
UNIFLAIR

Instruction manual



ACTIVE FLOOR MODULE

AFM4500B



UNIFLAIR SpA policy is one of continuous technological innovation. The Company therefore reserves the right to amend any data herein without prior notice.



Disposal: the product is made up of metal parts and plastic parts.

In reference to European Union directive 2002/96/EC issued on 27 January 2003 and the related national legislation, please note that:

- WEEE cannot be disposed of as municipal waste and such waste must be collected and disposed of separately;
- The public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment.
- The equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
- The symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment has been introduced onto the market after 13 August 2005 and that it must be disposed of separately;
- In the event of illegal disposal of electrical waste, the penalties are specified by local disposal legislation.

**READ AND SAVE
THESE INSTRUCTIONS**

Drafted by:	Checked by:	Approved by:
Munari Andrea 22/07/2010		

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This unit has been subjected to risk analysis under EC Directive 98/37/EEC (89/392/EEC). The technical solutions implemented during the design phase are described in the unit's technical documentation.

This unit is built to perform the functions for which it was designed without risk **as long as the installation, operation and maintenance of the unit are all carried out according to the instructions in this manual and on the labels on the unit.** There are however some residual risks, particularly regarding maintenance.

The risks which are particularly important for the safety of the user are marked with the danger symbol:



IMPORTANT WARNINGS



This unit contains electrical components, sharp edges and rotating devices such as the fans. **Before accessing the inside of the unit, disconnect it from the electrical power supply.**

All service and maintenance operations must be performed when the unit is off and must be done by qualified and experienced personnel who are aware of the necessary precautions.

In any case, all safety legislation of the installation location must be followed.

In the event of fire, water and other conductive substances must not be used to put out the fire near live electrical components. This warning must be displayed on notices in the unit installation location.



Make sure that the power supply voltage corresponds to the value shown on the data plate.

GENERAL DESCRIPTION

DOCUMENTATION ENCLOSED WITH THE UNIT



Every ACTIVE FLOOR unit is supplied complete with the following documents:

- Unit instruction manual;
- Electrical diagrams;
- Spare parts list
- CE declaration listing the directives and norms which the unit conforms
- Guarantee certificate.

UNIT DESCRIPTION AND INTENDED USE

ACTIVE FLOOR units are designed for high-technology applications such as computer rooms, telephone exchanges, control rooms.

All the units are fully assembled and tested in the factory and are built for applications where safety and reliability cannot be compromised.

The control system provides monitoring and prevention functions via:

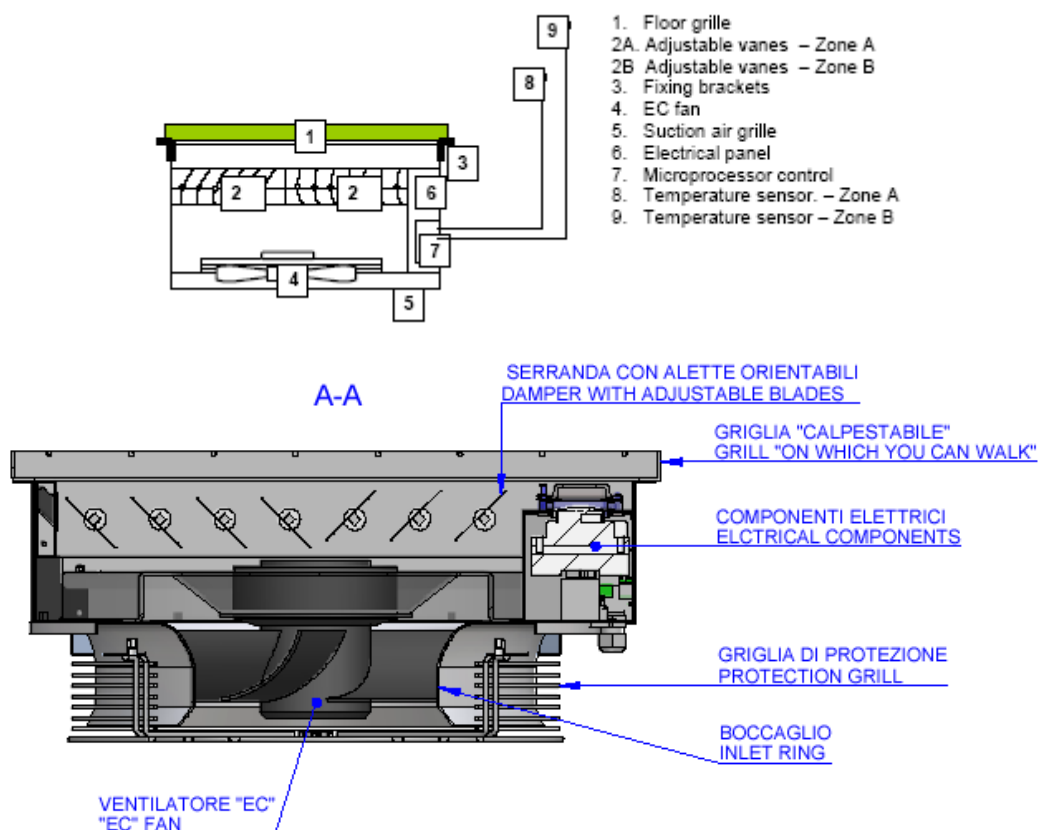
- Function status indication
- Continuous reading and display of the speed of the fan; reading and display of the temperature measured by the probes.
- Indication of fault and alarm situations

