Ventilation VTS

Software for air handling units
1.0.014

IMPORTANT

Only qualified personnel may install or carry out technical service on the product.

The customer must only use the product in the manner described in the documentation relating to the product.

In addition to observing any further warnings described in this manual, the following warnings must be heeded for all products:

- Prevent the electronic circuits from getting wet. Rain, humidity and all types of liquids or condensate contain corrosive minerals that may damage the electronic circuits. In any case, the product should be used or stored in environments that comply with the temperature and humidity limits specified in the manual.
- Do not install the device in particularly hot environments. Too high temperatures may reduce the life of electronic devices, damage them and deform or melt the plastic parts. In any case, the product should be used or stored in environments that comply with the temperature and humidity limits specified in the manual.
- Do not attempt to open the device in any way other than described in the manual.
- Do not drop, hit or shake the device, as the internal circuits and mechanisms may be irreparably damaged.
- Do not use corrosive chemicals, solvents or aggressive detergents to clean the device.
- Do not use the product for applications other than those specified in the technical manual.

The technical specifications shown in the manual may be changed without prior warning.

DISPOSAL

INFORMATION FOR USERS ON THE CORRECT HANDLING OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

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

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

KEY TO THE ICONS

	NOTE: to bring attention to a very important subject; in particular, regarding the practical use of the various functions of the product.
	IMPORTANT: to bring critical issues regarding the use to the attention of the user.
	TUTORIAL: some simple examples to accompany the user in configuring the most common settings.

CONTENTS

1. INTRODUCTION

1.1 Main features

Usability and display – The menu-based system allows the application to be configured as a tool for instant diagnostics. All this is possible by the immediately accessible overview screens.

Quick menus - information on the status is accessible directly from the main menu, without needing to access the submenus. Configuration, active function and operating temperature information are arranged in loops of screens, scrolled by pressing the DOWN button from the main screen.

List of functions:

Main features	Application code will determine the unit type
Heat recovery	AD – Supply-exhaust application without recovery
	AG – Supply-exhaust application with glycol heat recovery
	AP – Supply-exhaust application with plate cross-flow recuperator
	AR – Supply-exhaust application with rotary regenerator
	AS – Supply application
Coils management	HW – Water heater
	HE – Electric heater
	CW – Water cooler
	DX – Direct expansion
	CWHW - Cooler heater coil
	EVPR.HMFR – Evaporative humidifier
Fans	Up to 10 supply fans
	Up to 10 exhaust fans
	Option of redundant function with 2 fans
Hardware	uPC3 extra small
User interface	HMI Advanced
Languages	EN
Unit of measure	International
	USA
Alarms	Automatic and manual management
	Log from application
Supervisor protocol	Modbus
	Bacnet

1.2 Field connections

Rotary wheel
Addr. 4

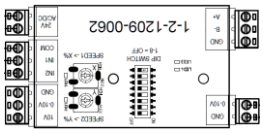
Exhaust CO2
Addr. 21

c.pCOe
Addr. 15
(Optional)

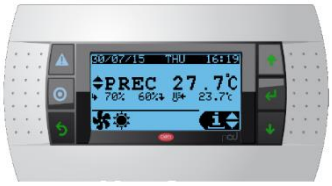
Supply fan (old) 1..5
Addr. 2 - 5 - 7 - 9

Supply Fanwall (max 10pcs.):
Addr. 41, 42, 43, 44, 45,
46, 47, 48, 49, 40

HMI Basic
Addr. 1 (16)

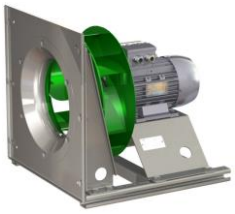


Module I/O – PCB EC
Addr. 13



Exhaust pressure
Addr. 12

Supply pressure
Addr. 11



Exhaust fan (old) 1..5
Addr. 3 - 6 - 8 – 10
Exhaust Fanwall (max 10pcs.):
Addr. 51, 52, 53, 54, 55,
56, 57, 58, 59, 50

