



# UPFLOW AIR DELIVERY CHILLED WATER ROOM UNITS MUC

## INSTRUCTION MANUAL

**Study this manual carefully before using the room unit and keep it in a safe place for future reference.**

## SAFETY NOTE

This equipment is designed to be safe in use for the purpose intended provided it is installed, operated and maintained in accordance with the instructions contained in this manual. They should therefore be studied in advance by any person wishing to install, use or service the equipment.

The equipment contains electrical components at mains voltage as well as rotating machinery such as fans. It should therefore normally be isolated from the power supply before it is opened up.

Any service and maintenance operations requiring access to the inside of the equipment while it is in operation should be carried out by an appropriately qualified or experienced person who is fully aware of the necessary precautions.

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**каталоги, инструкции, сервисные мануалы, схемы.**

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## QUICK GUIDE

*ATTENTION: the description of the Control System and the operating logic of the unit is contained in the Control System Instruction Manual.*

### START--UP OF THE UNIT

- **Connect power** to the electrical panel of the unit: **close the main isolator**, close the circuit **FAN/AUXILIARY** of the auxiliary circuit, switch on the power supply and check that the yellow LED lights up as follows:
  - “LINE” on mP3 Control Panel;
  - “\_ SYSTEM ON” on mP1 or mP2 Control Panels.
- **Open** the shut--off valves on the chilled water circuit.
- **Check** that the chilled water is circulating.
- **Start--up** the unit by pressing button **I** on the control panel: after a moment the fans will start and the “SYSTEM ON” green LED on the control panel will come on.
- **If an alarm condition** arises, displayed on the control panel by the “ALARM” red LED and accompanied by an audible warning, consult the control panel instruction manual.

### NON STARTING OF THE UNIT

If the unit doesn't start, check that:

- 1) power is on to the electrical panel and to the auxiliary circuit transformer;
- 2) the automatic breaker **FAN/AUXILIARY** on the electrical panel is set;
- 3) the fuse of the 24V auxiliary circuit is not blown; in the case of units with mP1 or mP2 control panel, check the fuse on the interface board (see specific instruction book);
- 4) the connectors of the control panel are correctly inserted;
- 5) the yellow LED labelled either:
  - “LINE” on mP3 Control Panel;
  - “\_ SYSTEM ON” on mP1 or mP2 Control Panel; is on.

### INSUFFICIENT COOLING

(see also para. FAULT FINDING GUIDE)

If the ambient temperature is too high after 30 minutes from the starting--up of the unit, verify that chilled water is flowing at the design temperature and check that:

- 1) the air filters are not clogged;
  - 2) the air flow is not obstructed (see para. AIR DISTRIBUTION);
  - 3) the room temperature set point is correct (see control panel instruction manual);
  - 4) the fans are rotating in the correct direction;
  - 5) the three--way valve is operating properly (see para. 3--WAY VALVE AND SERVOMOTOR);
  - 6) the heat load is not above the design value.
- N.B.: in the case of a unit malfunction, call a qualified service engineer.

### STOPPING THE UNIT

- **Stop** the unit by pressing push button **O** on the control panel: after a moment all the components of the unit will stop and the “SYSTEM ON” green LED on the control panel will go off;
  - **For long shutdown periods** it is advisable to disconnect the power supply and to open the isolator on the electrical panel.
- N.B.: Manual starting and stopping operations are deactivated in room units equipped with mP1/mP2 control panel if the microprocessor has been programmed either for remote control or for time controlled start/stop (see mP1/mP2 Instruction Manual).

### PERIODIC MAINTENANCE

(see also para. PREVENTIVE MAINTENANCE)

- **Check** that the room conditions displayed on the control panel are normal;
- **Check** periodically that the air filters are not clogged; change the filters when the specific alarm comes on;
- **Check** that the noise of the unit is normal;
- **Check** the free flow of condensate to the main drain;
- **Check** the tension of the fan belts (see para. FAN BELT TENSION).



