CONTENTS

1. VARIABLES 1

1.1 INTRODUCTION 1

1.2 TYPES OF VARIABLE 1
1.2.1 Byte 2
1.2.2 Word 2
1.2.3 Trigger 2
1.2.4 Real 2
1.2.5 DoubleWord 2
1.2.6 String 2

1.3 VARIABLE AND ADRESSES 3

1.4 LOGOVIEW VARIABLES 4
1.4.1 Defining the variables 4
1.4.2 Addressing the variables 6

2. THE FONTS 9

2.1 INTRODUCTION 9

2.2 LOGOVIEW FONTS 9
2.2.1 Defining the Logoview fonts 9
2.2.2 Creating a Logoview font 10
2.2.3 Modification of Logoview fonts 13
2.2.4 Deleting a Logoview font 13

THE ALARMS 14

INTRODUCTION 14
Classes and areas 14
Analog and digital alarms 14
Recognizing an alarm 15
Alarm statuses 15
Network management 15
Connection 16
Synchronization 17
Runtime operations 19
Configuration 19

Class configuration 20

Zone CONFIGURATION 26

Configuration of digital alarms 28
Digital Alarm Characteristics 30

Analog AlarmS ConfiguraTION 32
Analog Alarm Characteristics 35

OTHER CONFIGURATIONS 40
Alarms Archive 40
Log Configuration 43
Network configuration 46

Preferences 47

3. HISTORICAL ARCHIVES 51

3.1 General concepts 51
3.1.1 Historical archives 51
3.1.2 Using the historical archives 51

3.2 Historical archives in LOGOVIEW NT 51
3.2.1 Organisation 51
3.2.2 Creating a historical archive 51
3.2.3 Configuring a record 53
3.2.4 Configuring the historical archives file. 56
3.2.4.1 Fix period archives 58
3.2.4.2 Ring archives 60
3.2.4.3 Linear archives 61
3.2.5 Auto-archiving 61
Archiving by event 62
3.2.7 Info file 62

4. DATABASES 66

4.1 General concepts 66
4.1.1 The databases 66
4.1.2 Indices 67
4.1.3 Tag 67
4.1.4 Index expressions 68
4.1.5 Seek 69

4.2 DATABASES in LOGOVIEW NT 70
4.2.1 Using the databases 70
4.2.2 Structure of databases 70
4.2.3 Creating a database 71
4.2.4 Record configuration 73
4.2.5 Database information 75
4.2.6 The handles 76
4.2.7 Record management 76
4.2.7.1 Reading a record 76
4.2.7.2 Writing a record 77
4.2.7.3 Deleting a record 77
4.2.7.4 Formatting date fields 77
4.2.8 Managing index files 77
4.2.9 Querying the database 78
4.2.10 Locking a file 78
4.2.11 dBase expressions 79
4.2.11.1 Constants 79
4.2.11.2 Operators 79
4.2.11.3 Functions for dBase expressions 80
4.2.12 Multiuser operation 82
4.2.13 Limits 83
4.2.14 Return codes 83
4.2.15 Error codes 83

5. PRINT FORMATS 86
5.1.1 Print formats 86
5.1.2 The forms 86
5.1.3 Creating a print format 86
5.1.4 Print formats editor 91
5.1.4.1 Page mode 92
5.1.4.2 Form mode 92

5.1.4.3 Tools....92
5.1.4.4 Arrow button....93
5.1.4.4.1 Selection....93
5.1.4.4.2 **Shifting**....94
5.1.4.4.3 *Modification of characteristics*....94
5.1.4.4.4 *Size change*....94
5.1.4.5 Dynamic objects....94
5.1.4.6 System variables....98
5.1.4.7 Text....100
5.1.4.8 Lines....102
5.1.4.9 Rectangles....103
5.1.4.10 Images....105
5.1.4.11 OLE objects....106
5.1.4.12 Zoom (Custom)....106
5.1.4.13 Modes....107
5.1.5 Grid....108
5.1.6 Editing....109
5.1.6.1 Selection....110
5.1.6.2 Modification....110
5.1.6.3 Shifting....110
5.1.6.4 Modification of characteristics....111
5.1.6.5 Multiple selection....111
5.1.6.6 Alignment....111
5.1.6.7 Selecting superimposed objects....112

5.2 Using print formats....113
5.2.1 PRINT FORM....113
5.2.2 FLUSH FORM....113

6. EVENTS....115

6.1 Events Editor....115
6.1.1 Toolbar....115
6.1.2 Attributes toolbar....116
6.1.3 Event writing....117
6.1.4 Adding or modifying instructions....118
6.1.5 Errors....119
6.1.6 Information area....120
6.1.7 Search and replace....121
6.1.8 Cut and paste....121
6.1.9 Cancel/restore....121

6.2 Parameters and Local Variables....121

6.3 Event label....122

6.4 Preferences....123

7. INTERFACE SETUP....125

7.1 Menu Bar....125
7.1.1 Item Type....125
New Menu 126
7.1.2 Menu Item / Item name....128
7.1.3 Descriptive String....128
7.1.4 Activate Item....128

7.2 Configure menu item....129
7.2.1 Action assigned to button....129
Change screen layout....129

Start event 130
Opened screen layout name 130
7.2.2 Screen Layout Node 130
7.2.3 Starting Event / Event at exit / Starting or exit event parameter 130

7.3 Context Help 132

7.4 Suggestions 133

8. COMMUNICATIONS 135

8.1 Introduction 135

8.2 Field devices 135
8.2.1 Server and Client 136

8.3 Transaction types 136
8.3.1 Synchronous transactions 136
8.3.2 Asynchronous transactions 137

9. COMMUNICATIONS CONFIGURATION 138

9.1 Development environment 138
9.1.1 Stations section 139
9.1.1.1 Opening menu with right-hand mouse key 140
9.1.2 Communications section 141
9.1.3 Commands section 143
9.1.3.1 Enabling control options with communication devices 144
9.1.3.2 Enabling password for access to commands 144
9.1.3.3 Enabling list of connected servers 144
9.1.3.4 Enabling list of connected clients 145
9.1.3.5 LOGOVIEW server registration name 145
9.1.3.6 Opening timed window with registration name 146

10. RUNTIME COMMUNICATIONS 147

10.1 Server initialization 147
10.1.1 Communication error 147

10.2 Communication menu 148
10.2.1 Server communication panel 148
10.2.2 Client inspection panel 150
10.2.2.1 Connections section 150
10.2.2.2 Errors section 150
10.2.2.3 Statistics section 152
10.2.3 Station name 153

10.3 Password protection 154

11. LINE TREND 156

"New command" 157

11.2 "Characteristics" command 157

11.3 "Modify" command 157

11.4 Real time line trends 158

11.4.1 General characteristics 158
11.4.2 Configuring a new line trend in real time 159
11.4.2.1 General section 159
11.4.2.1.1 Trend name 160
11.4.2.1.2 Buffer duration 160
11.4.2.1.3 Chart duration 160
11.4.2.1.4 Trend update period 161
11.4.2.1.5 Permanent buffer 161
11.4.2.1.6 Trend variables 161
11.4.2.1.7 Trend channels 162
11.4.2.1.8 Password for runtime changes 165
11.4.2.2 Layout section 167
11.4.2.2.1 Window area 168
11.4.2.2.2 Legend area 168
11.4.2.2.3 Trend channel values area 169
11.4.2.2.4 Chart area 172

11.5 Historical line trends 178
11.5.1 ARC historical archive 178
11.5.2 DBF database 178
11.5.3 General characteristics 178
11.5.4 Configuring a historical line trend 179
11.5.4.1 General section 180
11.5.4.1.1 Trend name 180
11.5.4.1.2 Archive type 181
11.5.4.1.3 Initial file 181
11.5.4.1.4 Time chart 182
11.5.4.1.5 X-Y chart 182
11.5.4.1.6 Trend variables 183
11.5.4.1.7 Trend channels 184
11.5.4.1.8 Password for runtime changes 187
11.5.4.2 Layout section 189
11.5.4.2.1 Window area 190
11.5.4.2.2 Legend area 190
11.5.4.2.3 Trend channel values area 191
11.5.4.2.4 Chart area 191

11.6 " Modify" command menu 198
11.6.1 Trend area 198
11.6.2 Legend 199
11.6.3 Current values 199
11.6.4 Toolbar 200
11.6.4.1 Select  200
11.6.4.2 Text  200
11.6.4.3 Line  201
11.6.4.4 Rectangle  202
11.6.4.5 Insert image  202

11.7 "Modify" window menu 203
11.7.1 FILE menu 203
11.7.2 EDIT menu 203
11.7.2.1 Cut 204
11.7.2.1.1 How to cut an object that has been pasted into the trend 204
11.7.2.2 Copy 204
11.7.2.2.1 How to copy a trend object 204

11.7.2.3 Paste 204
11.7.2.4 Delete 204
11.7.2.5 Align 205
11.7.2.6 Same dimensions 205
11.7.2.7 Foreground 206
11.7.2.8 Background 206
11.7.2.9 Select all 206
11.7.2.10 Invert selection 206
11.7.2.11 Characteristics 206
11.7.3 TOOLS menu 206
11.7.3.1 Select  207
11.7.3.2 Text  207
11.7.3.3 Line  208
11.7.3.4 Rectangle  209
11.7.3.5 Insert image  209
11.7.4 OPTIONS menu 209
11.7.5 SETUP menu 210
11.7.6 WINDOW menu 210
11.7.7 GUIDE menu 210

12. PLUG-INS 212

12.1 What are plug-ins 212

12.2 Extension command 212

12.3 Using the plug-ins 214

1. VARIABLES

When developing a Logoview application variable it is very important to decide which and how many variables need to be used to represent the parameters concerned.

1.1 INTRODUCTION

In any company but also in daily life we are in contact with elements that change their appearance, shape or value during the course of the day. One simple example is the temperature of the human body. During the day the human body can react to certain environmental conditions by increasing or decreasing its temperature and are heartbeat may also vary according to the physical activity in which we are engaged, and so on.
For example, if we could check our heart rate every hour we notice that it varies. We could therefore say that the parameter 'our heartbeat' is a variable because it does no remain constant over time.
To use a pun, we might say that 'everything that varies is variable'. Of course, our aim is only to study the variables in the system that Logoview has to supervise.
What variables might there be in a system? A very large number: e.g. pipe pressure, engine rpm, oven temperature, valve status, etc.
These are clearly all variables: but they differ in terms of the information that they carry. To understand this concept better, let us examine two variable elements of a system: the temperature of an oven and valve status. It can be readily understood that the temperature has vary high variations levels: when the oven is switched off it is at 0 but once it has been switched on the temperature will begin to increase - 50..100..300...1000. until it reaches the set temperature. In other words oven temperature varies widely. In the case of a valve, on the other hand, the field of variation is very restricted: a valve is either open or closed. The variable that represents it can therefore have only two values: it will therefore be of a different type compared with that of the oven temperature. Logoview provides many types of variable.
The most suitable one for our purposes must be chosen.

Apart from the range variables there are other variables that will be used only by the Logoview application. These variables are the program memory and can be used for a host of different purposes: to keep a cycle index to store a datum that will be saved in file, etc. It is not possible to say a priori what will be required inside the Logoview application.
Any use of the variable will not change the basic principle: a variable must be used each time that there is an inconstant parameter that must be stored.
To solve all the problems, Logoview supplies 6 types of variable.

1.2 TYPES OF VARIABLE

A variable must be defined by the type of use that is made of it.
Logoview contains 6 different types of variable. The developer of the Logoview application must choose the most appropriate type of variable.

Important: a variable takes up space and slows down the system. If a variable is necessary this is a small price to pay but if the variable is unnecessary the system is slowed down unnecessarily. Only the variables that are strictly necessary must be defined.

Choosing the correct type of variable is not only of academic interest. It is also an excellent way of limiting and therefore controlling the variable. This lessens errors and therefore optimizes Logoview resources.

1.2.1 Byte

A byte variable is a whole number between **0** and **255**. It is therefore a good space compromise if we are dealing with whole parameters that falls within this range.

1.2.2 Word

A Word variable is a whole number but its value may vary between **-32768** and **32768.**

1.2.3 Trigger

A Trigger variable has only two values: 0 or 1. It can have no other value. It is therefore a Boolean variable.

1.2.4 Real

A real type variable takes on values between **+/-1 and (+/-38)**.
This type of variable may be the only type that can represent rational parameters.

1.2.5 DoubleWord

A DoubleWord variable is an entire number between **-2147483648** and **2147483647**. It is therefore longer than a Word variable and can therefore represent a wider range of values.

1.2.6 String

A string variable contains alphanumeric characters. It is treated differently from the other variables: many arithmetical operators cannot be used because this variable does not 'represent' a value but is simply a text.

1.3 VARIABLE AND ADRESSES

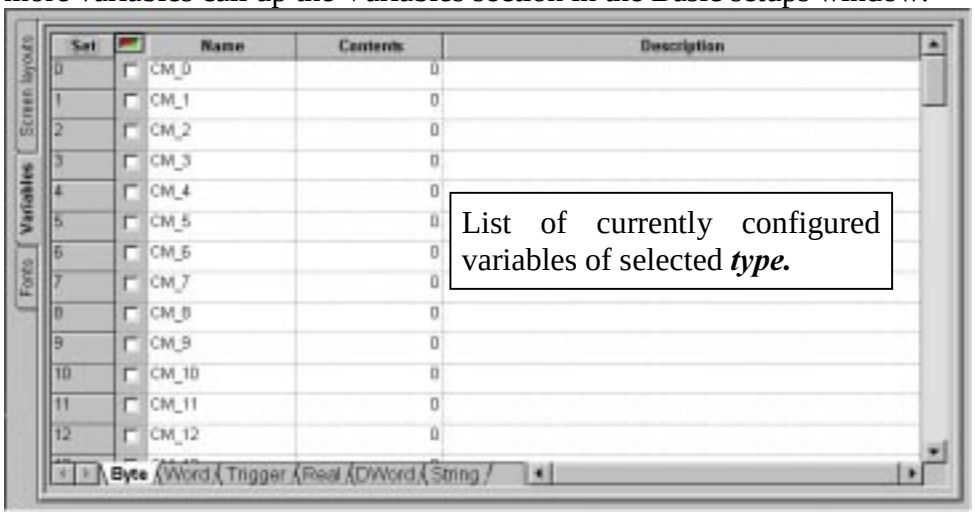
Each of us has a personal address at which we live, a telephone number or a P.O. box number: we all have a reference that anyone who wishes to 'interact' with us can use to trace us.
In order to be meaningful this reference must be individual: what would happen if your telephone number was the same as your neighbor's?
Logoview's main calling parties are the variables. Each variable must therefore have an address, also called a single-item offset, so that anyone who needs to handle it can do so without ambiguity. In Logoview, each variable can be reached in two ways: by the name or by its address. This applies whatever the point of access is: from any event or from any window with a variables reference (e.g. the window in which the files are defined).
The name of a variable is the name that it is asisgned whilst it is being defined. The address is the consecutive number of the variable on the list of variables that are available for that type.

N.B. If care is taken over the name that is given to a variable it can provide useful indications of the contents of the variable and can thus make the program more understandable.

1.4 LOGOVIEW VARIABLES

1.4.1 Defining the variables

As we have said, Logoview can manage 6 different types of variable, To define one or more variables call up the Variables section in the Basic setups window.



This window enables any Logoview variables to be set.

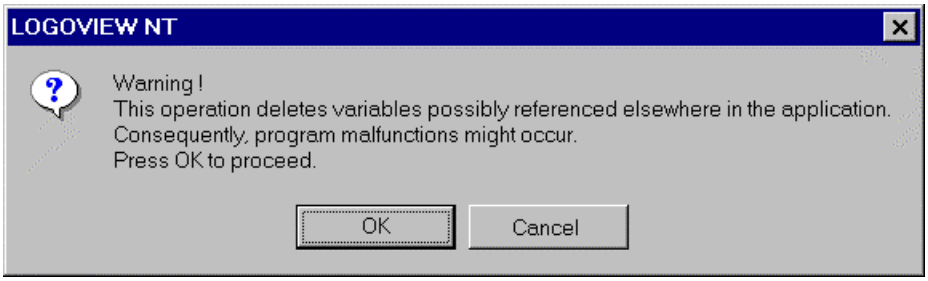
This section enable the number of variables of the selected type to be set. To set them, place the cursor of the mouse on the white box containing the number of variables current and press the left-hand mouse key.

This will activate the keyboard so that the required number of variables can be set.

To physically create the variables, press

Set

This action calls up the list of variables of that type and of the set size. This dimension may also be less than the previous one, in which case all excess variables will be deleted. As this operation can delete variables that may be referenced elsewhere in the application Logoview asks the user to press 'OK' to proceed.

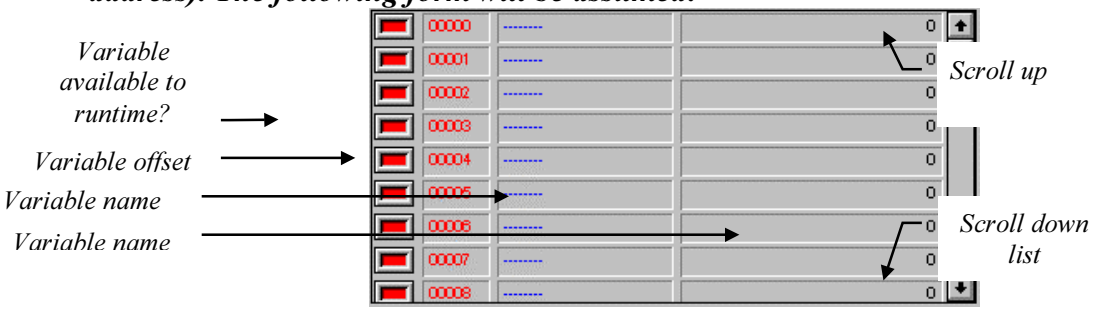


Press 'Cancel' if **Cancel** ***you do not wish to complete the operation.***

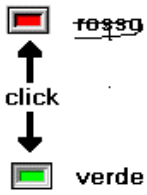
Press 'OK' to 

proceed with the deletion of excess variables.

The list of variables will contain the variables created by this operation and numbered in ascending order starting from '0' (the number represents the address). The following form will be assumed:



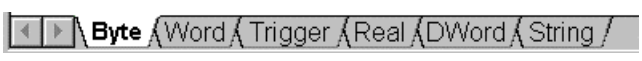
The small button to the left of the line may be red or green. If it is green the variable is available for runtime and can be set. An interactive field is then displayed: red means that the variable is not available for runtime.
To activate or deactivate the availability of the variable for runtime, place the cursor of the mouse on the button and press the left-hand mouse key.



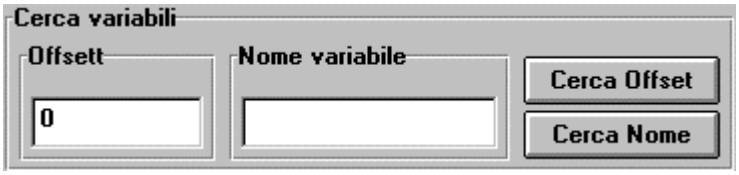
This value is the consecutive number of the variable inside the list of the available variables of the type set in the **Variable Type** ***section. This number can be used as a variable reference when it needs to be manipulated. The number is nevertheless connected to the type set for each type. Variable numbering starts from '0'. For example 1 variable may be a Real variable and be assigned offset 50 and a Trigger variable may also be assigned offset 50. It is nevertheless important to underline that variable of a given type has its own offset: there can never, for example, be two Word variables with offset 10 .***

This box displays the current name of the variable. Dots (.....) indicate that the variable does not have a name. To define a name place the mouse cursor on the box and press the left-hand mouse key. This will activate the keyboard so that the name can be set. The name may consist of up to 8 characters. To confirm, press Enter.

This box displays the current value of the variable. This value is current when the window is opened. After an application has been run the box will display the final value of the variable. This is a good way of evaluating the operation of a Logoview application. Errors or malfunctions can be detected by the fact that that the values of the variables are different from the expected values.



This section lists the types of variables that are available. Creating variables always refers to the type selected in this section. To select a type, place the cursor of the mouse inside the corresponding circle and press the left-hand mouse key. Logoview will fill the selection with a full ball. The list of variables current in the window refers to the type selected here.



This section enables the variables to be searched for by sel3ected type. The search can be by name or offset. To search for a variable by Offset, place the cursor inside the corresponding box and press the left-hand mouse key. This will activate the keyboard, so that the sought offset can be inserted. To confirm, press Enter.

To activate the search, press the button 

To search for a variable by name, place the cursor of the mouse inside the corresponding circle and press the left-hand mouse key. This will activate the keyboard, so that the sought name can be inserted. To confirm, press Enter.

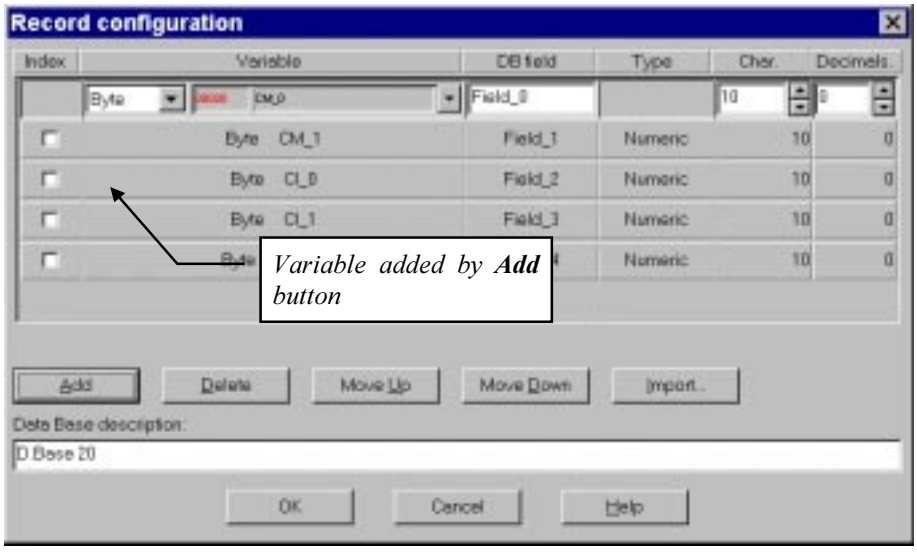
To activate the search, press the button

Some Logoview functions are not available until at least one variable has been defined. This means that when a new application is started, the variables need to be defined. This operation is 'encouraged' by Logoview, which opens the variables definition window first when an application is created.

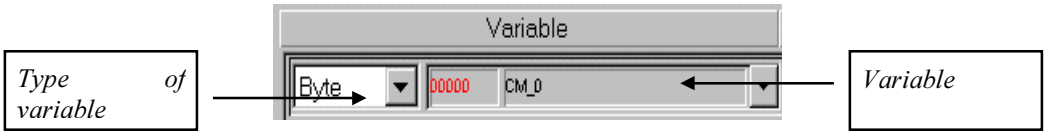
1.4.2 Addressing the variables

As already mentioned, the variables inside Logoview are used for a host of different purposes: for use in an event to support for programming, use a file field, etc. The user must therefore know exactly how to locate a configured variable from any point in the program using the procedure described in the previous paragraph.

From the window: when the variables are used in Develop to, for example, define a parameter, the databases contain configuration windows from which to simply select the variable concerned. Let us take the Record configuration window as an example:

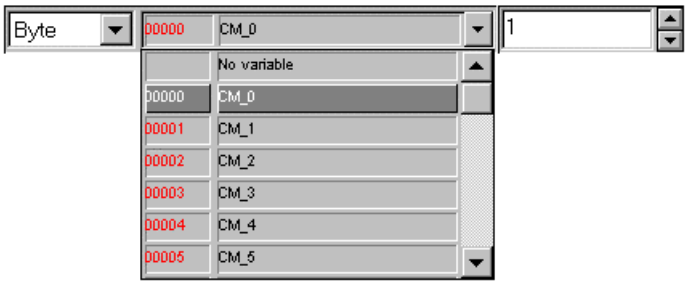


If a line is selected the variable can be modified according to requirements:



A variable can easily be selected from such a window: just select the type from the types list by pressing 

Next, select the variable required from the other list by pressing 



This is a procedure for selecting standard variables that can be used in many Logoview windows.

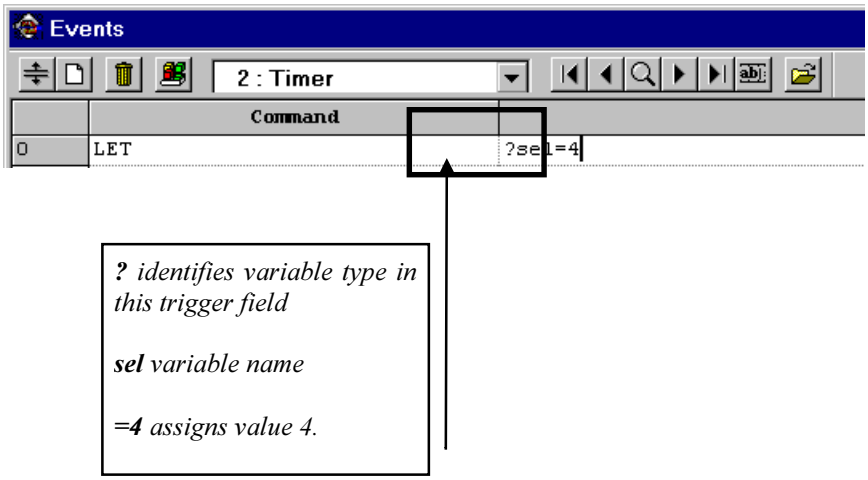
From event: Using variables from event is a very frequent operation. To access a variable, specify it either by name or with the offset. These two characteristics identify the individual variable. The variable can be used for any purpose by specifying its offset or

name. The only thing to remember is to add the prefix that identifies the type of variable. Prefixes are summarized in the following table:

TYPE	*PREFIX*
TRIGGER	**?**
BYTE	**!**
WORD	#
DOUBLE WORD	**:**
REAL	**@**

To assign, for example, the instruction ***LET*** to the Trigger variable with the name ***sel*** and offset **6** we can write either:

Use Name Variable



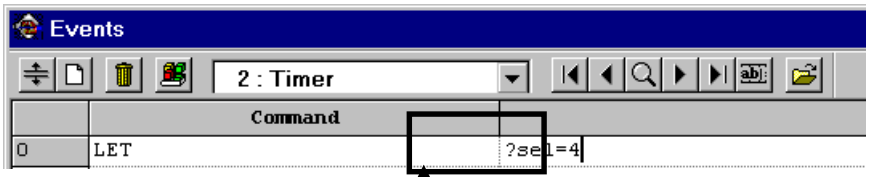
? *identifies variable type in this trigger field*

sel *variable name*

=4 *assigns value 4.*

or

Use Offset Variable



? ? *identifies variable type in this trigger field*

6 *variable offset*

=4 *assigns value 4.*

2. THE FONTS

The Logoview fonts contain the characters that an application can use to interact with the user. They are therefore important for highlighting the texts in the Logoview application that require a special style. As we shall endeavor to illustrate in the following paragraphs, the Logoview fonts are closely connected to Window fonts.

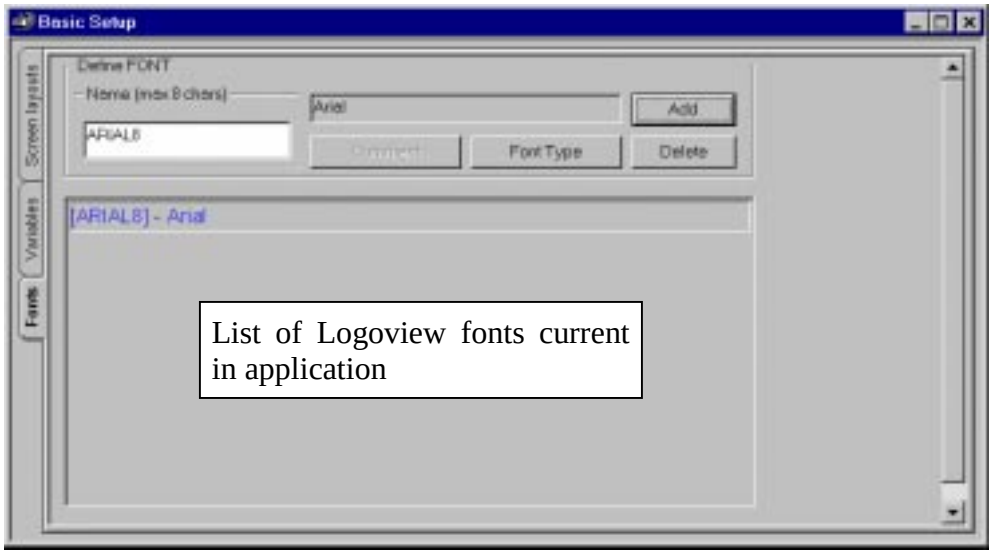
2.1 INTRODUCTION

Logoview can use all the fonts inside the Windows operative system. However, these fonts cannot be used directly: new fonts must first be defined inside Logoview, they must then be assigned names and used in the instruction made available by Event. We shall call these fonts 'Logoview fonts' from now on to distinguish them from the fonts of the operating system, which we shall call 'Windows fonts'.
This stratagem was introduced to maintain compatibility with earlier versions of Logoview. A Logoview font corresponds to a font with certain set Windows characteristics (such as character size, shading, italics, etc.).
Once the Logoview font has been defined, it will have a name and this will be the name by which it will be selected by all the instructions that use it. For example, in order to use the Arial 10 font inside the application it will be sufficient to create a Logoview font that we can call 'ARIAL' with these characteristics. When it is necessary to use the Windows font, just call up the Logoview "ARIAL" font.

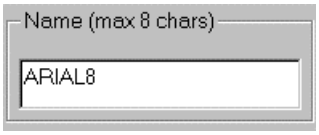
2.2 LOGOVIEW FONTS

2.2.1 Defining the Logoview fonts

A we have said, Logoview has its own fonts that are connected with the fonts of the operating system. To define one of more fonts, call up the section ***Fonts*** in the ***Basic Setup*** window.



This window enables the Logoview fonts to be set.



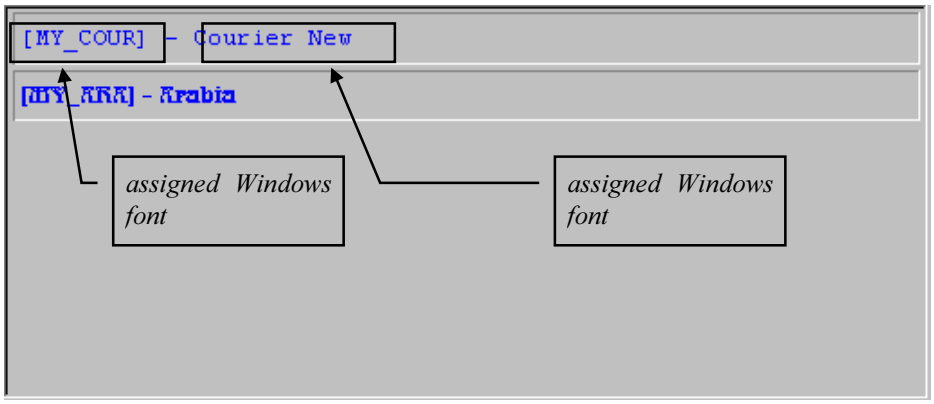
In this section the name of the new Logoview font can be keyed in that is to be created. To insert the name, place the cursor of the mouse on the white square and press the left-hand key. This will activate the keyboard, so that the name can be inserted.

This button enables a comment on the new Logoview font to be added.

This button activates the standard Windows font selection so that a Windows font can be assigned to the new Logoview Font. The name of the Windows button will appear inside the white box in the same section.

This button adds a new Logoview font with the name keyed into the field of the same name with characteristics selected from the window activated by the Font Type button. The new Logoview font will be displayed inside the list of available fonts.

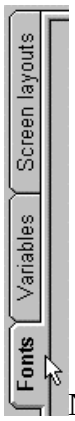
This button eliminates the font selected from the list of available fonts.



This is the list of defined Logoview fonts. The list is defined with the name of the Logoview fonts inside square parentheses and with the name of the assigned Windows font. To select a font, click on the corresponding line with the left-hand key of the mouse. The selected line will be highlighted in gray.

2.2.2 Creating a Logoview font

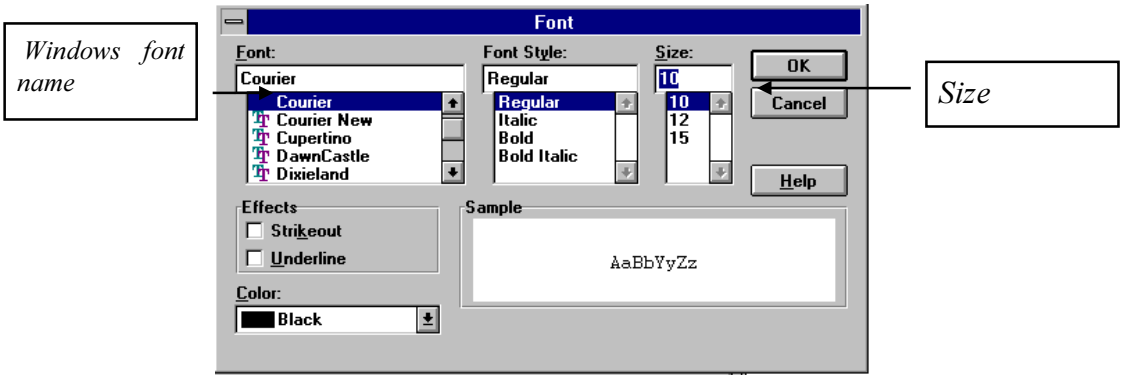
To create a Logoview font, open the Basic setup window and select the Fonts window illustrated in the previous paragraph.



Next, place the mouse cursor inside the square in the name section and press the right-hand key of the mouse. The keyboard will become active: key in the name that you wish to give to the new font inside Logoview (for example: 'ARIAL').

Press Enter to confirm. Next, press the Font Type button to select the Windows Font to assign to the Logoview Font that is being defined.

This button shows the standard Windows window for selecting fonts[1]. From this window select all the characteristics of the font that is being created:

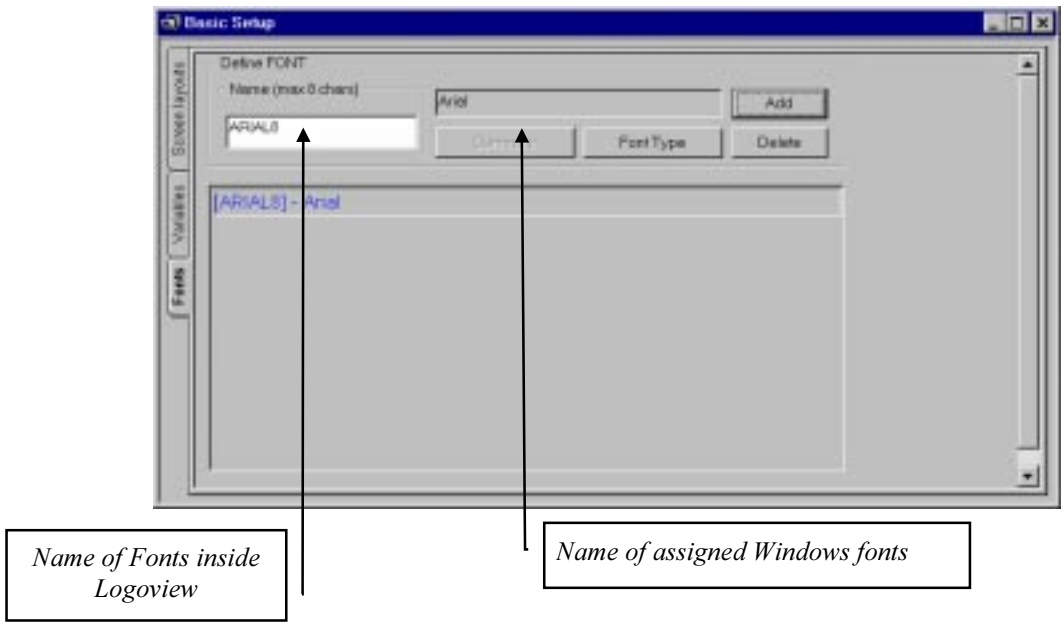


This window enables all the Windows font characteristics to be defined that you wish to assign to the Logoview font that is being defined.

Press the button to confirm. 

The white box in the top of the fonts setup window will show the name of the Windows font that has just been set.

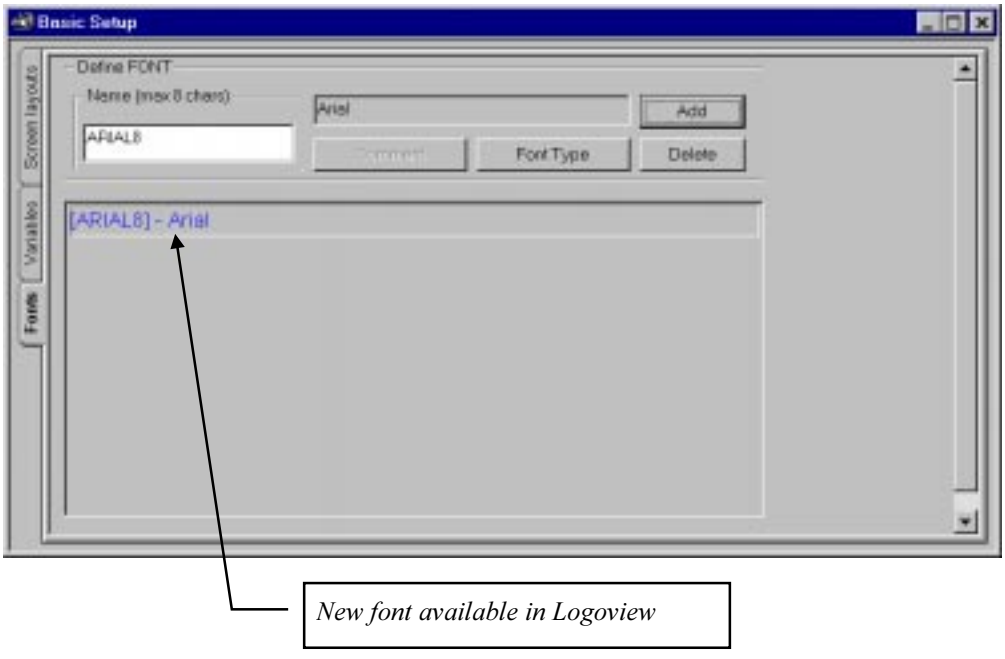
[1] *For further details on using the Font window, see the Windows manual.*



Press the button to confirm.

This action creates an association between the Logoview font and the Windows font.

A line will be added to the list of available fonts that will indicate the presence of the new font.



After creating the association, each time the you wish to use the font, just key in the name for it that has been set here.

Example: if the procedure described in this paragraph has followed to assign the name "ARIAL" to the ARIAL 10 font the instruction will be: FONT "ARIAL"

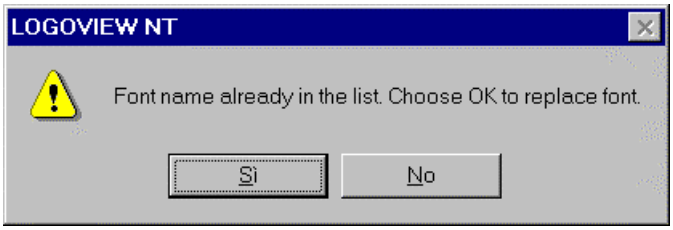
2.2.3 Modification of Logoview fonts

To modify a Windows font assigned to a Logoview font just select the corresponding line and press

This action will display the standard Windows font. Use the window to modify the settings as required and then press

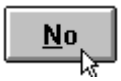
Next, press the button

Logoview will display the following message, which warns that the a Logoview font is already being modified:



Press 'Yes' to confirm that font replacement.

Press 'No' if you do not wish to replace the font.



Confirming the replacement means that all references to that Logoview font will in future use the new Windows font that has just been redefined.

2.2.4 Deleting a Logoview font

To delete a Logoview font, select it from the list of available fonts and press

This will delete the selected font, so that it will no longer be available for the application. The button will be active only if a line from the list of available fonts has been selected.

THE ALARMS

A large system requires careful monitoring. A particular parameter value may indicate a system fault. For this reason all the most important parameters must be checked.

INTRODUCTION

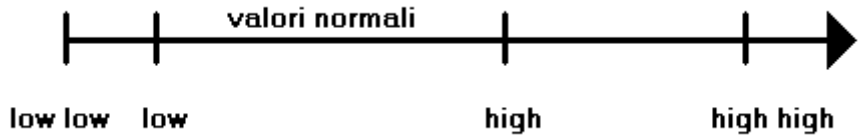
Logoview provides very flexible alarm management. This management is divided into configuration (development), which is described in this chapter, and running the Logoview application (runtime). Configuration enables all the alarm characteristics to be set. Runtime enables alarm status throughout the system to be checked and enables them to be recognized.

Classes and areas

An alarm has to draw attention to a fault. The Logoview application developer must have defined all these parameters and the parameters must be closely monitored by the operator. The parameters will be contained in variables. It is the developer's task to associate the alarms to the variables. The alarms can be divided into categories according to two criteria: classes and areas. An alarms class contains alarms with similar characteristics. For example, all the temperature alarms should belong to the same class. We say 'should' because it is the developer who must set all the alarms of a given class. Another criterion for dividing alarms is the system area: i.e. alarms can be grouped according to their location in the system. For example, all the alarms of a layout should be in the same area.

Analog and digital alarms

After assigning the monitoring parameters to the variables, the alarm must be assigned to abnormal variable values. The alarms may be analog or digital. As the name suggests, the former are governed by thresholds because they are connected to analog variables (BYTE, WORD, DOUBLE WORD, REAL); the latter are triggered by a binary value (0 or 1) because they are connected to digital variables (TRIGGERS). The thresholds enable a value range to be set within which a variable can vary without triggering an alarm. There are four alarms. This enables the variation range to be better defined. These four threshold values are called: LOW LOW, LOW, HIGH and HIGH HIGH. They are located as follows on a rising scale:



An acceptable variable value is a value that falls between the high and low value. As a further classification, another two thresholds have been introduced that can be used to warn of critical situations. As we shall see, it is nevertheless not compulsory to use all four values.
The thresholds apply only to analog variables. For trigger variables alarm status can be triggered by a change in status (e.g. change from value 0 to value 1).

Recognizing an alarm

Alarms are recognized during runtime. For this reason, this topic will not be discussed here. It should nevertheless be remembered that this operation requires the operator to explicitly recognize an alarm variable. This explicit acknowledgment is necessary for guaranteeing that no alarm is undetected. Naturally, for some alarms it may not be necessary to request explicit acknowledgment.

Acknowledgment is a class attribute: if acknowledgment is active for that class, all the alarms of that class will therefore be recognized.

Alarm statuses

An alarm can have different statuses. Alarm status indicates the alarm status at a given moment. As we shall see below, alarm status is assigned to a variable. The contents of this variable can have the following values.

value	*Meaning*
0	*No alarm*
1	*Current alarm not recognized*
2	*Current alarm recognized*
3	*Alarm disabled*
4	*Alarm current, not recognized but ended*

Value 0 shows that the parameter monitored by the alarm is within the limits set for correct system operations. Value 1 indicates that the parameter exceeds the permitted limits and that the operator has not yet taken note of this (i.e. he has not yet recognized it). Value 2 indicates that the operator has taken note of the alarm. Value 3 indicates that the alarm is disabled. Value 4 indicates that the parameter has returned within the permitted limits on its own.

Network management

Apart from local management, Logoview enables alarms to be managed in a wider context, such as a local network (two or more computers linked up to one another within the same building).
In such systems network management of alarms enables the operations carried out on the alarms during runtime to be shared.
For example, if a computer recognises an alarm, this acknowledgment is transmitted to the other PCs that are linked up to it. The synchronized operations are alarm acknowledgment and all the modification operations carried out by the operator. These are the operations that are synchronized between the linked-up computers:

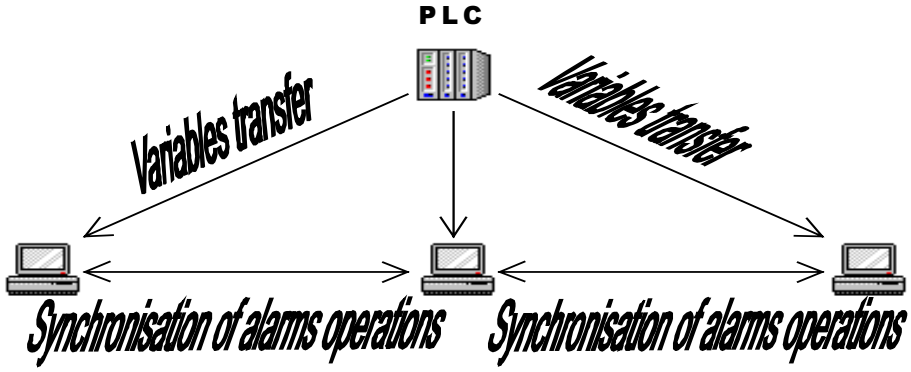
- editing (modification) of an alarm class

modification of the thresholds of the dead bands of the analog alarms

- alarm messages
- enabling or disabling

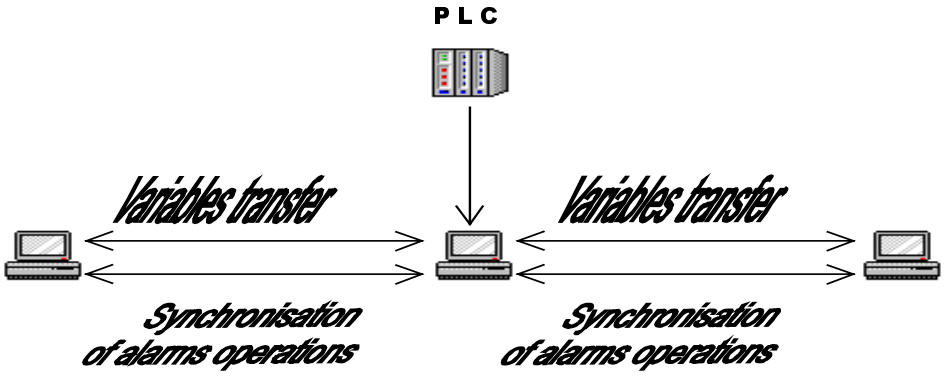
It is also possible to ensure that the extension of the alarms transfers the actual values of the alarm variables. Although this method can be used to transfer variables between different Logoviews for reasons of efficiency it is preferable for each Logoview to read the variables of a Logoview connected to the field by means of asynchronous communication blocks. Alternatively, system conditions permitting, each Logoview can be connected directly to the field.

The two most common types are:



In this configuration each Logoview is linked directly to the field. Network management of the alarms is limited to maintaining synchronization of the operation carried out by the operator.

In this configuration just one Logoview is connected to the field. The variables can be transferred both by alarms management and by the asynchronous communication blocks. For reasons of efficiency and in order to limit network traffic, it is better to use the asynchronous communication blocks.



Connection

When runtime is started up each Logoview tries to contact the Logoviews that have been configured in the **"Communications configuration"** A window will then be immediately displayed showing connections status.

As the connections are successfully completed a message will appear in the window below that finishes with 'OK'. As soon as all the connections have been successfully made the window disappears and the alarms operations are enabled. If one of the computers should not respond to the request for connection, Logoview will remain waiting for 15 minutes, during which the alarms operations will remain disabled. The operator can nevertheless close the window and continue to work normally.
If errors have occurred at the end of the set period (15 minutes) the window will remain displayed for another 10 minutes, after which it will close automatically.

Warning! To ensure correct network management of alarms, each Logoview must be connected to all the others with which the alarms must be synchronized.

Suppose we have three PCs (Excelsior, Voyager, Reliant) linked up together, in each of which a Logoview application has been installed. Each Logoview must have already configured the communications with the other two. This can be set in the **"Communications configuration"** (see page 115 and chapter 11 of the "Introductory Guide"); for the sake of simplicity the same application can be used on the three computers because if the name of the local computer and the name recorded as a station for this copy of Logoview (default GOST_MONIT) have been specified in the "**Communications configuration**" window this connection is ignored.

Warning! If the name "Local" is specified the local DDE protocol will be used instead of the network for the connection. If the name of the PC is entered under "Node", the NET-DDE network will be used for the connection because the name of the PC is certainly different from the "Local" name.

In the "**Synchronization of current alarms**" window, synchronization status is displayed.

The message: “Connection with…" indicates that the connection with the server is displayed only when the double connection with the specified server ("GOST_MONIT-VOYAGER") takes place. In other words, this means that both this computer and the remote computer have been connected; if one of the two connections is not successful, the alarms management would not be able to be synchronized with the remote computer. If the time is different by more than thirty seconds the synchronization window displays the message: L'ora dei due computer è diversa (117 secondi) “Computer time different (117 seconds)”.
To maintain clock synchronization on several computers use Windows NT Server. This contains TimeServer services. For further information, consult the Resource Kit of Windows NT.

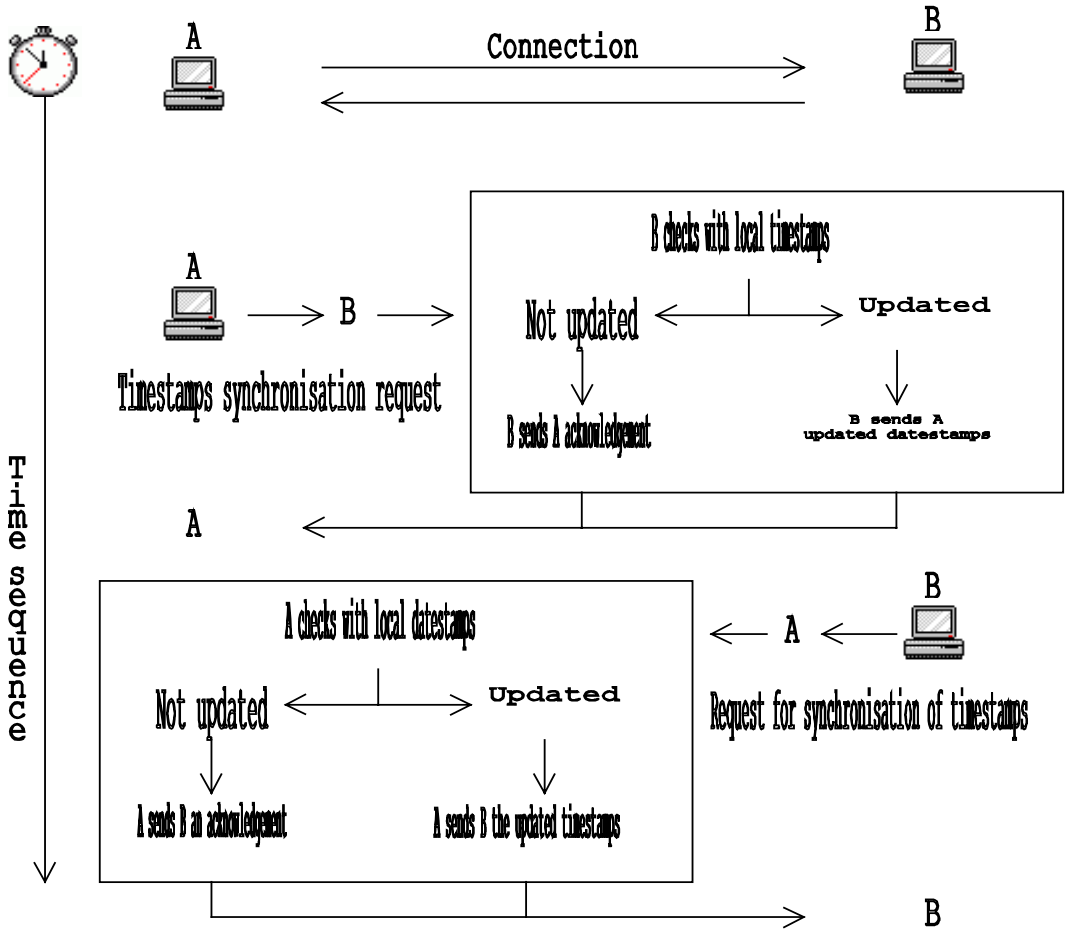
Synchronization

After the connection is made, as the links are completed, the synchronization process begins. For each of the connected Logoviews information is now exchanged between the one that exchange of detailed information on date and time (timestamps) relating to the synchronization data. The synchronized data are the modifications made by the operator during runtime:

- modification of alarm classes
- modification of thresholds of analog alarms
- modification of messages
- alarm enabling and disabling
- current and recognized alarms
- current alarms

For all these types of data (modification, enabling/disabling, current and recognized alarms), except for the last type of alarm, the date and time are checked in order to send only the most up-to-date data. Note that if there are 'current alarms' they are transmitted regardless of the fact of whether or not they are recent and without the timestamps being checked at all.
The computer that receives the timestamps compares them with the ones that it has stored in memory. If the latter are more recent than those received the computer sends the most recent dates in reply. Transmitting the dates affects the entire group because if, for example

even one of the thresholds has been modified, the computer sends the entire thresholds configuration to the most up-to-date version.
If the dates in the receiving computer are less recent than those received, only an acknowledge signal is sent.
After synchronization in both directions the dates (timestamps) of the computers must be identical.



As can be seen in the figure, a series of operations must take place before two computers can be synchronized. They occur in this chronological order:

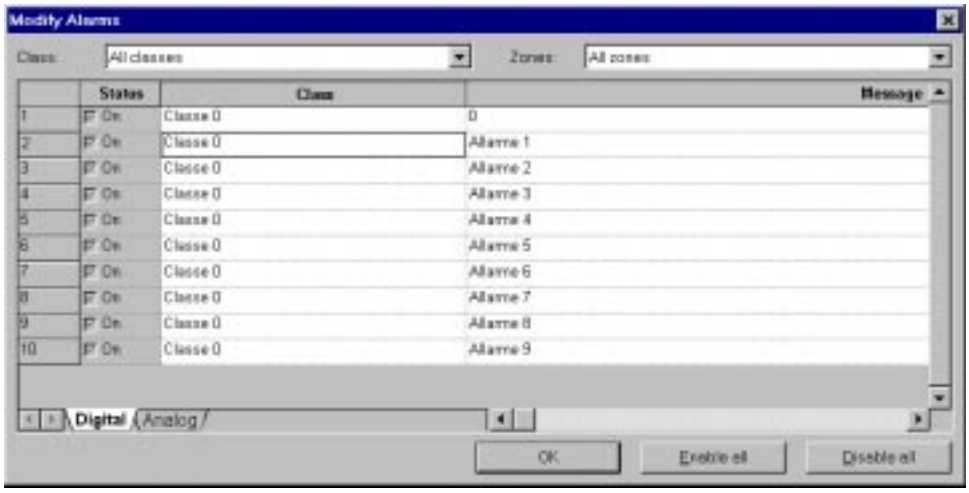
- connection
- synchronization request (in progress-window, or window displaying state of process this message appears: sincronizzazione in corso....) "synchronization in progress".
- comparison of timestamps
- transmission of acknowledgment message of transmission of updated timestamps.

The operator knows that this final phase has been reached when the video displays the message ..OK .
Remember that if, for example, computer "A" has to be synchronized not only with computer "B" but also with computers "C" and "D" it will carry out all these operations in sequence and in chronological order.
After synchronization has been completed the computer will save any updated timestamps to the disks so that when Logoview is started up again it will no longer be necessary to send information during synchronization. During normal operations, if none of the linked-up computers has been switched of or if they have all been switched off simultaneously no

information will be sent during synchronization. The PCs will if necessary transfer and save to local disks all the information on alarms that has been exchanged.

Runtime operations

During normal layout runtime operations, network alarms management will send the other linked-up computers all the modifications made by the operator in the "Modify alarms" window. To display them, select "Alarms" from the "Modify alarms" menu.



Messages are transmitted along the network when the operator makes a modification without waiting for the window to close. When "**Modify alarms** " is closed the connected Logoviews are sent a message instructing them to save the modifications to the local disks. This ensures that the next time that the program is run each computer will have an updated configuration and no data exchange will be required during synchronization.
Just like alarm modifications, the program sends the linked-up Logoviews alarm acknowledgment when the operator carries out the operation. The date and time of generation are assigned to each updating message that is sent down the network ; in this way, alarm acknowledgment will appear with the same date and time on all the network computers, even if the time of the individual PCs is not identical.
This behavior can lead to fault situations if there is a difference of several seconds between the time on the network computers and each computer reads the alarms directly from the field.
Let us assume that there are two PCs, A and B and that the time on PC A is 10.00, whilst the time on computer B is 10.05. If we assume that an alarm is generated and is detected by both computers (they must read directly from the field), the alarm will be recorded on PC A as occurring at 10.00 whilst on computer B the alarm will be recorded as occurring at 10.05. If the operator acknowledges the alarm on PC A at 10.01, Logoview will send the acknowledgment message to computer B, where the same time is recorded at the same time as on computer A: 10.01. A fault therefore occurs because an alarm is acknowledged four minutes before it occurs.
In order to avoid such situations, it is advisable to sure that the computer clocks are as perfectly synchronized as possible.

Configuration

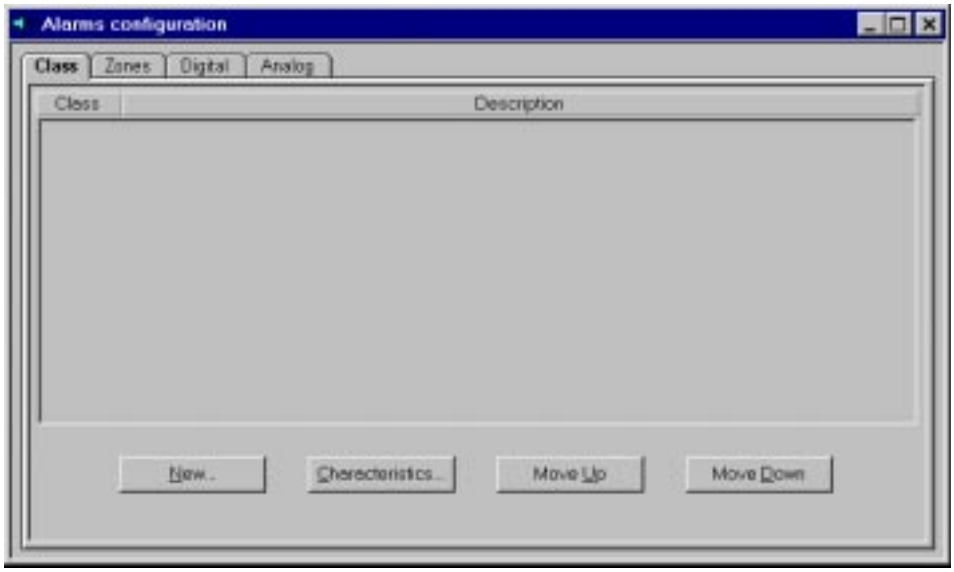
Alarms are configured in a dedicated window. To access the "***Alarms configuration"*** window, select "Alarms" from the SetUps menu

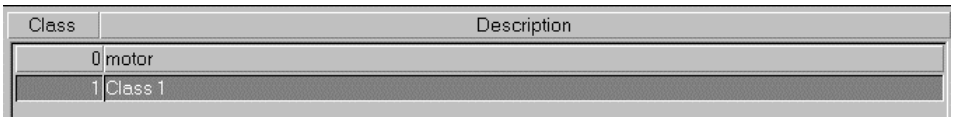
or press  on the main toolbar .