Return humidity
Addr. 32

Supply humidity
Addr. 31

Module I/O / Pressure sensor
Mainboard – Control Circuit
Addr. 18

9600,8n1 Modbus

ModBus® master protocol on port **FB**

Display protocol on port **DISP**

2. START UP

It is possible to load/update the application software of the uPC3
controllers family with thw following methods:

- Update via microUSB
- Update from computer by using c.factory (via USB or Ethernet connection)
- Update with file transfer via FTP

Update with file transfer via microUSB

1- Connect to microUSB port

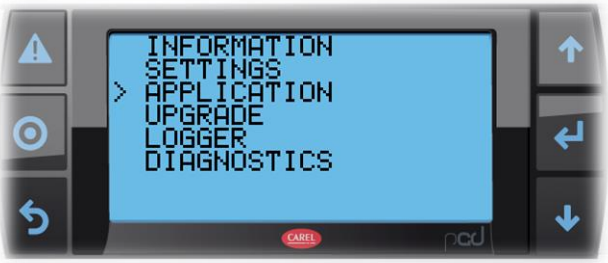
2- Open an My Computer USB Drive

3- Drag&drop the software update file from the directory on the computer to the “UPGRADE” directory on the uPC3 controller

4- Disconnect microUSB cable.
After disconnect cable autorun will start loading new software.

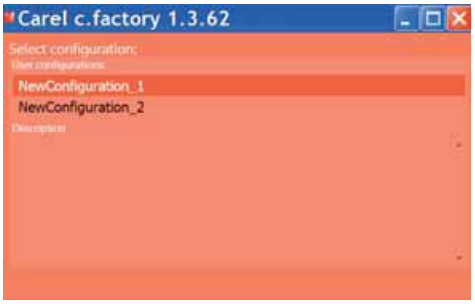
5- Wait for the application to load and the VTS logo to appear

6- After loading - Restart application press Alarm and Enter go to Application and Restart application.



Update from computer using c.factory
On all uPC3 family controllers, the application program can be loaded by using the c.factory software, with direct connection to the controller via USB cable or Ethernet network. To upload the application program, proceed as follows:

Update via Ethernet connection:
Configure the computer and the uPC3 controller so that they belong to the same LAN 1-Open c.factory and select the application program fi le compiled Inc.strategy tool (“.otr” fi le extension). The tool will list the configurations defined in c.design. Select the configuration to be loaded on the controller and click “next”.



2- Select the files to be loaded on the controller and “Ethernet connection” type. Select the MAC address of the uPC3 controller being updated and click “upload”.

3-At the end of the update procedure, the uPC3 controller restarts automatically with the new application program (or new configuration)

Update via USB connection:
Connect the computer to the uPC3 controller via USB cable using device USB port.

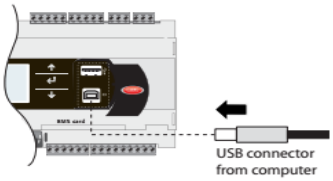
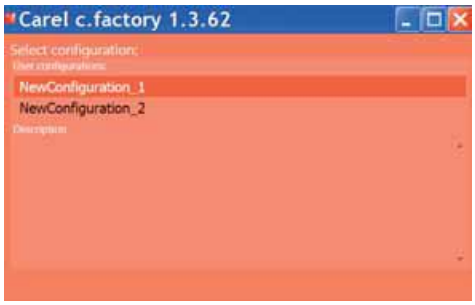


Fig. 6.g

1- Open c.factory and select the application program file compiled in c.suite (".otr" file extension). The tool will list the configurations defined in c.design. Select the configuration to be loaded on the controller and click "next".



2- Select the files be loaded on the controller and "USB Connection" type. Select the serial port that the uPC3 controller is connected to via USB cable and click "upload";

Note: if the uPC3 controller contains an application program that is protected by a different password or digital signature than the new application program, a dialogue box will be shown prompting for the previous password. If the password entered is correct, the new application program can be upladed.

