MITSUBISHI ELECTRIC

COMPUTER ROOM AIR CONDITIONER
MODEL

s-MEXT-G00 006-044

OPERATION MANUAL
TRANSLATION OF THE ORIGINAL INSTRUCTIONS

ISTRUZIONI DI FUNZIONAMENTO Per un uso sicuro e corretto, leggere questo manuale ed il manuale dell'unità esterna prima dell'installazione	**ITALIANO**
OPERATION MANUAL For safe and correct use, read this manual and the outdoor unit installation manual before installation.	**ENGLISH**
BEDIENUNGSHANDBUCH Für einen sicheren und korrekten Gebrauch lesen Sie vor der Installation diese Anleitung und die Anleitung des Außengerätes.	**DEUTSCH**
MANUEL D'UTILISATION Pour une utilisation sûre et correcte, lire ce manuel et le manuel de l'unité externe avant l'installation.	**FRANÇAIS**
BEDIENINGSHANDLEIDING Lees voor een veilig en correct gebruik alvorens het apparaat te installeren eerst deze handleiding en de handleiding van de buitenunit.	**NEDERLANDS**
MANUAL DE INSTRUCCIONES Para un uso seguro y correcto, lea este manual y el manual de la unidad exterior antes de la instalación.	**ESPAÑOL**
ΕΓΧΕΙΡΙΔΙΟ ΟΔΗΓΙΩΝ ΧΡΗΣΕΩΣ Για μια σωστή και ασφαλή χρήση, διαβάστε το εγχειρίδιο αυτό και το εγχειρίδιο της εξωτερικής μονάδας πριν από την εγκατάσταση.	**ΕΛΛΗΝΙΚΆ**
MANUAL DE OPERAÇÃO Para uma utilização segura e correta, leia este manual e o manual da unidade externa antes da instalação.	**PORTUGUÊS**
BETJENINGSVEJLEDNING For sikker og korrekt brug, læs denne manual og brugsanvisningen til udendørsenheden inden installation	**DANSK**
DRIFTSMANUAL För säker och korrekt användning, läs denna bruksanvisning och bruksanvisningen till den externa enheten före installationen	**SVENSKA**
İŞLETME ELKITABI Güvenli ve doğru bir kullanım için, kurulumdan önce işbu kılavuzu ve harici ünitenin kılavuzunu okuyunuz.	**TÜRKÇE**
РУКОВОДСТВО ПО ЭКСПЛУАТАЦИИ Для безопасной и правильной эксплуатации прочитайте это руководство и руководство внешнего блока, прежде чем приступать к установке оборудования.	**РУССКИЙ**
BRUKSANVISNING For sikker og korrekt bruk, les denne bruksanvisningen og installasjonshåndboken til utendørsenheten før installasjon.	**NORSK**
INSTRUKCJA OBSŁUGI W celu zapewnienia bezpiecznej i prawidłowej ekspolatacji przed instalacją należy zapoznać się z niniejszą instrukcją obsługi oraz instrukcją obsługi jednostki zewnętrznej.	**POLSKI**

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Description of the symbols

A number of symbols are used to highlight some parts of the text that are of particular importance. These are described below.

ATTENTION
Indicates situations of grave danger which, if ignored, can seriously endanger the health and safety of people.

OBLIGATION
Indicates that it is necessary to act in an appropriate manner in order not to put at risk the health and safety of people and not cause financial damage.

INFORMATION
Indicates technical information of particular importance which should not be neglected.

1. INTRODUCTION

The software described in this document was designed for use with precision air-conditioning units such as “Close Control” units (for data processing centres).

Below is a non-exhaustive list of the functions of the application:

- Adjustment of room temperature and humidity according to the setpoints entered using the user terminal.
- Complete visualisation of the operating status of the unit.
- Possibility of setting the main adjustment parameters with the “User” type password.
- Management and acoustic and visual signalling (visual only by default) of faults (alarms), events and maintenance, with memorisation up to 200 events.
- Possibility of serial control and management.
- Possibility of operating up to 10 units connected together in a local network LAN, also with one or two time-switched backup units.

2. USER INTERFACE

2.1. USER TERMINAL

The connection between the microprocessor board and the user terminal involve a 4-pole telephone cable equipped with RJ11 connector. The terminal is fed directly from the control board.

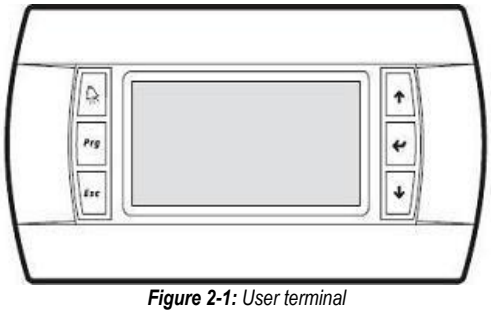


Figure 2-1: *User terminal*

2.1.1. Buttons general functions

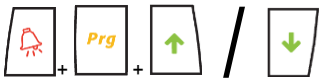
Key	Name	Description	
		Key	**Led**
	[ALARM]	Displays the alarms and resets normal operating conditions.	Fixed in case of alarm and flashing in case of signal. Once the [ALARM] key is pressed, the led becomes fixed. In lack of alarms/signals, the led is off.
	[PRG]	Accesses the main menu.	When the unit is operating (ON).
	[ESC]	goes back one level in the mask tree if you are in the header masks, or returns to the main mask.	Upon turning on the unit, when pressing any key or activating an alarm/signal. It will disengage after three minutes of inactivity on the keyboard of the user terminal.
	[UP] / [DOWN]	Move around the masks and set control parameter values.	
	[ENTER]	Confirms entered data.	
	**[ALARM + PRG + UP / DOWN]**	Increase or decrease screen contrast.	

Table 1: *List of keys and related functions*

2.2. OPERATING GENERAL CHARACTERISTICS

2.2.1. Groups of masks and menu structure

The tree structures for moving around the various menus of the controller are shown below.

The masks may be accessed through different menus using the **[UP]** and **[DOWN]** keys shown in the following figures with a double arrow ↑/↓. The **[ENTER]** or **[ESC]** keys are identified by Esc/↵.

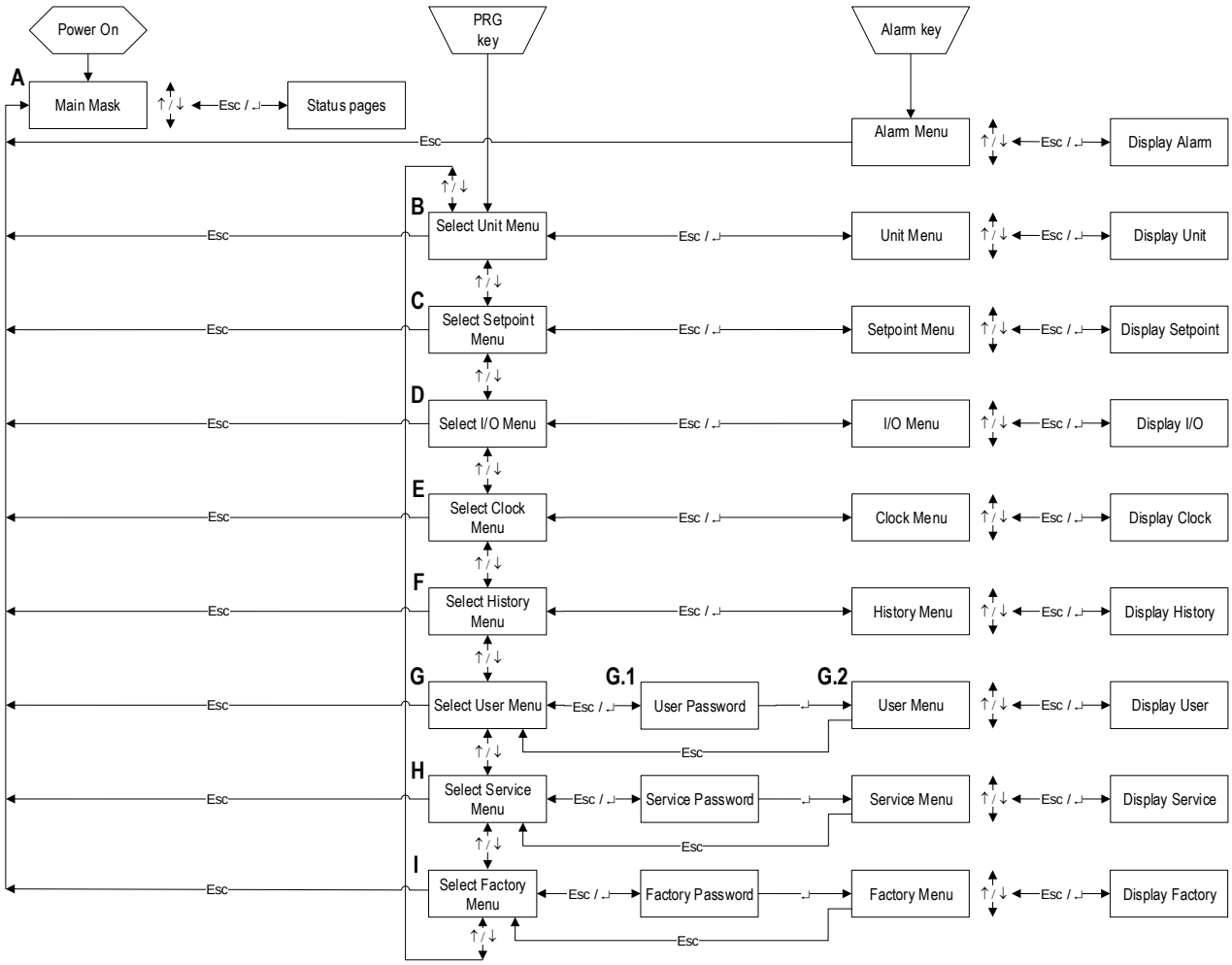


Figure 2-2: *Tree for moving around the menus*

- **A. Main mask See paragraphs 2.3 and 2.4.**
- **B.** The **"Unit Menu"** displays information such as temperature, pressure and circuit states.
- **C.** The **"Setpoint Menu"** is used to set the setpoints for the various available functions. It is possible to set different setpoints depending on the available function modes (heat resources present, humidifier present, and dehumidifier present, etc.). **See paragraph 2.6**
- **D.** The **"In/Out menu"** shows the status of the digital inputs and values read from the analogue inputs.
  It also shows the status of the digital outputs and the voltage supplied to the analogue outputs.
  If I/O expansions are present (depending on the configuration parameters), the inputs and outputs of the latter are also shown.
- **E.** The **"Clock menu"** is used to set and display the date and time and configure the time bands. **See paragraph 2.6**
- **F.** The **"Log menu"** is used to display the list of alarm events recorded by the unit.
- **G.** The **"User menu"** is used to display and set parameters relative to user programming of the unit. For setting the password (**G.1**) **see paragraph 2.2.2**
- **H.** The **"Service" menu** is used by Service to display and set unit configuration parameters.
- **I.** The **"Factory menu"** is used by the manufacturer to display and set unit configuration parameters.

