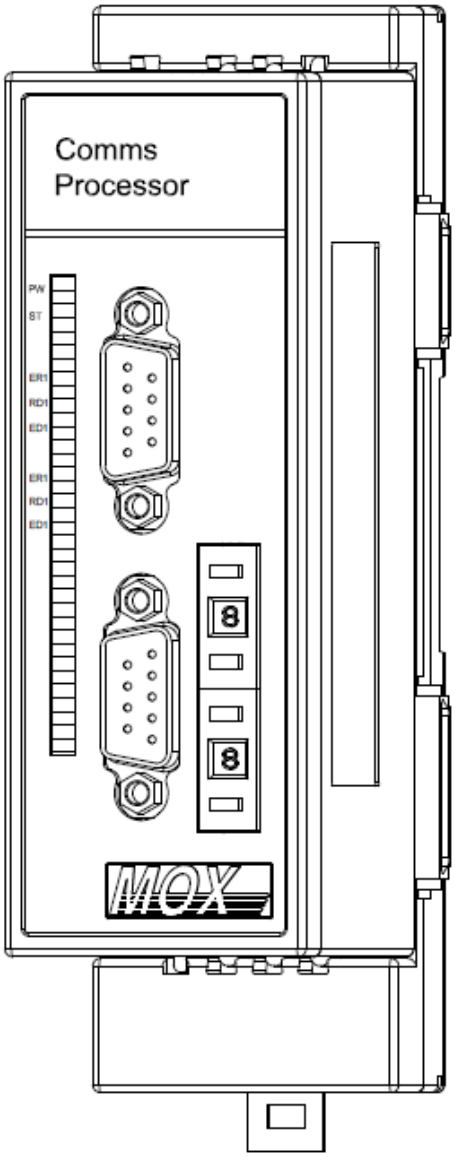
MOX CPP

User Guide

0742-603-2301-004



Preface

Scope of the User Guide

This MOX Communications Processor PROFIBUS (CPP) User Guide contains operation information for MX603-3020 CPP, including hardware installation and software configuration.

This guide has been organized for the operator, and it is expected that the user is an engineer, technician, electrician or similar with an understanding of the operating and programming requirements of similar modules and PROFIBUS.

The information found within this document is relevant only for the latest release of MOX 603 products. For information about earlier version of MOX 603 products please contact your local MOX supplier.

Related Documents

Typical application of the CPP module contains a collection of MOX equipment and several software packages. For this reason, a number of related documents should be read in conjunction with this user guide.

The related documents are noted below:

- MOX Open Controller Technical Overview
- MOX Field Controllers Technical Overview
- MOX 603 IO Technical Overview
- MOX 603 Rack Base IO User Guide
- MOX Open Controller User Guide
- MoxGRAF User Guide
- MoxIDE User Guide

Conventions Used

	*When you see the "exclamation mark" icon in the left-hand margin, the text to its immediate right will be a special note. Please ensure that you read this information to increase your understanding of the systems operation.*

	*When you see the "stop sign" icon in the left-hand margin, the text to its immediate right will be a warning. This information could prevent injury loss of property or even death (in extreme cases). It is very important that you stop and read this information and ensure that you have complete understanding before continuing with the procedures.*

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1 Overview

1.1 Introduction

The MOX Communications Processor PROFIBUS (CPP) module is designed as a slave on a PROFIBUS DP network and communicates with a PROFIBUS DP master.

As a member of the MOX 603 Communications Processor series, the MOX CPP acts as an I/O data exchange device between large-scale MOX 603 I/O module networks and the MOX Open Controller (OC) or other certified PROFIBUS DP master.

The advantages of using MOX CPP modules include the ability for controllers to drive more I/O devices as well as improved data exchange speed. MOX CPP modules can utilize the running and diagnostic information retrieved from I/O devices to efficiently manage the entire I/O network.

The MOX CPP module has two PROFIBUS DP slave ports, which support redundant connections to primary and standby controllers.

The MOX CPP module is powered by a MOX 603 PSU and is hot swappable. This allows the user to insert or remove a module without isolating the module's connected power or field devices.

MOX configuration software, MoxCon, is used to configure the MOX CPP module, enabling it drive and access data from the connected I/O modules. Then MoxGRAF could be adopted to build program to implement automatic monitor and control. With this perfectly cooperating suite, a flexible system with high performance suitable for a wide range of applications is brought up.

1.2 CE Notice

1.2.1 Standards and Approvals

CE Approval
The MOX CPP satisfies requirements of the EC Directives listed below:

- 2006/95/EC “Electrical Equipment Designed for Use within Certain Voltage Limits” (Low-Voltage Directive)
- 2004/108/EC “Electromagnetic Compatibility” (EMC Directive)

Use in Industrial Environments
MOX products are designed for industrial applications.

Application Field	Noise Emission Requirements	Noise Immunity Requirements
Industry	EN 61000-6-4: 2007	EN 61000-6-2: 2005

Table 1 Use in Industrial Environments

Use in Residential Areas
To operate a MOX CPP in a residential area, its RF emission must comply with Limit Value Group 1 Class A to EN 55011: 2007.

The following measures are recommended to ensure the interference complies with limit value class B:

- The MOX CPP must be installed within grounded cabinets.

1.2.2 Electromagnetic Compatibility

Definition
Electromagnetic compatibility (EMC) is the ability of an electrical installation to function satisfactorily in its electromagnetic environment without interfering with that environment.

The MOX CPP also satisfies requirements of EMC legislation for the European domestic market. Compliance of the MOX CPP with specifications and directives on electric design is prerequisite.

Pulse-shaped Disturbance
The following table shows the EMC compatibility of the MOX CPP in areas subject to pulse-shaped disturbance.

Pulse-shaped Disturbance	Test Voltage
Electrostatic Discharge to IEC 61000-4-2	Air Discharge: ±8kV Contact Discharge: ±4kV
Burst Pulses (high-speed transient disturbance) to IEC 61000-4-4	2 kV (power supply lines) 2 kV (signal lines > 3m) 1 kV (signal lines < 3m)
High-energy single pulse (surge) to IEC 61000-4-5	0.5 kV DC Power Supply Lines. (Line to line and line to earth) 1 kV Signal / Data Line > 3m (line to earth).

Table 2 Pulse-shaped Disturbance

Sinusoidal Disturbance
The following table shows the EMC compatibility of the MOX CPP in areas subject to sinusoidal disturbance.

Sinusoidal Disturbance	Test Values
RF Radiation (electromagnetic fields) to IEC 61000-4-3	10 V/m, with 80% amplitude modulation of 1kHz in the 80MHz~1000MHz and 3 V/m 1.4GHz~2GHz range.
RF conductance on cables and cable shielding to IEC 61000-4-6	Test voltage 10V, with 80% amplitude modulation of 1 kHz in the 150KHz~80MHz range.

Table 3 Sinusoidal Disturbance

Emission of Radio Interference
Electromagnetic interference to EN 55011: Limit Class A, Group 1 (measured at a distance of 10m).

Frequency	Noise Emission
30 MHz to 230 MHz	< 40 dB (µV/m)Q
230 MHz to 1000 MHz	< 47 dB (µV/m)Q

Table 4 Radiation Emission

Noise emission of PSU port to EN 55011: Limit value class A, Group 1.

Frequency	Noise Emission
0.15 MHz to 0.5 MHz	< 79 dB (µV/m) Q < 66 dB (µV/m) M
0.5 MHz to 5 MHz	< 73 dB (µV/m) Q < 60 dB (µV/m) M
5 MHz to 30 MHz	< 73 dB (µV/m) Q < 60 dB (µV/m) M

Table 5 Conductive Emission

2 Specifications

2.1 Key Features

- PROFIBUS DP slave
- PROFIBUS ports support redundancy
- Support for all standard PROFIBUS DP baud rates
- High data throughput with up to 244 bytes of input, 244 bytes of output and 280 bytes of input and output
- Network status LEDs
- Maximum 10 I/O modules per connected communications rack
- Compatibility with MOX 603 I/O modules

2.2 Datasheet

Communication	
PROFIBUS port	2
Isolation	
PROFIBUS port to system	1000Vrms
MOXBUS to system	1000Vrms
I/O rack to system	None
Configuration Parameters	
Station address	user selectable
Performance	
Power dissipation within module	<3W
Environmental Specifications	
Operating temperature	-20 to 70°C
Storage temperature	-40 to 85°C
Relative humidity	5% to 95%, non-condensing

Table 6 MX603-3020 CPP Datasheet

2.3 Familiarization

The following diagram identifies the various components associated with a typical MOX CPP.