3-At the end of the update procedure, the uPC3 controller restarts automatically with the new application program (or new configuration)

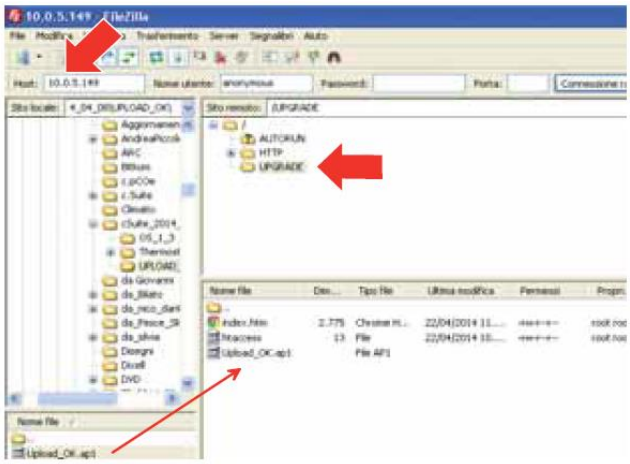
Attention: before updating the uPC3 controller via USB connection, check in the system menu that the Device USB port is enabled (Settings → USB Settings → PC connection)

Updat with file transfer via FTP

The uPC3 family con trollers fitted with Ehternet port include an FTP srver that provided acces to the public partition of the file system. Files and directories in this partion can be read, modified, created and deleted. FTP can also be used to transfer and .ap1 file, for example to update the image of the operating system or the application program. This is done using an FTP client, for example "FileZilla". The default username to access the file system is "anonymous". To protect the contents of the public the file system against unauthorised access, different user can be created, assigning each a different access profile, dedicated to each service and adapted to the individual directory. To update via FTP:

1-Open an FTP client. Enter the IP address of the uPC3 controller and the access credentials (default user "anonymous", no password)

2- Drag&drop the software update file from the directory on the computer to the "UPGRADE" directory on the uPC3 controller

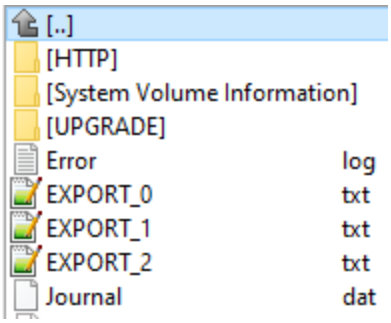


3-Access the system menu on the uPC3 and select "UPGRADE"

Note: when having loaded the update file to the "UPGRADE" directory via FTP, the update procedure can also be started using the virtual terminal.

Before upgrading the software, it is possible to save the existing AHU settings to restore later:

- import / export is done in uPC3 via menu -> unit cfg. -> I11 screen
- the name of the settings file is Export_00 (the "Export" part is fixed, the number is set by the user) - it is possible to save several different configuration settings and import them at the desired time
- the file with the given settings is saved in the internal memory of the controller, it can be accessed via a micro-USB connection or via an ftp server
- import / export is only allowed when the unit is in the "Off" mode - otherwise a message about the lack of import / export will be displayed
- below are three sample configurations saved in export files:



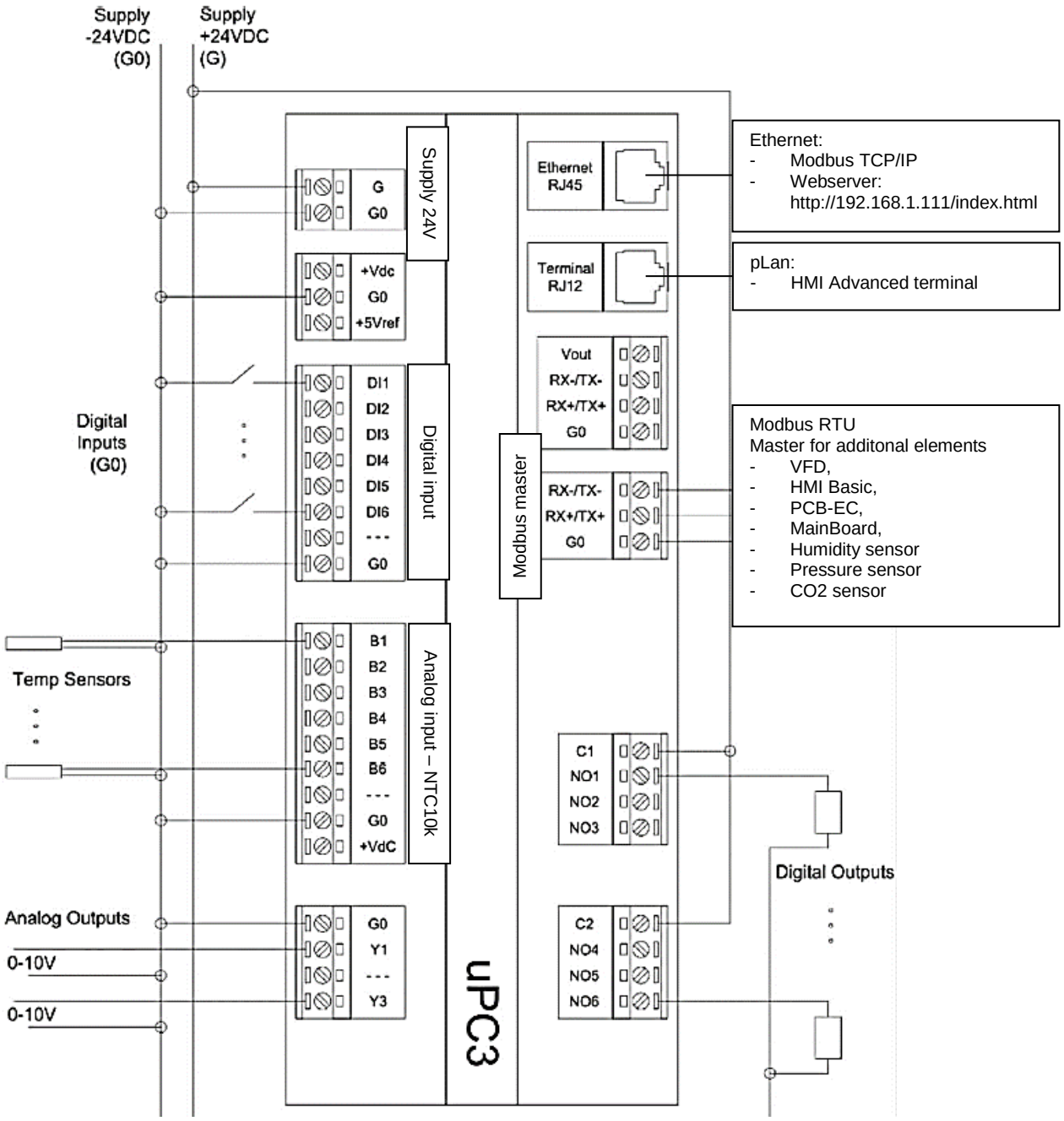
3. INSTALLATION

3.1 I/O configuration

Analog inputs	Descrition	Type	Note
B1	Supply temperature	NTC	Always enabled
B2	Return temperature	NTC	Forced enabled in case of return temperature regulation
B2	Pre-Heater temperature	NTC	Enabled in uunit with Pre-Heaater and Module I/O - MainBoard
B3	Outside temperature	NTC	Always enabled
B4	Recovery protection (Exhaust temperature)	NTC	Enabled in case of recovery
B5	Back water temperature	NTC	Enabled in case of HW unit
B6	Supply after recovery	NTC	Enabled for Compact unit – only information
B6	After preheater temperature	NTC	Enabled in case of preheater
HMI Basic – Temp.	Room temperature	MB	Enabled in case of room temperature regulation or HMI basic
Exp.31 – Hum.	Supply humidity	MB	Enabled in case of any humidity regulation
Exp. 32 - Hum.	Return humidity	MB	Enabled in case of return humidity regulation
Exp. 11 - Press.	Supply air pressure	MB	Enabled in case of fan regulation present
Exp. 12 - Press.	Exhaust air pressure	MB	Enabled in case of fan regulation present and exhaust fan present
Exp. 21 – CO2	CO2 return sensor	MB	Enabled in case of air quality control
Exp. 18 - MainBoard	Supply air pressure	MB	Enabled in case of fan regulation present
Exp. 18 - MainBoard	Exhaust air pressure	MB	Enabled in case of fan regulation present and exhaust fan present
Exp. 18 - MainBoard	Supply filter pressure	MB	Enabled in case of fan regulation present
Exp. 18 - MainBoard	Exhaust filter pressure	MB	Enabled in case of fan regulation present and exhaust fan present
Digital inputs	**Descrition**	**Type**	**Note**
DI1	Fire alarm		Always enabled
DI2	Antifreeze thermostat		Enabled in case of HW option
DI2	Electric heater thermostat alarm		Enabled in case of HE option
DI3	Cooling alarm		Enabled in case of cooling coil enabled
DI4	Humidifier alarm		Always enabled
DI4	Supply filter		Enabled for unit without humidity / DI win/sum / MainBoard activity / PCB-EC activity
DI5	Summer/Winter		Enabled in DXH

