MITSUBISHI ELECTRIC
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for a greener tomorrow eco Changes

CZMITWX01

Control of MITSUBISHI's WIZARDX line of air handling units

User manual

"Translation of the original Italian instructions"

EN

USER MANUAL

Manual: rev. 02 of 14-05-2018
Software: rev. 02 of 14-05-2018

CONTENTS

1. INTRODUCTION

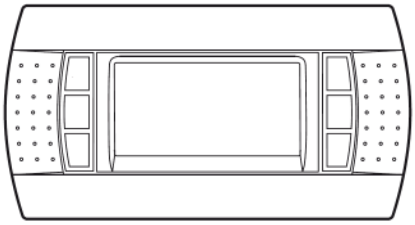
This document is a manual on use of the software for managing MITSUBISHI's WIZARDX line of air handling units.

The following are covered in this manual:

- Measures for resolving each alarm
- Control algorithms
- Other functions (e.g. time bands, night purge, etc.)
- User interface

The WizardX units have two user interfaces:

PGD Carel keypad



PAR MISTUBISHI keypad

The PGD keypad is located at the front of the WizardX unit; while the PAR keypad is located inside the unit, behind the return filter inspection panel.
A sticker on the panel identifies the location of the PAR keypad.

The software of the WizardX units is available in two different configurations: AUTO and IMOUC; the software configuration depends on the version of the WizardX unit, as shown in the table.

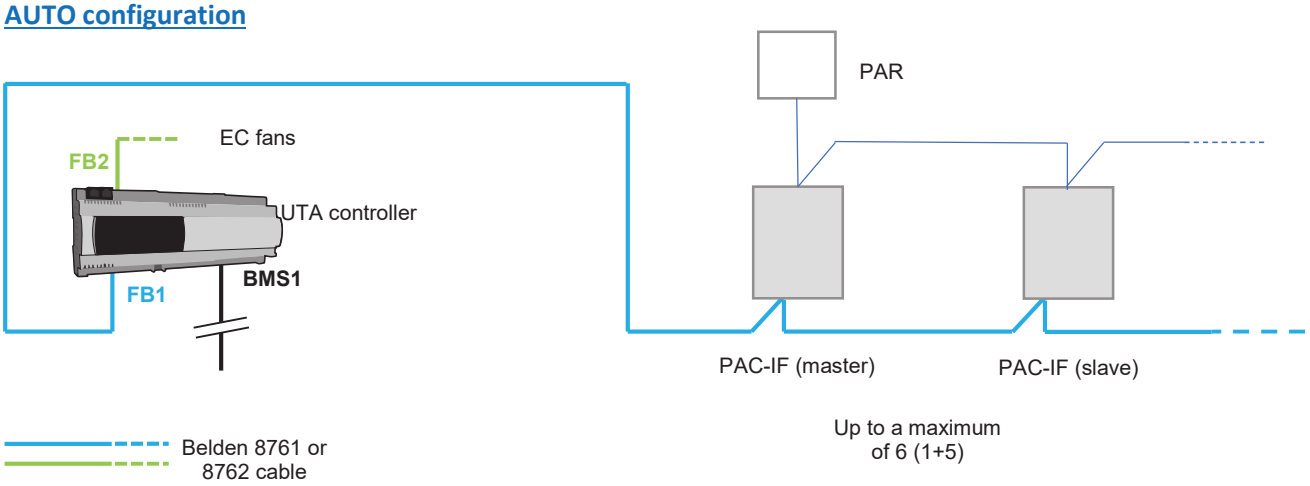
Version of WizardX unit	Software configuration
C-OU	AUTO
E-OU	IMOUC
B-OU	

The two software configurations are associated with different functions which are described further on.

SERIAL CONNECTIONS

Here is a diagram showing the RS485 serial connections for the AUTO and IMOUC software configurations:

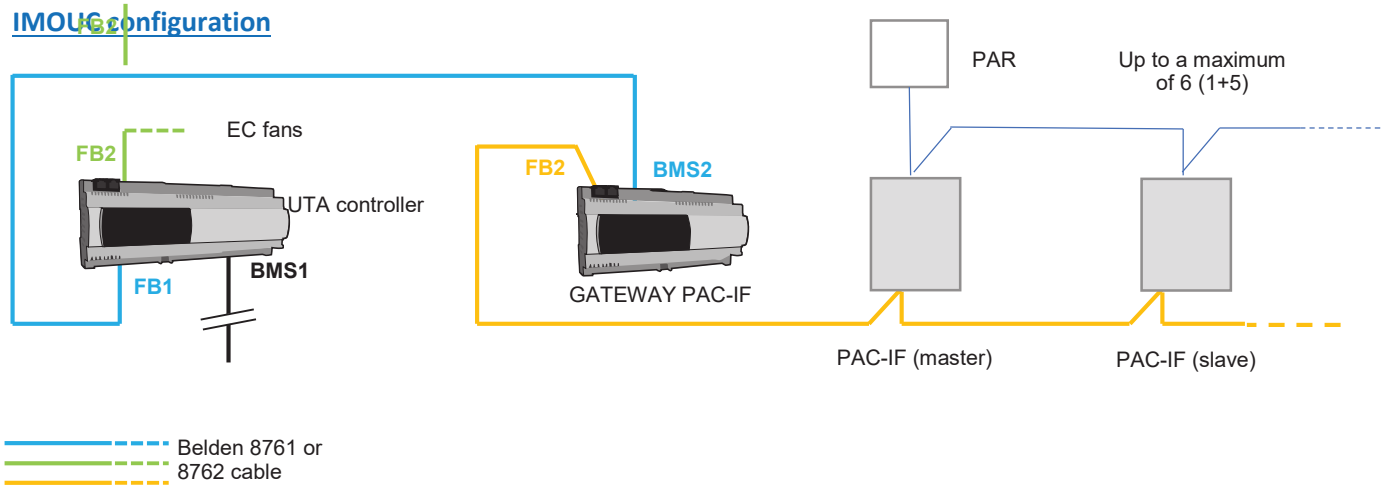
AUTO configuration



In AUTO configuration, the cooling power is controlled directly by the MITSUBISHI electronics (PAC-IF and PAR panel).

Serial communication with the PAC-IF boards is integrated in the application software of the AHU controller, with a single point of connection (BMS1 port) for third-party BMS systems to obtain information on the entire control system (AHU controller + PAC-IF boards).

IMOUC configuration



In IMOUC configuration, the cooling power is controlled by the AHU controller which communicates demand to the PAC-IF GATEWAY and the latter coordinates the PAC-IF boards on the basis of the MITSUBISHI specifications (number of steps and times).

The type of configuration (AUTO, IMOUC) can be set in the MANUFACTURER menu, where the number of external units and, therefore, of PAC-IF boards can also be configured.

2. INTERFACING WITH BMS SYSTEMS

The software can be used for interfacing with third-party BMS systems via the BMS1 port of the AHU controller board.

The available communication protocols are:

- MODBUS RTU (on RS485 serial line)
- MODBUS TCP (on Ethernet network)
- BACNET MSTP (on RS485 serial line)
- BACNET IP (on Ethernet network)

The type of protocol can be configured in the MAINTENANCE/SUPERVISION menu.

3. I/O LIST

The various digital inputs and outputs can be configured in the MANUFACTURER menu of the software user interface: the default settings are indicated below.

ANALOGUE INPUTS

	Description	Type
U1	CO2 probe	4..20 mA
U2	Delivery air humidity	4..20 mA
U3	Return air humidity	4..20 mA
U4	Delivery air temperature	NTC
U5	Return air temperature	NTC
U6	Differential discharge pressure	4..20 mA
U7	Differential return pressure	4..20 mA
U8	External air temperature	NTC
U9	Anti-freeze temperature	NTC
U10	Heat recovery unit outlet air temperature	NTC

DIGITAL INPUTS

	Description	Logic
ID1	Severe alarm	N.C.
ID2	NIGHT PURGE demand	N.O.
ID3	Dirty delivery pre-filter pressure switch	N.C.
ID4	Dirty return filter pressure switch	N.C.
ID5	Dirty delivery bag filter pressure switch	N.C.
ID6	Smoke/fire alarm	N.C.
ID7	ON/OFF	N.O.
ID8	Door alarm	N.C.
ID9	Air flow set 2	N.O.
ID10	Pre-heating alarm	N.C.
ID11	Humidifier alarm	N.C.
ID12	Post-heating alarm	N.C.
ID13	Heat recovery unit alarm	N.C.
ID14	-	-
ID15	-	-
ID16	-	-
ID17	-	-
ID18	-	-

ANALOGUE OUTPUTS

	Description	Type
Y1	Humidifier	0..10 V
Y2	Pre-heating	0..10 V
Y3	Post-heating	0..10 V
Y4	Rotary heat recovery unit	0..10 V
Y5	Recirculation damper	0..10 V
Y6	Air inlet/expulsion damper	0..10 V

DIGITAL OUTPUTS

	Description	Logic
NO1	Post-heating 1	N.O.
NO2	Post-heating 2	N.O.
NO3	Post-heating 3	N.O.
NO4	Pre-heating 1	N.O.
NO5	Pre-heating 2	N.O.
NO6	Pre-heating 3	N.O.
NO7	Delivery damper	N.O.
NO8	Return damper	N.O.
NO9	Rotary heat recovery unit	N.O.
NO10	Humidifier	N.O.
NO11	-	-
NO12	Return fan	N.O.
NO13	Supply fan	N.O.
NO14	General alarm	N.O.
NO15	-	-
NO16	-	-
NO17	-	-
NO18	-	-

DIGITAL INPUTS/OUTPUTS LOGIC

- The note in the LOGIC column for the digital inputs above means:

N.C.
Opening of the contact is interpreted as an active alarm for the alarm inputs, and as demand ("NIGHT PURGE demand", "ON-OFF", "Air flow set 2") for the control inputs.

N.O.
Closing of the contact is interpreted as an active alarm for the alarm inputs, and as active demand ("NIGHT PURGE demand", "ON-OFF", "Air flow set 2") for the control inputs (e.g. ID7 closed contact means demand to switch on the unit).

The N.C./N.O. logic can be configured directly for each digital input in the masks of the MANUFACTURER menu.

- The note in the LOGIC column for the digital outputs above means:

N.O.
The command to switch on a single external device is given by closing its digital output.
E.g. NO10 HUMIDIFIER, the humidifier is switched on by closing the NO10 output

N.C.
The command to switch on a single external device is given by opening its digital output.
E.g. NO10 HUMIDIFIER, the humidifier is switched on by opening the NO10 output

The N.C./N.O. logic can be configured directly for each digital output in the masks of the MANUFACTURER menu.

4. ALARMS TABLE

Below is a list of the alarms and the response of the system when they occur.

Faulty probe alarms:

Code	Description	Enab.	Delay	Reset	Action
AL009	U1 – CO2 probe	NO	30 s	AUT	Flow control is only at the differential pressure probe.
AL002	U2 – Supply air humidity	NO	30 s	AUT	In the case of humidity control at the delivery probe, humidity control is blocked (dehumidification is disabled and the humidifier is blocked). In the case of humidity control at the return probe, the supply humidity limit is not controlled.
AL004	U3 – Return air humidity	NO	30 s	AUT	In the case of humidity control at the return probe, humidity control is blocked (dehumidification is disabled and the humidifier is blocked). In the case of humidity control at the delivery probe, only the alarm is displayed.
AL001	U4 – Supply air temperature	NO	30 s	AUT	<u>in IMOUC configuration and with control at the delivery probe</u> Control of the main temperature and post-heating is blocked. <u>AUTO configuration</u> Control of post-heating is blocked.
AL003	U5 – Return air temperature	NO	30 s	AUT	<u>In IMOUC configuration and with control at the return probe</u> Control of the main temperature and heat recovery unit is blocked. <u>AUTO configuration</u> The heat recovery unit is blocked.

AL006	U6 – Differential discharge pressure.	NO	30 s	AUT	Forced running of the fans at fixed speed (set in the parameter 0..100%)
AL007	U7 – Differential return pressure.	NO	30 s	AUT	Forced running of the fans at fixed speed (set in the parameter 0..100%)
AL005	U8 – External air temperature	NO	30 s	AUT	Blocks energy saving action (free-cooling/free-heating). The heat recovery unit continues to run at 100%.
AL010	U9 – Antifreeze temperature	NO	30 s	AUT	Forced activation of the antifreeze alarm.
AL008	U10 – Heat recovery unit outlet air temperature	NO	30 s	AUT	The direct expansion coil inhibition function is disabled (see the paragraph "ROTARY HEAT RECOVERY UNIT").

The alarms are always enabled when the probe is in place.

The probe alarm is triggered after a set delay of 30 s for all the analogue inputs.

Digital input alarms:

Code	Description	Enab.	Delay	Reset	Action
AL014	ID1 – Severe alarm	NO	0 s	MAN	Blocks the entire AHU.
AL022	ID3 – Dirty delivery pre-filter	NO	YES	AUT	Signalling only.
AL023	ID4 – Dirty return filter	NO	YES	AUT	Signalling only.
AL024	ID5 – Dirty delivery bag filter	NO	YES	AUT	Signalling only.
AL015	ID6 – Smoke/fire alarm	NO	0 s	MAN	Blocks the entire AHU.
AL016	ID8 – Door alarm	NO	0 s	MAN	Blocks the entire AHU.
AL039	ID10 – Pre-heating alarm	NO	0 s	AUT	Blocks pre-heating.
AL017	ID11 – Humidifier alarm	NO	YES	AUT	Blocks the humidifier
AL040	ID12 – Post-heating alarm	NO	0 s	AUT	Blocks post-heating.
AL027	ID13 – Rotary heat recovery unit alarm	NO	YES	AUT	Blocks the heat recovery unit.

The one digital input (which can be enabled in the MANUFACTURER menu) enables the alarm.

Other alarms:

Code	Description	Enab.	Delay	Reset	Action
AL013	Antifreeze alarm	YES	YES	SEL	Fan switched off and delivery damper closed after a set time. The return fan can be set at either off or on depending on the configuration (e.g. flow, air quality, etc.) The demand for post-heating and pre-heating can both be set at between 0% and 100% <u>IMOUC configuration</u> Heat demand can be set at between 0 and 100%
AL026	Low return air flow alarm	YES	YES	MAN	Blocks the entire AHU
AL025	Low delivery air flow alarm	YES	YES	MAN	Blocks the entire AHU
AL029	Return fan alarm *(also includes failed serial communication with the AHU controller)*	NO	0 s	AUT	Blocks the entire AHU
AL028	Supply fan alarm *(also includes failed serial communication with the AHU controller)*	NO	0 s	AUT	Blocks the entire AHU
AL031	Return fan 2 alarm *(also includes failed serial communication with the AHU controller)*	NO	0 s	AUT	Blocks the entire AHU
AL030	Supply fan 2 alarm *(also includes failed serial communication with the AHU controller)*	NO	0 s	AUT	Blocks the entire AHU

Code	Description	Enab.	Delay	Reset	Action
AL032	Gateway PAC-IF offline alarm	NO	YES	AUT	IMOUC configuration CAPACITY REQUEST forced at 0%.
AL033	Master PAC-IF alarm	NO	0 s	AUT	Signalling only.
AL034	Slave PAC-IF 1 alarm	NO	0 s	AUT	Signalling only.
AL035	Slave PAC-IF 2 alarm	NO	0 s	AUT	Signalling only.
AL036	Slave PAC-IF 3 alarm	NO	0 s	AUT	Signalling only.
AL037	Slave PAC-IF 4 alarm	NO	0 s	AUT	Signalling only.
AL038	Slave PAC-IF 5 alarm	NO	0 s	AUT	Signalling only.