PERSONAL SAFETY

The design and wiring of air conditioning units conform to IEC electrical norms. The electrical board includes individual short circuit protection using automatic circuit breakers. Fan is fitted with metal grilles conforming to IEC safety norms. The fan is protected with suction and discharge grilles.

ACTIVE FLOOR LAYOUT

Each active floor unit is composed by the following components:

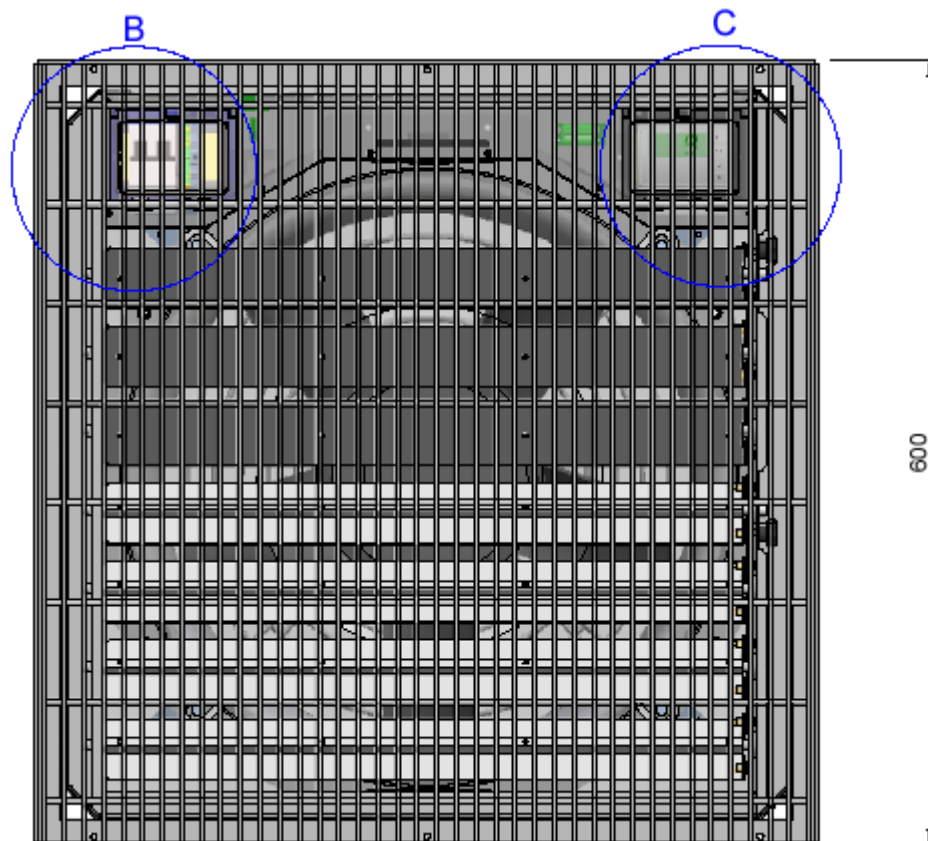


ACCESS TO MAIN COMPONENTS

Electrical Board

The electronic control board "C" is easily accessible removing the floor grill.

The automatic circuit breaker "B" is accessible removing the floor grill.



DATA PLATE

The data plate is in the electrical panel housing and shows:

- Unit model and serial number
- Power supply (voltage, number of phases and frequency)
- Power absorption of the unit and of the main components;
- Current absorption of the unit and of the main components: OA (Operating current), FLA (Full load current) and LRA (Locked rotor current);

MODEL	SERIAL No.			
POWER SUPPLY VOLTAGE				
ELECTRICAL CURRENT				
OA	FLA	LRA	KW	TOTAL
SETTING OF SAFETY DEVICES				
REFRIGERANT				

Fig. 4.








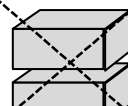
INSTALLATION GUIDE

TRANSPORT AND MOVEMENT

The unit **should not be turned on its back or upside-down, or exposed to the weather** and should be taken as near as possible to the installation location before removing the cardboard packing and the pallet.