The window comprises four sections. Each file enables a different aspect of alarms management to be configured. Before setting the actual alarms, configure alarm classes and system zones.

CLASS CONFIGURATION

The "**Class**" file displays all the classes that have already been defined, if there are any.





The main list of this window displays all the defined classes. Each class is defined by a consecutive number and a short description.

This button enables a new class to be added (see below).

This button enables the characteristics of the class selected from the main list to be modified.

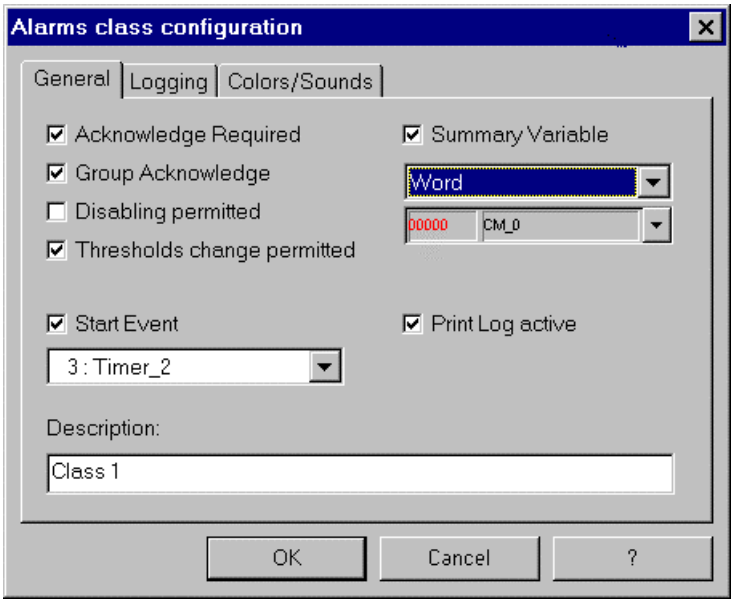
This button moves up by one position the class selected from the main list: it enables the consecutive number identifying the class to be reduced by one.

This button moves down by one position the class selected from the main list: it enables the consecutive number identifying the class to be increased by one.

To add a new class, press the button "**New…**". To configure an existing class, highlight the class and then push the button "**Characteristics …**". To create a new class using part of the configuration of an existing class it may be helpful to make a copy of the original class and then just modify the characteristics that change. To copy and paste a class, use the copy/paste command that are current in the "**Edit**" menu.

Whenever a new class is created or when the button "**Configure**" is pressed the alarm class configuration window is displayed. From this window all class characteristics can be set. The ***"General"*** section

enables the main class characteristics to be defined.

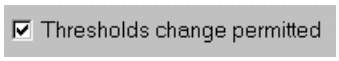


If this option is selected, the operator is required to acknowledge the alarms belonging to this class. If alarm acknowledgment is required, during runtime the operator must explicitly confirm that he has seen the alarm. To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A* 'check' *(☒) sign will appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. Remember that acknowledgment is a class attribute and therefore applies to all the alarms of the same class.

Select this option to add a button during runtime that enables all the alarms belonging to this group to be acknowledged. To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A* 'check' *(☒) sign will

appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key.

Select this option to enable all the alarms belonging to this class to be disabled during runtime. A disabled alarm remains inactive. To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A **'check'** ***(×) sign will appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key.***



Select this option to modify the thresholds of all the alarms belonging to this class. The threshold is value that triggers the alarm. To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A **'check'** ***(×) sign will appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. .***

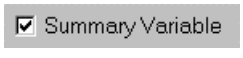
Select this option to start an event when an alarm is triggered. When a class alarm is triggered during runtime the configured event shown in the square below will be started. To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A **'check'** ***(×) sign will appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key.***

This square can be used to set the event that is to be started when a class alarm is triggered. The event parameter is the offset of the trigger variable assigned to the alarm. This event is called up by Logoview when an alarm of this class changes status, i.e. when:

- ***the alarm is activated***
- ***the alarm has ended***
- ***the alarm is acknowledged***
- ***the alarm is enabled or disabled***

The square is active only if the option "Start event" described above has been selected. To display the configured events, press  ***. Next, select the required event from the list that appears.***

Key in a short description of the alarm class in this box. Logoview assigns a default name when the class is created. To change this name, place the mouse cursor on the box and press the left-hand mouse key. This activates the keyboard. Next, key in the required name. This name will appear in the list of available classes in the "Alarms configuration" window.



Select this option to add a variable summary to the events class. The variable summary contains a value that indicates the status of all the alarms of the class. To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A **'check'** ***(×) sign will appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key.***

The type of variable summary can be set in this box. The box is active only if the "Active Variable" described above has been selected. To display the available types, press  ***Next, select the required type from the list. Set the variable summary of the previously selected type in this box. The box is active only if the "Active Variable" described above has been selected. To display the variable, press***  ***Next, select the required variable from the list that appears.***

This option enables default printing of the log.

Class summary variable

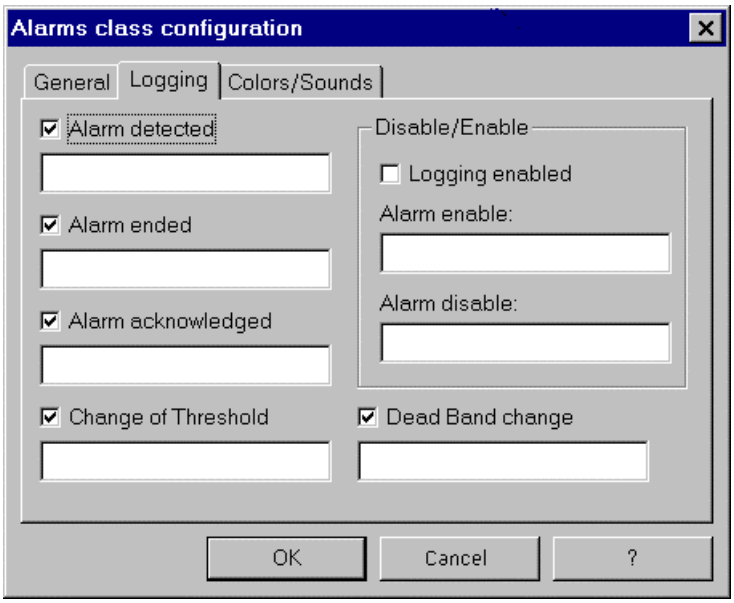
A summary variable can be assigned to an alarm class. The variable can have three values: 0, 1 or 2. These three values have the following meaning:

value	*Meaning*
0	*No alarm exists in the class*
1	*At least one unacknowledged alarms exists in the class.*
2	*All class alarms have been acknowledged.*

Naturally, value two is present only if all the current alarms are explicitly acknowledged.

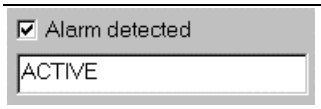
The "**Logging**" card

enables all the messages to be defined that are to be added to the log and the historical log for the alarms and enables the user to define the events that a log generates.

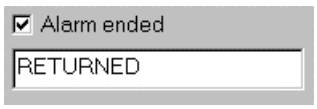


All the sections of this window act in the same manner. The selection box enables a given type of log (e.g. alarm generation) to be enabled/disabled whilst the string is entered in the text box underneath that will be added to the log. For example, if the message assigned to

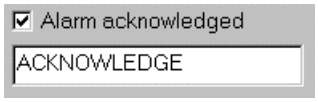
the alarm is “High Alarms" and active is entered in the "Alarm Generation" , the string "High Alarm **Active"** will be stored in the log and historical log.



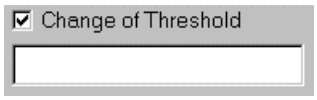
This section enables the string to be defined that has to be added to the log if an alarm is generated.



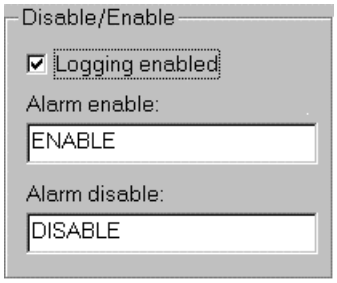
This section enables the string to be defined that has to be added to the log when the alarm disappears because it has ended ('RETURNED'



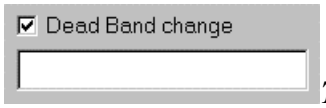
In this section, insert the string to add to the message when the alarm is acknowledged.



In this section enter the text to at to the log when an analog alarm threshold is changed.



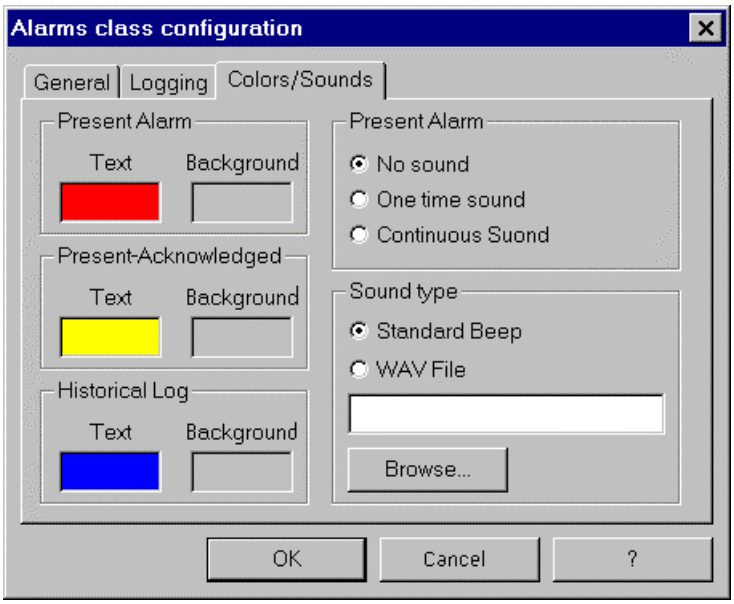
This section enables the text to be added to the log when an alarm is enabled or disabled.

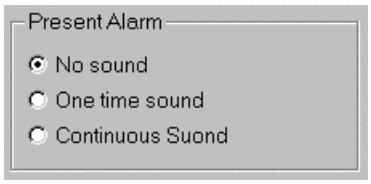


This section enables the text to be added to the log when a dead band of an analog alarm is changed.

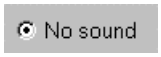
The "**Colors/sounds**" card:

enables the colors to be configured for the display of alarm messages.
A different pair of colors can be defined for acknowledged alarms as opposed to unacknowledged alarms. A third pair of colors that need to be defined will be used for the list of historical logs.
This section also enables the sounds to be configured that the PC produces when an alarm is triggered.



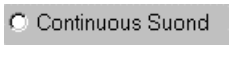


This section enables different acoustic alarm options to be selected. They are useful at the moment in which an alarm is generated.
Here is a detailed description.

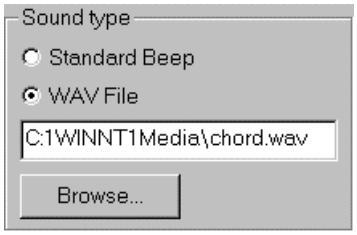


If this option is selected no sound will be generated when an alarm is triggered.

If this option is selected the set sound will be heard just once when an alarm is triggered.

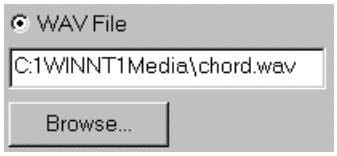


If this option is selected when an alarm is triggered a continuous will be heard until the alarm is acknowledged.



This section enables the type of sound to be selected that will be heard when an alarm is triggered.

If this option is selected the reproduced sound will be the computer's standard "beep".



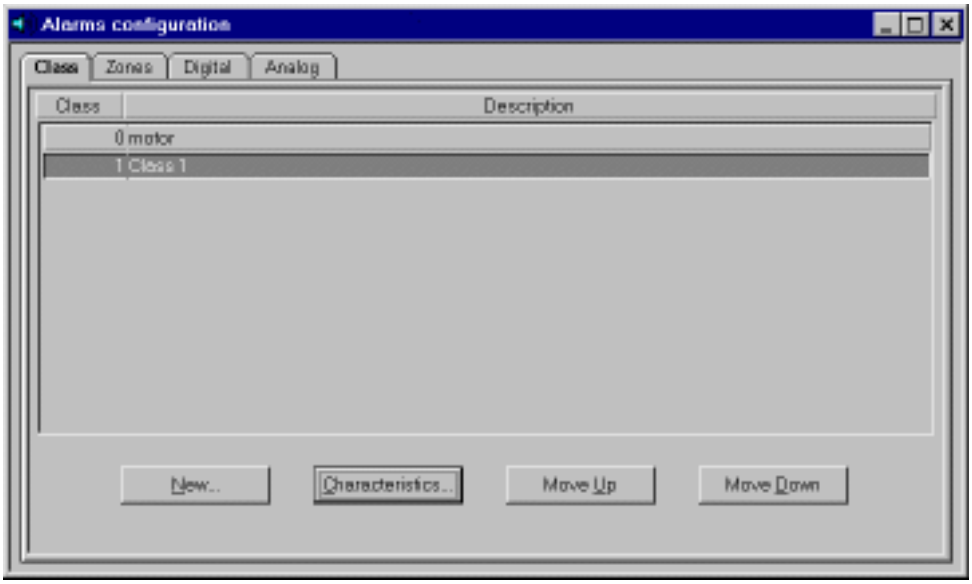
If this option is selected the selection can be customized inasmuch as pressing 

enables a WAV file to be inserted that produces the sound that most appeals to us. An audio card is required for this, otherwise the selected sound will be replaced by the computer "beep".

If the option "Continuous sound" is selected but the audio card has not been installed, only a single computer "beep" will be heard.
Similarly, if the option "File WAV" is accepted without the audio card, only a single computer "beep" will be heard and not the previously selected file sound.

ZONE CONFIGURATION

This file displays any zones that have already been configured.



The main list of this window displays all the defined zones. each area is displayed with its consecutive number and a brief description.

This button enables a new zone to be added (see below).

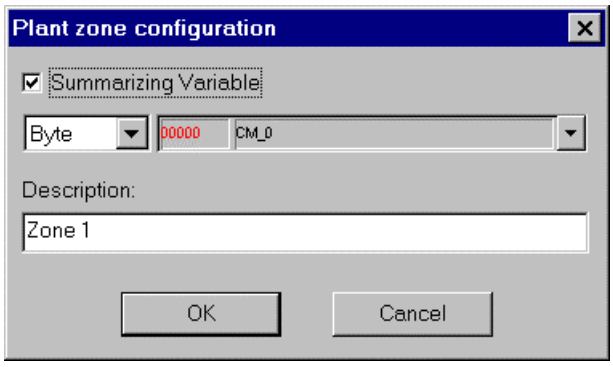
This button enables characteristics of the zone selected from the main list to be changed

This button moves up by one position the zone selected from the main list: it enables the consecutive number identifying the zone to be reduced by one.

This button moves down by one position the zone selected from the main list: it enables the consecutive number identifying the zone to be increased by one.

To add a new zone, press the button "**New…**". To configure an existing zone, highlight the zone and then push the button "**Characteristics …**". To create a new zone using part of the configuration of an existing zone it may be helpful to make a copy of the original zone and then just modify the characteristics that change. To copy and paste a class, use the copy/paste command that are current in the "**Edit**" menu.

Whenever a new zone is created or when the button "**Configure**" is pressed the alarm zone configuration window is displayed. From this window all zone characteristics can be set.



If this option is selected a zone variable summary can be configured. This variable summarizes the alarm statuses for a given area. To configure the required variable just use the descent controls below this box.

Describe the zone in this box so that it can be easily recognized.

Zone summary variable
A summary variable can be assigned to an alarm zone. The variable can have three values: 0, 1 or 2. These three values have the following meaning:

value	*Meaning*
0	*No alarm exists in the class*
1	*At least one unacknowledged alarms exists in the class.*
2	*All class alarms have been acknowledged.*

Naturally, value two is present only if all the current alarms are explicitly acknowledged.

CONFIGURATION OF DIGITAL ALARMS

The "**Digital**" file enables digital alarms to be configured. Each digital alarm is assigned to a **Trigger** variable. Logoview decides whether the alarm is current or absent according to the contents of the variable. The default value 0 indicates the normal state in which no alarms are current whilst 1 indicates that an alarm is current. A string variable is assigned to each alarm. This must contain the message to be displayed to the user and to be stored in the historical log. Special codes can also be inserted into the message in order to add up to 4 variables.
Logoview conserves internally the status of each alarm. If necessary, a Logoview variable can be assigned to alarm status in order to manage alarm status within the application. If a variable is assigned to status it is not only possible to know alarm status at any given moment but also to modify alarm status by modifying the variable. In this way it is possible to enable, disable and acknowledge individual alarms automatically in event-managed mode.

Depending on current alarm status, only some of the possible values may be assigned to the status variable:

Current status	new permitted statuses
0	3
1	2.3
2	3
3	0.1
4	2.3

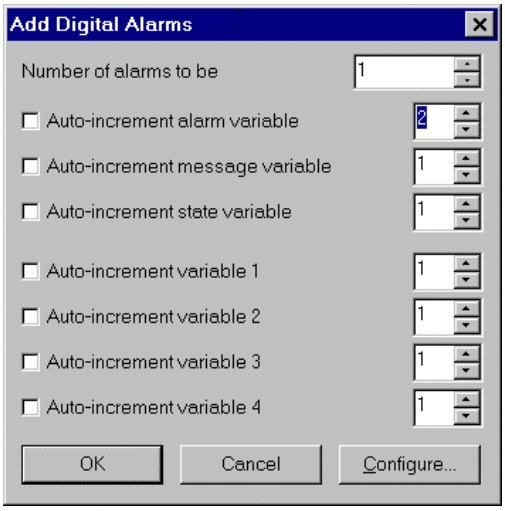
Status can be modified by the instruction ALM SETSTATUS and the alarm trigger and the new status value can be set as parameters.

It is thus not necessary to associate a status variable to an alarm in order to have an event alter alarm status.

This file displays any alarms that have already been configured..

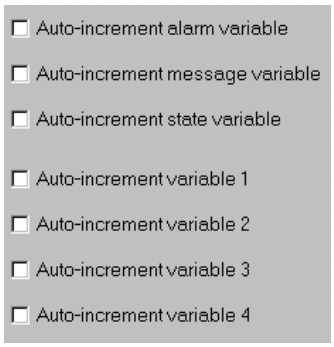
The main list of this window displays all alarms that have already been configured. For each file, the assigned trigger, the class, the zone and the message are displayed. The list can be sorted by trigger variable offset, trigger variable name, class or zone.

This button enables new alarms to be added. Use this button to open the window "**Add Digital Alarms**":

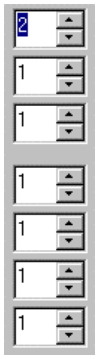


This window enables a set number of alarms to be added by automatically increasing the offset of the required variables. This makes it very easy to add a great number of alarms provided that the variables are consecutive.

Enter the number of alarms to be added in this box.



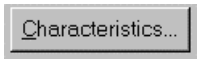
These checkboxes enable the offset of the variables assigned to the alarm to be increased automatically.



The boxes on the side enable the value of the offset increases to be selected for the variables assigned to the alarm.

For example, if "2" is set in "auto-increment variable", whenever an alarm is added the variable offset will be increased by a value of two.

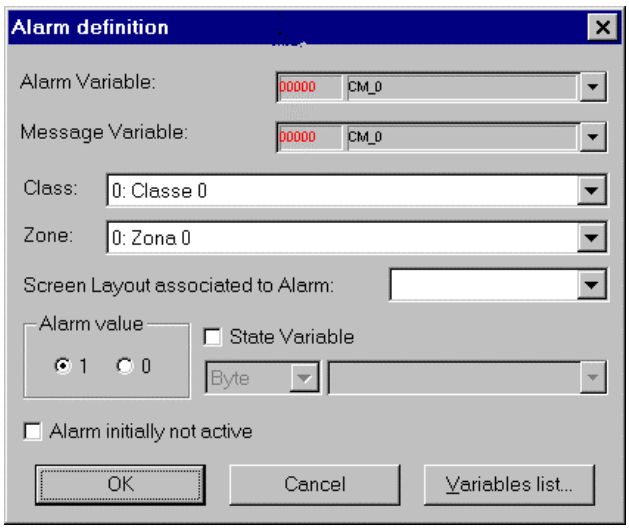
The "**Configure**…" button enables the user to configure the characteristics of the first of the alarms that are to be added. All the added alarms will have the same characteristics except for the fact that the selected variables will be automatically increased. The configuration window is the same as the one used for configuring the single alarm and will be illustrated below.
After the required characteristics have been set, just click on the "**Ok**" button to add the alarms.
Amongst the operations that are possible using the alarms list, it should be remembered that cut/paste operations can be used for different alarms. This can be useful both for transferring the configured alarms from one application to another and for creating alarms with a configuration that is similar to the current one. Caution! each trigger variable can be assigned to one alarm only! If a trigger variable is used for several alarms runtime will send an error message when the alarms are being initialized.



This button enables the user to set the characteristics of the alarm highlighted on the list.

Digital Alarm Characteristics

Press the button "**Characteristics …**" to open the configuration window for the individual digital alarm:



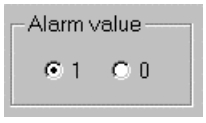
The alarm variable is a trigger variable that reflects alarm status. Depending on the configuration of the "**Alarm variable**" section the alarm may be current when the trigger is worth 1 or 0. A trigger variable can be assigned to just one alarm, If a trigger variable is used for several alarms runtime will send an error message when the application is being initialized.

The message variable is a string-type variable and during runtime it must contain the message that is to be displayed to the user. The complete string will comprise date and time plus the content of the variable configured in this section.

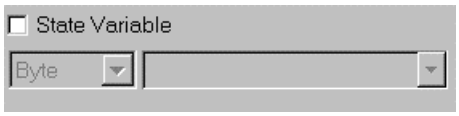
Set the class to which the alarm belongs in this section. The class sets alarm attributes: e.g. the colors to use, the log type to generate, etc.

The zone to which the alarm belongs must be set in this area so that the alarms can easily be subdivided and organized into system logic zones.

Use this section to set a layout to assign to the alarm. If a layout is assigned, during runtime the user can display this layout when the alarm is current.



Use this section to modify the alarm default value. Normally, alarm status corresponds to value 1 of the assigned variable trigger. Use the checkboxes in this section to set value 0 as the alarm status value for the assigned variable trigger.



Use this section to set a status variable. Logoview contains a variable that reflects alarm status. This alarm status can be read and modified by the event with the instruction ALM_GETSTATUS and ALM_SETSTATUS. For more efficient management Logoview can copy alarm status in a user variable. In his way the variable will reflect alarm status at any moment without any need to call up any instruction. The status variable can have the following values:

value	*Meaning*
0	*No alarm*
1	*Current alarm not recognized*
2	*Current alarm recognized*
3	*Alarm disabled*
4	*Alarm current, not recognized but has ended*

If this option is selected the alarm is initially deactivated. Alarms can be configured that are not active and that do not generate alarm statuses. Such alarms can then be activated directly by runtime.

This button enables the user to configure additional variables to be displayed in the alarm message and stored in the alarms historical log. If additional variables are configured the message must be correctly formatted by using the syntax of the STRPRINT instruction, i.e. by inserting the following formatting codes into the message:

%d	whole variable
%f	REAL variable
%s	string variable

For further details on formatting codes, look up STRPRINT in the instruction manual.
When constructing the alarm message Logoview analyses the string and replaces the formatting codes with the variables on the list. The first code will correspond to the first variable, the second code will correspond to the second variable, etc. Great care must be taken that there are not more formatting codes than configured variables (there may, on the other hand, be more variables than codes). Also check that the codes correspond to the type of variables. For example, if Logoview finds a string variable that corresponds to a % code, unpredictable results may occur.
If string variables are inserted, they can be displayed together with the alarm string but will not be saved in the historical log.

ANALOG ALARMS CONFIGURATION

The "**Analog alarms"** file enables analog alarms to be configured. Each analog alarm is assigned to several different variables. The most important are the alarm variable, whose value determines when alarm status occurs, and the trigger variables assigned to the alarm

thresholds. The trigger variables are assigned to the thresholds enable the alarm status of each threshold to be determined.
A string variable is assigned to each threshold. It contains the message to be displayed to the user and to be stored in the alarms historical log. Special codes can also be inserted into the message in order to add up to 4 variables.
To make analog alarm operation easier to understand, it should be pointed out that internally Logoview manages analog alarms as if they were four digital alarms, one for each threshold. This alarms are managed internally by Logoview, which raises them or lowers them, depending on changes in the alarm variable.
Logoview conserves internally the current status of each alarm. For analog alarms, status summarizes the status of the four thresholds. The meaning of the status therefore varies slightly compared with that of digital alarms.

	Alarm not active
	At least one threshold linked to the analog variable is in alarm status and the alarm has not been acknowledged.
	At least one threshold is in alarm status and there are no active unacknowledged alarms linked to the alarm variable.
	All thresholds are disabled.
	At least one threshold is in alarm status. The alarm has ended but has not been recognized.

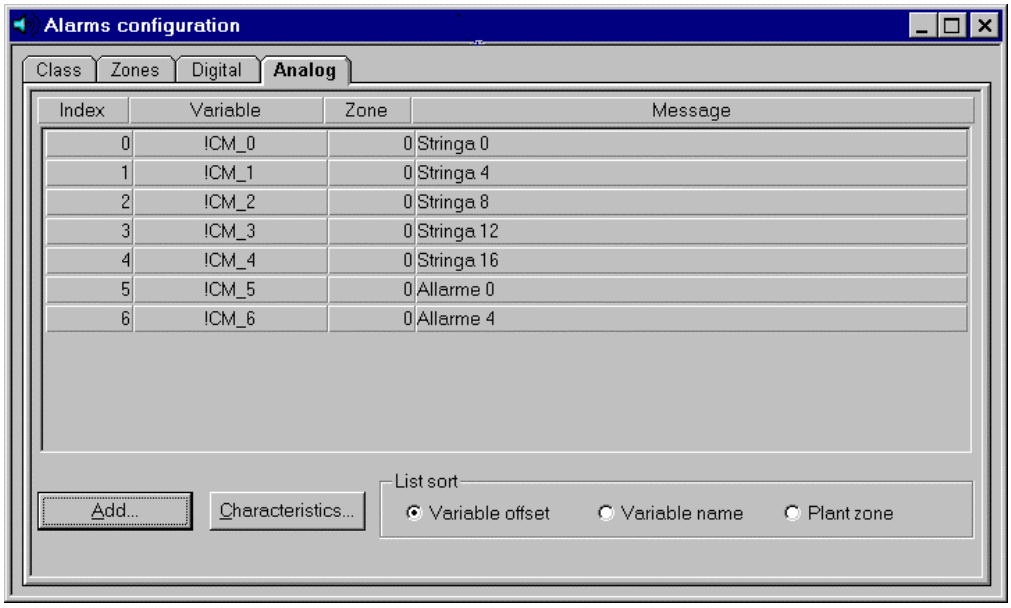
If necessary, a Logoview variable can be assigned to alarm status in such a way that alarm status can be managed within its application. Assigning a variable to status means that it is not only possible to know alarm status at any moment but it is also possible to modify alarm status if the variable is modified. In this way it is possible to enable, disable and acknowledge the individual alarms automatically by the event.
Depending on current alarm status, the status variable can be assigned only some of the possible values:

Current status	New permitted states
0	3
1	2.3
2	3
3	0.1
4	2.3

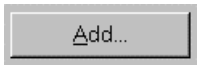
Status can also be modified by the instruction ALM SETSTATUS if the alarm variable and the new status value are used as parameters.

This means that it is not necessary to have a status variable assigned to the alarm to use an event to modify alarm status.

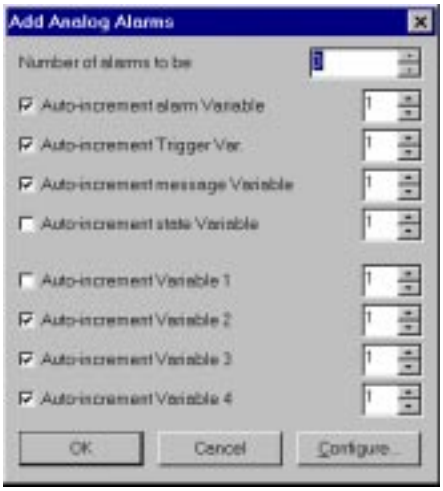
This file displays any alarms that have already been configured..



The main list in this window displays all the configured alarms. For each alarm a consecutive number, the assigned variable, the zone and the message are displayed. The list can be can be sorted by alarm variable, variable name or zone.



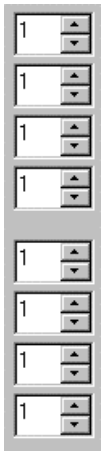
This button enables new alarms to be added. Use this button to open the window "**Add analog alarms**":



This window enables a set number of alarms to be added by automatically increasing the offset of the variables required. In this way, a large number of alarms can be added provided that the variables are organized consecutively.

This text box contains the number of alarms to be added.

These checkboxes enable the offset of the variables assigned to the alarm to be automatically increased.

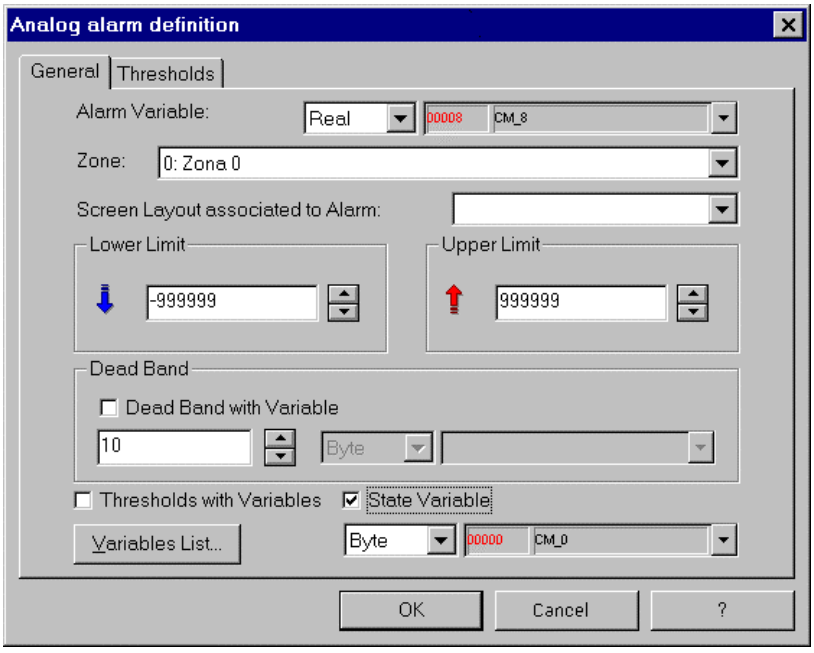

The boxes seen here enable the user to select the value of the increase in the offset for the variables assigned to the alarm.
For example, if the value "2" is set in "Auto-increment alarm Variable", whenever an alarm is added, the variable offset will be increased by a value of two.

The"**Configure**…" button enables the user to configure the characteristics of the first of the alarms to be added. All the added alarms will have the same characteristics except for the fact that the selected variables will be increased automatically. The configuration window is also used to configure the individual alarm and will be described below.
After setting the required characteristics just click on "**Ok**" to add the alarms.
Amongst the operations that are possible using the alarms list, it should be remembered that cut/paste operations can be used for different alarms. This can be useful both for transferring the configured alarms from one application to another and for creating alarms with a configuration that is similar to the current one. Caution! each trigger variable can be assigned to one alarm only! If a variable is used for several alarms runtime will send an error message when the alarms are being initialized.

This button enables the user to set the characteristics of the alarm highlighted on the list.

Analog Alarm Characteristics

Press the button "**Characteristics …**" to open the configuration window for the individual analog alarm:

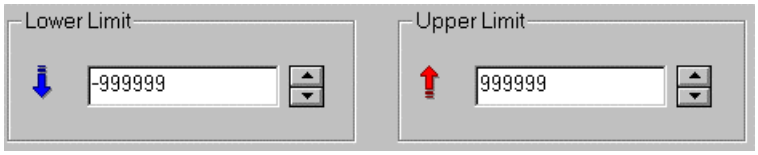


The "**General**" file contains the general configurations of the analog alarm whilst the "**Thresholds**" file contains the configuration of the individual thresholds.

The alarm variable is the variable that determines when alarm status occurs. Each time this variable is modified Logoview checks whether the thresholds have been exceeded and modifies alarm status and the trigger variables of the relative thresholds.

Set the zone to which the alarm belongs in this section so that the alarms can be more easily subdivided and sorted according to the system's logic zones.

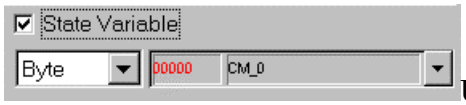
Use this section to set a layout to assign to the alarm. If a layout is assigned, during runtime the user can display this layout when the alarm is current.



Set the threshold limits in this section. In this way, when the thresholds are modified by the operator during runtime, it will not be possible to set values beyond the set range.

In this zone a value can be inserted that is deducted from the HH (high high) and H (high) thresholds and added to the LL (low low) and L (low) thresholds so that the alarm ceases when the variable value has reached the threshold value by taking account of the sum or subtraction of the value inserted as a dead band. For example, if the value of the HH threshold is 100 and the dead

band is 10 the alarm will end until it falls below the value 90. The "**Dead band with variable**" checkbox enables the user to choose whether to set the dead band value directly or instruct Logoview to read a variable value.



Use this section to set a status variable. Logoview contains a variable that reflects alarm status. This alarm status can be read and modified by the event with the instruction ALM_GETSTATUS and ALM_SETSTATUS. For more efficient management Logoview can copy alarm status in a user variable. In his way the variable will reflect alarm status at any moment without any need to call up any instruction. The status variable can have the following values

value	*Meaning*
0	*No alarm*
1	*Current alarm not recognized*
2	*Current alarm recognized*
3	*Alarm disabled*
4	*Alarm current, not recognized but has ended*

This button enables the user to configure additional variables to be displayed in the alarm message and stored in the alarms historical log. If additional variables are configured the message must be correctly formatted by using the syntax of the STRPRINT instruction, i.e. by inserting the following formatting codes into the message:

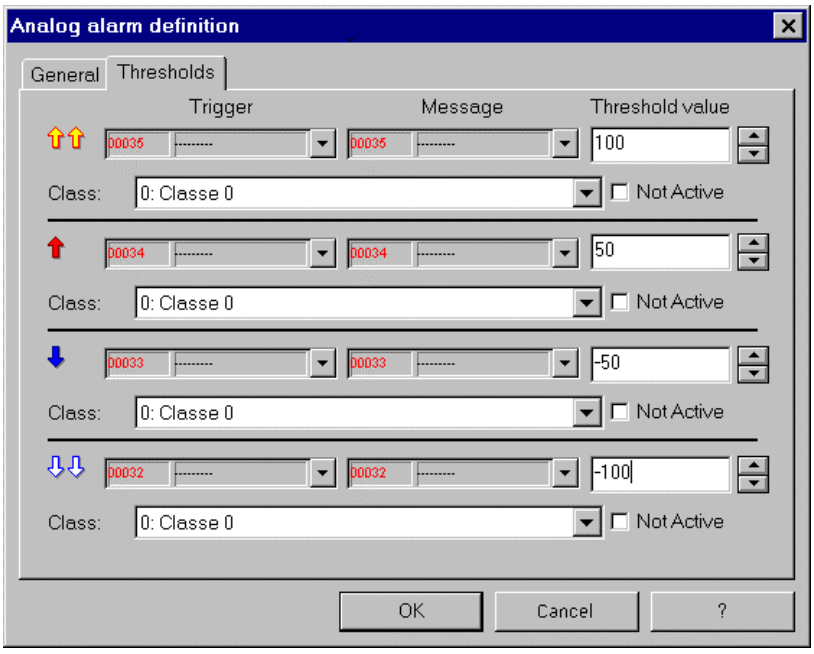
%d	whole variable
%f	REAL variable
%s	string variable

For further details on formatting codes, look up STRPRINT in the instruction manual.
When constructing the alarm message Logoview analyses the string and replaces the formatting codes with the variables on the list. The first code will correspond to the first variable, the second code will correspond to the second variable, etc. Great care must be taken that there are not more formatting codes than configured variables (there may, on the other hand, be more variables than codes). Also check that the codes correspond to the type of variables. For example, if Logoview finds a string variable that corresponds to a % code, unpredictable results may occur.
If string variables are inserted, they can be displayed together with the alarm string but will not be saved in the historical log.

This checkbox enables the method of setting thresholds to be modified. If the thresholds are not selected the thresholds are set as constant values during the development phase. When the thresholds are activated during the development phase the Logoview variables are set that will count the threshold values. Using the variables instead of constant values increases the scope of the application because each time that the

thresholds are modified alarm status is recalculated on the basis of the new threshold values so that the thresholds can be configured dynamically to meet individual requirements. In all cases, even with constant thresholds, threshold values can be modified by the instruction ALM_SETANALOG.

With constant thresholds the "**Thresholds"** constant appears as follows:

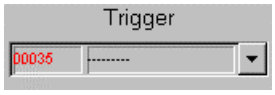


The window is divided into four equal sections. Each section is used to configure a different threshold.

⇧⇧	Section for configuring high high (HH) threshold
⇧	Section for configuring high (H) threshold
⇩	Section for configuring low (L) threshold
⇩⇩	Section for configuring low low (LL) threshold

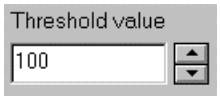
Remember to configure the threshold in such a way that the values are in this order: LL<L<H<HH

For each threshold configure the following parameters:



This section enables the trigger variable assigned to the threshold to be configured. The 4 trigger variables assigned to the thresholds are interdependent and there must be 4 consecutive triggers starting with the LL threshold. This means that if one of the triggers is configured the others will also be automatically modified.

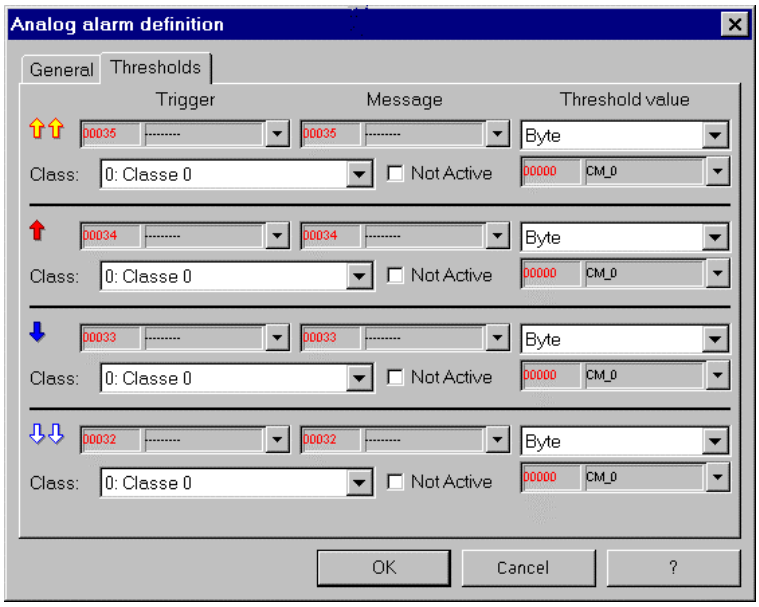
This section enables the string variable assigned to the threshold to be configured. The 4 trigger variables assigned to the thresholds are interdependent and there must be 4 consecutive triggers starting with the LL threshold. This means that if one of the triggers is configured the others will also be automatically modified.



This section enables threshold value to be configured. The text can be entered directly into the box or else the threshold value can be increased or decreased by 1 by means of the spin control on the side.

Set the class to which the alarm belongs in this section. The class sets alarm attributes: e.g. the colors to use, the log type to generate, etc.

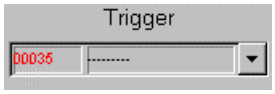
The checkbox in this section enables the threshold to be deactivated. This can be useful in cases in which the four thresholds are excessive and two are sufficient. In such cases it is sufficient to deactivate, for example, thresholds HH and LL.
In the case of thresholds with variables the "**Variables**" section appears as follows:



The window is divided into four equal sections. Each section is used to configure a different threshold.

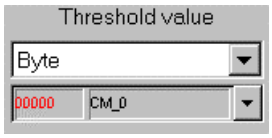
- Section for configuring high high (HH) threshold
- Section for configuring high (H) threshold
- Section for configuring low (L) threshold
- Section for configuring low low (LL) threshold

For each threshold the following parameters must be configured.



This section enables the trigger variable assigned to the threshold to be configured. The 4 trigger variables assigned to the thresholds are interdependent and there must be 4 consecutive triggers starting with the LL threshold. This means that if one of the triggers is configured the others will also be automatically modified.

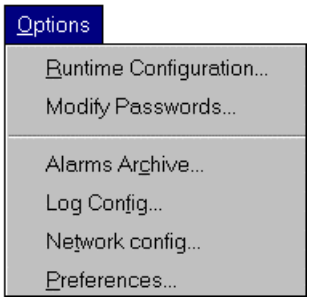
This section enables the string variable assigned to the threshold to be configured. The 4 trigger variables assigned to the thresholds are interdependent and there must be 4 consecutive triggers starting with the LL threshold. This means that if one of the triggers is configured the others will also be automatically modified.



This section enables the user to configure the variable for reading the threshold value. Although it is not indispensable, this variable should be the same type as the alarm variable.

Set the class to which the alarm belongs in this section. The class sets alarm attributes: e.g. the colors to use, the log type to generate, etc.

Lines for configuring alarms



The checkbox in this section enables the threshold to be deactivated. This can be useful in cases in which the four thresholds are excessive and two are sufficient. In such cases it is sufficient to deactivate, for example, thresholds HH and LL.

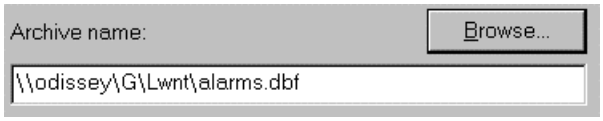
OTHER CONFIGURATIONS

When the "**Alarms configuration**" window is in the foreground of the "**Options"** window lines are added to configure the alarms management system.

Alarms Archive

Select the "**Alarms archive…**" from the "**Options**" menu to open the "**Alarms Archive Configuration**" dialog window. This enables the parameters to be configured for the historical alarms archive.

This window comprises two files. The first or "**General**" file contains the following configurations:



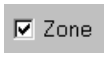
This section enables the user to configure the name of the historical log and of the path in which it should be stored. If a name without a path is specified, the archive will be created in the directory in which the application is found. To store the archive in a specific directory enter the archive name together with the path. The name can be entered directly into the text box or else click on the "**Browse"** button to use a standard window for searching for the path in which to store the archive.

Select this option to disable alarm recording inside the historical log. This is a very important function if network alarm management is used to manage the alarms of a group of networked computers. Place the mouse cursor in the white box and click on the left-hand mouse key during runtime to obtain a normal display of the alarms. They will not, however, be stored in the historical log of our computer. With network management of this type the task of storing alarms is entrusted to a single computer, in which this option will be disabled, although the other computers to which it is linked will continue to record alarms.
When several PCs are linked up in a network, a historical log can be opened directly on the PC that is storing the archive. In a Windows environment a file can be opening by specifying directly in the name the computer in which the file resides (UNC names). For example, if we have a historical file in the computer called "odissey" on disk "G" in the "alarms" directory we enter the following path into the file "Archive name": \\odissey\G\LWNT\alarms\Alarms.dbf .
To facilitate making this entry, use the "Browse" button to access not only the local files but also the network files and store the path directly in the text box.

Use this section to set the maximum number of records that can be stored in the historical log. When the maximum number of log entries is exceeded the oldest entries will be overwritten.

In this section set the size of the archive field that will contain the alarm message. This value must be of such a size that it contains the longest of the messages that will be generated during runtime. Any excessively long messages will be interrupted.

The "**Standard filters**" checkboxes enable the filters to be selected that must be generated and which must be kept constantly updated. The filters enable a select display of archive alarms to be provided during runtime. For example, if the filter is activated on the zones all the alarms for a certain system zone can be displayed. As each additional filter takes up space on the disc and slows down archive updating, filters that are deemed to be non-essential should be deactivated.

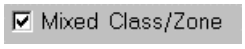


The zone filter enables the alarms to be selected according to system zone.

The class filter enables the alarms to be selected according to class

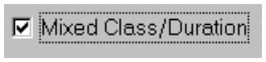
The alarm filter enables all the causes of a given alarm to be displayed.

The duration filter enables the alarms to be selected on the basis of their duration.



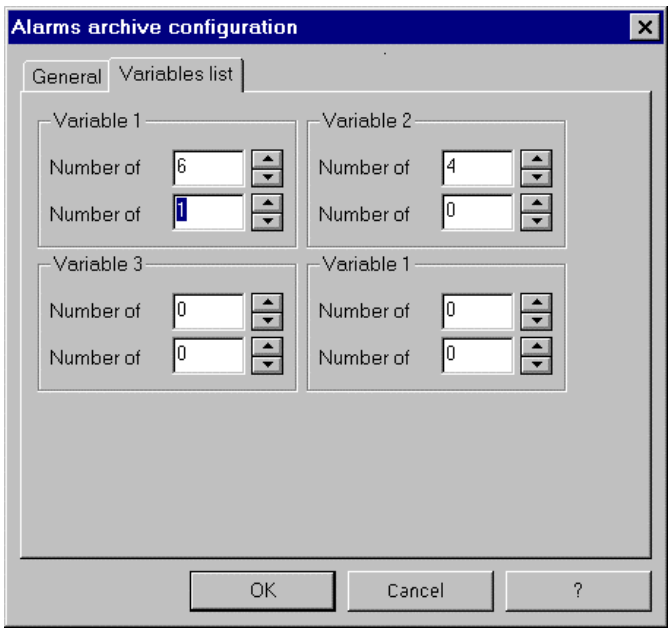
The mixed class/zone filter enables the alarms to be selected according to class and zone at the same time. For example, it is possible to display the class "Digital Alarms" belonging to zone "System 1".

The mixed alarm/duration filter enables all the reasons for a given alarm to be displayed that lasted for period whose minimum and maximum duration are set by the operator.



The mixed class/duration filter enables all the alarms of a given class to be selected that have a minimum and maximum duration that is selected by the operator.

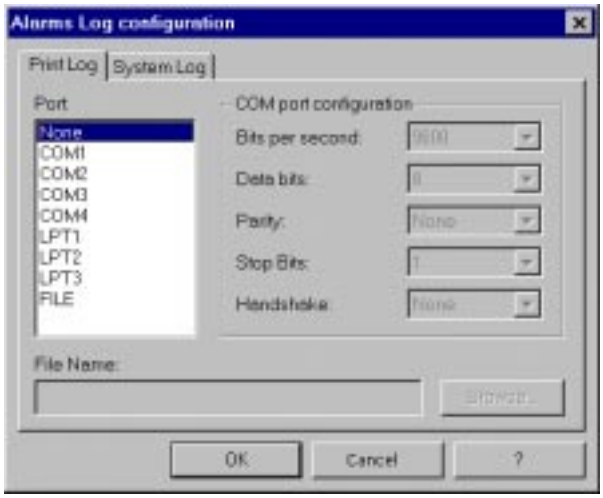
The second file of the "**Alarms Archive Configuration**" window enables all the characteristics of the four fields to be configured with the four variables that are assigned to each alarm.



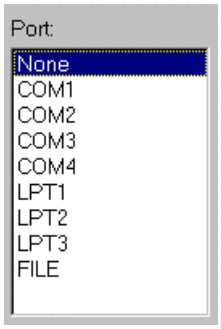
For each of the four variables the number of whole figures and places to the right of the decimal point must be configured. If these variables are not used, it is not necessary to configure.

Log Configuration

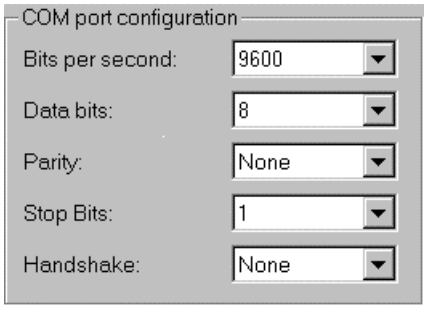
Select "**Log configuration….**" to open the dialog window "**Alarms Log Configuration**". This enables the method of log generation on the printer to be configured and also enables the user to decide which system logs should be generated. The alarms log is generated by Logoview as a flow of characters that is directed to the selected output device. At the end of each line Logoview generates a CR/LF (Carriage Return/Line Feed) sequence. This means that any printer connected to the serial or parallel port must be configured in such a way as to accept this type of line end. The output of the alarms log must be sent to a device that accepts ASCII characters such as printers or terminal videos. If characters other than the ASCII set are used the device to which they are sent must also be able to reproduce them. For example, in order to ensure that the character 'e' is reproduced correctly by a printer, the printer must use the same code page as that used by Windows. Normally, western versions of Windows use ANSI code page 1252. In the Windows manual you will nevertheless find code page used. If the printer is unable to reproduce the ANSI code used by Windows or is unable to set it correctly, limit the strings to ASCII characters only.
If Logoview's Unicode version an even more complicated problem may arise. Logoview converts Unicode characters to the characters of the system code page. This means that in the case of western languages single-byte characters are generated. If a language like Chinese is used that requires two-byte (DBCS) characters Logoview converts the Unicode characters in the system code page and this conversion generates other two-byte characters that are then sent directly to the output. The printing or display device must therefore interpret such characters correctly. If the output character is unable to interpret the DBCS characters on the system code page limit the strings to ASCII characters only.



The window comprises two files. The "**Print log**" file enables log printing to be configured. No type of printing is generated by default so this window can be used to direct the log to a serial port, a parallel port or a file.



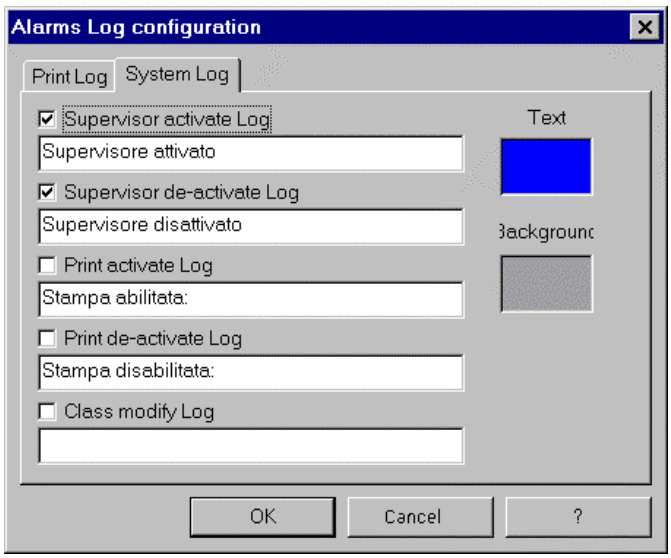
In this area the output device can be selected to which the log is to be sent. The COMx ports are serial ports whilst the LPTx ports are parallel ports. To send the log to a text file, select "FILE".



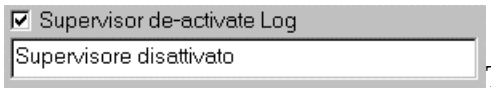
This section is active only when a serial port is selected and enables the transmission the port's transmission parameters to be configured.

This section is active only when the file output is select and enables the name of the destination to be set.

The second file of the window "**Alarms Log Configuration**" enables the user to generate the logs that should be generated.



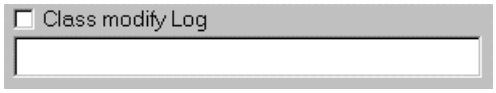
The checkbox in this section enables the " Supervisor activate" log to be enabled or disabled. This log is generated each time that Logoview Runtime starts to run the application. Enter the text that you wish to display and store in the text window.



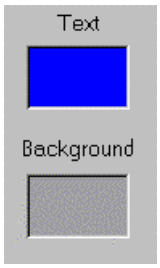
The checkbox in this section enables the "Supervisor deactivate " log to be enabled or disabled. This log is generated each time that Logoview Runtime finishes the application. Insert the text that you wish to display and store in the text box.

The checkbox in this section enables the "Print activate" log to be enabled or disabled. This log is generated each time that the operator activates the alarms log printout during runtime. This log is generated each time that the operator activates alarms log printing during runtime. Insert the text that you wish to display and store in the text box.

The checkbox in this section enables the "Print deactivate" log to be enabled or disabled. This log is generated each time that the operator deactivates printing during runtime. Insert the text that you wish to display and store in the text box.



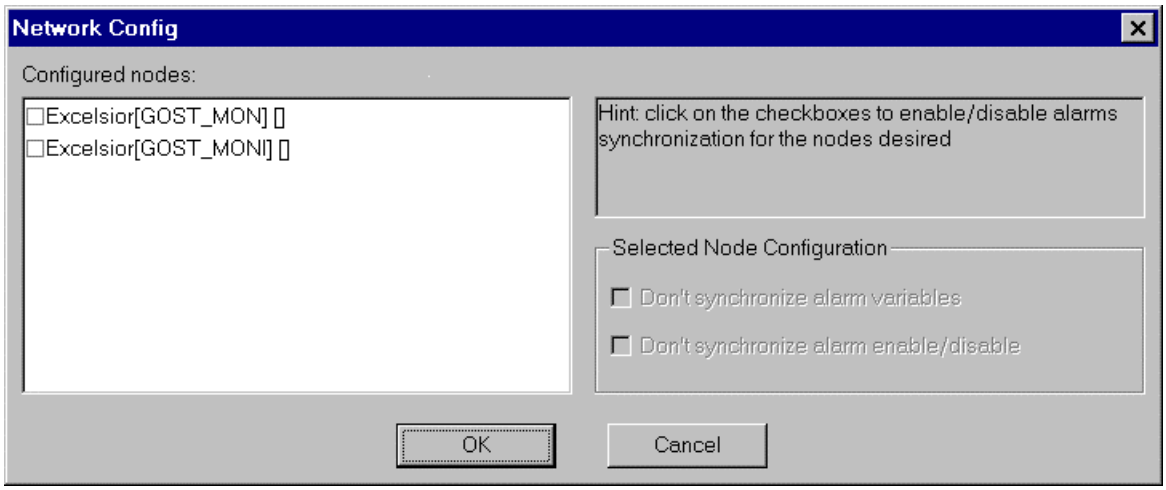
The checkbox in this section enables "Class modify" log to be enabled or disabled. This log is generated each time that the operator modifies the class to which an alarm belongs. Insert the text that you wish to display and store in the text box. .



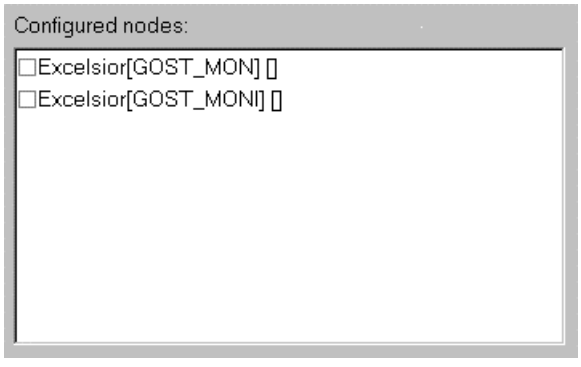
The boxes in this section enable the colors to be selected that are to be used to display the system log in the historical alarms window.

Network configuration

Select "**Network configuration**" from the "Options" menu to open the dialog window "**Network configuration**". This enables network management of the alarms if several computers are linked up together.



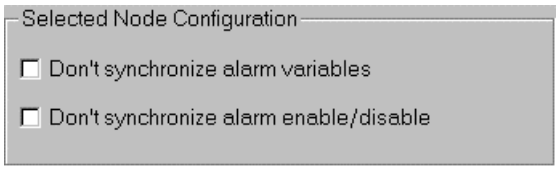
This dialog enables alarms variables to be shared during runtime, provided that they are configured in a network.



The list of "**Configured nodes**" is created by the nodes configured in the window "**Communications configuration"** of the "Stations" card (see Introductory Guide on page 115 and chapter 11). This window enables the number of configured nodes to be increased or decreased.

In the above list the developer can decide which nodes to use to synchronize the network alarms. Depending on requirements, the user can also decide for which nodes he wishes to synchronize the values of alarm variables during runtime and if he wants to synchronize

alarms enabling and disabling. When this window is open, by default no checkbox is active.



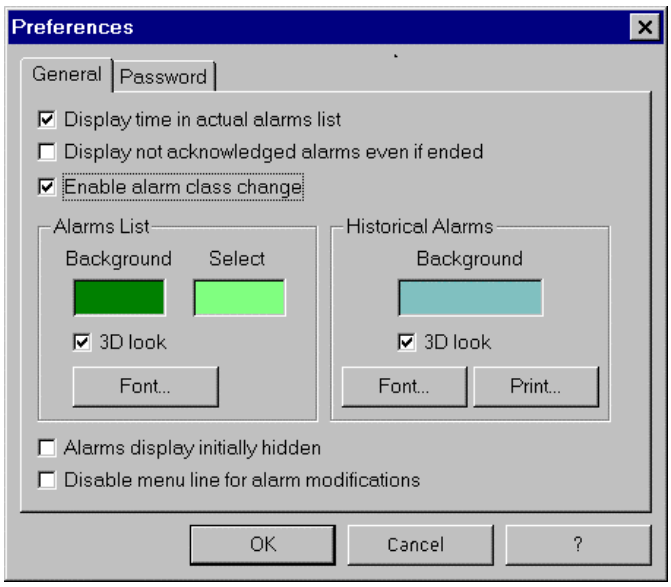
For each selected node the user can decide if he wishes to activate the options. Remember that these options are available only during runtime.