# DIMENSIONS AND WEIGHTS

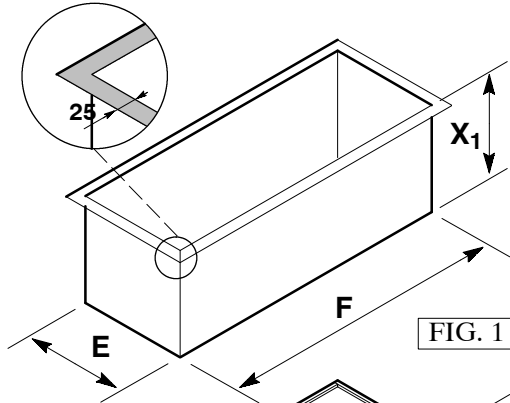


FIG. 1

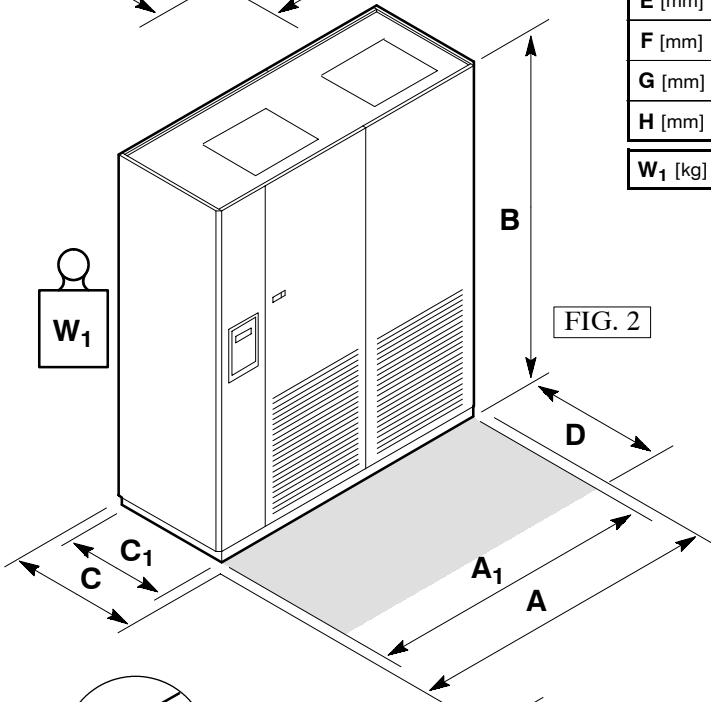


FIG. 2

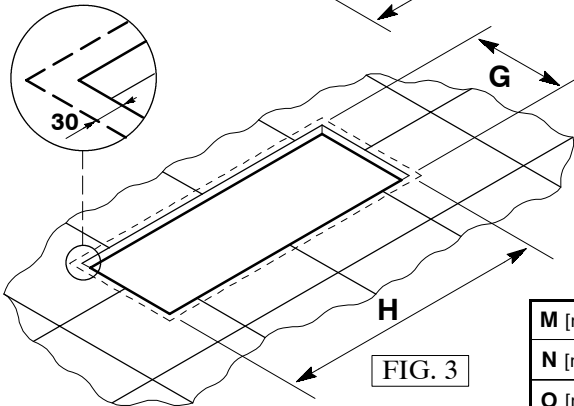


FIG. 3

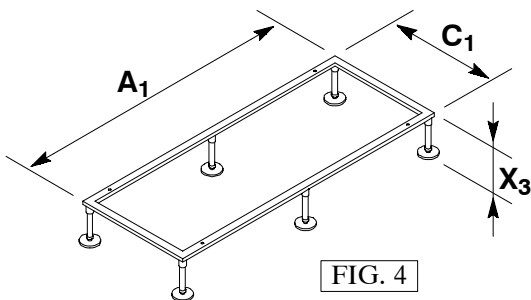
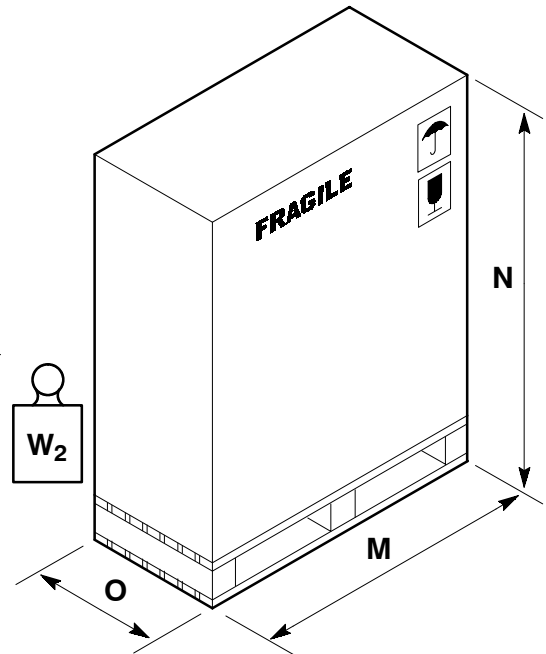