The unit must be stored, preferably in its packing, under cover and protected from excessive humidity (< 90% R.H.) and temperature (< 50°C).

The symbols applied to the unit's packaging conform to ISO7000; they are explained in the table below.

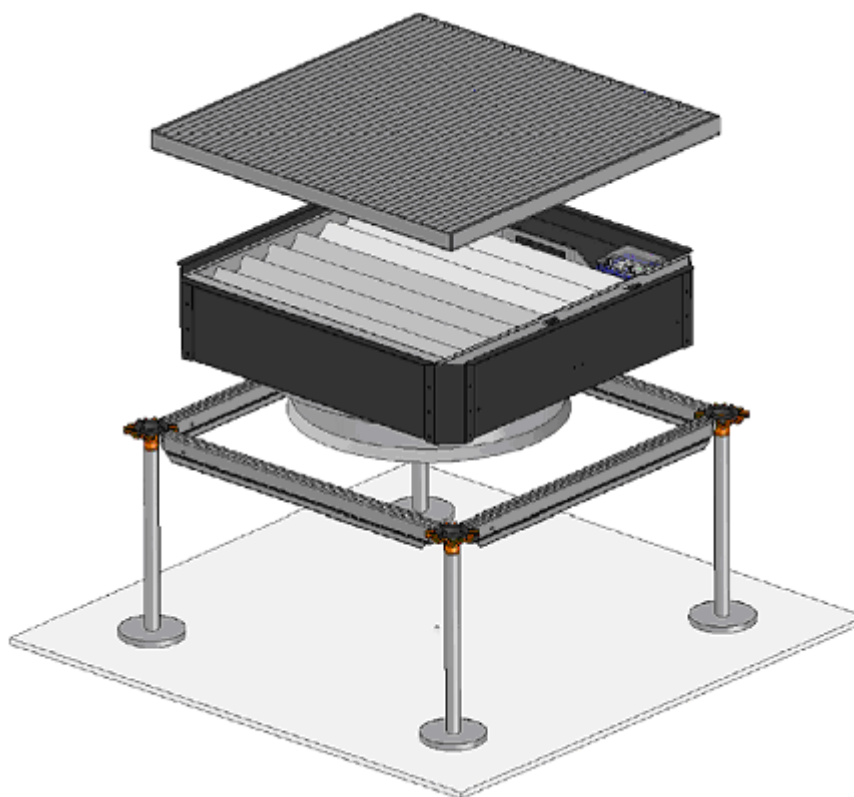
SYMBOL	MEANING	SYMBOL	MEANING
	FRAGILE: handle with care.		THIS SIDE UP shows the orientation of the unit.
	PROTECT AGAINST MOISTURE: the packaged unit must be stored in a dry place.		TEMPERATURE LIMITS: the unit must not be stored outside these limits.
	CENTRE OF GRAVITY: shows the centre of gravity of the packaged unit.		NO HOOKS: do not use hooks to lift the packed unit.
	KEEP AWAY FROM HEAT: the unit must be kept away from heat sources.		DO NOT STACK

RECEIVING THE UNIT

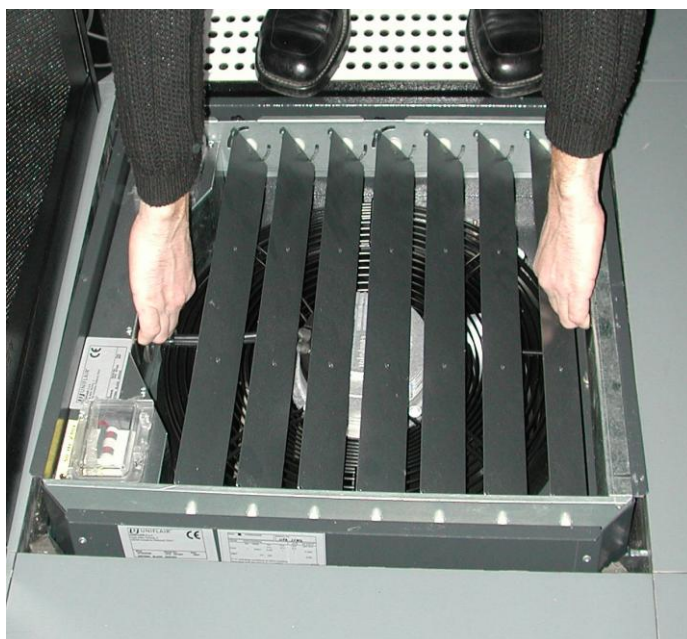
When the unit arrives, check that it is complete and in perfect condition; **notify the carrier immediately in writing of any damage** that might have been caused in transit.