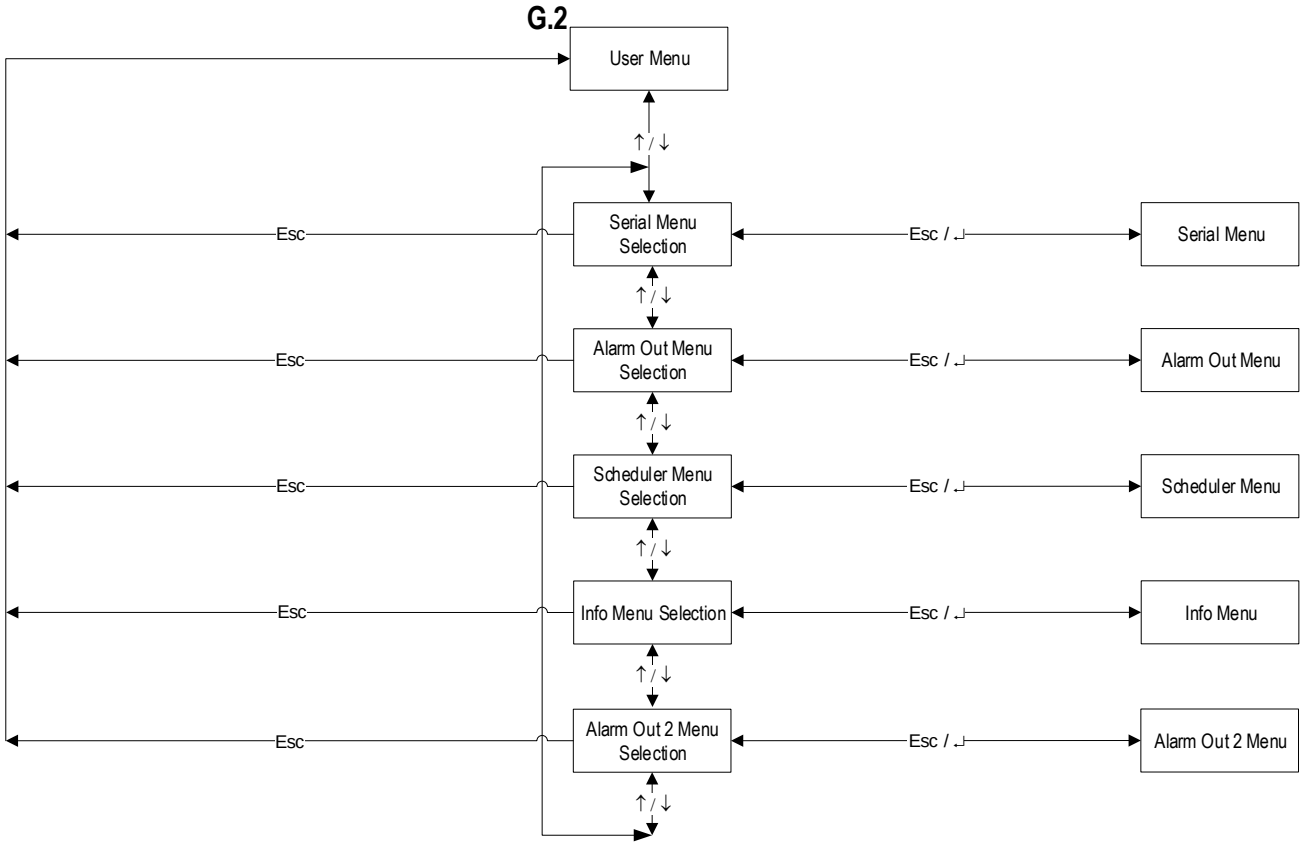


Figure 2-3: *Tree for moving around the "User menu"*

The access to the **"User"**, **"Service"** and **"Factory"** menus requires a password. The following chapter explains how to manage the passwords.

2.2.2. Password management

There are three levels that may be accessed upon entering a numeric password.
To enter the password, type every single digit in the set order from left to right.

To move from one digit to the next, just press the **[ENTER]** key.

To move from one digit to the previous, just press the **[ESC]** key. If the cursor should be on the first digit to the left, then this brings back to the main window.

The following table shows the value of the default user password:

USER PASSWORD
1234 **(modifiable)**

Once at the last digit of the password, by pressing the **[ENTER]** key the software will compare the entered password with those stored in its memory. If the entered password should not be correct, the message "Wrong Password !!!" will appear for a few instants, all digits will be reset, and the cursor will move back to the first digit, on the left end of the password space.

To go back with the cursor to the previous password digit, just press the **[ESC]** key.
By pressing the **[ESC]** key with the cursor on the first digit on the left, the system goes back by one level.

To change the **"User" password** access the **"Info" menu** inside the **"User" menu** and scroll the masks until the **"User" password** change mask appears:

```
Insert a NEW
USER
password
                0000
```

2.3. MAIN MASK

The figure below shows the main mask layout, including the (numbered) areas in which it is divided.

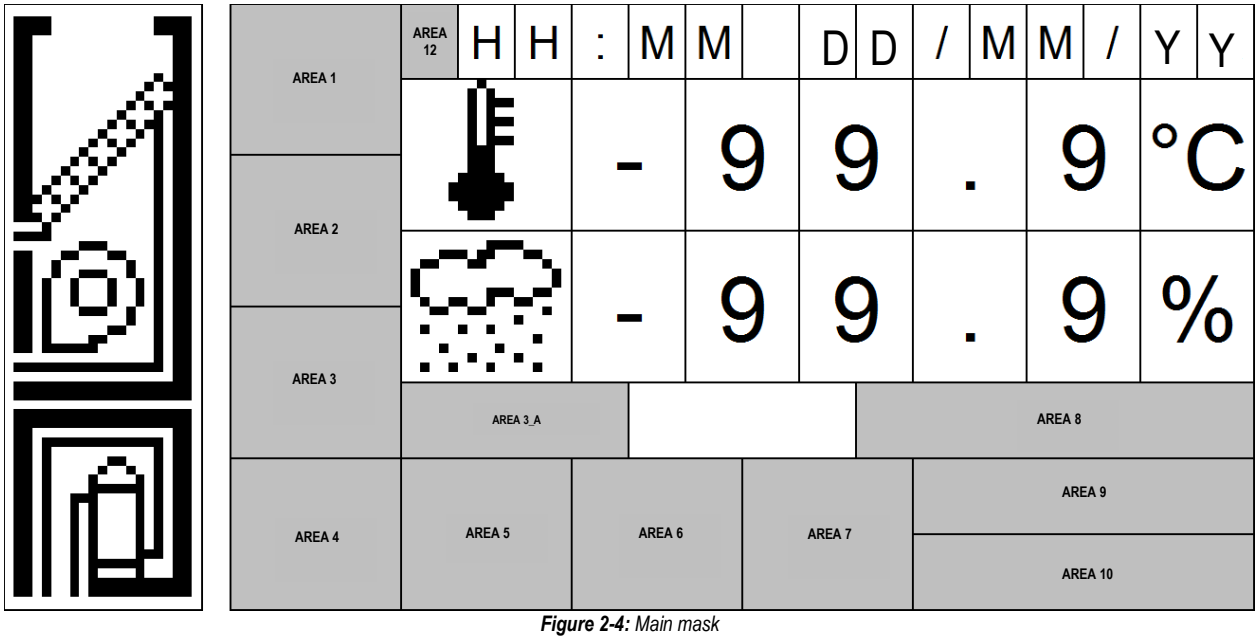


Figure 2-4: *Main mask*

The area above displays the hour and the date.
It also displays room humidity and temperature (only when the probe is installed) in real time (also in case the average value mode for the local LAN units connected should be active). Following is a description of the main mask areas:

Zone 1: General unit status

OFF	Unit off	
	Unit operating in normal mode	
	Unit off but with fan in operation at low speed to prevent gas build-up	
/ /	Unit operating on steady capacity mode	Normal operation / Maximum flow reached / Minimum flow reached
/	Unit operating on steady residual ΔP mode	Normal operation / Minimum flow reached

NOTE

If the icon flashes and the icons also flash at the same time, this means that the unit is on for post-ventilation of the electric heaters (see the relevant paragraph in the chapter Heating). The flashing of the icon together with the flashing of the icon indicates that the unit is on because it is waiting for the Mr Slim external unit to switch off.