If modifications are made, select this option to automatically prevent alarm variables being transferred to other connected computers.
For correct alarm operation, the developer must devise another system that enables the same result to be obtained. One solution could be to configure the communication blocks in the dialog window "**Communications configuration**". Alternatively, ensure that each PC reads the alarms variables directly form the field.

To activate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. A *'check'* (**x**) sign will appear. To deactivate the checkbox, place the mouse cursor on the white box and press the left-hand mouse key. This ensures that "alarm enable/disable" is not synchronized.
For example, from runtime the "Alarms" menu can be accessed. Select "Modify alarms " and in the column "Status" enable or disable the alarm as required. By configuring the computer in this way it will not provide the other networked computers with a display of the operation performed. On the other hand, if modified, the alarms 'Class" and "Message" will still be shared as will "Edit" for the analog alarms.

Preferences

Select "**Preferences**" to open the dialog window "**Preferences**". This enables general alarms management options to be modified and to set the protection password for modifying alarms configuration during runtime.



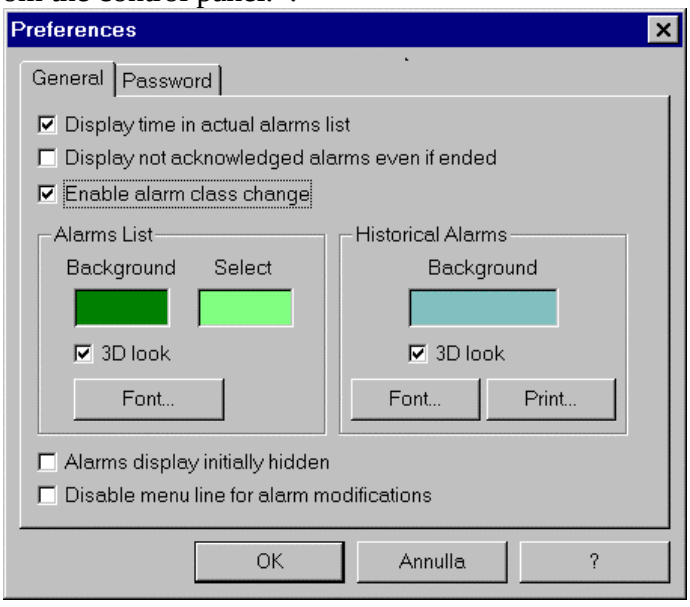
This checkbox enables the date and time of the list of current alarms to be enabled or disabled. If this checkbox has been selected the alarm messages will, for example, have the format: sent

30/09/1997 17:50:00 HH alarm

If it has not been selected, the previous message becomes.

HH alarm

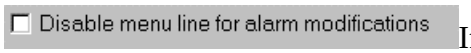
The date and time format depends on the Windows settings. To modify them, select "**International"** from the control panel. .



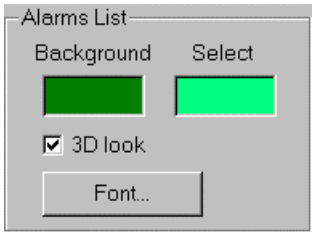
This checkbox enables Logoview behavior to be modified when unacknowledged alarms end. If this option is activated, unacknowledged alarms are displayed even when they end and disappear from the current alarms list only when they are acknowledged. When the option is deactivated the ended alarms disappear immediately from the list, even if they have not been acknowledged.

If this option is selected the alarm class can be modified by the operator during runtime. If it is deactivated during runtime, the class to which an alarm belongs cannot be modified.

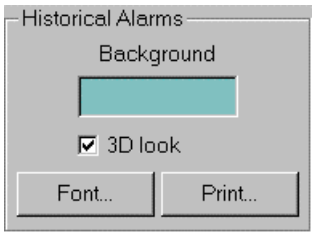
If this option is selected Logoview runtime is started up with the alarms list hidden. The alarms list can nevertheless be displayed by the relative commands.



If this option is selected is active the alarm modification menu line is deactivated. The Modify alarms window can be opened by the ALARMS_EDIT instruction.

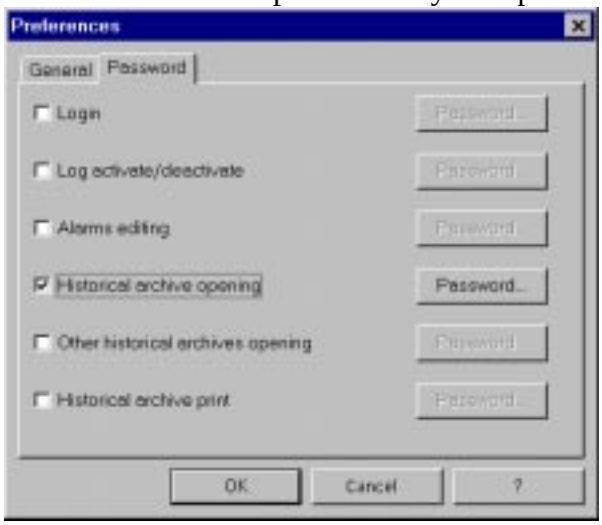


This section enables the colors and fonts to be configured that are to be used on the current alarms list. The "**Background**" color is used for the list background whilst the "**Select"** color is used to display the alarm selected by the operator for acknowledgment. The "**Font…**" button opens the standard font window to enable the font to be selected. Place a *'check'* (**x**) in the "3**D look**" checkbox to give the list a 3D look.



This section enables the graphic features to be configured for the list of historical alarms. The "**Background**" color is used for the list background whilst the "**Select"** color is used to display the alarms. The button "**Print"** enables the font to be selected for printing the list. Place a *'check'* (**x**) in the "3**D look**" checkbox to give the list a 3D look.

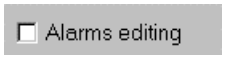
The "**Password**" file in the "**Preferences**" window enables password protection to be enabled for one of the activities that can be performed by the operator during runtime.



This window contains a series of checkboxes with buttons at the sides. Use the checkboxes to activate/deactivate the request for a password whilst the button on the side must be used to set the password that enables access.

If this option is selected a password is required for acknowledgment

If this option is selected a password is required to activate/deactivate the printer alarms log.



If this option is selected a password is required to open the alarm modification window.

If this option is selected a password is required to open the historical archive.

If this option is selected a password is required to open historical archives that are different from the one generated by this application.

If this option is selected a password is required to print historical archives.

3. Historical archives

The historical archives enables enable the variables files to be created with optimum flexibility and transparency. These files are managed by automatic storage procedures that enable magnetic records to be kept of the trends of the main system variables.

3.1 GENERAL CONCEPTS

3.1.1 Historical archives

The historical archives are files that ***LOGOVIEW NT*** generates to enable certain situations to be reconstructed that have occurred in the system. The variables that are stored in a historical archive are usually presented to the operator in the form of trends. This enables all the gathered data to be compared immediately. The format of the generated files is a proprietary format and cannot therefore be directly exported. Nevertheless, the ODBC driver enables these archives to be consulted by other programs that include this protocol.

These archives are configured by the ***Format configuration*** window. This enables all the parameters to be compiled that refer to record format and operation. ***LOGOVIEW NT*** enables twenty (20) different formats to be configured at any one time.

3.1.2 Using the historical archives

The historical archives are very useful for long-term monitoring system parameters. In many cases it is in fact necessary to carefully monitor certain system variables because they are especially important or significant for getting an idea of production progress. The historical archives have been designed to satisfy these requirements.

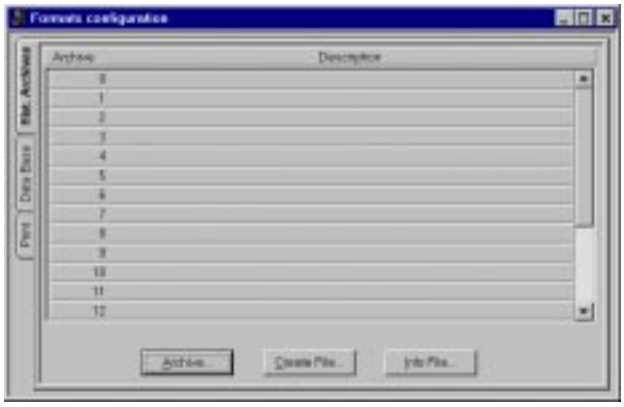
3.2 HISTORICAL ARCHIVES IN *LOGOVIEW NT*

3.2.1 Organisation

LOGOVIEW NT can manage 20 different types of historical archive. Each archive has its own special record format that is tailored to specific requirements. Each historical archive is saved by ***LOGOVIEW NT*** in a file with the extension .ARC.
The format definition is run by a special section of ***LOGOVIEW NT.*** It is run by instructions that are used in the application events.

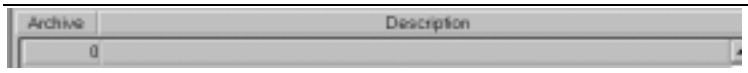
3.2.2 Creating a historical archive

To define a historical archive  format, select ***Formats*** from the ***Display*** menu or press the button on the main toolbar.
This action opens the window ***Formats configuration.***



LOGOVIEW NT enables the ***historical archives, the database*** and ***Print*** to be configured.

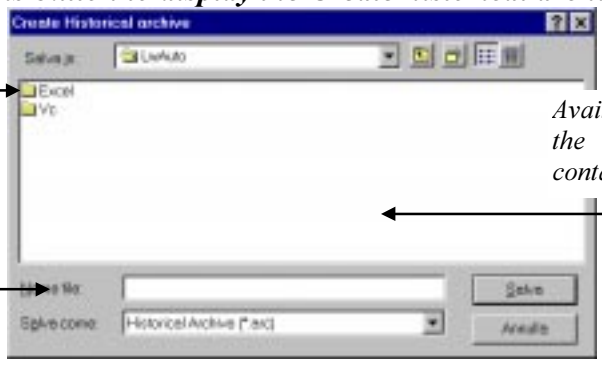
The ***historical archives*** section of this winnow enables 20 different types of historical archive to be defined, each one of which has its own format.



The main list in this window displays on 20 separate lines all the 20 historical archives that can be configured using LOGOVIEW NT. This line consists of the consecutive number of the archive and a short description. To select an archive, click on the required line with the mouse and press the left-hand mouse key. To display the hidden parts, use the scroll bar.

This button is active only if a line of the main list has been selected. It displays the Archive Configuration window, in which the historical archive record can be configured.

Press this button to display the Create historical archive window



Directories available in the selected unit. Select the directory that will contain the file.

Available units. Select the unit that will contain the file.

In this box, key in the name of the file that is to be created.

This window enables an empty file to be created for a historical archive (.ARC) (for further information on this window, see WINDOWS manual).
The Create File button is active only if an archive containing the fields is active. If an archive file is created before the record has been defined, LOGOVIEW NT will display this error message:

Files can be created only from archives whose record format has been defined.

Press this button to display the file window: Open Historical Archive (similar to the window used to create the historical archive). This enables a file to be selected that contains a historical archive from which the user wishes to obtain information. Information on the historical archive is displayed in the Historical archive information window after the button OK has been pressed to confirm.

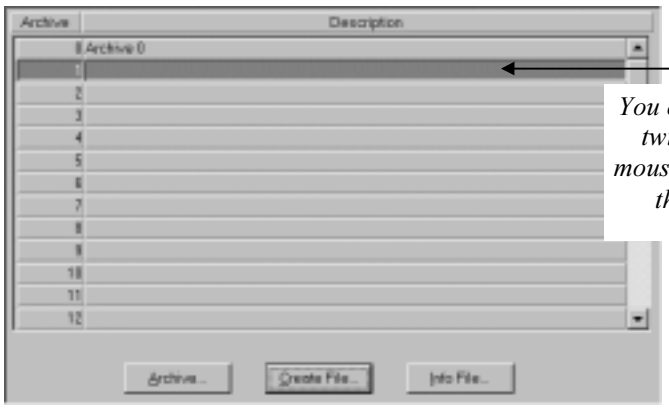
To create an empty historical file of a defined type, just select it from the list of those available and press the button

It is possible to create an empty file only if the record composition has been defined.

3.2.3 Configuring a record

Each historical archive comprises records that in turn comprise variables blocks. To configure a historical archive record specify which variables blocks must be stored.
To configure the record of a Historical Archive just select the corresponding line from the list in the ***Historical Archives Section***

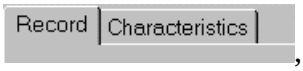
Formats configuration window

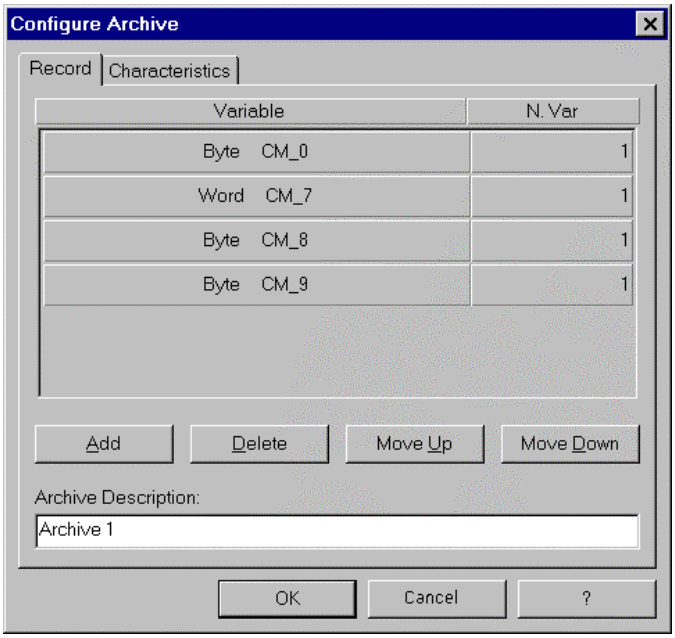


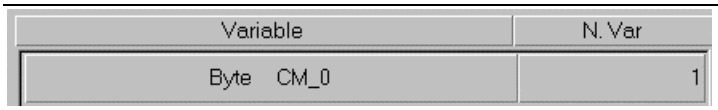
You can also click twice with the mouse to configure the records

and press the**...**  button.

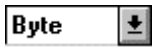
The same result can be achieved by clicking twice on the line. This action displays the ***Configure Record*** window, from which record composition and characteristics can be set, together with methods of updating the file of the historical archive.

To define  , use the ***Record*** section of the ***Configure Archive*** window. This section contains the list of variables blocks that will be archived.





Each record field is a variables block that corresponds to a line of the main list of this window. To set the characteristics of a variables block, click with the press the left-hand mouse key on the corresponding line. The selected line will take on a different form to make it easier to define the different items.



This combo enables the type of variable block to be selected (from those available in LOGOVIEW NT) for insertion into the record. To display the items current in a combination, press Then select the block required from the list.

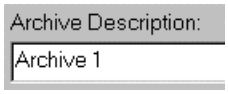
This combo enables the starting variable to be selected for the block that is to be inserted. This combo displays all the variables of the type selected in the previous combo. Each variable is represented by the offset and the label (if it has been defined).

If this line is deselected these two items will be summarised by a single display consisting of the type of variable and its label (if one on has been defined, otherwise they will be summarised by the offset).

Enter the number of the variables making up the block in this box.

Press this button to add a block of variables to the list of those that have already been defined. The added block is assigned default values, so the required characteristics and values must be set.

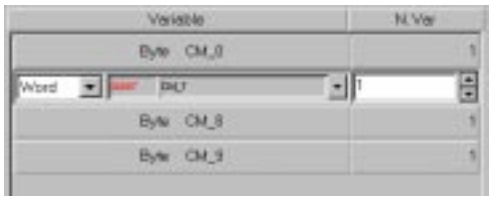
Press this button to eliminate the variables block selected from the main list in this window. If no block has been selected the button remains inactive.



A short description of the archive must be keyed into this box. LOGOVIEW NT assigns a default name when the archive is created. To change this name, move the cursor of the mouse inside the box and press the left-hand mouse key. This action activates the keyboard. Next, key in the required name.

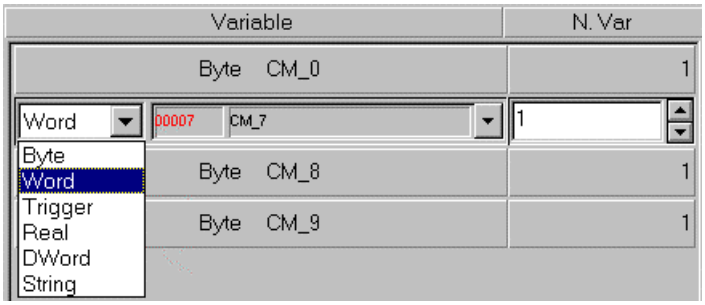
To insert a variables block, press 

select the line that has just been inserted and set the required characteristics.



A block is a contiguous group of variables and is defined by 3 characteristics: variables type, start offset and number of variables to be stored starting with the starting block. To set these 3 characteristics **LOGOVIEW NT** provides 3 combos for when a line is selected. The first two combos contain respectively the list of available types and the list of variables defined for that type.

To select variable type, press the button of the first combo that displays all the items current in that combo

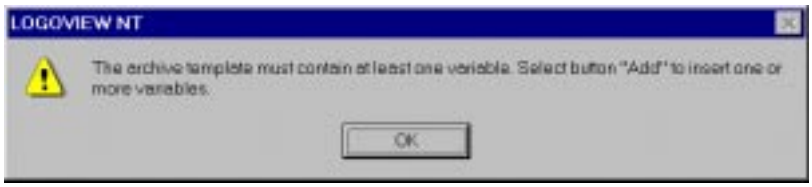


and select the type. To define the start variable of the block, follow the same procedure for the second combo.
The third box of the line enables the length of the variables block to be set. The setting can be made in two different ways: either keying the number directly after pressing the left-hand mouse key or else use the small scroll bar provided.

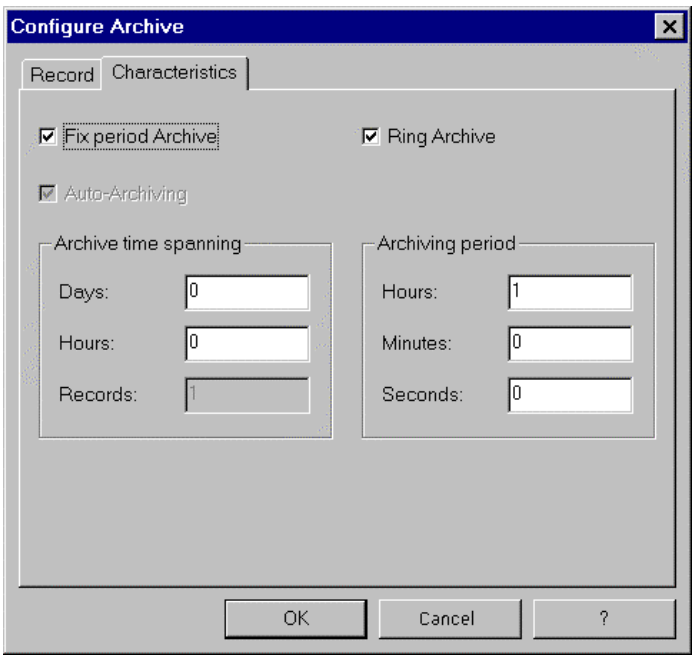
3.2.4 Configuring the historical archives file.

In the ***General*** section of the ***Configure Archive*** window the characteristics and updating methods of the historical archives file can be set.

To obtain a display of the ***General*** section the archive template must contain at least one variable. Otherwise, ***LOGOVIEW NT*** will display this error message:



The characteristics of the historical file depend of the use to which it is to be put. The characteristics of the file that will contain the historical archive must therefore be configured very carefully.

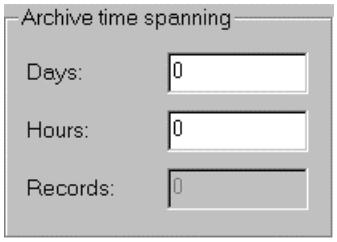


This option enables the file and the selected format to be updated at a fix period. In other words the file is always updated by LOGOVIEW NT, whatever the state of the PC, when the time set in Archive time spanning elapses.
Activate this option to automatically select the option.

This indicates that it will be LOGOVIEW NT that will insert the records when the set time expires, without any further operations.

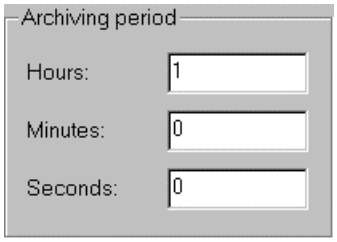
This option prevents the file containing the archive from growing indefinitely. The file will in fact under no circumstances exceed the limit set in the section 'Archive time spanning'.. Once the limit has been reached LOGOVIEW NT will start to rewrite the record from the start, as if the file were circular.

If this option is pressed LOGOVIEW NT automatically updates the file containing the archive. The option is automatically activated if the option fix period archive is selected. Updating time is specified in the section 'Archive time spanning'.

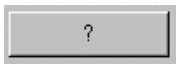


If the 'Ring Archive option has been selected this section can be used to set the archive size over time or space (i.e. the number of records that it can contain). The time size is set in days and hours if the archive is also fixed-time (in this case the number of records

is automatically calculated by LOGOVIEW NT). If the archive is not fixed-time the size depends on the number of records that the archive can contain.



If the option Auto-archiving is selected the time that elapses between one record save by LOGOVIEW NT and another can be set in this section. The time interval between one record entry and another is set in hours, minutes and seconds.



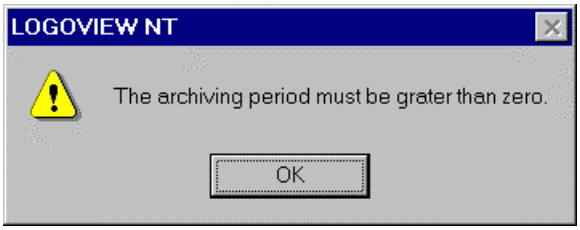
Press this button to obtain a display of the on-lline Help information on the commands contained in this window.

This button cancels all the operations carried out in this window and restores the preceding archive configuration.

This button confirms all the operations carried out in this window and modifies the archive configuration.

LOGOVIEW NT can manage both *'linear'* historical files that grow without limit as records and files are added and *'circular'* files that are rewritten from the beginning when the limit set in the ***Archive time spanning*** is reached.

If this button is pressed after the auto-archiving option has been activated but when the archiving period is zero and therefore not significant, **LOGOVIEW NT** will display this error message



This also applies to a ring archive with zero archive time spanning. To avoid the error message, set values greater than zero in both fields.

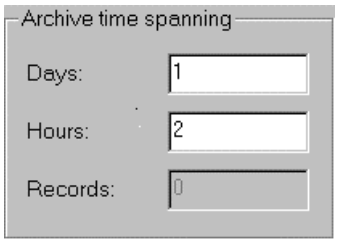
3.2.4.1 *Fix period archives*

If the option 

is activated the option 

will also be activated.

This means that for the archive in question ***LOGOVIEW NT*** will save a record at the end of the time set in the section ***Archiving Period,*** whatever happens.



The frequency of record entries will then be maintained even if, for example, the PC is switched off: in this case the records of the period in which it was possible to save the block will be empty. There may therefore be 'gaps' that faithfully reflect the fact that during those periods the variables block was not stored. This also applies to system delays. This feature is displayed in the historical trends, which represent these events in an immediate form.

If, on the other hand, the option

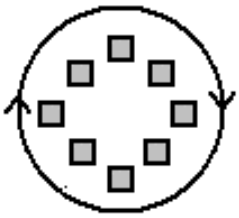
is not activated but the option

is maintained the historical archive will not contain any gaps because saving will always occur when the set time elapses, but only under normal operating conditions. If the PC switches off, no record will be empty and saving will resume when ***LOGOVIEW NT*** starts up again. No delays will therefore be displayed.
Fix period archives enable a general control of the system to be maintained under all operating conditions.

3.2.4.2 *Ring archives*

A ring archive is an archive that is rewritten whenever the set is exceeded.

The file cannot contain more than a certain number of elements.

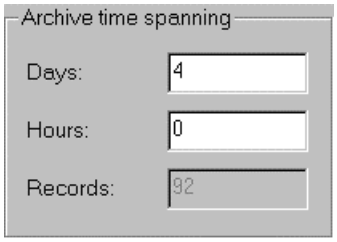


This limits the growth of the file containing the archive.

This archive can be used to maintain a record of recent system parameter trends.

To define a historical ring archive, just select the option

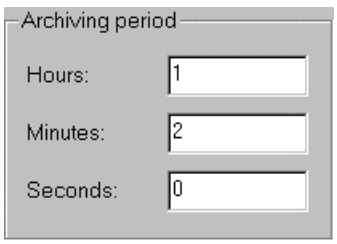
From this window. A ring archive needs to be defined by additional parameters such as the limit beyond which the archive must not grow. The limit is defined in ***Archive time spanning.***



An archive's time span can be expressed as a record or in time. If the ring archive is *Fix period* the time span is expressed in days and hours, i.e. in time. When this time span elapses, writing of the record restarts from the start of the file. To make a ring archive a fix period, select the option:

Selecting this option also selects the option:

This indicates the fact that ***LOGOVIEW NT*** will automatically insert the ring archive when the time set in the ***Archiving period elapses.***

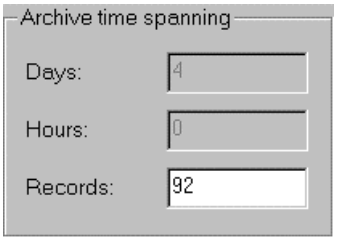


The record number that the file contains will be automatically calculated by ***LOGOVIEW NT*** for the specified archiving period.

Example: if an archive time span of 4 days and an archiving period of 1 hour have been set: the file will contain exactly 96 records, i.e. the hours that correspond to 4 days.

If the option 

is not activated the size of the archive will be expressed in records. The maximum number of records that the ring archive can contain is set in the ***Archive time spanning*** section.



A file that is not fix period can automatically store records if this option is selected: 

3.2.4.3 *Linear archives*

No limits are set to the growth of linear archives.

The size of the archive cannot be pre-set. Great attention must therefore be paid because an archive of this type can easily drain system resources unless it is planned.

A linear archive can be used to monitor parameters during the entire system operation period.

To define a linear archive, just ensure that the option

has not been selected (i.e. the box shown above must not contain a *'check'* (**x**)).
All the other options are similar to those used in the ring archive: fix period linear archives that are automatically updated can therefore be obtained.

3.2.5 Auto-archiving

To activate auto-archiving, just use the instruction ***OPEN FILE***. Auto-archiving procedures are activated as soon as the file is opened. Similarly, to close the file use the instruction ***CLOSE FILE***. This is of course possible only if 

has been selected for that archive from the ***General*** section of the window ***Configure Archive***.

3.2.6 Archiving by event

A historical archive is normally used by Event by means of a particular class of instructions: those grouped under the heading ***Files.*** This class of instructions enables the archive to be accessed in many different ways and also enables operations to be carried out on the files themselves.
It is usually better to separate the archives that are being managed by Event from those that are being managed by auto-archiving because the event-managed operation could cause records to be super-imposed on one another, so that the information they contain becomes incoherent. From Event an archive can be opened, records can be read and many other management operations can be conducted. Nevertheless, it should be remembered that before any operation is carried out on an archive, it must be opened by the instruction ***OPEN FILE*** and at the end it must be closed by the instruction ***CHIUDI FILE***.

3.2.7 Info file

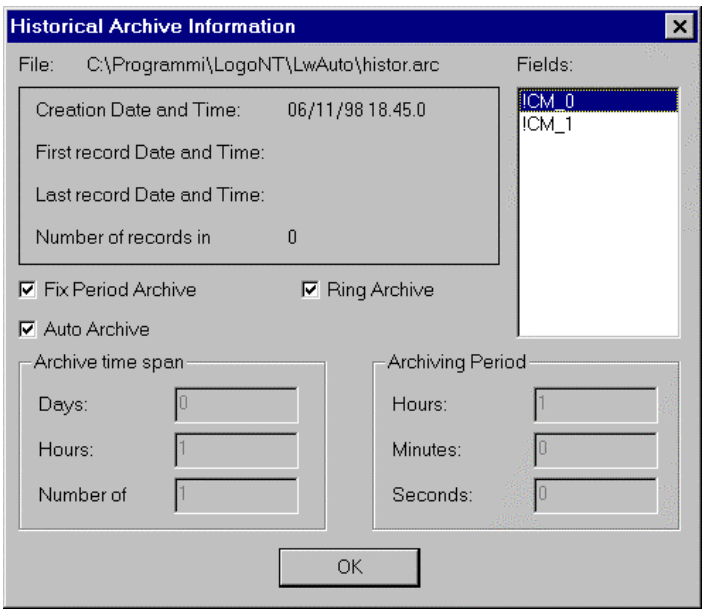
To obtain information on a file with the extension .ARC that contains an archive, press 

in the section ***Historical archives*** 

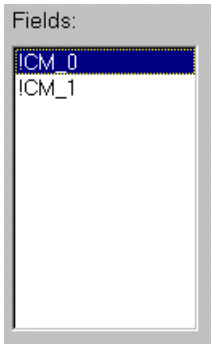
of the ***Formats configuration*** window.

Press this button to display the window of the files: ***Open historical archive***. From this window the file can be selected about which the user wishes to obtain information.

The information is displayed in the window ***Historical archive data.***

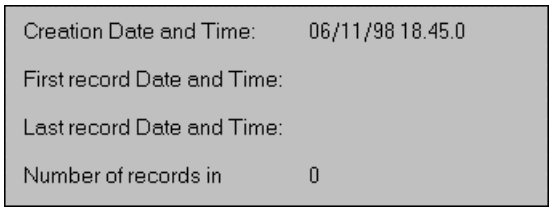


The line at the top of the window shows the complete file path: i.e. the place in which the file has been saved.



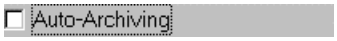
This box shows all the variables that make up the record. Each line represents a variable. Each variable is specified by the prefix that identifies its type and by its address.

TIPO	*PREFISSO*
TRIGGER	**?**
BYTE	**!**
WORD	**#**
DOUBLE WORD	**:**
REAL	**@**



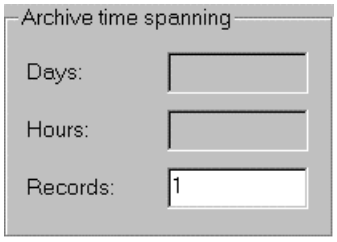
This section shows some of the characteristics of the file containing the historical archive. The data and time of creation of the file are shown, the time of the first and last record entry into the archive (if there is at least one record) and the number of records in the archive.

This shows whether the record entries have been made in the archive at fixed periods. If there is a cross inside the small white box it means that the option has been selected so that the archive is a fix period archive. On the other hand, if the box is completely whit the archive is not a fix period archive. If a Fix Period archive has been selected, the auto-archiving option will also have been selected.

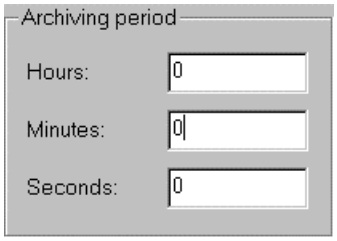


This indicates whether the record entries are made automatically or at fix periods. If this option is not assigned to the Fix Period option it means that archiving is not guaranteed if LOGOVIEW NT is not in operation.

Indicates whether the archive is a 'Ring Archive', i.e. whether its size is limited.



If the archive is a Ring Archive the limits of the file that contain the archive are set in this section.



If the auto-archiving option is selected in this section the time lapse between one record entry and another is indicated.

Press this button to close the Historical Archive Data window.

4. Databases

Databases are a vast topic. Even without treating this topic exhaustively, some important basic concepts need to be supplied. These will then enable the issues to be addressed that arise from managing databases via ***LOGOVIEW NT***.
LOGOVIEW NT provides a number of instruments that enable the database to be used in the applications: the final aim is to provide an overview of these instruments.

4.1 GENERAL CONCEPTS

4.1.1 The databases

If you are not familiar with the concept of a database just think of it as a collection of information that is organized in a logical manner. It is most often compared to a telephone directory. This contains names, telephone numbers and the addresses of thousands of people. Each item on the list is a ***record*** and each piece of information in the record is a ***field***.

As in the example, each database (also known as a ***table*****)** is a set of one or more fields that are organized into records (table lines). Each field has precise characteristics, such as type and size, that are determined by the information that needs to be stored in them.

LOGOVIEW NT uses the industrial standard .DBF as file format. This is compatible with other software such as dBase III, dBase IV, Clipper, FoxPro.
The .DBF standard requires that each field be described by four attributes: Name, Type, Length, Number of decimals.

- **NAME**: this is the name that will be used to identify the field. A name can contain up to 10 characters. It must be the only one within a given database and must consist of alphanumeric characters (including underlined characters).

- **TYPE**: the field type determines which type of datum can be stored. The DBF format contains six types of datum: character, numeric, floating point, date, logic and memo.

- **CHARACTER**: character fields may contain any sequence of alphanumeric characters. They have a fixed length and can contain up to 254 characters.

- **NUMERIC**, Floating Point: numeric fields can contain composite numbers of up to 19 figures.

- **DATE**: date fields can contain calendar dates and can have a fixed length of 8 characters.

- **LOGIC**: logic fields have a fixed dimension of 1 character and can have only two values: true or false. The "true" contents can be indicated by the letters "Y" or "T"; the "false" contents can be indicated by the letters 'N' or 'F'.

- **MEMO**: memo fields are identical to character fields but their dimensions can vary up to a maximum of 64k. Logoview NT does not support memo fields.

- **LENGTH**: this attribute refers to the number of characters that can be stored within the field.

- **NUMBER OF DECIMALS**: this attribute refers only to numeric or floating point fields and specifies the number of digits after the decimal point.

TYPE	*LENGTH*	*DECIMALS*	*Type of information*
Character	*1-254*	*0*	*Any ASCII character*
Date	*8*	*0*	*Date in CCYYMMDD format*
Logic	*1*	*0*	*'Y' or 'T' = TRUE, 'N' or 'F' = FALSE*
Numeric	*1 - 19*	*0 - (len-2)*	*Only numbers*

4.1.2 Indices

The aim of a database is to organize the data entries in such a way that they can be retrieved as easily as possible. Previously, we saw how data are subdivided into fields and records. Let us now see how the records can be sorted inside the database. The simplest way sorting the data entries is to move the database physically inside the file. Unfortunately, the simplicity of this system means that a great amount of data is moved from one area of the tile to another. It also means that only one method can be used to organize data.
A better system is to leave the records in the position in which they were inserted into the database and to manage the archive by means of an additional file called *INDEX.* When an index file is created the archive is sorted. Index files can be managed extremely efficiently; an unlimited number of indices can also be permanently available. ***LOGOVIEW NT*** uses a .CDX file indices. They are compatible with FoxPro 2.0.

4.1.3 Tag

Each index file can contain up to 47 sorting methods. Each method is identified by a tag. All open index files are automatically updated by ***LOGOVIEW NT*** whenever entries in the database are modified.

OBJECTS.DBF (Date file)

Rec.	*Object*	*ID*	*Price*
1	*screw*	*27*	*440*
2	*bolt*	*64*	*200*
3	*nail*	*33*	*100*
4	*bracket*	*99*	*2000*
5	*wrench*	*12*	*5000*
6	*hammer*	*54*	*3000*

OBJECTS.CDX (Index File)

***OBJ*_TAG**	***ID*_TAG**
bolt	*12*
wrench	*27*
nail	*33*
hammer	*54*
bracket	*64*
screw	*99*
↑ Tag	↑ Tag

PRICE.CDX (Index File)

***PRIC*_TAG**	
100	← *key*
200	← *key*
440	← *key*
2000	← *key*
3000	← *key*
5000	← *key*
↑ Tag	

The previous example shows the file OBJECTS.DBF, which contains the actual data entries. There are two index files: OBJECTS.CDX and PRICE.CDX. The first contains two tags. They enable the date file to be displayed sorted by OBJECT or by ID. The second contains just one tag. This enables the date file to be displayed by PRICE. Each file index element is called a ***KEY***.

4.1.4 Index expressions

Index file sorting procedure is defined by a dBase expression that is used to generate index keys. An *index expression* must be evaluated as a CHARACTER or NUMERIC expression. The most commonly used expression is simply the name of a field.

Example: the index expression for the tag OBJ_TAG is "OBJECT". When the expression is evaluated for record 6 it gives the result "Hammer ". OBJ_TAG is sorted by the contents of the OBJECT field.

Other commonly used expressions generate tags based on one or more tags. This system is known as an index with a composite key.

Example: the ID field ID is a character field. The tag can therefore be sorted according to this expression: "OBJECT+ID".

This expression produces a composite key consisting of an OBJECT field followed by the ID field. For record 6 the key is "Hammer 54".

Apart from chaining expressions databases can perform many other functions. For example, the key can always be evaluated with capital letters: "UPPER (OBJECT)". Similarly, other functions can be used to convert the numeric fields into character fields and vice versa.
If required, the tags can be sorted in reverse order. In this case, the keys will appear in reverse order compared to normal order.

4.1.5 Seek

One of the most interesting characteristics of a database is its ability to seek a record to by supply a ***Seek key.*** This process is known as ***Seek***. When a seek is carried out the seek key (usually a string) is compared with each key of the selected tag. When a correspondence is found, the assigned record is read by the DBF file.
LOGOVIEW NT enables both an exact and partial match to be made between the search key and the keys in the tag. In the first case, the search case must be identical to one of the keys in the tag.
When this seek criterion is used, ***LOGOVIEW NT*** follows these rules:

- the characters in the string of the seek criteria must exactly match the characters in the tag key.
- The comparison is case-sensitive. Seek key "aaaa" will not, therefore, find an exact match with the "AAAA" in the tag.
- The strings are compared only at the end of the shortest string. The seek key "abcd" is therefore exactly matched by "abcdefg".

There is a partial match when some characters of the seek key match the key in the tag; nonetheless, it is not possible to find a precise match.

Example: suppose that there an "abdefg" key in the current tag. If a Seek is made with the key "ab " there will be a partial match because only the first two characters are the same. It is as if using the "ab" key had given us a perfect match (note the lack of spaces)! In the case of a partial match the DB SEEK instruction will return an appropriate value.

When tags with composite keys are used (e.g. "SURNAME+FIRST NAME") the seek may be slightly more complicated. In fact, in this case, great care must be taken over creating the seek key.

Example: we have a tag comprising the expression "SURNAME+FIRST NAME" (SURNAME and FIRST NAME, up to twenty characters in length). To seek a specific name we must use as a key: "Bianchi Luigi ". The first part of the key, "Bianchi ", corresponds to the SURNAME field and is filled with spaces until the field length is obtained (20 characters). The second part, "Luigi ", corresponds to the NAME field.

The single parts of the seek key must be filled with spaces until there is an exact match between the dimensions of the individual fields that make up the tag.
A similar strategy must be used when the tag comprises different types of field.

Example: in the expression "PRODUCT+STR (COST,9,3)" PRODUCT is a 10-character field whilst COST is a 9-figure numeric field (with 3 decimals). A valid seek key is: "Monitor 1000.000". As the function STR() converts numeric values into strings, the seek key comprises 10 characters corresponding to the PRODUCT field and 9 characters corresponding to the value returned by function STR().

When creating the seek key remember the difference between operators dBase '+' and '-' when they are applied to character fields.
'+' includes in the chaining result all spaces; '-' excludes all spaces at the end of the first string.

Example: the expression "SURNAME+FIRST NAME" gives the result: "Bianchi Luigi " whilst the expression "SURNAME-FIRST NAME" gives the result: "BianchiLuigi "

4.2 DATABASES IN *LOGOVIEW NT*

4.2.1 Using the databases

As has already been extensively explained in the introductory manual, ***LOGOVIEW NT*** provides the developer with a complete support for managing powerful system of relational data bases. The support is provided by a series of instruments that enable the formats to be configured in a simple and flexible manner on the one hand and on the other hand enable the records to be managed.

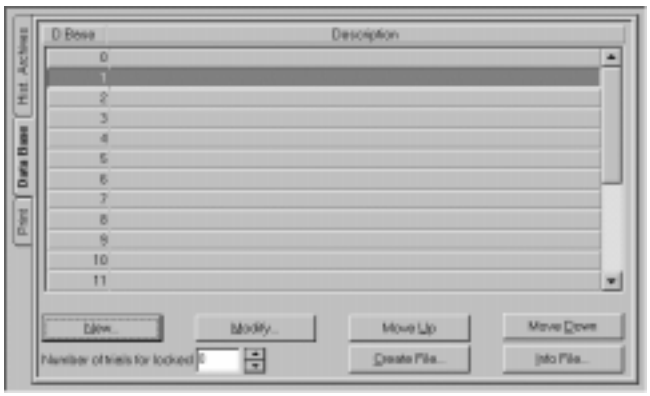
4.2.2 Structure of databases

LOGOVIEW NT can manage any number of databases whilst up to128 dbf. files can be opened from event. Each database has a particular record format that is tailored to requirements. Each database is saved by ***LOGOVIEW NT*** in a file with the extension .DBF. The database can therefore be used in all applications that support this format. The record fields in the databases defined by ***LOGOVIEW NT*** are assigned to variables: each field is connected to a variable. In this way, in addition to a record the value of the fields is taken directly from the assigned variables. It is also possible to open databases whose structure is unknown and for which there is no record format description inside ***LOGOVIEW NT***. In this case, the only limitation is to use the entire record reading and writing instructions (***DB PUTREC*** and ***DB GETREC***).
In order to manage databases that are not defined in ***LOGOVIEW NT*** the reading and writing instructions for a single field have been implemented (***DB PUTFIELD*** and ***DB GETFIELD***); these instructions do not refer to variables and leave the user the greatest discretion. He can therefore construct and manage very complex databases without linking them to ***LOGOVIEW NT*** variables.
Formats are defined in a special section of the application; the databases, on the other hand, are used by means of instructions that are used in the application events.

4.2.3 Creating a database

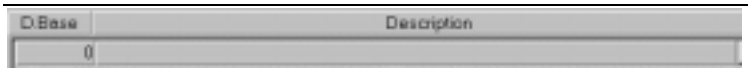
To define database format select ***Archives*** from the **Setups** menu or else push the button  on the main toolbar.

This action activates the window ***Format configuration.***



Wherever possible, configure the ***LOGOVIEW NT's*** ***Historical Archives***, ***Databases*** and ***Print.***

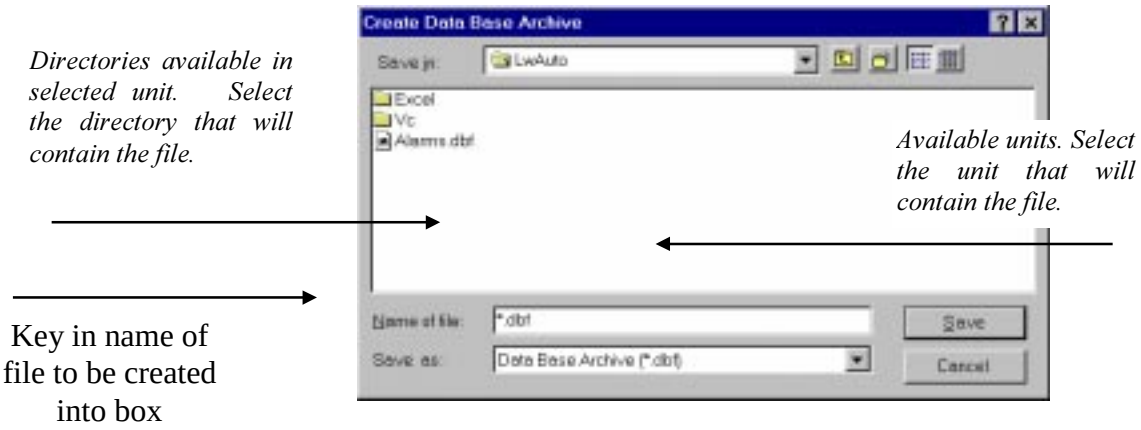
The ***database*** of this window enables the databases of ***LOGOVIEW NT*** to be defined by an unlimited number of formats, which can all be configured individually.



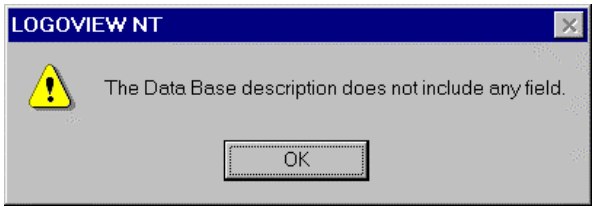
The main list of this window displays all the databases that can be configured by LOGOVIEW NT The line comprises the consecutive format number and a short description. To select a format, place the mouse cursor on the corresponding line and press the left-hand mouse key. To display the hidden parts, use the small scroll bar.

This button is active only if a line from the main list is selected. Press it to display the Record Configuration window, from which the database records can be displayed.

Create File... ***This button displays the standard file selection window shown below:***



Use this window to create an empty database file (.DBF). (For further information on the use of this window, check the WINDOWS manual). The button is active only if a database containing fields has been selected from the main list.
If an attempt is made to create a database file without defining fields LOGOVIEW NT will display an error message:



Archive files can be created, whose field formats have already been defined.

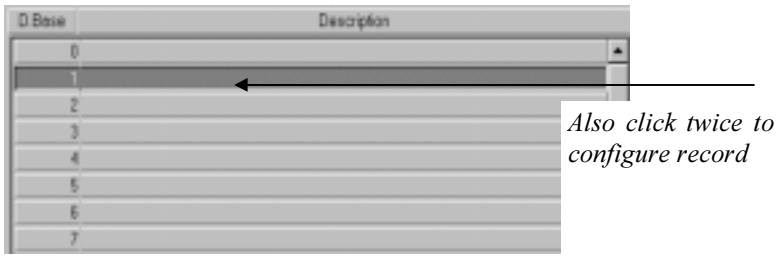
Info File... ***This button displays the standard file window: open database (similar to the database creation window), from which a file can be selected that contains a date about which more information is required (for further information on this window, see the WINDOWS manual). The information on the database is displayed in the Dbase Info after the button OK has been pressed to confirm.***

In this box, specify the number of attempts that LOGOVIEW NT must make to access a locked file. When an attempt is made to access a file that has been locked by another user LOGOVIEW NT goes into wait mode and makes a number of attempts (one each second): these are the specified number of tries. If 0 is set as a value LOGOVIEW NT will graphic object on attempting to open the file until it is unlocked.

Each database format that an be configured corresponds to a line of the main list current in this window.

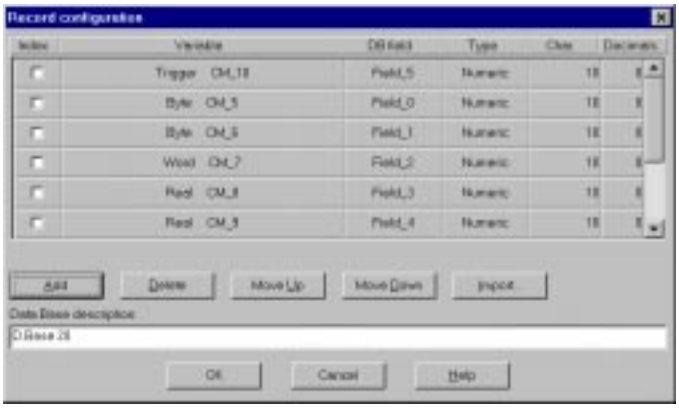
4.2.4 Record configuration

To configure the database record, just select the corresponding line from the main list in the ***Database*** section of the ***Formats Configuration*** window



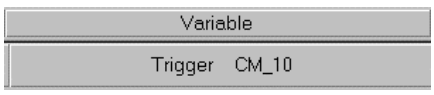
and press the ***record*** button. 

The same result can be reached by clicking twice on the same line. This action displays the ***Record Configuration***, from which record composition and characteristics can be set.



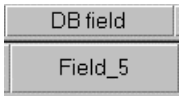
Each record field corresponds to a line of the main list of this window. To set field characteristcs, place the cursor on the required line and press the left-hand mouse key. The selected line will take on a different form to facilitate the definition of the different items.

Activate this option to use the fiel as a tag in the main index file (the one with the same name as the database file) that will be create with the database.

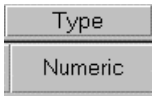


These two combos enable the variable to be chosen that is to be asigned to the field. In the first, specify the type of variable and in the seond the offset. LOGOVIEW NT will not allow a type to be selected that has no defined variable.

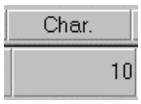
Deselect this line to summarize these two items in a single display made up of the type of variable and the tag (if one has been defined, or otherwise by the offset).



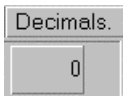
Key in the name of the database field ito this square. This will be the name by which the field will be identified in the DBF file. This is a very important indication, especially if the DBF file is shared with other database management programs. LOGOVIEW NT assigns a default name when the field is created.



This combo enables the field type to be selected. The type may also be different from the type of variable that has been assigned.



Set the number of characters for the field in this square. This value is very important because the size of the field must match the contents.



Set the number of decimals in this square if the field is a real field.

Key in a short description of the database into this square. LOGOVIEW NT assigns a default name when the database is created.

This button enables a field to be added to the database. The field will be added as the last item on the list. When the field is created LOGOVIEW NT will assign a default name that can be modified to suit requirements.

This button deletes the field selected from the list. If no field is selected, the button remains inactive.

This button cancels all the operations carried out in this window and restores the previous record configuration.

This button confirms all the operations carried out in this window and modifies the record configuration.

The Record Configuration window must be used to assign a variable to the record field so that ***LOGOVIEW NT*** will always know where to get the values to insert into the record when it writes and where to put them when it reads.

To make an association, add a field by pressing 

.

Next, select the line that has just been entered fro the main list:

Next, use the different combos to set the variable characteristics to assign to the field.

This association is very important if record reading and writing instructions are used (***DB PUTREC and DB GETREC***) because ***LOGOVIEW NT*** takes the value of the fields directly from these variables. On the other hand, use the reading and writing instructions of the single field (***DB GETFIELD*** and ***DB PUTFIELD***) to enter and read values without going through the variables. This is the reason why during the record configuration phase (Configuration Record window) a field type can be chosen that is different from the type of assigned variable: databases can also be created from types that are not directly supported by ***LOGOVIEW NT***.
In addition to this association the record fields must be defined that are to be used as tags in the initial index file. When ***LOGOVIEW NT*** creates a new database (use the ***DB CREA*** instruction or the button

in the ***database*** section of the ***Format Configuration*** window) with one of the defined formats it also creates the main index file. This has the same name but the extension .CDX and contains the tags that were defined in the ***Records Configuration*** window. Other index files can be created by the application.

4.2.5 Database information

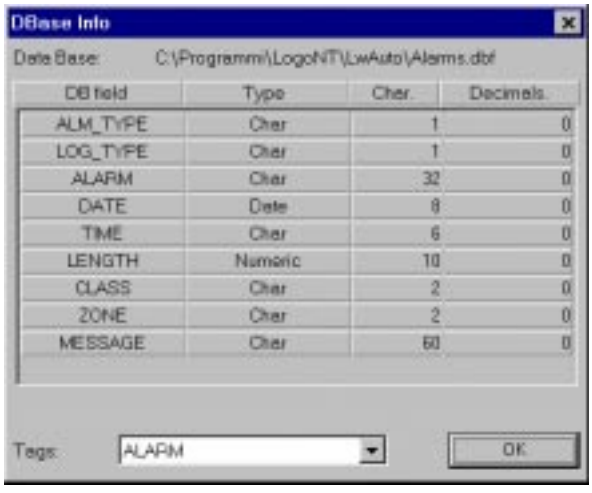
To obtain information on a .DBF file that contains a database, press the button

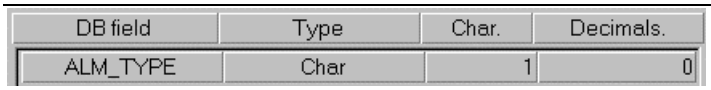
in the ***database*** 

section of the ***Formats configuration*** window.

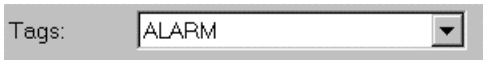
Press this button to display the standard files window: ***Open Dbase Archive*** This window enables the file to be selected about information is required.

The information is displayed in the ***Dbase Info*** window.





The main list in this window shows all the fields defined in the database file. Each line corresponds to a field of the database. To display the hidden parts of the list use the scroll bar to the right of the box.



This combo displays all the tags defined in the main index file. The main index file has the same name as the database.

This button closes the Dbase Info window.

4.2.6 The handles

The database is managed by the instructions in the application events.
Together with the instructions for database management, the concept of a *handle* has also been introduced. When a database is opened (or created) ***LOGOVIEW NT*** returns a numeric code to a variable. This must be used each time that a reference is made to that database. This numeric code is a file reference and is called a *handle.* The handle remains valid until the file is opened, i.e. until a DB CLOSE instruction is run. The concept of a handle is also valid for index files: each time that an index file is opened or created a new ***LOGOVIEW NT*** index returns a handle to be used to close that file.

Note: database handles cannot be confused with index file handles.

4.2.7 Record management

The records are stored in the database one behind the other. The database can then be shown on a record list.
When *LOGOVIEW NT* opens the database it positions itself on the first record: i.e. the first record using the selected TAG sorting method. Movement around the list is possible in two ways:

- The first system uses the DB GO instruction and enables a record to be selected regardless of the selected tag.

- The second system uses the current tag and enables movement from the to (DB TOP) to the bottom (DB BOTTOM) of the database or relative movement in relation to the current record (DB SKIP).

4.2.7.1 *Reading a record*

The current record can be read on the level of an entire record or a single field. The entire record is read by the instruction ***DB GETREC***. In this case the individual fields are automatically deposited in the configured variables. This instruction can of course be used only if the database record format has been defined inside ***LOGOVIEW NT***. The single field is read by the instruction ***DB GETFIELD*** and is independent of the record definition.

4.2.7.2 *Writing a record*

Like reading, writing can also be at the record level (***DB PUTREC***) or the field level (***DB PUTFIELD***). In the first case all the record will be written by taking the contents of the fields from the configured variables. If the individual fields are written the value that is to be written into the field can be specified each time. If one or more records have to be added to a DATABASE, first use the ***DB APPEND*** instruction to add an empty record and then modify the contents of the new record.
Note that writing data onto the disk occurs only when moving to a new record or when the ***DB FLUSH*** instruction is run. ***DB PUTREC*** automatically runs a ***DB FLUSH***.

4.2.7.3 *Deleting a record*

Current records are deleted by the ***DB DELETE*** instruction. Note that the record is not deleted but is only marked in such a way that a subsequent ***DB PACK*** instruction deletes it from the file. As we have said, the instruction ***DB PACK*** enables all the deleted records to be physically deleted. If the records are shared, before making a pack the DATABASE should be shut and reopened exclusively in order to increase packing efficiency.

4.2.7.4 *Formatting date fields*

Within a DBF file the date is memorized as a string of 8 characters in the following format: "CCYYMMDD"
(Century, Year, Month, Day).

Example: *the date 25/06/1993 becomes "19930625".*

By default ***LOGOVIEW NT*** automatically transforms the date fields according to the format set in the preferences window. Nevertheless, the date can also be read in native mode.

4.2.8 Managing index files

When a database is created, ***LOGOVIEW NT*** also creates an *index file* with the same name and the extension .CDX, which are compatible with Fox Pro 2.0. Other *index files* can be created and assigned to the database by the instruction ***DB CREAIDX***.
When ***LOGOVIEW NT*** opens the database file (through the ***DB instruction OPEN***) the *index file* with the same name as the database is opened. ***LOGOVIEW NT*** also selects the first defined tag as default. The other tags or *index files* can be selected by the application after the database is opened (by means of the instruction ***DB APRIIDX***).
All the *index files* that are opened are automatically updated by ***LOGOVIEW NT*** every time that the records in the database are modified.
A DBF may sometimes be updated whilst the index files (.CDX) are shut. In this case, the database contents of the *index file* are not updated, so when a tag is used it may be impossible to access certain records. Even worse, a record may be sought and found that no longer exists. In these cases, there are two possible solutions. The first is to delete the *index file* and recreate it; the second is to use the instruction ***DB REINDEX*** to regenerate all the indices.
When a database is closed (by the instruction ***DB CLOSE)*** all the assigned *index files* are automatically closed (including those opened separately using ***DB APRIIDX***).

4.2.9 Querying the database

Querying the database is one of the most important uses to which the database is put. For example, we may have to list (or print) all the records of a supplier from a certain date. If this type of interrogation is frequent we can generate an appropriate index file to use each time that the interrogation s carried out. Normally however, an interrogation is requested once only or each interrogation changes from the previous one. In this case certain specific instructions can be used for the queries. First, the ***DB QUERYSET*** is run. This enables the records to be selected and sorted (in the same way as an index file). ***DB QUERYSTART*** is then called up and actually runs the query (it may take some time to complete its work) and positions it on the first (or last) query record. At this point, the required data entries can be read from each record. To move between records, use ***DB QUERYSKIP*** and not ***DB SKIP***. When querying has been completed, call up ***DB QUERYEND*** in order to carry out more than one query.
LOGOVIEW NT can optimize query operations if the query filter expression (initialized in ***DB QUERYSET***) has this structure:

Key expression ***Logic operation Constant***

Example: if a tag contains the key expression "SURNAME "and the query expression is "SURNAME ="BIANCHI" optimization is possible.

The optimization used can ensure that the query run times are hundred or even thousands of times lower than those of traditional algorithms.
Optimization is also possible even when more complex expressions are used that use the operators.AND. and .OR.

Example: the expression "SURNAME ='BIANCHI' .AND. AGE>20" could be optimized if a tag with the key "SURNAME" or the key "YEAR" exists. Optimization would be more effective if both tags exist.