Legend

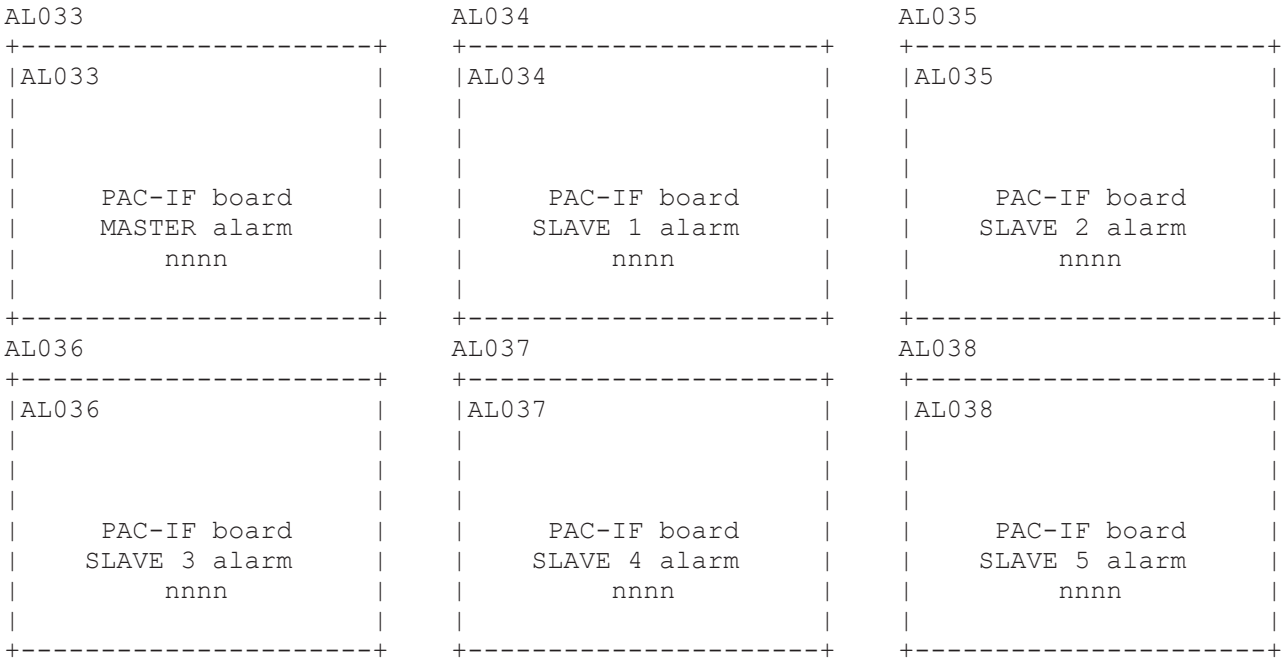
Enab.:
YES, alarm can be enabled in parameter
NO, alarm always enabled

Delay:
YES, delay can be enabled in parameter
VALUE, set delay with value as indicated in the table (e.g. 30 s indicates a set delay in the software that cannot be changed)

Reset:
AUT, automatic reset (type set in the software that cannot be changed in the parameter)
MAN, manual reset (type set in the software that cannot be changed in the parameter)
SEL., either AUT or MAN, that can be set in the parameter

Master/slave PAC-IF alarm

The MITSUBISHI code of the alarm in progress is shown in the alarm mask:



nnnn is the alarm code as indicated in the MITSUBISHI technical documents:

Code	Short description	Description
9999	PAC-IF board offline	No serial communication between the AHU controller and the PAC-IF board indicated.
0100	-	Blanket unit fault
01*0	-	Equipment fault
0403	-	Serial transmission fault
0404	Fb	User interface board fault
0701	-	Combustion circuit fault (A)
0702	-	Overheating protection for the combustion heat exchanger (A)
0703	-	Accidental fire (A)
0704	-	Heater fault (A)
0705	-	Seismograph fault (A)
0706	-	Flame current sensor fault (A)
0707	-	Switching on fault (A)
0708	-	Fan motor speed fault (A)
0709	-	Oil pump circuit fault (A)
0900	-	Performance test (no fault)
1000	-	Cooling cycle fault
10*0	-	Line cooling cycle fault *
1102	-	Supply temperature fault (TH4) (A)
1108	-	Internal thermostat (49C) (A)
11**	-	Cooling cycle temperature fault - Reference: **

Code	Short description	Description
12**	-	Cooling cycle modulation fault - Reference: **
1300	-	Low pressure fault (triggering of 63L) (A)
13**	-	Cooling cycle pressure fault - Reference: **
14**	-	Cooling cycle pressure fault - Reference: **
1500	-	Excessive cooling load fault
1501	-	Insufficient cooling load fault (/compression casing temperature fault)
1502	-	Cooling cycle fault due to return of liquid/ Low pressure fault (triggering of 63L) (A)
1503	P6 (Freezing)	Antifreeze
1504	P6 (Overheating)	Overheating
1503	-	Coil defrosting fault
1504	-	Overheating protection fault
1505	-	Compressor low suction pressure fault/cooling cycle low temperature fault
1506	-	Cooling circuit pump fault
1507	-	Identification of composition of refrigerant fault
1508	-	Cooling cycle control valve fault
1509	-	Excessive pressure fault (closed ball valve)
1510	-	Leaking of refrigerant from cooling circuit
1511	-	Cooling cycle fault - oil leak
1512	-	Cooling cycle fault - interruption of defrost protection function
1513	-	Freezing of brine for cooling cycle
1514	PL	Cooling system fault
1559	-	Oil balancing circuit fault
1600	-	Excessive refrigerant fault alert
1601	-	Insufficient refrigerant fault alert
1605	-	Suction pressure fault alert
1606	-	Refrigerant pump fault alert
1607	-	CS cooling circuit configuration detection fault
1608	-	Control valve fault
1659	-	Oil balancing circuit fault alert
2000	-	Condensate drainage system fault (pump interlock fault)
20*0	-	Condensate drainage system line fault *
21**	-	Condensate drainage system temperature fault - Reference: **
22**	-	Condensate drainage system temperature fault - Reference: **
23**	-	Condensate drainage system pressure fault - Reference: **
24**	-	Pressure in condensate drainage system fault - Reference: **
2500	-	Condensate leaking fault
2501	-	Water filling fault
2502	-	Condensate lift pump fault
2503	-	Drain sensor/float switch fault

Code	Short description	Description
2504	-	Fluid level 2 fault
2505	-	Chilled water valve fault
2506	-	Hot water valve fault
2507	-	Limited operation fault due to condensate sensor
2600	-	Limited operation fault due to water leak
2601	-	Limit operation fault due to suspension of flow of water in humidifier
2602	-	Limited operation fault due to drain pump
2603	-	Limited operation fault due to drain sensor
2604	-	Limited operation fault due to liquid level
3152	-	Temperature fault in inverter control board
3182	-	Temperature fault in housing
3252	-	Control board temperature fault alert
3600	-	Limited operation of ventilation system due to clogged filter
3601	-	Limited operation of ventilation system due to filter maintenance
3602	-	Limited operation of ventilation system due to damper position fault
37**	-	Limited operation of ventilation system humidistat **
38**	-	Limited operation due to humidity in ventilation system - Reference: **
4000	-	Electrical system fault
40*0	-	Electrical system fault in the line *
4100	-	Electrical system fault with stop due to over current
4101	-	Electrical system fault due to over current protection
4102	-	Fault due to phase failure
4103	-	Electric phase reversal fault
4104	-	Electrical system fault due to dispersion
4105	-	Short circuit fault
4106	-	Electrical system fault due to power cut
4107	-	Electrical system due to overload
4108	-	Electrical system fault due to overload/OCR51C Phase open (phase S), 51CM connector open (A)
4109	-	Electrical system fault due to OCR51 F
4110	-	Electrical system fault due to high voltage
4111	-	Electrical system fault due to current bus
4112	-	Electrical system fault due to overheating of coil 49°C
4113	-	Electrical system fault due to overheating of heater
4114	-	Electrical system fault due to fan controller
4115	-	Electrical system fault due to power synchronisation/Input circuit (51CM circuit connector) (A)
4116	-	Electrical system fault due to motor/speed fault
4117	-	Compressor self-protection function triggered (A)
4118	-	Fault with phase reversal detection circuit (printed circuit board)

Code	Short description	Description
4119	-	More than 2 connectors are open (A)
4121	-	Electrical system fault - take measures to avoid high harmonic frequencies
4123	-	Electrical system fault - inverter output error
4124	-	Electrical system fault - damper
4125	-	Electrical system fault - anti-rush circuit
4126	-	Electrical system over current protection/OCR51C fault alert
4162	-	Electrical system fault due to temperature of compressor coils
4163	-	Electrical system - fan controller alert
4165	-	Electrical system - power synchronisation alert
4171	-	Electrical system alert - take measures to avoid high harmonic frequencies
4200	-	Inverter fault
420*	-	Inverter fault - Inverter No.: *
4210	-	Overcurrent - stop of inverter
421*	-	Inverter overcurrent - stop of Inverter No.: *
4220	-	Insufficient voltage for inverter bus/Voltage fault (A)
422*	-	Insufficient voltage for inverter bus - Inverter No.: *
4230	-	Faulty inverter radiant thermostat
423*	-	Faulty inverter dissipator thermostat - Inverter No.: *
4240	-	Inverter overcurrent protection
424*	-	Inverter overcurrent protection - Inverter No.: *
4250	-	IPM inverter fault/bus voltage fault (A)
425*	-	IPM inverter fault *
4260	-	Inverter cooling fan fault
426*	-	Inverter cooling fan fault - Inverter No.: *
4300	-	Inverter tolerance fault
430*	-	Inverter tolerance fault - Inverter No.: *
4310	-	Inverter stop due to overcurrent
431*	-	Inverter stop due to overcurrent - Inverter No.: *
4320	-	Inverter bus insufficient voltage fault
432*	-	Inverter bus insufficient voltage fault - Inverter No.: *
4330	-	Inverter dissipator thermostat tolerance fault
433*	-	Inverter dissipator thermostat tolerance fault - Inverter No.: *
4340	-	Inverter overcurrent protection fault
434*	-	Inverter overcurrent protection fault - Inverter No.: *
4350	-	IPM inverter tolerance fault
435*	-	IPM inverter tolerance fault *
4360	-	Inverter cooling fan alert
436*	-	Inverter cooling fan alert - Inverter No.: *
5000	-	Sensor fault
5202	-	Open connector (63L) (A)
50*0	-	System sensor fault *
5300	-	Current sensor fault (A)

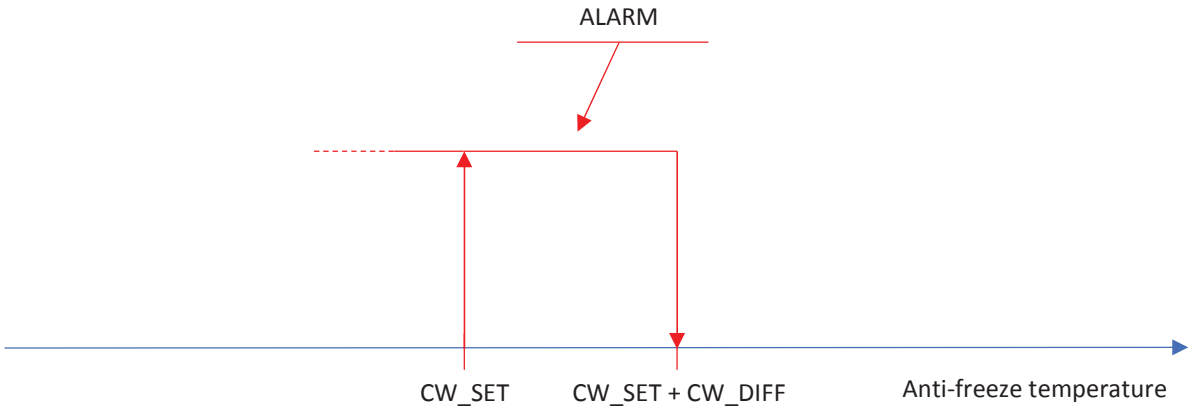
Code	Short description	Description
5101	P1	“Target air temperature” TH1 probe fault
5102	P2	“Ref. liquid temperature” TH2 probe fault
5103	P9	“2-phase temperature” TH5 probe fault
5111	PU	“HEX inlet temperaure” TH11 probe fault
52**	-	Pressure sensor fault - Sensor No.: **
53**	-	Current sensor fault - Sensor No.: **
54**	-	Humidity sensor fault - Sensor No.: **
55**	-	Refrigerant sensor fault - Sensor No.: **
56**	-	Air speed sensor fault - Sensor No.: **
57**	-	Limit switch fault - Limit switch No.: **
58**	-	Sensor fault - Sensor No.: **
59**	-	Other sensor faults - Sensor No.: **
6000	-	System fault
6101	-	System fault - with response frame
6102	-	No response in return
6200	-	H/W controller fault
6201	-	E2PROM fault
6202	-	RTC fault
6500	-	Communication fault
6600	-	Communication fault - Duplicate addresses
6601	-	Communication fault - Incorrect polarity
6602	-	Communication fault - Transmission hardware processor
6603	-	Communication fault - Transmission line obstruction
6604	-	Communication fault - No ACK (06H) (communication circuit error)
6605	-	Communication fault - No response frame
6606	-	Communication fault - Transmission processor
6607	-	Communication fault - No ACK in return
6608	-	Communication fault - No response frame
6609	-	Communication fault
6610	-	Communication fault
6700	-	Communication fault - transmission of K controls
6701	-	Communication fault - transmission of K controls
6702	-	Communication fault - duplicate addresses of K controls
6750	-	Communication fault - PO code of K control
6751	-	K fault - Room temperature thermistor
6752	-	K fault - Internal coil thermistor, condensation temperature sensor
6753	-	K fault - Transmission/reception
6754	-	K fault - Condensate sensor, switch
6755	-	K fault - Condensate pump
6756	-	K fault - Coil frost protection
6757	-	K fault - System error
6758	-	K fault - External unit, external/internal communication
6761	-	K fault - Room temperature thermistor
6762	-	K fault - Internal coil thermistor, condensation temperature sensor
6763	-	K fault - Transmission/reception

Code	Short description	Description
6764	-	K fault - Condensate sensor
6765	-	K fault - Condensate pump
6766	-	K fault - Coil frost protection
6767	-	K fault - External unit, external/internal communication
6771	-	K fault - High pressure, low pressure
6772	-	K fault - Internal thermostat, Supply temp. fault; Casing protection thermostat - Overcurrent protection
6773	-	K fault - Dissipator thermostat
6774	-	K fault - External thermostat
6775	-	K fault - Pressure sensor, Internal/external communication error
6776	-	K error - Stop due to overcurrent
6777	-	K fault - System error
6778	-	K fault - Normal condition
6779	-	K fault - Excessive load, voltage fault, CT sensor fault
6800	-	Communication error - Other type of error
6801	-	Communication error - V control
6810	-	Communication error - RH control
6811	-	Communication error - RH synchronisation not recovered
6812	-	Communication error - RH control hardware
6813	-	Communication error - RH control status bit detection
6820	-	Other communication errors
6821	-	Other communication errors - Transmission line engaged
6822	-	Other communication errors - ACK not received
6823	-	Other communication errors - No response
6824	-	Other communication errors - Data reception error
6830	-	Communication error - duplicate setting of cooling circuit address
6831	-	Communication error - No response from MA
6832	-	Communication error - MA synchronisation not recovered
6833	-	Communication error - Transmission/reception of MA
6834	-	Communication error - Detection of MA start bit
6840	-	Communication error - A controls, external/internal reception/communication
6841	-	Communication error - A controls, reset synchronisation of external/internal communication
6844	-	Communication error - A controls, external/internal communication of incorrect connection, excessive quantity of internal units (over five units)
6845	-	Communication error - A control, external/internal communication of incorrect connection (telecommunications, disconnection)
6846	-	Communication error - A control, external/internal communication of exceeded time limit
7000	-	System fault
7100	-	System fault - Total capacity error
7101	-	System fault - Capacity code error

Code	Short description	Description
7102	-	System fault - Too many units connected error
7103	-	System fault - Error setting length of the pipes
7104	-	System fault - Error setting height of floor
7105	-	System fault - Address greater than 254
7106	-	System fault - Attribute setting error
7107	-	System fault - Distributor setting error
7108	-	System fault - Cooling circuit setting error
7109	-	System fault - Connection setting error
7110	-	System fault - Cooling circuit connection data not set
7111	-	System fault - I/O board not connected/remote control sensor fault
7112	-	System fault - I/O type setting error
7113	-	System error - Device not set
7116	-	System fault - Correct the setting error
7117	-	System fault due to model identification setting error
7130	EE	Incorrect setting of dip-switch
7131	-	System error due to cooling only H/P mixed system (PAC facility) connection error
7132	-	System fault due to multiple entries of performance (PAC facility)
7200	-	System fault - Numerical values not set
7201	-	System fault - Numerical values not set
73**	-	System fault due to LON system device

ANTIFREEZE ALARM (AL013)

The antifreeze alarm is generated when the temperature detected by the probe connected to the U9 "ANTIFREEZE TEMPERATURE" analogue input remains below a given threshold for a certain period of time as indicated in the figure:



The parameters:

- CW_SET, threshold
- CW_DIFF, reset differential
- delay

can be set in the SERVICE menu.