FIG. 4

	MUC . . . .						
	0610	0710	0910	1210	1710	2310	2510
A [mm]	640	740	970	1440	1670	2370	
A <sub>1</sub> [mm]	600	700	930	1400	1630	2330	
B [mm]	1970						
C [mm]	605	650					
C <sub>1</sub> [mm]	600	645					
D [mm]	600	700					
E [mm]	565	610					
F [mm]	600	700	930	1400	1630	2330	
G [mm]	540	640	870	1340	1570	2270	
H [mm]	540	590					
W <sub>1</sub> [kg]	165	220	260	330	380	480	490



	MUC . . . .						
	0610	0710	0910	1210	1710	2310	2510
M [mm]	710	810	1040	1510	1740	2440	
N [mm]	2135						
O [mm]	670	720					
W <sub>2</sub> [kg]	185	240	285	360	420	525	535

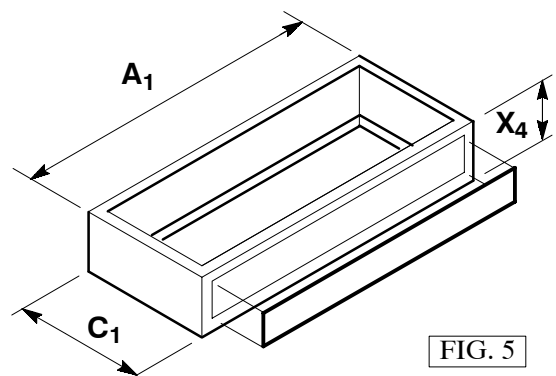


FIG. 5



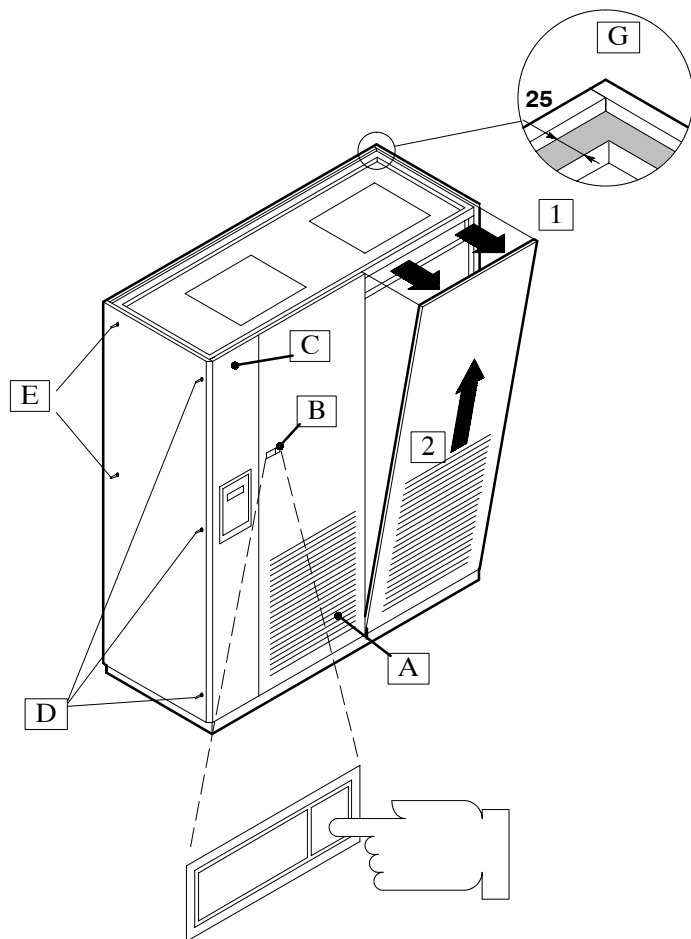


FIG. 7

## CONTROL PANEL

The unit is delivered with the control panel packed separately to prevent any damage during transport.