4.2.10 Locking a file

Normally, ***LOGOVIEW NT*** automatically locks files that are updated. However, in some cases it may be necessary to use an explicit record or file lock. In this case the function DB LOCK can be used. This enables a single record, the entire DBF file or the DBF file and all the assigned index and memo files to be locked.
Note that each new lock deletes all previous ones in order to avoid dead-lock problems. Also remember that when an entire DBF file is locked, automatic ***LOGOVIEW NT*** locking is disabled and an explicit DB UNLOCK is required. The instructions DB PACK and DB REINDEX always run a DB UNLOCK after the work is completed in order to delete any locks that are current. DB UNLOCK deletes all locks in the database that is being used. When accessing a locked record ***LOGOVIEW NT*** waits for the record to be unlocked and makes a fresh attempt every second. The number of attempts can be set in the RUNTIME configuration window. If the number of attempts is set at 0 (or -1), ***LOGOVIEW NT*** will make an indefinite number of attempts or after the number of attempts it will return code 50 in the error variable.

4.2.11 dBase expressions

A dBase expression is a character string and is evaluated by the database inside **LOGOVIEW NT**. In particular, the *dBase expressions* are used to create indices with the instruction DB CREATEIDX. All the *dBase expressions* return a value of a specific type: numeric, character, logic or date.

A common *dBase expression* comprises a field name. In this case the expression type depends on the field type. Example of an expression:

"NAME_FIELD"

Note: in this manual all expressions are placed between double inverted commas ("). The inverted commas are not part of the expression and are used only to separate it.

4.2.11.1 *Constants*

dBase expressions can contain numeric, characer or logic constants. In each case, expressions that are made up only of constants are not particularly useful. A numeric constant is basically a number.

Example, "4", "8.1" and "267" are expressions containing numeric constants.

Character constants are letters surrounded by single inverted commas.

Example "'this is a constant", "'Mario Bianchi'" are expressions containing character constants.

The only permitted logic constants are: TRUE. and .FALSE. (abbreviated as .T. and .F.)

4.2.11.2 *Operators*

Operators with '+', '*', or '<' are used to handle constants and fields.

Example: "3+8" is an example of a dBase expression in which the + operator intervenes on two numeric constants and returns the value "11".

The values on which an operator intervenes must be of a type that is appropriate to the operator.

Example: the division operator '/' intervenes on two numeric values.

The operators have an order of precedence that specifies the order in which the different parts of an expression are evaluated. The order of precedence of an operator is set out in the following table that describes the different operators. The higher the precedence, the sooner the operation will be evaluated.

Numerical operators require numeric operands.

Operator name	*Symbol*	*Precedence*

Addition	+	*5*
Subtraction	-	*5*
Multiplication	*	*6*
Division	/	*6*
Power	** or ^	*7*

Character operators are the two operators called *"Chain I"* and *"Chain II",* which combine two character values into one.

Operator name	***Symbol***	***Precedence***
Chain I	+	*5*
Chain II	-	*5*

Example: " 'Bianchi ' + 'Mario ' " becomes " 'Bianchi Mario ' "

Chain II is slightly different because the spaces at the end of the first string are deleted.

Example: " 'Bianchi ' - 'Mario ' " becomes " 'Bianchi Mario ' "

Relational operators are operators that give a logical type (true/false). All the operators except for "contain" operate on numeric, character and date data. The "Contain" operator requests two values and returns "True" if the first is contained in the second.

Operator name	***Symbol***	***Precedence***
Same as	=	*4*
Different from	<> or #	*4*
Less than	<	*4*
Greater than	>	*4*
Less or same as	<=	*4*
Greater or same as	>=	*4*
Contains	$	*4*

Example: " 'CD' $ 'ABCD' " returns".T." "8<7" returns".F."

Logic operators return a logic result and operate on two logic values.

Operator name	***Symbol***	***Precedence***
NOT	*.NOT.*	*3*
AND	*.AND.*	*2*
OR	*.OR.*	*1*

Example: " .NOT. .T." returns".F." " .T. .AND. .F." returns".F."

4.2.11.3 *Functions for dBase expressions*

A function can be used as a dBase expression or as part of an expression. Just like the operators, the constants and the fields the functions also return a value. The functions have a name followed by round parentheses.

CTOD (Char_value)

Converts a character value into a date value.

***Example**: "CTOD('11/30/88')"*

The character representation always has the format "MM/DD/YY"

DATE ()

Returns system date.

DAY (Date_value)

Returns the day of the date as a numeric value.
***Example**: "DAY(DATE())" returns "20" if it is the twentieth of the month.*

DEL ()

Returns "*" if the current record is marked for deletion. Otherwise, it returns " "

DELETED ()

Returns .TRUE. if the current record is marked for deletion.

DTOC (Date_Value)

Converts a date value into a character value. The value is always in the format "MM/DD/YY".

***Example**: "DTOC(DATE())" returns "05/30/93" if the date is 30 May 1993.*

DTOS (Date_Value)

Converts a date value into a string in the format "CCYYMMDD".

***Example:** "DTOS(DATE())" returns "19930530" if the date is 30 May 1993.*

IIF (Log_Value,True_result,False_Result)

If the 'Log_Value is .TRUE. IIF returns 'True_Result'. Otherwise, it returns 'False_Result'. True_Result and False_Result must be the same length and type. Otherwise, an error will be returned.

***Example**: "IIF(VALUE<0,'Less than Zero ','Greater than Zero')"*

LTRIM (Char_value)

Deletes all the spaces inside the expression.

MONTH (Date_value)

Returns the month of the data as a numeric value.

***Example:** "MONTH(STOD("19930830"))" returns "08"*

RECCOUNT ()

Returns the total record number in the database.

RECNO ()

Returns the current record number.

STOD (Char_Value)

Converts a string in the format "CCYYMMDD" into a date value.

STR (Number, Length, Decimals)

Converts a numeric value into a character value. "Length" that should make up the new string (including decimal point).
"Decimals" is the number of decimal digits required. If the number is too great for the required number of digits, they are generated by the characters *.
Example: *" STR(5.7,4,2) " returns" '5.70' "*

SUBSTR (Char_value, Start_Position, Num_Chars)

Returns a Char_Value substring (of the type character). The substring will be as long as the Num_Chars and will start at the Start_Position of Char_Value.

Example: *" SUBSTR("ABCDEF",2,3) " returns" 'BCD' "*

TIME ()

Returns time of system as a string in the format "HH:MM:SS"

TRIM ()

Deletes all the spaces at the end of the expression.

UPPER (Char_Value)

Transforms a string into upper case characters.

VAL (Char_Value)

Converts a character value into a numeric value.

Example: *"VAL('10.5')" returns "10.5"*

YEAR (Date_Value)

Returns the year of the date as a numeric value .

Example: *"YEAR(STOD ("19930830") "returns "1993"*

4.2.12 Multiuser operation

LOGOVIEW NT's database module can share the databases and index files with other ***LOGOVIEW NTs*** or with programs that use the **FoxPro 2.0** locking scheme. By default, ***LOGOVIEW NT*** opens the files exclusively and prevents access to other programs. Specify a suitable parameter in the DB OPEN instruction to share DBF and CDX files. The locking method that is used in a multiuser environment is very important. ***LOGOVIEW NT*** is always able to read a database record or tag, even if it has been locked by another user. If a record or tag is modified ***LOGOVIEW NT*** locks the record (on the DBF file) or the file (on a CDX file) so that the record (or index file) cannot be simultaneously modified.

4.2.13 Limits

These are the limits of the database section of **LOGOVIEW NT**

Description	*Limit*
Date File (DBF) size	*1 000 000 000 bytes*
Max. field width	*254 characters*
No. of digits in numeric fields	*19*
Number of fields	*256*
Number of tags per index file	*47*
Record size	*65500 (64k)*
Number of open files	*50*

4.2.14 Return codes

The following codes can be returned by the database functions:

Value	*Meaning*
0	*In general, a '0' result indicates that the instruction has been successful.*
1	*Indicates that the search key has been found..*
2	*Indicates that the search has been unsuccessful and that the database index is on the record after the one sought.*
3	*End of file (EOF)*
4	*Beginning of file (BOF)*
5	*Indicates that the key has not been found*
10	*Indicates that the tag should be in reverse order.*
20	*Indicates that a tag should have single keys or that an attempt has been made to add a duplicate key.*
50	*Indicates that part of the file has been locked by another user.*

4.2.15 Error codes

The following error codes are returned by the database functions:

General errors during access to disk

Value	*Meaning*
-10	*Error during file closing*
-20	*Error during file creation. For example, an incorrect name has been specified, the file is already open or else there are problems with the disk.*
-30	*Error in setting file length*
-40	*Error during modification of file length*
-50	*Error during file locking*
-60	*Error during file opening. The most common problem is an attempt to open a file that does not exist. A problem will also arise if an attempt is made to open more files than the number configured in CONFIG.SYS (**LOGOVIEW NT** enables up to 64 files to be opened, 40 of which are databases).*
-70	*Error during file reading. May have been caused by a **DB GO** on a non-existent record.*
-80	*Error during file deletion.*
-90	*Error during file renaming.*
-100	*Error during positioning in the point of a file.*
-110	*Error during unlocking of a file.*
-120	*Error during file writing. Occurs when disk is full.*

Errors that are peculiar to DBF files

Value	*Meaning*
-200	*The specified file is not a DBF file. This normally occurs when the header (and probably the data) of the .DBF file have been damaged.*
-210	*Incorrect field name. The name of the field that has been passed on to an instruction such as DB GETFIELD or DB PUTFIELD does not exist within the database.*
-220	*Field type not acknowledged.*
-230	*Record too large.*

Errors that are peculiar to index files (.CDX)

Value	*Meaning*
-300	*No key was found in the tag. This error occurs when a record key should be a tag but has not been found.*
-310	*The index file has been damaged. This error is generated when an irregularity is discovered inside the CDX. file.*
-330	*Incorrect* TAG *file. An incorrect tag file has been found in a DB TAGSELECT instruction. Make sure that the index file with the tag that is to be selected has been opened.*

Errors in evaluation of expressions

Value	*Meaning*
-400	*A comma "," or a closing parenthesis was expected ")". For example, the expression "SUBSTR(A" would generate an error of this type.*
-410	*The expression is not complete. For example, the expression "FIELD_A+" would not be complete because something is missing after "+".*
-420	*The specified date file has not been opened.*
-422	*The second and third parameters of an* ***IIF()*** *must be of exactly the same length.*
-425	*The second and third parameters of a* ***SUBSTR()*** *or* ***STR()*** *must be constants.*
-430	*The parameter number is incorrect.*
-440	*The expression is too long or complex to be evaluated.*
-450	*A closing parenthesis ")" is missing. Make sure that each parenthesis that is opened is also closed.*
-460	*The subexpression type does not match the type requested by an operator. For example, in the expression "33 .AND .F." "33" is numeric but the operator ".AND." requires a logic type.*
-470	*Function not acknowledged . The name of an non-exstent function has been found.*
-480	*Operator not acknowledged. An incorrect character has been found in the place of an operator.*
-490	*A character sequence has not been acknowledged as being valid as a constant, a field name or a function.*
-500	*Final character of string missing'.*

Optimization errors

Value	*Meaning*
-610	*General error in optimization routine*
-620	*Error during optimization suspension*
-630	*Error during flushing of buffered information*

Relational errors

Value	*Meaning*
-710	*General error in relational routine*
-720	*Linked record not found*

Serious errors

Value	*Meaning*
-910	*Internal error. Internal variable contains incorrect value.*
-920	*No more memory available*
-930	*Incorrect parameter has been given to a function*
-950	*Unexpected result. Function has returned unexpected result.*

Errors in instruction parameters

Value	*Meaning*
-16385	*Incorrect description index. A record description index that does not exist has been specified in a DB CREATE or DB OPEN instruction.*
-16386	*No record. A record description index that contains no field has been specified in a DB CREATE or DB OPEN instruction.*
-16387	*No more handles are available (maxim No. of handles =40)*
-16388	*Incorrect handle. An instruction has been given a handle that does not refer to a database or to an open index file.*
-16389	*Incorrect field name. An instruction has been given a name that does not exist.*
-16390	*Incorrect tag name. An instruction has been given the name of a tag that is not found amongst the open index files. Make sure that an index file with the required tag has been opened.*
-16391	*The DB QUERYSET has not been called up. Before calling up one of the DB QUERY., call up the DB QUERYSET.*

5. Print formats

Print formats enable printouts of all the sizes using in an ***LOGOVIEW NT*** application to be organized according to the standard Windows page in a very simple and flexible manner.
Print formats in ***LOGOVIEW NT***
Windows organizes printing into pages. Windows requires data to be organized into pages and then be printed. Windows does not allow a single line to be printed.

The ***LOGOVIEW NT*** section that is dedicated to print formats enables the different page structures to be created that are required for the application. These structures will then be filled by the event. ***LOGOVIEW NT*** does not set any limits to the number of formats that can be configured. There can therefore be a different format for each size group for which a paper record is required. The printout occurs in two phases: in the first the skeleton is set of the page that is to be printed and in the second phase the actual print command is given. The second phase is run by the event by the available print instructions.

5.1.1 Print formats

As stated in the introductory manual, the formats can contain two types of object: *Static objects* and *Dynamic objects*:

- *Static objects* enable a legible format to be constructed
- *Dynamic objects* are the variables defined in the application

5.1.2 The forms

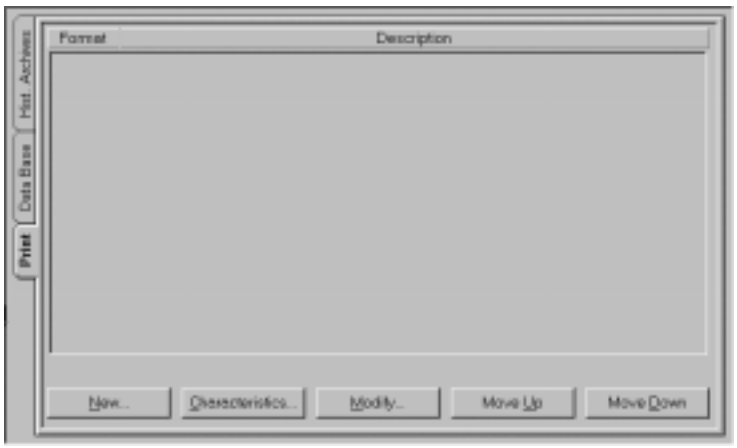
A format may comprise one or more forms, which in turn may contain one or more variables.

The module is the dynamic part of the format: i.e. the part that is filled each time with the variable values; each modules contains the same variables.

5.1.3 Creating a print format

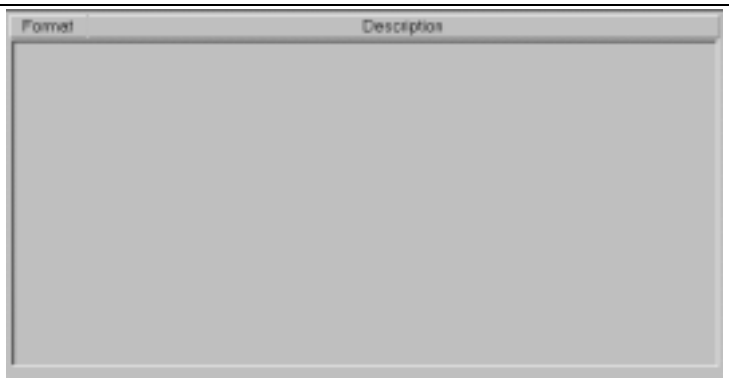
To define a print format, select ***Formats*** from the menu.

Select ***Display*** or press  on the main toolbar.
This action activates the ***Formats configuration*** window:



in which ***LOGOVIEW NT***'s ***Historical archives***, ***Database*** and ***Print*** can be configured.

The ***Print*** section of this window enables all the print formats to be defined that are required for the application.

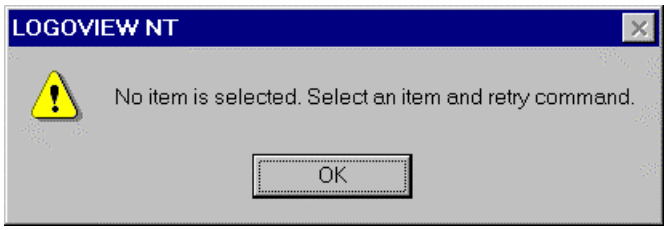


The main list of this window contains the defined print formats. The list is initially empty and there is no limit to the number of formats that can be defined. Each line corresponds to a print format. The line comprises a consecutive archive name and a short description.

To select a print format, place the mouse cursor on the corresponding line and press the left-hand mouse key. To open the format editor place the mouse cursor on the corresponding line and click twice. To display the hidden parts, use the small scroll bar.

This button enables a new format to be added to the list of available formats.

This button enables the print format characteristics selected from the formats list to be changed. If the button is pressed before a format has been selected LOGOVIEW NT will display an error message:



This message indicates that a format must be selected before the button is pressed.
The window used to modify format characteristics is opened during creation and is explained subsequently.

This button enables the formats editor to be opened on the format that has been selected from the list of available formats.
If the button is pressed before a format has been selected LOGOVIEW NT will display an error message indicating that a format must be selected before pressing the button:

This button moves the selected format up by one place. For example, if the selected format is the second on the list (i.e. 'Format 1)

after the button 

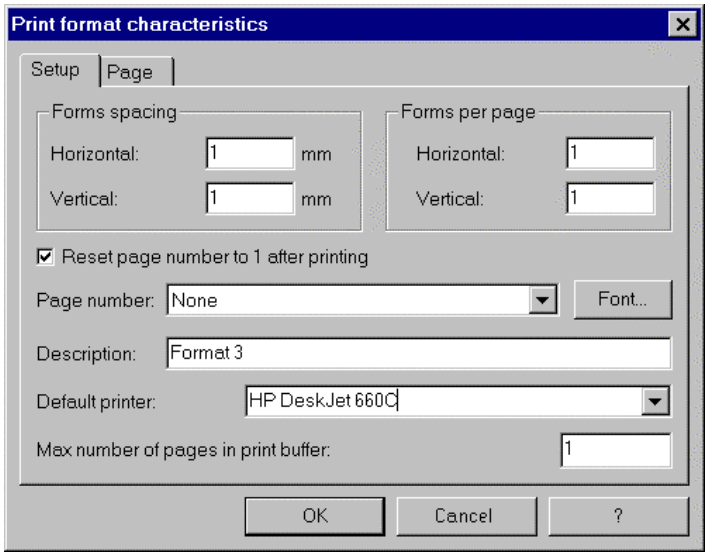
is pressed, the top format will be selected (i.e. 'Format 0').

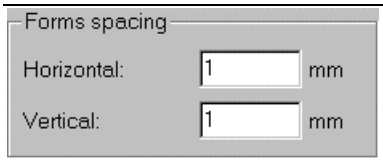
This button has the same function as the previous button but instead of moving the button up it moves it down. In the previous example, the 'Medium' format would end up at the bottom of the list (with number 2).

To create a new print format, place the mouse cursor on the button

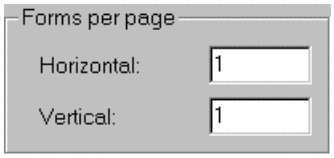
and press the left-hand mouse key. The window ***Print format characteristics*** will be displayed. This window is divided into two sections: ***Setup and Page.*** .

The ***Setup*** section enables the format characteristics to be set.





In this section the horizontal and vertical distances between one form and another on a single page can be set.



The number of forms per page can be set in this section. The number of forms must be specified on both the horizontal and vertical planes.

This option enables page numbering to be reset at 1 after each printing session.

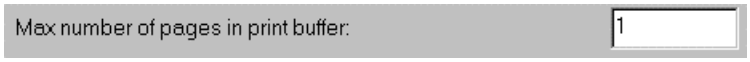
Enter the position of the page number in this box. To set a new configuration, press the left-hand mouse key on  ***. The available items will be displayed.***

Select the required item from the list that appears.

This button displays the standard font window, from which the font can be selected with which the page number will be printed.

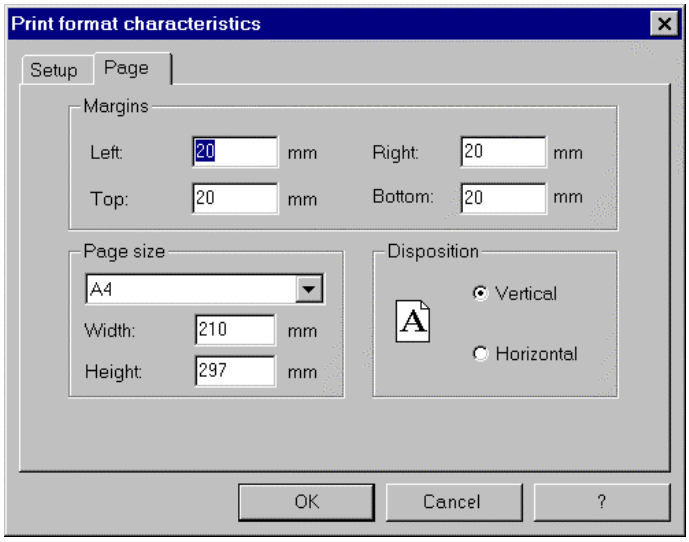
A short description of the print format can be keyed into this box.

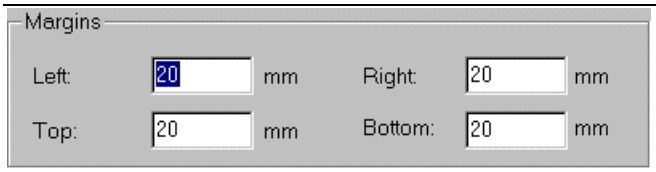
The printer default path can be entered in this box unless another has been specified in the print instruction.



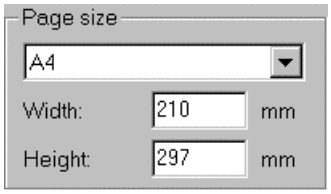
Enter the number of pages to be kept 'suspended' in the print buffer in this box. Once the print buffer has been filled, the 'suspended' pages will be printed. The print buffer can nevertheless be emptied immediately by the instruction FLUSH_FORM. It should be pointed out that each format has a print buffer, the length of which may vary.

The ***Page*** section enables the size of the page to be set that will contain the format.



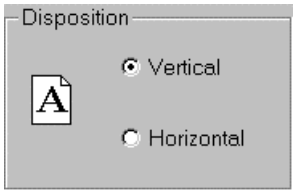


This section enables page margins to be set. This limits the work area.



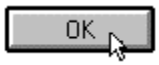
This section enables page size to be set. Page size can be set in two ways: the first method is to select a format (with certain sizes) from the list of available sizes: to do so, click with the left-hand mouse key on  ***to display the list of available formats. When a format is chosen, its correct dimensions will be automatically shown in the 'Width' and 'Height' boxes. The other method is to manually set width and***

height by clicking with the mouse on the relevant squares and then keying in the required dimensions. LOGOVIEW NT will automatically set the message 'Other format'.



Page disposition can be set in this section.

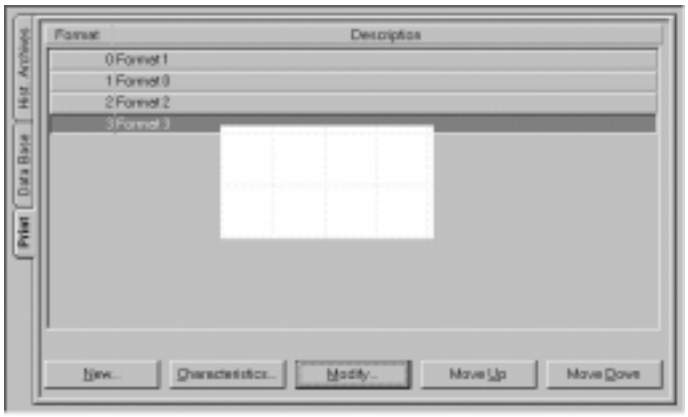
To confirm the creation of the set print format, press



To cancel the created format, press:

5.1.4 Print formats editor

To open the print editor, place the mouse cursor on the line that corresponds to the format on which you wish to work in the list of available formats in the ***Formats Configuration*** and click twice.



Alternatively, select the line (place the cursor at the top and press the left-hand mouse key: the selected line will be highlighted in gray) and press the button

The two actions have the same effect: both open the editor window for the selected format.

The formats editor is an editor that enables all the objects to be inserted that the user wishes to display in a simple and flexible manner. The editor is displayed in a window.
The window's appearance and use depend on the mode adopted. In fact, the editor can display the entire page or the individual form on the page.

The display depends on the status of the button on the toolbar inside the window.

button not pressed: ***editor in page mode.***

 button not pressed: ***editor in form mode.***

When the editor is in page mode, the entire page is displayed. In other words, a general view of the work in progress is provided. In page mode, only static objects can be inserted.

When the editor is in form mode the individual for on the page is displayed and the work area is reduced to that area. In form mode both static and dynamic objects (variables) can be inserted.

5.1.4.1 *Page mode*

In page mode the entire print format and all the forms that have been defined are displayed.
To activate page mode, make sure that button 
has not been pressed. In this mode only static objects can be inserted. The page is displayed in the form in which it will be printed.

5.1.4.2 *Form mode*

Form mode displays the print format and the form contained inside it.
To activate form mode, press button 

The area that can be used by the form is shown in white on the screen. The gray area should not be used because objects in this area could be superimposed on other forms. overlap .
Both static and dynamic objects (variables) can be inserted into a form by pressing button


5.1.4.3 *Tools*

The tools on the toolbar enable the objects to be inserted into and manipulated in the print area, whether this be a page or a form. They are used in the same way in both modes. The only difference is whether a button is that the button for inserting dynamic objects is not available in page mode.

TOOLBAR

The toolbar in this window contains all the tools that are required to create the print format in the selected mode. The button for inserting dynamic fields is not available in page mode.

This button is used to edit, select, adjust size or move objects in the minimum area.
.

This button enables dynamic objects, i.e. variables to be inserted into the print area. This button is active only in form mode.

This button enables system variables to be entered into the print area (such as time and date).

This button enables static text strings (that do not vary) to be inserted into the print area.

This button enables horizontal, vertical or oblique lines of different dimensions and colors to be inserted into the print area.

This button enables rectangles of different dimensions and colors to be inserted into the print area.

This button enables different image formats to be inserted into the print area.

This button enables OLE standard objects to be inserted into the print area.

This button enables part of the work area to be zoomed.

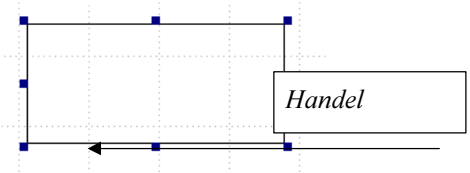
This button activates the page mode or form mode for the print area..

5.1.4.4 *Arrow button*

The arrow button enables some important operations to be carried out on objects in the print area. The principle is the same as for all ***LOGOVIEW NT*** tools. To select the tool, place the mouse cursor on it and press the left-hand mouse key.
The cursor will take on the form of an arrow to enable the following operations to be carried out on an image in the print area.

5.1.4.4.1 Selection

When the object is selected all subsequent operations are linked to that object (e.g. 'Copy and paste'). The selection can be single or multiple, depending on whether one or more objects has been selected. Some operations permit a multiple selections but others do not. To select an object, place the mouse cursor on it and press the left-hand mouse key. To select more than one object, place the mouse cursor on it, press the left-hand mouse key, keep ***SHIFT*** key pressed and select all the other objects. The selected objects are highlighted by handles.



To select the object, place the mouse cursor on the actual object, (e.g. on a rectangle on a point of the contour line).
In a multiple selection the last object to be selected is the reference object and is identified by full handles. The other objects of the multiple selection are highlighted by empty handles. To select a new reference, place the mouse cursor on it keep ***SHIFT*** key pressed and press the left-hand mouse key. The reference object is essential for operations such as alignment.

5.1.4.4.2 Shifting

To shift one or more objects, first select them. Next place the cursor on the center of the object. This will be the reference object in the case of a multiple selection. The cursor will take on the form of a cross with four arrows to indicate that ***LOGOVIEW NT*** is ready to carry out the shift. Press the left-hand mouse key and keep it pressed whilst dragging the object to the required position. In the case of a multiple selection, all the other objects will also be shifted.

5.1.4.4.3 *Modification of characteristics*

All the objects in the print area have special characteristics: the rectangles have a line thickness and color, the dynamic objects have the address of the assigned variable, and so on. To modify these characteristics, place the mouse cursor on the objects and click twice. This action calls up a window that displays object characteristics. This window varies with the object and is the same as the one encountered whilst the object was inserted. For a fuller description, consult the paragraph dealing with the object concerned.

5.1.4.4.4 *Size change*

To change the size of an object, select it. Only a single selection is required: place the mouse cursor on the handle that corresponds to the modification required. As mentioned before, each handle corresponds to a given modification. Once the mouse cursor has been placed on the handle it takes on the shape of an arrow indicating the direction in which the object can be modified. When the cursor has taken on the shape of an arrow, press the left-hand mouse key to change the size by dragging the mouse.

 5.1.4.5 *Dynamic objects*

Dynamic objects ***LOGOVIEW NT*** variables. A dynamic object can be inserted only in form mode.

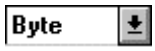
To insert this type of object, place the mouse on the button on the toolbar and press  the left-hand mouse key. The cursor will take on the form of a (thick) cross to show that the entry can be made. Place the cursor at the point in which you wish to insert the object and press the left-hand mouse key. Keep the left-hand mouse key pressed and drag the cursor in one direction until the reference rectangle has been given the correct shape. Then release the key.

The rectangle that has just be set is only a reference rectangle: it will not be printed in any event. It will contain the value of a LOGOVIEW NT variable.

At the end of the operation the Variables window will be displayed

This enables all the variable characteristics to be specified that will occur in the reference rectangle.

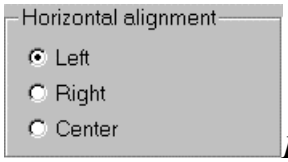
In this box set the variable that must be printed inside the reference rectangle. The address of a variable is specified by the two parameters 'Type' and 'Offset'. These can be set by two combos..



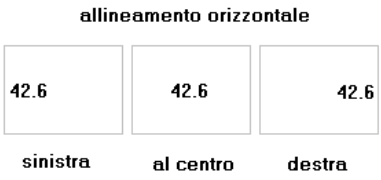
Use this combo to select variable type (from among those current in LOGOVIEW NT). To display the items current in a combo, press Then select the item from the list that will appear.

This combo enables the variable offset to be selected. This combo displays all the variables of the type selected in the previous combo. Each variable is represented by the offset and the name (if it has been defined).
To display the items current in a combo, press Then select the item from the list that will appear.

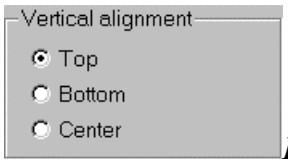
In this box select the number of decimal digits to indicate the precision with which a real variable must be printed within a reference rectangle for the dynamic object that is being defined. The precision of a real number is represented by the number of figures that follow the decimal point.



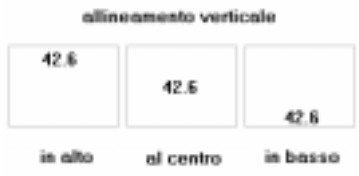
In this area, specify the horizontal alignment with which the variable will be printed within the reference rectangle. The alignment result is shown in the following figure:



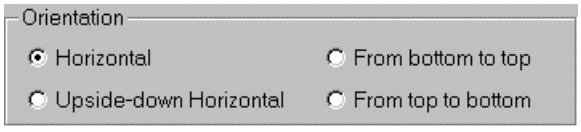
horizontal alignment
left center right



In this area, the vertical alignment can be specified with which the variable will be printed inside the reference rectangle. The result of the alignment is shown in the figure below:



vertical alignment
top center bottom



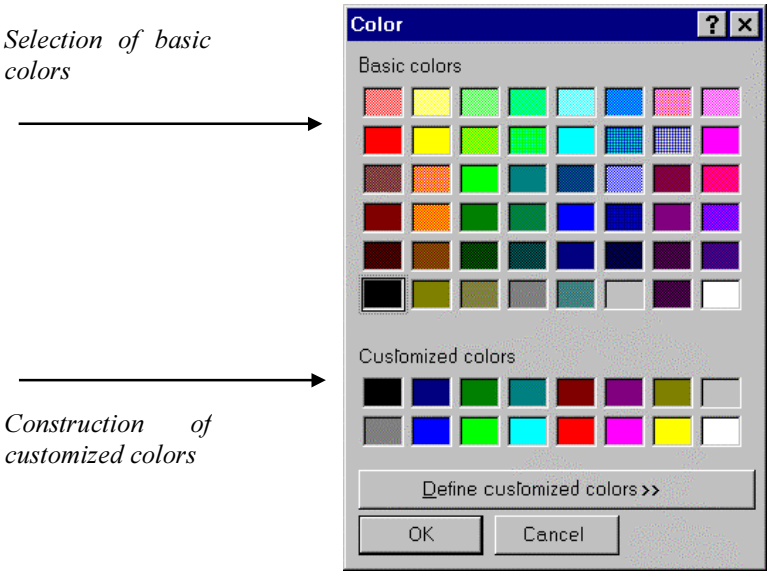
In this area, the orientation can be specified with which the variable will be printed inside the reference rectangle. The result of the alignment is shown in the figure below

orientation

horizontal horizontal upside-down from bottom to top from top to bottom

This option enables the contents of the variable to be printed on more than one line inside the reference rectangle. The option is very useful in cases in which the variable is of the string type. To activate this option LOGOVIEW NT will force top alignment and horizontal orientation.

This box enables the color to be selected with which the variable will be printed inside the reference square. To select a color, place the mouse cursor inside the square and press the left-hand mouse key; the Colors window will be displayed, from which the required color can be selected.



This window enables all the color characteristics to be set.

To confirm the selection, press the button. 

This button displays the standard Windows color selection window. From this window, select all the required color characteristics.

Press this button to activate the standard Windows font window to select the font with which the variable will be printed inside the reference rectangle.

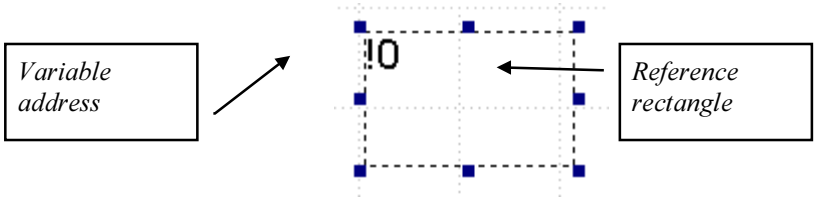
This window enables all the characteristics of the Windows font to be set that are to be used for printing the variable.

Press this button to confirm the selection. 

Press this button to cancel all the operations carried out in this window and to cancel the dynamic object setting.

Press this button to confirm all the operations carried out in this window and insert the dynamic object into the print area.

After the setting has been confirmed, the dynamic object, i.e. the variable, will take on the following shape inside the reference rectangle.



The variable is identified by its address. This consists of type

TIPO	*PREFISSO*
TRIGGER	**?**
BYTE	**!**
WORD	#
DOUBLE WORD	**:**
REAL	**@**

and offset. The size of the reference rectangle can be changed or moved or its characteristics can be changed to suit requirements by means of the arrow  tool. However, this is used only during the definition phase and will have no place in the printout.

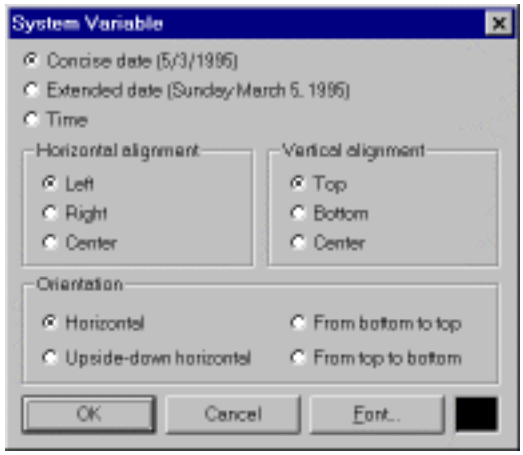
 5.1.4.6 *System variables*

The system variables are time and date, both in concise and extended format. This information is very useful for giving the print format a temporary location. System variables can be inserted in both page and form mode.

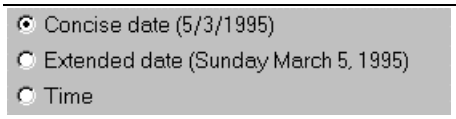
To insert a system variable, place the mouse on the button on the toolbar and press  the left-hand mouse key . The cursor will take on the form of a (thick) cross to show that the entry can be made. Place the cursor at the point in which you wish to insert the object and press the left-hand mouse key. Keep the left-hand mouse key pressed and drag the cursor in one direction until the reference rectangle has been given the required size. Then release the key.

The rectangle that has just been defined is only a reference rectangle. It will not be printed. It will contain the value of a system variable.

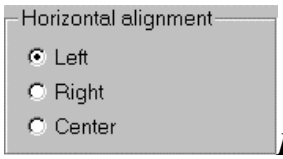
When this operation has been completed the ***System Variable*** window will be displayed.



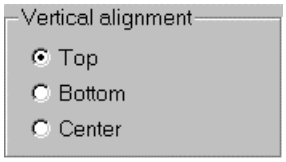
This enables all the system variable characteristics to be specified that will occur in the reference rectangle.



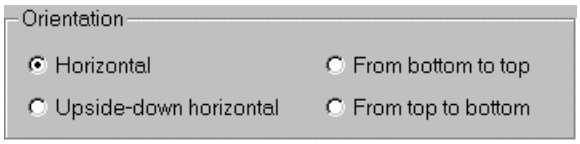
In this area specify the type of system variable that must be inserted into the reference rectangle.



In this area specify the horizontal alignment with which the system variable will be printed inside the reference rectangle.



In this area specify the vertical alignment with which the system variable will be printed inside the reference rectangle.



In this area, the orientation can be specified with which the system variable will be printed inside the reference rectangle.

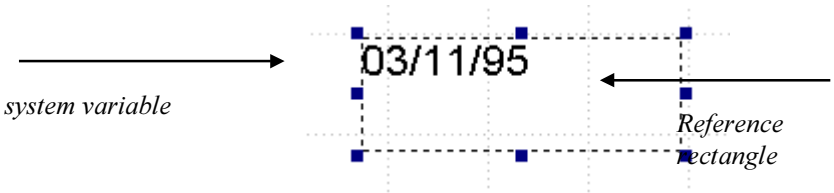
This box enables the color to be selected with which the variable will be printed inside the reference square. To select a color, place the mouse cursor inside the square and press the left-hand mouse key; the Colors window will be displayed, from which the required color can be selected.

Press this button to activate the standard Windows font window to select the font with which the system variable will be printed inside the reference rectangle.

Cancel ***Press this button to cancel all the operations carried out in this window and to cancel the system variable setting.***

Ok ***Press this button to confirm all the operations carried out in this window , and to insert the system variable into the print area.***

After the entry has been confirmed, the dynamic object, i.e. the variable, will take on the following shape inside the reference rectangle.



The size of the reference rectangle can be changed or moved or its characteristics can be changed to suit by means of the arrow . However, this is used only during the definition phase and will have no place in the printout.
The set system variable is only a reference. The actual value that it is given will depend on the method of making the setting. If the variable has been inserted into the form the date or time will be when the form was filled in (by means of the ***PRINTFORM*** instruction). If the variable is entered in the page, the date or time will be those when the first form on the page was filled in.

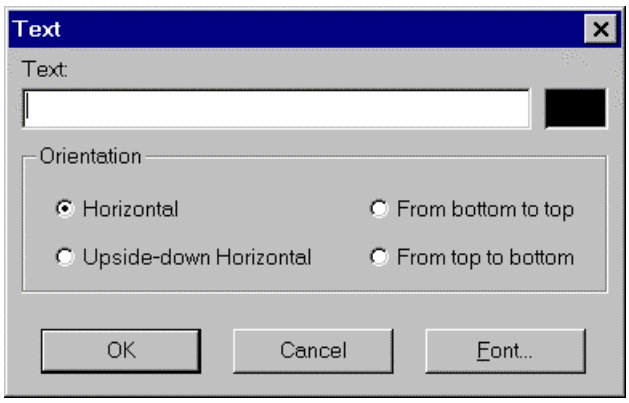
5.1.4.7 *Text*

The text is static and comprises a series of alphanumeric characters. There is no limit to text length. This type of static object is very useful for creating captions and explanations of the different parts that make up the print format. A text can be inserted both into the form and the page.

To insert a static text, place the mouse on the button on the toolbar and press the left-hand mouse key . The cursor will take on the shape of a rectangle to show that the entry can be made. Place the cursor at the point in which you wish to insert the object and press the left-hand mouse key.

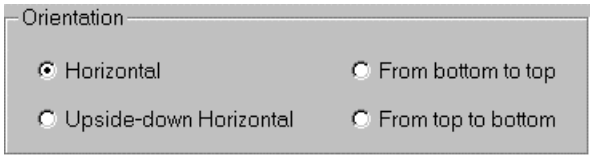
The size of the object will be automatically calculated by ***LOGOVIEW NT*** *on the basis of the number of characters that it contains.*

The ***Text*** window will be displayed.



In this window all the text characteristics can be specified that the user wishes to insert into the print area.

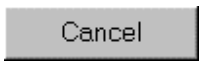
In this box, key in the text for the format. The text can consist of any alphanumeric character. To insert the text, place the mouse cursor inside the square and press the left-hand mouse key. This activates the keyboard: key in the required name.



Use this area to specify the orientation with which the system variable will be printed inside the reference rectangle.

This box enables the color to be selected with which the variable will be printed inside the reference square. To select a color, place the mouse cursor inside the square and press the left-hand mouse key; the Colors window will be displayed, from which the required color can be selected.

Press this button to activate the standard Windows font window to select the font with which the system variable will be printed inside the reference rectangle.



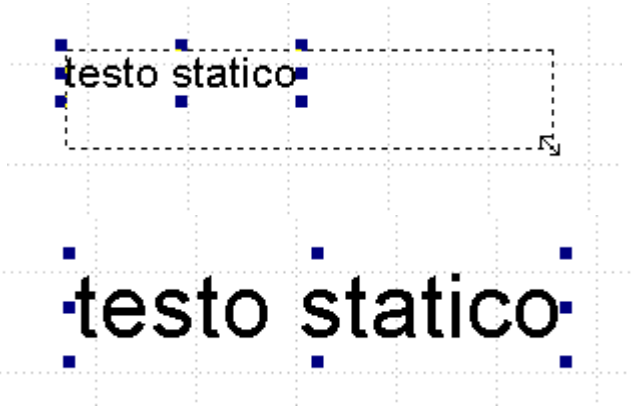
Press this button to cancel all the operations carried out in this window and to cancel the text setting.

Press this button to confirm the text setting in the print area.

The size of the telecommunications experts in the print area depends on the font size that has been selected.
After the text has been selected its size can be changed, it can be shifted or its characteristics can be changed to suit requirements by means of the arrow button.

static text

If the handles are used to change the size of the rectangle containing the text the font size will also be changed:

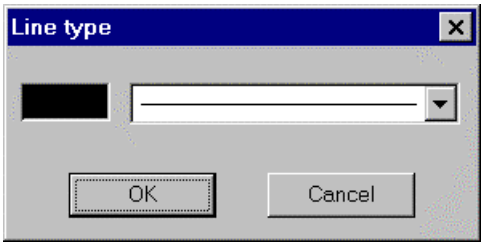


5.1.4.8 *Lines*

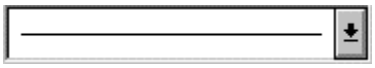
Lines are objects that can be positioned both on the form and on the page. Just like the lines, graphic objects are very useful for composing a legible print format.

To specify a line, place the mouse on the button on the toolbar and press the left-hand mouse key. The cursor will take on the form of a (thick) cross to show that the entry can be made. Place the cursor at the point where the line should begin and press the left-hand mouse key Keep the left-hand mouse key pressed and drag the cursor in one direction until the line has been given the required length and direction. Then release the key.

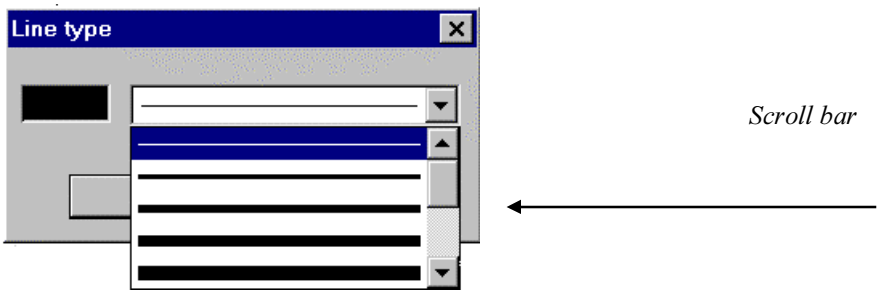
When this operation has been completed the ***Line type*** window will be displayed.



In this window the size and color of the line that has just been selected can be set.



In this box, set the thickness of the line that you wish to draw. To display all the available thickness, place the mouse cursor on the button and press the left-hand mouse key.



Next, select the required thickness. To scroll to the parts that cannot be seen, use the small scroll bar.

This box enables the color to be selected with which the line will be printed. To select a color, place the mouse cursor inside the square and press the left-hand mouse key; the Colors window will be displayed, from which the required color can be selected.

Press this button to cancel all the operations carried out in this window and to cancel the line setting.

Press this button to confirm all the operations carried out in this window and insert the line into the print area.

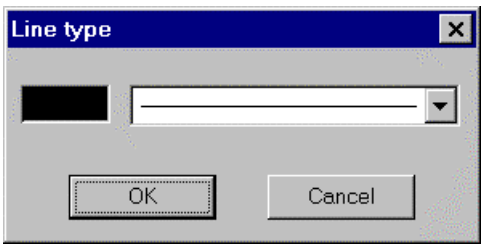
After the line has been selected its size can be changed, it can be shifted or its characteristics can be changed to suit requirements by means of the arrow button  .

5.1.4.9 *Rectangles*

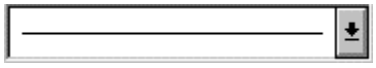
Rectangles are objects that can be positioned both on the form and on the page. Just like the rectangles, graphic objects are very useful for composing a legible print format.

To specify a rectangle, place the mouse on the button on the toolbar  and press the left-hand mouse key. The cursor will take on the form of a (thick) cross to show that the entry can be made. Place the cursor at the point where the rectangle should begin and press the left-hand mouse key Keep the left-hand mouse key pressed and drag the cursor in one direction until the rectangle has been given the required length and direction. Then release the key.

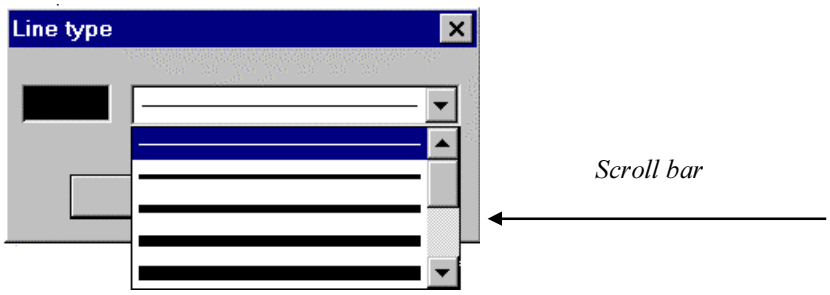
When this operation has been completed the ***Line type*** window will be displayed.



In this window the size and color of the rectangle that has just been selected can be set.



In this box, set the thickness of the line that forms the rectangle contour line. To display all the available thicknesses, place the mouse cursor on the button and press the left-hand mouse key.



Next, select the required thickness. To scroll to the parts that cannot be seen, use the small scroll bar.

This box enables the color to be selected with which the rectangle contour line will be printed. To select a color, place the mouse cursor inside the square and press the left-hand mouse key; the Colors window will be displayed, from which the required color can be selected.

Press this button to cancel all the operations carried out in this window and to cancel the contour line setting.

Press this button to confirm all the operations carried out in this window and to insert the rectangle into the print area.

After the rectangle has been selected it can be changed or moved or its characteristics can be changed to suit requirements by means of the arrow  .

5.1.4.10 *Images*

LOGOVIEW NT enables one or more images to be inserted in order to make the print format more vivid.
Small images are recommended. Even if the image is reduced in side when the field is reduced in size the actual dimensions will not change and the amount of memory occupied will not change and this can impair performance in terms of speed.
It is often better to use a drawing program like PAINTBRUSH to reduce the image and to then import it into **LOGOVIEW NT** later. The size-changing function can be used to make small adjustments to the format after it has been positioned.
The images in a format can be used as a background or a logo. They are therefore an important way of customizing the format. An image can be inserted onto both a form and a page.

To insert an image, place the mouse on the button on the toolbar and 
press the left-hand mouse key. The cursor will take on the shape of a rectangle to show that the entry can be made. Place the cursor at the point in which you wish to insert the object and press the left-hand mouse key.

The size of the image will be calculated automatically by ***LOGOVIEW NT*** *on the basis of the size of the image.*

The file standard will be displayed: ***Load image*** enables the image to be loaded onto a disk.

LOGOVIEW NT can read images in the formats most frequently used by graphic programs in a WINDOWS environment.
The following formats are recognized:

- ***SCR***	*Logoview*
- ***TIF***	*PageMaker (Aldus)*
- ***PCX***	*Paintbrush*
- ***BMP***	*Windows*
- ***TGA***	*Targa (Truevision)*
- ***GIF***	*PageMaker (Aldus)*

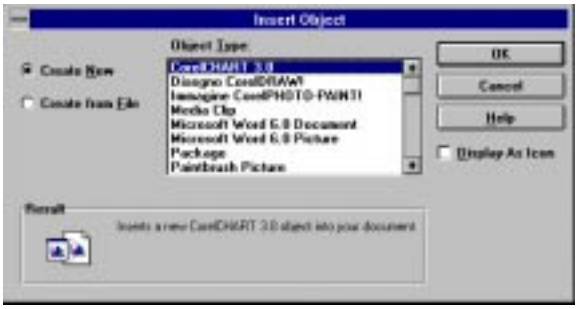
Of these formats, **LOGOVIEW NT** also recognises formats that have been compressed in a particular way. The ***TIF*** format is a complete implementation of version 5, for which up to 24-bit color images are used.
LOGOVIEW NT can also read the most updated versions of the ***PCX*** files**,** including the 24-bit files.
The ***TGA*** format is very useful for those who use programs for broadcast applications on TARGA and VISTA or ILLUMINATOR cards.
Finally, according to the standard the ***GIF*** format can manage image with up to 256 colors.
Regardless of the col9ors of the video card, there are no limits to the type of images that can be loaded or to their sizes. The important thin is that is that the memory is sufficient for working.
Remember that the more memory is installed, the more rapidly **LOGOVIEW NT** will be able to handle the images.

Once the image has been positioned its size can be changed or it can be moved to suit requirements by the arrow button.

5.1.4.11 *OLE objects*

LOGOVIEW NT enables an OLE object to be inserted. This is the document of an application that provides this type of service. In can be inserted into a WORD, EXCEL document printing format, and so on.
To insert an OLE object, place the mouse on the button on the toolbar and press the left-hand mouse key. The cursor will take on the shape of a rectangle to show that the setting can be made. Place the cursor at the point in which you wish to insert the object and press the left-hand mouse key.

The ***Insert Object*** window will be displayed.



This enables the OLE object that you wish to insert to be selected.

To confirm the entry, press

(for detailed guidance on the use of the Insert Object window or OLE objects, see the WINDOWS manual).

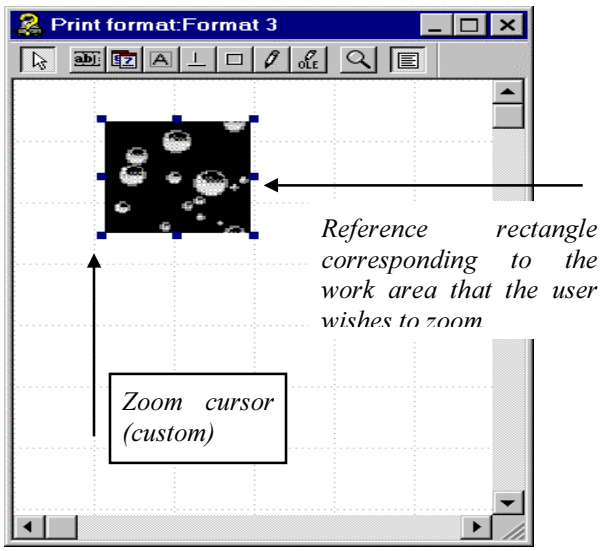
Once the image has been positioned its size can be changed or it can be moved to suit requirements by the arrow button.

5.1.4.12 *Zoom (Custom)*

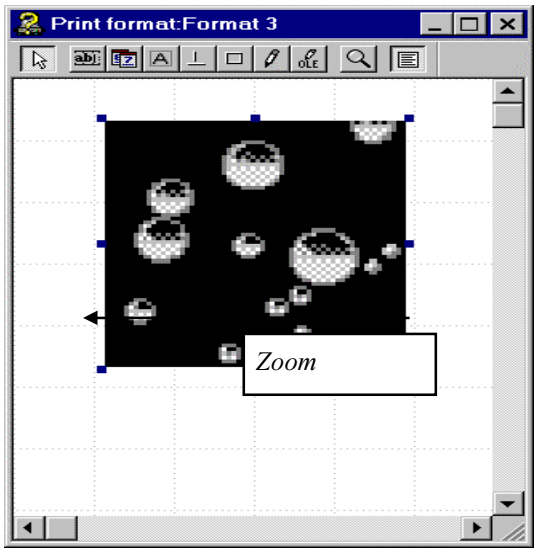
This tool enables parts of the work area to be zoomed both in page mode and in form mode. The object can be zoomed only once; to restore the work area to normal size, use a menu command. The zoom tool is known as a custom zoom because it is the user who decides by how much already zoomed objects should be enlarged. Details can therefore be zoomed to suit the user.

To carry out a zoom, place the mouse button on zoom button and press the left-hand mouse key. The cursor will take on the form of a (thin) cross, which shows that the object can be zoomed. Place the cursor on the point to be zoomed and press the left-hand mouse key. Keep the he left-hand mouse key pressed and drag the cursor in one direction until the reference rectangle has reached the required size.

In this case the reference rectangle shows the part of the work area that is to be zoomed.



When the key is released the specified zone will be zoomed:



5.1.4.13 *Modes*

This button enables the user to switch from page mode to form mode and viceversa. Current mode depends on button status.

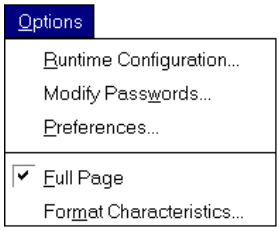
 button not pressed: ***editor in page mode .***

 button pressed: ***editor in form mode .***

To change mode, place the mouse cursor on the button and press the left-hand mouse key. The button will remain pressed (and the work area will remain in the same mode) until the left-hand mouse key is pressed again.

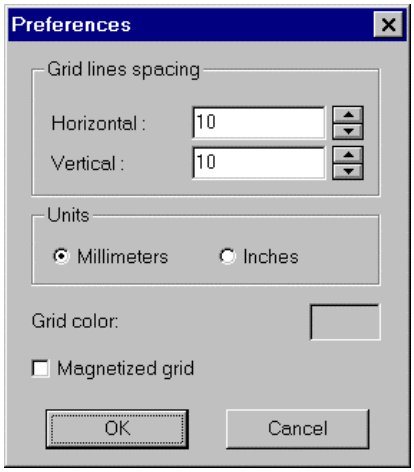
5.1.5 Grid

The useable work area is completely white and is full of equidistant dots. These dots are the work raster, i.e. the reference grid that enable the objects to be aligned during positioning.
This grid can also be magnetized. This means that when graphic objects are positioned in the print area their vertices are attracted, i.e. they are attracted magnetically to the nearest reference point.
The distance between grid points can be expressed in millimeters or inches and can be configured by the user.

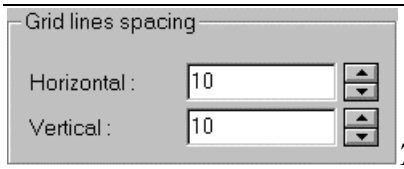


To set grid characteristics, select ***Preferences...*** from the ***Options*** menu**.**

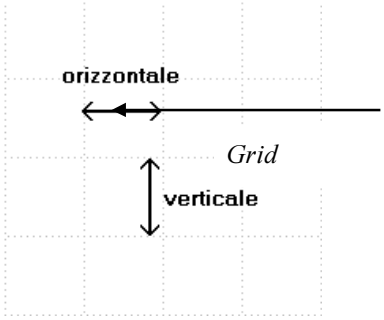
The ***Preferences*** window will be displayed



This window enables all the characteristics of the reference grid to be set.



This section enables both the vertical and horizontal spacing between grid lines to be set according to this plan.



The unit of measurement for this spacing is specified and selected in the section described below. The number can be set in two ways. The first way consists placing the mouse cursor inside the rectangle and pressing the left-hand mouse key. This action activates the keyboard for keying in the required value. Alternatively, the value can be increased or decreased by mans of the small scroll bar: click on the top arrow to increase the value and press the bottom arrow to decrease the value.

Set the unit of measurement used in the print area in this section. This section also enables the unit of measurement to be set with which the size of the grid is specified that is shown in the section just described ('Spacing between grid lines').

This box enables the color of the reference grid to be selected. To select a color place the mouse cursor inside the square and press the left-hand mouse key. The colors window will be displayed from which the required color can be selected.

Select this option to magnetize the grid. In other words, when graphic objects are placed in the print area, their vertices are attracted, i.e. 'magnetized' by the nearest reference grid. This greatly assists alignment operations.

Press this button to cancel all the operations carried out in this window and to restore the previous settings.

Press this button to confirm all the operations carried out in this window and to update the work area with the new settings.

5.1.6 Editing

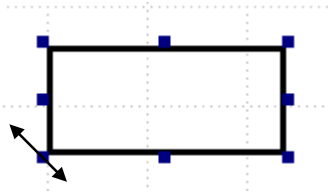
As we have mentioned, a grid is used as a reference for aligning the different objects. There are also some editing options that enable objects to be aligned and moved, either individually or in groups. The ***Edit*** menu contains a series of commands that have been designed to enable the objects to be arranged in a rational and simple manner on the format that is in keeping with the philosophy of the packet.