Zone 2: Unit detail status

	Presence of an active alarm
	Maintenance signal
	Active manual controls
	Unit on/off from terminal
	Unit on/off from remote contact
	Unit on/off from supervision system
	Unit on in local LAN
	Unit turned on for LAN disconnection alarm

STAND BY	Unit on stand-by
	Unit on for exceeding the maximum room temperature threshold
	Unit on for exceeding the minimum room temperature threshold
	Unit on for exceeding the maximum room humidity threshold
	Unit on for exceeding the minimum humidity threshold
Blinking	Unit on for electric heater post-ventilation function
	Unit off and powered by ULTRACAP

Zone 3: Type of event, shown in case of event

	EEPROM faulty
	LAN disconnected
ADL	ADL function at operating limit
	Water leaks (flooding)
	High ambient temperature
	Low ambient temperature
	High ambient humidity
	Low ambient humidity
	Air flow alarm
L1 L2 L3	Phase sequence wrong
	Filters clogged
	Fire/smoke detected
	Electric element overheating
	High humidifier current
	Low humidifier current
	No water to the humidifier
	Gas leak detected

	Room temperature probe faulty
	Room humidity probe faulty
	Feed air temperature probe faulty
	External air temperature probe faulty
	Differential pressure transducer faulty
1	IO 1 expansion alarm offline (ind. 8)
T+H	T+H probe offline alarm
	Humidifier driver offline alarm
	Network transducer offline alarm
GAS 1	Circuit 1 frost-free function alarm
GAS 2	Circuit 2 frost-free function alarm
1	BMS1 offline
M	Master PAC-IF offline alarm
S1	Slave 1 PAC-IF offline alarm
M	Master PAC-IF alarm
S1	Slave 1 PAC-IF alarm

In case of several active events, the area displays the event having higher priority of all the present events. The order of severity for the events displayed in this area reflects the order in which the alarms are reported in the table, from the most to the least severe. The severity of the events is valued based on the consequences they imply for the operation of the conditioning unit.

Area 3_A: Code of the event corresponding to the icon shown in area 3. As well as the code, the event type is also displayed (Signal or Alarm).

Zone 4: "Cold" devices currently in operation

	Compressor active *Split Type unit*: At least one compressor of a Mr Slim unit is active

NOTE

The icon flashing indicates that there is a request for the switching on of the compressor, but a PAC-IF protection time count is running.

Zone 5: Currently active "Freecooling" devices

	Direct Freecooling damper in adjustment

Zone 6: "Humidity" devices currently in operation

	Dehumidifier active
	Humidifier active

When the icon flashes intermittently, the dehumidifier activation request is in process, though a temperature block is active (high or low temperature threshold, minimum temperature threshold).

On the other hand, the icon flashing indicates that there is a pending dehumidification request, but a compressor protection time count is running.

Zone 7: "Hot" devices currently in operation

1 / 2 / 1 / 2	First / Second / Third step of electric heaters active
Blinking	Electric heaters Post-Ventilation function active

Zone 8: Current unit ON/OFF status
This parameter can also be used to switch the unit on/off.

Zone 9: Serial address of the unit (where supervision is enabled)

Zone 10: LAN address of the unit (where the local network (LAN) is engaged).

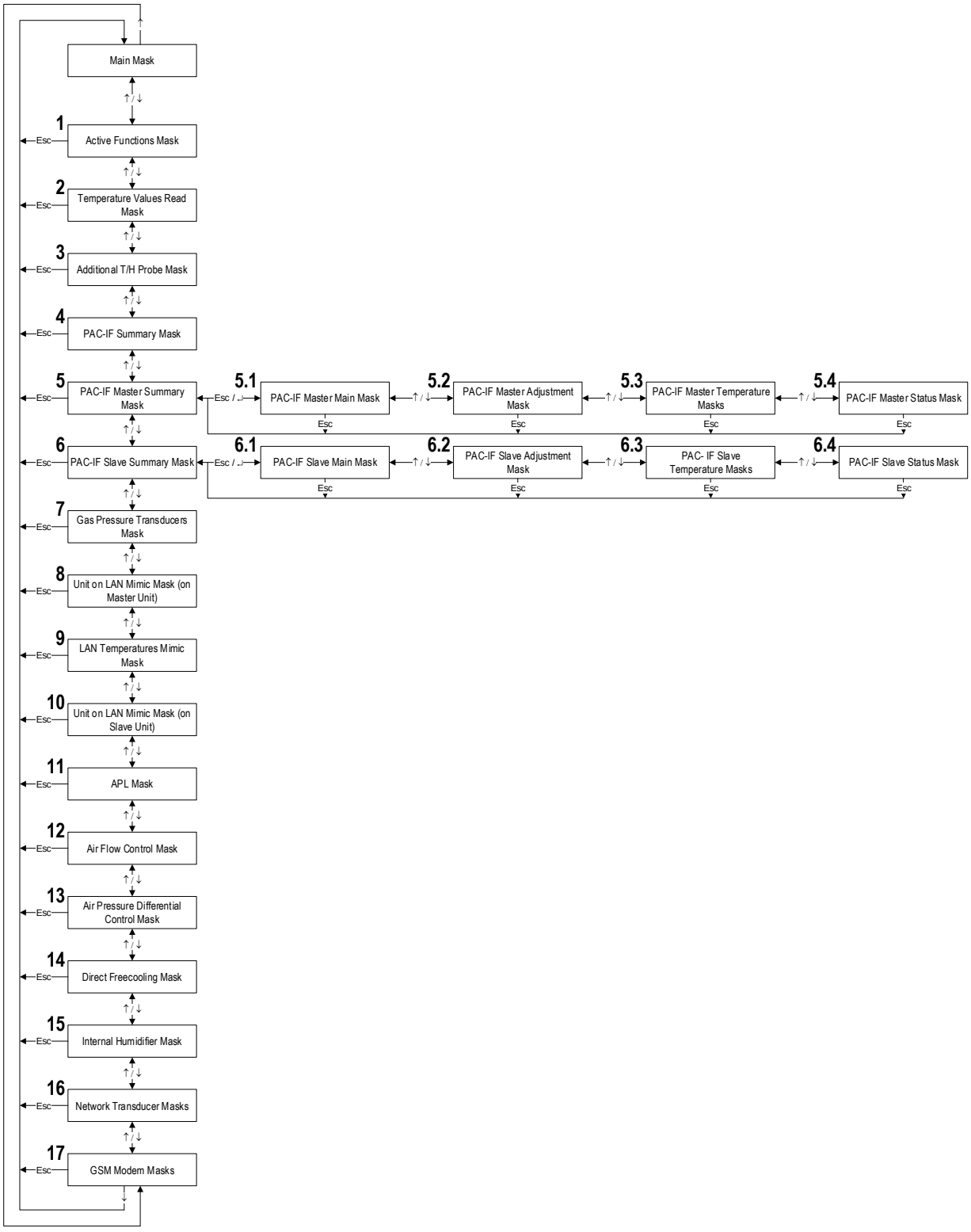
Zone 12: Display of active functions icon
The icon shown in this area indicates that there are active functions and that the "active functions" mask is available for viewing the active functions. Refer to paragraph 2.5 for information on the active functions.

2.4. MAIN LOOP MASKS

The main loop masks may be accessed using the **[UP]** or **[DOWN]** keys. They have the following functions:

- Provide a complete overview regarding the status of the unit.
- Provide useful information to the unit maintenance operator.

2.4.1. Structure of the main loop



2.4.2. Main loop mask table

Press **[UP]** or **[DOWN]** to move from one mask to another.

Below are the main loop masks

	Mask of the terminal	Description of the mask
1	ACTIVE FUNCTIONS DELAY FOR TIME OBSERVATION	Mask that displays the active functions of the unit *Visible only when certain functions are active*
2	24.0 °C 15.0 °C 35.0 °C	Active probe value display mask Room temperature probe Delivery temperature probe Temperature probe
3	AUXILIARY T-H PROBE Addr. 129 24.0 °C 50.0 % Status:Offline	Mask that displays the value of the serial auxiliary probe (address 129). *Visible if the probe is configured*
4	REQUEST STATUS PAC-IF Cooling request: 100% Step request: 11 Waiting: NONE	Mask displaying the requests of cold and steps sent to the PCA-IF013B-E card It also shows if the system is waiting for the expiry of a time delay before sending the steps to the Master PAC-IF013B-E card: • [NONE] No delay • [SHORT WAIT] Short delay (300s / 5min) • [LONG WAIT] Long delay (600s / 10min) • [CHANGING MODE] Cycle inversion/mode change (120 s / 2min) • [MIN T.OFF] Minimum Off (120s / 2min)
5	PAC-IF013B-E MASTER PAC-IF ⇨DETAIL Active step: 11 Mode: COOLING Status:Online	Master PAC-IF013B-E status Pressing [**ENTER**] will take to the section containing additional Master PAC-IF card information In case of alarm, the ⚠ icon will flash showing the “PAC-IF code:” message followed by the alarm code from the PAC-IF card. For additional information on the meaning of the code, see the “Event Mask” chapter.
6	PAC-IF013B-E SLAVE1 PAC-IF ⇨DETAIL Active step: 11 Mode: COOLING Status:Online	Slave 1 PAC-IF013B-E status Pressing [**ENTER**] will take to the section containing additional Slave 1 PAC-IF card information In case of alarm, the ⚠ icon will flash showing the “PAC-IF code:” message followed by the alarm code from the PAC-IF card. For additional information on the meaning of the code, see the “Event Mask” chapter.
7	08.0bar 08.0bar 03.3°C 03.3°C	Mask for the display of the values of the active probes and their conversions into temperature • Circuit 1 low pressure switch • Circuit 2 low pressure switch