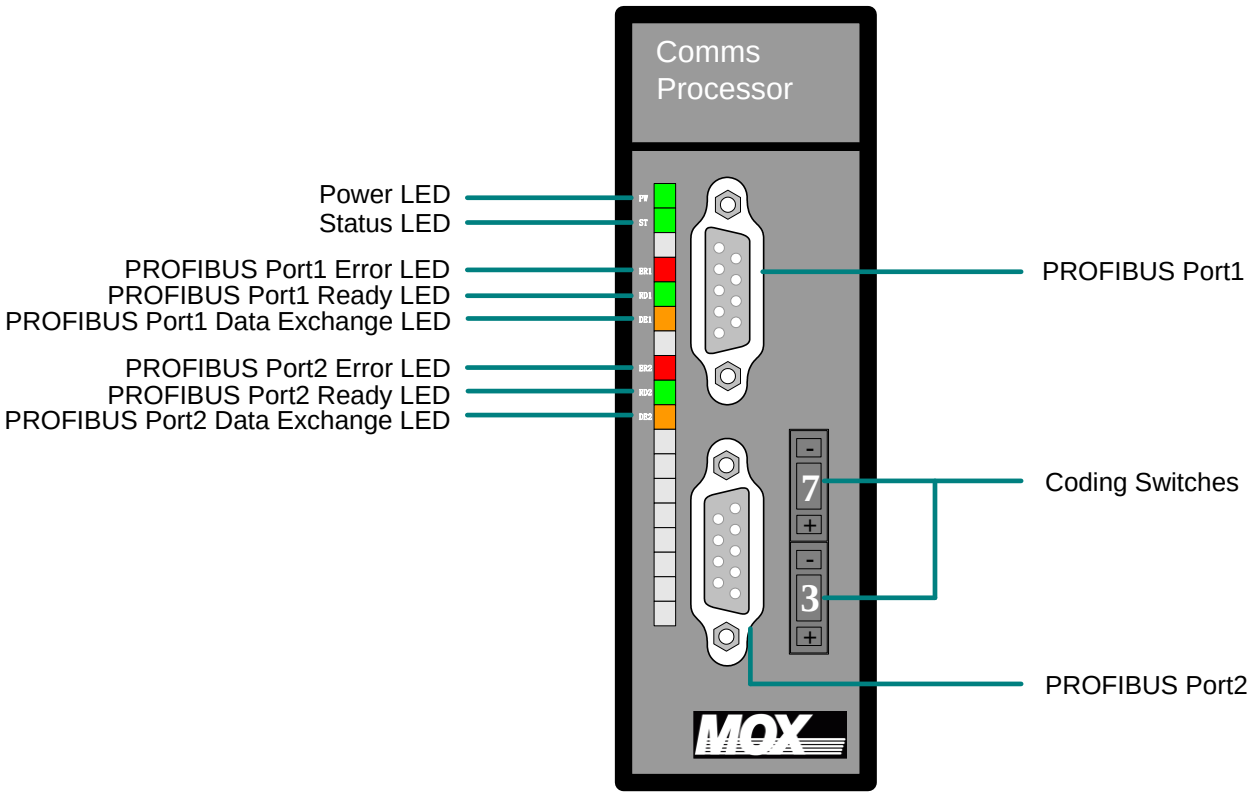


Figure 1 A Typical MOX CPP

2.4 LED Indicator

LED	Color	Description
PW	Green	Power Supply
ST	Green	Running Status
ER1	Red	PROFIBUS Port1 Error Status
RD1	Green	PROFIBUS Port1 Ready Status
DE1	Yellow	PROFIBUS Port1 Data Exchange Status
ER2	Red	PROFIBUS Port2 Error Status
RD2	Green	PROFIBUS Port2 Ready Status
DE2	Yellow	PROFIBUS Port2 Data Exchange Status

Table 7 MOX CPP LED General Description

LED	State	Description
PW	ON	Power On
	OFF	Power Off
ST	ON	Start to work after success initialization
	OFF	System Initialization
	Flashing at 2Hz	No I/O module is found when system initializes
ER	ON	All configured modules are offline
	OFF	No Error
	Flashing at 2Hz	I/O Module Error
RD	ON	Active
	OFF	Inactive
	Flashing at 2Hz	The PROFIBUS port is not configured or not connected with DP Master
DE	ON	In Data Exchange Status
	OFF	Not in Data Exchange Status

Table 8 MOX CPP LED State Description

Active *and* ***Inactive*** *are used to describe running status of redundant PROFIBUS ports. Active means this port can read input data from and write output data to I/O modules. Inactive means the port can only read input data from I/O modules.*

Primary *and* ***Standby*** *are used to describe whether this port is connecting to primary controller or standby controller.*

The following table gives all combinations of each LED states:

LED	State	Description
PW	ON	PROFIBUS port is NOT configured or connected.
ST	ON	
ER	OFF	
RD	Flashing at 2Hz	
DE	OFF	
PW	ON	PROFIBUS port enters data-exchange status after being configured correctly. RD is ON for active port and OFF for inactive port.
ST	ON	
ER	OFF	
RD	ON / OFF	
DE	ON	
PW	ON	No real I/O modules are found in rack during system initialization. If network is scanned at this time, Blank Module will be got. I/O rack should be checked carefully under this circumstance.
ST	Flashing at 2Hz	
ER	OFF	
RD	Flashing at 2Hz	
DE	OFF	
PW	ON	No real I/O modules are found in rack during system initialization with configuration being downloaded from master.
ST	Flashing at 2Hz	
ER	Flashing at 2Hz alternately	
RD		
DE	OFF	
PW	ON	PROFIBUS configuration fails when 1) Configured module queue is not identical with that in master setting. 2) Configuration contains “Blank Module”.
ST	ON	
ER	Flashing at 2Hz alternately	
RD		
DE	OFF	
PW	ON	It occurs in following cases: 1) Part of configured modules are offline 2) Configured module(s) are online but not working 3) Module(s) types change from configured ones 4) Add modules that are not configured before RD is ON for active port and OFF for inactive port.
ST	ON	
ER	Flashing at 2Hz	
RD	ON / OFF	
DE	ON	
PW	ON	All configured modules are offline. RD is ON for active port and OFF for inactive port.
ST	ON	
ER	ON	
RD	ON / OFF	
DE	ON	

Table 9 MOX CPP LED Diagnostic Description

2.5 Communication Ports

The MOX CPP module has two PROFIBUS ports, which support redundant links to a primary and a standby controller.

The MOX CPP module uses PROFIBUS ports to deliver I/O data to connected master controllers. The CPP module is capable of automatically identifying the baud rates on the PROFIBUS ports, from 9.6Kbps to 12Mbps.

The PROFIBUS port of the CPP module is a female DB9 connector. It is used to connect the bus cable to the desired node. The pin assignments on the PROFIBUS port are as follows.

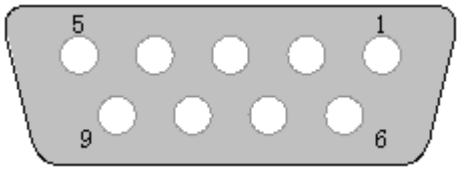


Figure 2 PROFIBUS Port Pin Numbering

The following table gives description of each pin:

Pin #	Signal	Description
1	SHIELD	Shield or protective ground
2	NC	N/A
3	DATA+	Transmit/receive data, positive, B cable
4	NC	N/A
5	GND	Data transfer potential (reference potential for VCC)
6	VCC	Supply voltage positive(P5V)
7	NC	N/A
8	DATA-	Transmit/receive data, negative, A cable
9	NC	N/A

Table 10 Pin Assignment of PROFIBUS Port

2.6 Coding Switches

The two PROFIBUS ports on one CPP module use the same station address. A station address from 1 to 99 can be set using the coding switches on the front case of the CPP module. Station 0 is reserved for Master, diagnostics or programming tools.

	*These two PROFIBUS ports cannot be connected to one bus communications network at the same time.*

To configure the station address press the “+” and “-” push buttons located on the front case of the CPP module. The upper digits represent the “x10” units and the lower digits represent the “x1” units. For example, the figure shown below represents station address 73:

Figure 3 MOX CPP Coding Switches

2.7 Redundancy

To support redundant operation, the MOX CPP module uses two PROFIBUS ports. Two PROFIBUS ports on the CPP module use one station address. Therefore they cannot be connected to one bus at the same time.

The active port has both DP input and output communication authority. The inactive port only has DP input communication authority. When the active port fails, the inactive port will be switched to active and take over data communications in both directions.

On start-up of a redundant configuration, e.g. primary and standby MOX controllers, the primary controller takes control over field operations as it has been allocated to do so. However, if the primary controller fails, the standby controller will take charge of the field operations immediately.

Currently I/O module redundancy is NOT supported by MOX CPP.

3 Installation

3.1 A Typical MOX Control System with CPP

The following diagram identifies the typical MOX CPP connection mode with MOX OC and MOX 603 I/O modules. In this case, the MOX CPP module is configured as a slave of MOX OC. Each CPP module provides comprehensive information to connected master devices so that the operational status may be monitored and controlled more efficiently. The wide range of module specific diagnostic information can be accessed via PC software packages, MoxCon or MoxGRAF.