POSITIONING THE UNIT

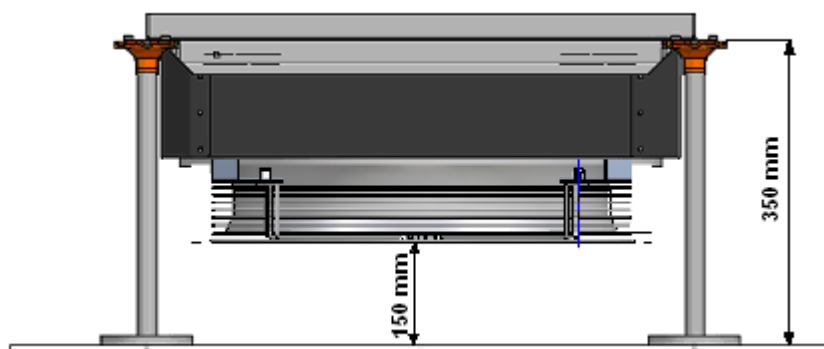
Each unit must be placed directly on four columns and stringers.



To facilitate the placement of the module on the raised access floor, there are handles on the inside of the module itself (see the photo below)

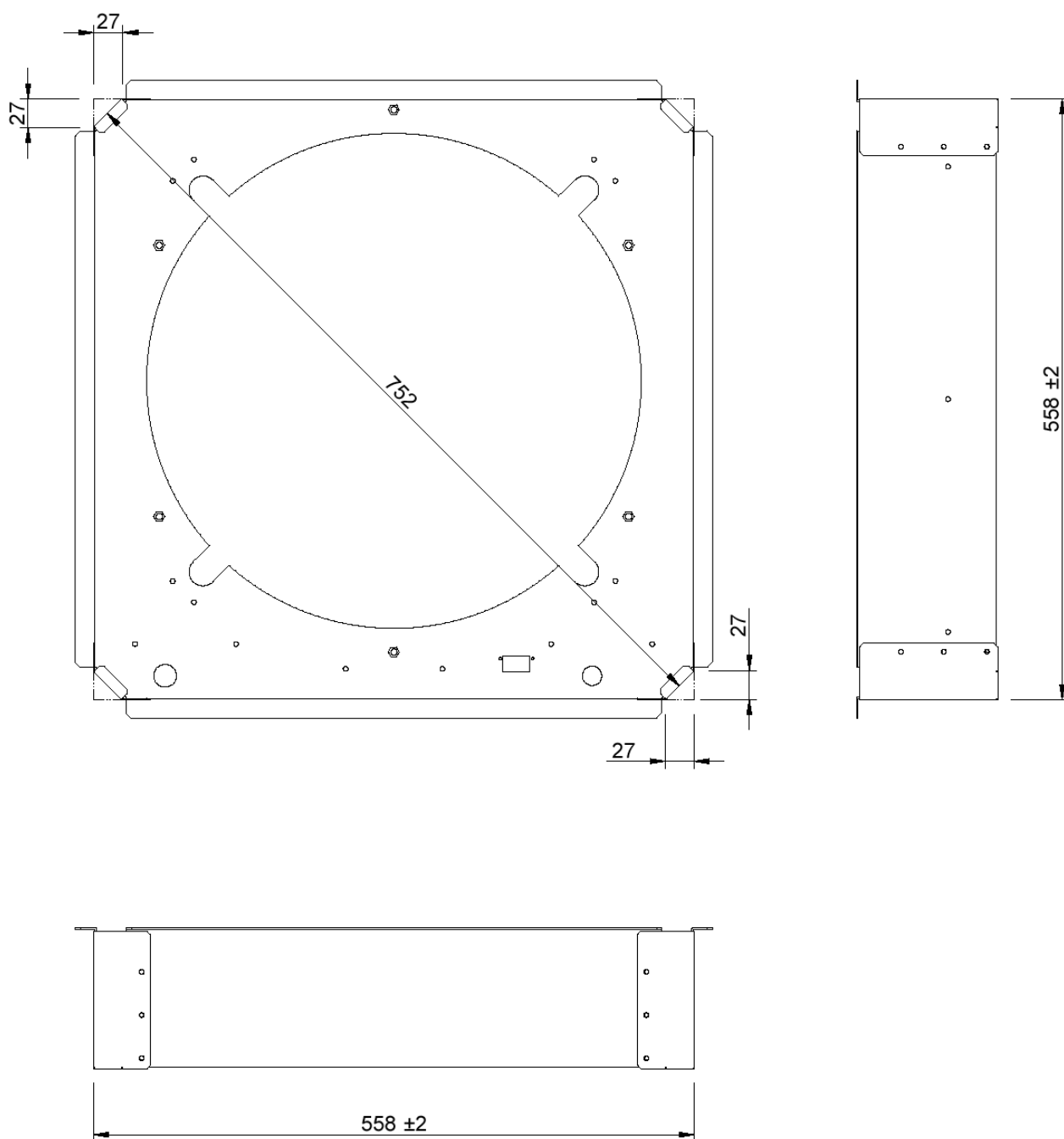


In order to grant the air flow, the minimum distance from the basement is 150 mm.