DI5	Return filter		Enabled for unit without humidity / DI win/sum / MainBoard activity / PCB-EC activity
DI6	Remote Off or change Mode		On the screen G08 in Menu – In/Out settings you can change the operating mode.
Exp. 13 – PCB EC	Supply filter	MB - IN1	Enabled with PCB EC
Exp. 13 – PCB EC	Exhaust filter	MB - IN2	Enabled with PCB EC
Digital outputs	**Descrition**	**Type**	**Note**
NO1	Main heating (heater or pump)		Enabled in case of heating device
NO1	Re-Heater		Enabled in unit with DX_H and second heater
NO2	Supply and exhaust damper		Always enabled
NO3	Global Alarm		Enabled for unit without reheater or preheater
NO3	ReHeater		Enabled in case of reheater device
NO3	PreHeater		Enabled in case of preheater device
NO4	Main cooling 1 (DX or pump)		Enabled in case of cooling device
NO4	DX_H start		Enabled in case of DX_H device
NO5	Main cooling 2		Enabled in case of cooling 2 step device
NO5	DXH Reverse		Enabled in caes of cooling/heating coil
NO5	Humidity		Enabled in case of humidity device
NO5	Glicol pump		Enabled in case of recovery glicol device
NO5	Redundant		Enabled in case of redundant device
NO6	Heating 2nd stage		Enabled in case of 2nd heating device for HE unit
NO6	Humidifier		Enabled in case of humidifier device
NO6	DX_H 2nd stage		Enabled in case of 2nd DX_H
Analog outputs	**Descrition**	**Type**	**Note**
Y1	Heating output	0-10V	Enabled in case of heating device
Y1	Re-heating output	0-10V	Enabled in case of Re-Heater device
Y3	Cooling output	0-10V	Enabled in case of cooling device
Y3	Mixing damper output	0-10V	Enabled in case of Mixing damper device
Y3	Recovery output	0-10V	Enabled in case of Recovery device
Exp. 13 – PCB EC	Heat recovery	MB-AO1	Enabled in case of heat recovery
Exp. 13 – PCB EC	Mixing chamber signal	MB-AO2	Enabled in case of mixing chamber
Exp. 18 - MainBoard	Heat recovery	MB-AO1	Enabled in case of heat recovery
Exp. 18 - MainBoard	Mixing chamber signal	MB-AO2	Enabled in case of mixing chamber
Exp. 18 - MainBoard	Humidifier	MB-AO3	Enabled in case of humidifier
Exp. 18 - MainBoard	Preheater output	MB-AO4	Enabled in case of preheater

Attention: Structure of the software in class A: the thermal protection safeties for overload and high pressure must act directly on the compressor actuator and are thus wired in series with the command for coil of the compressor contactor.



3.2 Standard input/output for function

I/O **Standard elements for all units**

uPC3 I/O	Descrition	Type	Note
B1	Supply temperature	NTC	
B2	Return temperature	NTC	Optional
B3	Outside temperature	NTC	
DI1	Fire alarm	NC	
DI6	Remote Off	NC	
pLan RJ12	HMI Advanced terminal	pLan	
3-pins RS485	HMI Basic terminal	RS-485	Optional

Expansion module I/O

Compact suspended / floor RRG unit with built-in automation standard equipped with an:

- expansion module I/O – MainBoard Control-Circuit,
- CAV regulation for fan
- all sensor temperature with additional B6 after recovery on supply.
- humidity return sensor

Ventus CBX - Controlbox automation standard equipped with an expansion module I/O – PCB-EC.