	*The MOX OC supports max 2K input and 2K output data size per PROFIBUS DP master card.*

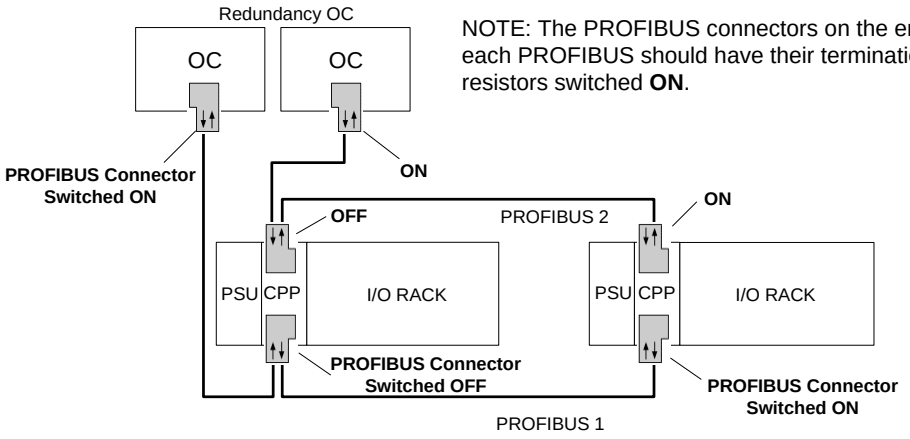


Figure 4 MOX Control System with OC-CPP-I/O Structure

The CPP module is powered by MOX 603 PSU. A single MOX CPP module can support up to 10 connected MOX 603 I/O modules in a rack. Each I/O module has a unique station address, configured via its onboard address switch.

	*MOX I/O station numbers must always start at 1 beginning with the first connected module to a MOX CPP and no gaps should be left between station addresses.*

Large systems with numerous I/O modules, as shown in the above example, require multiple I/O racks controlled by MOX CPP modules.

The MOX CPP module uses base MX603-2020-01. MOX CPP modules support hot-swappable function.

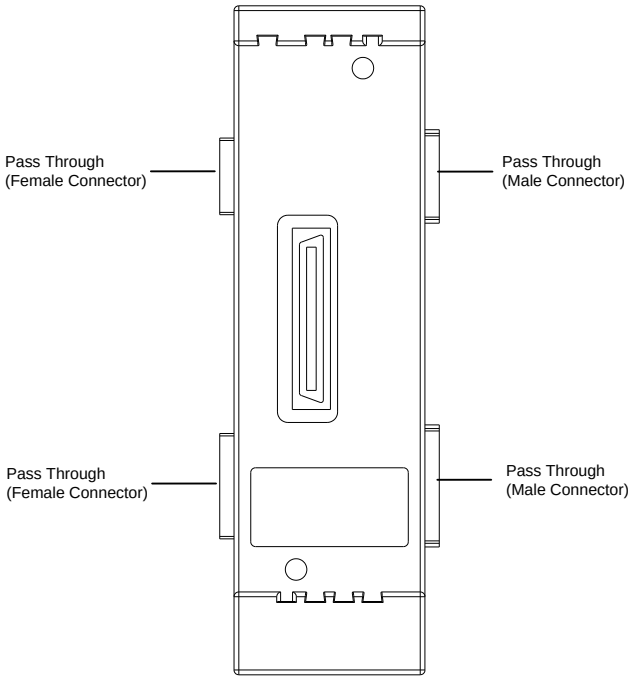


Figure 5 Rack Base MX603-2020-01 Familiarization

In order to minimize cable reflections and ensure a defined terminated level on the transmission cable, the PROFIBUS connectors on both ends of each PROFIBUS network should have their termination resistors switched to **ON**.

Normally, a single PROFIBUS DP segment will support up to 32 stations. But when using intrinsically safe PROFIBUS DP, this is reduced to 10 per segment. Overall, when using repeaters, up to 100 stations can be connected to one DP master. However, each repeater must be counted as one station.

The transmission rate and the permissible cable length specified for the segment must be taken into account. It is of great importance to adopt cable rated to PROFIBUS DP specifications. For example, a cable length of 400m is permissible for a network with a transmission rate of 500Kbps.

Maximum segment length (m)	Transmission rate (Kbps)
100	12000
100	6000
100	3000
200	1500
400	500
1000	187.5
1200	93.75
1200	45.45
1200	19.2
1200	9.6

Table 11 Cable Length per Segment

	*The selected transmission rate must be supported by all field devices in the PROFIBUS-DP system.*

3.2 Dimensions

The following figure shows the CPP and base physical dimensions.

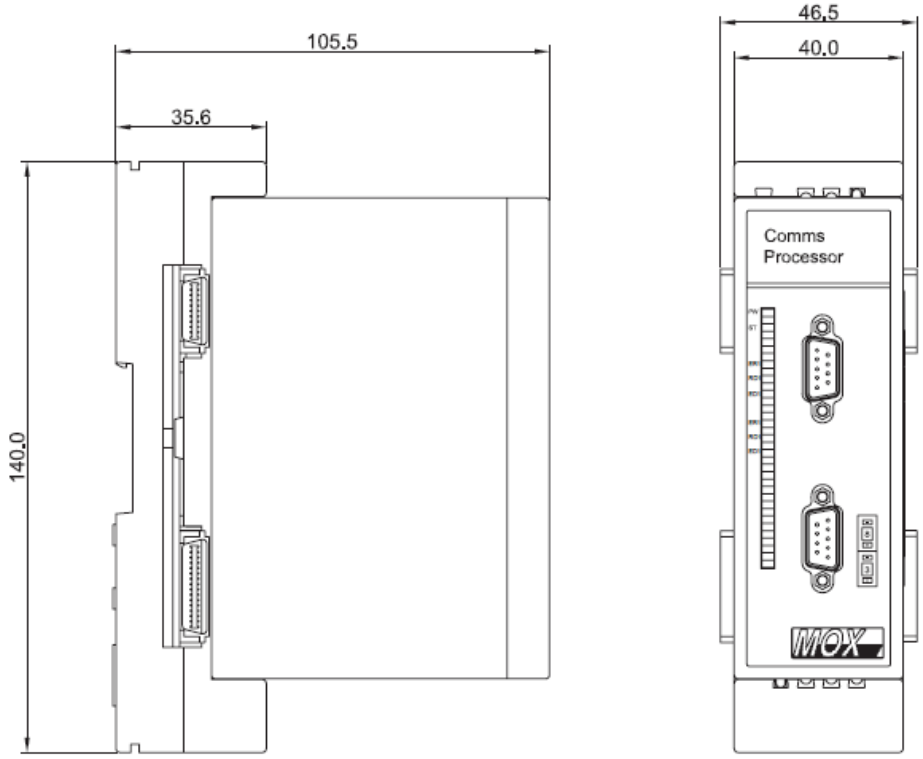


Figure 6 CPP and Base Physical Dimensions

4 Software Tools

To access data from connected MOX 603 I/O modules, the PROFIBUS DP system should be configured using MoxCon. A MoxGRAF project should be built including I/O wiring and user programs to ensure correct control of the desired system. For help with using the software, please refer to related user guides listed at the beginning of this guide.

4.1 Configuration in MoxCon

MoxCon uses GSD (Generic Station Description) files to determine device description data, which is required for all PROFIBUS devices. The GSD file is used to identify and configure any PROFIBUS device in an open system. It is an ASCII file and could be read with any text editor.

For the MOX CPP module, the GSD file is identified as MOX_0A5B.GSD and its format is based on the standard IEC 61784-1:2002 Ed 1 CP 3/1.

MOX_0A5B.GSD file describes the general property and data format of the MOX CPP, including transmission parameters and diagnostic information, allowing the controlling master to access it. Furthermore, CPP is one intrinsically modular DP slave to support MOX 603 I/O family, and may have a variable I/O configuration in different applications. In GSD file, there is dedicated section to describe each available I/O module, with following content:

- Configuration identifier
  This includes the length and IN/OUT direction of exchanged data of this module and other vendor specific information.
- Settable parameters
  This includes module and channel specific characteristics.

A blank module may be scanned as default I/O when no real I/O modules are found. Once a blank module is scanned, any configuration action will lead to a CFG error, which can be identified by the LED status. A configuration including a blank module must not be downloaded to the CPP module.

The following procedure gives a configuration outline:

1) Create a new MoxCon project by selecting **File->New** from the menu, the following dialog box will be displayed, choose **"PROFIBUS"** then click **"OK"**.