The packing containing the control panel is placed on the

right-hand side of the unit, inside the fan compartment protecting panel.

For mounting see para. "MOUNTING AND CONNECTION OF CONTROL PANEL".

## CONNECTION TO SUPPLY DUCTWORK

This unit is designed to supply conditioned air into ductwork or, via a suitable extension hood, into a suspended ceiling.

The flange detail (see fig. 7) for the connection of the ductwork or extension hood to the top of the unit is shown in detail **G**.

In the drawing in fig. 1 are the overall dimensions of the optional discharge plenum. The height  $X_1$ , has to be specified at the time of order and may be anywhere between 300 and 950 mm.

(A higher plenum than this can be supplied to special order).

## ACCESS TO THE UNIT

### OPENING AND REMOVAL OF PANELS

The unit is accessible on all sides by removing the covering panels (see fig. 7).

#### FRONT PANELS

Front panel removal does not require the use of tools.

The main panel **A** is hinged and opens on release of handle **B** when pressed at the indicated point; this operation also frees the panel on the left side **C** (not in models MUC0610 and MUC0710).

The locking pressure of the panel can be adjusted by means

of the screw in the internal catch.

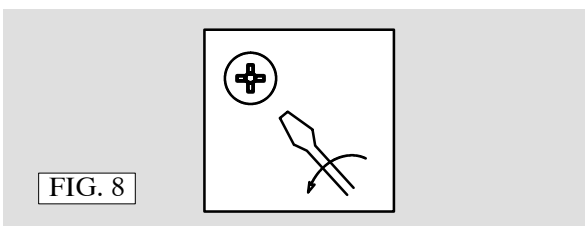
The remaining panels (not in models MUC0610, MUC0710 and MUC0910) are engaged at the bottom and held to the front of the unit by spring-loaded catches; for removal, pull the top edge of the panel forward to release the catches (operation 1) and lift (operation 2). Do the opposite for assembly.

#### SIDE PANELS

They are both fixed with five **internal** screws as follows:

--three screws **D** distributed on the front side uprights, accessible after removal of the front panels;

--two screws **E** on the backside uprights; the screws are marked with the symbol shown in fig. 8 and accessible at the bottom of the filter compartment (with the filters removed) and at the end of the fan compartment.



#### REAR PANELS

The rear panels are fixed with screws on each side.



MUC . . . .						
	0610	0710	0910	1210	1710	2310 2510
I	3/4"	1"	1 1/4"	1 1/2"	2"	
U	3/4"	1"	1 1/4"	1 1/4"	2"	
C	Ø25					
F	Ø6					
D	Ø21					
I <sub>1</sub>	110					
I <sub>2</sub>	230					
I <sub>3</sub>	180	195	205	215	240	
U <sub>1</sub>	310			330	375	
U <sub>3</sub>	290	285	305	325	380	
C <sub>1</sub>	--	120		75		
C <sub>2</sub>	--	65	95	140		
D <sub>1</sub>	70	100				
D <sub>2</sub>	120	110	200	720	770	900