LOW AIR FLOW ALARM (AL025 and AL026)

The low return or delivery air flow alarm is generated when the flow is found to be below a given threshold for a certain period of time.

The parameters:

- CWL_SET, threshold
- delay

are used to determine both the return and delivery air flow alarm and can be set in the SERVICE menu.

DIGITAL OUTPUT FOR GENERAL ALARM (NO14)

The alarms that cause switching of the NO14 "General alarm" output relay are the following:

Code	Description
AL014	ID1 - Severe alarm
AL015	ID6 - Fire/smoke alarm
AL016	ID8 - Door alarm
AL027	ID13 - Rotary heat recovery unit alarm
AL026	Low return air flow alarm
AL025	Low delivery air flow alarm
AL029	Return air fan alarm
AL028	Delivery air fan alarm
AL031	Return air fan alarm 2
AL030	Delivery air fan alarm 2

In addition to signalling active blocking alarms, the output is used for blocking compressors via the PAC-IF boards on the external Mr Slim units.

5. FUNCTIONS

The various types of control and the functions available are described below, distinguishing between AUTO and IMOUC modes when necessary. No distinction is made however when the control or function is available in the same way for both modes.

5.1. ON-OFF

AUTO configuration

The unit can be switched on/off:

- at the PAR display
- via the ID7 "ON/OFF" digital input
- according to the TIME BAND in the PAR (see further on)

IMOUC configuration

The unit can be switched on/off:

- via the ID7 "ON/OFF" digital input
- at the AHU controller display in the "Unit ON/OFF" menu
- by the BMS system
- according to TIME BAND (see further on)

N.B.:
switching ON/OFF from the display of the AHU controller and from the BMS system involve the same variable in the software

5.2. SETPOINTS FOR MAIN CONTROLS

TEMPERATURE

AUTO configuration

The setpoint is set at the PAR panel; refer to the MITSUBISHI documentation (Interface)

IMOUC configuration

The active setpoint can correspond to one of the 3 following parameters:

1. USER SETPOINT
2. COMFORT SETPOINT
3. ECONOMY SETPOINT

The active setpoint is the USER SETPOINT when the time bands are not active.

When the time bands are active, however, the active setpoint can be the COMFORT SETPOINT, the ECONOMY SETPOINT or the USER SETPOINT, depending on the time band settings (see further on).

HUMIDITY

AUTO configuration

Dehumidification is not controlled in AUTO configuration; humidification, instead, is controlled as indicated in paragraph 6.6.

IMOUC configuration

Both dehumidification and humidification are controlled in IMOUC configuration as indicated in paragraph 6.6. There is a single setpoint parameter used for control of the humidifier and during dehumidification.

AIR FLOW

The active setpoint is the parameter:

- STD FLOW SETPOINT (SET_P)

Closing of digital contact ID9 "AIR FLOW SET 2" changes the active setpoint with the parameter:

- FLOW SETPOINT 2 (SET_P2)

There are different setpoint parameters for return and supply that refer to the maximum setpoints set in the MANUFACTURER menu.

In the case of the CO2 probe and control according to air quality, the setpoint may vary automatically between the values of SET_P and SET_P2 (see paragraph 5.10 AIR FLOW CONTROL).

The setpoints for the main temperature and humidity parameters can be modified in the masks of the SETPOINT menu, while the flow parameters are in the SERVICE and MANUFACTURER menus.

5.3. EC FANS

RS485 serial communication between the AHU controller and the fans is used to control the same fans.

The fans used are ZIEHL-ABEGG EC BLUE fans.

It is possible to set the serial address and configure the fans in the masks of the SERVICE menu: at the same time, the parameters for stopping the fans independently when serial communication is lost are set automatically. The parameters for running the fan at fixed speed when a digital contact is closed at the terminal block of the fan are also set automatically.

When replacing a fan, make sure that the new fan is configured with the factory settings of the manufacturer ZIEHL-ABEGG and repeat the setup procedure in the SERVICE menu.

Below is the fan configuration procedure.

1. **Switch on only the PLC (SWITCH OFF THE MOTORS)**

2. **Configure all the addresses of the modbus brushless motors on the PLC with the value 247 (ZIEHL default):**
   Prg → SERVICE → MAINTENANCE → enter password → EC FANS →
   [Press ↵ to select the parameter to be modified. Press ↑↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

(1)
```
+----------------------+
|VENTIL. EC - ZIEHL V01|
|SUPPLY FAN            |
|                      |
|Enable manage   :  Yes◄|
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

(2)
```
+----------------------+
|VENTIL. EC - ZIEHL V02|
|SUPPLY FAN            |
|                      |
|Address      : 247    ◄|
|Rotation     : CLOCK. |
|Ramp time    : 0000 sec|
|Max rounds   : 0000 rpm|
|Save         : No     |
+----------------------+
```

(3)
```
+----------------------+
|VENTIL. EC - ZIEHL V03|
|SUPPLY FAN            |
|                      |
|                      |
|MIN. Speed     : 000.0%◄|
|MAX. Speed     : 100.0%◄|
|                      |
|                      |
+----------------------+
```

(4)
```
+----------------------+
|VENTIL. EC - ZIEHL V04|
|RETURN FAN            |
|                      |
|Enable manage   :  Yes◄|
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

(5)
```
+----------------------+
|VENTIL. EC - ZIEHL V05|
|RETURN FAN            |
|                      |
|Address      : 247    ◄|
|Rotation     : CLOCK. |
|Ramp time    : 0000 sec|
|Max rounds   : 0000 rpm|
|Save         : No     |
+----------------------+
```

(6)
```
+----------------------+
|VENTIL. EC - ZIEHL V06|
|RETURN FAN            |
|                      |
|                      |
|MIN. Speed     : 000.0%◄|
|MAX. Speed     : 100.0%◄|
|                      |
|                      |
+----------------------+
```

(7)
```
+----------------------+
|VENTIL. EC - ZIEHL V07|
|SUPPLY FAN 2          |
|                      |
|Enable manage   :  Yes◄|
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

(8)
```
+----------------------+
|VENTIL. EC - ZIEHL V08|
|SUPPLY FAN 2          |
|                      |
|Address      : 247    ◄|
|Rotation     : CLOCK. |
|Ramp time    : 0000 sec|
|Max rounds   : 0000 rpm|
|Save         : No     |
+----------------------+
```

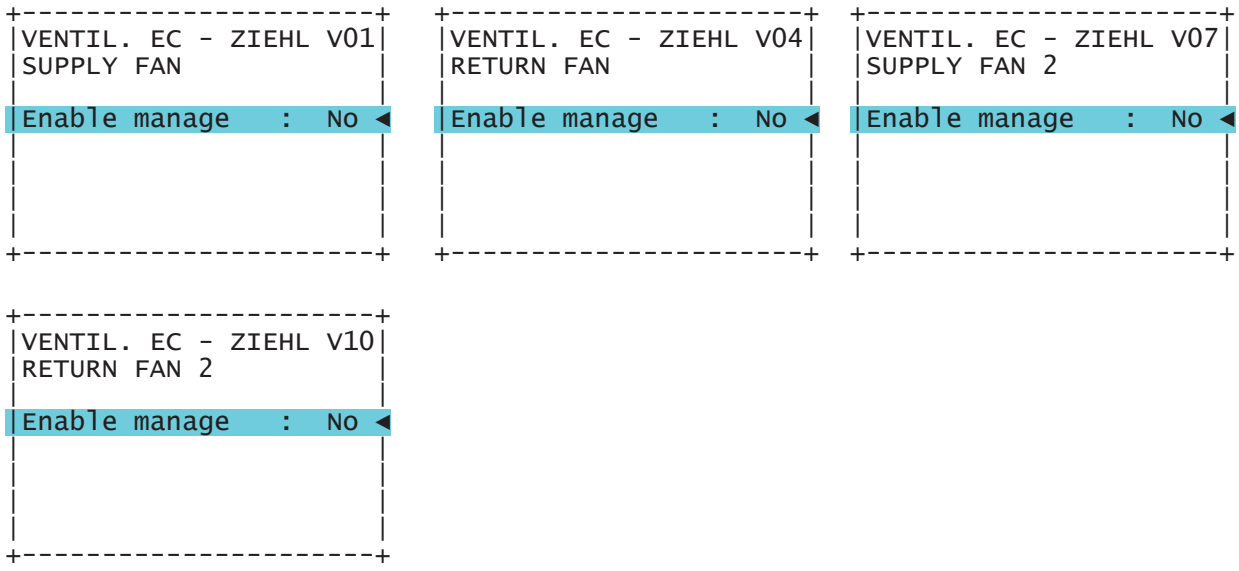
(9)
```
+----------------------+
|VENTIL. EC - ZIEHL V09|
|SUPPLY FAN 2          |
|                      |
|                      |
|MIN. Speed     : 000.0%◄|
|MAX. Speed     : 100.0%◄|
|                      |
|                      |
+----------------------+
```

(10)
```
+----------------------+
|VENTIL. EC - ZIEHL V10|
|RETURN FAN 2          |
|                      |
|Enable manage   :  Yes◄|
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

(11)
```
+----------------------+
|VENTIL. EC - ZIEHL V11|
|RETURN FAN 2          |
|                      |
|Address      : 247    ◄|
|Rotation     : CLOCK. |
|Ramp time    : 0000 sec|
|Max rounds   : 0000 rpm|
|Save         : No     |
+----------------------+
```

(12)
```
+----------------------+
|VENTIL. EC - ZIEHL V12|
|RETURN FAN 2          |
|                      |
|                      |
|MIN. Speed     : 000.0%◄|
|MAX. Speed     : 100.0%◄|
|                      |
|                      |
+----------------------+
```

3. **Disable all the modbus brushless motors on the PLC:**
   Prg → SERVICE → MAINTENANCE → enter password → EC FANS →
   [Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

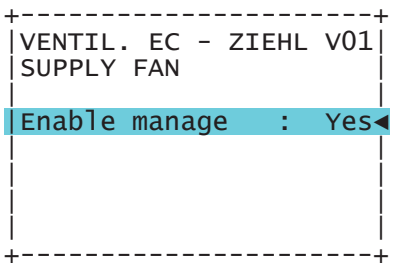


4. **Switch off the PLC**

5. **Switch on only the "DELIVERY" motor (IF NOT PRESENT, SKIP TO STEP 12)**

6. **Switch on the PLC**

7. **Enable only the "DELIVERY" modbus brushless motor on the PLC:**
   Prg → SERVICE → MAINTENANCE → enter password → EC FANS →



[Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

8. **Enter the default address of the Ziehl motors (247) and restart only the PLC keeping the motor switched on**

9. **Check acquisition of the motor parameters:**
   Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V02|
|SUPPLY FAN            |
|                      |
|Address     : 247     ◄
|Rotation    : CLOCK.  |
|Ramp time   : 0040 sec◄ WAIT FOR PARAMETER ACQUISITION
|Max rounds  : 1800 rpm◄ WAIT FOR PARAMETER ACQUISITION
|Save        : No      ◄ WAIT FOR LINE ACQUISITION (~10 seconds)
+----------------------+
```

10. **Modify the Ziehl motor address (21) and motor plate parameters and save:**

```
+----------------------+
|VENTIL. EC - ZIEHL V02|
|SUPPLY FAN            |
|                      |
|Address     : 21      ◄ Modify address
|Rotation    : CLOCK.  ◄ Enter correct rotation
|Ramp time   : 0040 sec◄ Enter required time ramp
|Max rounds  : 1800 rpm◄ Enter motor plate value
|Save        : Yes     ◄ Save
+----------------------+
```

11. **When the mask below appears, switch off the motor and PLC:**

```
+----------------------+
|   > Attention <      |
|  MODBUS FAN ADDRESS  |
|  CHANGED CORRECTLY   |
|                      |
|Turn-off and restart  |
|the unit and the fan  |
|to have communication |
|[ Keys disabled ]     |
+----------------------+
```

12. **Switch on only the "RETURN" motor (IF NOT PRESENT, SKIP TO STEP 20)**

13. **Switch on the PLC**

14. **Disable the "SUPPLY FAN" modbus brushless motor on the PLC:**
    Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V01|
|SUPPLY FAN            |
|                      |
|Enable manage   :  No ◄
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

[Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

15. **Enable only the "RETURN FAN" modbus brushless motor on the PLC:**
    Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

16. **Enter the default address of the Ziehl motors (247) and restart only the PLC keeping the motor switched on**

17. Check acquisition of the motor parameters:

Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V05|
|RETURN FAN            |
|                      |
|Address     : 247     ◄
|Rotation    : CLOCK.  |
|Ramp time   : 0040 sec◄ WAIT FOR PARAMETER ACQUISITION
|Max rounds  : 1800 rpm◄ WAIT FOR PARAMETER ACQUISITION
|Save        : No      ◄ WAIT FOR LINE ACQUISITION (~10 seconds)
+----------------------+
```

18. Modify the Ziehl motor address (22) and motor plate parameters and save:

```
+----------------------+
|VENTIL. EC - ZIEHL V05|
|RETURN FAN            |
|                      |
|Address     : 22      ◄ Modify address
|Rotation    : CLOCK.  ◄ Enter correct rotation
|Ramp time   : 0040 sec◄ Enter required time ramp
|Max rounds  : 1800 rpm◄ Enter motor plate value
|Save        : Yes     ◄ Save
+----------------------+
```