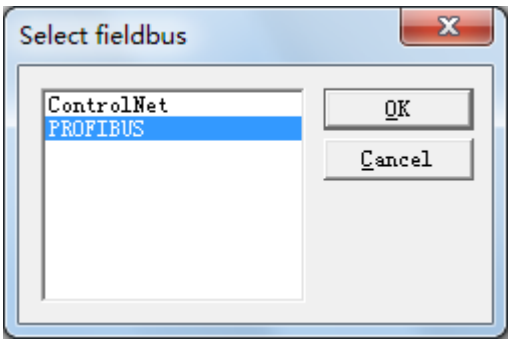


Figure 7 Set up a New Project

2) Insert a Master device by selecting **Insert->Master** from the menu. You can see an **"M"** letter attached to the mouse pointer, then click the blank area. For MOX system, Hilscher PROFIBUS DP Master with Identification number 0x7507 should be used. Click **"Add>>"** then **"OK"**.

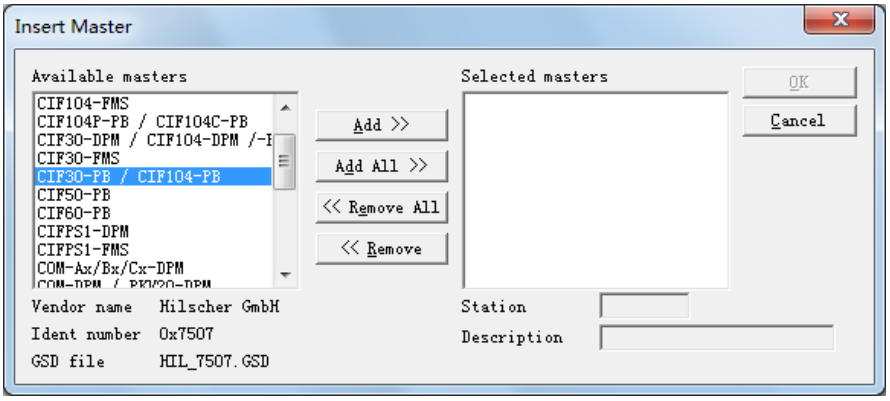
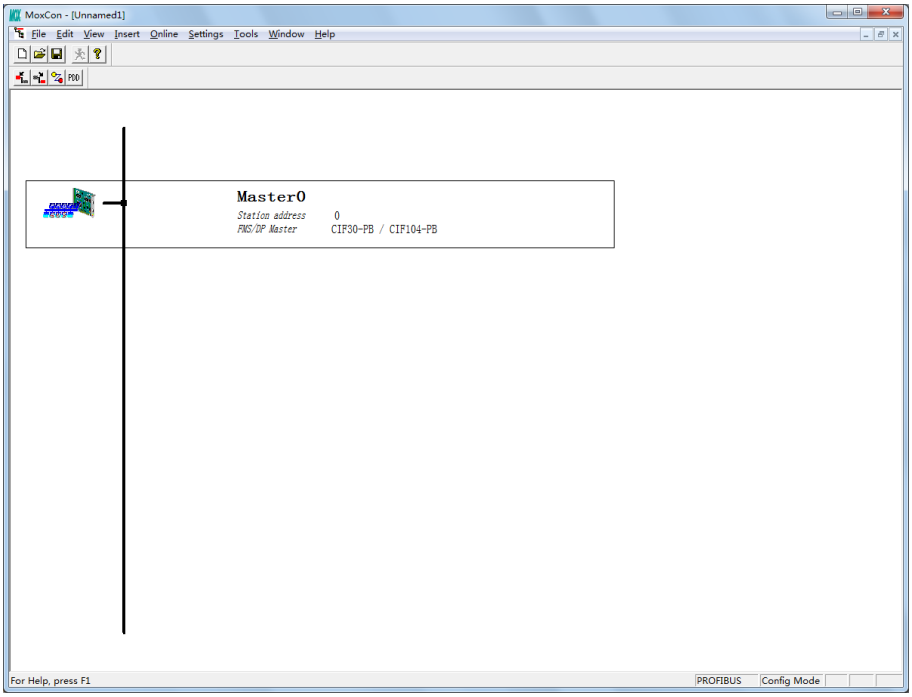


Figure 8 Add PROFIBUS Master



3) To configure the DP Master, double click the DP Master to show the "Master Configuration" window.

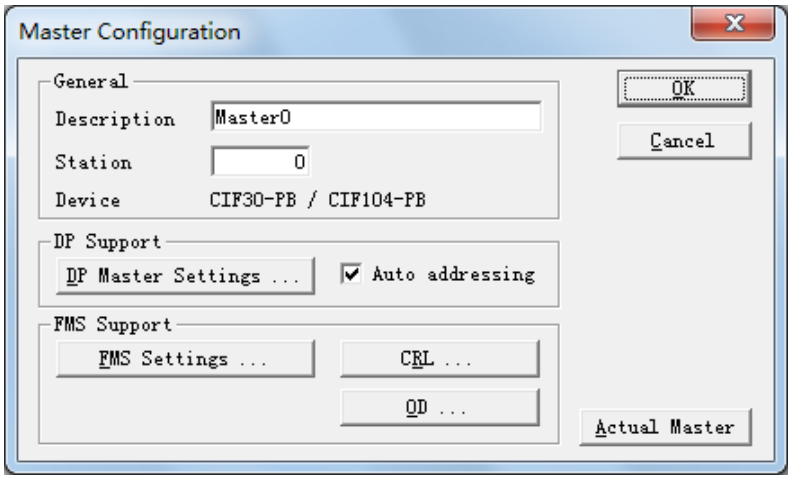


Figure 9 Master Configuration

By clicking on the “DP Master Settings”, the following window will show for users to set the “Watchdog time”. It is recommended to change the “Watchdog time” to 3000ms for MOX system.

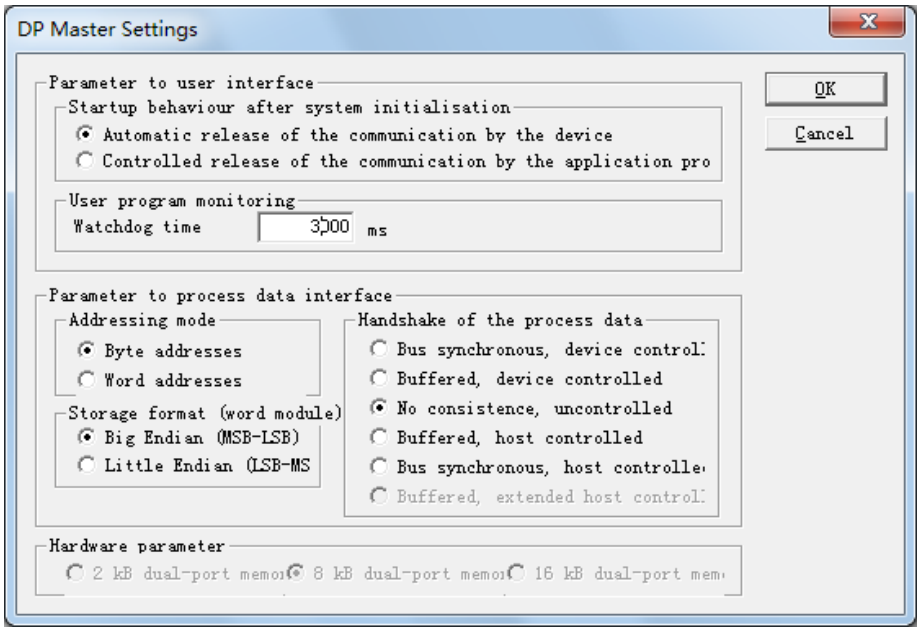


Figure 10 DP Master Settings

4) Set bus parameters by selecting Setting-> Bus Parameter. In the case of low PROFIBUS baud rate and large data exchange, it is recommended to set the watchdog time to 3000ms as shown below, to deal with the large cycle time of data exchange between DP master and CPP.