	Mask of the terminal	Description of the mask
8	LAN 1: 2: STD BY 3: 4: 5: 6: 7: 8: 9: 10: ADL	Local network (LAN) status display mask. This mask is displayed only at the Master unit (LAN address=1). *Visible if the local network (LAN) is configured* Unit operating Unit in stand by Unit in rescue mode Unit not operating Unit with Hot-Spot protection Unit with Cold-Spot protection If the ADL LAN function is enabled: ADL enabled ADL LIMIT ADL operating limit reached
9	1 99.9 2 99.9 3 99.9 4 99.9 5 99.9 6 99.9 7 99.9 8 99.9 9 99.9 10 99.9 LAN:Local Unit Temp.(°C)	Mask that displays all the temperature values read by the units on the pLAN network. This mask is displayed only at the Master unit (pLAN address=1). *Visible if the pLAN is configured*
10	LAN 1: 2: 3: 4: 5: 6: 7: 8: 9: 10:	Local network (LAN) status display mask. This mask is displayed only in the Slave unit (LAN address=2÷10). *Visible if the local network (LAN) is configured* Unit operating Unit not operating
11	01 LAN APL Current 0020 Pa Target 0020 Pa APL APL 0020 Pa Local 0019 Pa Status On target	APL pLAN function operation status display mask. This mask is displayed for all the units (pLAN address=1 to 10). Visible if the pLAN is configured and the APL function is active
12	Target 02500 m3/h FLOW REG Current 02000 m3/h Status In Regulation …	Constant Capacity operation display mask. *Visible if the function is configured*
13	Target 0020 Pa DP REG Current 0020 Pa Status On target	Constant Head operation display mask. *Visible if the function is configured*
14	DT 03.0 T.INT 24.0 T.EXT 21.0 Status Enabled Position ALL INTERNAL 000%	Direct Free Cooling function operation display mask. *Visible if the function is configured* Shows Internal T, external T and Direct Free Cooling enable Damper position (internal only, mixing, external only) and opening percentage The image graphically describes the Free Cooling damper position:
15	000.0kg/h A 00.0 µS/cm000 Alarm code:00 Warning code:0	**Humidifier** operation status display mask. *Visible if humidifier is present*
16	Energy Management Voltages (V) 000 Current (A) 000.0 Active Power(kW) 0000.0	Display mask for the values detected by the **network transducer** in case on mono-phase circuit. *Visible if the network transducer is present and configured*

	Mask of the terminal	Description of the mask
	Energy Management Voltages (V) L1-L2 000 L2-L3 000 L3-L1 000 Neutral 1 000 Neutral 2 000 Neutral 3 000	Display mask for the electric values detected by the **network transducer**. Displays phase-phase and phase voltage (phase-neutral) values. *Only for three-phase units.* *Visible if the network transducer is present and configured*
	Energy Management Current (A) Line 1 000.0 Line 2 000.0 Line 3 000.0 Neutral 000.0	Display mask for the electric values detected by the **network transducer**. Displays phase and neutral current. *Only for three-phase units.* *Visible if the network transducer is present and configured*
	Energy Management Active Power (kW) Phase 1 0000.0 Phase 2 0000.0 Phase 3 0000.0 Total 0000.0	Display mask for the electric values detected by the **network transducer**. Displays phase and neutral current. *Only for three-phase units.* *Visible if the network transducer is present and configured*
	Energy Management Energy: 0000000kWh Time: 0000000 h	**Network transducer** active energy and hour counter display mask. *Visible if the network transducer is present and configured*
17	Input/Output GSM modem Status: Stand-by ext.modem Offline 000% Timelnextncallr:0000 s SMS Queue: 00	**gsm modem** status display mask. *Visible if the gsm modem is present and configured*
5.1	PAC-IF PAC-IF MASTER ← ↓	Mask confirming access to the Master PAC-IF013B-E card additional information section. Press “Esc” to return to the Master PAC-IF013B-E card status mask.
5.2	PAC-IF013B-E Master Status: ON Mode: COOLING Step: 11 Communication: Online	Master PAC-IF info mask: • Status • Method • Communication • Adjustment step
5.3	PAC-IF013B-E Master TH11: 10.0°C TH5: 13.0°C TH2: 09.0°C	Master PAC-IF info mask: • Suction temperature probe (TH11) • Two-phase temperature probe (TH5) • Liquid temperature probe (TH2)

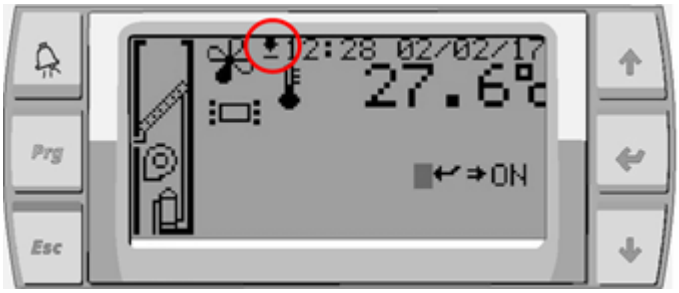
	Mask of the terminal	Description of the mask
	PAC-IF013B-E Master TH7: 10.0°C	Master PAC-IF info mask: • External temperature probe (TH7)
5.4	PAC-IF013B-E Master Compressor Status: ON Predefrost: OFF Defrost: ACTIVE Selfprotection: ACTIVE Software ver. 000001	Master PAC-IF info mask: • Compressor status • Pre-defrost • Defrost • Self protection • PAC-IF SW version
6.1	PAC-IF PAC-IF SLAVE1 ← ↓	Mask confirming access to the Slave 1 PAC-IF013B-E card additional information section. Press “Esc” to return to the Slave 1 PAC-IF013B-E card status mask.
6.2	PAC-IF013B-E Slave1 Status: ON Mode: COOLING Step: 11 Communication: Online	Slave 1 PAC-IF info mask: • Status • Method • Communication • Adjustment step
6.3	PAC-IF013B-E Slave1 TH11: 10.0°C TH5: 13.0°C TH2: 09.0°C	Slave 1 PAC-IF info mask: • Suction temperature probe (TH11) • Two-phase temperature probe (TH5) • Liquid temperature probe (TH2)
	PAC-IF013B-E Slave1 TH7: 10.0°C	Slave 1 PAC-IF info mask: • External temperature probe (TH7)
6.4	PAC-IF013B-E Slave1 Compressor Status: ON Predefrost: OFF Defrost: ACTIVE Selfprotection: ACTIVE Software ver. 000001	Slave 1 PAC-IF info mask: • Compressor status • Pre-defrost • Defrost • Self protection • PAC-IF SW version

2.5. "ACTIVE FUNCTIONS" MASK

The mask that shows the active functions of the unit can be displayed in the Main Loop.

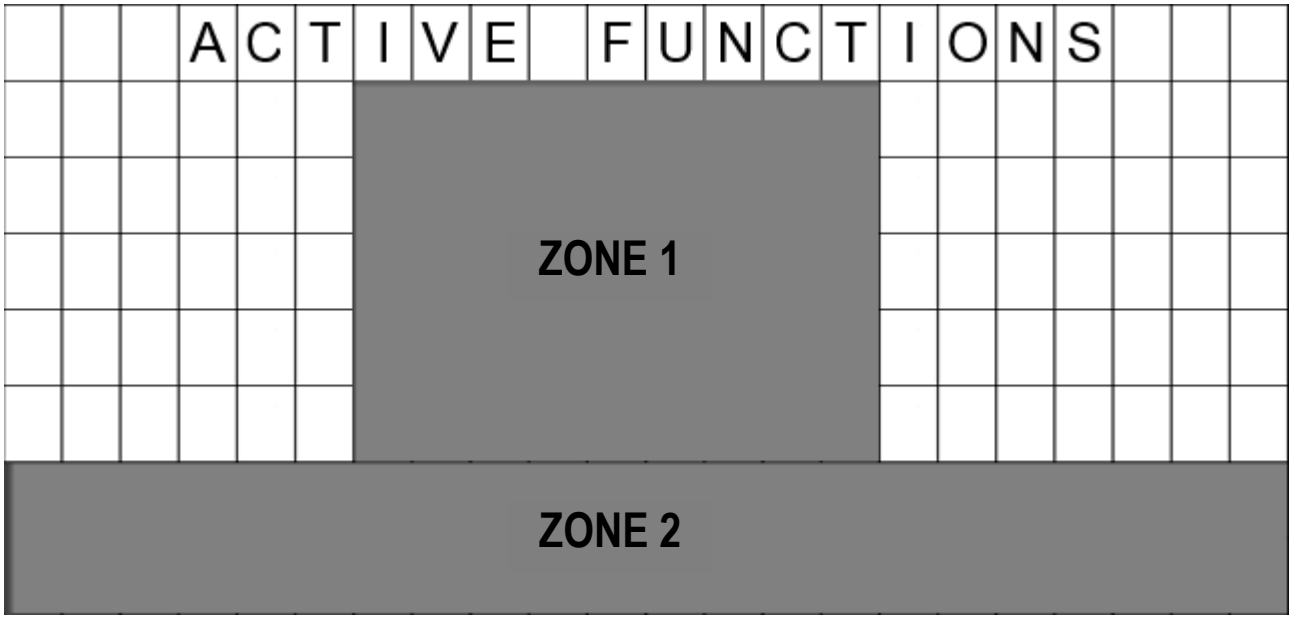
INFORMATION
The mask can be displayed only if one of the functions described below is active.

The appearance of the mask is signalled on the main screen with the icon . It is shown below.



Press in the main display screen to display the active functions mask.