OVERALL DIMENSIONS

In the drawing attached below are represented the overall dimensions of Active Floor Module.



ELECTRICAL CONNECTIONS



Correct and accurate electrical connections, carried out in compliance with local regulations, are extremely important for the prevention of accidents and for ensuring long, trouble-free operation.

ACCESS TO THE ELECTRICAL PANEL

Before working on the electrical parts of the unit, make sure that there is no power supply to the unit and that the switch on the electrical panel is off.

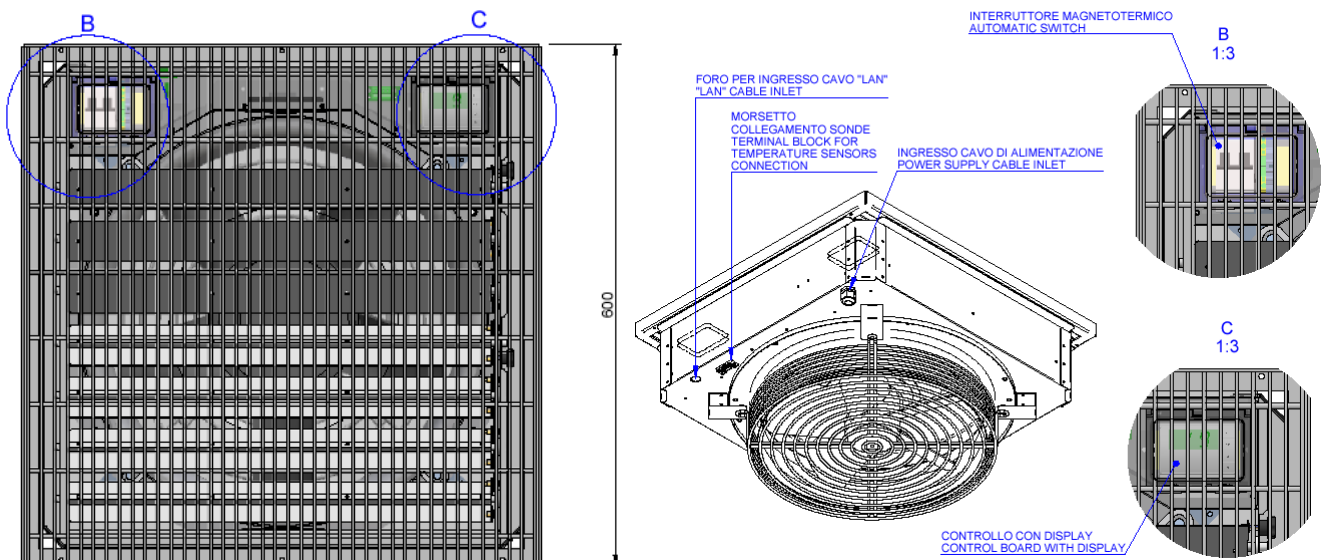
The power section of the electrical panel is protected by a plastic covers.

CONNECTION TO THE MAINS

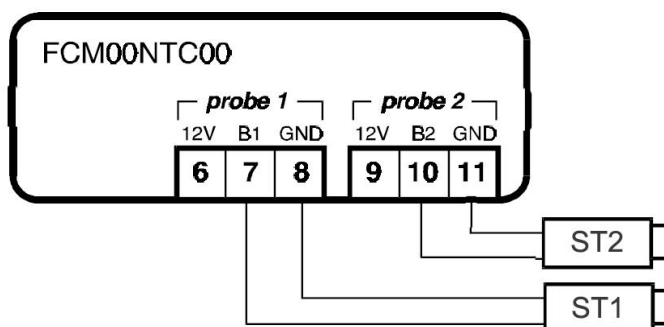
Check that the mains voltage corresponds to the nominal data of the unit (voltage, phases, frequency) shown on the electrical panel.

Power supply voltage must be within $\pm 10\%$ of the nominal value. Unit operation with power supplies outside these limits may invalidate the guarantee.

Fix the ends of the power supply cable to the mains (brown = phase; blue = neutral; yellow-green = ground).