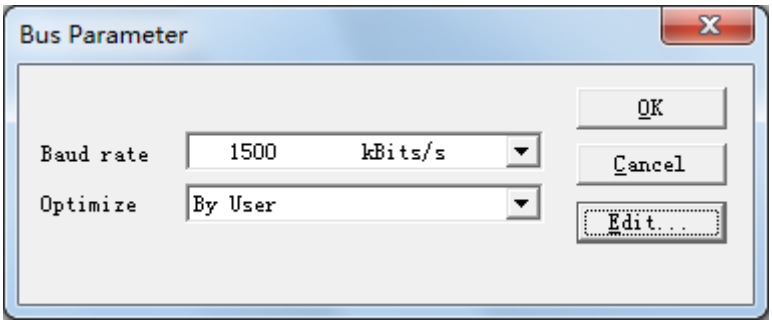


Figure 11 Bus Parameter

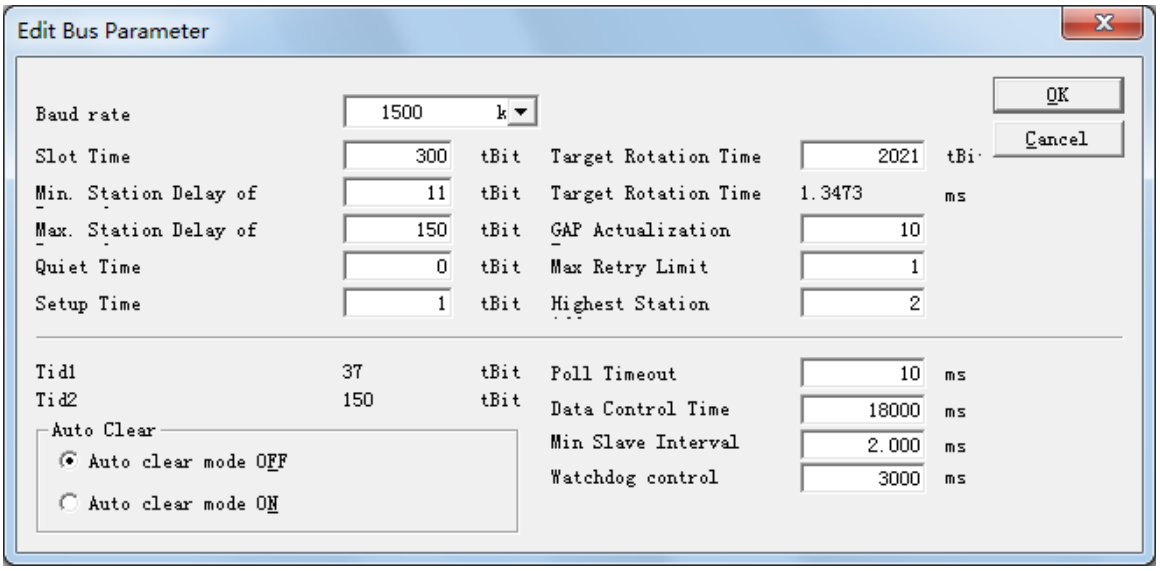


Figure 12 Edit Bus Parameter

5) Set the MOX OC communication device driver to Serial or TCP/IP by selecting **Settings > Device Assignment** from the menu. Select **"CIF TCP/IP Driver"** then click **"OK"**.

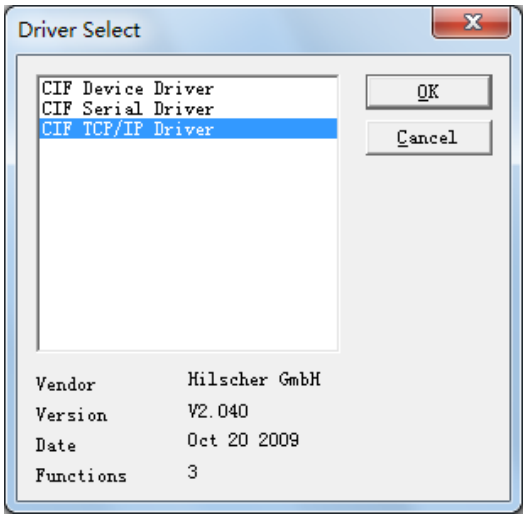


Figure 13 Set OC Connection Driver

Fill in the **IP Address** of the MOX OC. Click **"Add"**. Select I/O interface board from the **Board Selection** frame that will be connected to the MOX 603 I/O modules.

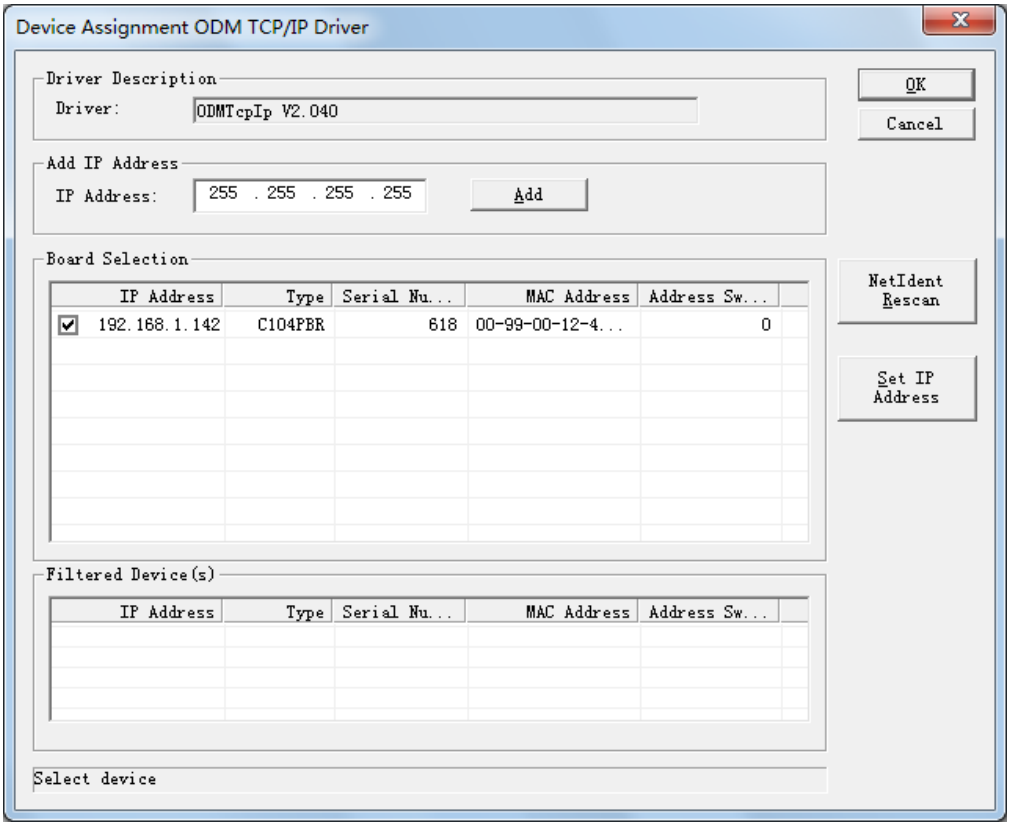


Figure 14 Set IP Address and Connect to Server

6) Scan PROFIBUS DP network by selecting **Online->Automatic Network Scan** from the menu for all MOX CPP and I/O modules which are connected. Click **"Accept Configuration"**.

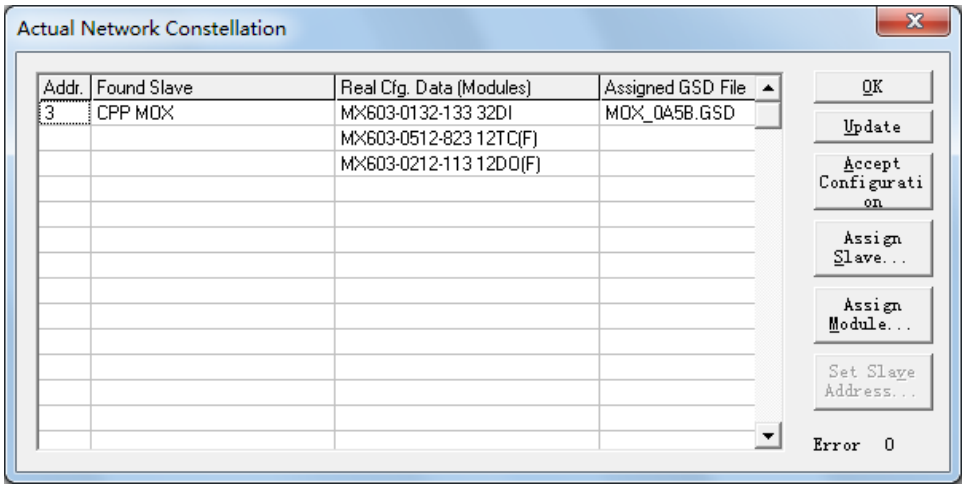


Figure 15 Actual Network Constellation

STOP	*Before "Automatic Network Scan", an empty configuration must be downloaded to the Master, and this will reset the target PROFIBUS master device and all the slaves connected.*

	Make sure this do no harm to the system, especially when it is running.

The CPP slave will be displayed below the master with respective I/O information contained in this slave. The I/O information is displayed consecutively from IO station 1.

So, before automatic network scan, make sure the address of the I/O stations on the rack starts from 1 and increase consecutively.