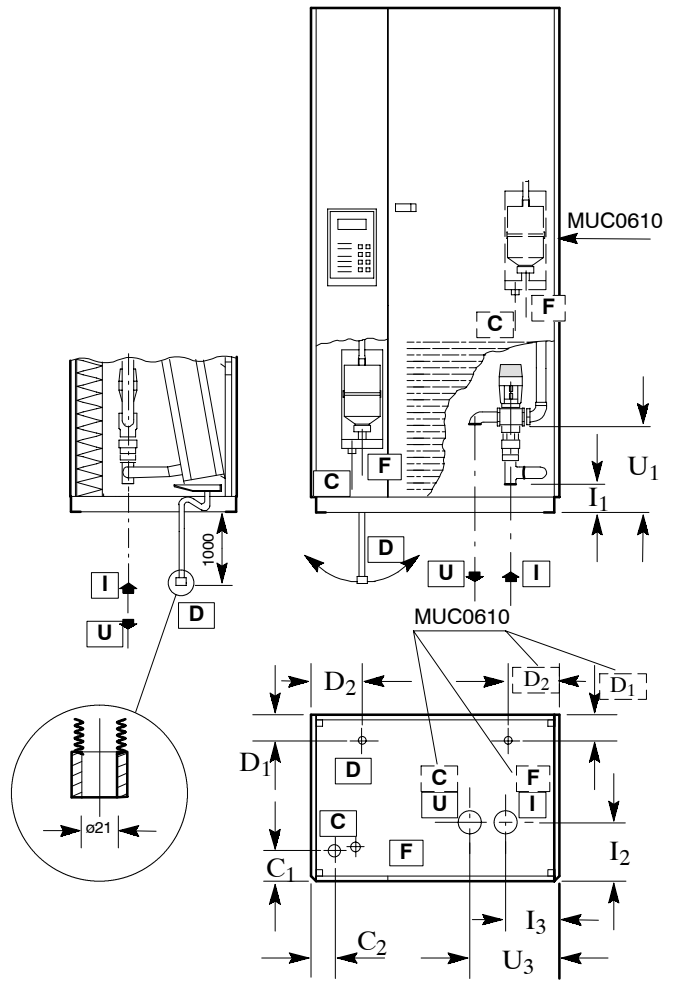


FIG. 9

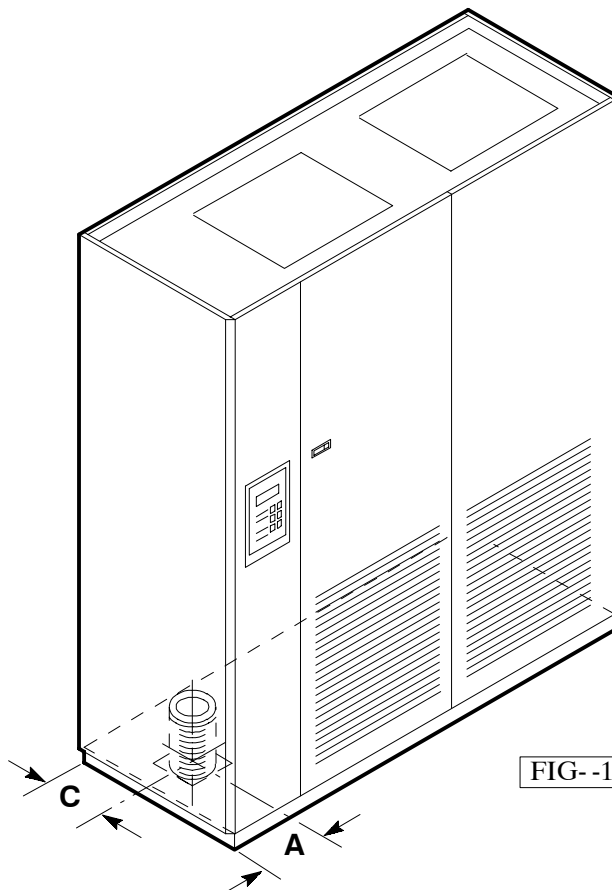


FIG. -10

MUC . . . .						
	0610	0710	0910	1210	1710	2310 2510
A	110					
C	295	310				



## ELECTRICAL CONNECTIONS

*A correct electrical connection, carried out accurately and in compliance with local regulations, is extremely important in order to prevent accidents and to ensure a long trouble-free operation.*

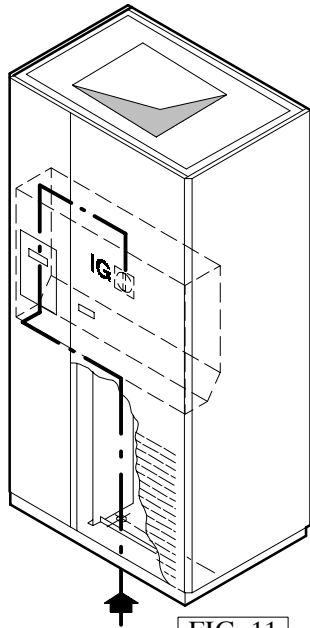


FIG. 11

### POWER CONNECTION

Before working on the electrical parts of the unit, make sure that the power is off and that the isolator on the electrical panel is open (position "O").