19. When the mask below appears, switch off the motor and PLC:

```
+----------------------+
|   > Attention <      |
|  MODBUS FAN ADDRESS  |
|  CHANGED CORRECTLY   |
|                      |
|Turn-off and restart  |
|the unit and the fan  |
|to have communication |
|[ Keys disabled ]     |
+----------------------+
```

20. Switch on only the "SUPPLY FAN 2" motor (IF NOT PRESENT, SKIP TO STEP 28)

21. Switch on the PLC

22. Disable the "RETURN FAN" modbus brushless motor on the PLC:

Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V04|
|RETURN FAN            |
|                      |
|Enable manage   :  No ◄
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

[Press ↵ to select the parameter to be modified. Press ↑↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

23. Enable only the "SUPPLY FAN 2" modbus brushless motor on the PLC:
Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V07|
|SUPPLY FAN 2          |
|                      |
|Enable manage   :  Yes◄
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

[Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

24. Enter the default address of the Ziehl motors (247) and restart only the PLC keeping the motor switched on

25. Check acquisition of the motor parameters:

```
+----------------------+
|VENTIL. EC - ZIEHL V08|
|SUPPLY FAN 2          |
|                      |
|Address     : 247     ◄
|Rotation    : CLOCK.  |
|Ramp time   : 0040 sec◄ WAIT FOR PARAMETER ACQUISITION
|Max rounds  : 1800 rpm◄ WAIT FOR PARAMETER ACQUISITION
|Save        : No      ◄ WAIT FOR LINE ACQUISITION (~10 seconds)
+----------------------+
```

26. Modify the Ziehl motor address (23) and motor plate parameters and save:

```
+----------------------+
|VENTIL. EC - ZIEHL V08|
|SUPPLY FAN 2          |
|                      |
|Address     : 23      ◄ Modify address
|Rotation    : CLOCK.  ◄ Enter correct rotation
|Ramp time   : 0040 sec◄ Enter required time ramp
|Max rounds  : 1800 rpm◄ Enter motor plate value
|Save        : Yes     ◄ Save
+----------------------+
```

27. When the mask below appears, switch off the motor and PLC:

```
+----------------------+
|   > Attention <      |
|  MODBUS FAN ADDRESS  |
|  CHANGED CORRECTLY   |
|                      |
|Turn-off and restart  |
|the unit and the fan  |
|to have communication |
|[ Keys disabled ]     |
+----------------------+
```

28. Switch on only the "RETURN FAN 2" motor (IF NOT PRESENT, SKIP TO STEP 36)

29. Switch on the PLC

30. Disable the "SUPPLY FAN 2" modbus brushless motor on the PLC:

Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V07|
|SUPPLY FAN 2          |
|                      |
|Enable manage   :  No ◄
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

[Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

31. Enable only the "RETURN FAN 2" modbus brushless motor on the PLC:

Prg → SERVICE → MAINTENANCE → enter password → EC FANS →

```
+----------------------+
|VENTIL. EC - ZIEHL V10|
|RETURN FAN 2          |
|                      |
|Enable manage   :  Yes◄
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

[Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

32. Enter the default address of the Ziehl motors (247) and restart only the PLC keeping the motor switched on

33. Check acquisition of the motor parameters:

```
+----------------------+
|VENTIL. EC - ZIEHL V11|
|RETURN FAN 2          |
|                      |
|Address     : 247     ◄
|Rotation    : CLOCK.  |
|Ramp time   : 0040 sec◄ WAIT FOR PARAMETER ACQUISITION
|Max rounds  : 1800 rpm◄ WAIT FOR PARAMETER ACQUISITION
|Save        : No      ◄ WAIT FOR LINE ACQUISITION (~10 seconds)
+----------------------+
```

34. Modify the Ziehl motor address (24) and motor plate parameters and save:

```
+----------------------+
|VENTIL. EC - ZIEHL V11|
|RETURN FAN 2          |
|                      |
|Address     : 24      ◄ Modify address
|Rotation    : CLOCK.  ◄ Enter correct rotation
|Ramp time   : 0040 sec◄ Enter required time ramp
|Max rounds  : 1800 rpm◄ Enter motor plate value
|Save        : Yes     ◄ Save
+----------------------+
```

35. When the mask below appears, switch off the motor and PLC:

```
+----------------------+
|   > Attention <      |
|  MODBUS FAN ADDRESS  |
|  CHANGED CORRECTLY   |
|                      |
|Turn-off and restart  |
|the unit and the fan  |
|to have communication |
|[ Keys disabled ]     |
+----------------------+
```

36. Switch on all the motors that have been configured and are available in the system

37. Switch on the PLC

38. Enable all the modbus brushless motors that are on the PLC, configured and available in the system
Prg → SERVICE → MAINTENANCE → enter password → EC FANS →
[Press ↵ to select the parameter to be modified. Press ↑ ↓ to modify. To view the next masks, press ↵ until the cursor flashes in the top left corner, and then press ↓]

```
+----------------------+
|VENTIL. EC - ZIEHL V01|
|SUPPLY FAN            |
|                      |
|Enable manage   :  No ◄ Enable if configured previously
|                      |
|                      |
|                      |
|                      |
+----------------------+

+----------------------+
|VENTIL. EC - ZIEHL V04|
|RETURN FAN            |
|                      |
|Enable manage   :  No ◄ Enable if configured previously
|                      |
|                      |
|                      |
|                      |
+----------------------+

+----------------------+
|VENTIL. EC - ZIEHL V07|
|SUPPLY FAN 2          |
|                      |
|Enable manage   :  No ◄ Enable if configured previously
|                      |
|                      |
|                      |
|                      |
+----------------------+