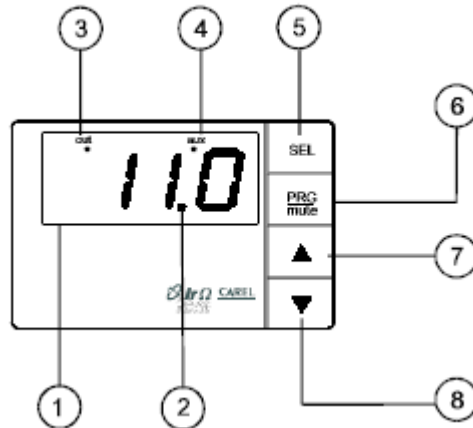
CONNECTING PROBES



START-UP AND TESTING

Check that mains corresponding to the effective voltage of the Active Floor.

SETTING THE REGULATION THE FRONT PANEL

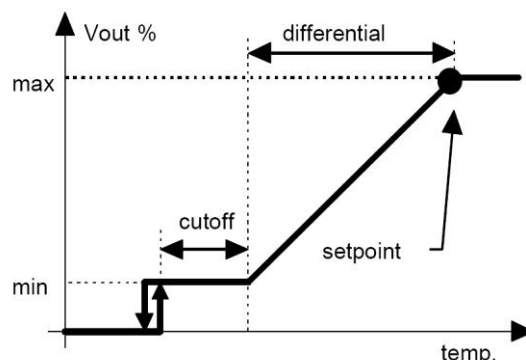


The front panel is composed by:

- 1.- Display: it displays the value of the probes; in the event of alarm it displays the alarm code; during the programming it displays the parameter codes and their values
- 2.- Led decimal: it turns on when the value being controlled is displayed with decimal point resolution
- 3.- Led out: it turns on when the 0-10V output energises (output voltage different from 0 V); it flashes when the 0 – 10 V output reaches its maximum programmed value
- 4.- Led aux: it turns on or flashes according to the selected operating mode;
- 5.- This button displays and/or sets the set point ; if pressed together with PRG / mute button for 5 sec. , it allows the password to be inserted and the configuration parameter to be accessed.
- 6.- This button allows, in pressed for 5 sec , to access to the more frequently used parameters; in the event of alarm it silences the buzzer; if pressed again, resets the alarm signal, as long as the cause of the alarm has been removed.
- 7.- While being pressed it displays the value of probe 1; during the programming it moves to the next parameter or increases the value of the parameters.
- 8.- While being pressed it displays the value of probe 2; during the programming it moves back to the next parameter or decreases the value of the parameters.

The control board adapts the air flow moved by the fans on the basis of the temperature of probes according the following control drawing.

N.B: if the stand alone module is installed with loads lower than 15Kw per rack, the air flow should be set to between 40 and 50%, setting the maximum value of the C05 digital output parameter.



SETTING PROCEDURES

How to change the set points:

- 1.- press the PRG/mute button for 5 sec
- 2.- 00 is displayed; set 77 (password) by using 7 and 8 buttons and press SEL to confirm
- 3.- ST1 is displayed ; press SEL to show the set point value ;
- 4.- by using 7 and 8 buttons set the new set point value
- 5.- Press SEL to confirm; ST2 is displayed
- 6.- Repeat steps 3,4 and 5
- 7.- Press PRG/mute button to confirm

How to change the other configuration parameters:

- 1.- press together SEL and PRG/mute buttons until 00 is displayed
- 2.- set 77 (password) by using 7 and 8 buttons; press SEL to confirm
- 3.- by using 7 and 8 buttons, scroll the different parameters and stop on desired parameter to be changed

PARAMETER LIST AND FACTORY SETTING

Parameters	Description	Factory setting
St1	Set point 1 (main)	35 °C
C00	Operating mode	2
P01	Differential of St1	5 °C
C03	Type of set point	2
C04	Min. output value	20 %
C05	Max. output value	70 %
C06	Soft-start	10°C
C07	Cut off	15 °C
C08	Speed-up	0 s
C09	Integral action	180 s
C10	Output value with high alarm	2
C13	Probe type	0
C17	Filtering action at probe unit	1 s
C18	Unit of measure	0
C19	Second probe management	1
P25	Threshold of low alarm	12°C
P26	Threshold of high alarm	40 °C
P27	Differential of high/low alarm	2 °C
P28	Delayed alarm	0 s
Password	Password	77

SERIAL CONNECTION

Enables and defines the type of serial connection

Access:

if C50=1, 3 or 4 press "PRG/mute" + "SEL" for 5 seconds and password 77;
if C50=0 or 2 the parameter can only be displayed.

C52: Type of serial connection

Operating range: from 0 to 2

C52=0 disabled connection

C52=1 connection to supervisory network (protocol Supervisor 3.0)

C52=2 connection to pLAN network

Default: C52= 2

C53: Serial Address

Binds an address to the device. Only data packets with address equal to C53 are accepted by the device.