5.1.6.1 *Selection*

First, select the object to be modified.
To select an object, place the mouse cursor on the object and press the left-hand mouse key.
The handles mentioned previously will appear around the selected object to indicated that it has been selected.

5.1.6.2 *Modification*

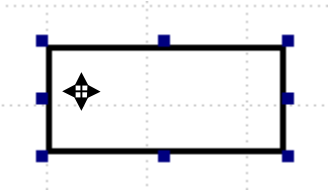
In addition to highlighting selected objects the handles enable them to be modified. Place the cursor on any of the handles to make it change shape: the changed shape will indicate which type of modification can be carried out.



By placing the cursor on the vertices of the handles and dragging them (keeping the left-hand mouse key pressed) the two sides that make up the vertex can be enlarged or narrowed. If one of the handles at the center of the sides is selected, the side can be set at right angles to the side. This means that the dimensions of any of the objects can be modified.
Always remember that modifying the dimensions of static text objects automatically modifies font dimensions.

5.1.6.3 Shifting

If the cursor is moved around the selected field, when the mouse key is pressed the cursor will take on the form of a four-pointed arrow. This means that when the mouse if moved the object underneath it will also be moved.



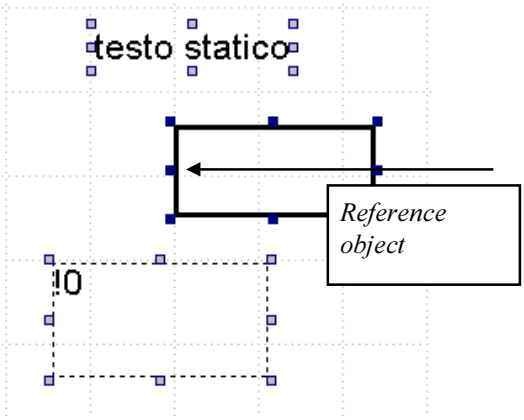
Remember that if the grid is magnetized, shifts and size changes will be influenced by the grid's multiple shifts. To fine adjust, just disable the magnet in the window that can be called up by selecting ***Grid*** from the ***Options*** menu.

5.1.6.4 *Modification of characteristics*

In order to modify the parameters of the different static and non-static parameters of the different objects, just click twice with the mouse inside the object or choose ***Characteristics*** from the ***Edit*** menu. This operation makes ***LOGOVIEW NT*** again display the window with the options for the object in questions so that the options can be varied.

5.1.6.5 *Multiple selection*

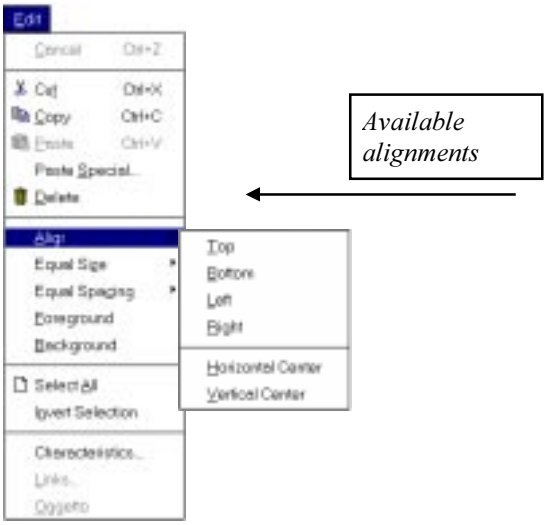
More than one object can be aligned and shifted simultaneously.
First, select the objects to be modified. It is sufficient to select the first object, keep the ***SHIFT*** key pressed and then select the other objects. Keeping the ***SHIFT*** key pressed enables several objects to be selected. In this situation, during the selection of the different objects the last to be select will have full handles whilst the others will be highlighted by empty handles.



This distinction enables the operator to tell at a glance which of the selected objects is the reference object. This is particularly useful for aligning because all the objects are aligned on the reference object. If, after selecting the different objects, you think that another field should be used as a reference, just place the cursor on the object that you have selected and select it without pressing the ***SHIFT*** key**.** Note that the handles of this object will fill up and the handles of the previous reference object will become empty.
To move the selected objects, the procedure is virtually the same as for moving a single object. This function also enables a group of fields to be moved whilst maintaining their positions to one another.

5.1.6.6 *Alignment*

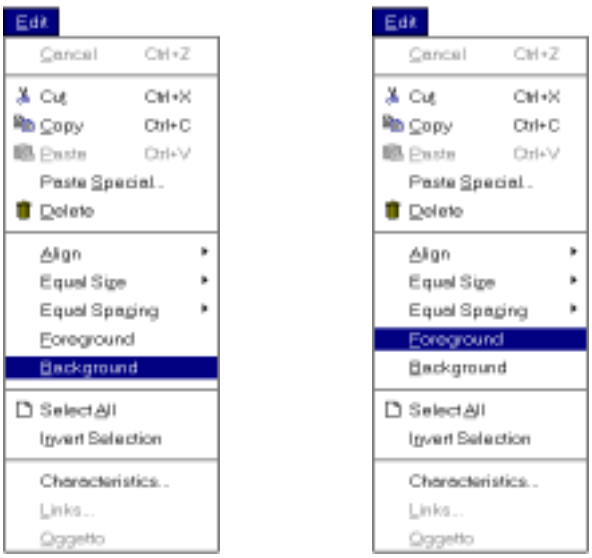
To align, after selection, open the ***Edit*** menu and select ***Align.***



This operation will open a six-option menu: the first four enable alignment on one of the four sides of the reference object whilst the last two enable the selected fields to be aligned on the center.
Selecting one of these options will cause ***LOGOVIEW NT*** to immediately run the command.

5.1.6.7 *Selecting superimposed objects*

Selecting an object below another one is another important topic. In a typical case a text is selected that is framed by a rectangular contour that is been added subsequently. Each attempt to select the field will mean that the rectangle is selected. This obstacle can be avoided by keeping the key ***CTRL*** pressed whilst clicking on the rectangle. In this way the object ***below*** will be selected. An alternative system would be to select the rectangle and then choose the command ***Background*** from the ***Edit*** menu. In this way the rectangle will take on a background position in relation to the field that it previously covered.
The **Foreground** command has the opposite effect: it places an item in the foreground that was previously in the background.



5.2 USING PRINT FORMATS

As we have endeavored to show in the previous paragraphs, print formats are the only way of organizing variables printouts.
Format construction occurs only during the ***LOGOVIEW NT*** development phase. During runtime, the instructions are provided that enable the formats to be filled with the values of the variables.
These two instructions enable the print formats to be managed:

PRINT FORM fills a form with the values of the variables

FLUSH FORM empties the print queue by printing all the pages.

As soon as a page fills up it is positioned in the print queue in order to be sent to the printer. Remember that each format has its own print queue, the length of which may be different.

5.2.1 PRINT FORM

The *Print Form* instruction fills a form of the specified format. The page containing the form is printed immediately only if the following conditions are fulfilled: the form is the last one on the page and the page is therefore full. The page that has just been filled fills up the print queue. The page will then be printed on the default printer. The settings will be entered in the window ***Print format characteristics.***

PRINT FORM INT form

form: *print format number*

5.2.2 FLUSH FORM

The Flush Form instruction empties the print queue by printing all the pages waiting in the print queue.
The print can be re-directed to a printer that is different from the default printer.

FLUSH FORM INT form, INT op, VAR INT err [,STR printer]

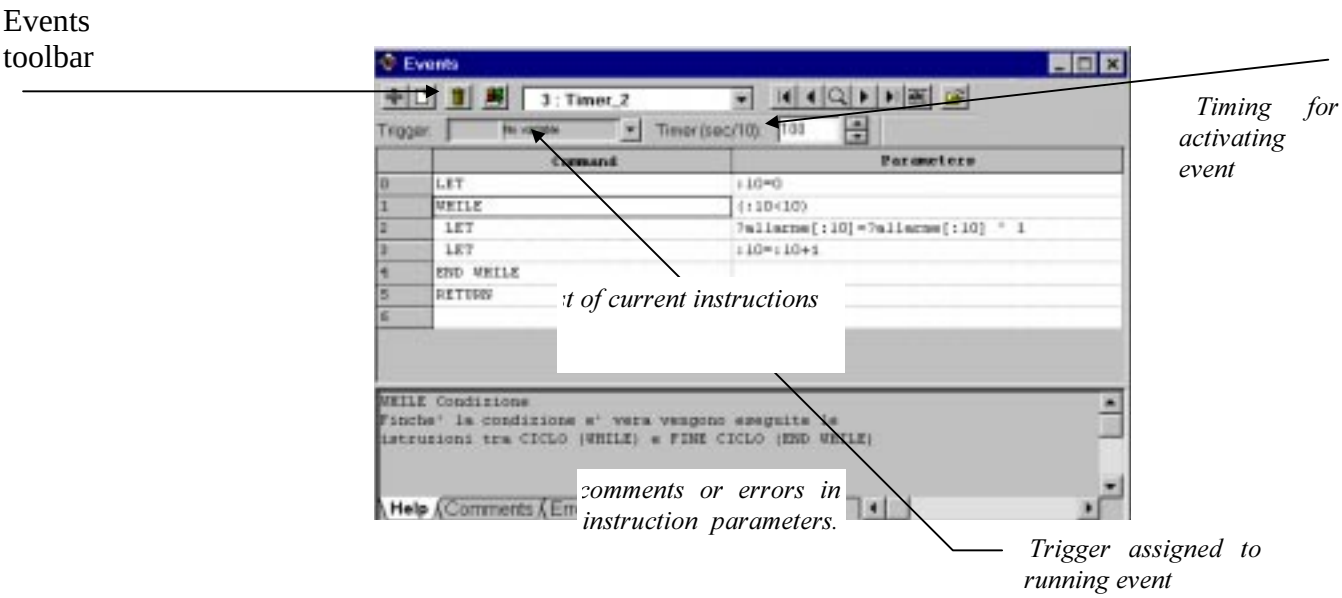
form: *print format number*
op: *Operation*
0= Print on default printer
1= Print on printer selected as additional parameter
2= Print on printer selected by operator
3= Eliminate buffered pages
er: *Error variable (0=Ok)*
-1: Incorrect parameters
-2: Temporary print file cannot be created.
-3: Required printer cannot be opened. Check that printer exists and that name has been entered correctly.
-4: Printing cannot be started, check that the printer is connected and on-line. .
-5: Temporary file cannot be opened to print current page

6. Events

LOGOVIEW NT provides an internal programming language that enables the application events to be created. The events are programming units (similar to procedures) that can be used in parallel by exploiting ***LOGOVIEW NT***'s real multitask architecture.
This chapter will illustrate the operations of the events editor that is integrated into Logoview. For further details of LPE programming, see programming manual and the instruction guide.

6.1 EVENTS EDITOR

To access the events editor, press  on the *Main toolbar* of the instruments by activating the corresponding menu command.



The window is divided into three areas: toolbar, list of event instructions and messages area.

6.1.1 Toolbar

The toolbar shows the most important commands for modifying events. These commands are duplicated in the menus.

This button enables an instruction to be entered into any line of the event and is the equivalent of using the “**Enter"** command from the “**Edit**” menu.

This button selects all the instructions in the current event and is the equivalent of using the “**Select all"** command from the “**Edit**” menu

This button deletes all the selected instructions and is the equivalent of using the “**Delete"** command from the “**Edit**” menu.

This button enables the event's parameters and local variables to be configured and is the equivalent of using the “**Parameters & Variables"** command from the “**Edit**” menu.

This list contains all the events defined for the application. To display another event, just select it from this list.

This button displays event 0. This is the first defined event and is the equivalent of using the “**First event**" command from the “**Options**" menu.

This button displays the event preceding the currently displayed one and is the equivalent of using the “**Previous event**" command from the “**Options**" menu.

This button enables an event to be searched for on an object and is the equivalent of using the “**Search event**" command from the “**Options**" menu.

This button displays the event that follows the currently displayed one and is the equivalent of using the “**Next event**" command from the “**Options**" menu.

This button displays the last event, and is the equivalent of using the “**Last event**" command from the “**Options**" menu.

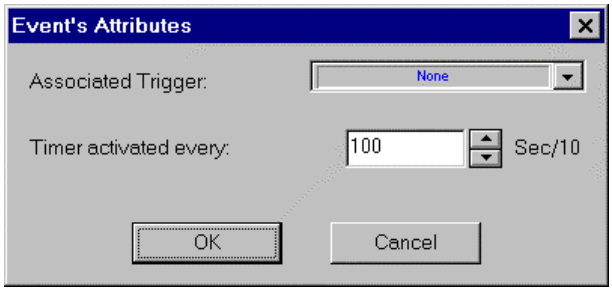
This button enables the label to be defined for the current event and is the equivalent of using the “**Modify label**" command from the “**Edit**" menu.

This button enables the number of events current in the application to be set and is the equivalent of the “**Events**” command from the “Edit" menu.

6.1.2 Attributes toolbar

This event can be assigned to a trigger; when the trigger changes status the event is activated. This function is useful in all those cases in which a sequence of instructions have to be carried out if a condition arises that causes a trigger to change status.
In the same way, each event can be activated at set intervals. The minimum interval is a tenth of a second.
The attributes toolbar enables the toolbar to be selected that is asisgned to the event and to set the timer to activate the timed event. The timer must be set in tenths of a second, so the number 10 must be entered to set an interval of a second. Both these attributes are optionals and must be set only if required. The event 0 is activated by Logoview at the start of runtime, cannot be assigned to a trigger and cannot be timed.

The settings that are permitted by the attributes toolbar can also be made by selecting "**Modify attributes**" from the "**Edit**" menu. The window "**Events's attributes"** will open. This contains the same toolbar fields.



6.1.3 Event writing

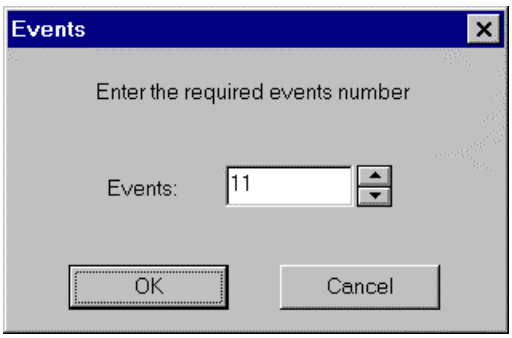
Event writing and modification occur in the list in the middle of the window. This list provides editing functions such as inserting and modifying instructions and parameters, cutting/pasting of entire lines or only individual parameters and multi level cancellation and restoration. The instructions list is divided into three columns. Each column can be modified just by dragging the line that divides the columns in the columns headings.

	Command	Parameters
0	LET	:10=0
1	WHILE	(:10<10)
2	LET	?allarme[:10]=?allarme[:10] ^ 1
3	LET	:10=:10+1
4	END WHILE	
5	RETURN	
6		

A double click on the lines dividing the columns automatically changes the amount of space occupied by the text.
The grid lines can be highlighted by clicking on the first column on the left. If "Shift" or "Ctrl" are kept pressed whilst the column is selected, several lines at a time can be selected.

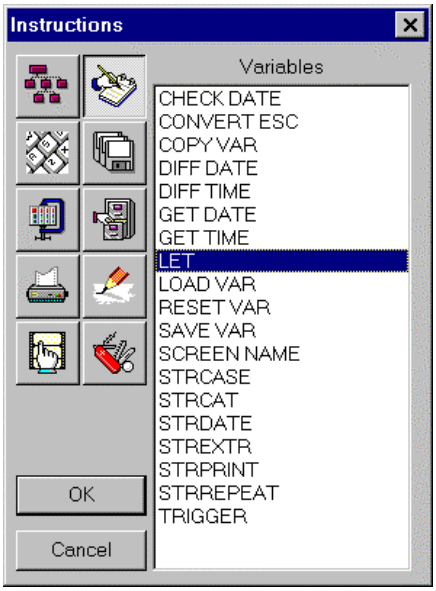
	Command	Parameters
0	LET	:10=0
1	WHILE	(:10<10)
2	LET	?allarme[:10]=?allarme[:10] ^ 1
3	LET	:10=:10+1
4	END WHILE	
5	RETURN	
6		

Once the lines have been selected they can be deleted or copied by using the commands on the main Logoview toolbar or the commands from the "**Edit**" menu.
The quantity of events can be set by the button on the toolbar or by "**Events**" from the "**Edit**" menu. Eithe4r command will open the following window, in which the number of events can be modified:



6.1.4 Adding or modifying instructions

To add an instruction just place the mouse cursor on the last line and press the left-hand mouse key. To modify an existing instruction, just clock on the required instruction.
Both these actions display the instructions window. This lists all the instructions that are current in ***LOGOVIEW NT***. If an instruction is being modified in the window, the current instruction will be highlighted.



This window contains all the ***LOGOVIEW NT*** instructions, sorted by category:

 ***Flow:*** This category contains all the event-flow instructions; it comprises all the instructions for creating cycles, conditions, etc.

 ***Variables:*** This category contains all the variables instructions; it comprises all the instructions for assigning, initializing, string-chaining, etc.

 ***User interface***: This category contains all the operator interface instructions: it comprises all the instructions for managing alarms, user inputs, passwords, etc.

 ***Files***: This category contains all file management instructions; it comprises all the instructions for creating or deleting files, managing the records of the historical archives, etc..

 ***PLC***: This category contains all the instructions for managing communications with the field; it comprises all the instructions for reading and writing on linked servers.

 ***Database***: This category contains all the database instructions; it comprises all the instructions configured database format instructions: 'Create'; 'Add'; 'Search', etc.

 ***Printer***: This category contains all print instructions; it comprises all the instructions for printing configured formats.

 ***Graphics:*** This category contains all graphics instructions; it comprises all the instructions drawing and managing boxes.

 ***Animations:*** This category contains all animations instructions: MCI, sprite etc.

 ***Outside commands***: This section contains all the commands added by ***LOGOVIEW NT*** extensions.

If the option "Enable ASCII editing of instructions" is activated in the preferences window the window with the instructions will not open automatically. It will be necessary to enter the required instruction manually. Nevertheless, even in this case the instructions window can be opened by pressing the keys CTRL+F1 at the same time.
After entering the mnemonic instruction code Logoview positions the cursor on the parameters box. Key in the parameters and press ENTER to complete the instruction modification phase. Instead of using ENTER use the cursor keys to continue with the modification of other instructions. during the modification of instruction parameters in the bottom of the window a help text will be displayed to remind the user of the parameters required by the instruction. To insert an instruction among other instructions, first highlight the line in front of which you wish to place another instruction and then select "**Insert**" from the "Edit" menu or  on the toolbar, a new line will be inserted automatically and the window will open for inserting a new instruction.

6.1.5 Errors

When an instruction is modified, Logoview checks that the parameters are correct. If they are not correct, Logoview reports an error. Logoview uses the following error messages:

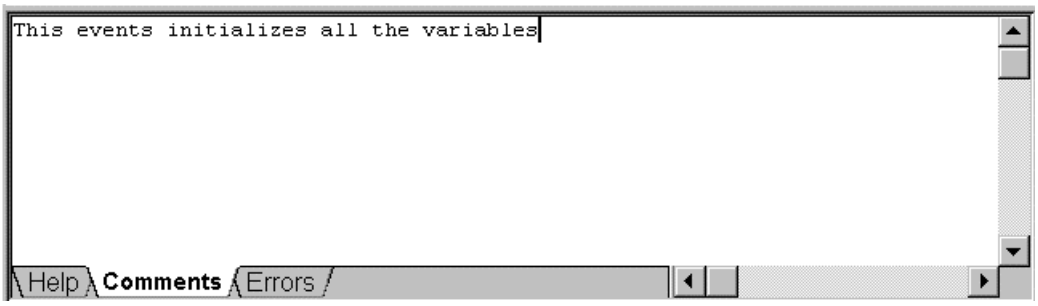
Errors	Notes
Parentheses not symmetrical	Closing parenthesis ")" missing.
Syntax error	This error is not reported when Logoview is unable to identify an error with accuracy and generally indicates that an

	incorrect syntax has been used to write the parameters.
Variable not defined	The variable indicated in the message has not been found amongst the general or the local variables.
Inverted commas not symmetrical	A " is missing at the end of a string.
Variable requested	A 'numeric expression' has been used in a variable that requires only one variable.
Square closing parenthesis missing	In one of the parameters the square closing parameter "]" is missing.
Function different from requested type.	A function has been used that returns a REAL value inside an expression that requires INT values, e.g. the index expression within square parentheses.
Parentheses are required after the function	When a function requires parameters, round parentheses are required after the name of the function: e.g. ABS(1.1) and not ABS 1.1
REAL is too big or too small.	A constant that is outside the permitted range of values for REAL variables has been used.
STRING required	A numeric expression has been used in a parameter that requires a string.
$$ is not supported by Logoview NT	The operator $$ is not supported by Logoview NT
Numeric variable required	A numeric expression or string is required in a parameter in which a NUMERIC variable is required..
STRING variable required	A numeric expression or string constant has been used instead of a STRING variable.
Numeric expression required	A string has been used in a parameter in which a numeric expression was required.
String expression required	A numeric expression has been used in a parameter in which a string was required.
Parameters missing in function	Fewer parameters than required have been specified in function.
Memory insufficient for compilation	Memory insufficient for normal Logoview operations.
Parameter assignment not permitted	It is not permitted to assign a new value to one of the event parameters.
Incorrect separator character.	An unknown character has been found at the end of a parameters. Use only a comma to separate parameters. .
Insufficient number of parameters	Insufficient number of parameters entered in relation to those required by the instruction.
Assignment symbol '=' missing	Assignment symbol missing from LET instruction..
Label not defined	Reference has been made to undefined event label.
Unrecognized identifier	Identifier has been used that is not recognized as a variable name or as a function.

6.1.6 Information area

At the bottom of the Events window there is a multifunctional area that enables:
A Help text to be displayed during instruction parameters modification.

All syntax errors to be displayed that were generated whilst instructions were entered. This window also displays the errors generated during ASCII loading of events.
Enter comment for current event



To change the type of information to be displayed just click on the label at the bottom of the window. For example, click on “Comments” to access the comment on the current event.

6.1.7 Search and replace

The events editor enables strings current in the instructions parameters to be searched for and replaced. For example, it is possible to replace all the instances of the variable #TEST with :PROVA. The “Edit” menu contains the commands “**Search**”, “ **Search next**” and “**Replace**”, which enable items to be searched for and replaced.

6.1.8 Cut and paste

The events editor enables both instructions and instruction parameters to be cut and pasted. The “Edit” menu contains the commands “**Cut**”, “**Copy**”, “**Paste**” (duplicated on the main toolbar of Logoview) that enable these operations to be carried out on the highlighted instructions. To copy only the parameters of an instruction, modify the parameters: highlight them with the cursor, press the keys CTRL+C, move to the destination cell and press CTRL+V.

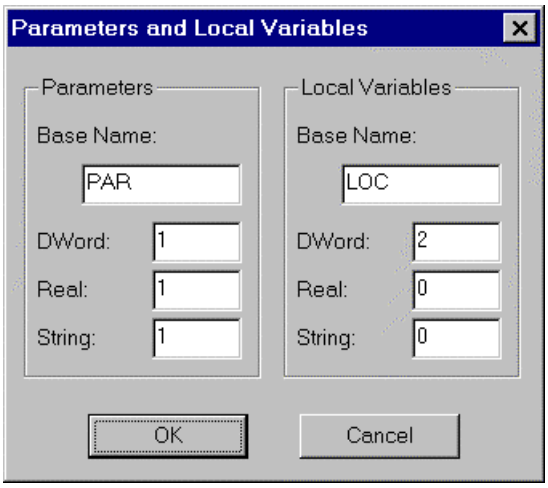
6.1.9 Cancel/restore

The events editor enables all the modifications to be canceled and canceled operations to be restored. All modification operations carried out on instructions and current event parameters can be canceled/restored until another event is accessed. If a current event is modified editing operations carried out until that moment cannot be canceled. To modify the last operation, select "**Cancel"** from the “**Edit**” menu. To restore the last canceled operation, select “**Restore"** from the “**Edit**” menu.

6.2 PARAMETERS AND LOCAL VARIABLES

Each event enables local variables to be defined. These variables can be used only in the event in which they have been defined and their value is valid only as long as the event runs. At the end of the event, the contents of the local variables is lost. At the start of each event the local variables of that event are zeroed. Only DWORD, REAL and STRING local variables can be defined.

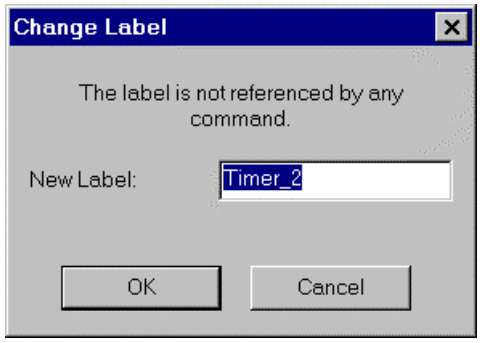
Each event can be called as a subroutine to which parameters can be given. In order to correctly set parameters they must not only be specified when the SUB or CALL instruction is called up but must also be configured on the called-up event. The parameters can be DWORD, REAL and STRING. The parameters cannot be modified by the called-up event. The only way in which the called-up event can return a result is by means of the instruction RETURN.
Local variables and parameters can be called by a name that is constructed from a common base followed by an order number. For example, if the common base for the variable is LOC the first local variable will be LOC0, the second LOC1 and so on.
To configure local variables and parameters click on  or activate "**Parameters and Local Variables**" from the "Edit" menu to open this window:



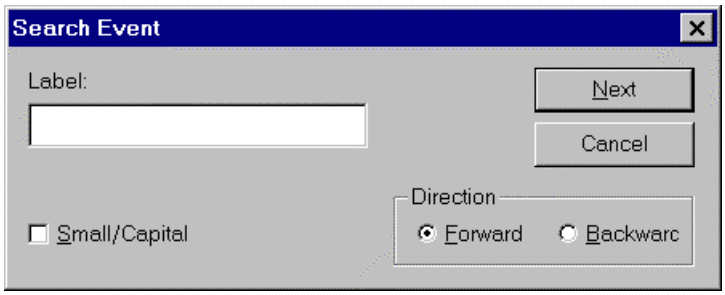
This window enables both the base name for the local parameters and variables and the quantity of local parameters and variables to be set for each of the permitted types. No more than 255 variables can be configured per type. There cannot be more than 16 parameters and the maximum length of the name must be no longer than 6 characters.

6.3 EVENT LABEL

In order to permit more rapid identification and greater readability of the subroutine calls, each event is assigned a label. The label must be unambiguous: no two events can have the same label and the label must not contain spaces or characters that are not alphanumeric.
To modify the label of the current label click on  or select "**Change label**" from the "Edit" menu. In both cases the following window will open, from which the required label can be set.



Use  or "**Search Event**" from the "Edit" menu to search for an event with a given label. Activate the search commands to open the window:



Write the label ino this box. Just the first part of the label can be written. In this way, all the events that have that have a label beginning with the same substring can be found.

If this box is active the search will be case-sensitive. If it is not active no distinction will be made between small and capital letters. In other words, "ABC" will be treated the same as "abc".

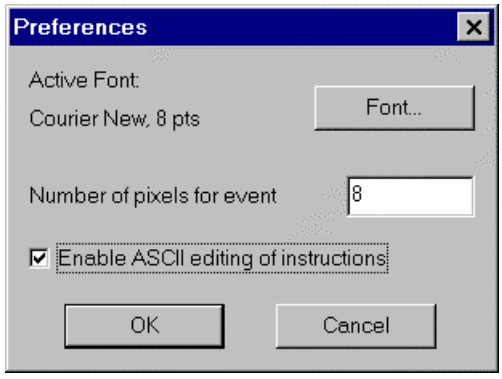
These selection boxes enable the search to be continued in events after or before the current event. In all cases, the search starts with the current event.

This button activates the search. If the label has been found in the window underneath, the corrsponding event is displayed.

This button enables the window to be shut and the editor to return to Events.

6.4 PREFERENCES

The "**Preferences**" item from the "**Options**" menu enables events editor settings to be modified:



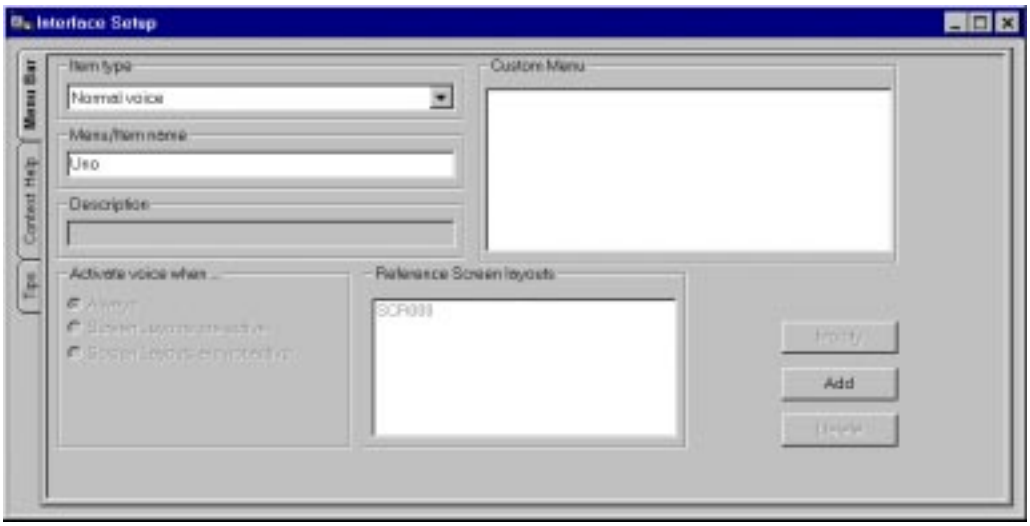
This section enables the font to be modified that is used to display the events. The “Font” button enables the fonts standard window to be opened so that a different font from the current one can be selected.

This section enables the number of pixels to be set by which the instructions at each indentation level shoiuld be moved to the right.

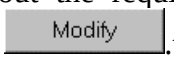
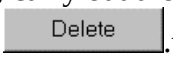
This box ASCII editing of instructions to be enables/disabled. After the names of the instructions have been selected they must be entered manually whilst the instructions selection window must be opened whilst it is inactive.

7. Interface setup

Press the left-hand mouse key on this button  to open the **"Interface setup"** window. This consists of three sections: **"Menu bar"**, **"Context Help"** and **"Tips"**, each one of which performs a precise function that we shall see later. In the window below, certain aspects of the Logoview interface can be configured during runtime.

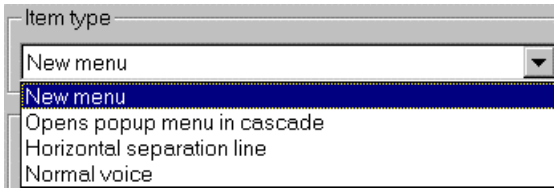


7.1 MENU BAR

The different controls in this section enable the user menu items that appear on the Logoview menu bar during runtime to be added, modified or deleted. To add a new menu, select the branch in which to insert a new item from the "User menu composition" tree.
From the different window sections (curtain menu, text boxes) select the setups for the object that is to be added. After it has been configured to meet operator requirements, click on  .to modify an existing menu item, select the item from the **"User menu composition"** tree, carry out the required operations in the different sections of the window and then click on  .to delete an existing menu item, select the item from the **"User menu composition"** tree, carry out the required operations in the different sections of the window and then click on  .to configure the actions that an item must perform during runtime, click the left-hand mouse key twice on the item highlighted in the "**User menu composition"** tree. This option is available only for the **"Normal items"** as other items would be of no use.
In the **"Menu bar"** section the user menus are configured that are part of the Logoview bars during runtime and which combine with those current in the program. Menu functions are the same as those of the buttons on the layouts. In other words, they enable screens to be changed or events to be run.

7.1.1 Item Type

Select the menu **“Item type”** from this section that must be added or modified.
Four different configurations are available.

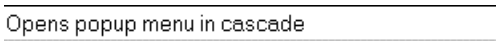


New Menu

. This option appears on **"User menu composition"** tree with the icon. 

.
When the item **"New menu"** is selected it will be noted that only the curtain menu "Menu name/item name" remains active.

Open a cascade popup menu



This option enables the user to set a menu item that opens a cascade menu, i.e. a menu item next to which there is the symbol ▸ (this means that a submenu is current) and to display the contents of the submenu. This is displayed in the **"User menu composition"** tree by the icon. .
If the item **"Opens popup menu in cascade"** is chosen only the curtain menu **"Menu name/ item name"** remains active.

Horizontal separation line

This option enables a separation line to be inserted inside the menu that is made up of different items and commands. The separation line can also be inserted inside superimposed menus.
Inside the window's composition space the configured option is displayed as .
If the item **"Horizontal separation line"** is selected no other option remains active.

Normal Voice

This option enables a single command to be inserted inside the menu or a series of commands to be inserted into the superimposed menu. After selecting the command in the box **"Menu / item name"** (see below) key in the name to assign to the command and in the box **"Descriptive string"** (explained below) key in the description of the command action. Inside the window's composition space the configured option is displayed as .

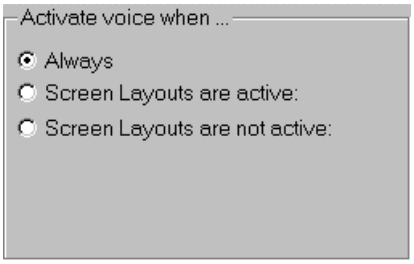
7.1.2 Menu Item / Item name

After selecting a command, in the **"Menu \item name"** box key in the name to be assigned to the menu or to the command that concerns you.
Inside the window's composition space the configured option is displayed as Uno .

7.1.3 Descriptive String

This section enables the developer to insert a string that describes the menu item that is being configured. This will be displayed in runtime in the status bar when the operator selects the item to which this option has been assigned. The descriptive string displays a short description that the user may find useful.

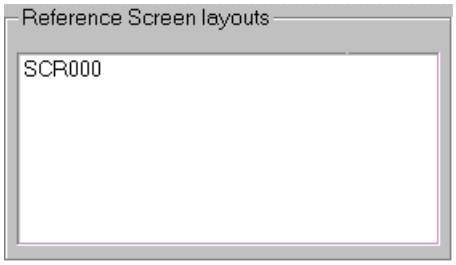
7.1.4 Activate Item



This section enables one of the three above options to be activated for each configured item.

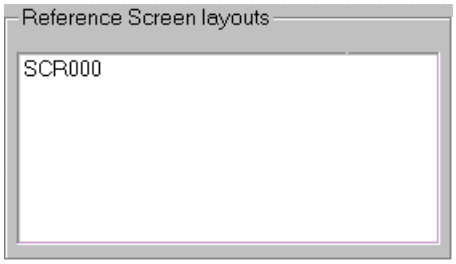
Always is selected by the developer if he feels that the highlighted menu item should be enabled in all application layouts.

Screen Layouts are active: is selected by the developer if he feels that the highlighted menu should be enabled only for layouts that he defines in the section **"Reference screen layouts".**



Screen Layouts are not active: is activated by the developer if he feels that the highlighted

menu item should be disabled for the screen layouts that he defines in the section **"Reference screen layouts".**



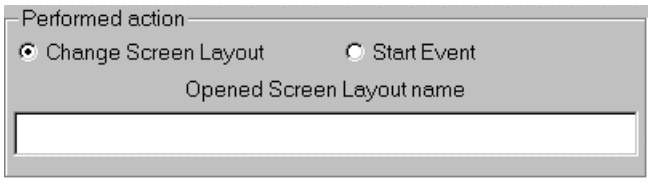
7.2 CONFIGURE MENU ITEM

The following dialog window enables the command to be configured that must activate another event. To open the dialog window:
place the cursor on the selected item inside the composition window and press the left-hand mouse key twice.

This will open a new dialog window in which to configure the required event.

In the part dedicated to the logic configuration setting there are the following options:

7.2.1 Action assigned to button



In this area select the actions assigned to activation of the button during runtime.

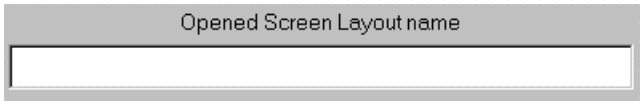
Change screen layout

If this option is selected, when the button is activated during runtime a new screen will be loaded on the video. If this option is selected when the button is pressed during runtime a new layout will be loaded onto the screen.

Start event

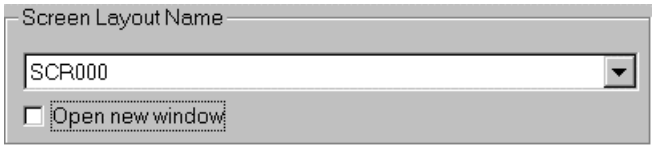
If this option is selected, when the button is activated during runtime an event configured for the application will be run.

Opened screen layout name



In this box key in the name of the screen that you wish to open when the command is run.

7.2.2 Screen Layout Node



Select this option to open a cascade menu from which to select the screen layout node that you wish to open when the button is activated during runtime. Any open screen layout node that is selected from the list is a screen layout that has been configured for the application inside the Layouts list of the Basic settings window, see chapter **Errore. L'origine riferimento non è stata trovata.**

Open new window

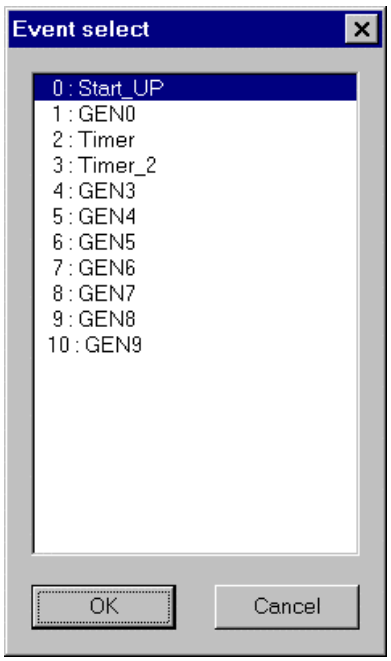
If this option is activated, when the button is pressed by the operator during runtime a new window for the command will open. This window contains the graphic objects that were inserted during the development phase.

7.2.3 Starting Event / Event at exit / Starting or exit event parameter

If the change of a screen is selected in the configuration in these boxes key in the event that you wish to start when a screen layout is opened (Entry event) and the event that you wish

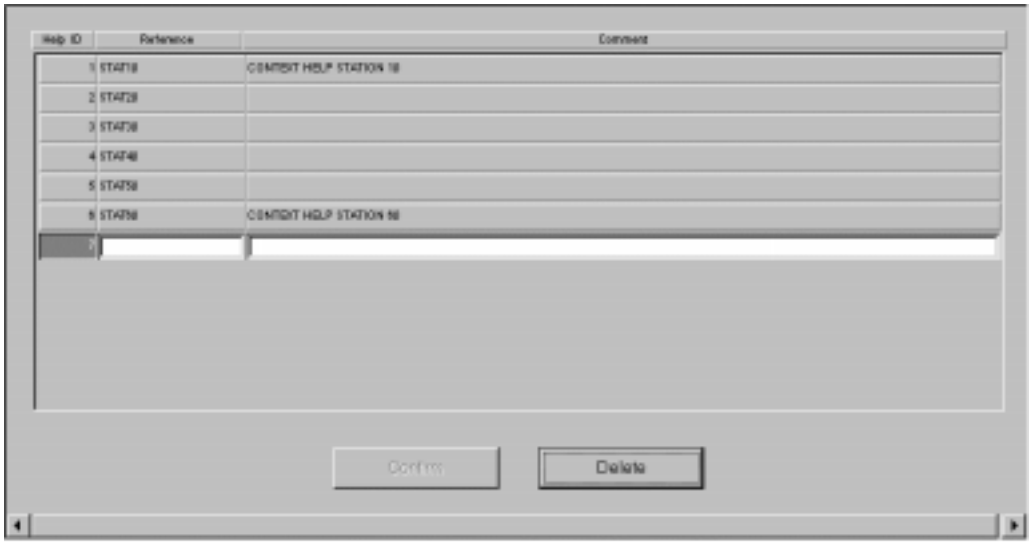
to run when the screen layout is closed down (Exit event).
If an event has been configured to start when a button is activated, only the configuration of the start event will be available in this box.
To select the events, place the mouse cursor on the event Name box and press the left-hand mouse key. This opens a cascade menu from which to choose the event type.
The value to assign to the parameter boxes depends on the application and on the manner of writing the event. Generally, a value should be set that is given to the event during runtime. In this way the programmer can determine running of the event at the moment in which the operator calls it up.

Event select window where there are all the Events for the current application ⇨



7.3 CONTEXT HELP

The **"Context help"** section enables the reference Ids to be configured for using a Context help during runtime.



Logoview enables the application to be configured in such a way as to enable the user to obtain context-sensitive help on the screens used during runtime. Standard Windows Help is used a precise procedure must be followed in order to use it.
In theory, to write a Help it is sufficient to use a word processor that can save the files in .rtf format (e.g. MsWord); if the Microsoft instructions are followed, a Help file can be created with help of a word processor and the Help Compiler distributed by Microsoft.
Nevertheless, it is much easier and convenient to use a Help file editor: there are a number of tools commercially available that can satisfy all requirements. In general, they can also be used to write the Help files of Logoview applications.
One of the basic concepts of the Windows Help system is that the topics can be called up only by numeric Ids. But as it is inconvenient to use such numeric Ids the developer can assign an alphanumeric reference to a numeric ID. With this system the programmer can use a mnemonic name that it is easy for him to remember whilst the Help engine will be sent the relative numeric ID.
The aim of the window shown above is to create associations between the numeric ID and the name given by the programmer to the object because it must be used in other parts of Logoview to call up Help. For example, help references can be configured directly on the screens by means of the icon  on the screens toolbar (see "Context help" on page 119 of the manual "Guide to Logoview NT"). When the application is saved Logoview will generate a file with the extension .lhp. Here is an example of this type of file:

```
//************************************
// File for HELP compilation
// Generated by LOGOVIEW NT
// Application :E:\SUPERVISIONE\LOGONT\Test\Test
//************************************
STAZ_1      1
STAZ_2      2
STAZ_3      3
```

```
STAZ_4        4
STAZ_5        5
STAZ_6        6
STAZ_7        7
STAZ_8        8
STAZ_9        9
STAZ_10       10
STAZ_11       11
STAZ_12       12
STAZ_13       13
LEGENDA_1     14
```

This file contains that map that assigns the mnemonic strings to the Ids and it must be inserted into the program that is used to create the Help file.
For example, if the **"Help Writer's Assistant"** is used, select the menu item "Project", choose "Settings" and then display the section "Map" set out below:

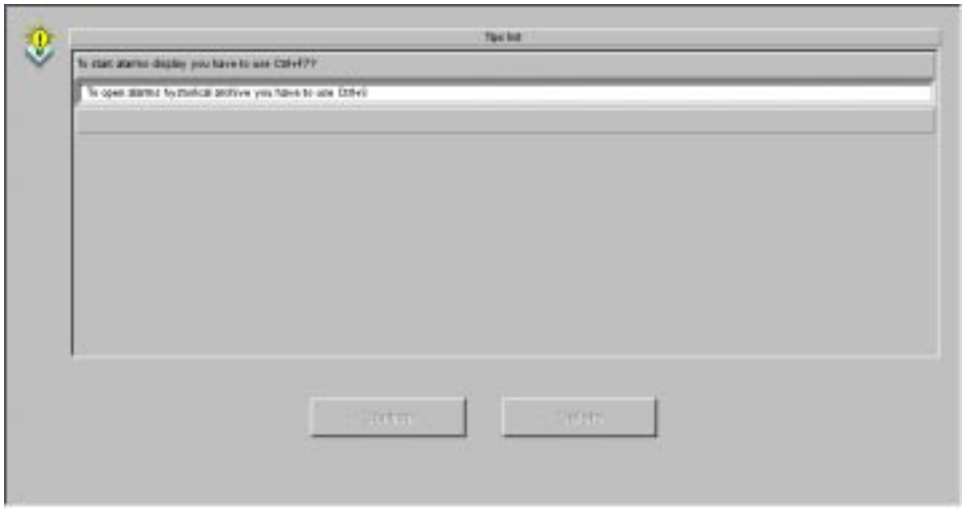
This file generated by Logoview for "myapp.gme"

After compiling the Help file it must be copied into the application archive and must have the same name. For example, if the application has been called "myapp.gme" the name of the file must be "myapp.hlp".

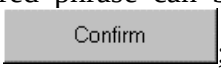
Warning! If the Help file contains a contents table, the file must also be copied with the extension .cnt.

7.4 SUGGESTIONS

The "Suggestions" section enables windows contents to be configured with the "Suggestion of the day". This is defined during runtime.



This window enables the developer to insert suggestions that will be displayed during runtime each time that the Logoview program is run or when the menu item **"Guide"** is activated and the option **"Suggestion of the day"** is activated.

It is very easy to insert a message into the text box displayed above. Click the left-hand mouse key twice to activate the space. This will become white and the cursor will flash. This indicates that the required phrase can be written. After writing the phrase, press "Enter" to activate the button 

; This confirms the action and enables other messages to be written that could not otherwise be written.

8. COMMUNICATIONS

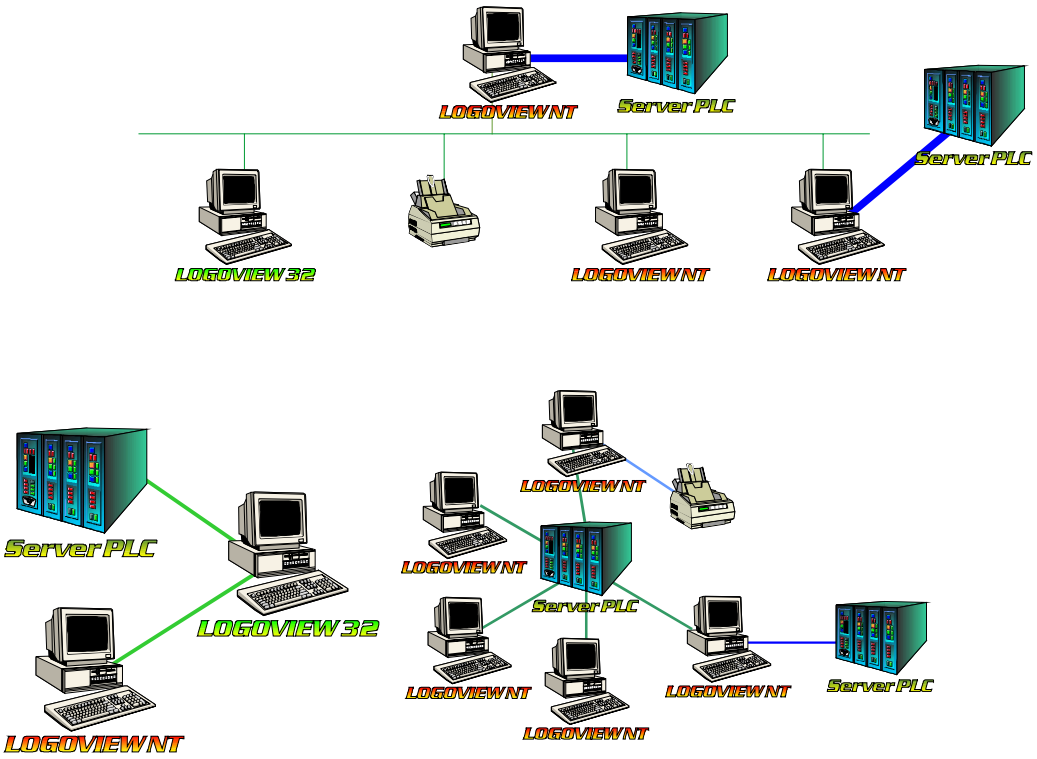
8.1 INTRODUCTION

Before describing in detail the main steps for configuring ***LOGOVIEW NT*** 's communication settings the concept of field data collection must be introduced. As for all supervision programs, ***LOGOVIEW NT*** 's main task is to collect, process and store data received from the field. ***LOGOVIEW NT*** permits a large number of configurations for this field but in order to correctly perform its functions it requires an interface that 'translates' the language received from the external field. This system is the driver.
The driver dialogs with the field devices and transmits the read data via a communication channel to ***LOGOVIEW NT***, which processes the data according to the configured program.
In a large-scale system, there are different communication types. Two types of interaction with the field can be identified. The first updates the display of the system variables in order to control operating efficiency. The second consists of a modification of the parameters in the field directly by ***LOGOVIEW NT***.
The main operations that can be carried out are synchronous writing, synchronous reading and asynchronous reading.
Synchronous writing is used to communicate with the field by writing the variables values on the device connected to the field front. Synchronous reading communicates with the devices connected to the field and reads their values. As these are synchronous operation, they oblige ***LOGOVIEW NT*** to wait for the reply to the message and make the entire transaction extremely slow. The request to wait for the reply is made because the command must be run correctly for the program to proceed.
The best meansof reading the field variables is asynchronous reading. In this way the system does not have to wait whilst the values are read cyclically. Instead, when new values have to be communicated to ***LOGOVIEW NT*** it is the driver that transmits them and places them directly in the destination variables. In this way, only variables travel that have been modified in such a way as to greatly increase transaction speed.

8.2 FIELD DEVICES

To set the field operations directly by ***LOGOVIEW NT***, configure the devices with which communication is required. For ***LOGOVIEW NT*** the devices are identified by two names: the name of the actual device and the name of the station at which the device is located. The name of the device is the name that is given to the device. On the other hand, the name of the station is used if the device has been connected o a remote station that is connected to ***LOGOVIEW NT*** by the network. In this case, the name of the station must also be set so that ***LOGOVIEW NT*** knows where to find the device. The devices can be of a different nature or another ***LOGOVIEW NT*** station. A system can require complicated configurations; there may be different servers for guiding the different types of device but there may also be several ***LOGOVIEW NTs*** communicating together.

Different connection configurations between ***LOGOVIEW NT*** and the field.



8.2.1 Server and Client

In order to configure communication between two devices that communicate by means of a driver it is necessary to understand what servers and clients are and distinguish between them.

Servers provide a service. Clients avail themselves of this service. They can be defined as logical configurations in which a certain number of servers supply data from a device to the client, which in this case is ***LOGOVIEW NT*** . But several different clients can also be configured that require different services from the same server.

In the case of ***LOGOVIEW NT*** it is the server's task to provide access to the blocks of variables mapped out on the device with which it communicates.

It is possible to configure the server variable on variables used for developing ***LOGOVIEW NT***.

In order to enable this configuration to function and make it useable the mapping of the server's variable blocks and those of ***LOGOVIEW NT*** must be comparable with those of the communication driver.

It should be remembered that several servers may exist on a single computer, so they must be unequivocally identified in order to be able to communicate. A server is identified by two parameters: node name and station name.

8.3 TRANSACTION TYPES

8.3.1 Synchronous transactions

Synchronous transactions can be run exclusively by an event. An event is a sequence of instructions that ***LOGOVIEW NT*** runs when circumstances arise that cause them to be run.

The instructions request the device on which the user intends to operate and of course the parameters that enable reading or writing. As previously mentioned, the operation occurs whilst waiting for the required operation to be completed. Operations of this type can be

run only on drivers that have been configured in the device list. READ and WRITE are the synchronous operations that can be carried out.
Syntax parameters to write a WRITE and READ instruction by an external device.

PLC: Name of driver station with which to communicate (must be declared in the list of devices).

Node: Network node hosting the driver station. If it is in local node (in the PC) leave the inverted commas “” empty.

Dest.Source: Destination variable (for writing) Source variable (for reading)

Nvar: Number of variables for reading or writing

Rem: Variable remote offset on reading or writing device. Of same type as local one.

Tout: Timeout in seconds. In other words, amount of time that must elapse before receiving the reading result response.

Ris: Result of reading return variable of any error code or correct result reading.

Flg: Persistence flag that has to decide whether the instruction should wait the arrival of data or not if the transmission channel is occupied by other requests. In addition, it decides whether the data should always be sent or whether only variations on the last reading are required.

8.3.2 Asynchronous transactions

Asynchronous transactions involve only reading operations.
It has been designed for cyclical readings and hose that are carried out cyclically or which are timed.
The great disadvantage of a synchronous transaction procedure is that it monopolizes the time of the CPU and thus significantly slows down the other operations. On the other hand, if the asynchronous procedure is used, ***LOGOVIEW NT*** does not have to run any event or procedure cyclically in order to interrogate the connected device. On the other hand, it is the task of the device to update the variables if any of the variables reported by the program has been modified.

9. Communications configuration

Before setting the communications configuration, basic field data collection and processing functions have to be checked.

Analysis of configuration that is to be set.
The system analysis is closely linked with the work that is to be done: for small systems a simple connection is used, i.e. a ***LOGOVIEW NT*** application and a single field device from which the processing data are taken.
If more complex configurations are required, there will be networks forming a communication system between different ***LOGOVIEW NTs*** and drivers.

Defining devices with which to communicate.
The fact that the device is being developed and the application is still being designed is not important because we are working with a PLC simulator. This enables all the operations carried out by the actual device to be simulated.
It is nevertheless important to configure the communication devices correctly in order to avoid errors or connection problems when the system is activated.

Setting and subdividing the data blocks into logical structures to be read from the field.
This step is carried out y the ***LOGOVIEW NT*** development environment and is the characteristic part that is most important to develop in order to configure the communication systems.

9.1 DEVELOPMENT ENVIRONMENT

In order to access the editor to configure the communications, use the commands in the *Basic settings* area of the development environment.
Activate the  icon on the toolbar or the *Communications* command from the *Setups* menu

to open the dialog window *Communications configuration.*

To access the different sections of the configuration window, place the mouse on the index

to the left of the window and press the left-hand mouse key.

9.1.1 Stations section

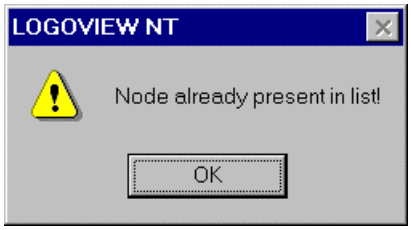
The dialog window opens directly in the section dedicated to configuring the settings for the communications devices (see figure on previous page).
This section displays the box containing the list of devices with which to communicate via ***LOGOVIEW NT***. The window is made up of three different columns. These represent the name o the nodes, the name with which the device is recorded and the alias, i.e. the identifying name, of the node device.

Node: in order to connect ***LOGOVIEW NT*** with a serial PLC network, the driver needs to know the address of each node that is connected to the network with which it intends to activate the communication.
The nodes list is initially empty. Key into this list the name of the node containing the device that you wish to have communicate with ***LOGOVIEW NT***.
The node name is the name of the computer that hosts the server on the network.
If the communication device is on the same computer as the one on which ***LOGOVIEW NT*** is installed, the box will display the message *'local'.* This is also the default value that is reported in the list.

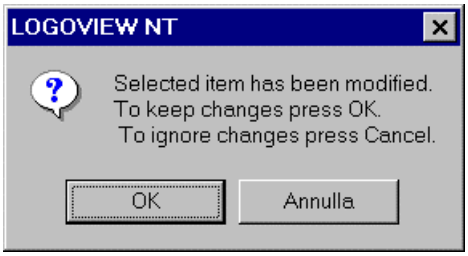
Station: in the stations list key in the name of the device with which ***LOGOVIEW NT*** should communicate.
Each node can contain several devices with which to communicate. That is why different station names can be combined to the same node.
To operate the driver correctly, it is not necessary to enter on the list all the networked stations with which you link up. Nonetheless, all the nodes with which you intend to communicate must be listed and the data must be complete and above all accurate.

When keying in the node names remember to key in the characters that identify the nodes correctly and always in the same way, paying attention to upper and lower case letters.

Alias: the name that must be keyed into these boxes are very important when modifications are made to the reading or writing instructions to be transferred to the driver on the node.
Key into the instructions the name inserted into the *Alias* box to automatically transfer the instructions to the node and stations that are identified by the alias without having to modify the different stations individually.
An *Alias* name cannot be keyed in that is the same as one that is already present on the list assigned to another node.
If an already listed name is keyed ***LOGOVIEW NT*** will display the following fault message:



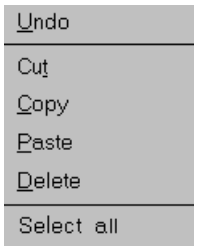
After inserting a new station or node, key in the command *Confirm* to activate the configuration.
If the confirm command is not activated ***LOGOVIEW NT*** displays the following message:



After the device list that is to be communicated has been filled, ***LOGOVIEW NT*** can establish and maintain connections with all active local and remote devices and detects when one of the devices is closed or re-opened.

9.1.1.1 *Opening menu with right-hand mouse key*

Place the mouse arrow inside the configuration boxes and press the right-hand mouse key to open a menu containing commands for filling in the different areas.

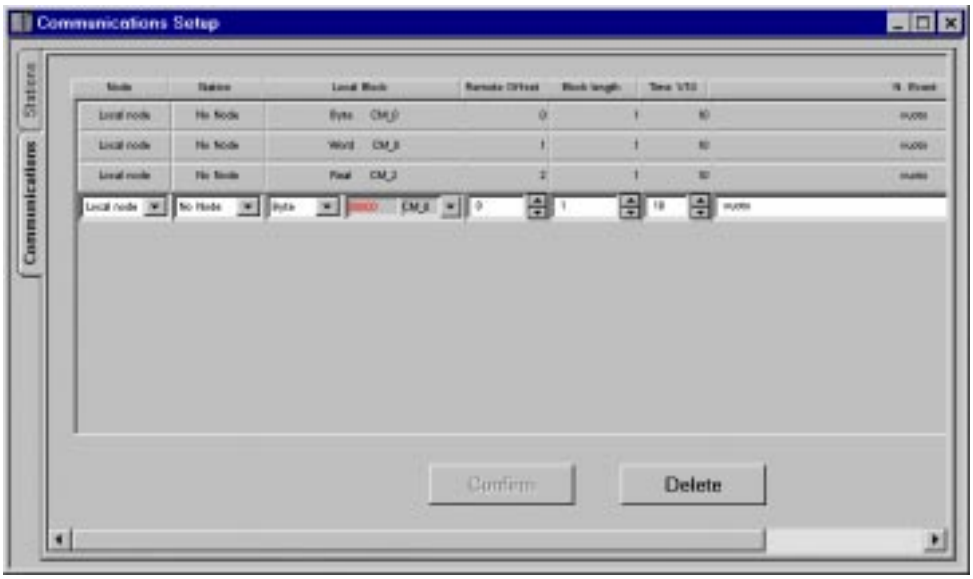


The commands in this menu facilitate box configuration and enable a series of combined actions to be carried out when the captions need to be deleted, copied or moved from one box to another.