+----------------------+
|VENTIL. EC - ZIEHL V10|
|RETURN FAN 2          |
|                      |
|Enable manage   :  No ◄ Enable if configured previously
|                      |
|                      |
|                      |
|                      |
+----------------------+
```

CONFIGURATION DONE

5.4. TEMPERATURE CONTROL

AUTO configuration

The PAC-IF boards and PAR display manage the cooling capacity demand of the external units.

The TH1 probe (connected directly to the master PAC-IF board) can be in delivery (std) or return position.

IMOUC configuration

Control can be carried out:

- U4 "SUPPLY AIR TEMPERATURE" probe
- U5 "RETURN AIR TEMPERATURE" probe

and the cooling capacity demand is communicated to the GATEWAY PAC-IF.

The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

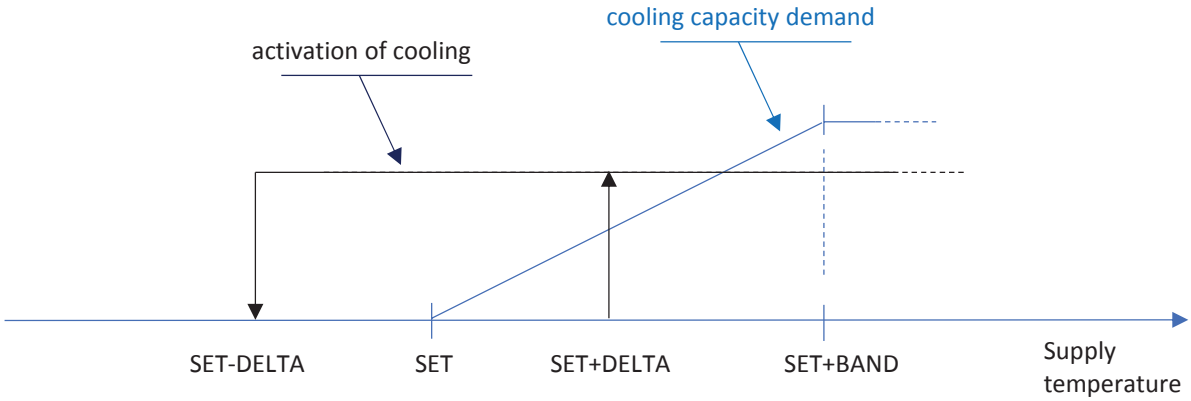
- SET (see paragraph 7.2)
- PROPORTIONAL BAND
- INTEGRAL TIME

Selection of the probe for control and the PROPORTIONAL BAND and INTEGRAL TIME parameters can be set in the SERVICE menu.

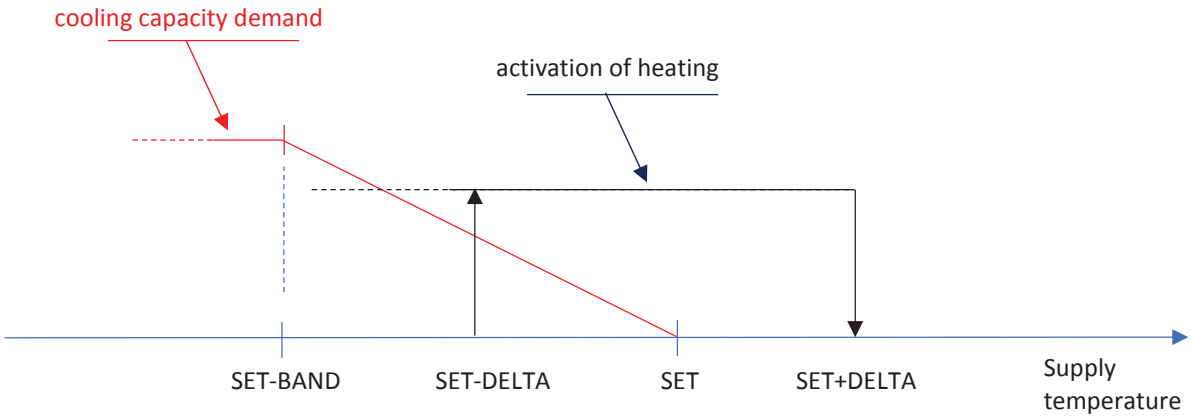
There are two different INTEGRAL TIME parameters which are used differently for heating and cooling.

Heating and cooling are activated as follows:

COOLING



HEATING



The DELTA parameter can be set in the SERVICE menu.

5.5. MANAGEMENT OF LOW SUPPLY TEMPERATURE LIMIT

A post-heating coil is required in this case.

The action can be either analogue using a Y3 "POST-HEATING" 0..10 V analogue output, or digital with 3 steps, using the NO1 "POST-HEATING 1", NO2 "POST-HEATING 2" and NO3 "POST-HEATING 3" digital outputs.

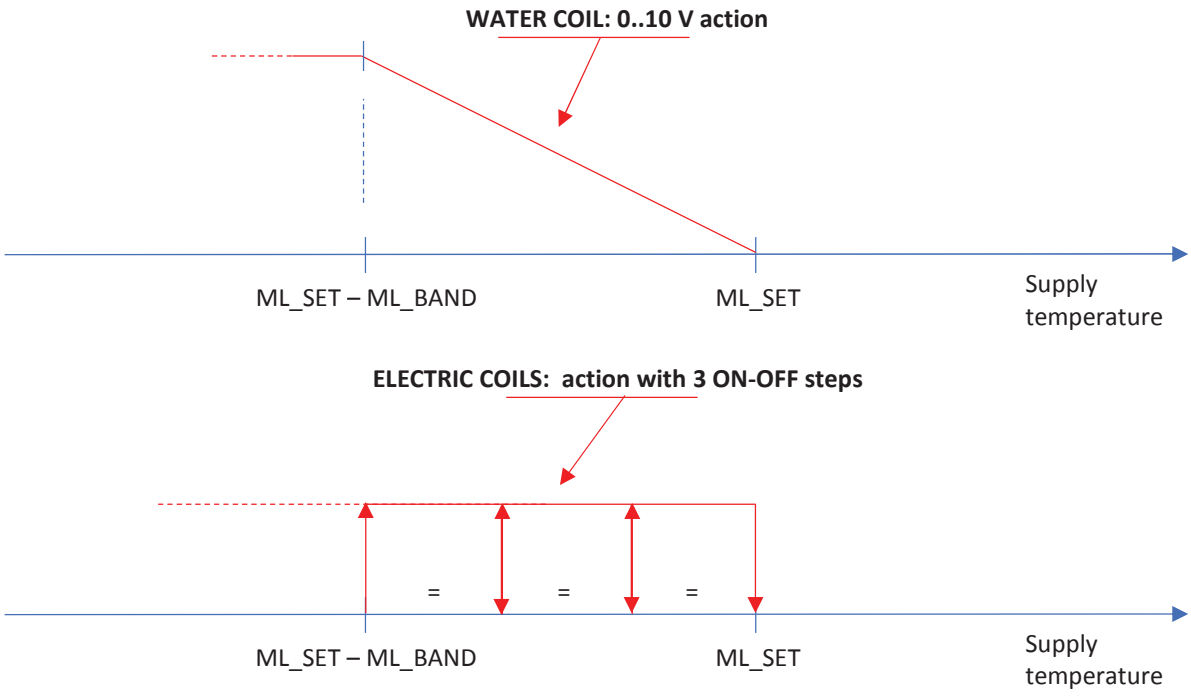
AUTO configuration

The low temperature limit is not managed.

IMOUC configuration

When the delivery probe is used for temperature control, post-heating action is controlled with main temperature control to supplement the action of the direct expansion coil (see paragraph 7.8 POST-HEATING CONTROL)

When the return probe is used for temperature control, the limit temperature is controlled on the basis of the temperature detected by the U5 "SUPPLY AIR TEMPERATURE" probe, as shown in the figure:



The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

- SET
- PROPORTIONAL BAND
- INTEGRAL TIME

Selection of the probe for control and the SET, PROPORTIONAL BAND and INTEGRAL TIME parameters can be set in the SERVICE menu.

5.6. HUMIDITY CONTROL

The demand for humidification/dehumidification can be in relation to:

- U3 "RETURN AIR HUMIDITY" probe
- U2 "SUPPLY AIR HUMIDITY" probe

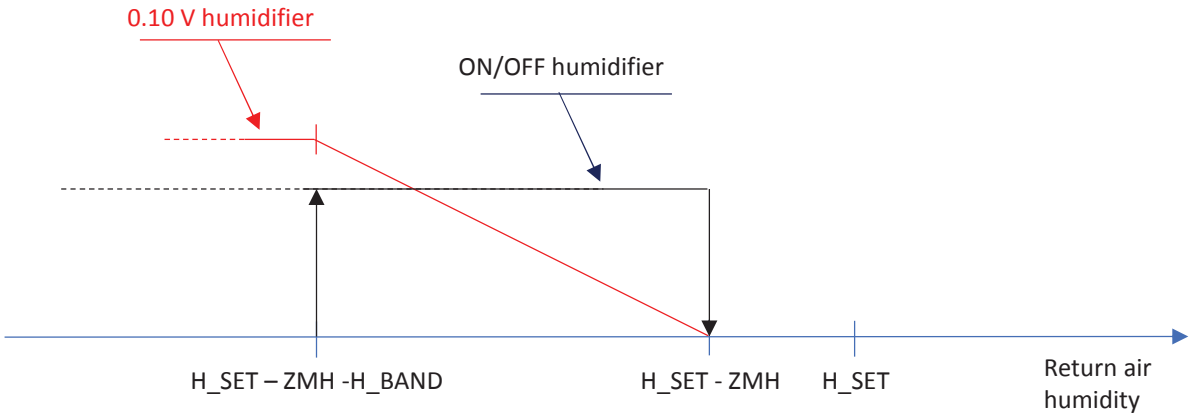
The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

- SET (see paragraph 7.2)
- DEAD ZONE
- PROPORTIONAL BAND
- INTEGRAL TIME
- DELAY between the HUMIDIFICATION/DEHUMIDIFICATION phases

Selection of the probe for control and the DEAD ZONE, PROPORTIONAL BAND and INTEGRAL TIME parameters can be set in the SERVICE menu.

HUMIDIFIER

This is controlled by the NO10 "HUMIDIFIER" digital output or by the Y1 "HUMIDIFIER" 0..10 V analogue output (one or the other) as indicated below:



DEHUMIDIFICATION

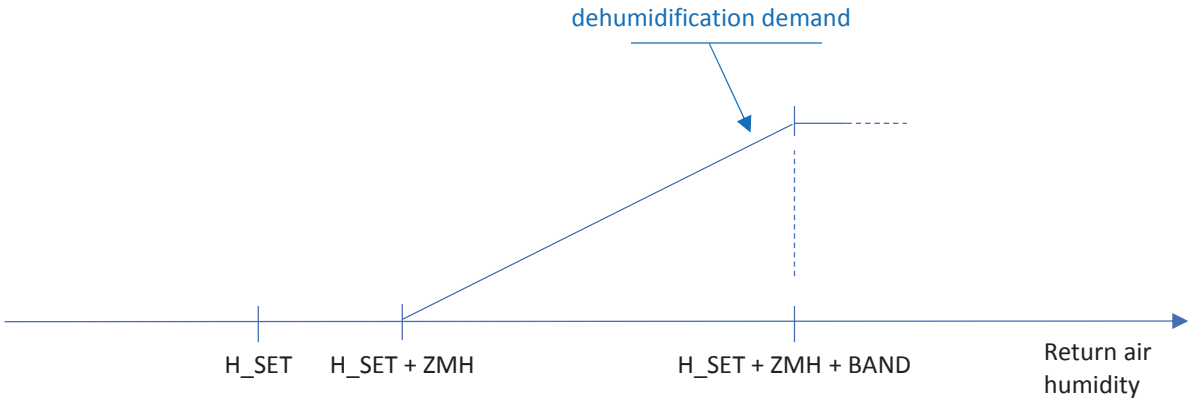
Dehumidification is not controlled in AUTO configuration, since the AHU controller does not control the cooling capacity directly as in the case of IMOUC configuration.

The priority of demand for cooling capacity for the temperature or humidity is also controlled:

- when temperature control is prioritised, the demand for cooling capacity is equal to the demand for cooling; and when there is no demand (the temperature setpoint is met), the demand for cooling for dehumidification is considered

- when humidity control is prioritised, the demand for cooling capacity is equal to the demand for cooling for dehumidification; and when there is no demand (the humidity setpoint is met), the demand for cooling for the temperature is considered

The demand for dehumidification is determined as indicated below:

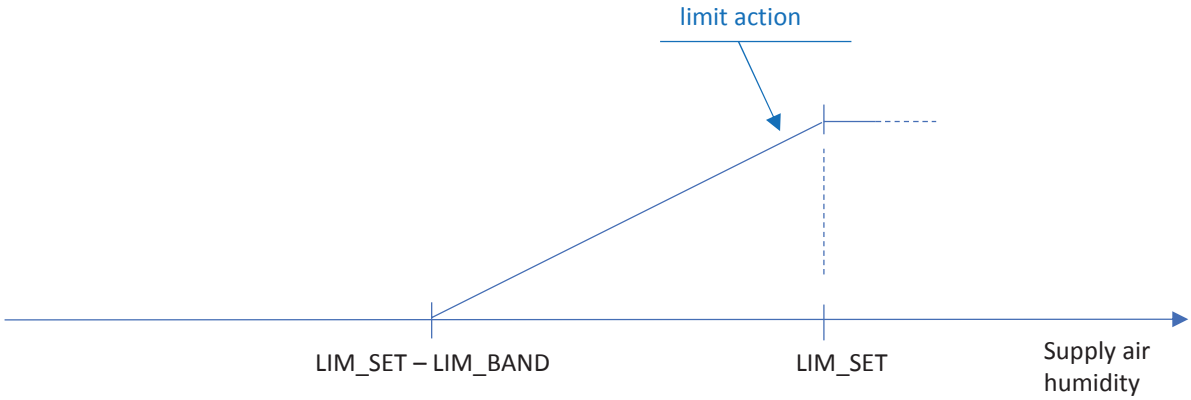


DEHUMIDIFICATION takes priority over HEATING.

5.7. MANAGEMENT OF HIGH SUPPLY HUMIDITY LIMIT

In the case of delivery control, the limit is controlled by the U2 "SUPPLY AIR HUMIDITY" analogue input.
In the case of humidity control at the U3 "RETURN AIR HUMIDITY" probe, the limit of the supply humidity detected by the U2 "SUPPLY AIR HUMIDITY" analogue input is controlled .

The limit action associated with PROPORTIONAL type control, as indicated below, is subtracted from the humidification demand:



The LIM_SET and LIM_BAND parameters can be set in the SERVICE menu.

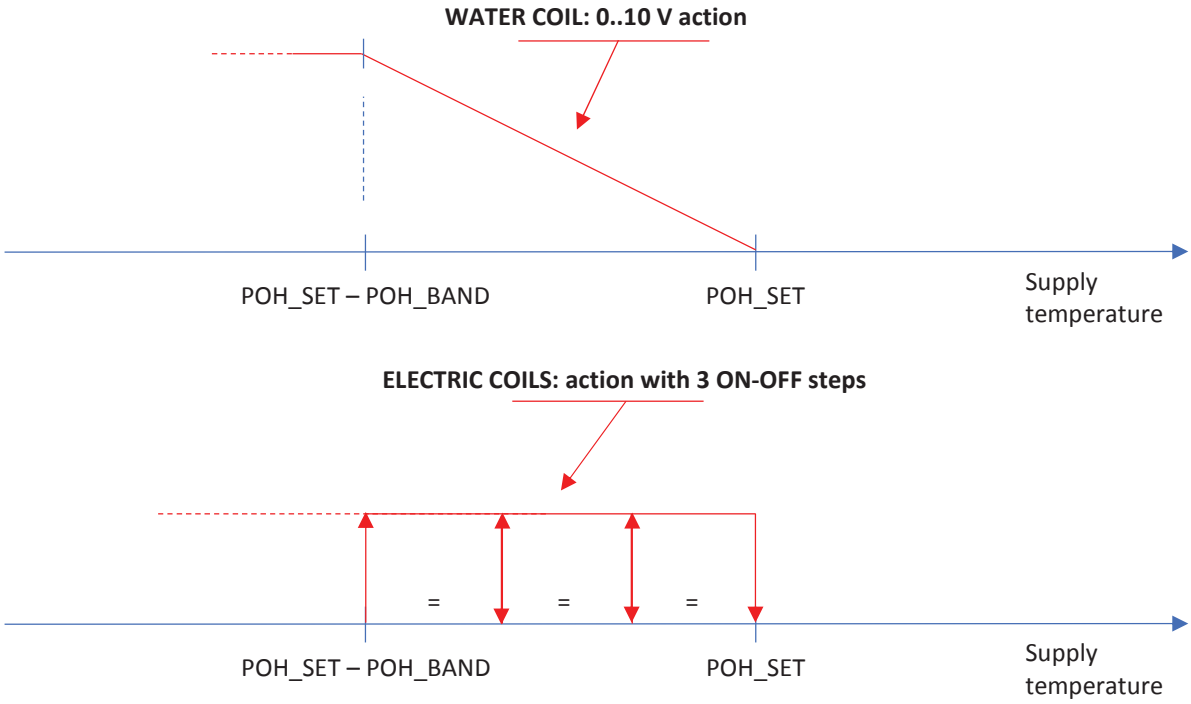
5.8. POST-HEATING CONTROL

Post-heating is only possible when there is a (water or electric) post-heating coil.

The action can be either analogue using a Y3 "POST-HEATING" 0..10 V analogue output, or digital with 3 steps, using the NO1 "POST-HEATING 1", NO2 "POST-HEATING 2" and NO3 "POST-HEATING 3" digital outputs.

AUTO configuration

Post-heating is controlled by means of the TH1 probe as indicated in the figure below and with a certain delay (that can be set in the SERVICE menu) in relation to actual demand:



The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

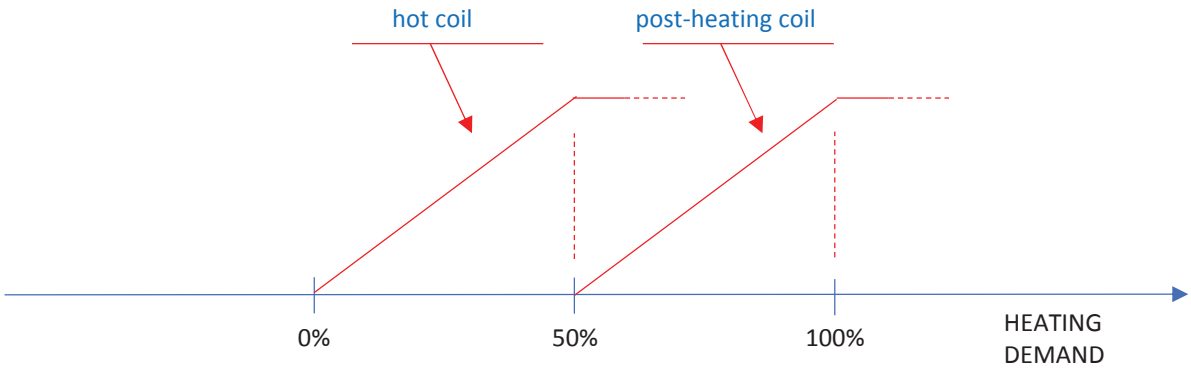
- SET (that can be set on the PAR display)
- PROPORTIONAL BAND
- INTEGRAL TIME

The PROPORTIONAL BAND and INTEGRAL TIME parameters can be set in the SERVICE menu.

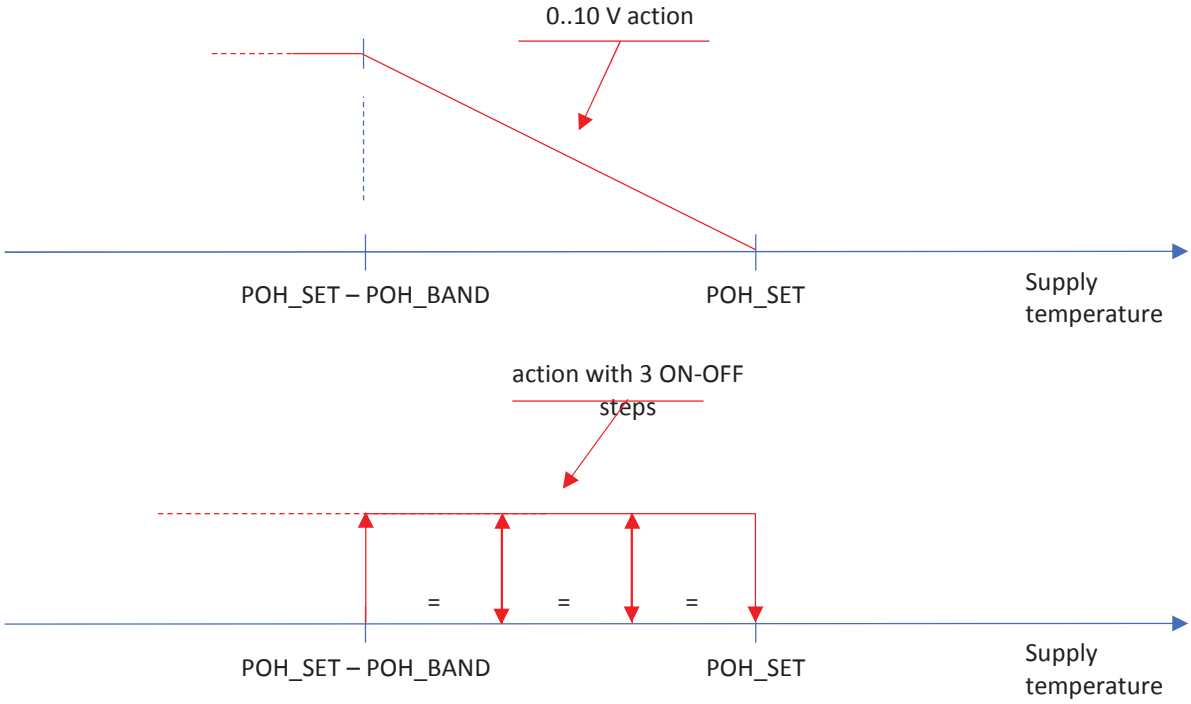
IMOUC configuration

Post-heating can supplement the main heating action (direct expansion coil) or can be used to offset the dehumidification phase (lowering of the supply temperature due to cooling for dehumidification).

In the case of supplementing the main heating action, the heating demand (see paragraph 7.4 TEMPERATURE CONTROL) is divided between the two sources (main coil and post-heating coil) as follows (control in cascade):



To offset the cooling action of dehumidification, post-heating is carried out in relation to the supply air temperature detected by the U4 "SUPPLY AIR TEMPERATURE" analogue input.



The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

- SET
- PROPORTIONAL BAND
- INTEGRAL TIME

The PROPORTIONAL BAND and INTEGRAL TIME can be set in the SERVICE menu.

5.9. PRE-HEATING CONTROL

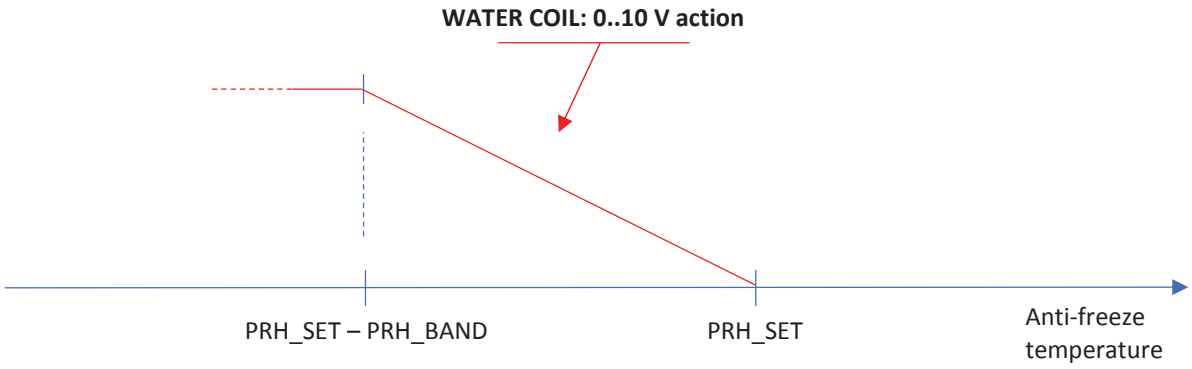
Pre-heating is carried out in relation to the air temperature detected by the U9 "ANTIFREEZE TEMPERATURE" analogue input.

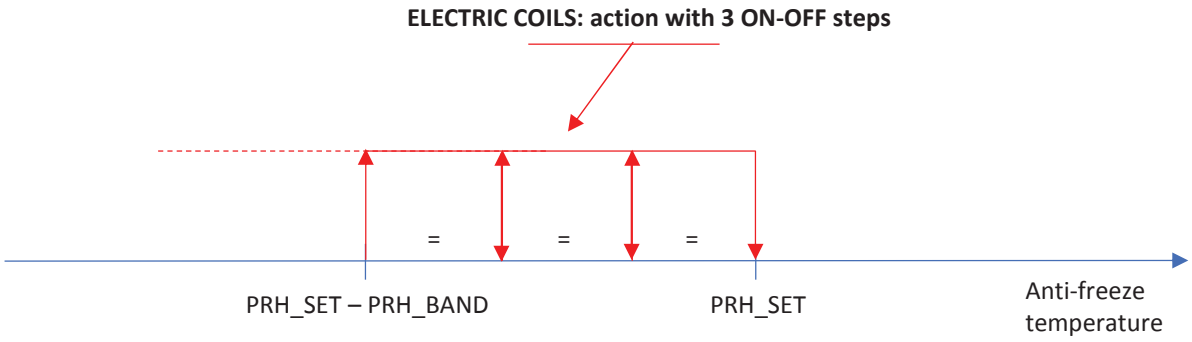
The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

- SET
- PROPORTIONAL BAND
- INTEGRAL TIME

The PROPORTIONAL BAND and INTEGRAL TIME can be set in the SERVICE menu.

The action can be either analogue using a Y2 "PRE-HEATING" 0..10 V analogue output, or digital with 3 steps, using the NO4 "PRE-HEATING 1", NO5 "PRE-HEATING 2" and NO6 "PRE-HEATING 3" digital outputs, as shown in the figure:





5.10. AIR FLOW CONTROL

(Return and delivery) flow control is carried out in relation to the value of the difference between the pressure readings of the U6 "DIFFERENTIAL SUPPLY PRESSURE" and U7 "DIFFERENTIAL RETURN PRESSURE" analogue inputs

The value is calculated according to the formula:

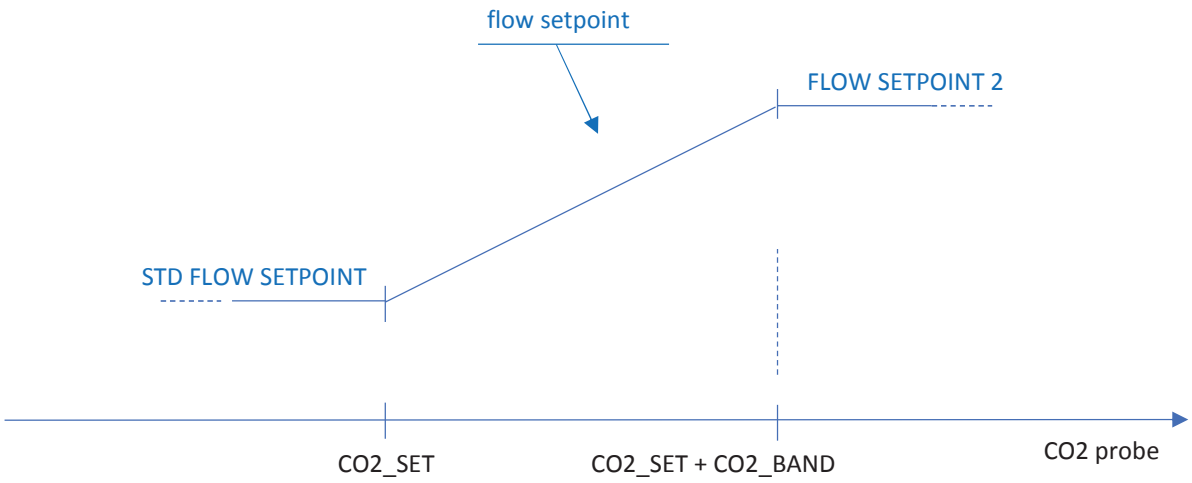
flow = K x RADQ (pressure), where K is the characteristic parameter of the fan that can be set in the SERVICE menu.

The type of control can be PROPORTIONAL and PROPORTIONAL+INTEGRAL, with the parameters:

- SET
- PROPORTIONAL BAND
- INTEGRAL TIME

The PROPORTIONAL BAND and INTEGRAL TIME can be set in the SERVICE menu and, like the setpoint, can differ for return and delivery.

The flow can also be modified to "clean" the air in relation to the CO2 value detected by the U1 "CO2 probe" analogue input that involves automatic variation of the STD FLOW SETPOINT and FLOW SETPOINT 2, as shown in the figure:



CO2_SET and CO2_BAND can be set in the SERVICE menu.

5.11. DAMPER MANAGEMENT

The NO7 "DELIVERY DAMPER" and NO8 "RETURN DAMPER" digital outputs control opening and closing of the respective ON-OFF dampers and are controlled in relation to the status of the unit:

- Opening when the unit is switched ON
- Closing a period of time after the fans are switched off and during switching off of the unit

No other control actions are envisaged for these dampers.

The return and delivery dampers are closed when the unit is switched off.

MIXING CHAMBER

Units with mixing chamber have an additional 3 dampers:

- exhaust air expulsion damper and fresh air inlet damper, controlled by means of the one Y6 "INLET/EXPULSION DAMPERS" 0..10 V signal
- recirculation damper, controlled by means of the Y5 "RECIRCULATION DAMPER" 0..10 V analogue output

The operation (control signal) of the inlet/expulsion dampers is in opposition to that of the recirculation damper.

The inlet/expulsion and recirculation dampers are closed when the unit is switched off.

It is possible to set the minimum and maximum opening limits of both the recirculation damper and of the inlet/expulsion dampers.

The recirculation of air can be set at:

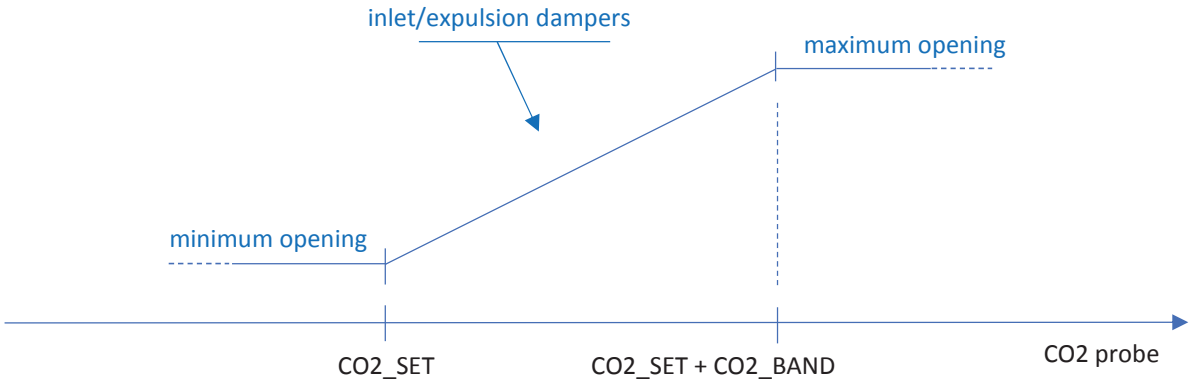
- INACTIVE
- CONTINUOUS
- PERIODIC
- MANUAL
- AIR QUALITY

In the case of CONTINUOUS recirculation of air, when the unit is active, the inlet/expulsion dampers remain open at the minimum value and the recirculation damper remains open at the maximum value.

In the case of PERIODIC recirculation of air, the recirculation damper opens periodically for a set period of time: with the recirculation damper at the minimum value and the inlet/expulsion dampers at the minimum value.

In the case of MANUAL recirculation of air, opening of the recirculation damper is forced at a value duly set in the mask of the SETPOINT menu and the operation of the inlet/expulsion dampers is therefore in opposition.

In the case of CO2, the inlet/expulsion dampers are opened on the basis of the CO2 value detected by the U1 "CO2 probe" analogue input: the inlet/expulsion and recirculation dampers open/close in opposition.



The configuration parameters are in the SERVICE menu.

It is possible to select the mode of action:

- MODULATING (see diagram above)
- ON/OFF (activation with CO2_SET + CO2_BAND and deactivation with CO2_SET)

When the heat recovery unit is active, the mixing chamber is forced to run with only fresh air:
- the inlet/expulsion dampers are set at the maximum value
- the recirculation damper is set at the minimum value

OPERATION LIMIT

If the external temperature is <ET_SET - where ET is the external temperature - the position of the recirculation damper is forced at the maximum value and the inlet/expulsion dampers are forced at the minimum value.