Operating range: from 0 to 255

C54: Baud rate / destination address data

Depending on the type of connection you select, define:

- supervision: the transmission speed (baud-rate);
- pLAN: the device address to which to send data.

Operating range: from 0 to 32 if C52=1 (supervision)

C54=0 → 1200 Bd

C54=1 → 2400 Bd

C54=2 → 4800 Bd

C54=3 (o > 3) → 9600 Bd - from 0 to 32 if C52=2 (pLAN)

Default: C54= 31

Using the serial connection requires the option: "serial board RS485".

Ended configuration and connections of all modules AF, you must

- Food and wait for the master control initialization
- Switch the AF modules one at a time spaced 30 sec apart

CABLE FOR LAN AND SUPERVISION CONNECTION

For connection to both LAN and supervision networks, it is advisable to use a cable which has the following specifications:

Multi-coupled cables with internal flexible conductors made from tin plated copper (AWG 22/7), insulated with polypropylene, singularly coupled, screened with aluminium/polyester tape + continuity wire in tin plated copper (AWG 24/7) connected on a common axis to reduce the diameter and protected by an external sheath in PVC.

Technical features

Article	Ø external om. (mm)	Conduct. resist. max. (ohm/km)	Impedence (ohm)	Capacity (pF/m)		Operating voltage (V)	Operating temp. (°C)
				C1	C2		
Y08723 2x2xAWG22/7	4,50	54,8	50	108	198	300	-10/+60



ALARMS

The instrument controls and constantly checks alarm conditions during unit operating.

In the event of off-normal condition:

- when not in the programming phase, the display shows a message that identifies the type of alarm (see table below). The alarm message is shown alternatively to the normally displayed parameter every two seconds; in the event the regulator has interrupted control action or other alarms have been detected, the display will show the symbol "---" as well as the other alarm indications. If the normally displayed value is that of a probe temporarily disconnected, it won't be displayed until the probe has been connected again (the probe value will then be shown alternatively to the dedicated alarm message);
- the buzzer sounds;
- the status of the controller and its analogue output depend on the type of alarm occurred;
- the starting up of the relay digital output (if programmed as alarm indication) depends on the type of alarm.

When the cause that generated the alarm disappears, the controller and the digital output can be reset automatically or manually, depending on the type of alarm. Turning off the buzzer and resetting the alarm message requires a manual operation (except for alarms Er4 and Er5). Press PRG once to silence the buzzer and twice to make the displayed alarm message disappear.

Should an alarm be detected while displaying or modifying a parameter, press PRG to silence the buzzer. After that, PRG can be used to save any modification and exit the programming procedure.

Type of alarm	Effects on the regulation process	Effects on the digital output (when C31=1,2)	Ripristino
Er0= disconnected probe ST1	Regulation is disabled and analogue output is determined by C10	energised	automatic as soon as the probe is reconnected; manual reset for buzzer and displayed messages
Er1= disconnected probe ST2	the same as Er0		
Er2= faulty parameter memory	disabled with analogue output to 0 V	none	Re-programming
Er3= alarm from digital input	disabled with analogue output to 0 V	energised	programmable: both manual and automatic as soon as the external alarm stops; manual reset for buzzer and displayed messages
Er4= High temperature alarm	determined by C10 (no effects or analogue out at 100%)	energised	automatic with program. Differential; (manual if the differential has been given a high value)
Er5= Low temperature alarm			

The Er2 alarm will be shown permanently on the display due to:

- faulty reading of the parameters memory (usually at start-up); factory-set parameters will be temporarily set but they will not be saved in the parameters memory (it is possible, however, to access to the parameters and set their correct values again). We suggest resetting the factory-set parameters.
- faulty writing of the parameters memory (usually when pressing PRG). Any new modification won't be saved; it is possible, however, to access to the parameters, modify their values and save them again.

Press PRG to silence the buzzer and cancel the alarm message on the display.

Alarms Er3, Er4 and Er5 will not appear if there is a disabling command coming from terminal block.

TECHNICAL DATA

GENERAL CHARACTERISTICS

These characteristics refer to standard units and may be different for special or modified units.