After checking that the mains voltage corresponds to the nominal data of the unit (voltage, phases, frequency) shown on the protective cover of the electrical panel, pass the electrical supply cable through the hole in the bottom of the unit and up to the main isolator **IG** on the electrical panel (see fig. 11).

Fix the ends of the supply cable wires to the upper terminals of the isolator in the electrical compartment; tighten up the terminal screws.

### MOUNTING AND CONNECTION OF CONTROL PANEL

The control panel should be placed in the hole (in the two holes in the case of mP3+hP3 system) on the front left panel.

Fasten the control panel(s) into position following the instructions enclosed in packing and insert the cable

connectors in the respective slots without forcing them (see also the control panel instruction manual).

**ATTENTION: the connection of the control panel must always be carried out when the power is off** (isolator on the electrical panel in position "O").

### ACCESS TO THE ELECTRICAL PANEL

The power section of the electrical panel, at mains voltage, is protected by a plastic cover.

To remove it:

- turn off the isolator to release the handle blocking the hatch;
- unscrew the four fixing screws.

### INSTRUMENT AND ALARMS

The unit is equipped with the following instruments (see fig. 12):

- **Room temperature and humidity sensor STU**; made up of:
  - a) a NTC sensor on the mP3 unit, plus a humidity sensor on the hP3 panel (if fitted);
  - b) a single combined sensor in the units equipped with mP1/mP2 panels.
- **Air flow sensor FS** -- differential pressure switch in the electrical panel;
- **Clogged filters sensor PFS** -- differential pressure switch in the electrical panel;
- **Electrical heaters safety thermostat TSR** -- in the fan compartment with access to manual reset push-button without removal of the internal panel.

The following optional instruments can be connected to every room unit (see the control panel instruction manual):

- **Under floor flooding** detector consisting of:
  - a) **SAS instrument** inserted in the appropriate socket of the electrical panel (see fig. 12);
  - b) **RAS sensor** (or sensors, connected in parallel) to be placed at the points to be monitored;
- **High/low room temperature sensors ATA and BTA**: to be installed close to the room unit;
- **High/low room humidity sensors AUA and BUA**: to be installed close to the room unit;
- **Fire and smoke sensors SFF**: to be installed in the ambient or in the raised floor cavity, in a low air-speed zone.