Reactivation occurs when the external temperature > ET_SET + ET_DIFF which can both be set in the SERVICE menu.

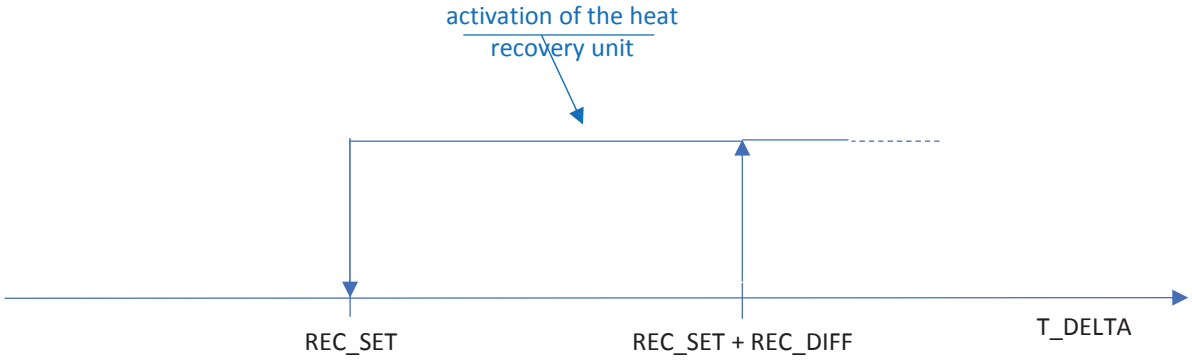
5.12. ROTARY HEAT RECOVERY UNIT

The rotary heat recovery unit is controlled by means of the NO9 "ROTARY HEAT RECOVERY UNIT" digital output (STD, rotor at fixed speed) or by means of the Y4 "ROTARY HEAT RECOVERY UNIT" 0..10 V analogue output (OPZ, variable speed rotor). Activation and control of the speed depend on the difference between the external air temperature and the temperature of the air taken from the room, and occur only when there is active demand for heating or cooling (in the case of IMOUC configuration, demand is from the PLC, while in the case of AUTO configuration, demand is from the Mr Slim unit).

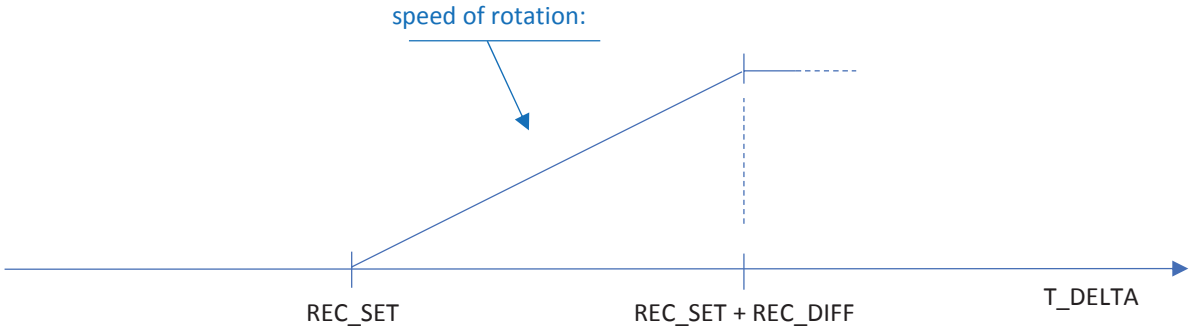
in the case of heating
T_DELTA = Return air temperature - External air temperature

in the case of cooling
T_DELTA = External air temperature - Return air temperature

In the case of ON-OFF



In the case of VARIABLE SPEED

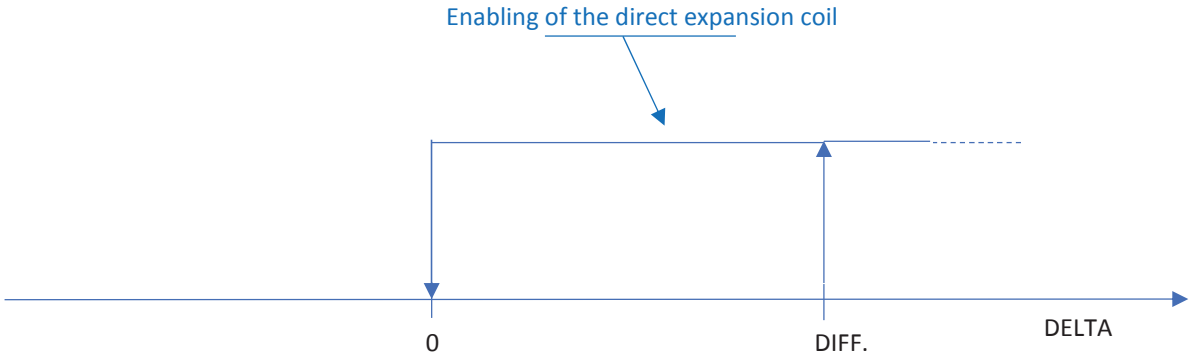


In both cases, the REC_SET and REC_DIFF can be set in the SERVICE menu.

INHIBITING THE ACTION OF THE DIRECT EXPANSION COIL

In the case of IMOUC configuration and when the conditions are such that the temperature of the air leaving the heat recovery unit, detected by the U10 "HEAT RECOVERY UNIT AIR OUTLET TEMPERATURE" analogue input, is close to the active temperature setpoint, the action of the direction expansion coil can be avoided.

The function works as follows:



DELTA = absolute value (Heat recovery unit air outlet temperature – Active temperature setpoint)

Enabling of the function and the DIFF. parameter can be set in the SERVICE menu.

5.13. ENERGY SAVING

If the external air temperature is suitable for heating action (free-heating) or cooling (free-cooling) and there is active temperature demand (only in IMOUC configuration), the actions carried out are:

- Opening of the recirculation damper is forced in the minimum position
- Opening of the inlet/expulsion dampers is forced in the maximum position
- The heat recovery unit is blocked

AUTO configuration

FREE-COOLING

Activation occurs when both these conditions are active

- External air temperature < Return air temperature – DT1
- External temperature > PAR_SET + DT2

PAR_SET can be set on the PAR display, and the parameters DT1 and DT2 can be set in the SERVICE menu.

FREE-HEATING

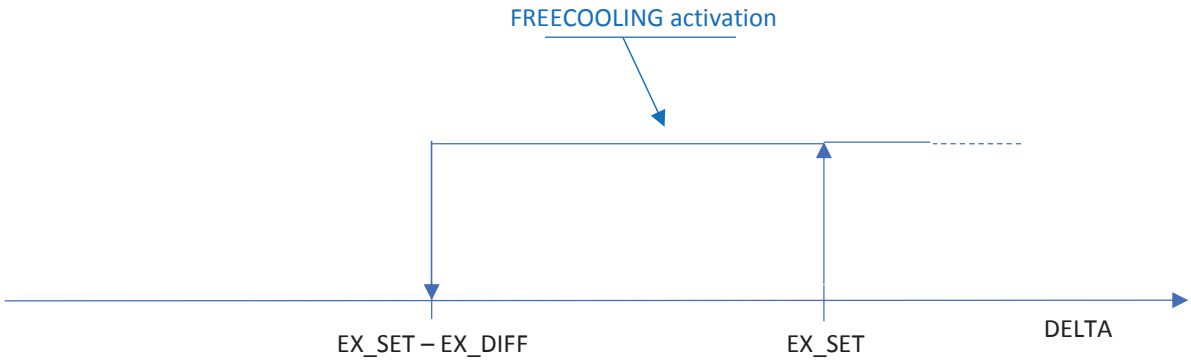
Activation occurs when both these conditions are active

- External air temperature > Return air temperature + DT1
- External temperature < PAR_SET - DT2

PAR_SET can be set on the PAR display, and the parameters DT1 and DT2 can be set in the SERVICE menu.

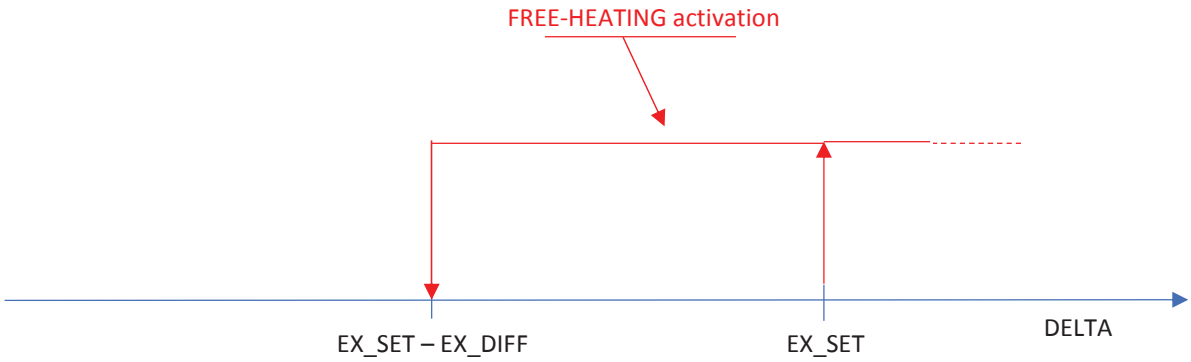
IMOUC configuration

FREE-COOLING



DELTA = Return air temperature - External air temperature

FREE-HEATING



DELTA = External air temperature - Return air temperature

The parameters EX_SET and EX_DIFF are the same in both cases and can be set in the SERVICE menu.

5.14. COMMISSIONING FUNCTION

The function is available only when there is a mixing chamber and temperature control at the return probe, and involves operation with full recirculation when the unit is switched on, forcing maximum opening of the Y5 "RECIRCULATION DAMPER" until the temperature setpoint is reached or in any case for a maximum set time.

In the case of a mixing chamber, the inlet/expulsion dampers are forced at the minimum value.

When the function is enabled, operation with full recirculation occurs only when there is active temperature demand.

The function can be enabled (it is disabled by default) and configured in the SERVICE menu.

For units in AUTO mode, the function can be enabled only with the return control probe: there is a specific parameter in the MANUFACTURER menu for selecting this.

5.15. NIGHT-PURGE FUNCTION

The function, available only in IMOUC configuration, involves forced activation of the fans with thermoregulation blocked, and can be activated:

- Via the ID2 "NIGHT-PURGE DEMAND" digital input
- On the display, in the SERVICE menu
- On the BMS system
- According to TIME BAND

NOTE: activation on the display and on the BMS system involve the same variable in the software

Demand via the digital input and on the display/BMS system take priority over time band mode, when this is set (e.g. time band for switching OFF the unit).

5.16. TIME BANDS

AUTO configuration

The time bands are set in the PAR (only ON-OFF).

IMOUC configuration

There are 6 different time bands for each day of the week, from MONDAY to SUNDAY, as follows:

F1	HH1:MM1	MODE
F2	HH2:MM2	MODE
F3	HH3:MM3	MODE
F4	HH4:MM4	MODE
F5	HH5:MM5	MODE
F6	HH6:MM6	MODE

The options in this MODE are:

- OFF
- NIGHT-PURGE
- COMFORT SETPOINT (temperature)
- ECONOMY SETPOINT (temperature)
- USER SETPOINT (temperature)

E.g.

	MONDAY	TUESDAY	WEDNESDAY
F1	06:30 SET-POINT ECONOMY	06:30 SET-POINT ECONOMY	06:30 SET-POINT ECONOMY
F2	12:30 SET-POINT COMFORT	12:30 SET-POINT COMFORT	12:30 SET-POINT COMFORT
F3	14:00 SET-POINT ECONOMY	14:00 SET-POINT ECONOMY	14:00 OFF
F4	19:30 NIGHT-PURGE	19:30 NIGHT-PURGE	00:00 -
F5	00:00 -	00:00 -	00:00 -
F6	00:00 -	00:00 -	00:00 -

	THURSDAY	FRIDAY	SATURDAY
F1	06:30 SET-POINT ECONOMY	06:30 SET-POINT ECONOMY	06:30 SET-POINT ECONOMY
F2	12:30 SET-POINT COMFORT	12:30 SET-POINT COMFORT	12:30 SET-POINT COMFORT
F3	14:00 SET-POINT ECONOMY	14:00 SET-POINT ECONOMY	14:00 OFF
F4	19:30 NIGHT-PURGE	19:30 NIGHT-PURGE	00:00 -
F5	00:00 -	00:00 -	00:00 -
F6	00:00 -	00:00 -	00:00 -

	SUNDAY		
F1	19:30 NIGHT-PURGE		
F2	00:00 -		
F3	00:00 -		
F4	00:00 -		
F5	00:00 -		
F6	00:00 -		

From Monday to Friday, the modes are those indicated in the table.

The unit is in NIGHT-PURGE mode until 6:30 Monday morning and between 19:30 and 6:30 Monday to Saturday.

The unit is kept OFF from 14:00 on Saturday to 19:30 on Sunday.

The unit is in NIGHT-PURGE mode between 19:30 on Sunday and 6:30 Monday morning.

HOLIDAY PERIOD

Up to 6 periods can be configured:

P1	DAY11/MONTH11 .. DAY12/MONTH12	MODE
P2	DAY21/MONTH21 .. DAY22/MONTH22	MODE
P3	DAY31/MONTH31 .. DAY32/MONTH32	MODE
P4	DAY41/MONTH41 .. DAY42/MONTH42	MODE
P5	DAY51/MONTH51 .. DAY52/MONTH52	MODE
P6	DAY61/MONTH61 .. DAY62/MONTH62	MODE

The options in this MODE are:

- OFF
- COMFORT SETPOINT (temperature)
- ECONOMY SETPOINT (temperature)
- USER SETPOINT (temperature)

The unit remains in the selected mode for the entire day during the chosen period.

E.g.

P1	23/12 .. 31/12	OFF
P2	01/01 .. 06/01	OFF
P3	00/00 .. 00/00	-
P4	00/00 .. 00/00	-
P5	00/00 .. 00/00	-
P6	00/00 .. 00/00	-

The unit remains switched off during the period between 23 December and 6 January. The periods P3..P6 are not used

PUBLIC HOLIDAYS

Up to 6 public holidays (special days) can be configured:

D1	DAY1/MONTH1	MODE
D2	DAY2/MONTH2	MODE
D3	DAY3/MONTH3	MODE
D4	DAY4/MONTH4	MODE
D5	DAY5/MONTH5	MODE
D6	DAY6/MONTH6	MODE

The options in this MODE are:

- OFF
- COMFORT SETPOINT (temperature)
- ECONOMY SETPOINT (temperature)
- USER SETPOINT (temperature)

The unit remains in the selected mode for the entire day.

E.g.

D1	08/02	OFF
D2	25/04	OFF
D3	01/05	OFF
D4	02/06	OFF
D5	00/00	-
D6	00/00	-

The unit remains switched off on the days 8 February, 25 April, 1 May and 2 June. The days D5..D6 are not used.

6. DESCRIPTION OF THE USER INTERFACE DISPLAY

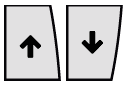
The pGD1 interface and its control buttons are described below.

Description of the buttons:

ESC, return to the main menu or the higher menu

PROG, access the navigation menu

ALARM, access the alarms section to identify and, if necessary, reset any alarms



UP and **DOWN**, for scrolling through and setting the parameters

ENTER, for confirming changes and accessing the parameters to be modified

The interface consists of various sets of masks that can be accessed and scrolled through using the buttons described above.

The index of the various sets (drop-down menu) can be reached by pressing the PROG button.

The active alarms can be viewed by pressing the ALARM button once, and reset by pressing the button twice.

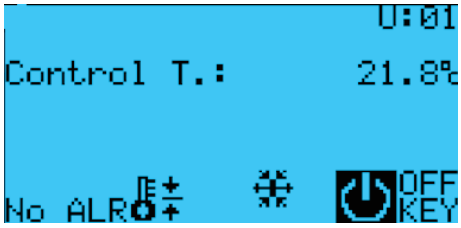
The various menus contain information and parameters arranged according to level of use, some of which require a password (default 1234).

It is possible to scroll through the masks of the same menu by pressing the UP and DOWN buttons. To modify a parameter, use the ENTER button to select the required field and then use the UP and DOWN buttons to modify it, and lastly press the ENTER button to save the changes.

There are various menus and submenus on the interface as described below.

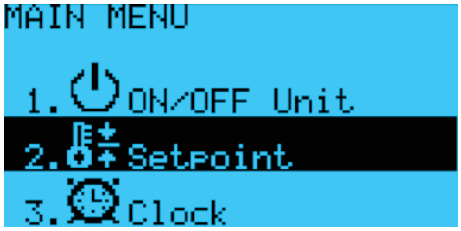
The button to access the menu is in brackets:

Main Menu [ESC]



(example)

Programming menu [PROG]



The options in the Main Menu:

1. ON-OFF
2. SETPOINT
3. CLOCK
4. LOG
5. I/O
6. SERVICE
7. MANUFACT.

Use the [PROG] button to access the various options in the menu and the [UP] and [DOWN] buttons to scroll through the list. After selecting a menu, press [ENTER] to access the masks of the menu, and in the case of submenus scroll through these to find the masks of interest.

Below is a list and description of the various masks of the menus. The values of the parameters shown in the masks are the default ones.

6.1. MENU (TREE)

Below is a tree menu with the various options in the submenus on the user interface:

1. **UNIT ON/OFF**

2. **SETPOINT**

3. **CLOCK**
    1. SET CLOCK
    2. TIME BANDS
    3. HOLIDAYS
    4. PUBLIC HOLIDAYS

4. **LOG**

5. **INPUTS/OUTPUTS**
    1. ANALOGUE INPUTS
    2. DIGITAL INPUTS
    3. ANALOGUE OUTPUTS
    4. DIGITAL OUTPUTS
    5. EC FANS

6. **SERVICE**
    1. MAINTENANCE
    2. SERVICE INFO
    3. PROGRAM INFO
    4. HOUR COUNTER

7. **MANUFACT.**
    1. HW CONFIGURATION
        1. ANALOGUE INPUTS
        2. DIGITAL INPUTS
        3. ANALOGUE OUTPUTS
        4. DIGITAL OUTPUTS
        5. INITIALISATION
    2. CONTROLS
    3. INITIALISATION

6.2. MAIN MENU

U:nn, nn indicates the univocal address of the controllers' local network

Shows the measurements indicated (only if configured by the manufacturer for the application in question).

The field in the figure with the symbol and text OFF KEY can also change to mean the following:

	--- **(empty space)**	Unit on stand-by
	ON **(empty space)**	Unit on
	OFF **ALR**	Unit switched off by an alarm
	OFF **BMS**	Unit switched off from supervision
	OFF **CLK**	Unit switched off from time band
	OFF **DIN**	Unit switched off from digital input
	OFF **KEY**	Unit switched off from keypad
	NGT **PRG**	Night-purge in progress