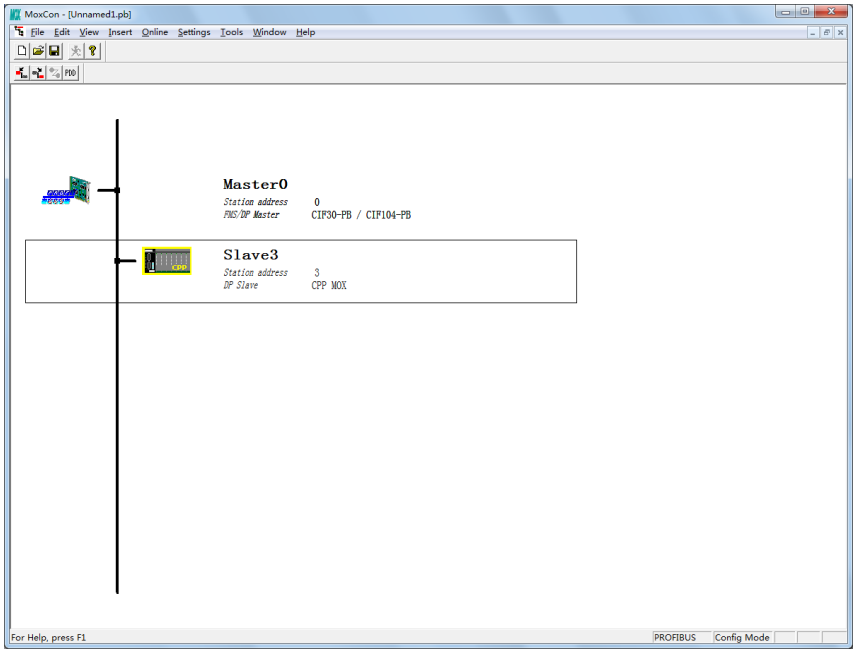


Figure 16 DP Slave

7) Double click Slave pane to open **Slave Configuration Panel**. All I/O modules connected in the CPP rack are listed. Operations such as remove and insert are also available. The operational parameters of the CPP module and connected I/O module can be modified according to requirements.

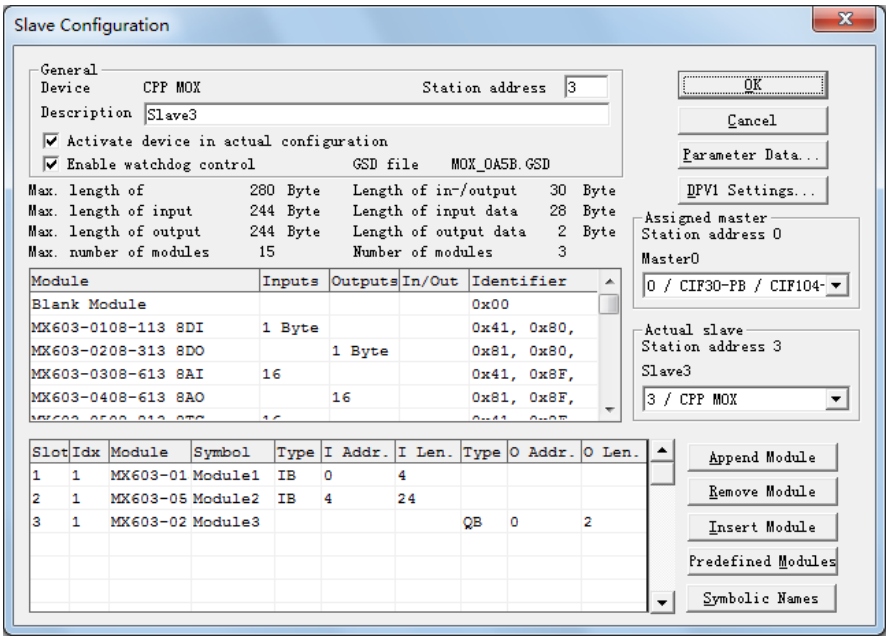


Figure 17 Slave Configuration Panel

	*Please pay attention to the "I Addr." and "O Addr." column of I/O module table. They are used to determine the "Offset" parameter of devices in MoxGRAF project later.*

The following figure will appear by clicking the **"Parameter Data"** button in the right upper corner of **Slave Configuration Panel**. It gives a parameter overview of CPP and all I/O modules connected to it. All parameters in this panel identify the important settings which determine the operational mode and property of concerned modules.

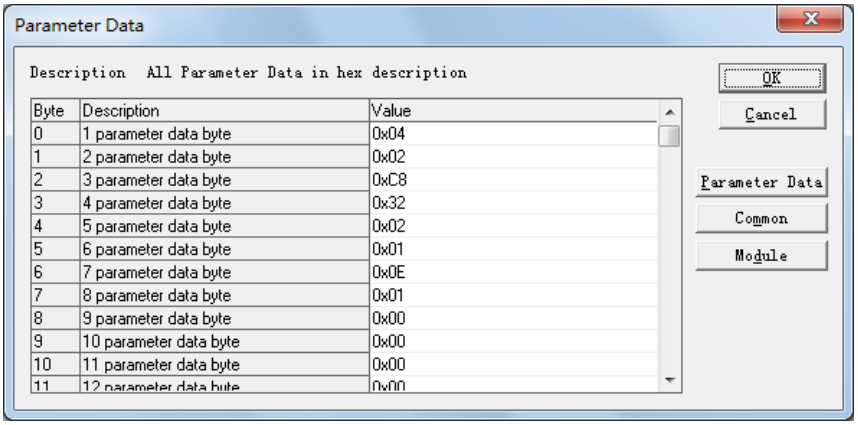
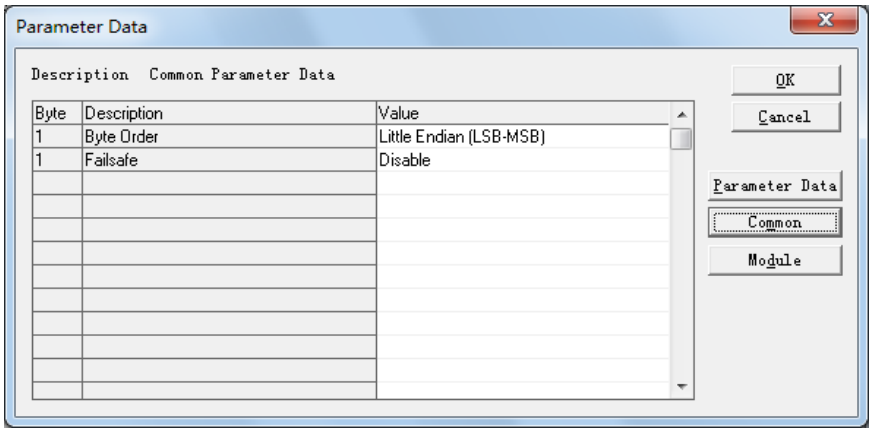


Figure 18 Parameter Data Panel

Common

Click "Common" in the **Parameter Data** page and the following window will be shown.



To change the value for the “Byte Order”, double click the value column. In the pop-up window as shown below, select the option as desired. This will determine the transmitting sequence of multi-byte data on the bus.

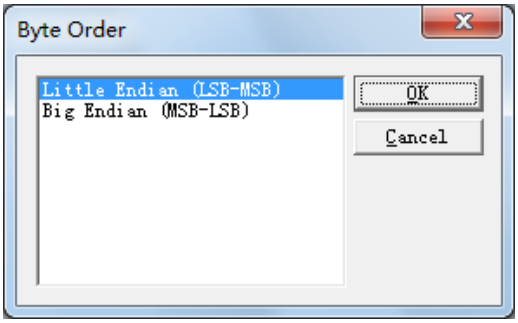


Figure 19 Byte Order

To change the value for the “Failsafe”, double click the value column. In the pop-up window as shown below, select the option as desired.

If CPP fails to exchange data with the DP master, it will continue to refresh output module with the “Last Value” or “0” according to the selection. If the “Failsafe” is set to “Disable”, CPP will stop scanning when losing the DP master.

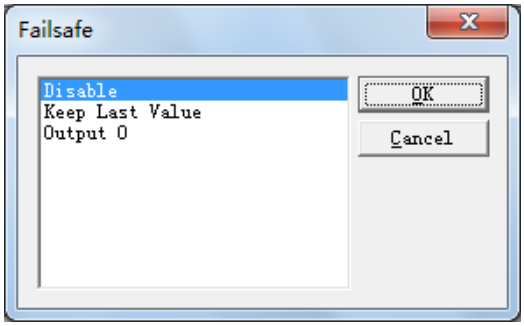


Figure 20 Failsafe

Module

To change module parameter data please click **“Module”** button and select the module you want to change, then all user-changeable parameters of the selected module will be displayed on **Parameter Data** page.

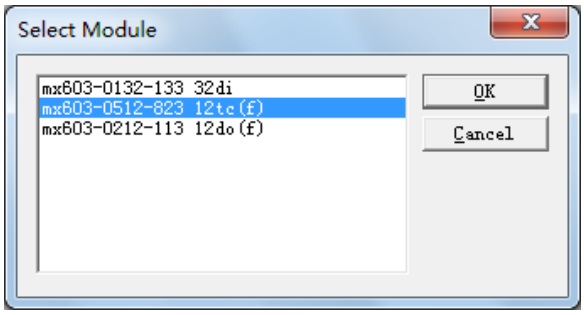


Figure 21 Select Module Panel

By double clicking the selected value of the specified parameter, there will be a pop-up window listing all available options of each parameter, choose the desired value and click **"OK"** to save the settings.