Visible from: Main loop



Zone 1 and 2: Flashing of all the active functions

Icon	Function	Meaning
TIME BANDS ACTIVATED	Time bands active	Time bands active
FREE COOLING ACTIVATED	Freecooling active	Unit in Freecooling mode
DELIVERY AIR TEMP. PROTECTION ACTIVATED	Delivery air temperature protection active	The application is limiting cooling demand to avoid excessively cold delivery air
DEHUMIDIFY PROTECTION ACTIVATED	Dehumidification protection active	The dehumidification protection is active (maximum or minimum temperature)

Icon	Function	Meaning
SAFETY REDUCTION LOAD (LP) ACTIVATED	Safety Reduction Load LP	The Safety Reduction Load LP (low pressure) function is enabled. The internal fan of the unit and the inverter are controlled to prevent excessively low pressure in the low pressure section.
POST-VENTILATION ACTIVATED	Post-ventilation active	The heater cooling post-ventilation is active
DELAY FOR TIME OBSERVATION	Delay for time obs.	One or more compressors are blocked to comply with the start-up times, or the unit is awaiting regulation
HIGH TEMPERATURE pLAN RESCUE ACTIVATED	High temperature pLAN rescue active	The pLAN network logics activate the unit when the high temperature limit is exceeded.
LOW TEMPERATURE pLAN RESCUE ACTIVATED	Low temperature pLAN rescue active	The pLAN network logics activate the unit when the low temperature limit is exceeded.
HIGH HUMIDITY pLAN RESCUE ACTIVATED	High humidity pLAN rescue active	The pLAN network logics activate the unit when the high humidity limit is exceeded.
LOW HUMIDITY pLAN RESCUE ACTIVATED	Low humidity pLAN rescue active	The pLAN network logics activate the unit when the low humidity limit is exceeded.
HOT SPOT PROTECTION ACTIVATED	Hot Spot protection for a pLAN network	The unit considers its local temperature instead of the average temperature to control the Hot Spot concerned.
COLD SPOT PROTECTION ACTIVATED	Cold Spot protection for a pLAN network	The unit considers its local temperature instead of the average temperature to control the Cold Spot concerned.
ACTIVE FAN ON STAND-BY ACTIVATED	Active Fan on Standby	The unit is on standby but the fan continues to run at a set speed
PERIODIC CHECK	Periodic override	The unit forces the cooling demand sent to the PAC-IF cards to minimum and keeps ventilation at maximum to help prevent the formation of ice on the piping.
FAN ACTIVE FOR GAS BUILD-UP PREVENTION	Ventilation active for gas build-up prevention	The unit is off, but the fans are kept in operation at reduced speed to prevent gas build-up in case of leaks
FAN BOOST BY ALARM IN THE LAN	Forcing of ventilation to maximum level due to a LAN alarm	Ventilation has been forced to maximum level due to an alarm (no air flow or gas leak detected) in one of the other units connected to the LAN network
EXTERNAL UNIT STOPPED BY ALARM IN THE LAN	External unit stopped due to a LAN alarm	The Mr Slim external unit has been stopped due to an alarm (gas leak detected) in one of the other units connected to the LAN network
FC DAMPER OPENED BY ALARM IN THE LAN	Direct Free Cooling damper open to maximum level due to a LAN alarm	The Direct Free Cooling damper has been opened to maximum level due to an alarm (gas leak detected) in one of the other units connected to the LAN network

Note: All the active functions of the unit are displayed in the same mask (with the flashing of various icons).

2.6. CHANGING THE PARAMETERS

2.6.1. Menu mask table

To access the main menu, showing the available submenus, click **[HOME]**.
Press **[UP]** or **[DOWN]** to move from one mask to another inside the same menu.
Press **[ENTER]** to access the parameter, press **[UP]** or **[DOWN]** to change the value of the parameter.

Below are the masks of the menus used to set the parameters. As well as the information displayed on every single mask, the unit setting parameters (Par N. column) are also included.

Mask of the terminal	Description of the mask
 Scheduler ← ↓	Access mask to Scheduler menu. Press "Up" or "Down" to scroll through the other masks and "Esc" to return to the menu selection list. Submenu allowing the activation of time band management.
---------- P32.01 Scheduler config: N	Parameter to set the time bands (N:disabled - Y:enabled)
 Info ← ↓	Access mask to Info menu. Press "Up" or "Down" to scroll through the other masks and "Esc" to return to the menu selection list. Submenu that can be used to change user password and display software info.
Insert a NEW USER password 0000	Sets a new password. **Warning**: the value set in this field is the one and only to access the user menu.
Evolution+ Code ME 28.00 EN HW pCO5+S NAND 50MB Flash 2MB + 7MB + 4MB Ram 2048KB Boot 05.01 Bios06.21	This mask contains the reference information of the software [Code ME 28.00 EN]. The closed padlock symbol shows that the board is provided with its propriety software. The second part of the mask shows information about the hardware: size (S), memories (NAND, Flash, Ram) and the versions of the installed operating system (boot and bios).
 Setpoint ← ↓	Access mask to Setpoint menu. Press "Up" or "Down" to scroll through the other masks and "Esc" to return to the menu selection list. Submenu used to change the working point.
Active set point Set point cooling: 24.0 °C Set point heating: 00.0 °C	Active set point display mask

Mask of the terminal	Description of the mask
---------- P50.01 Set point cooling: 24.0 °C ---------- P50.02 Set point heating: 24.0 °C	Parameters to set the cooling and heating set points, if the hot sources are enabled
---------- P50.03 Set point dehumidif. 55%RH ---------- P50.04 Set point humidif.: 45%RH	Parameters to set the dehumidifier and humidifier set points
---------- P50.05 Set point cooling by LAN limits: 30.0°C ---------- P50.06 Set point heating by LAN limits: 18.0°C	Parameters to set the cooling set point by LAN limits and heating set point by LAN limits
---------- P50.07 Set point dehumdif. by LAN limits: 75%RH ---------- P50.08 Set point humdif. by LAN limits: 35%RH	Parameters to set the dehumidifier set point by LAN limit and humidifier set point by LAN limits
---------- P50.09 MIN room temperature for deumid OFF: 23.0°C	Parameters for minimum room temperature and dehumidifier off
 Clock ← ↓	Mask confirming access to the Clock menu. Press "Up" or "Down" to scroll through the other masks and "Esc" to return to the menu selection list. Submenu that can be used to adjust the internal clock and configure the time bands.
Clock card not installed	Mask indicating the lack or damage to the clock board.
Clock config.: Date Tme 01/05/13 10:40	Current date and time setting.
Time bands not enabled. See user menu	Indicates that the time bands have been set correctly, though they are not enabled. To enable them, see user menu.

Mask of the terminal	Description of the mask
Time band programming: advanced	Advanced bracket programming allows to manage four different daily time bands, namely type A and type B, C and D, which may be customised and are independent of each other. Standard programming only allows for the use of A-type time bands.
Weekly timetable Monday A Tuesday B Wednesday B Thursday B Friday B Satur. C Sunday disabled	Weekly timetable setting.
Band 1A Off Time 00:00 / 06:00 Sp C 24.0°C H 20.0°C Band 2A Regulat. Time 06:00 / 20:00 Sp C 24.0°C H 20.0°C	Example of mask for setting the time band.

2.7. EVENTS MASKS

Press the **[ALARM]** key once to enter the **"Alarm"** menu and view the event messages along with their codes.
If there is more than one event, scroll the menu using the **[UP]** and **[DOWN]** keys. Press any other button to exit this menu.

INFORMATION
Contact your local service centre for support.

2.7.1. Alarm or signal events

First of all, a distinction should be made between two types of event:

- Signal: event that does not stop anything and does not compromise the unit operation. It helps to set the alarm cumulative.
- Alarm: Event blocking a device or the whole unit. It helps to set the alarm cumulative.

In case of an alarm event:

- The red led flashes intermittently in case of a signal.
- The red led is fixed in case of an alarm event.
- The main mask lights up.
- The area 2 in the main mask displays the alarm icon, represented by an operating buzzer.
- The area 3 of the main mask displays an icon reporting the cause of the alarm and, next to it, the type of event (Signal/Alarm) and the associated event code.

By pressing the **[ALARM]** key once, the event detail mask appears. This mask provides the following information:

- Event type (Signal/Alarm).
- Event code.
- Rearm type (Manual/Automatic).
- Event position (Compressor/Circuit/Unit/System).
- Action type (compressor/circuit/unit/water circuit/heater/humidifier/specific function block).
- Event description.

The event is reset by pressing the **[ALARM]** key in the "Alarm" menu. If the **[ESC]** key is pressed, there is no reset and the event stays active.

3. STARTING THE UNIT

3.1. UNIT POWER SUPPLY

ATTENTION
Connect the unit to the power supply at least 8 hours before starting it; if this is not done, the guarantee will become null and void.

ATTENTION
Pay attention to the fans. They are kept on at reduced speed when the power is connected, even if the unit is switched off from the terminal, and while the controller has not yet started, to ensure the dispersion of possible gas leaks.

When the unit is fed, wait approximately 35 seconds before the application starts to run. This time interval may not be cancelled because it is necessary for the control board to initialise the user terminal. In this phase the user terminal display is lit but does not display anything.

When starting the programme, ventilation starts automatically without any delay, unless the unit is connected to the local LAN network. In this case, each unit of the network is activated after a delay in seconds equal to the unit LAN address multiplied by 5, in order to prevent the evaporating fans of all the units from starting at the same time when the power returns after a black-out. This risk cannot be avoided if there are several units that are not connected with each other in a network.

During start-up of the direct expansion units, a control is carried out to check that the sequence of the phases is correct before ventilation is started. If it is not correct, ventilation is not started and the incorrect sequence of phases alarm is triggered.

3.2. VENTILATION START-UP

There are different procedures for starting or stopping the unit: using the user interface buttons or selecting from the display. The procedures take the following priority in case of conflicts (from highest to lowest priority):

1. On/Off from user interface.
2. On/Off from U5 digital input of the controller.
3. On/Off from local network (LAN).
4. On/Off from time bands.
5. On/Off from supervision.

Using the user interface
The "On/Off" parameter is displayed on the main mask. "Off" means that the unit is switched off while "On" means that the unit is switched on.

Proceed as follows:

- *Switching On*: Move to the "On/Off" parameter by pressing **[ENTER]** and then press **[UP]** or **[DOWN]** until "On" appears. Press **[ENTER]** again to confirm. If "On" continues to be displayed it means that the unit has been switched on.
- *Switching Off*: Move to the "On/Off" parameter and change to "Off" using the same procedure used to switch the unit on. Press **[ENTER]** again to confirm. If "Off" continues to be displayed it means that the unit has been switched off.

Using the digital input
Only if the digital input is present and if the "Enable On/Off from digital input" has been set at "Yes" in the **"Regulations" menu** which requires the **"Service" password**.