```
m_Main_M01
+----------------------+
|Main                M01|
|                       |
|Flow Measurement       |
|fans                   |
|Supply       20000m3/h|
|Delivery set 25000m3/h|
|Return       20000m3/h|
|Return set   25000m3/h|
+----------------------+
```

Shows the flows and setpoints of reference for the return and supply sections of the air handling unit.

```
m_Main_M02
+----------------------+
|Main                M02|
|PAC-IF MASTER          |
|                       |
|Probe TH1 :  20.0  °C  |
|Probe TH2 :  20.0  °C  |
|Probe TH5 :  20.0  °C  |
|Probe TH7 :  20.0  °C  |
|Probe TH11:  20.0  °C  |
+----------------------+
```

Shows the temperature probes detected by the PAC-IF control board defined as the master for the various external Mr Slim units.

The same applies for the other external slave units (masks shown on the basis of the number of Mr Slim units configured by the manufacturer).

```
m_Main_M03
+----------------------+
|Main                M03|
|PAC-IF SLAVE 1         |
|                       |
|Probe TH1 :  20.0  °C  |
|Probe TH2 :  20.0  °C  |
|Probe TH5 :  20.0  °C  |
|Probe TH7 :  20.0  °C  |
|Probe TH11:  20.0  °C  |
+----------------------+
```

```
m_Main_M04
+----------------------+
|Main                M04|
|PAC-IF SLAVE 2         |
|                       |
|Probe TH1 :  20.0  °C  |
|Probe TH2 :  20.0  °C  |
|Probe TH5 :  20.0  °C  |
|Probe TH7 :  20.0  °C  |
|Probe TH11:  20.0  °C  |
+----------------------+
```

```
m_Main_M05
+----------------------+
|Main                M05|
|PAC-IF SLAVE 3         |
|                       |
|Probe TH1 :  20.0  °C  |
|Probe TH2 :  20.0  °C  |
|Probe TH5 :  20.0  °C  |
|Probe TH7 :  20.0  °C  |
|Probe TH11:  20.0  °C  |
+----------------------+
```

```
m_Main_M06
+----------------------+
|Main                M06|
|PAC-IF SLAVE 4         |
|                       |
|Probe TH1 :  20.0  °C  |
|Probe TH2 :  20.0  °C  |
|Probe TH5 :  20.0  °C  |
|Probe TH7 :  20.0  °C  |
|Probe TH11:  20.0  °C  |
+----------------------+
```

```
m_Main_M07
+----------------------+
|Main                M07|
|PAC-IF SLAVE 5         |
|                       |
|Probe TH1 :  20.0  °C  |
|Probe TH2 :  20.0  °C  |
|Probe TH5 :  20.0  °C  |
|Probe TH7 :  20.0  °C  |
|Probe TH11:  20.0  °C  |
+----------------------+
```

```
m_Main_M08
+----------------------+
|Main                M08|
|GATEWAY PAC-IF         |
|Step required : 00     |
|Step actived  : 00     |
|Active mode   : Heat   |
|Pre-Defrost   : No     |
|Defrost       : No     |
|Waiting time  : ----   |
+----------------------+
```

The masks M08 and M09 are only visible in IMOUC configuration and show information on the status of the external units and the commands sent to these by the AHU controller.

The delay time is an estimate of the time required to transfer the cooling capacity demand (step) from the GATEWAY to the master PAC-IF board (these are safety times for protecting the compressors of the external units against sudden changes in cooling capacity):

- short (5 minutes)
- long (10 minutes)
- reversal (5 or 10 minutes, depending on the number of steps required)
- off (5 or 10 minutes, depending on the number of steps required during the transition off > on)

The mode:

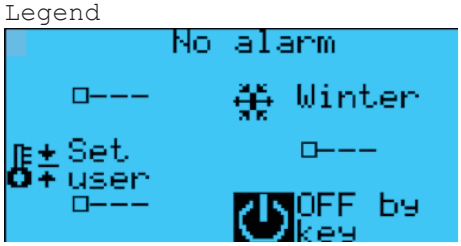
- Hot
- Cold

The status conditions before the defrost and the defrost by the external units are also indicated.