For example, the 12Ch TC has several items that can be modified according to various requirements: each channel's sensor type, each channel's filter times, each channel's CJ compensation, etc.

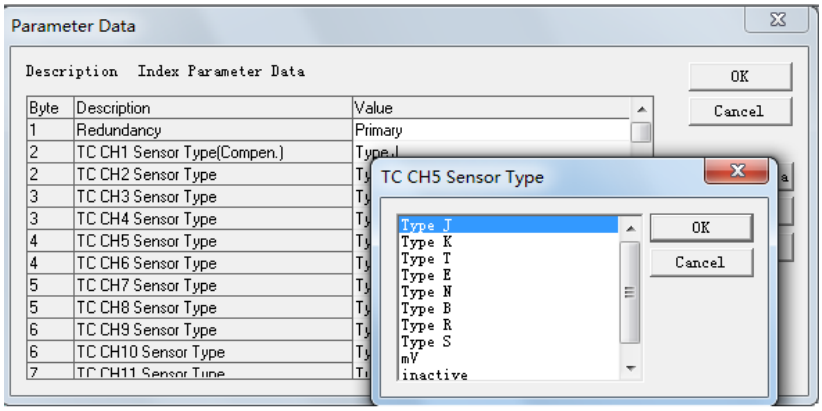


Figure 22 Change Parameter Data

8) Save the file and download it to the master. Select **Online->Download** from the menu to download the configuration and parameters to the master. Then the system will run into normal working status.

	*Do not download CFG or PRM when no I/O modules are connected.*

For a redundant system, the user needs to configure two identical PROFIBUS networks, i.e. scan the network and download the configuration to both MOX Open Controllers separately.

4.2 Monitor and Control in MoxGRAF

To implement the automatic control and monitor of a MOX system of PROFIBUS DP, MoxGRAF project should be built.

1) Start MoxGRAF, select **File->New Projecty**, make new project.

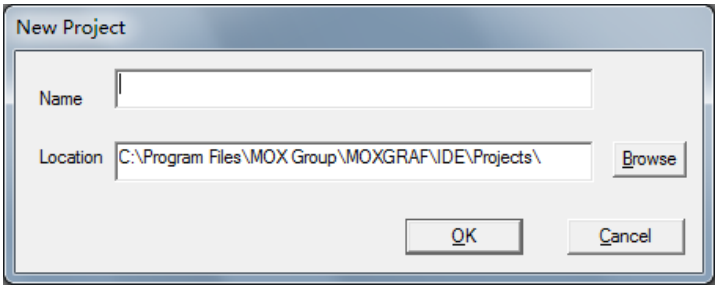


Figure 23 Setup New MoxGRAF Project

2) Add MOX OC. If it is a redundancy system, set the IP addresses of the primary and standby controllers.

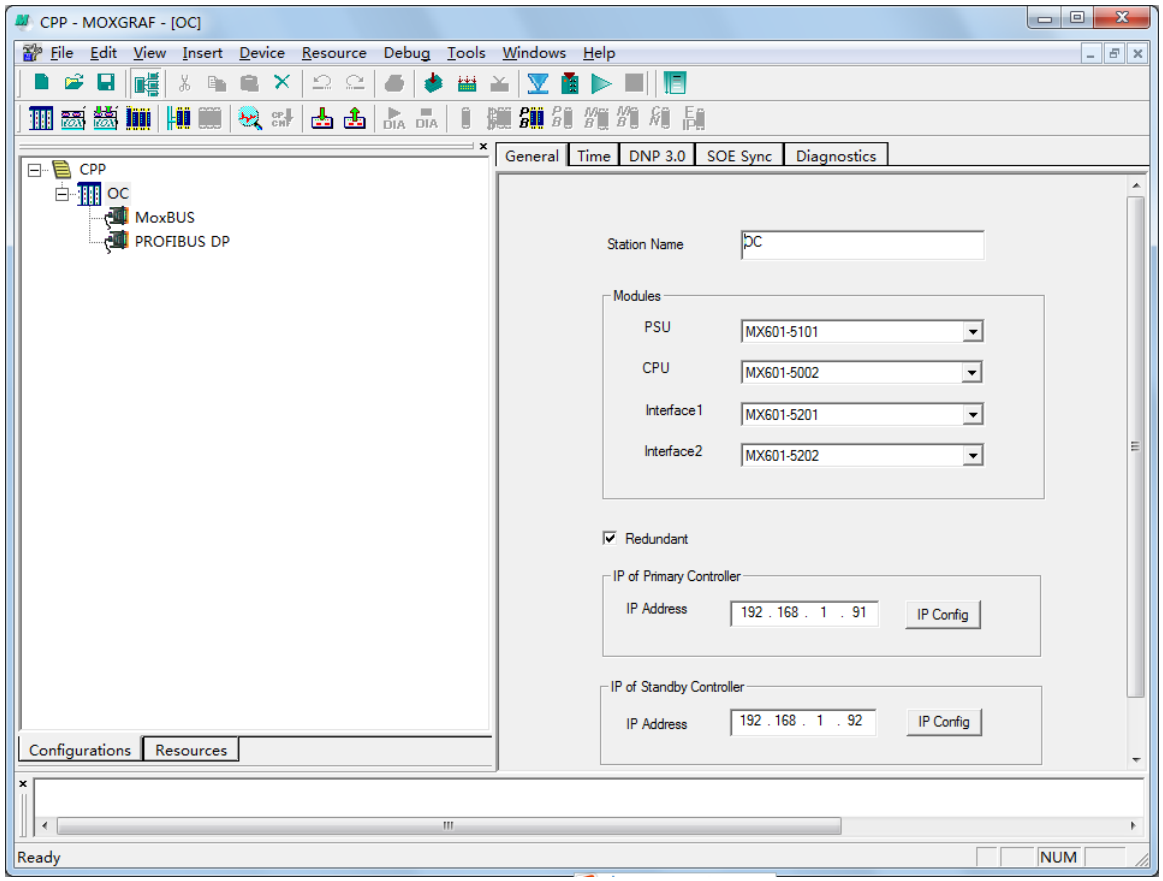


Figure 24 Add MOX OC

3) Import CPP.

Select PROFIBUS DP interface, then click **"Insert > Import CPP"** from the menu bar:

The following window will pop up for users to select project paths:

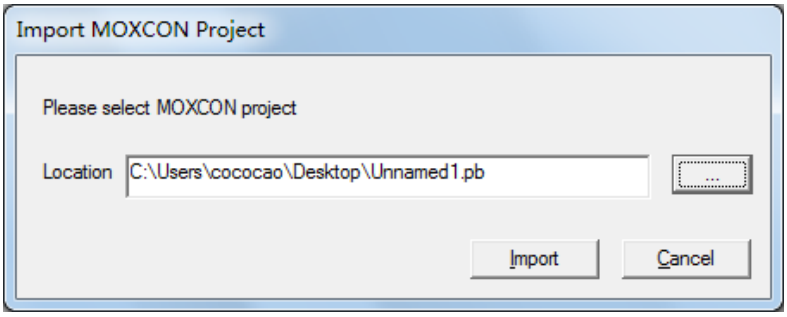


Figure 25 CPP Import

Click the browse button to select required MoxCon Project Path. Then click **"Import"** button to start importing process.

4) Download the configuration to the OC by selecting the device in Configuration view, and clicking  on the toolbar.

5) Switch to the Resources View in the Navigation Panel to define global variables, click on "Global Variables" in resource view, right click on the blank space under "Variable" edit window to the right, and choose "Add"; or just double click the blank space in "Variable" edit window.