## ELECTRICAL DATA

COMPONENTS														COMPLETE ROOM UNIT						OPTIONAL FANS														
BELT DRIVEN FANS MOTORS (a) Standard speed						BELT DRIVEN FANS MOTORS (a) Reduced speed						BELT DRIVEN FANS MOTORS (a) Low speed						ELECTRIC HEATERS		ELECTRODE HUMIDIFIER		ROOM UNIT VERSION C		ROOM UNIT VERSION T		ROOM UNIT VERSION D		ROOM UNIT VERSION H		DIRECT DRIVEN FANS MOTORS (a)				
MODEL	VOLTAGE	No.	kW	OA	FLA	LRA	No.	kW	OA	FLA	LRA	No.	kW	OA	FLA	LRA	kW	OA	kW	OA	OA (c)	OA (c)	OA (c)	OA (c)	No.	kW	OA	FLA	LRA					
MUC0610	380/3 415/3	1	0.75	1.8	2.0	11.0	1	0.55	1.3	1.4	6.2	1	0.55	1.3	1.4	6.2	6.0 7.2	9.1 10.0	3.3 3.6	5.0 5.0	1.8	10.9 11.8	6.8	15.9 16.8	1 (b)	0.55	5.0	5.5	8.7					
MUC0710	380/3 415/3	1	1.1	2.6	2.9	13.1	1	0.55	1.3	1.4	6.2	1	0.55	1.3	1.4	6.2	6.0 7.2	9.1 10.0	3.3 3.6	5.0 5.0	2.6	11.7 12.6	7.6	16.7 17.6	1 (b)	0.55	5.0	5.5	8.7					
MUC0910	380/3 415/3	1	1.5	3.3	3.7	18.5	1	0.75	1.8	2.0	11.0	1	0.55	1.3	1.4	6.2	9.0 10.7	13.7 14.9	3.3 3.6	5.0 5.0	3.3	17.0 18.2	8.3	22.0 23.2	1 (b)	0.74	5.9	7.1	11.0					
MUC1210	380/3 415/3	2	1.1	2.6	2.9	13.1	2	0.55	1.3	1.4	6.2	2	0.55	1.3	1.4	6.2	12.0 14.3	18.2 19.8	6.6 7.2	10.0 10.0	5.2	23.4 25.0	15.2	33.4 35.0	2 (b)	0.55	5.0	5.5	8.7					
MUC1710	380/3 415/3	2	1.5	3.3	3.7	18.5	2	0.75	1.8	2.0	11.0	2	0.55	1.3	1.4	6.2	18 21.5	27.3 29.9	6.6 7.2	10.0 10.0	6.6	33.9 36.5	16.6	43.9 46.5	2 (b)	0.74	5.9	7.1	11.0					
MUC2310	380/3 415/3	3	1.5	3.3	3.7	18.5	3	0.75	1.8	2.0	11.0	3	0.55	1.3	1.4	6.2	18 21.5	27.3 29.9	6.6 7.2	10.0 10.0	9.9	37.2 39.8	19.9	47.2 49.8	3 (b)	0.74	5.9	7.1	11.0					
MUC2510	380/3 415/3	3	1.5	3.3	3.7	18.5	3	0.75	1.8	2.0	11.0	3	0.55	1.3	1.4	6.2	18 21.5	27.3 29.9	6.6 7.2	10.0 10.0	9.9	37.2 39.8	19.9	47.2 49.8	3 (b)	0.74	5.9	7.1	11.0					

### LEGEND

kW: nominal power;  
 OA: nominal operating current;  
 FLA: full load current;  
 LRA: locked rotor current.

### NOTES

(a): data referred to each piece;  
 (b): single phase at 220V or 240V;  
 (c): max current of the most loaded phase at nominal operating condition.

## RECOMMENDED SIZES OF POWER SUPPLY CABLES AND LINE FUSES

ROOM UNIT VERSION C			ROOM UNIT VERSION T			ROOM UNIT VERSION D			ROOM UNIT VERSION H		
MODEL	LINE	FUSES (a)	LINE	FUSES (a)	LINE	FUSES (a)	LINE	FUSES (a)	LINE	FUSES (a)	
MUC0610	3x1.5+1.5PE	30A	3x1.5+1.5PE	30A	3x1.5+1.5PE	30A	3x2.5+2.5PE	30A			
MUC0710	3x1.5+1.5PE	30A	3x1.5+1.5PE	30A	3x1.5+1.5PE	30A	3x2.5+2.5PE	30A			
MUC0910	3x1.5+1.5PE	30A	3x2.5+2.5PE	30A	3x1.5+1.5PE	30A	3x2.5+2.5PE	30A			
MUC1210	3x1.5+1.5PE	30A	3x4+4PE	40A	3x2.5+2.5PE	30A	3x6+6PE	50A			
MUC1710	3x1.5+1.5PE	30A	3x6+6PE	50A	3x2.5+2.5PE	30A	3x16+16PE	80A			
MUC2310	3x1.5+1.5PE	30A	3x6+6PE	50A	3x2.5+2.5PE	30A	3x16+16PE	80A			
MUC2510	3x1.5+1.5PE	30A	3x6+6PE	50A	3x2.5+2.5PE	30A	3x16+16PE	80A			

NOTES (a): supply line back-up protection suitable for I<sub>sc</sub> up to 50kA