```
m_Main_M09
+----------------------+
|Main                M09|
|GATEWAY PAC-IF        |
|                      |
|Heat          : 000.0%|
|Cool          : 000.0%|
|                      |
|                      |
|                      |
+----------------------+
```

Shows the external units' demand for cooling capacity in heating mode (hot) or cooling mode (cold) from the AHU controller.

Legend



Shows the meaning of the icons in the M00 main mask and the presence of any alarms in progress.

Below are all the icons that are shown in the mask:


Alarm in progress


Configuration error


User setpoint


Economy setpoint


Comfort setpoint


Dehumidify


Humidify


Pause Dehumidify/Humidify


HEATING mode


Night purge active

NGT
PRG


HEATING mode active


COOLING mode


COOLING mode active


Air recirculation damper


Air quality damper


Periodic change of air


Energy saving damper


Active damper


Unit on stand-by


Unit ON


OFF from alarm

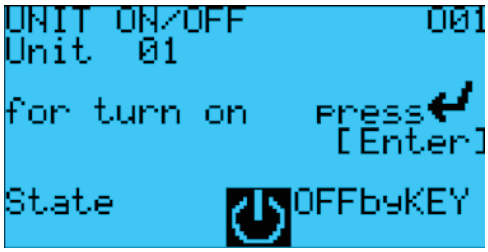

OFF from supervision


OFF from time band


OFF from digital input


OFF from keypad

6.3. ON-OFF DAMPER (only visible in IMOUC mode)



For switching the AHU on/off by directly pressing the ENTER button.

Shows the status of the AHU.

The field in the figure with the symbol and text " Standby" can also change to mean the following:

Stand-by	Unit on stand-by
Unit ON	Unit on
OFFbyALR	Unit switched off by an alarm
OFFbyBMS	Unit switched off from supervision
OFFbyCLK	Unit switched off from time band
OFFbyDIN	Unit switched off from digital input
OFFbyKEY	Unit switched off from keypad
NGT PRG	Night-purge in progress

6.4. SETPOINT MENU

```
m_Setpoint_S01
+----------------------+
|SETPOINT           S01|
|regulation            |
|USER temperature      |
|in use:          20.0C|
|                      |
|Setting :        20.0C|
|                      |
|SUPPLY TEMPERATURE    |
+----------------------+
```

The "In use" field shows the current active setpoint (user/comfort/economy).

The "Setting" field is for modifying the USER temperature setpoint.

Shows the variable for control and, therefore:

- SUPPLY TEMPERATURE
- RETURN TEMPERATURE

The mask is only visible when temperature control is configured.

```
m_Setpoint_S02
+----------------------+
|SETPOINT           S02|
|regulation            |
|USER humidity         |
|in use:         055.0%|
|                      |
|Setting:        055.0%|
|                      |
|SUPPLY HUMIDITY       |
+----------------------+
```

The "In use" field shows the current active setpoint (user/comfort/economy).

The "Setting" field is for modifying the USER temperature setpoint.

Shows the variable for control and, therefore:

- SUPPLY HUMIDITY
- RETURN HUMIDITY

The mask is only visible when humidity control is configured.

```
m_Setpoint_S03
+----------------------+
|SETPOINT           S03|
|regulation            |
|COMFORT               |
|from time periods     |
|                      |
|Temperature :    28.0C|
|Humidity    :   055.0%|
|                      |
+----------------------+
```

The COMFORT temperature and humidity setpoints can be set from time bands.

```
m_Setpoint_S04
+----------------------+
|SETPOINT           S04|
|regulation            |
|ECONOMY               |
|from time periods     |
|                      |
|Temperature :    23.0C|
|Humidity    :   050.0%|
|                      |
+----------------------+
```

The ECONOMY temperature and humidity setpoints can be set from time bands.

```
m_Setpoint_S05
+----------------------+
|SETPOINT           S05|
|regulation            |
|Air quality           |
|                      |
|CO2 :          0900ppm|
|                      |
|                      |
|                      |
+----------------------+
```

The setpoint for air quality control can be set.

The mask is only visible when the air quality probe is configured.

```
m_Setpoint_S06
+----------------------+
|SETPOINT           S06|
|regulation            |
|Manual control of fan |
|                      |
|                      |
|Supply :   000 %      |
|Return :   000 %      |
|                      |
+----------------------+
```

A fixed speed can be set for the fans of the supply and return section.

The mask is only visible when manual control of the supply or return fans is configured.

```
m_Setpoint_S07
+----------------------+
|SETPOINT           S07|
|regulation            |
|Air renewal damper    |
|Manual                |
|                      |
|Air renewal damp.:000%|
|                      |
|                      |
+----------------------+
```

A fixed position can be set for the air recirculation damper.

The mask is only visible when the air recirculation damper and manual air renewal are configured.

6.5. CLOCK MENU/SET CLOCK

```
m_Clk_Setup_K01
+----------------------+
|CLOCK              K01|
|Hour    :        16:54|
|Date    :      26/03/18|
|Day     :        Monday|
|                      |
|Enable time           |
|periods :           No|
|                      |
+----------------------+
```

The date/time/day of the week can be set.

Enables the time bands.

6.6. CLOCK MENU/DAILY TIME PERIODS

```
m_Daily_TZ_K11
+----------------------+
|CLOCK              K11|
|Daily time periods    |
|Day:          Monday  |
|F1:  00:00  User      |
|F2:  00:00  User      |
|F3:  00:00  User      |
|                      |
|Copy towards:MTWTFSS c|
+----------------------+
m_Daily_TZ_K12
+----------------------+
|CLOCK              K12|
|Daily time periods    |
|Day:          Monday  |
|F4:  00:00  User      |
|F5:  00:00  User      |
|F6:  00:00  User      |
|                      |
|Copy towards:MTWTFSS c|
+----------------------+
```

The masks K11 and K12 are for setting the time bands for operation each day of the week.

The mode can be selected for each band.

It is possible to copy the settings of the current day for one or more days of the week: use the UP and DOWN buttons to select a day, select the field "c" and change it to "W" to copy.

6.7. CLOCK MENU/HOLIDAY PERIODS

```
m_Holidays_K21
+----------------------+
|CLOCK              K21|
|Holiday periods 2018  |
|1.:00/00-00/00 User   |
|2.:00/00-00/00 User   |
|3.:00/00-00/00 User   |
|4.:00/00-00/00 User   |
|5.:00/00-00/00 User   |
|6.:00/00-00/00 User   |
+----------------------+
```

In this menu it is possible to set the work mode and start/end date of holiday periods.

6.8. CLOCK MENU/PUBLIC HOLIDAY PERIODS

```
m_SpecDays_K31
+----------------------+
|CLOCK              K31|
|Pub.Holiday 2018      |
|1.:  00/00     User   |
|2.:  00/00     User   |
|3.:  00/00     User   |
|4.:  00/00     User   |
|5.:  00/00     User   |
|6.:  00/00     User   |
+----------------------+
```

In this menu it is possible to set the work mode for each date of a public holiday.

6.9. ALARM LOG MENU

```
M_History_H01
+----------------------+
|ALARM RECORD       H01|
|00:00  00/00/00       |
|Event:   0000         |
|Code :    000         |
|XXX                   |
|YYY                   |
|T.Reg00.0°C  Stp00.0°C|
|H.Reg000.0%  Stp000.0%|
+----------------------+
```

In this menu it is possible to view the last 99 alarms.

The event field indicates the sequential number of the record.

The code field indicates the alarm code.

The lines XXX and YYY give a description of the alarm and of certain events, as indicated below:

- Unit switched on
- Unit switched off from alarm
- Unit switched off from local network
- Unit switched off from BMS
- Unit switched off from active time bands
- Unit switched off from digital input
- Unit switched off from keypad
- External manual override active
- Machine off for Summer/Winter change

Lastly, the control temperature and humidity and the active setpoints at the time of recording the event are shown.

6.10. I/O/ANALOGUE INPUTS MENU

```
m_AIn_Ii1
+----------------------+
|INPUTS/OUTPUTS     Ii1|
|Analogical inputs     |
|   for select. of view|
|                      |
|U01 ---       000.0 ---|
|U02 ---       00000 ---|
|U03 ---       000.0 ---|
|U04 ---       00000 ---|
+----------------------+
```

Use the UP and DOWN buttons to scroll through the 4 measurements shown (analogue inputs).

The "---" is replaced by a short description of the input in relation to the configuration.

6.11. I/O/DIGITAL INPUTS MENU

```
m_DIn_Ii2
+----------------------+
|INPUTS/OUTPUTS     Ii2|
|Digital inputs        |
|   for select. of view|
|                      |
|ID01 ---           C  |
|ID02 ---           C  |
|ID03 ---           C  |
|ID04 ---           C  |
+----------------------+
```

Use the UP and DOWN buttons to scrolls through the 4 measurements shown (digital inputs).

The "---" is replaced by a short description of the input in relation to the configuration.

O= open, C= closed.

6.12. I/O MENU/ANALOGUE OUTPUTS

```
m_AOut_Io1
+----------------------+
|INPUTS/OUTPUTS     Io1|
|Analogical outputs    |
|   for select. of view|
|                      |
|Y1 ---            000%|
|Y2 ---            000%|
|Y3 ---            000%|
|Y4 ---            000%|
+----------------------+
```

Use the UP and DOWN buttons to scroll through the 4 measurements shown (analogue outputs).

The "---" is replaced by a short description of the output in relation to the configuration.

6.13. I/O/DIGITAL OUTPUTS MENU

```
m_DOut_Io2
+----------------------+
|INPUTS/OUTPUTS     Io2|
|Digital outputs       |
|   for select. of view|
|                      |
|NO01 ---           A  |
|NO02 ---           A  |
|NO03 ---           A  |
|NO04 ---           A  |
+----------------------+
```

Use the UP and DOWN buttons to scroll through the 4 measurements shown (digital outputs).

The "---" is replaced by a short description of the output in relation to the configuration.

O= open, C= closed.

6.14. I/O MENU/EC FANS

```
m_IOEC_Fans_G01
+----------------------+
|I/O VENT. EC ZIEHL G01|
|SUPPLY FAN            |
|                      |
|Speed req.    :  040.0%|
|Actual speed :02000rpm|
|Power         : 01000 W|
|Tension       :    100V|
|Temperature   :   30.0C|
+----------------------+
```

The masks in this menu show the measurements relating to operation of the fans in use for the return and supply section.

```
m_IOEC_Fans_G02
+----------------------+
|I/O VENT. EC ZIEHL G02|
|RETURN FAN            |
|                      |
|Speed req.    :  040.0%|
|Actual speed :02000rpm|
|Power         : 01000 W|
|Tension       :    100V|
|Temperature   :   30.0C|
+----------------------+
```

```
m_IOEC_Fans_G03
+----------------------+
|I/O VENT. EC ZIEHL G03|
|SUPPLY FAN 2          |
|                      |
|Speed req.    :  040.0%|
|Actual speed :02000rpm|
|Power         : 01000 W|
|Tension       :    100V|
|Temperature   :   30.0C|
+----------------------+
```

```
m_IOEC_Fans_G04
+----------------------+
|I/O VENT. EC ZIEHL G04|
|RETURN FAN 2          |
|                      |
|Speed req.    :  040.0%|
|Actual speed :02000rpm|
|Power         : 01000 W|
|Tension       :    100V|
|Temperature   :   30.0C|
+----------------------+
```

6.15. ALARM MASKS

```
m_Alarm_001
+----------------------+
|AL001                 |
|                      |
|                      |
|                      |
|SUPPLY AIR TEMPERATURE|
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_002
+----------------------+
|AL002                 |
|                      |
|                      |
|                      |
|SUPPLY AIR HUMIDITY   |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_003
+----------------------+
|AL003                 |
|                      |
|                      |
|                      |
|RETURN TEMPERATURE    |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_004
+----------------------+
|AL004                 |
|                      |
|                      |
|                      |
|RETURN HUMIDITY       |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_005
+----------------------+
|AL005                 |
|                      |
|                      |
|                      |
|OUTSIDE AIR TEMPERAT. |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_006
+----------------------+
|AL006                 |
|                      |
|                      |
|                      |
|SUPPLY PRESSURE       |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_007
+----------------------+
|AL007                 |
|                      |
|                      |
|                      |
|RETURN PRESSURE       |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_008
+----------------------+
|AL008                 |
|                      |
|                      |
|                      |
|RECOVERY EXIT         |
|AIR TEMPERATURE       |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_009
+----------------------+
|AL009                 |
|                      |
|                      |
|                      |
|CO2 PROBE             |
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_010
+----------------------+
|AL010                 |
|                      |
|                      |
|                      |
|ANTIFREEZE TEMPERATURE|
|                      |
|     Probe faulty     |
|      or absent       |
+----------------------+
```

```
m_Alarm_011
+----------------------+
|AL011                 |
|                      |
|                      |
|                      |
|Clock board faulty    |
|or not installed      |
|                      |
|                      |
+----------------------+
```

```
m_Alarm_012
+----------------------+
|AL012                 |
|                      |
|                      |
|                      |
|  Local supervision   |
|absent or disconnected|
|                      |
|                      |
+----------------------+
```

```
m_Alarm_013
+----------------------+
|AL013                 |
|                      |
|                      |
|                      |
|       Antifreeze     |
|                      |
|                      |
|                      |
+----------------------+
```

```
m_Alarm_014
+----------------------+
|AL014                 |
|                      |
|                      |
|                      |
|     Grave alarm      |
|  from digital input  |
|                      |
|                      |
+----------------------+
```

```
m_Alarm_015
+----------------------+
|AL015                 |
|                      |
|                      |
|                      |
|  Fire/smoke sensor   |
|                      |
|                      |
|                      |
+----------------------+
```

m_Alarm_016

AL016
Door opening

m_Alarm_017

AL017
Humidifier

m_Alarm_018

AL018
Hour thresh.exceeded maintenance supply fan

m_Alarm_019

AL019
Hour thresh.exceeded maintenance return fan

m_Alarm_020

AL020
Hour thresh.exceeded maintenance supply fan 2

m_Alarm_021

AL021
Hour thresh.exceeded maintenance return fan 2

m_Alarm_022

AL022
Delivery pre-filter flowswitch dirty

m_Alarm_023

AL023
Return filter flowswitch dirty

m_Alarm_024

AL024
Pocket delivery filter flowswitch dirty

m_Alarm_025

AL025
Delivery low air flow

m_Alarm_026

AL026
Return low air flow

m_Alarm_027

AL027
Heat recovery unit

m_Alarm_028

AL028
Alarm ZIEHL Delivery fan

m_Alarm_029

AL029
Alarm ZIEHL Return fan

m_Alarm_030

AL030
Alarm ZIEHL Delivery fan 2

m_Alarm_031

AL031
Alarm ZIEHL Return fan 2

m_Alarm_032

AL032
PAC-IF board GATEWAY alarm

m_Alarm_033

AL033
PAC-IF board MASTER alarm nnnn

m_Alarm_034

AL034
PAC-IF board SLAVE 1 alarm nnnn

m_Alarm_035

AL035
PAC-IF board SLAVE 2 alarm nnnn

m_Alarm_036

AL036
PAC-IF board SLAVE 3 alarm nnnn

m_Alarm_037

AL037
PAC-IF board SLAVE 4 alarm nnnn

m_Alarm_038

AL038
PAC-IF board SLAVE 5 alarm nnnn

m_Alarm_039

AL039
Post-Heating alarm

m_Alarm_40

AL040
Pre-Heating alarm

7. CHRONOLOGY OF THE DOCUMENT

Rev.	Date	Author	Approved by	Description
00	13-04-2018	MZ	MZ	Issue
01	24-4-2018	MZ	MZ	Updated and revised further to the indications of Schenal / Mitsubishi received 20-4-2018
02	14-5-2018	VA	MZ	Updating of the default values of the parameters indicated in the masks of the user interface.

Legend:
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