Proceed as follows:

- *Switching On*: Close the remote On/Off contact. The corresponding icon is displayed in the main mask.
- *Switching Off*: Open the remote On/Off contact. The corresponding icon is displayed in the main mask.

Using local network (LAN) protocol:
This mode requires the unit to be connected in a LAN network.
The On/Off control comes from the Master, that is, the unit whose LAN address is=1.
The corresponding icon is displayed on the main mask.

Using time bands
Make sure that "Clock card not installed" is not displayed in the **"Clock"** menu.
Check that the "Scheduler config" parameter in the **"User"** menu is set to "Yes".

Proceed as follows:

- *Switching On*: Set the required switching on time in the **"Clock"** menu. The unit switches on when the set time is reached. The "On from time bands" message appears in the main mask to show that the unit has been switched on. *Note*: The unit does not switch on if it is set to "Off from keypad" or "Off from digital input".
- *Switching Off*: Set the required switching off time in the **"Clock" menu**. The unit switches off when the set time is reached. The "Off from time bands" message appears in the main mask to show that the unit has been switched off.

After enabling time bands from the "Enable time bands" parameter in the "user menu", time bands can be set and different setpoints can be specified according to requirements.

The following must be defined to ensure correct use of the time bands:

1. The type of programming of the time bands:
   - *Standard*: For setting a single programming category (A), with a maximum of 10 time bands, that can be assigned to each day of the week.
   - *Advanced*: For setting up to 4 different types of programming category (A, B, C and D), with a maximum of 10 different time bands, that can be assigned to each day of the week.
2. For each day of the week:
   - Disable the time bands: On the day selected, the controller runs without the time bands.
   - Enable a type of time band (A, B, C or D): On the day selected, the controller runs as programmed.
3. For each time band:
   - Unit status: OFF (unit turned off by time bands) or in adjustment mode (unit turned ON by time bands).
   - Time band start time (for the first time band, this is fixed at 00:00).
   - Time band end time (for the tenth time band, this is fixed at 23:59).
   - Cooling setpoint.
   - Heating setpoint (when applicable and configured).

INFORMATION
The time bands B, C and D are shown only when Advanced programming is selected.

INFORMATION
To use a smaller number of bands, simply set the time a band ends to the same time it begins. In this way, the band in question is ignored.

Below are a few examples that, in graphical form, use bands A, B and C in the clock menu.
The weekly graph uses band A for Monday, band B for Tuesday, Thursday and Friday, and band C for Saturday, and the bands are disabled for Sunday.

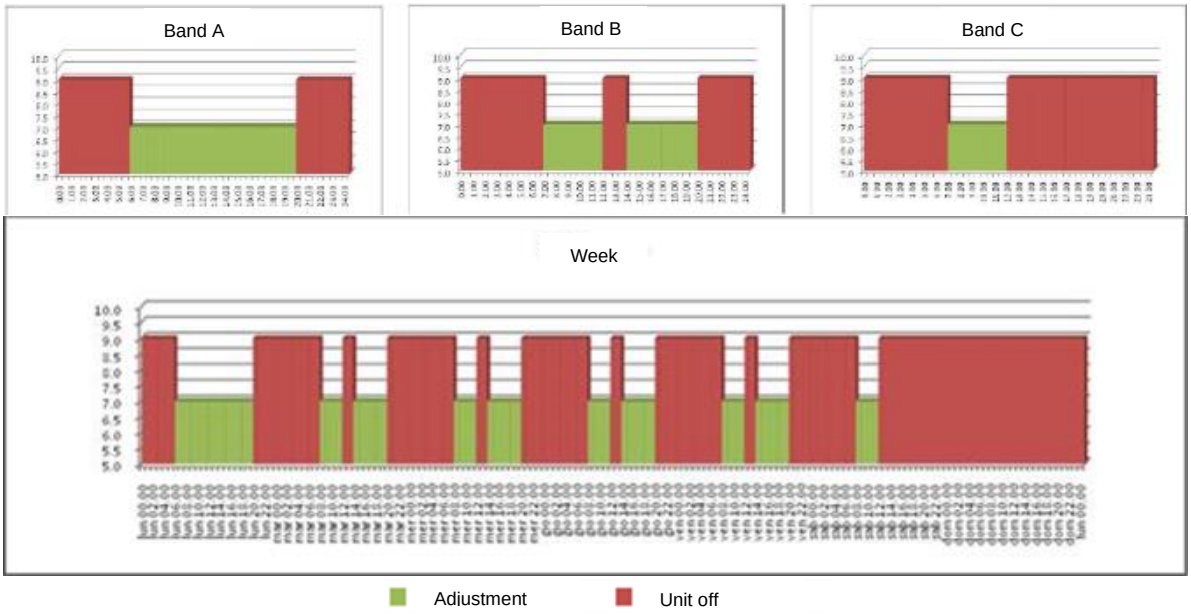


Figure 3-1: *Example ofdaily time band settings*

Using the supervision protocol
Only if the serial board is fitted.
Check in the **"User menu"** that the parameters "Serial line enabling" and "On/Off enabling from supervisor" are set at "Yes".

Proceed as follows:

- *Switching On*: Send the switching on command from the protocol. The corresponding icon is displayed in the main mask.
  Note: The unit does not switch on if it is set to "Off from keypad" or "Off from digital input".
- *Switching Off*: Send the switching off command from the protocol. The corresponding icon is displayed in the main mask.

3.3. FORCED VENTILATION ACTIVATION

When a unit is switched off using one of the procedures just described, the off command will be sent to the PAC-IF cards and ventilation will remain in operation until the Mr Slim units have been switched off. This transitional period will be notified by the ventilation and the compressor icons flashing at the same time.

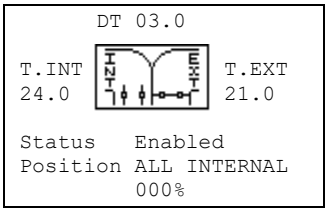
In case of s-MEXT unit blocking alarm, ventilation is immediately disabled and the external Mr Slim unit immediately stops.

The blocking alarms are:

- Air flow differential pressure switch
- Clogged filter differential pressure switch
- Heater thermostat
- Fire/Fumes sensor
- Flooding sensor
- Gas leak detected (ventilation forced to maximum level).

4. DIRECT FREE COOLING STATUS DISPLAY MASK

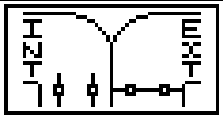
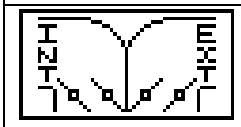
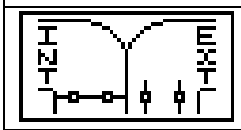
Free Cooling status can be viewed at any time.
From the main mask, press the **[DOWN]** key to open the following mask.



The centre image offers a graphic representation of the Free Cooling damper position.

The following values are also reported

- External air temperature (left of the image).
- External air temperature (right of the image).
- Temperature difference (centre, above the image).
- Free Cooling status (enabled or disabled).
- Damper position (internal only, mixing, external only) and the opening percentage.

	Damper in internal air **only** position
	Damper in mixing position indoor and outdoor air.
	Damper in external air **only** position.

5. LOCAL LAN NETWORK MANAGEMENT

5.1. PURPOSE OF THE LOCAL LAN NETWORK

The unit connection to the local network (LAN) allows to perform the following functions:

- Balancing the operating hours among the different units by rotating the reserve units (Stand-by).
- Turning on the reserve units in case other units should turn off due to an alarm, maintenance or power feed interruption.
- Turning on reserve units to offset the excessive thermal load.
- Checking up to 10 units with a single user terminal (shared user terminal).
- Operating with all units based on the average temperature and humidity values read by the temperature probes only in the operating units.

OBLIGATION
To allow the LAN to operate correctly, the units must have the same software version and revision (e.g.: ME28r00).
If there is more than one version, update to the latest version or create two different LAN's.

5.2. PRELIMINARY OPERATIONS

In order to operate the unit correctly within the local LAN network, it is necessary to perform the following operations.

5.2.1. Network cabling

For the purposes of setting a local LAN network among the units, it is necessary for the installer to lay an electrical connection among the same by means of a screened cable (not included in the supply).

INFORMATION
it is recommended to use twisted couple of AWG24 cabling (2 wires in total) + Belden 8723 or 8102 type sheath.

ATTENTION
the electrical connections must be installed when the units are off and not fed. The LAN serial low safety voltage (SELV) cabling must be kept safely far from the power cables.

ATTENTION
The electrical connections must be installed by qualified staff, when the unit is off and not fed.

ATTENTION
The connections must be made directly on the unit main terminal board: the RX/TX+, RX/TX-, and GND connection terminals do NOT vary from unit to unit and are clearly indicated on the electrical diagram on board the unit.

All control boards being part of the local network are connected according to a bus arrangement.
The following image shows the type of connection to be made:

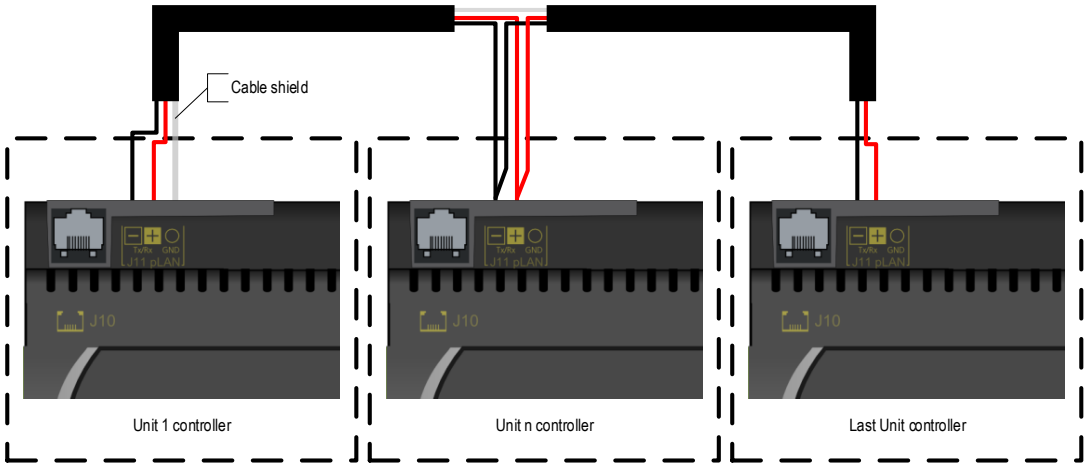


Figure 5-1: *Example of local network (LAN) electrical connection*

5.2.2. Network configuration

The configuration requires the following assignments.