Power supply	V / ph / Hz	230 / 1+N / 50
No of fans / motor	N	1 E.C.
Air volume	m ³ /s	max
		nominal
		min.
Power consumption	kW	nominal
Dimensions		
Height	mm	230
Length	mm	600
Width	mm	600

ELECTRICAL DATA

MODEL	VOLTAGE	OA at minimum speed	OA at nominal speed	OA at max speed	FLA
AF	230V /1 / 50HZ	0,65	1,2	2,2	2,5

KEY

kW: current absorption;

OA: current absorption in operating conditions;

FLA: current absorption in maximum conditions;

MAINTENANCE

REGULAR CHECKS

The following maintenance operations should be done regularly:

WEEKLY:

- check that room conditions on the control panel display are normal;
- check normal temperature and noise levels of fan;
- check that power supply voltage is within design limits;

MONTHLY:

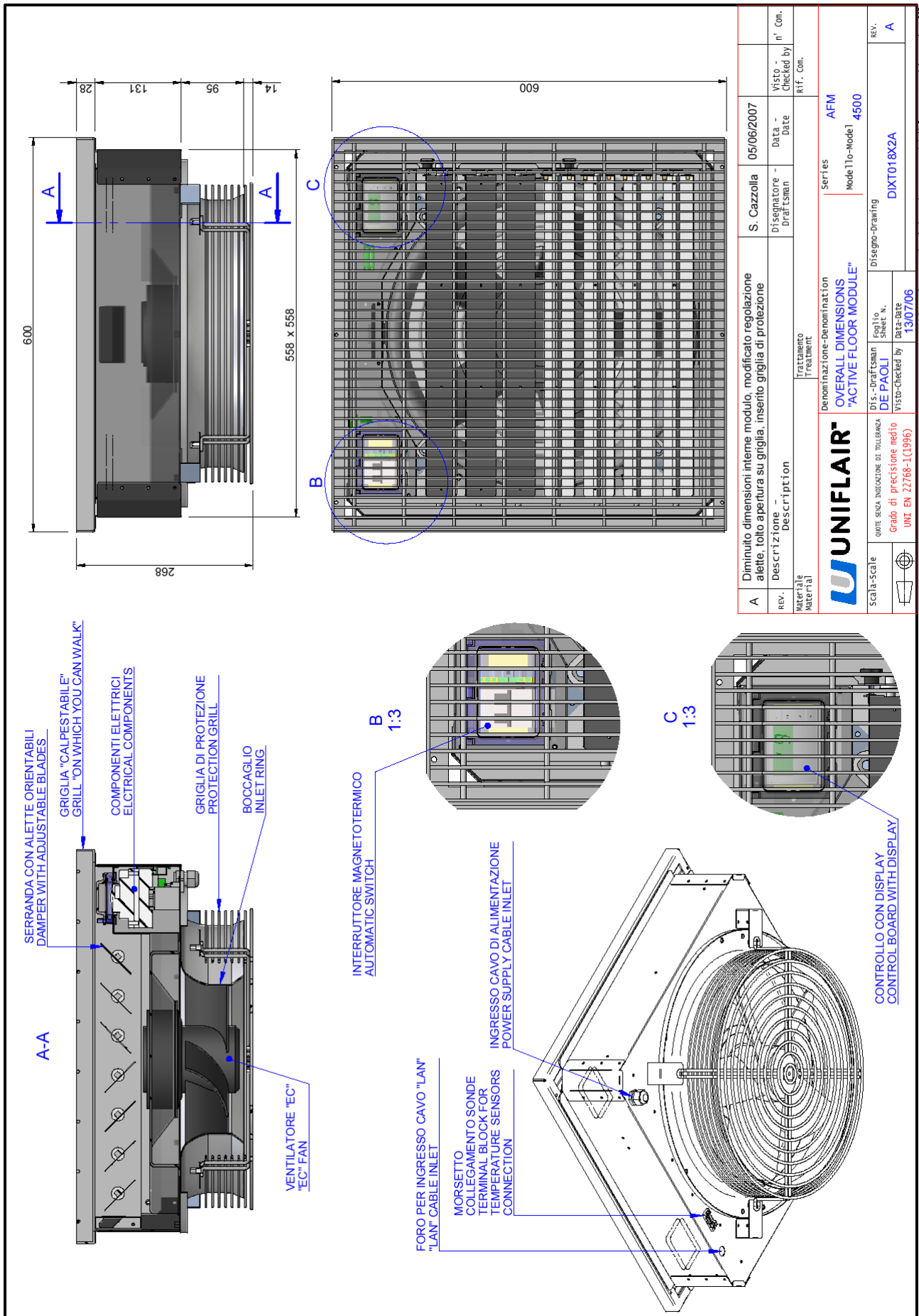
- check that electrical terminals are tight and in good condition;



PROBLEM SOLVING

Problem solving is made easier by the microprocessor control display; if there is an alarm, consult the control panel instruction manual.

If necessary, call the nearest service centre describing the nature of the fault displayed on the control.





UNIFLAIR S.p.A.

Legal and Administrative Headquarters: Viale della
Tecnica 2, 35026 Conselve (PD) Italy

Tel +39 049 5388211 Fax +39 049 5388212 -
uniflair.com

info@uniflair.com

P.IVA 02160760282 C.C.I.A.A. di PD R.E.A. 212586
del 21/04/1988 - R.I.N. 02160760282 M. PD004505

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