These commands operate in the same way as normal Windows commands.
For more details, see User Guide 1

9.1.2 Communications section

The second section of the configuration window is dedicated to mapping the requests that ***LOGOVIEW NT*** makes to the driver.



The different areas of this section are filled in to define the communication blocks. If ***LOGOVIEW NT*** does not know the device with which it is communicating via the driver (the device could also be another ***LOGOVIEW NT***), it transmits to the driver requests for variables mapped with sequential addresses that are sorted according to the types that are available in ***LOGOVIEW NT***.

The driver in fact receives requests such as:

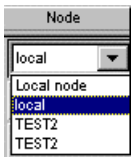
send a block of BYTE variables containing 50 variables starting with offset 300 and position from offset 1250.

The driver must interpret the request in this way:

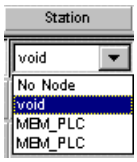
take the variables from offset 300 to offset 349 from the inner map and send them to LOGOVIEW NT, which will position them starting with BYTE variable of offset 1250

Obviously, if the driver that ***LOGOVIEW NT*** contacts is another ***LOGOVIEW NT*** this will just take the contents of the variables from the required offset and send it to the place requesting it. On the other hand, if the driver is interfaced with a PLC the PLC will convert the required addresses with those of the connected device.

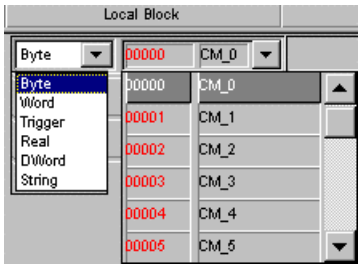
To do this the driver must be of the smart type and must entirely meet ***LOGOVIEW NT*** specifications.
The configuration of the connections tables of the different data blocks that are checked by the driver is as follows:



Name of node to be to be contacted: this list contains all the nodes configured in the section dedicated to station configuration. Select the node containing the device that is to be contacted.

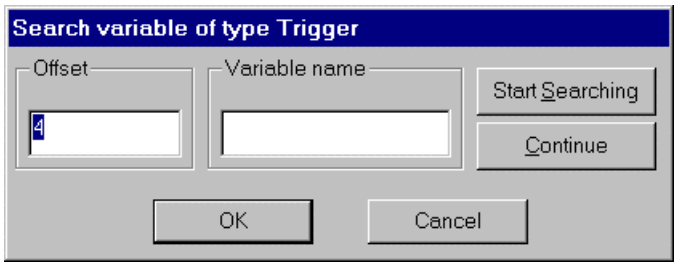


Name of station on node: this list contains all the stations configured in the station dedicated to stations configuration. Select the station that you wish ***LOGOVIEW NT*** to communicate with.



Local block: these lists contain all the types of variables that are to be read. Combine them as offsets of the first variable of the support block inside ***LOGOVIEW NT***.
In the example, ***LOGOVIEW NT*** will place the readings of the variables mapped in the device, starting with number 0 of the WORD type configured during the development phase.

Place the mouse cursor in the variables area and press the right-hand mouse key to open a dialog window for the variables search.



This window enables a rapid variables search to be made if the position number and offset are already known.

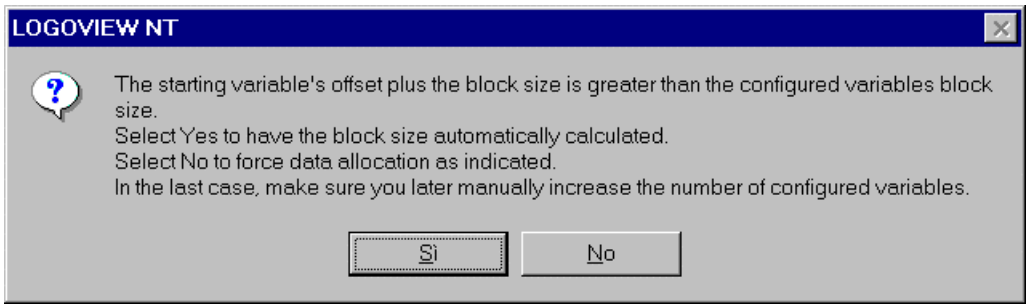
Remote Offset : in this box key in the offset number of the first variable of the block to be read on the remote device with which ***LOGOVIEW NT*** communicates. The offset number can be increased by using the scroll bars at the side of the box 

.

: in this box key in the offset number of the first variable of the block to be read on the remote device with which ***LOGOVIEW NT*** communicates. The offset number can be increased by using the scroll bars at the side of the box 

.

The number inserted in this box must be less than the sum of the offset of variable at the start of reading.
If an incorrect entry is keyed, ***LOGOVIEW NT*** will display an error window and will ask how to proceed.



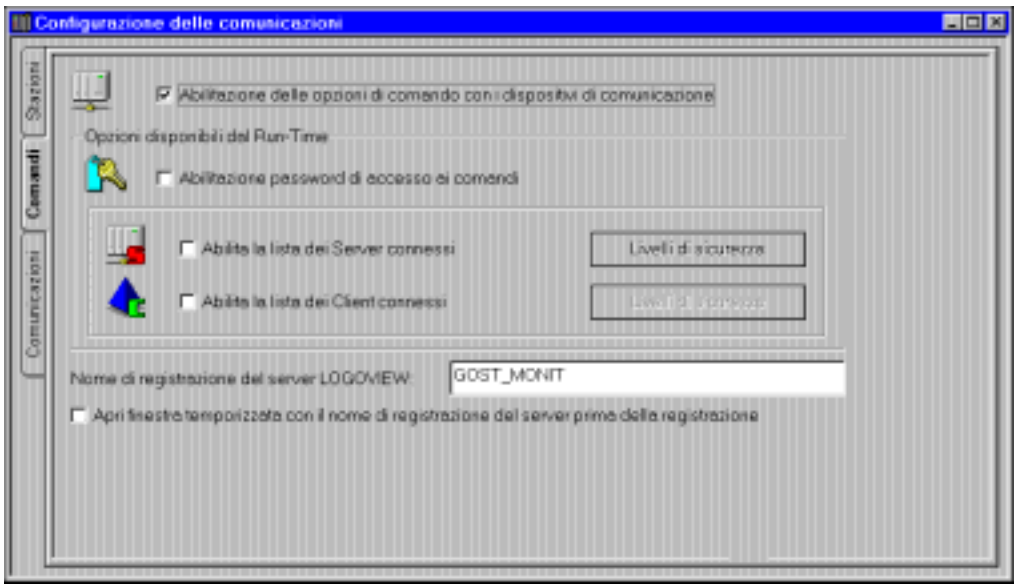
Time 1/10: key in the reading update time in this box in tenths of a second that ***LOGOVIEW NT*** must have on the blocks to be checked on the device. The offset number can be increased by using the scroll bars at the side of the box  .

N. Event **Event** number: in this box key in the event number to be run each time that new values assigned to the block occur. An event is a sequence of instructions that ***LOGOVIEW NT*** runs when circumstances arise that cause them to be run: e.g. a count by a timer or variation in trigger status. Each time that new values arrive from the device and are assigned to an event ***LOGOVIEW NT*** runs the instructions. The offset number can be increased by using the scroll bars at the side of the box  .

After configuring all the blocks that the driver must follow, at connection ***LOGOVIEW NT*** transfers all the configured tables to the destination devices. Upon receiving the tables the driver prepares the field reading cycle, creates a table to assign to the points controlled by the remote device and, depending on the time required, acts in such a way that only the modified variables are transferred. Of all the parameters configured in this section only the event number that is to be run is not passed on to the driver. This is because the event that must be run depends directly on ***LOGOVIEW NT*** operations.

9.1.3 Commands section

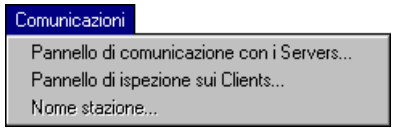
The third section of the configuration section is enables the device with which ***LOGOVIEW NT*** is communicating to be controlled in remote mode.



The window section consists of a series of options. If they are activated, different configurations can be accessed for controlling communication with devices that are connected to ***LOGOVIEW NT*** during runtime.

9.1.3.1 *Enabling control options with communication devices*

Select this option by placing a check (✓) in the corresponding box to activate a control menu during runtime. The menu comprises a series of commands that enable the status of the connected devices and the list of the commands supported by each device to be checked.



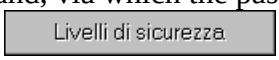
For further information on the individual commands in the menu see chapter 10.2, page 148.

9.1.3.2 *Enabling password for access to commands*

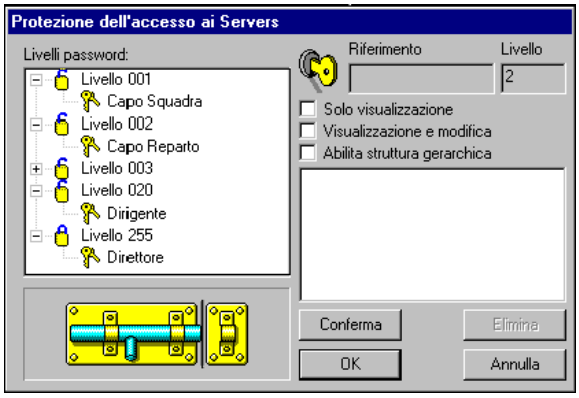
Select this option by placing a check (✓) in the corresponding box. The password control window can then be accessed in order to access the communications commands during runtime.
If this option is not selected, the list of connected servers and clients will not be enabled.

9.1.3.3 *Enabling list of connected servers*

Select this option by placing a check (✓) in the corresponding box- This will activate the *Security levels* command, via which the password control window can be accessed.

Press the command 

Security levels to open the control window *Server access protection.* This window enables users and protection levels for the server concerned to be entered.



For further information on configuring the access password entry window, see User Guide 1.

9.1.3.4 *Enabling list of connected clients*

Select this option by placing a check (✓) in the corresponding box- This will activate the *Security levels* command, via which the password control window can be accessed.

Press the command Livelli di sicurezza *Security levels* to open the control window *Client access protection.* This window enables users and protection levels for the server concerned to be entered.

For further information on configuring the access password entry window, see User Guide 1.

9.1.3.5 *LOGOVIEW server registration name*

In this box key in a ***LOGOVIEW NT*** identification name by which the ***LOGOVIEW NT*** will be recognized by the field. To be recognized, the ***LOGOVIEW NT*** must register as a server and have an individual name that will be recognized by anyone that wishes to link up. Before opening the communication channel, during runtime, a dialog window is opened that shows the name that will be used by the program for registration (see page 147).

If the name is accepted, the user can wait for ***LOGOVIEW NT*** to shut the window or else he can press the button to close it. In the same way, ***LOGOVIEW NT*** 's name can be changed by keying it into the dialog box. This operation must be carried out by people who know exactly what they are doing because other wise there is a danger that the server will

be registered under one name whilst the different devices search for different server to become connected.

9.1.3.6 *Opening timed window with registration name*

Select this option by placing a check (✓) in the corresponding box. This will open the dialog window bearing the name that will be used by the program for registration. The registration name is keyed in the box described previously in chapter **Errore. L'origine riferimento non è stata trovata.**.

10. Runtime communications

After setting the *Communications* parameters in the development phase, we deal with the application running phase, which is known as 'runtime'. This enables all the ***LOGOVIEW NT*** configurations to be run and contains all the instruments required by the operator to interact with the objects configured for supervision.

When ***LOGOVIEW NT*** enters runtime it tries to use the driver to link up to the operating system, which is waiting for communications from clients
The operating principles is extremely simple: the driver dialogs with the field devices and transmits the data read by a communications channel to ***LOGOVIEW NT***. ***LOGOVIEW NT*** processes this data according to the program.
To accede to the devices configured during the development phase (see chapter **Errore. L'origine riferimento non è stata trovata.**) ***LOGOVIEW NT*** tries to identify the name of the nodes and stations to which it should link up, depending on the set parameters.

10.1 SERVER INITIALIZATION

Before starting the field search for the set devices, ***LOGOVIEW NT*** has to register as a server in order to carry out network communications.
For initialization, it reads the communication parameters and the name used the last time and displays them in this window:

If you do not wish to display the opening of the initialization window, during the development phase do not select the relative option, which is set out in chapter 9.1.3.6 on page 146.

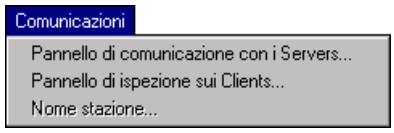
10.1.1 Communication error

After initialization, ***LOGOVIEW NT*** starts to search for the devices connected for communication. During these attempts, different types of error could occur that will cause the connection between ***LOGOVIEW NT*** and the field to fail. For each failed attempt, a fault window will be displayed: this warns the user that a communication error has occurred, specifies the server affected and specifies the object that has generated the error.

Three different options can be selected in the window.
'Do not display errors of this type any more'. Select this option and continue the runtime program.
'Continue'. The connection search and runtime continue.
'Stop runtime'. The user exits the program.

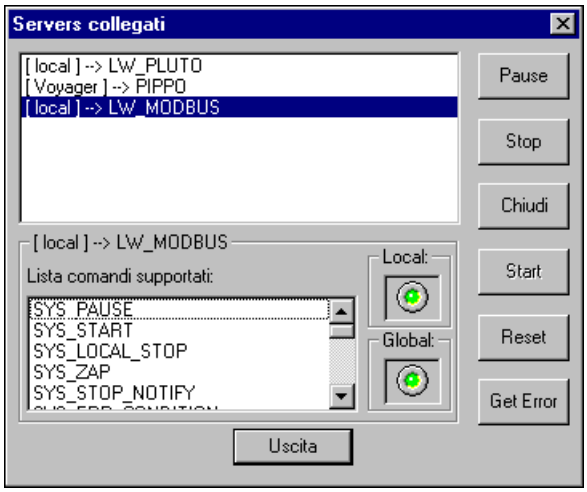
10.2 COMMUNICATION MENU

The menu comprises a series of commands that enable the status of the connected devices and the list of command supported by each device to be checked.



10.2.1 Server communication panel

Select this command to open a window to control the servers connected with ***LOGOVIEW NT***.



The window comprises two display areas and a series of utility commands.

Devices list: the top area shows a list of the devices connected to ***LOGOVIEW NT*** .
If the device is located in the same computer the node description is identified by the term *'Local'*. If the device is located in a remote system, the name of the host node will appear.

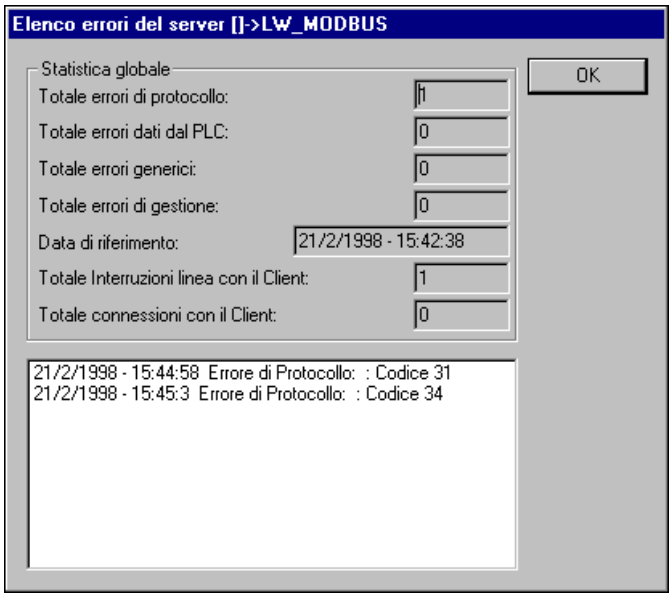
List of supported commands: at the bottom a list of commands will appear supported by the device selected in the top area.
Use these commands to intervene of commands of the device.

Control LED  : the LEDs of the devices connected to ***LOGOVIEW NT*** show when the wait queue is full of a great number of messages.
Queue status can be understood by observing the color of the LED. This has three levels: green, yellow and red. When the queue is free and can accept the transactions the LED is green.
The two LEDs identify the status of the *local* queue, in other words the capacity of ***LOGOVIEW NT*** to accept transaction data and the status of the *Global* queue. This is the level of traffic on the communication network.

Commands: this window contains a series of commands that enable the user to intervene on the selected device. These commands are active only if the device supports them. Otherwise, they are deactivated.

The most important command is identified by the error display message 

. If this command is activated a dialog window opens that displays the list of errors for the selected device.
Internally, the device manages a list of errors that the user can consult at leisure. The length of the list can be varied but it always stores the most recent errors. The number of items on a list varies from a minimum of 25 to a maximum of 500 that can be configured directly by the device. The date and time, type and code of each error are stored.



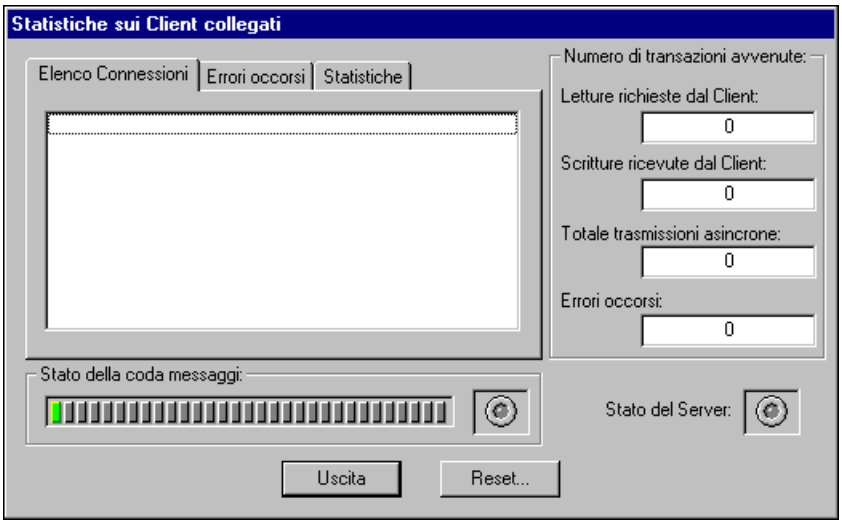
As the device works, many different errors may occur. They may be due both to transmission to and from the field and to problems of memory and configuration. These errors are stored inside a default queue. The errors can be consulted on the list that is always available in the window. In addition, ***LOGOVIEW NT*** is informed of these errors according to a very precise criterion. If the errors have been generated by field they are passed on to all the connected clients whilst all the other errors are passed on to the relevant client. Depending on their seriousness, these errors open a window inside ***LOGOVIEW*** in which the error code and the name server that sent the error message are

displayed. The error is also inserted into the errors log, which can be consulted at any time. For further details, see LOGOVIEW Runtime manual.

10.2.2 Client inspection panel

This command enables the panel to be opened that enables ***LOGOVIEW NT*** 's internal server to be accessed. ***LOGOVIEW NT*** can link up to external devices but it can also be seen as an external device by another LOGOVIEW. The control window that opens when the command is activated is made up of different configuration sections.

10.2.2.1 *Connections section*

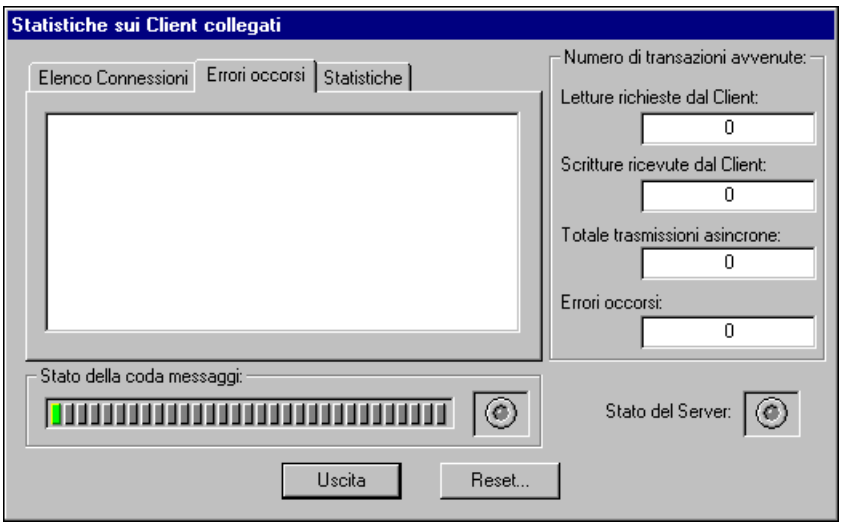


In the first section the driver shows a list of names. These names are the lists of the programs that are connected with the driver and wish work simultaneously. The driver can serve more than one ***LOGOVIEW NT*** at the same time.
When a new client is connected to the driver, the name Protection of the client appears on the least. The client is disconnected, the name disappears from the list.

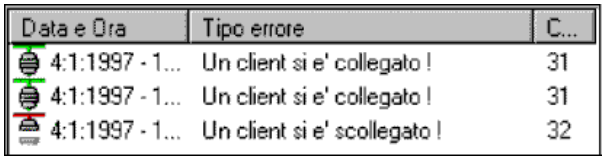
Dislocazione	Nome client
local	LW_SPOCK
RELIANT	GOST_MONIT

The number of times that customers connect and disconnect is recorded inside two special accumulators and the values are displayed in the *Statistics* file.
As ***LOGOVIEW NT*** cannot be launched twice on the same computer, in order to connect several ***LOGOVIEW NT***s to the same driver, several nodes must be networked.

10.2.2.2 *Errors section*

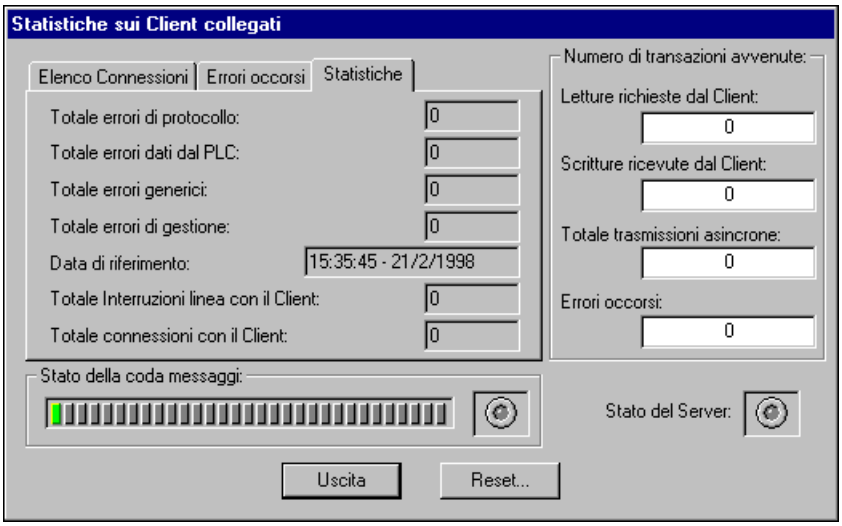


In the second section, a list is shown that the driver will fill with the contents of the errors list.
The section is subdivided into different areas in which the error codes, the number of transmissions and the status of server queue are displayed.
For a more detailed explanation of the number of transmissions and the status of the server queue, see chapter 10.2.2.3 on page 152.
The errors list contains a number of items that can be configured. These items are always the most recent errors.
The list shows the date and time at which the error occurred, the type of error and the error code.



There are 4 (four) possible types of error:
Errors from PLC: these are mainly the errors that the PLC sends as a response. For a list of these errors, consult the PLC manual that is being used. Some errors of this type are also generated by the driver.
Protocol errors: these are the errors that are generated by the driver when problems occur that are connected with the memory or with managing the queues.
General errors: these are generated by incorrect driver operations. They may also be generated by external reasons that are linked to faulty system configuration.
Management errors: these errors occur only rarely and are due to problems that are linked to process synchronism. They may be linked to an incorrect driver configuration.

10.2.2.3 *Statistics section*



This section of the window enables the work statistics to be displayed.
The section is divided into different areas in which the error statistics, number of transmissions and server queue are displayed.

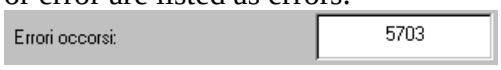
In the area on the left, inside the errors list, the driver contains the accumulators that keep a list of errors constantly updated from the moment in which the program was run or from the moment in which the list was reset.
In the area on the right of the section certain displays are shown that are updated in real time and which are used to keep certain parameters under constant control that show at a glance that the driver is operating correctly.

The monitored values are as followed:

The number that is displayed indicates the finite quantity of communications between the driver and the connected device. Naturally, it is always a total so it includes all types of communication. The speed with which it increases is directly proportional to the number of communications read per tenth of a second.

This shows the number of value update blocks sent to the different clients. The number of blocks is a relative value because it does not correspond 1 to 1 with the field readings because only the variables are sent that have been modified and which in a transmission could contain several different variations at the same time. Variations in this value express only the impression that the LOGOVIEW channel is also in operation.

This shows the number of messages that the different LOGOVIEWs connected to the driver have requested. Only the messages with a positive outcome are displayed by the count. Those which have been aborted by time-out or error are listed as errors.



This edit control displays the total number of errors that have occurred from the last reset of the errors code.

The bottom of the statistics section of the window displays the data flow control from and towards the field.

Queue status messages: the LED in this area  shows when the wait queue is full of messages. When the queue is full the LED becomes red. This means that the driver will not accept any more requests (asynchronous requests-synchronous requests are always met) until the queue has been eliminated.
Queue status can be seen by the LED scale next to the status LED:  . The scale fills up as the queue fills up so as to show how much space is left in the queue. The scale has three levels of color: green, yellow and red. These correspond to the level of fullness. If the scale is completed full, the LED becomes red and then the level of the scale falls as the field meets the requests. When the scale leaves the yellow area and only the green cells are visible, the general LED also becomes green and asynchronous requests are accepted again. If the LED remains a fixed red color it might mean that the set reading frequency is beyond the capability of the computer or driver. In this case it must be lowered by having the driver discard messages in order not to clog up the lines.

The transactions queue refers to transmissions between ***LOGOVIEW NT*** and the driver. When the level LED is red this means that the queue is full and the driver has difficulty in processing all the messages coming from LOGOVIEW. In this case, the driver automatically closes the queues until the queue concerned has been partially emptied. On the other hand, when the LED indicates that server status is red, it means that the server has come to a stop. If the LED is yellow, it means that the driver is in pause status in relation to one or more customers.
These conditions are set in remote mode any of the LOGOVIEWs connected to the driver. It is therefore necessary to wait for LOGOVIEW to restore normal conditions.

Also when the server is stopped the LED that indicates server status will become red, but in this case as soon as the server is started again the LED will become green again.

10.2.3 Station name

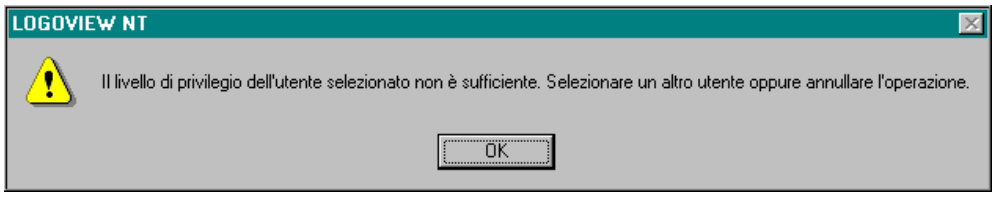
This command enables the name to be seen with which the server inside ***LOGOVIEW NT*** has been registered. When this item is called up the window opens that enables the name to be displayed, but the name cannot be modified.

To modify this window, follow the field connection procedure and carry out the modification specified in chapter 10.1.
This menu item is in fact the only one that does not require a password, even if they have been set for the system.

10.3 PASSWORD PROTECTION

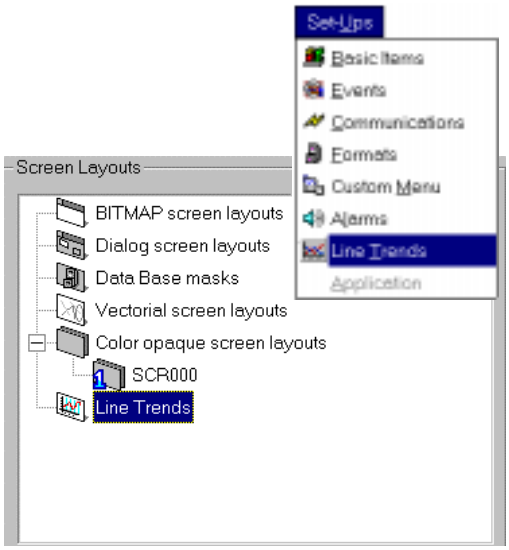
Configurations are protected during the development stage in order to ensure that settings can be viewed and modified only by a certain number of people.
During runtime, if communications configuration has been protected, (see chapter 9.1.3.2, page 144), when the system is activated, the password request window will appear from which to select the name of the user and insert the corresponding password.

If unauthorized users or passwords are entered in the boxes ***LOGOVIEW NT*** will not allow the window to be opened to open the passwords and will display the following error message:



11. Line Trend

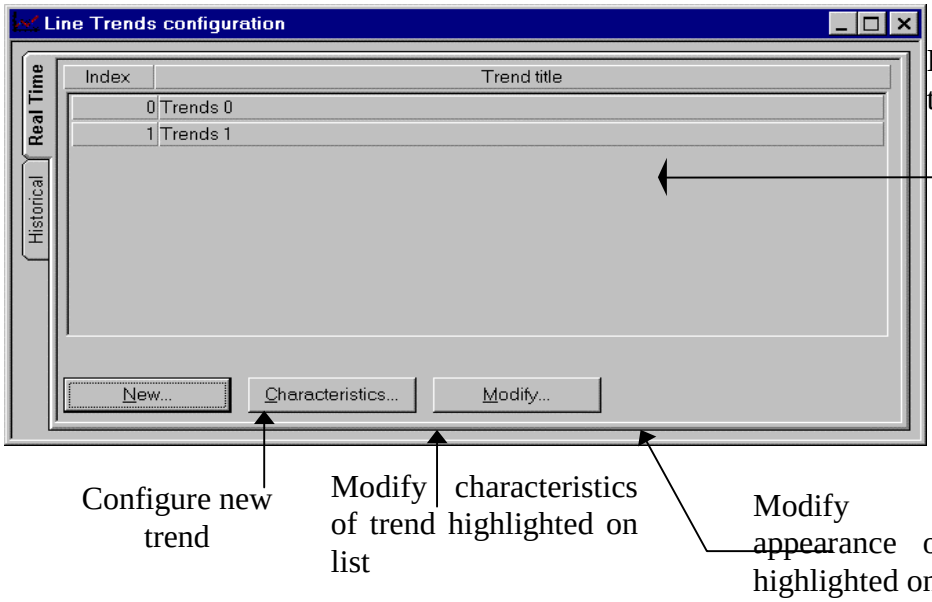
LOGOVIEW NT enables graphs to be generated by an instrument that monitors the trend of a certain number of variables.
The graph consists of lines that are made up by an editor that enables all the variables that make it up to be configured very flexibly.
This type of graphic is known as a **Line Trend**.
There are two main types of Line Trend: real-time trends and historical trends. Many of the configurations shown in the dialog windows are common to both types of line trend.
The guide provides full coverage of all the configurations for the different types of trend by means of the different dialog windows.
To activate configuration of a line trend, highlight the command shown in the *"Layouts List"* area inside the *"Base settings"* window and then activate the *Line Trend* command in the Setups menu or click on the icon  on the main toolbar in order to open the trend configuration dialog window.



After commands have been activated, the dialog windows will open in which the line trends can be configured.

The dialog window *"Line Trend configuration"* is divided into two different types of line trend: *real-time* and *historical.* The two sections of the window are the same in terms of

composition of the commands and graph settings.



11.1 “NEW COMMAND”

Use the mouse cursor to activate the command *“New"*. This enables the parameters to be set for configuring a new line trend. For details, see page 158 of chapter 0 "*Configuring a real-time line trend"* or chapter 11.5, "*Configuring a historical line trend"* on page 178

11.2 “CHARACTERISTICS" COMMAND

Click on the *“Characteristics”* command to open the dialog window in which the line trend has been configured that was selected inside the window area. The dialog window that opens comprises two sections and different options. If they are modified, the configuration characteristics of the selected line trend are modified. For full details see the parts of *General section* and *Layout section* that deal with line trends. For real-time line trends, see 11.4.2.1 page 159 and for historical line trends, see **Errore. L'origine riferimento non è stata trovata.** on page **Errore. Il segnalibro non è definito.**.

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11.3 “MODIFY” COMMAND

Click on the *“Modify”* command to open the dialog window in which the completely configured trend is displayed. For full details see *0 “Modify” command* on page 198, which deals with modifications to trend configurations.

11.4 REAL TIME LINE TRENDS

Real-time line trends enable the trends of up to one or more variables to be displayed and store the sampled values in the system memory.
This type of control is based on an area for temporary memory for the while duration of runtime. During runtime, ***LOGOVIEW NT*** regularly samples the contents of the variables configured in the trend, stores them in buffers and updates the chart if it is displayed.
As the data are stored inside the PC's RAM (Random Access Memory - computer memory in which data and programs are temporarily stored. The contents of the RAM are deleted each time that the computer is switched off). This type of chart is suitable for displaying the contents of variables whose variations the user does not wish to store permanently.
The maximum limit for variable samples inside a real-time line trend cannot exceed 32767. For example, if a variable is sampled every second, the maximum display time will not exceed 9 hours of operation.

11.4.1 General characteristics

Each line trend is displayed in a separate window and can be configured by a series of different parameters.

Sampling period - *at least one second*
Duration displayed on chart - *inadvisable to exceed 90%*
Time stored in memory buffers
Legend
Current variable values
Position and characteristics of the scale for X-Y axes
Characteristics of the grid on the chart

In each line trend a series of runtime variables can be configured. Up to 32 variables can be sample and simultaneously displayed in the trend.
LOGOVIEW NT enables the configured variables to be configured separately from the 32 displayed variables. In this way it is possible to set a certain number of variables but display only 32 with the relative scale limits and values separated from the form in which they are displayed on the chart.
The chart display for each of the 32 variables that can be displayed in the trend is configured on the basis of the variable that is selected as scale reference.

Chanel activated as reference in the Trend scale

During runtime the user can modify the trend scale and the displayed variables that have been configured in the 32 data channels. These modifications can be made subject to the insertion of passwords during the line trend configuration phase. When the variables configured in the trend are replaced, the historical records of the deleted variables are lost.
A table can also be displayed showing the values sampled by the trend.

11.4.2 Configuring a new line trend in real time

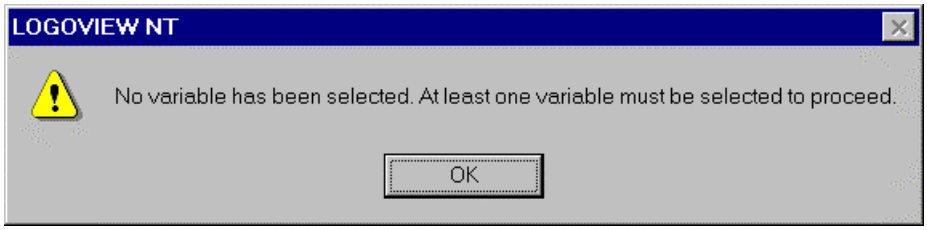
After *Line Trend* has been selected from the menu *View* or by clicking on the *Line Trend* icon on the toolbar the window *"Line trends configuration"* will open. Place the mouse inside the section *Real time* and select it with the mouse cursor. 

The *Real time* section enables the line trends to be configured by clicking on the command *"New"* to open the dialog window inside which the parameters can be inserted that are required to display the chart.

The dialog window is divided into two different sections 

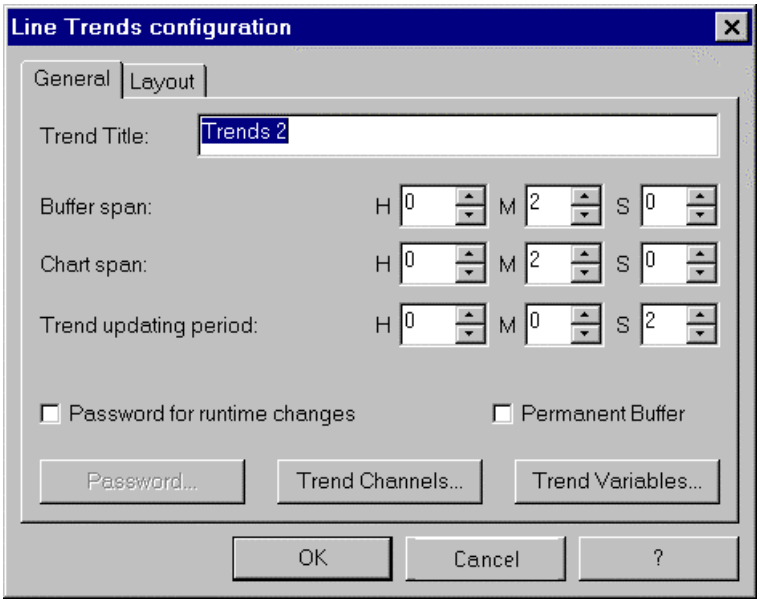
.
Line trends configuration comprises a series of parameters that refer to operations and chart form. To accede to the section of the window that is dedicated to the *Layout*, first configure the parameters in the *General* section.

If the user tries to transfer to the layout section before configuring the General section ***LOGOVIEW NT*** *displays an error message:*



Click on "OK" to position ***LOGOVIEW NT*** *directly inside the dialog window of "Trend variables" in which the variables required for the line trend can be configured (see Chapter* ***Errore. L'origine riferimento non è stata trovata. 'Errore. L'origine riferimento non è stata trovata.'****).*

11.4.2.1 *General section*



The *General* section of the *"Line trends configuration"* window is divided into different areas, inside which the parameters can be inserted for creating a line trend.

11.4.2.1.1 Trend name

In this box key in a description of the line trend that is being configured. This description must be unique: each trend must have its own name because the trend name is used during runtime to open the chart.
The trend name is displayed on the main bar of the dialog window during runtime.

11.4.2.1.2 Buffer duration

In this box enter the duration of the buffer in which the data sampled by the trend are stored. Duration is expressed in hours, minutes and seconds and may be greater than the duration of the chart displayed in runtime. In other words, buffers can be configured that are greater than actual chart duration. To display the entire stored trend, click on the slider underneath the trend.

A buffer is a temporary memory used to exchange data with a different type of support. It is often used to compensate for the different speeds with which the different devices manage data.

11.4.2.1.3 Chart duration

Inside these boxes enter the duration of the chart that displays the data sampled by the trend. Duration is expressed in hours, minutes and seconds and corresponds to the quantity of data that the user wishes to display on the chart during runtime.

11.4.2.1.4 Trend update period

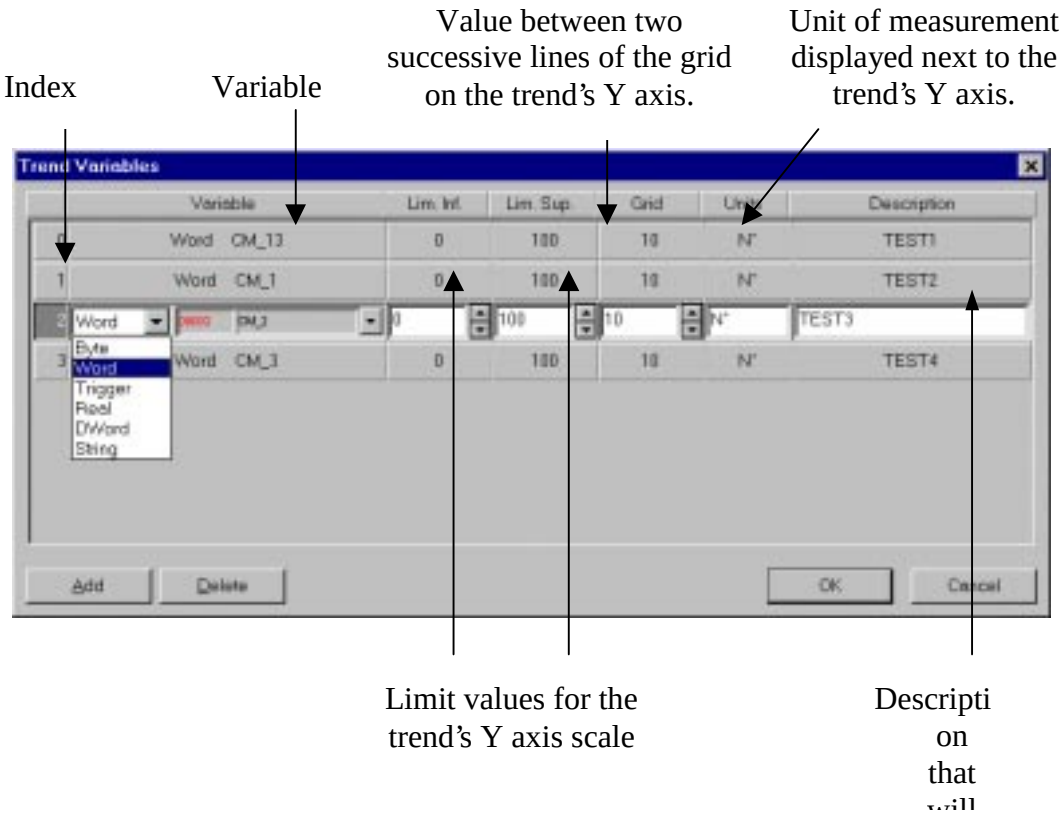
Inside these boxes the sampling period of the variables configured for the trend is entered. The period is expressed in hours, minutes and seconds and is the time that elapses between two samplings of variables values during runtime.

11.4.2.1.5 Permanent buffer

Activate this command to enable the line trend to sample and store data even when the chart is not displayed. This facility prevents data being lost when the chart is not displayed and enables values to be displayed as soon as the chart is opened during runtime.

11.4.2.1.6 Trend variables

Activate this command to open the dialog window *"Trend variables"*. Use the *"Trend variables"* window to select and configure the variables that can be used to create the line trend chart.

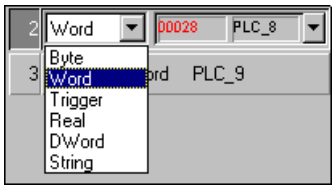


The variables configuration window is divided into different areas into which all the values can be inserted for composing the line trend.
To enter a variable for configuration click on the command *"Add"* with the mouse: ***LOGOVIEW NT*** will display a configuration string inside the window and will increase the corresponding index number by one value.

0	Word	PLC_6	0	100	10	N°	PROVA1

After the command *"Add"* is activated the new configuration string in the window contains by default a variable of the same type as the one on which the last configuration was carried out. Accordingly, if the last configured variable is a WORD variable, the new string contains a new variable of the same type increased by one value.
To insert all the values required by the line trend click with the mouse on the configuration data boxes and key in the values. .

Variable: click with the mouse on this box to open a cascade menu from which the type of variable for display in the line trend can be configured.



Top and bottom Limits: inside these boxes key in the limits to be assigned to the trend's Y axis.
The values can also be modified by the arrow commands on the side of the box.
Normally, the values assigned to the limits are set directly by the chart and depend on the values of the configured variables.

Grid: inside this box key in the value of the distance between two successive grid lines on the trend's Y axis.

Unit of measurement: inside this box key in the unit of measurement caption that must be displayed on the trend's Y axis.

Description: in this box key in the description that will appear inside the trend legend.

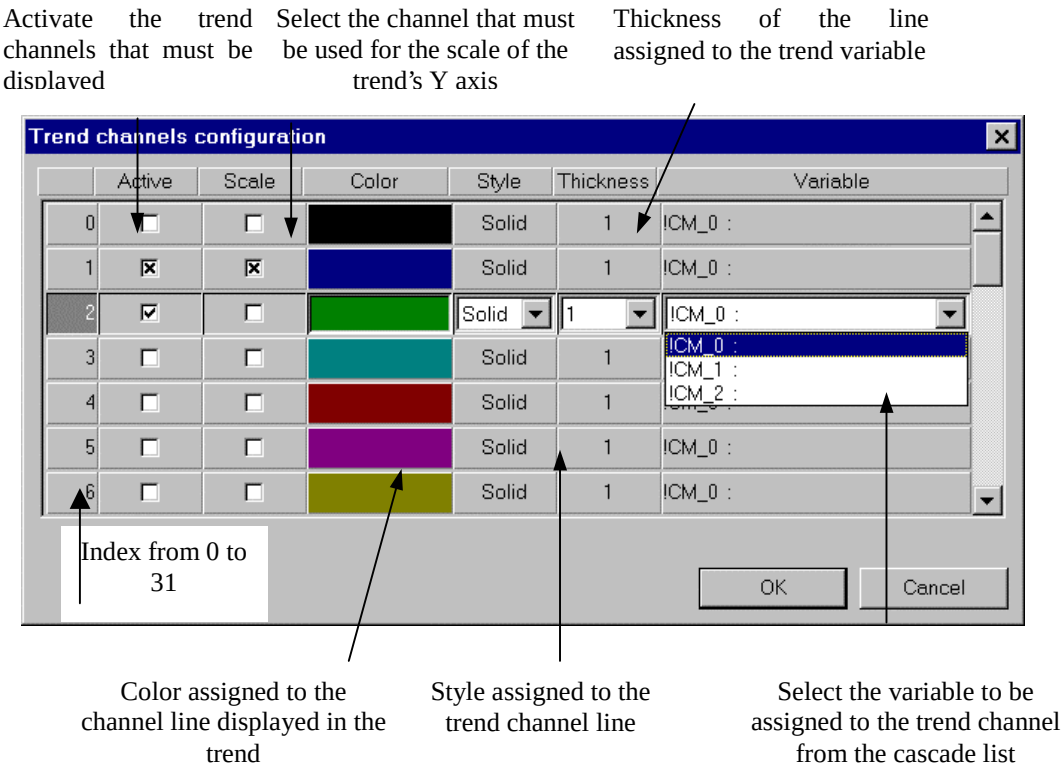
Suggestion: configure a number that is not greater than 1000 variables. To optimize the Line Trends, about 100 configured variables are sufficient.

To delete a configured variable, use the mouse cursor to select it from the list inside the dialog window and then activate the command *"Delete"*. All the variables following the deleted variable will be automatically renumbered and the index number will be decreased by one.

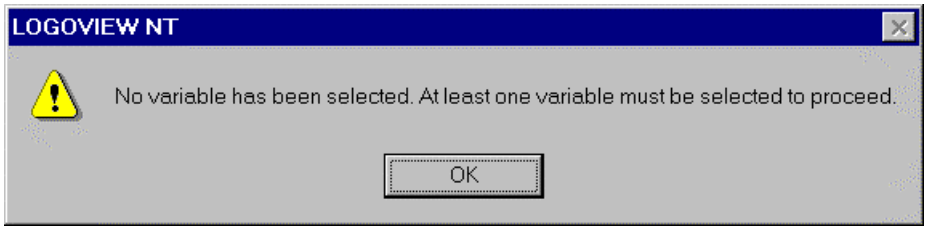
11.4.2.1.7 Trend channels

Activate this command to open the dialog window *"Trend channels configuration"*. This enables the graphical characteristics of 32 channels to be selected and configured that are assigned to the variables configured inside the dialog window *"Trend variables"* on page **Errore. Il segnalibro non è definito.**

The 32 variables activated in the channels will be displayed inside the trend.



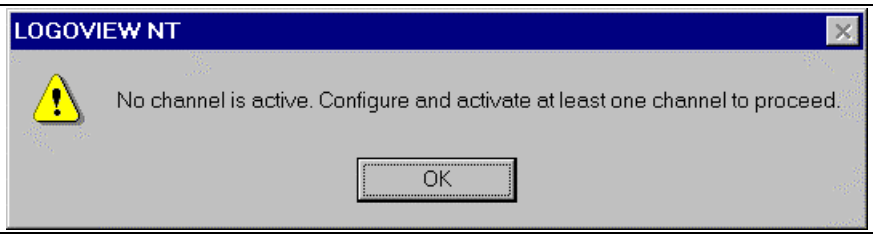
If the user wants to open this dialog window before inserting and configuring the variables, LOGOVIEW NT will display an error message that warns that the no variable has been selected.



The trend channels configuration window is divided into different areas inside which the options must be activated for making up the line trend.

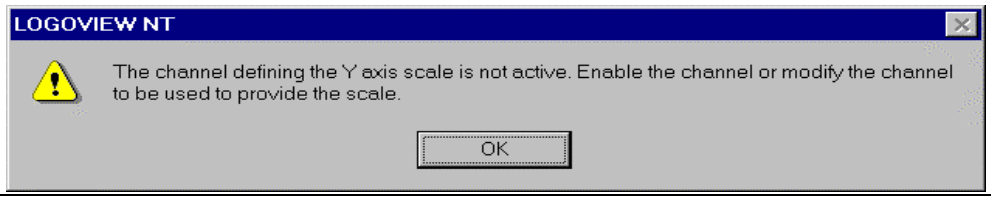
Active: use the mouse to place a *'check'* (***x***) in the box in order to activate all the channels (up to a possible maximum of 32) that you wish to have displayed in the line trend.
It is not possible to use the line trend until at least one of the channels inside the dialog window has been activated.

*If the user forgets to activate the channels **LOGOVIEW NT** will display a fault window.*



Scale: use the mouse to place a *'check'* (✓) in the box in order to activate the channel that must be used for the trend's Y axis scale.
One of the channels that is available for use for the scale must be activated.

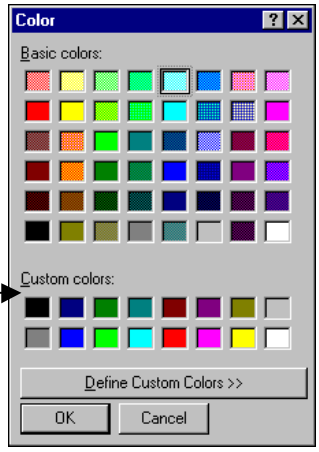
If the user does not activate the channel, ***LOGOVIEW NT will display an error message****.*



Color: select the color to be assigned to the display of the line for the variable assigned to the channel in the trend. To change the color inside the box, select the channel line and then click on it to open the *"Color"* window within which the channel color can be selected.

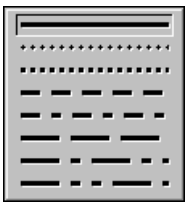
Several channels can be assigned the same color because the style and thickness of the lines can be varied according to the different variables displayed in the trend.

Only plain colors can be selected. If patterned colors are used or if the colors are made up of a combination of two or more colors, ***LOGOVIEW NT*** will not accept the selection.



If a patterned color or a combination of colors is selected ***LOGOVIEW NT*** *will approximate the color to the nearest of the 16 basic colors and will display this error message:*

Style: from the cascade menu select the line type to be displayed inside the trend.

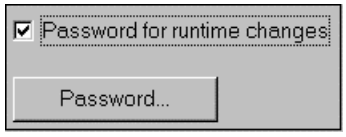


Thickness: from the cascade menu select the thickness of the line to be displayed inside the trend. Four different thicknesses can be displayed.

Variable: from the cascade menu select the variable to be assigned to the channel that should be displayed inside the trend.
The displayed menu contains all the variables configured inside the dialog window *"Trend variables"* on page **Errore. Il segnalibro non è definito.**.
It is not possible to display all the variables configured by composing a single trend because the maximum number of channels that can be activated is 32. Nevertheless, different trends that are assigned to different variables can be created in order to ensure complete monitoring during runtime.
In such cases the same scale should always be used for the Y axis of the different trends in order to be able to better compare the different situations.

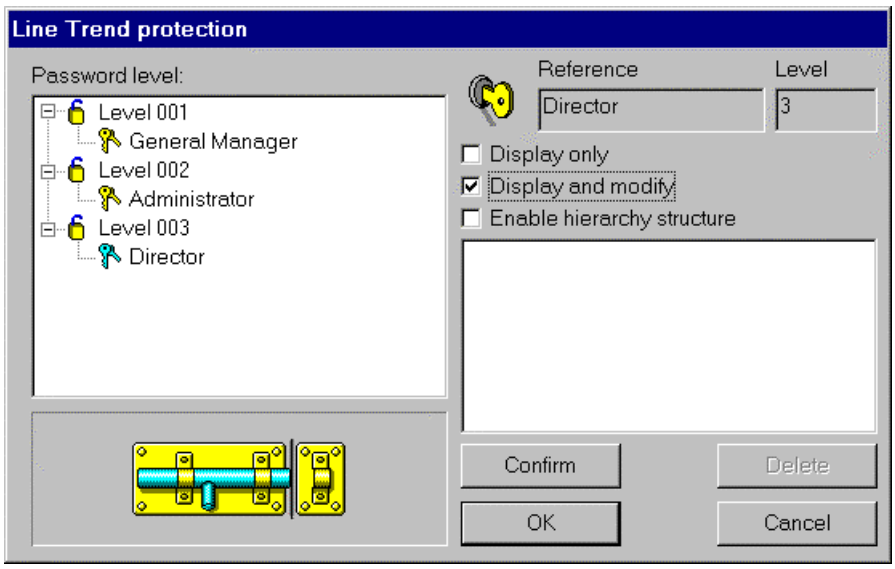
11.4.2.1.8 Password for runtime changes

Select this command to use a password to protect the trend that is being configured when it is displayed during runtime.
Place a *'check'* (✓) in the box to activate the button for opening the dialog window in which to insert the password.



It is not possible to activate the command without entering a password into the configuration window. If the user forgets to make an entry ***LOGOVIEW NT will display this error message:***

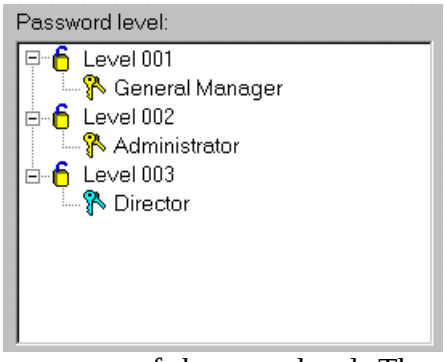
Use the mouse cursor to open the dialog window *"Line Trend protection"*. From here, the users and protection levels or the line trend can be entered.



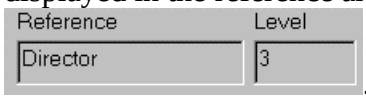
The trend protection password can be applied in two different ways.
The first type depends directly on the user's personal password. The second type is hierarchical and depends on the previously compiled list.

11.4.2.1.8.1 *Protection directly from password*

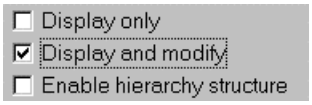
Inside the *"Password levels"* area of the dialog window a list appears that numbers the levels from 001 to 255. Different users with different functions and personal passwords can be inserted at each level. To display the users, click twice on the affected level to open the list.



Click with the mouse on the set user of the open level. The user will be highlighted and displayed in the reference area and alongside the protection level will be shown:

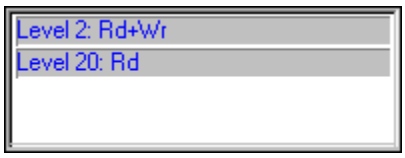


. The user must now be assigned rights of access to the trend. Use the mouse cursor to select the rights of access from the list of options. The selected options are marked by a *'check'* (√):



After completing these steps correctly, use the 

key to add the selected user to the list in the same way as for the other users. The list may hold up to 10 users.



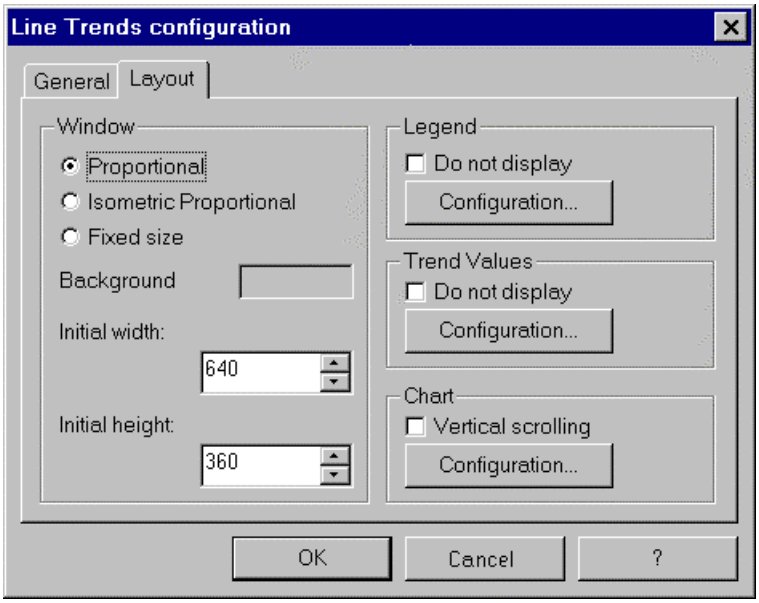
During runtime the listed users will have access to the protected trend only if they enter their passwords and will be able to modify or display the chart only if they have been assigned this right by the developer during the design phase.

11.4.2.1.8.2 *Protection by hierarchical structure*

Assigning levels and passwords to the different users during the design phase is by itself a hierarchical choice: the higher the number (from 0 to 255) the greater the user privileges. To take a banal example, a line operator will have a LEVEL 0 password whilst a plant director will have a LEVEL 255 password.
Having said this, let us now turn to a short explanation of the option *"Enable hierarchical structure"*.
Selecting this command deletes the display of users list on the trend access list together with the privileges assigned to them by the developer. A level must be selected from the list of the *"Password levels".* This is displayed without any reference to the user:

If the command is confirmed during runtime all listed LEVEL 3 or above users on the list who are authorized to display and modify the chart can obtain a display whilst lower-level users will not be authorized to do so, regardless of their previous privilege level.

11.4.2.2 *Layout section*



The layout section of the *"Line trends configuration"* window is divided into different areas within which the line trend display parameters can be modified.

11.4.2.2.1 Window area

Ratio: if this option is activated the size of the line trend window can be modified during runtime by clicking on it with the mouse. Using this option to modify dimensions could create difficulties for the characters font because all the displayed parts are modified without considering the ratio between sizes.