Unit adddress	Managed terminals
1	11 (private) 32 (shared)
2	12 (private) 32 (shared)
3	13 (private) 32 (shared)
4	14 (private) 32 (shared)
5	15 (private) 32 (shared)

Unit adddress	Managed terminals
6	16 (private) 32 (shared)
7	17 (private) 32 (shared)
8	18 (private) 32 (shared)
9	19 (private) 32 (shared)
10	20 (private) 32 (shared)

The control board is supplied with LAN address = 1.
The address may be checked directly on the control board or by means of the user terminal.

5.2.3. Address setting the control board - Directly from the board

The control board address is displayed by 7-segment screen in the following image:

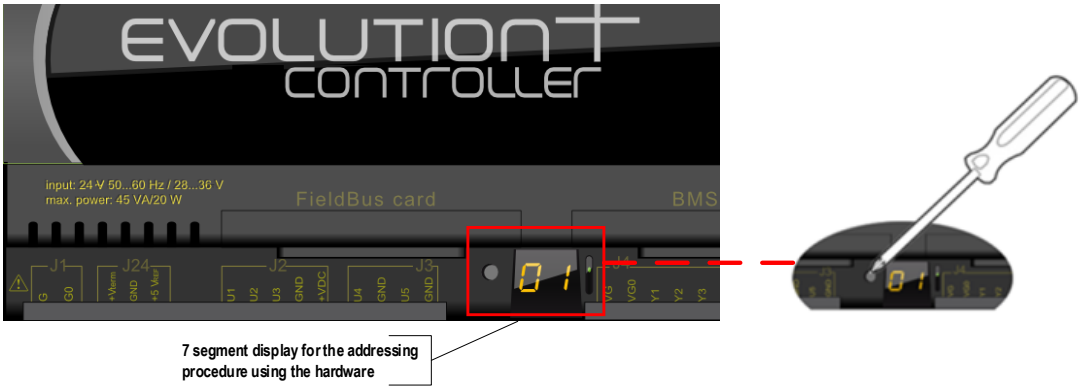


Figure 5-2: *Control board addressing*

In order to display the current address, press the button on the left of the display briefly (for no more than 2 seconds) using, for instance, the tip of a screwdriver (Ø < 3mm). After 5 seconds from releasing the button, the address display turns off.

In order to change the board address, follow the process below:

1. Press the button with a screwdriver for at least 3 seconds. The saved address starts flashing.
2. Press the button repeatedly, or press and hold it to scroll through automatically, to find the required address.
3. Wait for at least 10 seconds. The display starts flashing quickly to indicate that the new address has been saved.
   In order to cancel the operation, turn off the control within 7 seconds of pressing the button last.
4. Turn off and restart the EVOLUTION+ controller in order to activate the new address.

5.2.4. Address setting the control board - from the user terminal

1)	Press and hold **[UP]+[DOWN]+[ENTER]** at the same time for at least 3 seconds to enter configuration mode. A mask is displayed with the cursor flashing in the top left corner.	`Display address Setting.....: 21`
		
		`I/O Board address: 01`

2)	Press **[ENTER]** once to modify the address of the terminal (display address setting). The cursor will move on the address field.
	Press **[UP]** or **[DOWN]** to select the value 0 and then press **[ENTER]** again to confirm. The value will be saved in the permanent memory of the terminal.
		`Display address Setting.....: 00`
		
		`I/O Board address: --`

3)	The appearance of the next mask indicates that the keyboard address has been set.	`Display address Changed`

4)	Turn the board off and then on again by pressing and holding **[ALARM]+[UP]** at the same time. Wait until the board address setting mask appears, then release the keys.
	The mask appears for setting the required address.
		`##################`
		`selftest`
		`pleasewait...`
		`##################`

ATTENTION
This is a *time procedure*; hence if the parameters are not set in a few seconds, the display turns off. In such case, repeat the process.

5.2.5. User terminal address setting

Once the keyboard has been connected to the device, run the following procedure:

1)	Press and hold **[UP]+[DOWN]+[ENTER]** at the same time for at least 3 seconds to enter configuration mode. A mask is displayed with the cursor flashing in the top left corner.	Display address Setting.....: 00 I/O Board address: --
2)	Press **[ENTER]** once to modify the address of the terminal (display address setting). The cursor will move on the address field. Press **[UP]** or **[DOWN]** to select the required value of the address and then press **[ENTER]** again to confirm. The value will be saved in the permanent memory of the terminal.	Display address Setting.....: 21 I/O Board address: --
3)	The appearance of the next mask indicates that the keyboard address has been set.	Display address Changed
4)	If an empty mask or a mask showing "NO LINK" appears after pressing **[ESC]**, it means that the keyboard is not communicating with any boards. It is necessary to set the address of the board or configure the local network (LAN).	NO LINK

ATTENTION
This is a *time procedure*; hence if the parameters are not set in a few seconds, the display turns off. In such case, repeat the process.

5.3. REACTIONS TO ALARMS WITHIN THE LAN NETWORK

Some events cause reactions in all the units connected to the LAN network of the unit where the event itself occurred. These reactions are aimed at preventing the formation of gas build-up.
The units not in alarm condition will show this reaction through the flashing of the Active Functions mask, to indicate that the behaviour is due to the presence of an alarm in at least one of the other units connected to the LAN network.

5.4. SHARED USER TERMINAL

The shared user terminal (address 32) is managed by the application as follows:

- Usually, it displays the information regarding the unit selected by the user by pressing **[ESC]** and **[ALARM]** simultaneously. Whenever this is done the terminal switches onto the upper unit address.
- In case of maintenance alarm or signal on any of the units connected to the LAN network, the user terminal automatically switches onto the alarm/maintenance unit, in order to allow proper signalling.

Physically, the shared terminal may be connected to any of the network boards; moreover, it may be connected both on the unit (panel terminal) or in remote position (wall terminal).

5.4.1. Connecting the remote keyboard

Usually, just the on-board keyboard is used, directly connected to the J10 connector.
It is possible to connect a remote keyboard to the unit and it is possible to choose from different configurations.

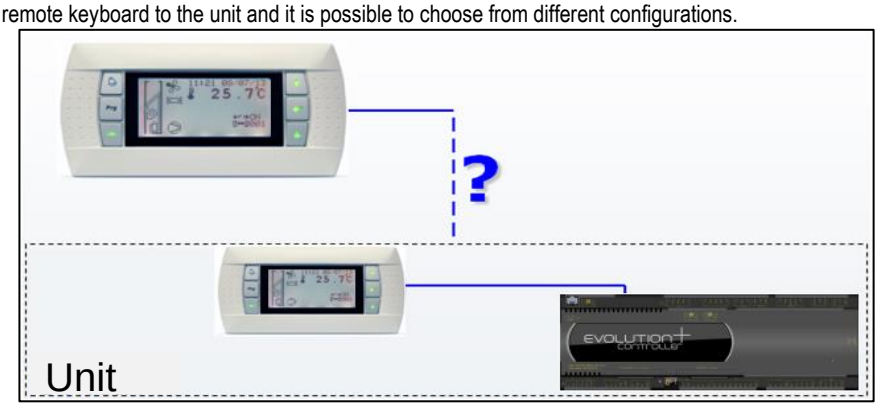
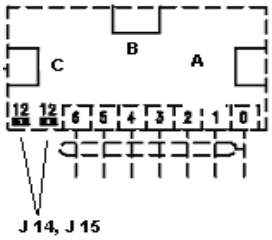


Figure 5-3: *Basic scheme to connect a remote keyboard*

5.4.2. "T" shunt

This is a shunt with phone connectors that is used in both the local network (LAN) and global network.
The two jumpers J14 and J15 must short circuit pins 1 and 2.
There is also a terminal board. The meanings of the various terminals are explained below.

1.	Image and wiring diagram of a T-shunt.		
2.	Meaning of the terminal board	Screw terminal	Function
		0	Earth (shielded cable sheath)
		1	+VRL=30V
		2	GND
		3	Rx-/Tx-
		4	Rx+/Tx+
		5	GND
		6	+VRL=30V

5.4.3. Remote keyboard up to 200 metres

To connect a remote keyboard two "T" shunt boards must be used, one near the controller and one near the remote keyboard.
In case of a remote keyboard monitoring a single unit for a distance of less than 200 metres, the correct configuration is as follows.