Water heater – H_cw

Control

- PID controller - Heating
- PID controller - Protecting the rebate sensor
- Limiting the minimum / maximum signal
- Low air temperature alarm

uPC3 I/O	Descrition	Type	Note
Y1	Heating control signal	0-10V DC	
NO1*	Main heating - Pump	+24V DC 230V AC	
B5	Back water temperature	NTC	Optional
DI2	Antifreeze thermostat	NC	

* For supplying circulation pumps, a relay with + 24 V DC to 230 V AC is available.

Electric heater – HE

Control

- PID controller - Heating
- Limiting the minimum / maximum signal
- Adjustable switching level individual sections

uPC3 I/O	Descrition	Type	Note
Y1	Control of the PWM section	0-10V DC	
NO1	Main heater section 2 – On/Off	+24V DC	
NO6	Main heater section 3 – On/Off	+24V DC	
DI2	Heater alarm	NC	

Water cooler – C_cw

Control

- PID controller - Cooling
- Limiting the minimum / maximum signal

uPC3 I/O	Descrition	Type	Note
Y3	Cooling control signal	0-10V DC	
NO4	Main cooling - Pump	+24V DC	
DI3	Cooler alarm	NC	

DX cooler – C_dx

Control

- PID controller - Cooling
- Limiting the minimum / maximum signal
- Adjustable switching level of individual sections

uPC3 I/O	Descrition	Type	Note
Y3	Cooling control signal	0-10V DC	
NO4	Main cooler section 1 – On/Off	+24V DC	
NO5	Main heater section 2 – On/Off	+24V DC	
DI3	Cooler alarm	NC	

Fan – V

Control

- Standard work percentage control
- PID control for regulation CAV*
- PID control for regulation VAV

uPC3 I/O	Descrition	Type	Note
3-pins RS485	Modbus RTU communication	RS-485	

* CAV standard for Compact unit using the Mainboard module I/O – Control Circuit.

Filters – F

Control

- Compact – Pressure transducer
- Ventus – Pressure switch

uPC3 I/O	Descrition	Type	Note
3-pins RS485*1	Modbus RTU communication	RS-485	Compact
IN1*2	Air supply filter – pressure switch	NC	CBX
IN2*2	Air return filter – pressure switch	NC	CBX
DI4*3	Air supply filter – pressure switch	NC	CBX
DI5*3	Air return filter – pressure switch	NC	CBX

*1 For Compact units the need to use the Mainboard module I/O – Control Circuit.
*2 Input IN1/IN2 available on the PCB-EC extension I/O module.
*3 Input DI4/DI5 available In the case of a unit without a humidifier, DXH.

Recovery – Plate cross / HEX – P

Control

- PID controller - Heat recovery
- PID controller - Cooling recovery
- Limiting the minimum signal

uPC3 I/O	Descrition	Type	Note
B4	Exhaust temperature after recovery – antifreeze protection	NTC	
B6*1	Supply temperature after recovery – in compact unit	NTC	Optional
AO1*2	By-pass actuator	0-10V DC	
Y3*3	By-pass actuator	0-10V DC	Optional

*1 Additional sensor for calculating the recovery efficiency used in compact AHUs.
*2 Output AO1 available on the PCB-EC extension I/O module available for unit without humidifier.
*3 In the case of a unit without a mixing chamber and a cooler, it is possible to use Y3 for recovery.

Recovery - Rotary – R

Control

- PID controller - Heat recovery
- PID controller - Cooling recovery
- Limiting the minimum signal

uPC3 I/O	Description	Type	Note
B4	Exhaust temperature after recovery – antifreeze protection	NTC	
B6*1	Supply temperature after recovery – in compact unit	NTC	Optional
3-pins RS485	Modbus RTU communication	RS-485	

*1 Additional sensor for calculating the recovery efficiency used in compact AHUs.