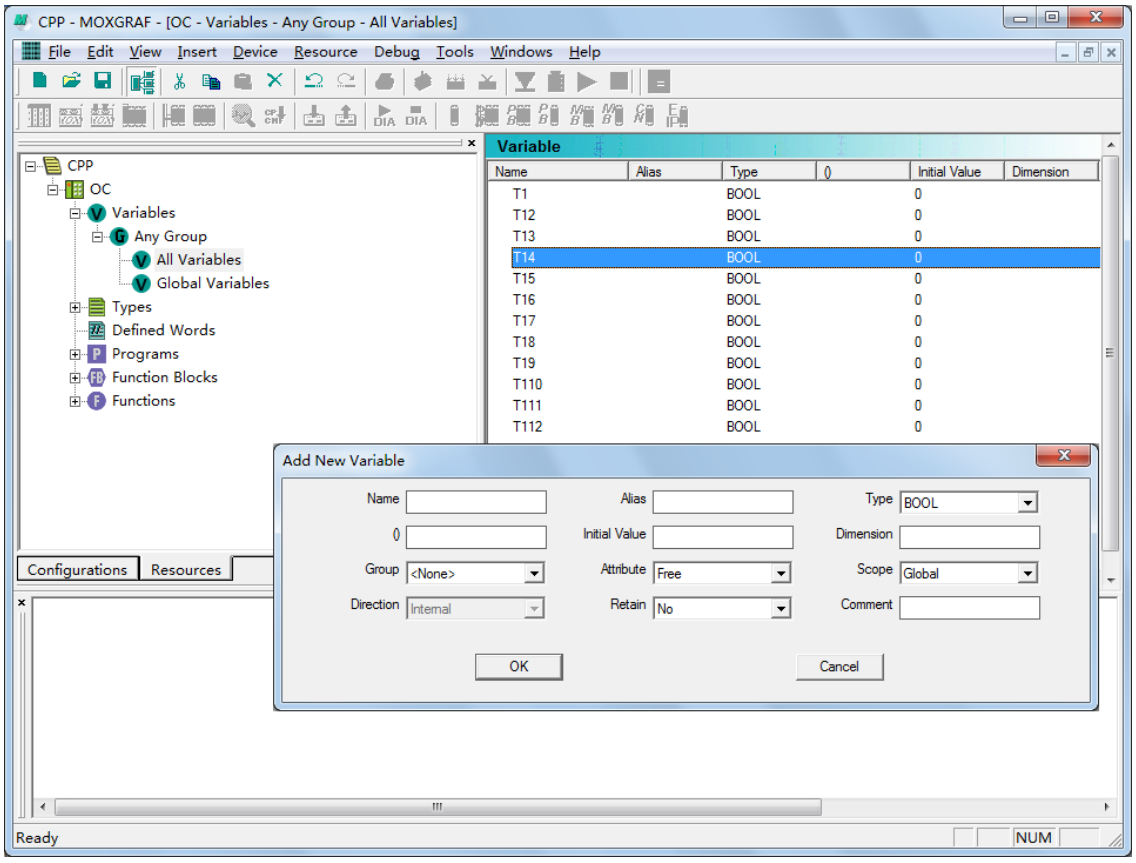


Figure 26 Add Variables

If necessary, bind the variables to the CPP's IO modules by right click the channel of each module and select "Bind"

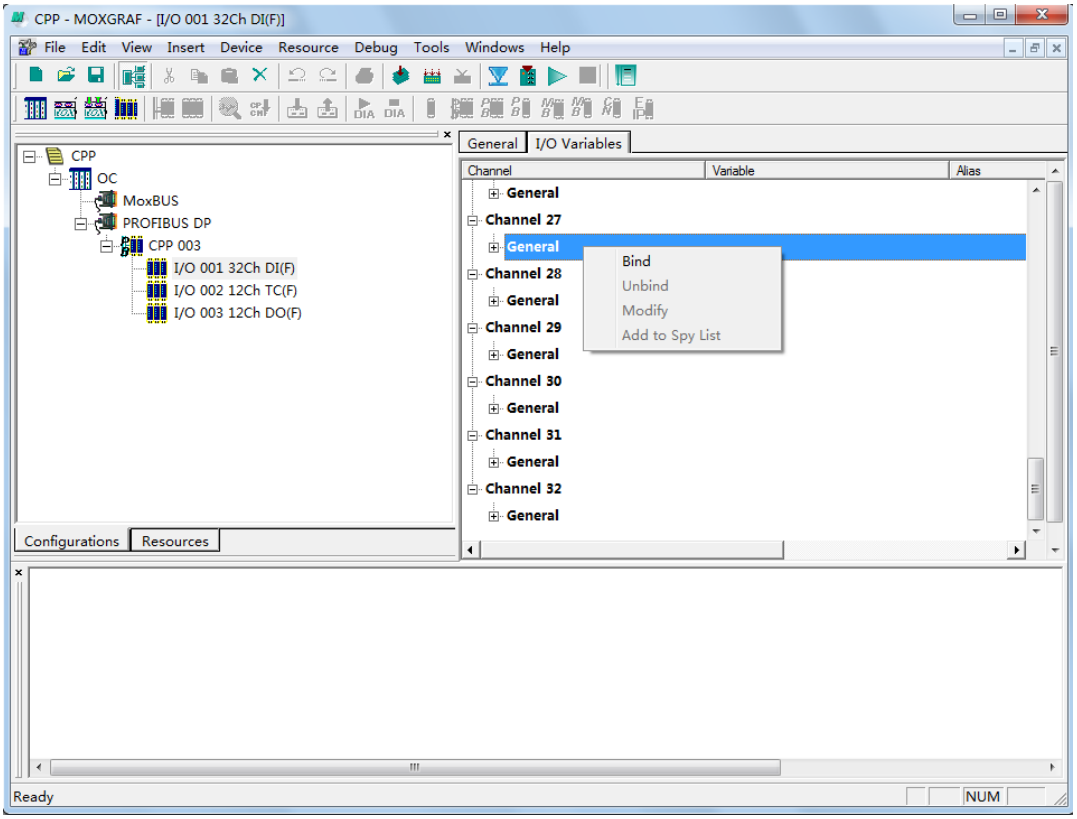


Figure 27 Bind Variables to IO Modules

6) Add Programs or Function Blocks. Refer to MOXGRAF online help.

7) After programming, use **Resource > Build** to compile the codes. If there are no mistakes within the program, you can download the code to the target controller to debug online by selecting **Resource > Download Code**.

8) Debug the downloaded project to verify input or output data.

Appendix A Communication Protocols

Appendix A PROFIBUS Communications

PROFIBUS is a fieldbus system, which is in widespread use all over the world. PROFIBUS fulfils the requirements for the interconnection of intelligent field devices in manufacturing, process and building automation.

PROFIBUS is a dynamic technology that grows functionally while complying with the international standards EN 50170, EN 50254 and IEC 61158.

PROFIBUS defines the technical characteristics of a serial field bus system with which distributed digital programmable controllers can be networked, from field level to cell level. PROFIBUS is a multi-master system and thus allows the joint operation of several automation, engineering or visualization systems with their distributed peripherals on one bus.

PROFIBUS specifications encompass several industrial bus protocol specifications. They are PROFIBUS-DP, PROFIBUS-FMS, PROFIBUS-PA and PROFINET. In fact, most of the slave applications are DP applications. It is a high speed data communication protocol.

PROFIBUS-DP is a device level bus that supports both analog and discrete signals. PROFIBUS-DP has widespread usage for such items as remote I/O systems and variable speed drives. PROFIBUS-DP communicates at speeds from 9.6Kbps to 12Mbps over distances from 100 to 1,200 meters.

Appendix B Product Support

Warranty Information

All MOX manufactured products are warranted to be free from defects in material and workmanship. Our obligation under this warranty will be limited to repairing or replacing, at our option, the defective parts within 1 year of the date of installation, or within 18 months of the date of shipment from the point of manufacture, whichever is sooner. Products may only be returned under authorization. The purchaser will prepay all freight charges to return any products with a valid return authorization number to the designated repair facility.

This limited warranty does not cover loss or damage that may occur in shipment of the goods or due to improper installation, maintenance, misuse, neglect or any cause other than ordinary commercial or industrial use. This limited warranty is in lieu of all other warranties whether oral or written, expressed or implied.

Liability associated with all MOX products shall not exceed the price of the individual unit that is the basis of the claim. In no event will there be liability for any loss of profits, loss of use of facilities or equipment or other indirect, incidental or consequential damages.

Contact Details

To obtain support for MOX products, call MOX Group on the following numbers, or your designated support provider and ask for MOX Support.

E-mail addresses:

support@mox.com.au

sales@mox.com.au

Visit our web page at:

http://www.mox.com.au

Service Information

If you require service, contact your local MOX Group representative. A trained specialist will help you to quickly determine the source of the problem. Many problems are easily resolved with a single phone call. If it is necessary to return a unit, an RMA (Return Material Authorization) number will be provided.

All returned materials are tracked with our RMA system to ensure speedy service. You must include this RMA number on the outside of the box so that your return can be processed immediately.

Your MOX Group authorized applications engineer will complete an RMA request for you. If the unit has a serial number, we will not need detailed financial information. Otherwise, be sure to have your original purchase order number and date purchased available.

We suggest that you provide a repair purchase order number in case the repair is not covered under our warranty. You will not be billed if the repair is covered under warranty.

Please supply us with as many details about the problem as you can. The information you supply will be written on the RMA form and supplied to the repair department before your unit arrives. This helps us to provide you with the best service, in the fastest manner. Most repairs are completed within two days. During busy periods, there may be a longer delay.

If you need a quicker turnaround, ship the unit to us by airfreight. We give priority service to equipment that arrives by overnight delivery. Many repairs received by midmorning (typical overnight delivery) can be finished the same day and returned immediately.

We apologize for any inconvenience that the need for repair may cause you. We hope that our rapid service meets your needs. If you have any suggestions to help us improve our service, please give us a call. We appreciate your ideas and will respond to them.

For Your Convenience:

Please fill in the following information and keep this manual with your MOX system for future reference:

P.O. #: _____ Date Purchased: _____

Purchased From: _____

MOX Group
Web: www.mox.com.au
Email: info@mox.com.au