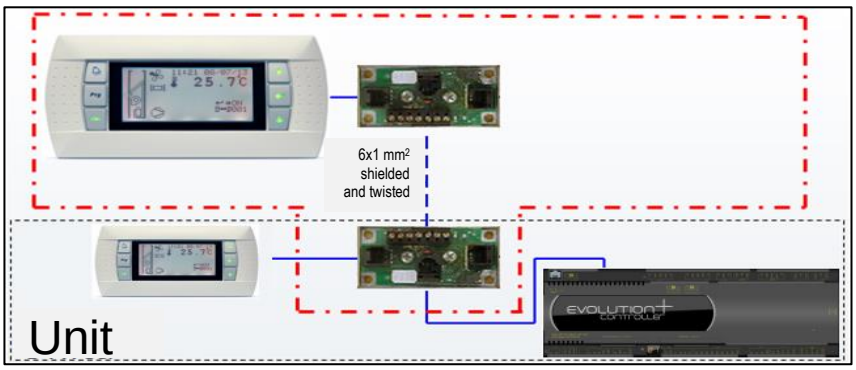


Figure 5-4: *Basic scheme to connect a remote keyboard up to 200 m*

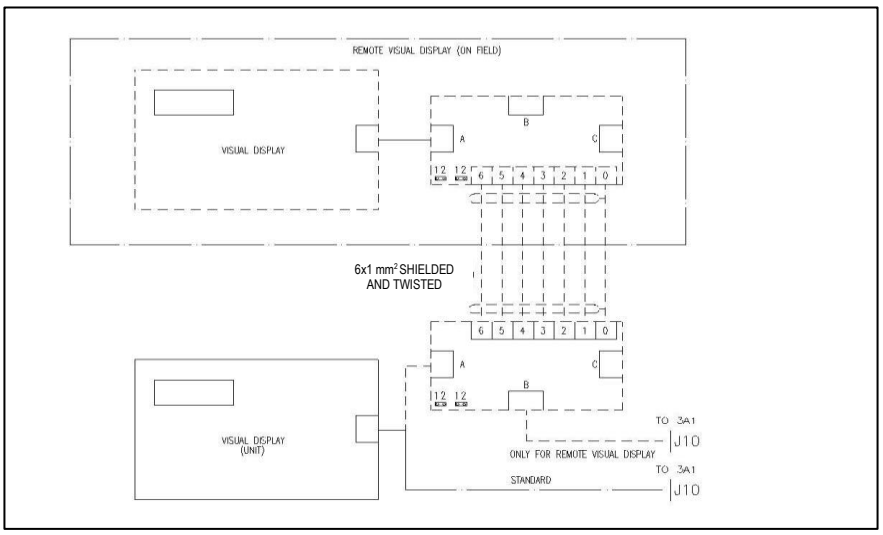


Figure 5-5: *Electrical diagram to connect a remote keyboard up to 200 metres*

5.4.4. Remote keyboard from 200 metres up to 500 metres

If the remote keyboard must be installed over 200m away from the local network (LAN), a power unit must be installed near the remote keyboard.
The remote keyboard cannot be installed more than 500 m away.
The only difference between this and a remote keyboard up to 200 metres is that the power unit must be to terminals 1 and 2 of the T shunt (the one near the remote keyboard). In this case a 3-wire cable connecting the two T-shunts is sufficient.

If just one chiller is connected, the connection diagram is:

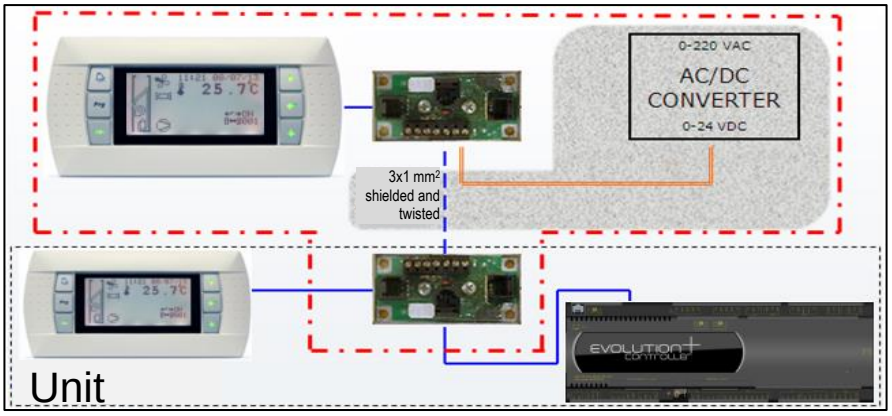


Figure 5-6: *Basic scheme to connect a remote keyboard from 200 to 500 metres*

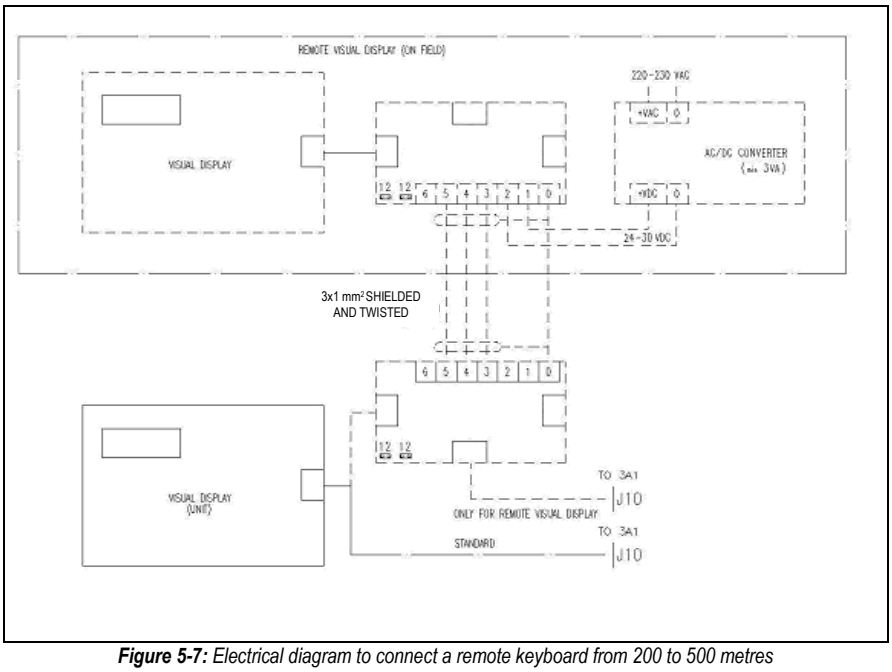


Figure 5-7: *Electrical diagram to connect a remote keyboard from 200 to 500 metres*

5.4.5. Remote keyboard for more than one unit

To connect more than one chiller to the same remote keyboard, connect the two boards together by jumpering connectors J11.
A configuration similar to the two shown above should only be used on the first board in the network (the one nearest the remote keyboard).

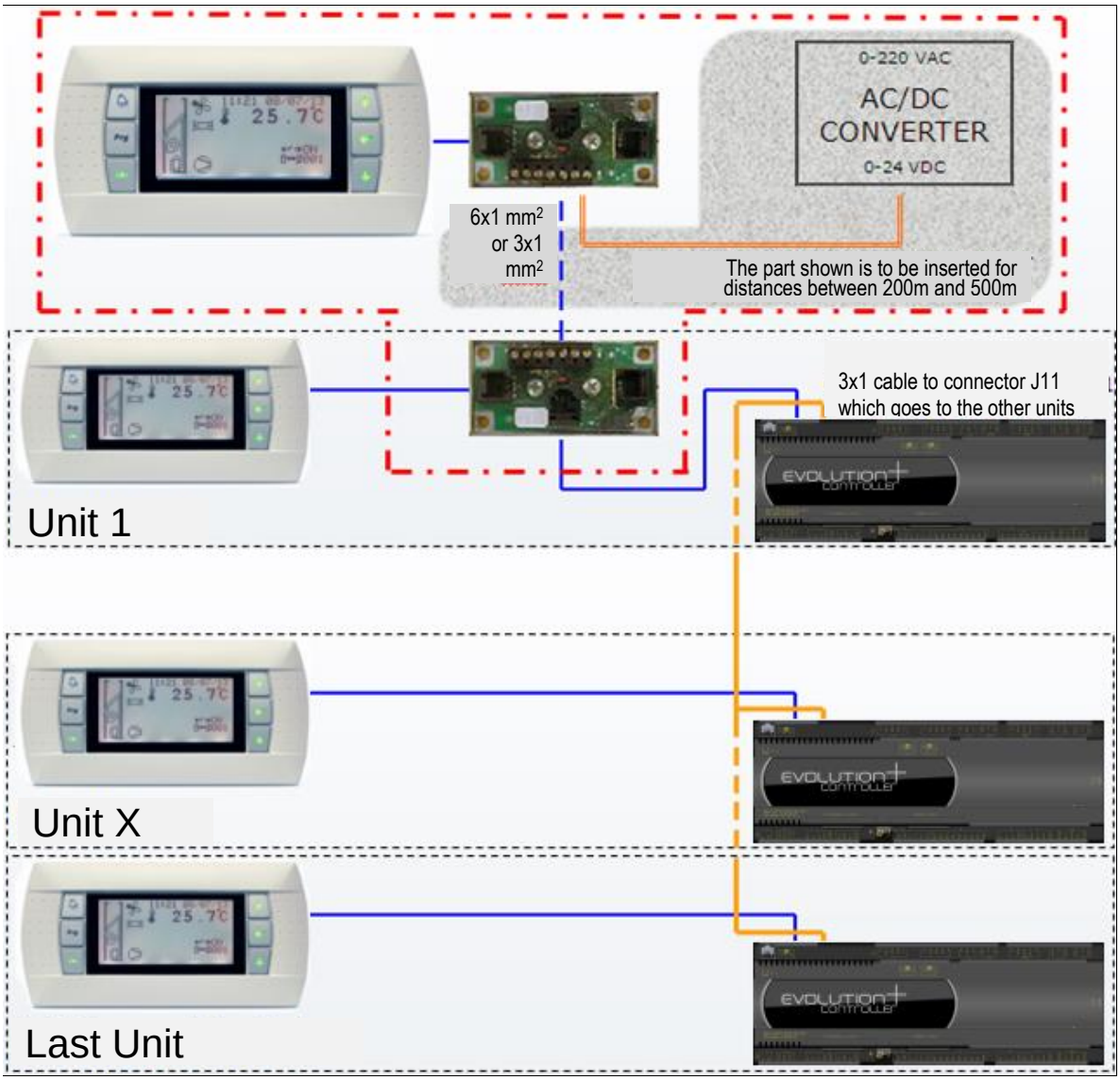


Figure 5-8: *Basic scheme to connect a remote keyboard to more units*

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