Isometric ratio: activate this option to modify the dimensions of the line trend during runtime by means of the mouse cursor whilst maintaining the ratio between the trend sides. This option is recommended when the size of several windows needs to be changed during runtime in order to obtain a comparison of the different line trends with the same scale on the Y axis.

Fixed dimensions: if this option is activated the dimensions of the line trend window cannot be altered during runtime.

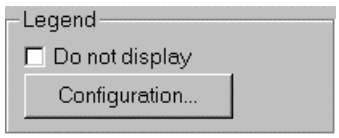
Background color: use this option to select the background color for the window that contains the trend. Click with the mouse on the box containing the color to open the *"Color"* window, inside which the trend's background color can be selected.

Initial width/height: inside these boxes key in the pixel sizes to assign to the window containing the trend displayed in runtime.
Remember that when altering the height and width of the window inside an existing trend the size and proportions of some objects and character fonts could change. In addition, the original configuration of descriptions could be changed.

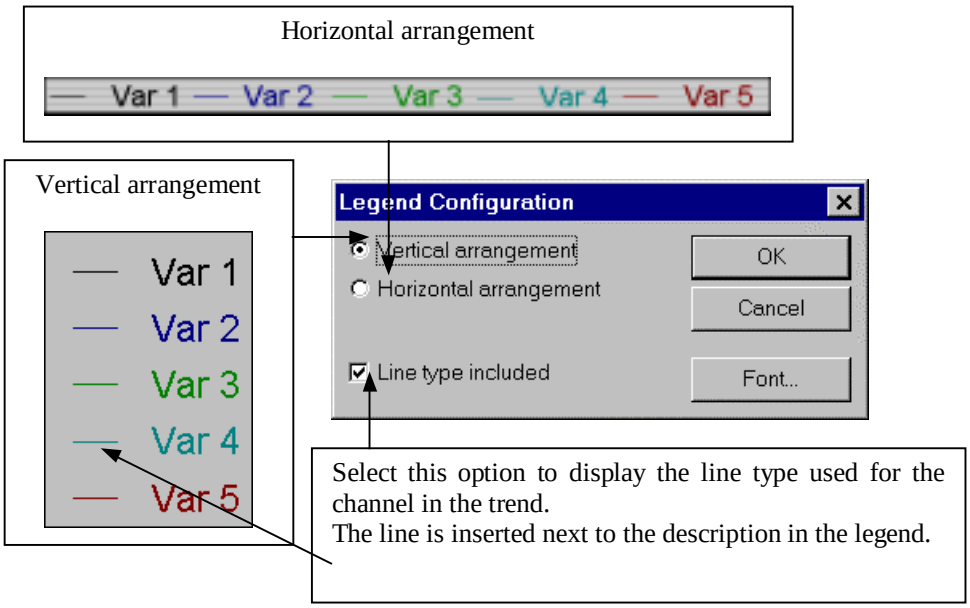
11.4.2.2.2 Legend area

Configuring this command enables the legend to be activated inside the trend window.
A legend is a box that identifies the patterns or colors assigned to the trend data series.

place a *'check'* (✓) inside this box if you do not wish the legend to be displayed in the trend window. →

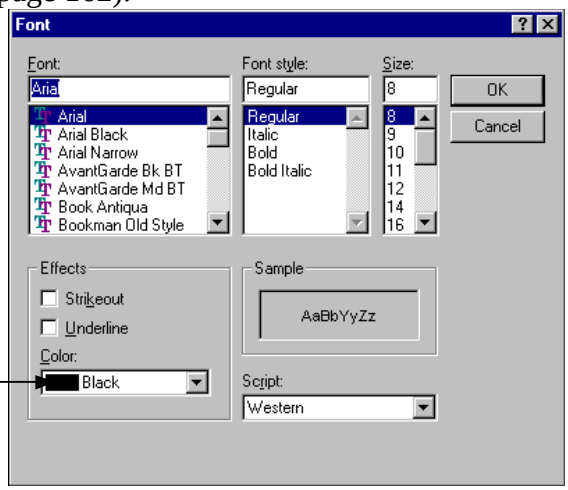


To configure the legend, click with the mouse on the *"Configuration"* button to open a window from which to select the options to assign to the trend legend.



The window *"Legend configuration"* contains the *"Font"* command. Click with the mouse on the *"Font"* command to open the *"Font"* dialog window from which to select the character type to assign to the values contained in the legend.
Remember that is impossible to change the color of the characters contained in the legend because the default colors are those contained in the channel configuration window (see chapter 11.4.2.1.7 Trend on page 162).

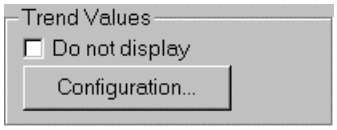
The font color of legend characters cannot be changed.



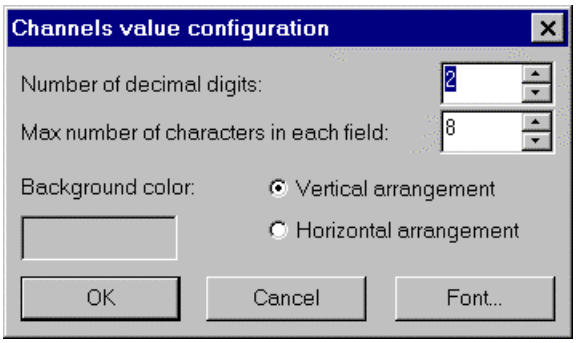
11.4.2.2.3 Trend channel values area

Configure this command to display the table of the current values of the channels monitored by the trend window.
A values table contains the numeric trend data. Each line of the table is a data series referring to a given variable.

place a *'check'* (✓) inside this box if you do not wish the table trend value to be displayed in the trend window.

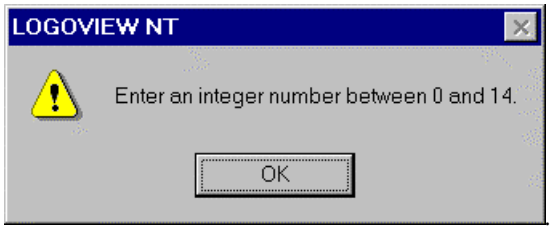


To configure the table of current values, click with the mouse on the *"Configuration"* to open a window from which the options can be selected to assign to the series of current trend values.



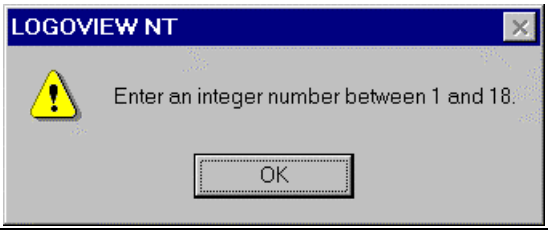
Number of decimal digits: enter the number of decimals of the current value that you wish to display in the legend referring to variables monitored by the trend.
Example: **3** decimal points display in legend 654.**435**

Inside the numeric box a figure between 0 and 14 can be entered. If an incorrect figure is entered this error message will be displayed:



Maximum number of characters in each field: in this box the maximum number of digits for the current value, including decimal digits, that you wish the monitored trend variables legend to display.
Example: maximum number of characters: **8**
number of decimal digits. **3**
legend display: 756913.23
The example shows that the displayed number, including the 3 decimal digits, would have exceeded the maximum set number of characters **(8)**.
The current value is therefore shown only to 2 decimal places.

Numbers between 0 and 18 can be keyed into the numeric box. If an incorrect entry is made, this message will be displayed: .

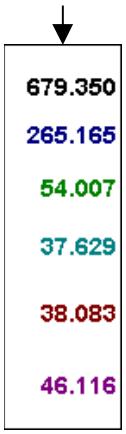


Background color: use this option to check the color to assign to the background of the window that contains the series of data on the monitored variables. Click with the mouse on the box containing the color to open the *"Color"* window in order to select the channel color from it.

---

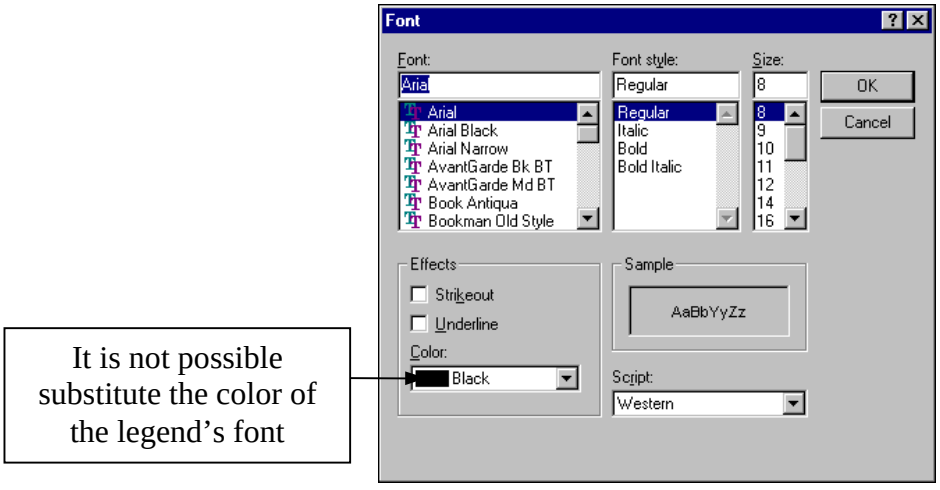
*Only plain colors can be used for the channels. If a patterned color or a combination of colors is selected **LOGOVIEW NT** will approximate the color to the nearest of the 16 basic colors and will display this error message:*

Vertical arrangement



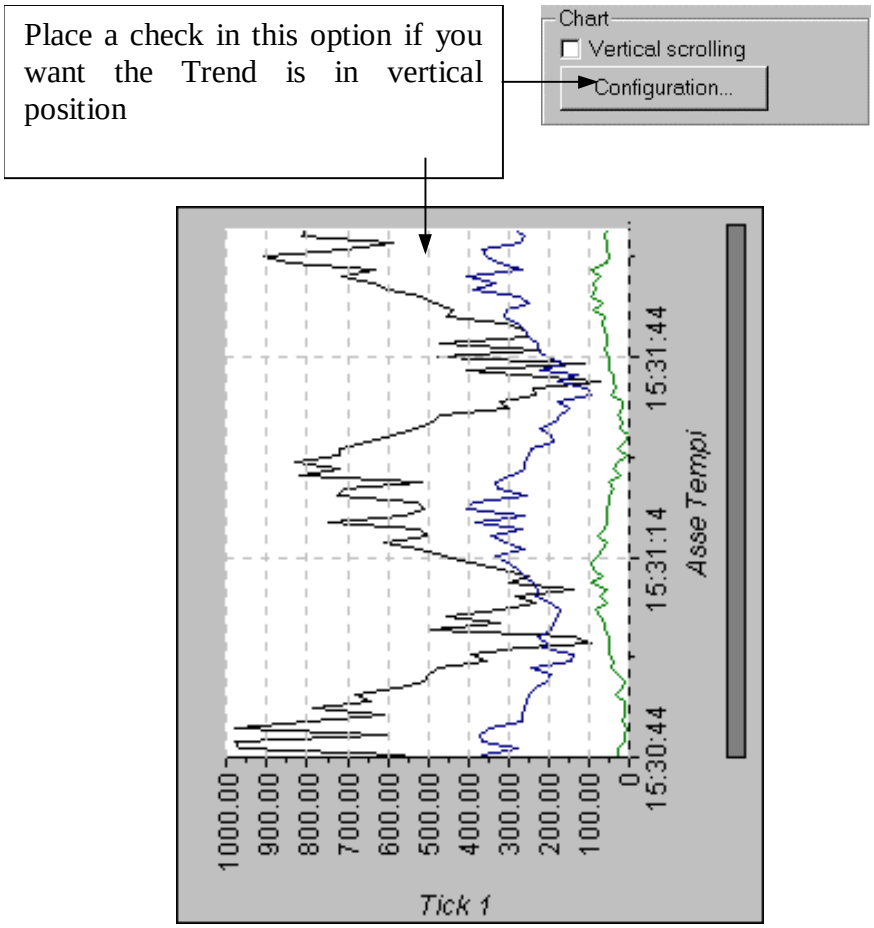
Horizontal arrangement

Font: Click with the mouse on this box to open the dialog window *"Font"*, from which to select the type of character to assign to the current values contained in the legend.
Remember that is impossible to change the color of the characters contained in the legend because the default colors are those contained in the channel configuration window (see chapter 11.4.2.1.7 Trend on page 162).



11.4.2.2.4 Chart area

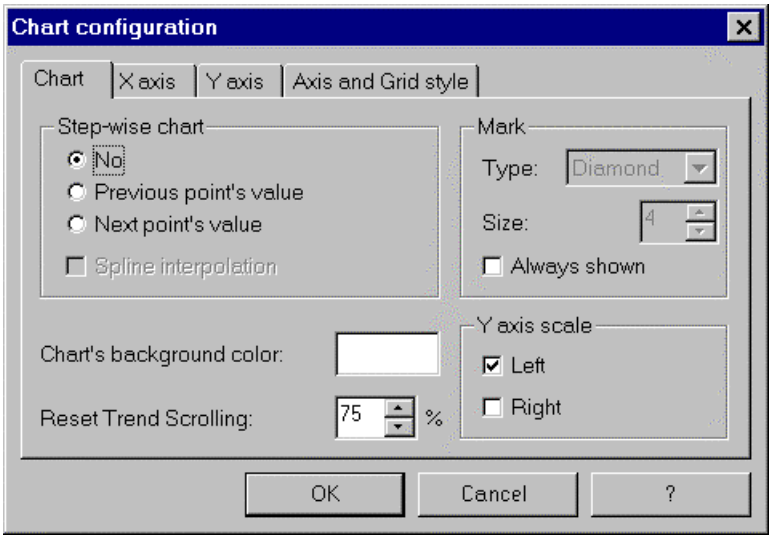
Configure this command to change the form of the trend chart display.
A chart uses an indicator, in this case the trend, to display the values of the monitored variables.



To configure chart characteristics click with the mouse on *"Configuration"* to open a window divided into three sections from which the options can be selected to assign to the graphical display of the trend window.

11.4.2.2.4.1 *Area section of chart*

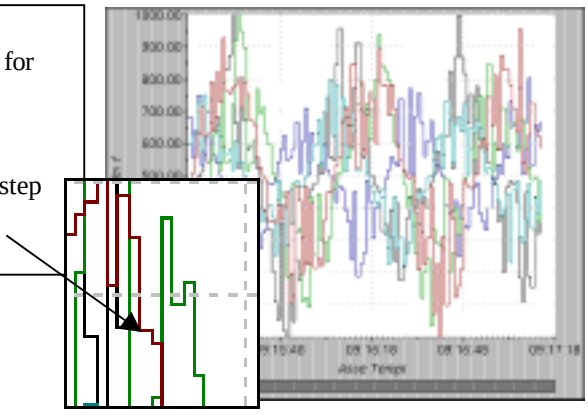
The first section of the window is dedicated to configuring the chart area, i.e. the entire chart and all the relative items.



Step-wise chart: select *"No"* to display the normal distribution of lines in the trend. Use this option with the two commands *"Previous point's value"* or *"Next point's value"* to display the chart in steps within the trend window.

Previous point's value: the trend uses the previous point's value as the starting point for each step.

Next point's value: the trend uses the next point's value as the starting point for each step



Spline interpolation: this option is active only with historical line trends.

Chart background color: use this option to select the color to assign to the background of the window containing the chart. Click with the mouse on this box to open the *"Color"* window, from which the required color can be selected.

*Only the 16 base colors displayed at the bottom of the window can be selected. If a color is selected from the top area **LOGOVIEW NT** will select the nearest match from the colors in the base colors area and will display this error message:*

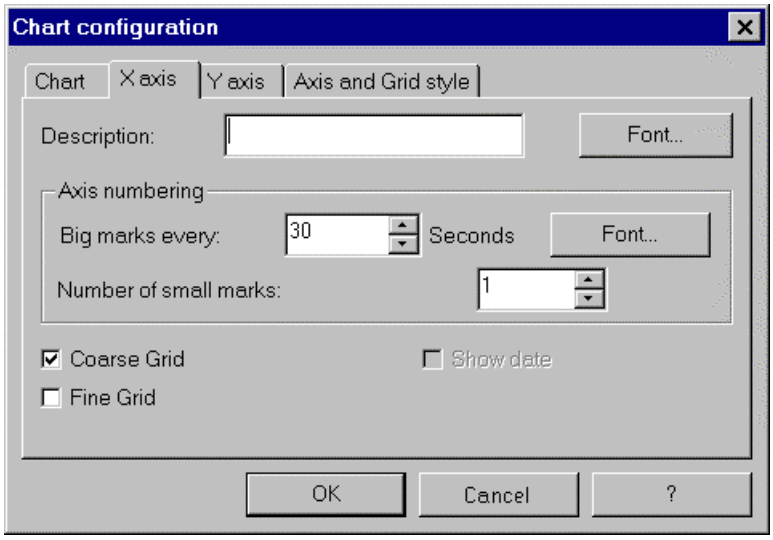
Reset trend scrolling: inside this box enter the percentage of the trend that you wish to display on the video when the scrolling through the trend. It is advisable to display

between 50% and 80%. To display the trend that cannot be seen on the video during runtime click with the mouse on the scroll bar at the bottom of the trend.

Mark type: this option is active only with historical line trends.
Y axis scale: enables the vertical coordinates or Y axis to be positioned to the left or right or on both sides of the trend.
If both options are deactivated the scale is not displayed

11.4.2.2.4.2 *X axis section*

The second section of the window is dedicated to configuring the X axis or horizontal trend coordinates.
The axis marks the edge of the chart and provides terms of reference for measurements or comparisons.

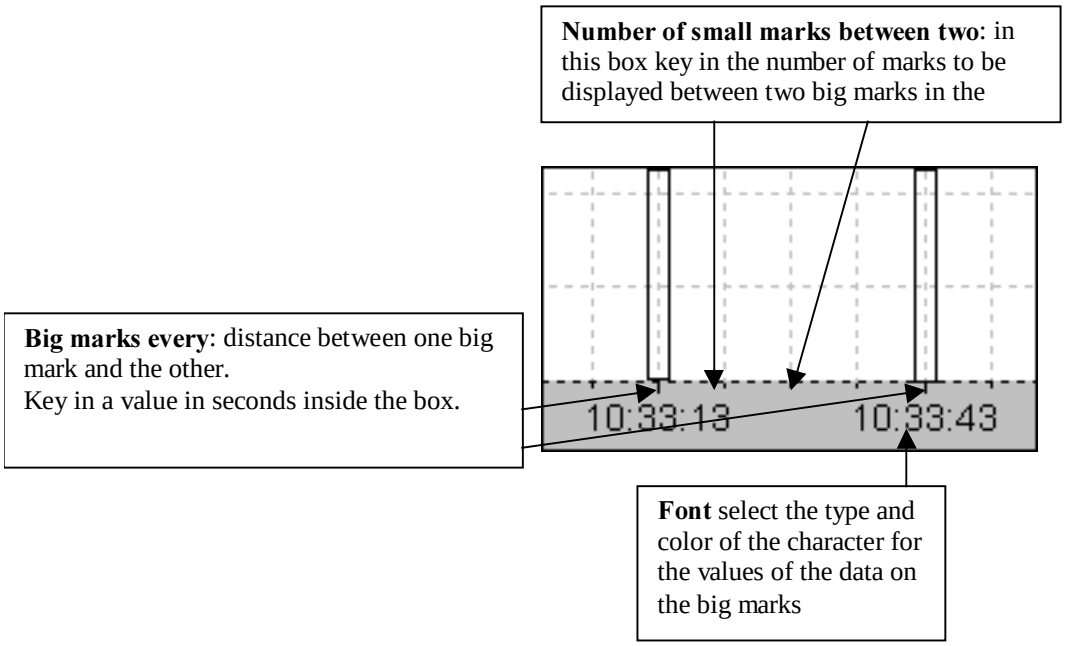


Description: into this box key in the description that will be displayed on the X axis inside the trend window.

Select the *Font* command to open a dialog window in which character and color of the description can be modified.

Axis numbering: in this area of the window the grid of the X axis inside the trend window can be configured.
Activate the *Font* command to open a dialog window in which the character and color of the numbering can be modified.

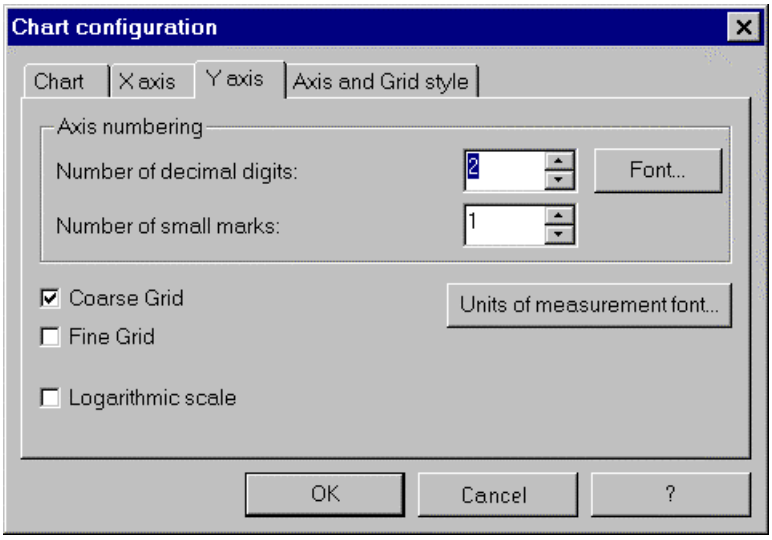
Display of axis numbering options



Grids: the grid display of the big marks and the minor marks between the big marks can be activated or deactivated inside the chart.

11.4.2.2.4.3 *Y axis section*

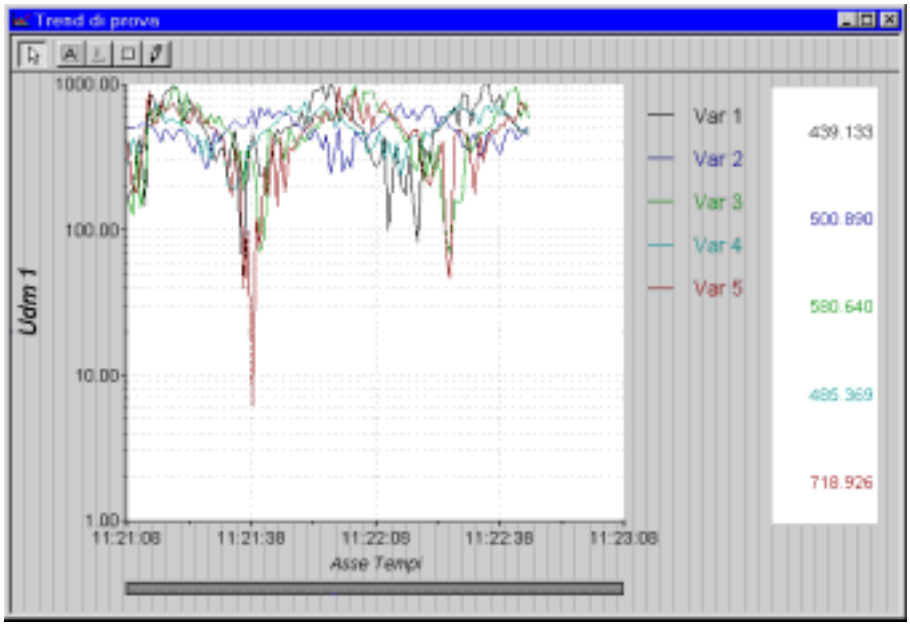
The third section of the window is dedicated to configuring the Y axis or horizontal axis of the trend coordinates.
The axis marks the edge of the chart and provides terms of reference for measurements or comparisons.



Font Unit of measurement: use the mouse cursor to open the *"Font"* dialog window from which to select the type of character to assign to the description of the unit of measurement shown on the Y axis.

Grids: the grid display of the big marks and the minor marks between the big marks can be activated or deactivated inside the chart.

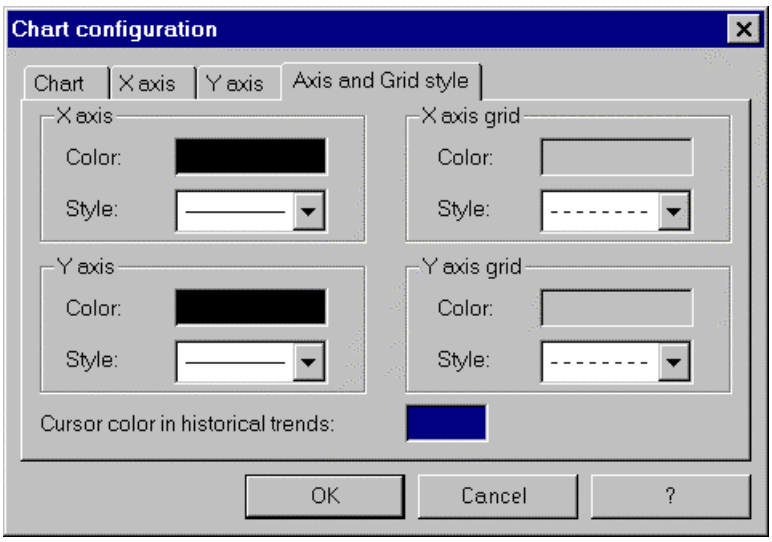
Logarithmic scale: activate this command to recalculate the values in the boxes 'Minimum value', 'Maximum value', 'Main unit' and 'Secondary unit' as values to the power of 10 for the values axis using the data points plotted on the chart. Logarithmic charts do not accept zero or negative values and the values contained in the main unit and secondary unit must be as great as or larger than 10.



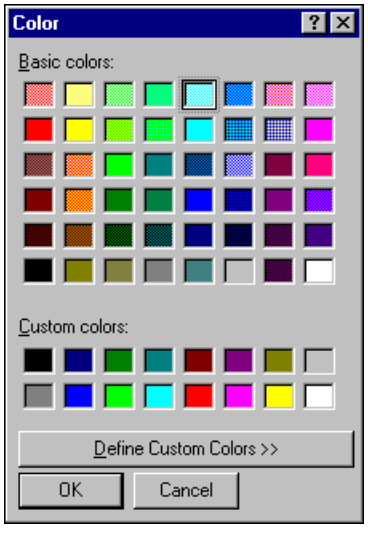
Using a logarithmic scale for the trend is suitable for fields in which there are very wide differences in the values of variables. The more gradual increase in the value of the logarithm compared with the integer enables the system to be monitored better.

11.4.2.2.4.4 *Axis and grid style*

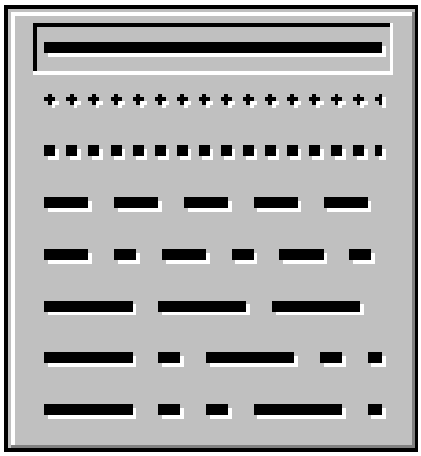
The fourth section of the window is dedicated to configuring the styles and colors of the X and Y axes and of the coarse and fine grids shown on the main and minor marks inside the trend window.
The axis marks the edge of the chart and provides terms of reference for measurements or comparisons.
The grid is a group of lines that can be added to a grid to simplify data display and evaluation.



Inside the different parts of the window the color and style of the axes and grids can be selected by two different commands that activate respectively the dialog window *Color* for the colors of the lines and the curtain window containing the different styles to assign to the lines.



Color window



Finestra *Tipo Linea*

Cursor color on historical trends: this option is active only with historical trend lines.

When all trend configurations have been completed, ***LOGOVIEW NT*** positions itself directly on the window displaying the chart that has been created. Within the window, all configurations that are required to optimize the trend can be checked and if necessary modified.

All the commands and characteristics of this dialog window are set out in chapter 0 *"Modify" command,* on page **Errore. Il segnalibro non è definito.** .

11.5 HISTORICAL LINE TRENDS

Historical line trends enable the trends of one or more variables stored in a historical archive or database to be displayed in the form of a time chart.
There are two categories of historical line trend. One type is based on .DBF files whilst the other is based on .ARC files. These files rely on ***LOGOVIEW NT***'s historical archives and are configured at the outset by the developer.

11.5.1 ARC historical archive

A historical archive is a database in which the records are made up of blocks of variables. These records enable the trends of a certain number of variables to be monitored over extended periods. The historical archives are therefore ***LOGOVIEW NT***'s historical memory.
LOGOVIEW NT can manage up to 20 different types of historical archives. Each archive has its own record format, which depends on application requirements.
ARC historical archives are configured by activating the *Formats* command in the *Setups* menu. This opens the dialog window *Formats configuration.* From this window the commands and options can be selected that are required for archive characterization.

11.5.2 DBF database

A database is a group of information that is organized logically, within which each field has precise characteristics that depend on the information that needs to be stored.
The purpose of a database is to organize data in such a way that they can be retrieved as simply as possible.
DBF historical archives are configured by activating the *Formats* command in the *Setups* menu. This opens the dialog window *Formats configuration.* From this window the commands and options can be selected that are required for archive characterization.

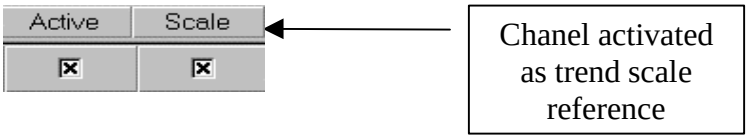
11.5.3 General characteristics

Each line trend is displayed in a separate window and can be configured by a series of different parameters.

Time duration displayed by chart
Sampling period *– time or according to a set range*
Legend
Position and characteristics of the scale for X-Y axes
Characteristics of the grid on the chart

The list of the lines that the user can display in a line trend is read by the initial configuration of the internal ***LOGOVIEW NT*** archive or by the database.
In each line trend a series of variables can be configured that can be sampled inside the chart. Up to 32 of this variables can be displayed simultaneously in the chart.

LOGOVIEW NT enables the configured variables to be configured separately from the 32 displayed variables. In this way it is possible to set a certain number of variables but display only 32 with the relative scale limits and values separated from the form in which they are displayed on the chart.
The chart display for each of the 32 variables that can be displayed in the trend is configured on the basis of the variable that is selected as scale reference.



During runtime the user can modify the trend scale and the displayed variables that have been configured in the 32 data channels. These modifications can be made subject to the insertion of passwords during the line trend configuration phase.
A table can also be displayed showing the values current in the archive.

11.5.4 Configuring a historical line trend

As is the case with real-time line trends, after *Line Trend* has been selected from the menu *View* or by clicking on the *Line Trend* icon on the toolbar the window *"Line trends configuration"* will open. Place the mouse inside the *Historical* section and select it with the mouse cursor. 

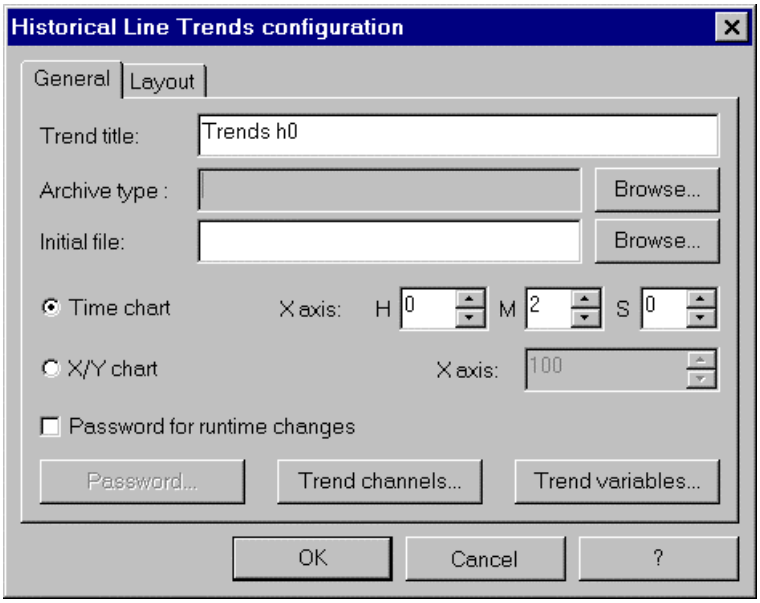
The *Historical* section enables the line trends to be configured by clicking on the command *"New"* to open the dialog window inside which the parameters can be inserted that are required to display the chart.
The dialog window is divided into two different sections 

.
Line trends configuration comprises a series of parameters that refer to operations and chart form. To accede to the section of the window that is dedicated to the *Layout*, first configure the parameters in the *General* section.

If the user tries to transfer to the layout section before configuring the General section ***LOGOVIEW NT*** *displays an error message:*

*Click on "OK" to position **LOGOVIEW NT** directly inside the dialog window of "Archive selection" variables" in which the variables required for the line trend can be configured (see Chapter 181, page 181).*

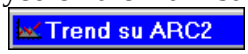
11.5.4.1 *General section*



The *General* section of the *"Line trends configuration"* window is divided into different areas, inside which the parameters can be inserted for creating a line trend.

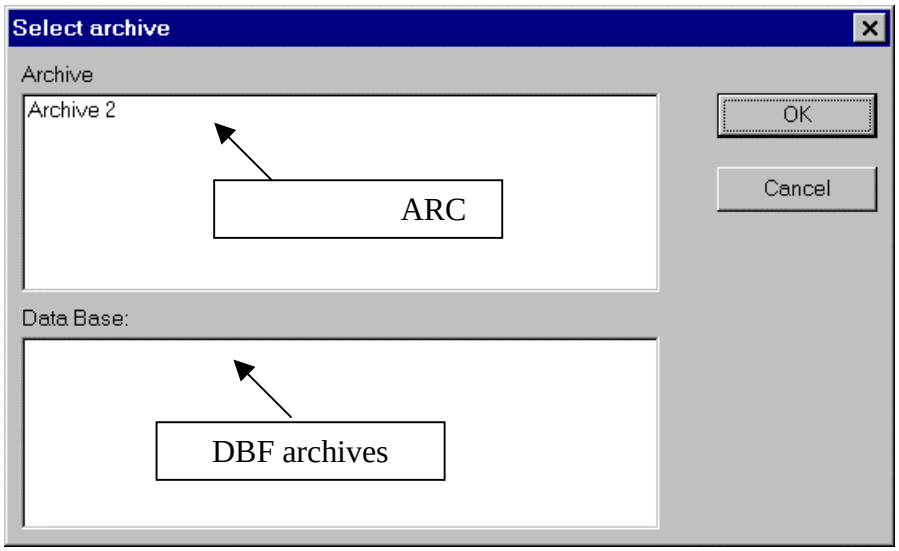
11.5.4.1.1 Trend name

In this box key in a description of the line trend that is being configured. This description must be unique: each trend must have its own name because the trend name is used during runtime to open the chart.
The trend name is displayed on the main bar of the dialog window during runtime.



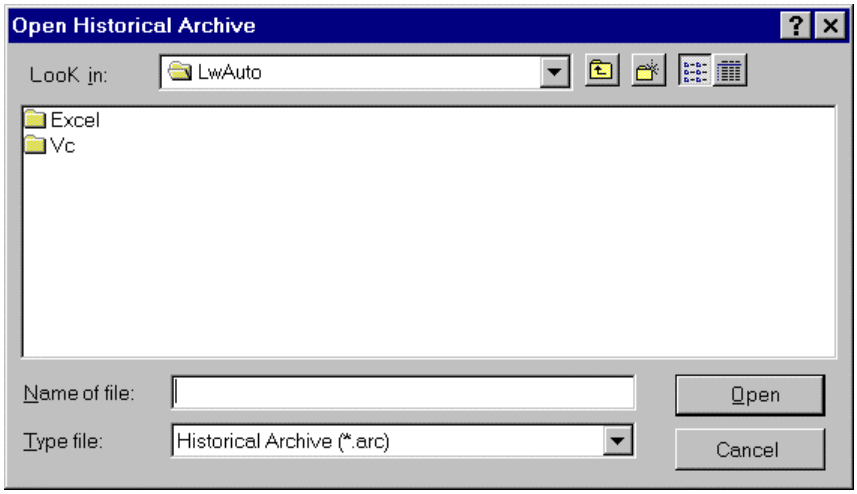
11.5.4.1.2 Archive type

In this box enter the name and type of the archive in which you wish to save and store the trend records of a given number of variables that were recorded during runtime.
To select archive type, click with the mouse on the *Browse* command to open the *Select archive* dialog window. From this window, select the archive in which the monitored data should be stored.



11.5.4.1.3 Initial file

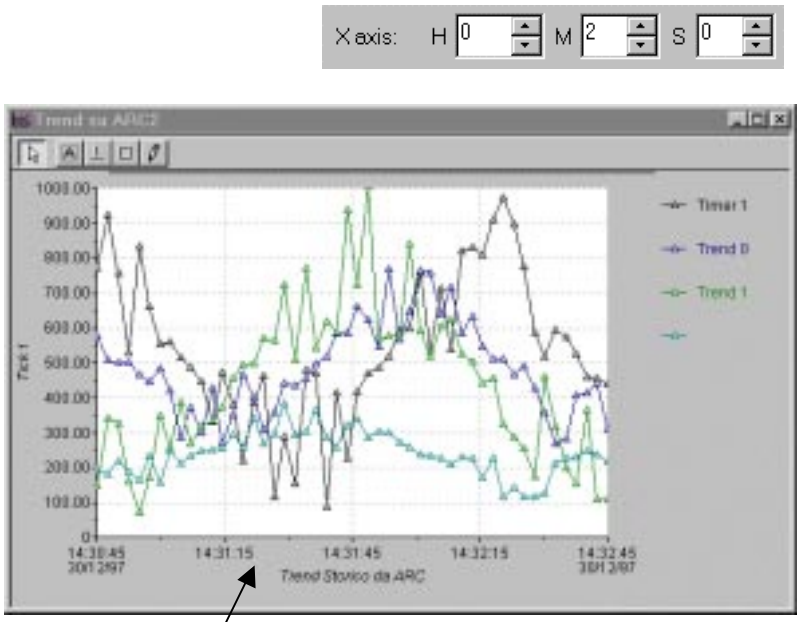
In this box enter the patch in which the selected archive has been stored. This indicates the path in which the trend will be opened during runtime. To open the path, click with the mouse on *Browse* to open the dialog window *Open archive* from which to select the archive path.



The *Open archive* dialog window can be configured in two different ways, depending on the type of archive that is being selected: DBASE or ARCHIVE.

11.5.4.1.4 Time chart

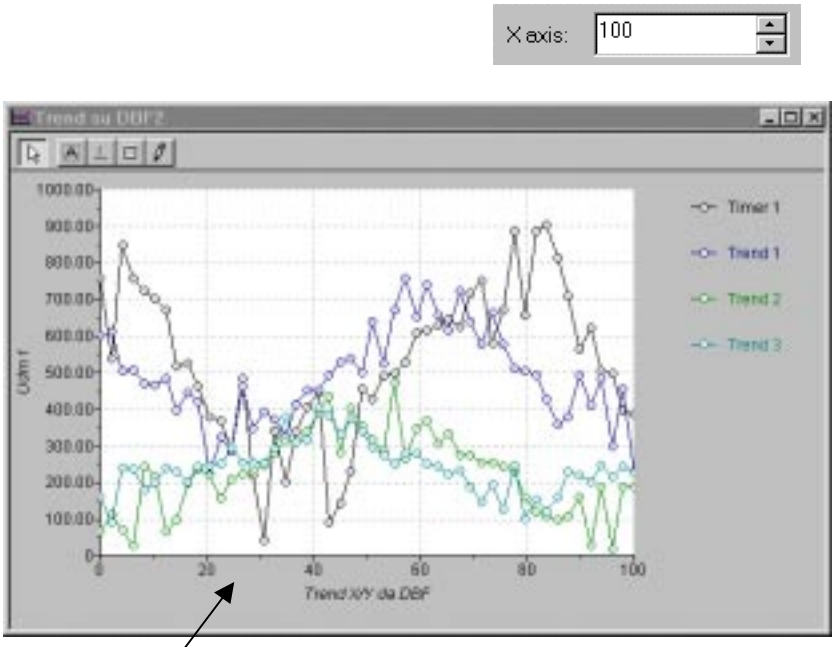
If this option is selected the chart in the trend window is displayed along an X axis that is defined by the time values inserted into the different boxes.



X axis is defined by a pre-set time parameter that was set during the configuration phase.

11.5.4.1.5 X-Y chart

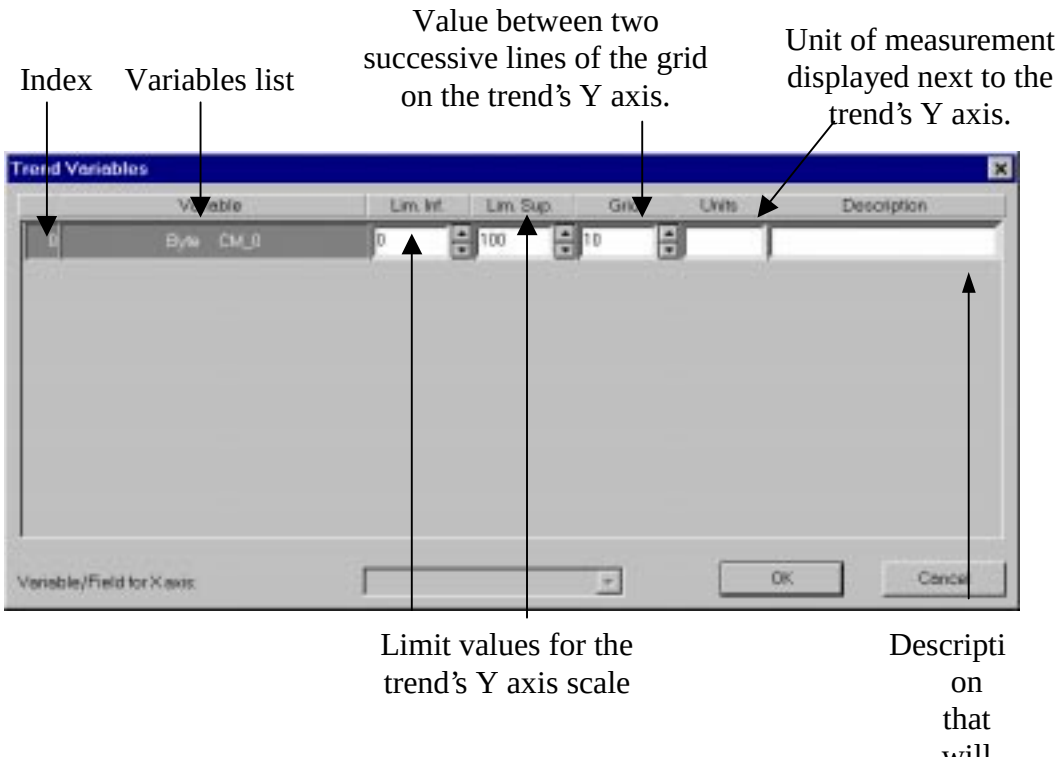
If this option is selected the chart in the trend window is displayed along an X-Y axis that is determined by an arbitrary range keyed into the appropriate box.



X axis is defined by an arbitary pre-set range defined during the configuration phase.

11.5.4.1.6 Trend variables

Activate this command to open the dialog window *"Trend variables"*. Unlike the real-time trend, it does not allow variables to be modified because that are read by an archive.
To modify the variables, the archive must be reconfigured.



The variables window nevertheless allows the user to modify line trend configuration limits.

Variable: this historical trend field cannot be modified.

Top and bottom Limits: inside these boxes key in the limits to be assigned to the trend's Y axis.
The values can also be modified by the arrow commands on the side of the box.
Normally, the values assigned to the limits are set directly by the chart and depend on the values of the configured variables.

Grid: inside this box key in the value of the distance between two successive grid lines on the trend's Y axis.

Unit of measurement: inside this box key in the unit of measurement caption that must be displayed on the trend's Y axis.
Description: in this box key in the description that will appear inside the trend legend.

Variable/field to use for the X axis: this command is not available for ARC historical line trends. It is available only for DBF historical line trends. Within this option, choose from a cascade menu the field from which to select the date and time required for plotting the chart.

An ARC historical line trend already contains a Date/time field, which is added to the file when the trend is archived.

A DBF historical line trend does not contain a Date/time field. It must therefore be created inside the Events configuration during the database creation phase. The field that is created must be a character field comprising 14 characters that are made up in the following manner: year (4 characters), month (2), hour (2), minutes (2) and seconds (2).

The Events configuration and the Field configuration are set out below.

	Command	Parameters
0	RESET VAR	!0,100
1	RESET VAR	#0,100
2	RESET VAR	:0,100
3	RESET VAR	@0,100
4	END	
5		

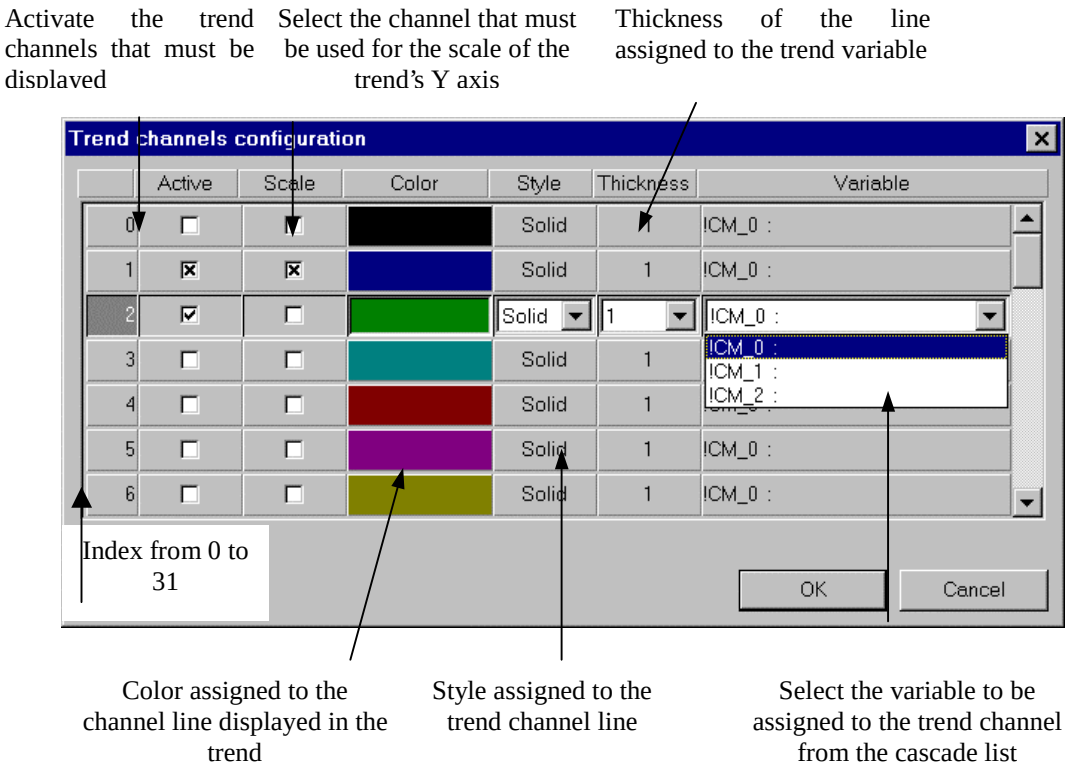
Date/time field configuration for historical line trend database.

11.5.4.1.7 Trend channels

Activate this command to open the dialog window *"Trend channels configuration"*. This enables the graphical characteristics of 32 channels to be selected and configured that are assigned to the configured variables that are stored in the archive displayed in the window *"Trend variables"* on page **Errore. Il segnalibro non è definito.**.

The 32 variables that are activated in the channels will then be displayed inside the trend.

The trend channels configuration window is divided into different areas inside which the options must be activated for making up the line trend.

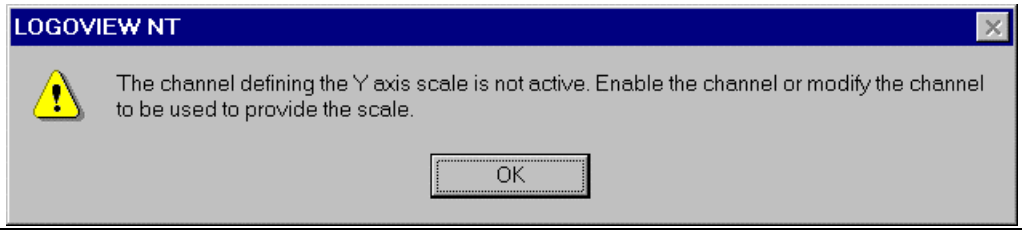


Active: use the mouse to place a *'check'* (✓) in the box in order to activate all the channels (up to a possible maximum of 32) that you wish to have displayed in the line trend.
It is not possible to use the line trend until at least one of the channels inside the dialog window has been activated.

*If the user forgets to activate the channels **LOGOVIEW NT** will display a fault window.*

Scale: use the mouse to place a *'check'* (✓) in the box in order to activate the channel that must be used for the trend's Y axis scale.
One of the channels that is available for use for the scale must be activated.

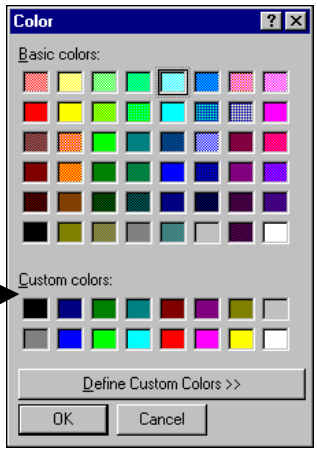
*If the user does not activate the channel, **LOGOVIEW NT** will display an error message.*



Color: select the color to be assigned to the display of the line for the variable assigned to the channel in the trend. To change the color inside the box, select the channel line and then click on it to open the *"Color"* window within which the channel color can be selected.

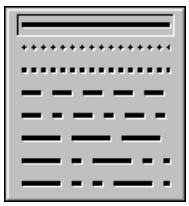
Several channels can be assigned the same color because the style and thickness of the lines can be varied according to the different variables displayed in the trend.

Only plain colors can be selected. If patterned colors are used or if the colors are made up of a combination of two or more colors, ***LOGOVIEW NT*** will not accept the selection



*If a patterned color or a combination of colors is selected **LOGOVIEW NT** will approximate the color to the nearest of the 16 basic colors and will display this error message:*

Style: select the line type to be displayed inside the trend from the cascade menu.



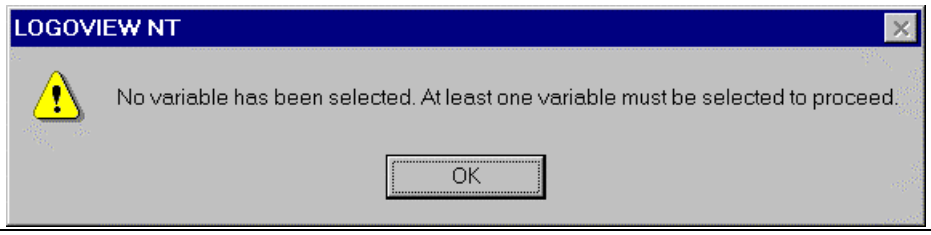
Thickness: from the cascade menu select the thickness of the line to be displayed inside the trend. Four different thicknesses can be displayed.

Variable: from the cascade menu select the variable to be assigned to the channel that should be displayed inside the trend.
The displayed menu contains all the variables configured inside the dialog window *"Trend variables"* on page **Errore. Il segnalibro non è definito.**.

It is not possible to display all the variables configured by composing a single trend because the maximum number of channels that can be activated is 32. Nevertheless, different trends that are assigned to different variables can be created in order to ensure complete monitoring during runtime.
In such cases the same scale should always be used for the Y axis of the different trends in order to be able to better compare the different situations.

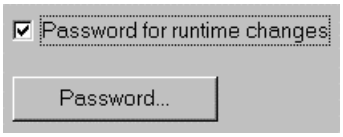
---

*If the operator runs the "Trend channels" command before the General section has been configuration, **LOGOVIEW NT** will display this error message:*



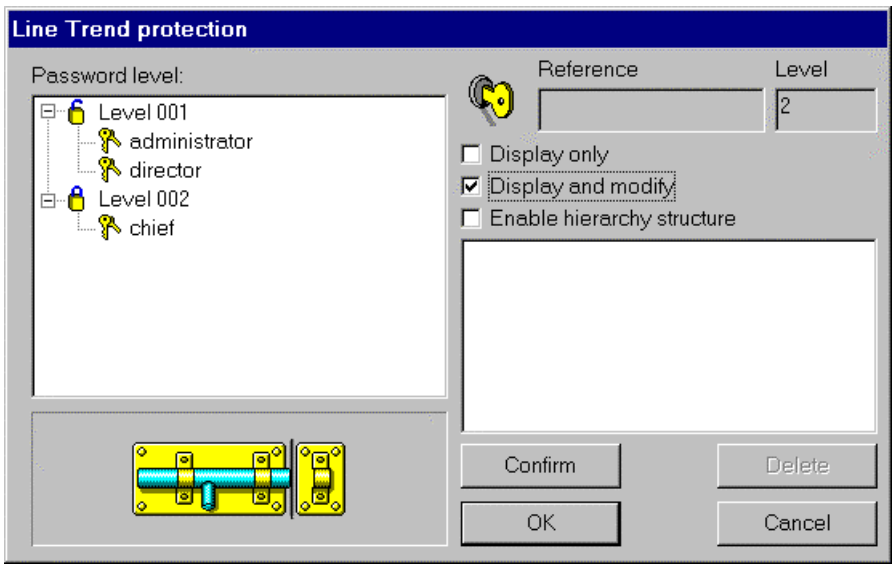
11.5.4.1.8 Password for runtime changes

Select this command to use a password to protect the trend that is being configured when it is displayed during runtime.
Place a *'check'* (✓) in the box to activate the button for opening the dialog window in which to insert the password.



It is not possible to activate the command without entering a password into the configuration window. If the user forgets to make an entry LOGOVIEW NT will display this error message:

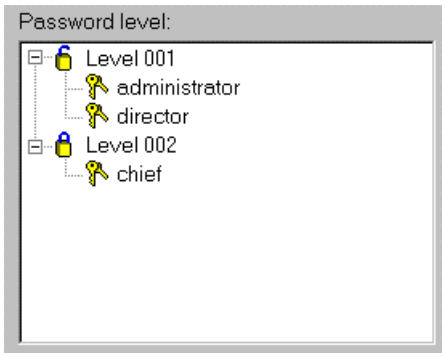
Use the mouse cursor to open the dialog window *"Line Trend protection"*. From here, the users and protection levels or the line trend can be entered.



The trend protection password can be applied in two different ways.
The first type depends directly on the user's personal password. The second type is hierarchical and depends on the previously compiled list.

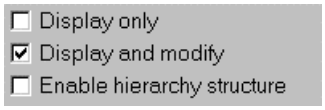
11.5.4.1.8.1 *Protection directly from password*

Inside the *"Password levels"* area of the dialog window a list appears that numbers the levels from 001 to 255. Different users with different functions and personal passwords can be inserted at each level. To display the users, click twice on the affected level to open the list.



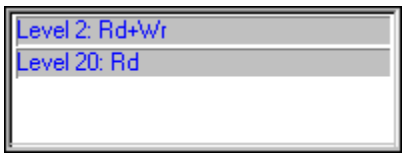
Click with the mouse on the set user of the open level. The user will be highlighted and displayed in the reference area and alongside the protection level will be shown:

The user must now be assigned rights of access to the trend. Use the mouse cursor to select the rights of access from the list of options. The selected options are marked by a *'check'* (√):



After completing these steps correctly, use the 

key to add the selected user to the list in the same way as for the other users. The list may hold up to 10 users.



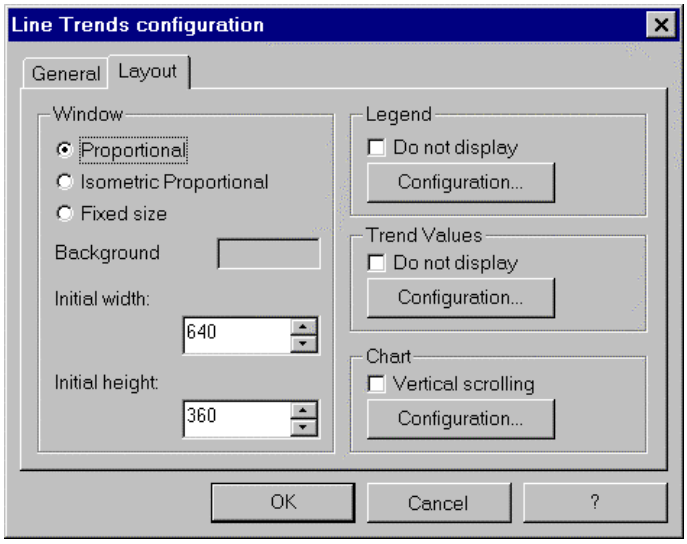
During runtime the listed users will have access to the protected trend only if they enter their passwords and will be able to modify or display the chart only if they have been assigned this right by the developer during the design phase.

11.5.4.1.8.2 *Protection by hierarchical structure*

Assigning levels and passwords to the different users during the design phase is by itself a hierarchical choice: the higher the number (from 0 to 255) the greater the user privileges. To take a banal example, a line operator will have a LEVEL 0 password whilst a plant director will have a LEVEL 255 password.
Having said this, let us now turn to a short explanation of the option *"Enable hierarchical structure"*.
Selecting this command deletes the display of users list on the trend access list together with the privileges assigned to them by the developer. A level must be selected from the list of the *"Password levels".* This is displayed without any reference to the user:

If the command is confirmed during runtime all listed LEVEL 20 or above users on the list who are authorized to display and modify the chart can obtain a display whilst lower-level users will not be authorized to do so, regardless of their previous privilege level.

11.5.4.2 *Layout section*



The layout section of the *"Line trends configuration"* window is divided into different areas within which the line trend display parameters can be modified.

11.5.4.2.1 Window area

Ratio: if this option is activated the size of the line trend window can be modified during runtime by clicking on it with the mouse. Using this option to modify dimensions could create difficulties for the characters font because all the displayed parts are modified without considering the ratio between sizes.

Isometric ratio: activate this option to modify the dimensions of the line trend during runtime by means of the mouse cursor whilst maintaining the ratio between the trend sides. This option is recommended when the size of several windows needs to be changed during runtime in order to obtain a comparison of the different line trends with the same scale on the Y axis.

Fixed dimensions: if this option is activated the dimensions of the line trend window cannot be altered during runtime.

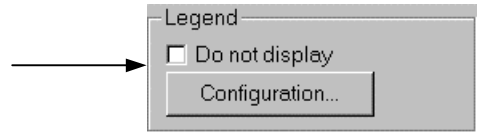
Background color: use this option to select the background color for the window that contains the trend. Click with the mouse on the box containing the color to open the *"Color"* window, inside which the trend's background color can be selected.

Initial width/height: inside these boxes key in the pixel sizes to assign to the window containing the trend displayed in runtime.
Remember that when altering the height and width of the window inside an existing trend the size and proportions of some objects and character fonts could change. In addition, the original configuration of descriptions could be changed.

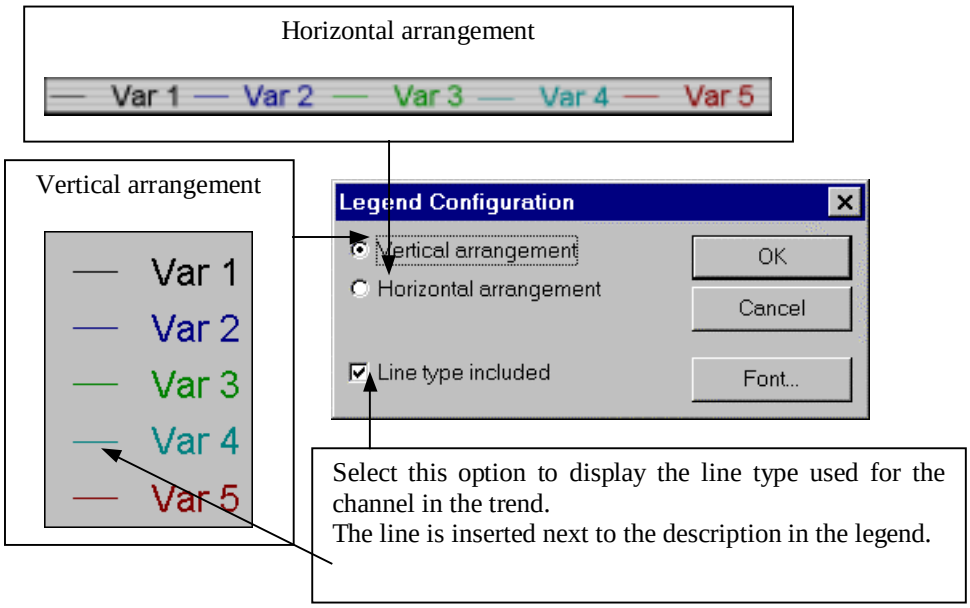
11.5.4.2.2 Legend area

Configuring this command enables the legend to be activated inside the trend window.
A legend is a box that identifies the patterns or colors assigned to the trend data series.

place a *'check'* (✓) inside this box if you do not wish the legend to be displayed in the trend window.

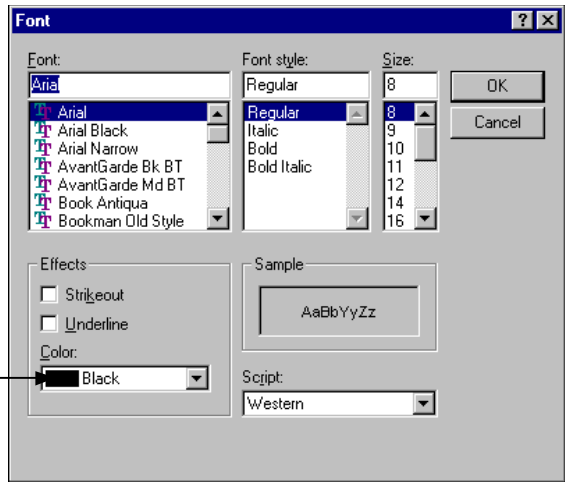


To configure the legend, click with the mouse on the *"Configuration"* button to open a window from which to select the options to assign to the trend legend.



The window *"Legend configuration"* contains the *"Font"* command. Click with the mouse on the *"Font"* command to open the *"Font"* dialog window from which to select the character type to assign to the values contained in the legend.
Remember that is impossible to change the color of the characters contained in the legend because the default colors are those contained in the channel configuration window (see on page. 184).

The font color of legend characters cannot be changed.



11.5.4.2.3 Trend channel values area

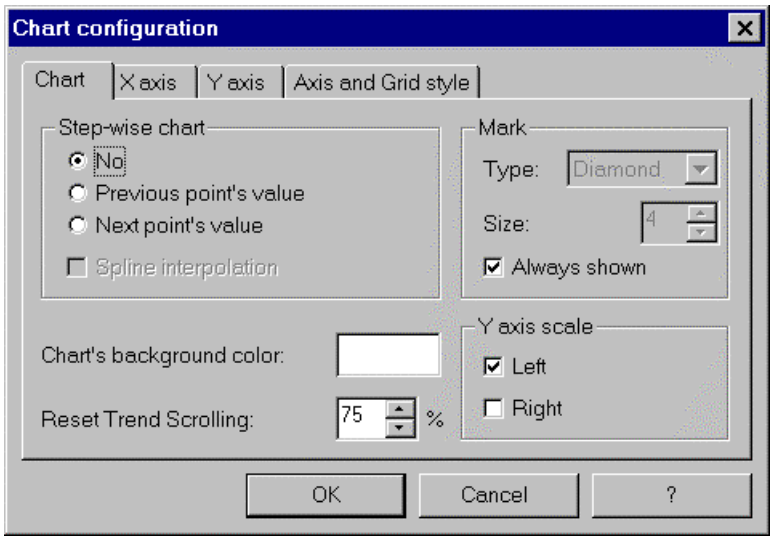
This option is active only for real-time line trends.

11.5.4.2.4 Chart area

Configure this command to change the form of the trend chart display.
A chart uses an indicator, in this case the trend, to display the values of the monitored variables.
To configure chart characteristics click with the mouse on *"Configuration"* to open a window divided into three sections from which the options can be
selected to assign to the graphical display of the trend window.

11.5.4.2.4.1 *Area section of chart*

The first section of the window is dedicated to configuring the chart area, i.e. the entire chart and all the relative items.



Step-wise chart: this option is available only for real-time line trends.

Spline interpolation: if this option is selected the points on the graph in the trend window are not connected by a straight line. ***LOGOVIEW NT*** use a quadratic equation (second degree equation) to carry out a spline interpolation in order to plot an ideal connecting curve.

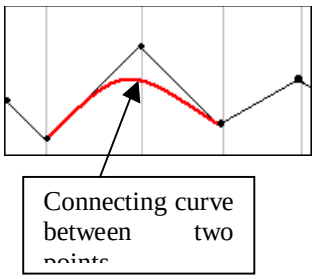
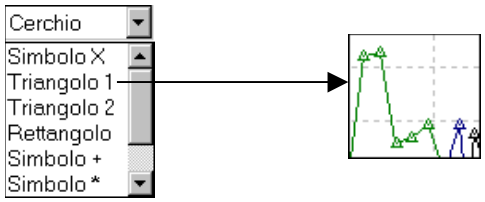


Chart background color: use this option to select the color to assign to the background of the window containing the chart. Click with the mouse on this box to open the *"Color"* window, from which the required color can be selected.

Only the 16 base colors displayed at the bottom of the window can be selected. If a color is selected from the top area ***LOGOVIEW NT*** *will select the nearest match from the colors in the base colors area and will display this error message:*

Reset trend scrolling: this option is available only for real-time line trends.

Mark type: within this area, select the mark type and size of the *mark* for indicating the value of a given trend variable.
From the curtain list select the type of mark that should be displayed on the chart.

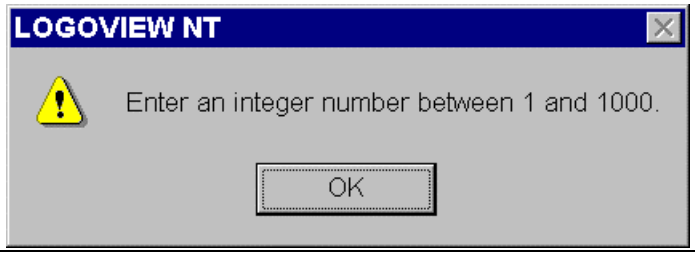


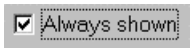
Circle
X symbol
Triangle 1
Triangle 2
Rectangle
Symbol +
Symbol *

In the size box key in the size of the mark. The size must be between 1 and 15.

---

*If an incorrect number is keyed in **LOGOVIEW NT** will display the following error message:*



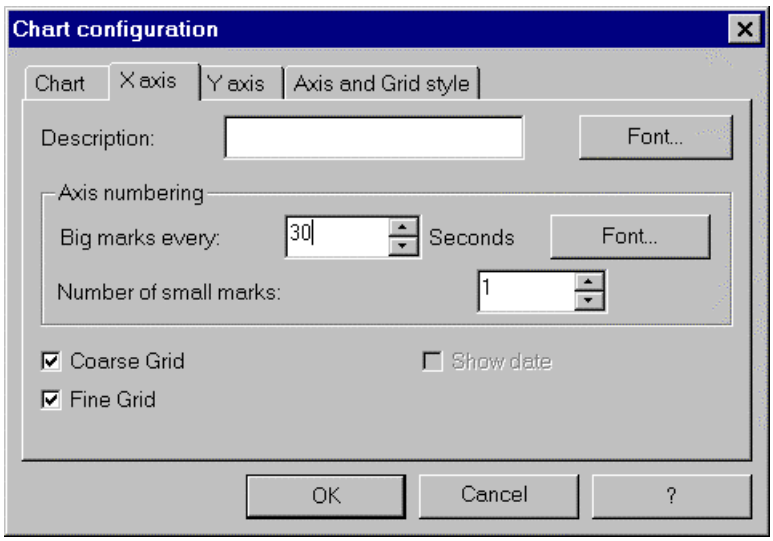


Select this box to always display the mark in the trend.

Y axis scale: enables the vertical coordinates or Y axis to be positioned to the left or right or on both sides of the trend.
If both options are deactivated the scale is not displayed.

11.5.4.2.4.2 *X axis section*

The second section of the window is dedicated to configuring the X axis or horizontal trend coordinates.
The axis marks the edge of the chart and provides terms of reference for measurements or comparisons.

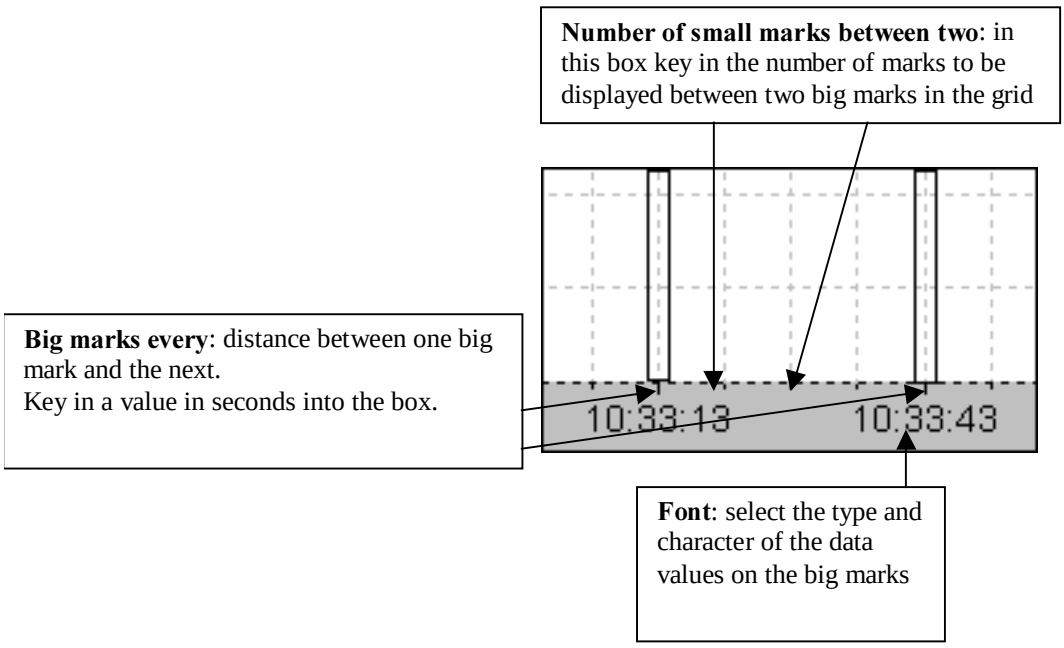


Description: into this box key in the description that will be displayed on the X axis inside the trend window.

Select the *Font* command to open a dialog window in which character and color of the description can be modified.

Axis numbering: in this area of the window the grid of the X axis inside the trend window can be configured.
Activate the *Font* command to open a dialog window in which the character and color of the numbering can be modified.

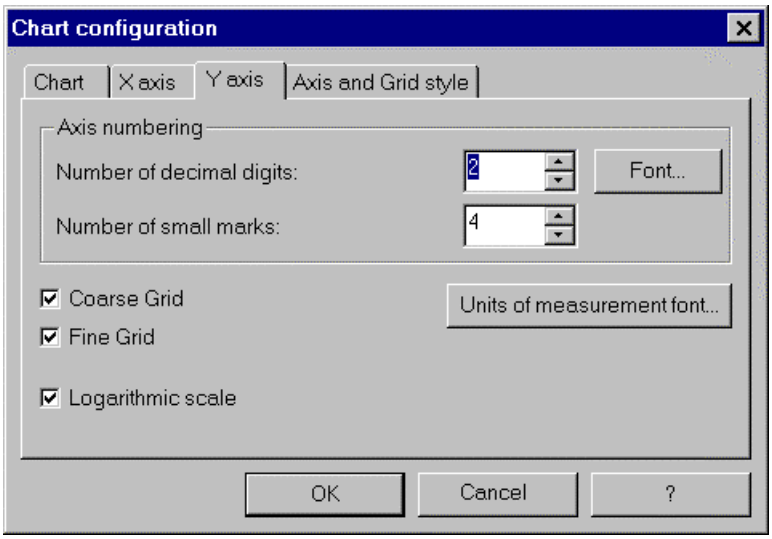
Display of axis numbering options



Grids: the grid display of the big marks and the minor marks between the big marks can be activated or deactivated inside the chart.

11.5.4.2.4.3 *Y axis section*

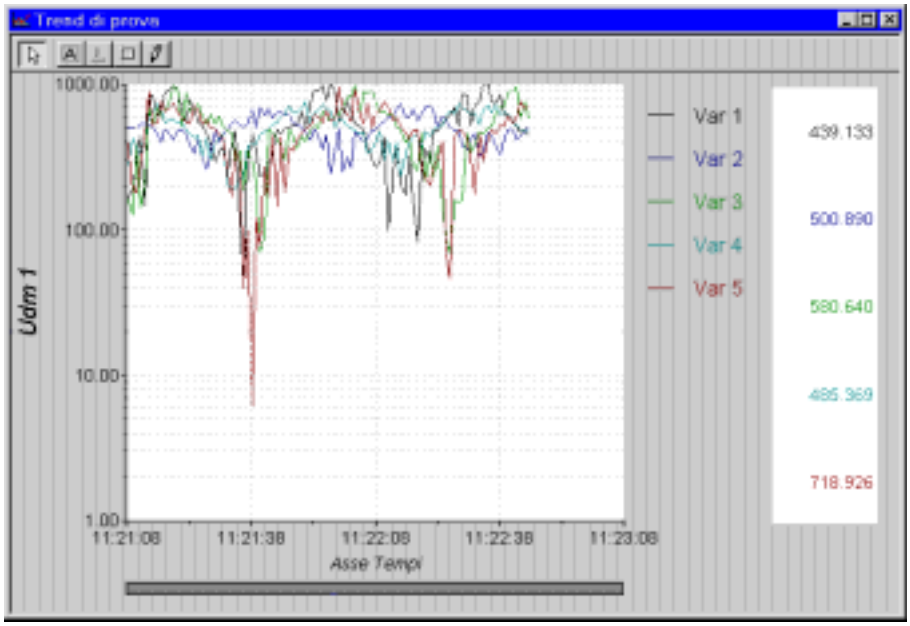
The third section of the window is dedicated to configuring the Y axis or horizontal axis of the trend coordinates.
The axis marks the edge of the chart and provides terms of reference for measurements or comparisons.



Font Unit of measurement: use the mouse cursor to open the *"Font"* dialog window from which to select the type of character to assign to the description of the unit of measurement shown on the Y axis.

Grids: the grid display of the big marks and the minor marks between the big marks can be activated or deactivated inside the chart.

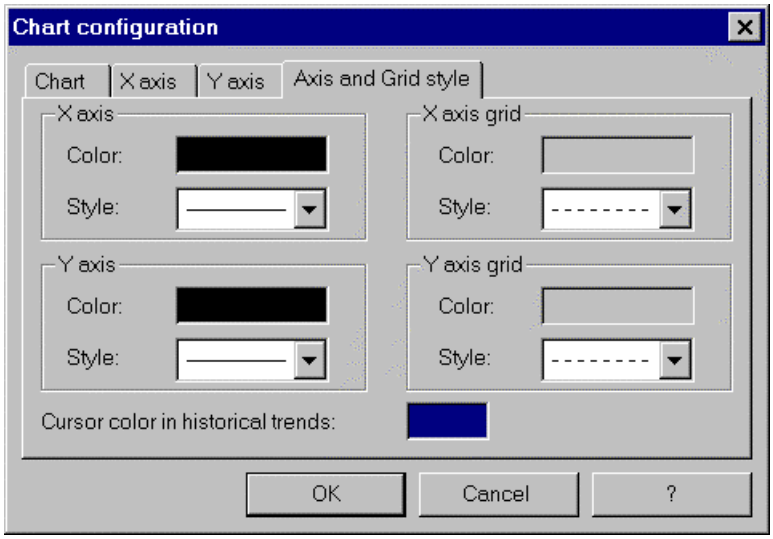
Logarithmic scale: activate this command to recalculate the values in the boxes 'Minimum value', 'Maximum value', 'Main unit' and 'Secondary unit' as values to the power of 10 for the values axis using the data points plotted on the chart. Logarithmic charts do not accept zero or negative values and the values contained in the main unit and secondary unit must be as great as or larger than 10.



Using a logarithmic scale for the trend is suitable for fields in which there are very wide differences in the values of variables. The more gradual increase in the value of the logarithm compared with the integer enables the system to be monitored better.

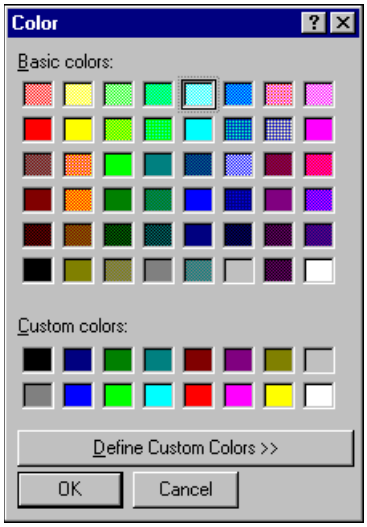
11.5.4.2.4.4 *Axis and grid style*

The fourth section of the window is dedicated to configuring the styles and colors of the X and Y axes and of the coarse and fine grids shown on the main and minor marks inside the trend window.
The axis marks the edge of the chart and provides terms of reference for measurements or comparisons.
The grid is a group of lines that can be added to a grid to simplify data display and evaluation.

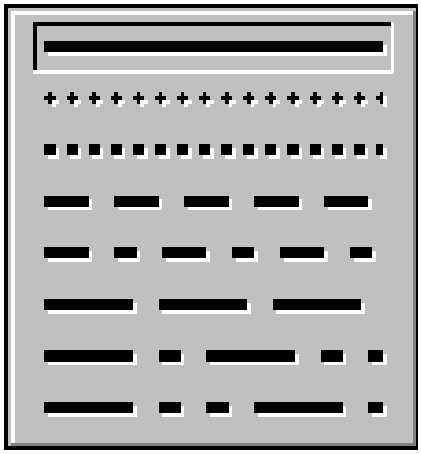


Inside the different parts of the window the color and style of the axes and grids can be selected by two different commands that activate respectively the dialog window *Color* for

the colors of the lines and the curtain window containing the different styles to assign to the lines.



Color window



Line type window

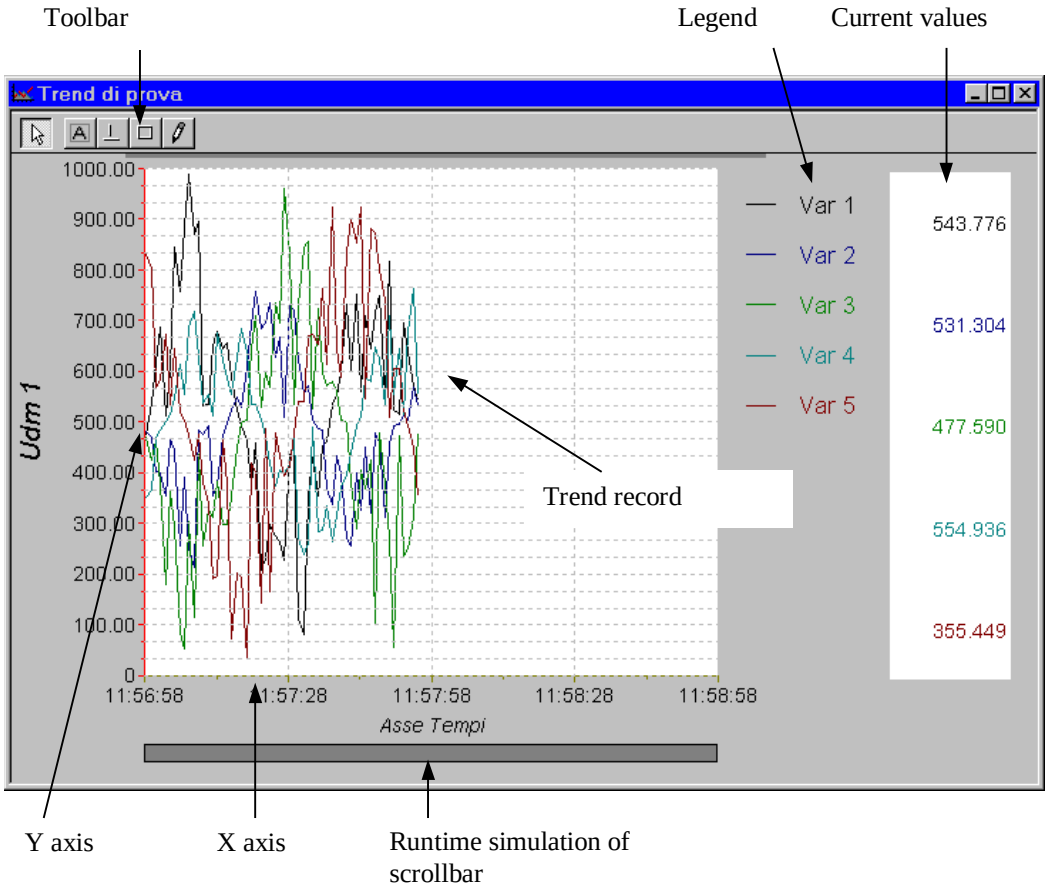
Cursor color on historical trends: this option enables the color of the cursor on the historical line trends to be selected. To select this command, place the mouse cursor inside the box containing the color. This will open the *"Color"* window, from which the required color can be selected.

When all trend configurations have been completed, ***LOGOVIEW NT*** positions itself directly on the window displaying the chart that has been created. Within the window, all configurations that are required to optimize the trend can be checked and if necessary modified.

All the commands and characteristics of this dialog window are set out in chapter 0 *"Modify" command,* on page 198.

11.6 " MODIFY" COMMAND MENU

Click on the *"Modify"* command with the mouse to open the dialog window in which the completely configured trend is displayed.
The *"Modify"* command opens a window that is the same for both types of line trend. This chapter will not therefore point out differences in use for real-time or historical line trends.

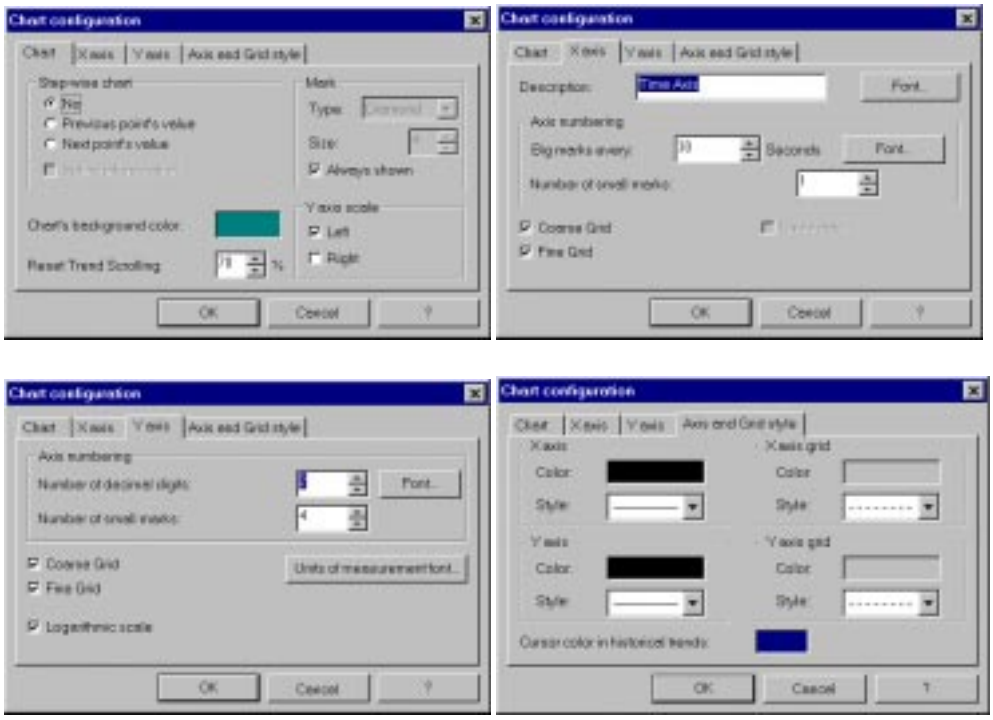


The window displays the trend as it will be displayed during runtime. This enables the user to immediately apply configuration modifications
To carry out modifications, click on the area concerned with the mouse and then click twice on the different sections of the configuration window in which the new parameters should be inserted.

The only difference between real-time and historical line trends is that the table of current values and the chart for historical trends architect not displayed because the values of the variables are read by the archives or the database.

11.6.1 Trend area

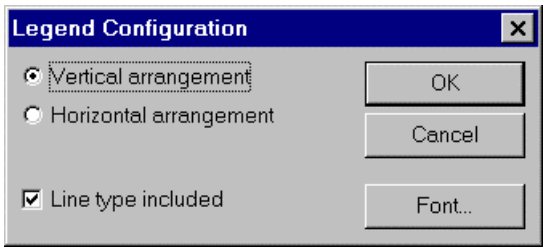
When the area is selected in which the trend is displayed the sections of the *"Chart configuration"* dialog window open. This enables the chart area, the X and Y axes and the grid configurations to be modified.



For full details on the commands and options in these sections of the dialog window, see the chapter *Chart for real-time line trends* 11.4.2.2.4 and *Chart for historical line trends* **Errore. L'origine riferimento non è stata trovata.**.

11.6.2 Legend

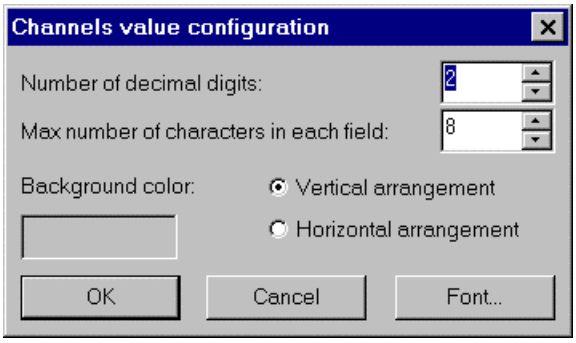
When the area is selected in which the trend is displayed the sections of the *"Legend configuration"* dialog window open. This enables the legend area, the X and Y axes and the grid configurations to be modified.



For full details on the commands and options in these sections of the dialog window, see the chapter *Chart legend for real-time line trends* 11.4.2.2.2 and *Chart legend for historical line trends* **Errore. L'origine riferimento non è stata trovata.**.

11.6.3 Current values

Select the area displaying the current values of the channels to open the dialog window *"Channels value configuration"* This dialog window enables the channel configurations to be modified.



For full details on the commands and options in these sections of the dialog window, see the chapter *Channel values for real-time line trends* 11.4.2.2.3.

11.6.4 Toolbar

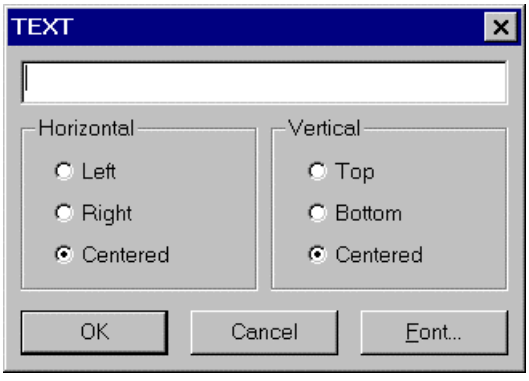
Inside the chart display window there is a toolbar that consists of a series of commands that enable the objects to be positioned inside the trend.

11.6.4.1 *Select* 

Select this icon to activate the methods for selecting an object from inside the trend. When the mouse cursor is placed on the screen it will take on the appearance of an arrow. To activate the object, move the cursor onto the required object and press the left-hand mouse key. The selected object will be highlighted by handles around it. These handles can be used to move it to another place or to change its size.

11.6.4.2 *Text* 

Select this icon to activate the methods for inserting a text message into the trend. the inserted test will remain unchanged during runtime.
After the command has been activated, a dialog window will open from which the characteristics can be selected that should be assigned to the text.



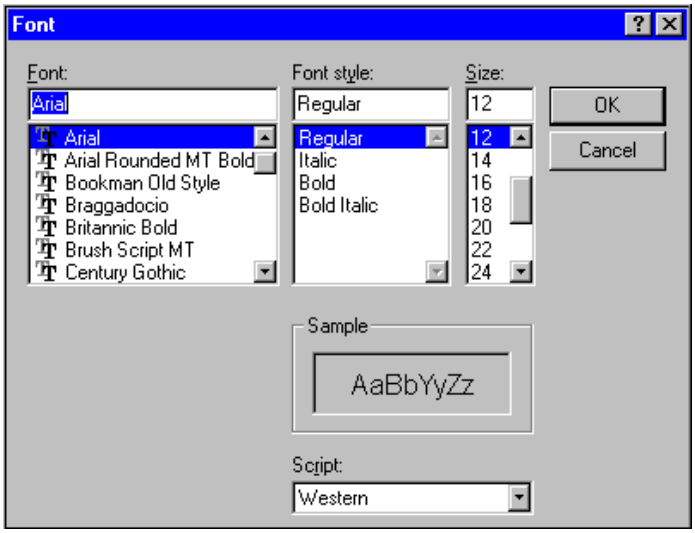
The dialog window is divided into different areas for text configuration.

Entry box: in this box key in the text that you wish to insert.

Horizontal: select the horizontal alignment that you wish the text to have inside the box.

Vertical: select the vertical alignment that you wish the text to have inside the box.

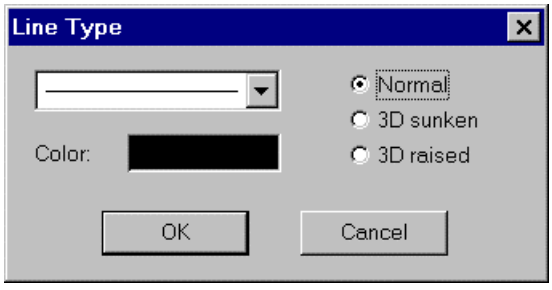
Font: select this command to open a *"Font"* dialog window from which to select the font type that you wish to assign to the text. The characters inside the dialog window are the same as those of the system that is currently being used.



The text is placed inside the trend window. The size of the area in which it is located can be changed, as can its position on the chart.
Only the position of the characters can be changed by the mouse cursor, not their position.

11.6.4.3 *Line*

Select this icon to enable a straight line to be inserted inside a layout.
After activating the command, place the mouse cursor on the point in the text in which you wish to plot the line and press the left-hand mouse key. A dialog window will open from which you can select the characteristics to assign to the line.



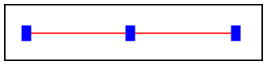
The dialog window is divided into different areas from which line configuration can be selected.

Line type: click on the menu of a cascade menu to open a list of different sizes of line: select the required type.

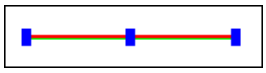
Color: to change the line color click on the box with the mouse. A *"Color"* dialog window will open from which the required color can be selected.

Effects: from the list select the effect to assign to the layout.

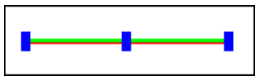
Normal



3D sunken

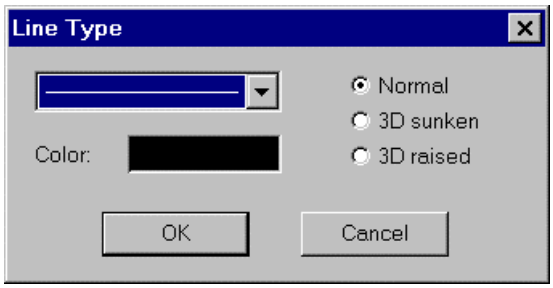


3D raised



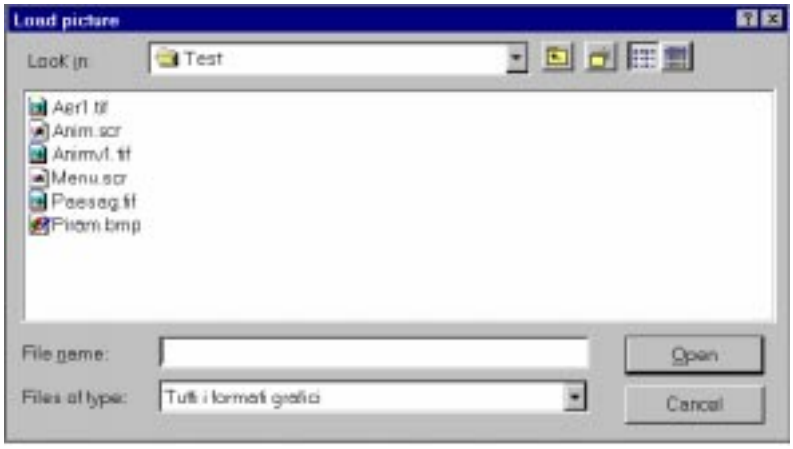
11.6.4.4 *Rectangle*

After activating the command, place the mouse cursor on the point in the text in which you wish to draw the rectangle and press the left-hand mouse key. A dialog window will open from which you can select the characteristics to assign to the rectangle's perimeter lines.



11.6.4.5 *Insert image*

Use this command to insert an image with the extension ".BMP" inside the trend.
After activating the command, place the mouse cursor on the point in the text in which you wish to insert the image and press the left-hand mouse key. A dialog window will open from which you can select the path and the type of image that you wish to display inside the trend.



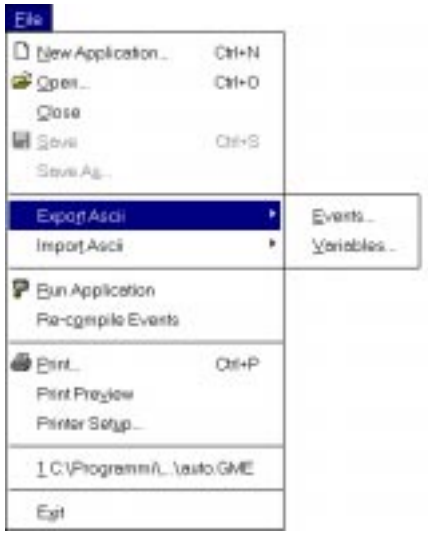
The dialog window contains the same options as the window that has been opened to assign the

11.7 “MODIFY” WINDOW MENU

The trend display window enables the configurations to be checked that have been activated for the chart. It contains a series of menus inside the menus bar from which further modification to trend characteristics can be made.

Some of the menus that are contained inside the *Modify* window bar are common to other ***LOGOVIEW NT*** configuration windows but others are made up of specific line trend commands.
In the following discussion of the menu commands the specific menus will be described in detail but the reader will be referred to the other chapters of the guide for information on the shared commands.

11.7.1 FILE menu



The commands that make up the File menu are common to all ***LOGOVIEW NT*** configuration windows and are discussed in detail in the *Guide to Logoview 1* user manual.

11.7.2 EDIT menu

11.7.2.1 *Cut*

Use this command to delete or transfer an object in a trend inside another application trend. The parts that are selected and cut will be stored in the scrap area until other information is cut or copied or until the application is closed down. As the information remains stored in the scrap area, it can be pasted into another trend whenever this is required.

11.7.2.1.1 How to cut an object that has been pasted into the trend

- Click on the selected object with the mouse. A combination of simultaneously selected objects can be cut pressing the **CTRL** key at the same moment as the mouse is clicked on them.
- Select the **Cut** command from the application menu.

This command deletes the selected objects from the screen and stores them in the scrap area, from which they can be pasted.

11.7.2.2 *Copy*

Use this command to copy an object from one trend to another. the selected and copied parts will remain in the scrap area until other information is cut or copied or until the application is closed down.

11.7.2.2.1 How to copy a trend object

- Click on the selected object with the mouse. A combination of simultaneously selected objects can be cut pressing the **CTRL** key at the same moment as the mouse is clicked on them.
- Select the **Copy** command from the application menu.

This command copies the selected objects on the screen and stores them in the scrap area, from which they can be pasted.

11.7.2.3 *Paste*

Use this command to paste previously cut or copied objects that have been stored in the scrap area. The pasted objects are passed onto the same area as the one from which they were copied or cut. Click on them with the mouse to highlight them. This enables their size to be changed or to be moved to any part of the trend. As the cut or copied information remains in the scrap area, it can be pasted onto another trend at any moment.

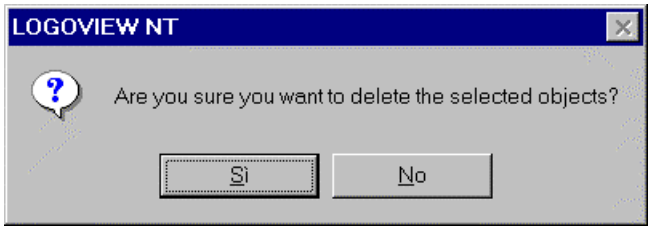
Note

The scrap area contains all the copied or cut objects. It is an exclusive area because it contains only the last object to have been inserted. As there is only when scrap area for all Windows applications great care must be exercised when cutting or copying objects as they objects may be deleted from the scrap area before they have been pasted. When pasting, the scrap area is not empty: a copy is made of the object stored in the scrap area.

11.7.2.4 *Delete*

Use this command to delete the selected object.

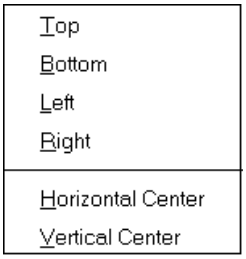
To delete an object, highlight it by clicking on it with the mouse and then activate the *Delete* command.. ***LOGOVIEW NT*** will display a window asking for confirmation of the command:



If an object is deleted by mistake it cannot be recovered.

11.7.2.5 *Align*

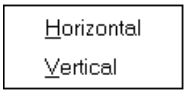
Use this command to align selected objects inside the trend. To align, use different menu options that are selected by the mouse.



To select the objects to align click the mouse cursor on each one of them and then press the left-hand mouse key and the *"Shift"* key at the same time. To select all the objects, activate the menu's *"Select All"* command.
From the selection of objects displayed in the trend, select one as a reference for sorting all the others. The reference object is always the last to be selected.
To change the reference object, run the command *"Select".* Click on the required object and press the left-hand mouse key and press the "Shift" key at the same time. The selected object will be highlighted by the handles that surround it filling up.

11.7.2.6 *Same dimensions*

Use this command to assign the same height and width to all the selected objects inside the trend.
From the selection of objects displayed in the trend, select one as a reference for changing the height and width of all the others. The reference object is always the last to be selected.
To change the reference object, run the command *"Select".* Click on the required object and press the left-hand mouse key and press the "Shift" key at the same time. The selected object will be highlighted by the handles that surround it filling up.
Click on the arrow at the side of the command to open another menu.



Select *"Horizontal"* to give all the objects the same width and select *"Vertical"* to give them the same height.

11.7.2.7 *Foreground*

Use this command to place in the foreground the selected objects that are positioned underneath the other objects inside the trend.

11.7.2.8 *Background*

Use this command to place in the background the selected objects that are positioned above the other objects inside the trend.

11.7.2.9 *Select all*

Use this command to select all the object inside the trend.

11.7.2.10 *Invert selection*

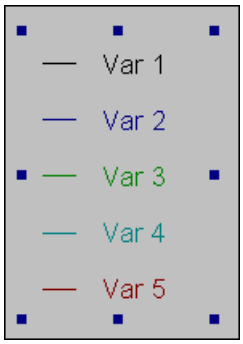
Use this command to invert the selection of objects in 'trendout': if this command is activated the non-selected objects are selected and the selected objects are deselected.

11.7.2.11 *Characteristics*

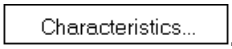
Use this command to open the configuration windows of the trend chart inside the chart area, of the axes, grids, legend and current values
To activate the configuration window, click on the part inside the trend window whose *Characteristics* you wish to modify and then select the command from the menu.

Example

Select the legend area from the trend window



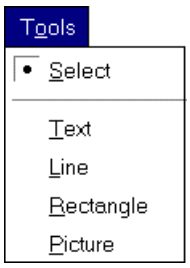
AFTER CLICKING WITH THE MOUSE ON THE REQUIRED ACTIVATE THE *CHARACTERISTICS COMMAND* FROM THE



.MENU.

The legend configuration window will open:

11.7.3 TOOLS menu



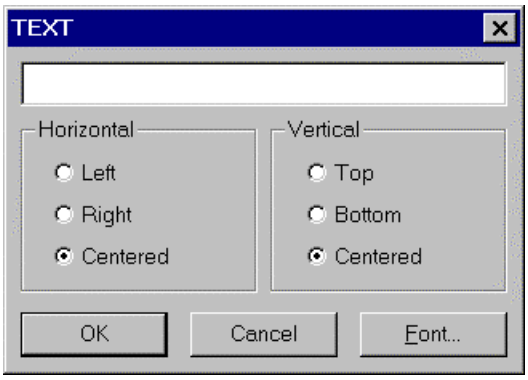
The *Tools* menu contains all the commands for the *Toolbar* inside the *Modify* window. It comprises a series of commands that enable the objects to be positioned inside the trend.

11.7.3.1 *Select* 

Select this icon to activate the methods for selecting an object from inside the trend. When the mouse cursor is placed on the screen it will take on the appearance of an arrow. To activate the object, move the cursor onto the required object and press the left-hand mouse key. The selected object will be highlighted by handles around it. These handles can be used to move it to another place or to change its size.

11.7.3.2 *Text* 

Select this icon to activate the methods for inserting a text message into the trend. the inserted test will remain unchanged during runtime.
After the command has been activated, a dialog window will open from which the characteristics can be selected that should be assigned to the text.

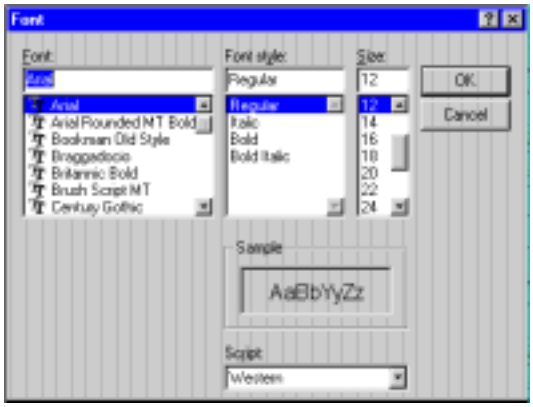


The dialog window is divided into different areas for text configuration.

Entry box: in this box key in the text that you wish to insert.

Horizontal: select the horizontal alignment that you wish the text to have inside the box.

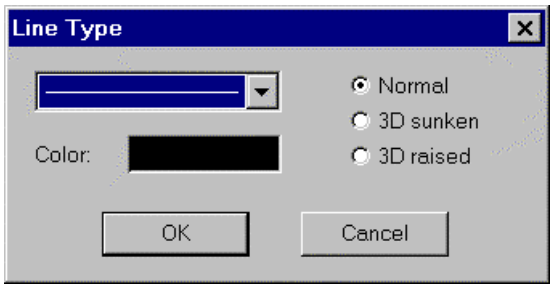
Vertical: select the vertical alignment that you wish the text to have inside the box.
Font: select this command to open a *"Font"* dialog window from which to select the font type that you wish to assign to the text. The characters inside the dialog window are the same as those of the system that is currently being used.



The text is placed inside the trend window. The size of the area in which it is located can be changed, as can its position on the chart.
Only the position of the characters can be changed by the mouse cursor, not their position.

11.7.3.3 *Line*

Select this icon to enable a straight line to be inserted inside a layout.
After activating the command, place the mouse cursor on the point in the text in which you wish to plot the line and press the left-hand mouse key. A dialog window will open from which you can select the characteristics to assign to the line.



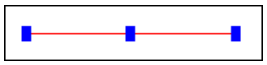
The dialog window is divided into different areas from which line configuration can be selected.

Line type: click on the menu of a cascade menu to open a list of different sizes of line: select the required type.

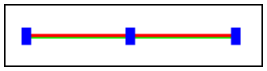
Color: to change the line color click on the box with the mouse. A *"Color"* dialog window will open from which the required color can be selected.

Effects: from the list select the effect to assign to the layout.

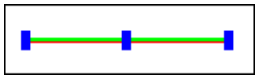
Normal



3D sunken

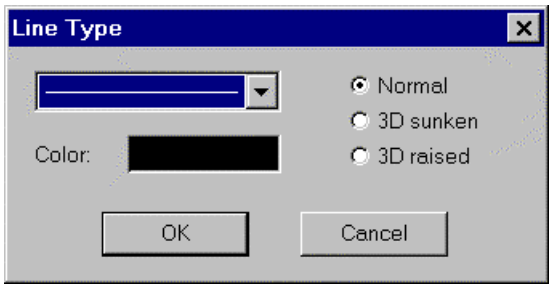


3D raised



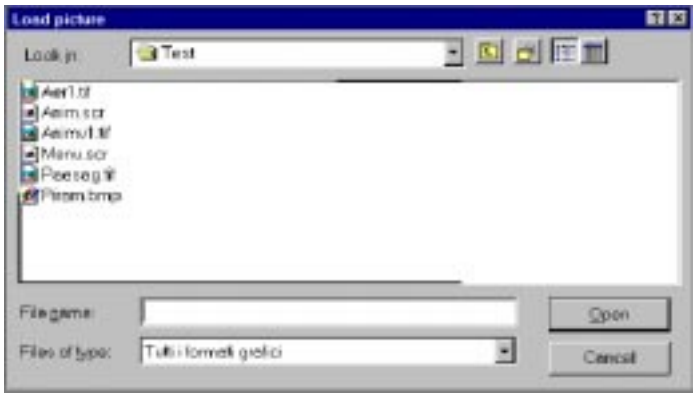
11.7.3.4 *Rectangle* 

After activating the command, place the mouse cursor on the point in the text in which you wish to draw the rectangle and press the left-hand mouse key. A dialog window will open from which you can select the characteristics to assign to the rectangle's perimeter lines.



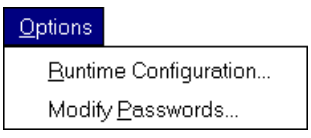
11.7.3.5 *Insert image* 

Use this command to insert an image with the extension ".BMP" inside the trend.
After activating the command, place the mouse cursor on the point in the text in which you wish to insert the image and press the left-hand mouse key. A dialog window will open from which you can select the path and the type of image that you wish to display inside the trend.



The dialog window contains the same options as the window that has been opened to assign the

11.7.4 OPTIONS menu

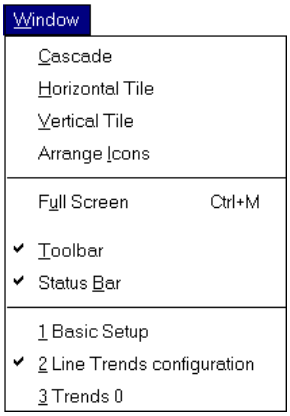


The commands that make up the File menu are common to all the commands that make up the File menu are common to all ***LOGOVIEW NT*** configuration windows and are discussed in detail in the *Guide to Logoview 1* user manual.

11.7.5 SETUP menu

The commands that make up the File menu are common to all ***LOGOVIEW NT*** configuration windows and are discussed in detail in the *Guide to Logoview 1* user manual.

11.7.6 WINDOW menu



The commands that make up the File menu are common to all ***LOGOVIEW NT*** configuration windows and are discussed in detail in the *Guide to Logoview 1* user manual.

11.7.7 GUIDE menu

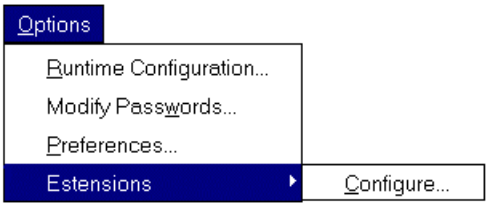
The commands that make up the File menu are common to all ***LOGOVIEW NT*** configuration windows and are discussed in detail in the *Guide to Logoview 1* user manual.

12. Plug-Ins

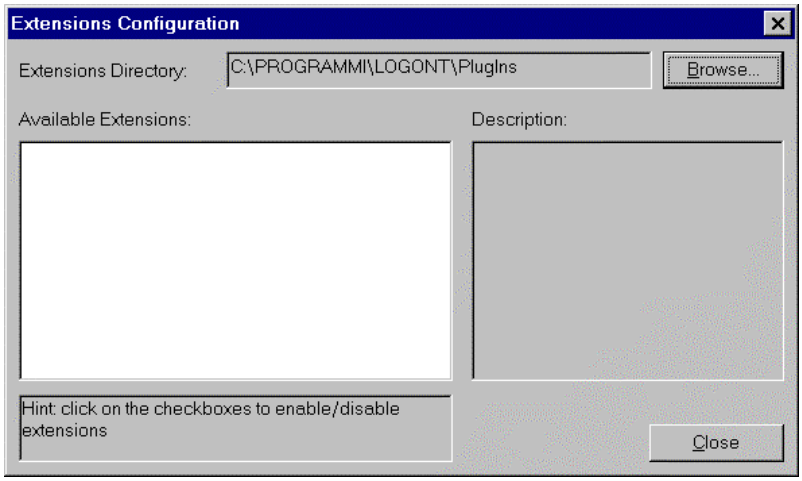
12.1 WHAT ARE PLUG-INS

During the layout design phase, the basic settings window contains the *Options* menu. This consists of a series of commands that are set out in Chapter XXXXX and of the ***Extensions*** command**.** This is used to configure packets of applications that can be assigned to ***LOGOVIEW NT***.
These accessory applications are known as plug-ins. They are software accessories that work together with ***LOGOVIEW NT*** to expand the scope and functions of the application.
Some of the plug-ins can be installed together with ***LOGOVIEW NT***. Other can be installed automatically by a series of configuration commands. ***LOGOVIEW NT*** uses plug-in functions in the system in which the ready-incorporated functions are used.
Plug-ins can operate in different modes and can be displayed with different configurations: whole-screen, incorporated, can add icons to toolbars or menus inside the bar, expand the programming language or import and receive items that are external to ***LOGOVIEW NT***.

12.2 EXTENSION COMMAND



Open the menu to configure the accessory applications extension by running the *Configure* command.
Select the command to activate the *Extensions configuration* command to assign the parameters for opening the plug-in required for extending the application.



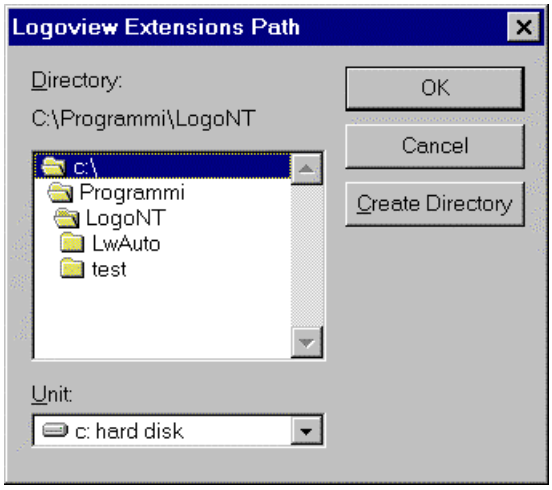
The window is divided into different areas from which the options must be selected for activating the plug-ins to assign to ***LOGOVIEW NT***.
The top of the window displays the path in which the plug-in is installed:

On the left all the plug-ins that are available in the directory selected by the path are shown. To enable the extension for the application, click on the selection boxes with the mouse.

On the right, there is a description of the type and use of the extension selected from the area on the left.

To change the plug-in path, click on the command 

, to open the dialog window from which to select the extensions path.

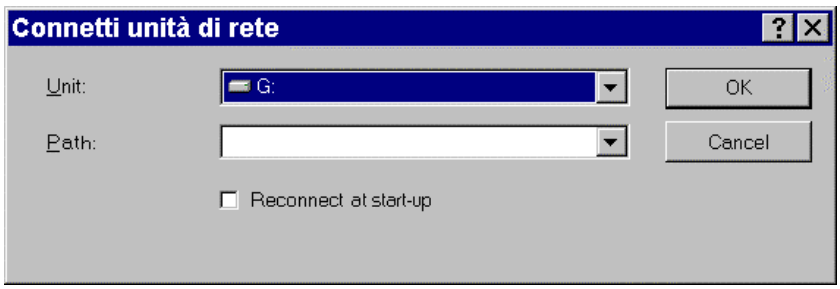


Use the window options to change the extensions directory or to create a new directory in which to install them and then activate a plug-in that is housed in a different networked station.

Select the command *Create Directory* to open a window in which to key in the name to assign to the new directory created to install the plug-ins to assign to ***LOGOVIEW NT***.

The new directory is stored after the last directory of the selected path to be opened.

Select the command *Network* to open a window from which to select the network path in which the extension is stored that you wish to assign to ***LOGOVIEW NT***.



Unit: from this area select the disk unit. The drive unit is identified by a letter and is chosen from the cascade list.

Path: in this area insert the name of the network path that is required for locating the disk unit. All connections are stored in the area so that it will in future be possible to make a direct connection from the list rather than keying in the network path.

Reconnect at start-up: if this command is selected the connection will be repeated each time that the program is accessed.

Note

To link up with a remote network drive, the drive must be shared on the network. The drive must be shared on the PC in which the disk is physically located. To do so, its privileges are required. To know how to make disks available on the network and how to set privileges, consult the manual of the operating manual that is being used.

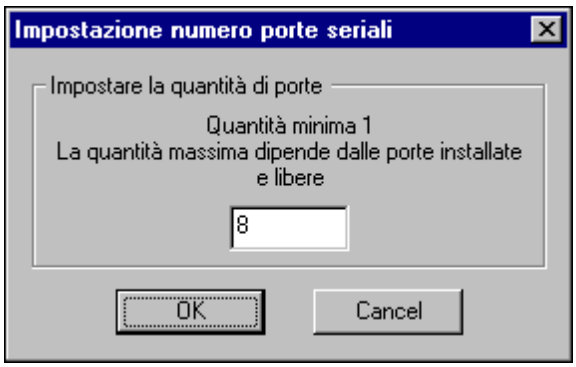
12.3 USING THE PLUG-INS

As we have already stated, activating extensions assigned to ***LOGOVIEW NT*** may modify the display of commands, icons, menus and the windows of the current application.
This section describes the uses and changes that may occur after a plug-in has been activated.

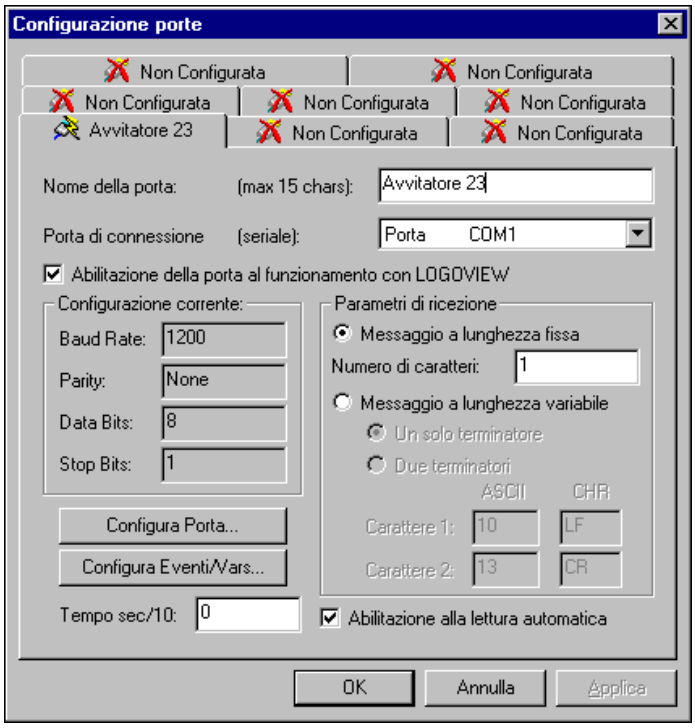
Suppose that plug-in has been activated for configuring and using the serial ports installed on the local computer.
The composition of the commands menu is modified by inserting further extension options.

To the toolbar icons are added that correspond to the commands of the activated plug-in that has been assigned to ***LOGOVIEW NT***  .

When the layout developer activates the commands or icons they are displayed on screen of the dialog window for the extension. These dialog windows can then be used to configure and use the plug-ins in order to increase the application's control scope.



All the plug-in dialog windows can be displayed and used when extension configuration is deactivated.



For further details on the different plug-in configurations, see the user manuals that are provided with the extensions that can be assigned to the ***LOGOVIEW NT*** application.