Recovery - Glycol – G

Control

- PID controller - Heat recovery
- PID controller - Cooling recovery
- Limiting the minimum signal

uPC3 I/O	Description	Type	Note
B4	Exhaust temperature after recovery – antifreeze protection	NTC	
B6*1	Supply temperature after recovery – in compact unit	NTC	Optional
AO1*2	Valve adjustment actuator	0-10V DC	
Y3*3	Valve adjustment actuator	0-10V DC	Optional
NO5*4	Glycol pump	+24V DC	

*1 Additional sensor for calculating the recovery efficiency used in compact AHUs.
*2 Output AO1 available on the PCB-EC extension I/O module available for unit without humidifier.
*3 In the case of a unit without a mixing chamber and a cooler, it is possible to use Y3 for recovery.
*4 In systems without DXH, humidifier, fan redundant.

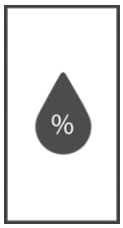
Mixing chamber – M

Control

- PID controller - Heating
- PID controller - Cooling
- PID - CO2 controller
- Limiting the minimum / maximum signal

uPC3 I/O	Description	Type	Note
AO2*1	Valve adjustment actuator	0-10V DC	
Y3*2	Valve adjustment actuator	0-10V DC	Optional

*1 Output AO2 available on the PCB-EC extension I/O module.
*2 In the case of a unit without a recovery and a cooler, it is possible to use Y3 for mixing chamber.



Humidifier – W

Control

- PID controller - Humidity
- PID controller - Compensation for supply air humidity
- Limiting the minimum / maximum signal

uPC3 I/O	Description	Type	Note
3-pins RS485	Humidity transducers Modbus RTU communication	RS-485	
AO1*1	Humidifier control signal	0-10V DC	
NO5*2	Humidifier – On/Off	+24V DC	

*1 Output AO1 available on the PCB-EC extension I/O module.
*2 In the case of a unit without a glycol recovery and a redundant fan, it is possible to use NO5 for humidifier.

DXH Reverse – C_dxh

Control

- PID controller - Heating
- PID controller - Cooling
- Limiting the minimum / maximum signal
- Adjustable switching level of individual sections

uPC3 I/O	Description	Type	Note
Y1	Heating/Cooling control signal	0-10V DC	
NO4	DXH section 1 – On/Off	+24V DC	
NO6	DXH section 2 – On/Off	+24V DC	
NO5*	DXH Reverse – Heat/Cool	+24V DC	
DI2	DXH alarm	NC	

* DXH output available In the case of a unit without humidifier, recovery glycol, redundant fan.

Redundant fan

The fan section contains doubled fans, motors and inverters. One fan is working, the other is a reserve in the event of a failure. In addition, the operating hours counters decide on routine switching between the fans so that the load and wear of both units is uniform. When switching from one fan to another, there is a gap to adjust the position of the dampers directing the air flow.

uPC3 I/O	Description	Type	Note
3-pins RS485	Modbus RTU communication	RS-485	
NO5*	Redundant damper	+24V DC	

* DXH output available In the case of a unit without humidifier, recovery glycol, DXH.

PreHeater

Control
- PID controller – Heating
- Addtitonal temp. sensor

uPC3 I/O	Descrition	Type	Note
AO2	Heating control signal	0-10V DC	For CBX
B6	Temp. after heater	NTC	
AO4	Heating control signal	0-10V DC	For compact
B2	Temp. after heater	NTC	
NO3	Main heating – Start signal	+24V DC	
B5	Back water temperature	NTC	
DI2	Heater alarm	NC	

ReHeater

Control
- PID controller – Heating
- Addtitonal temp. sensor

uPC3 I/O	Descrition	Type	Note
Y1*	Heating control signal	0-10V DC	
NO1*	Main heating – Start signal	+24V DC	
AO2**	Heating control signal	0-10V DC	
NO3**	Main heating – Start signal	+24V DC	
DI2	Heater alarm	NC	

* For systems when the heater behind the DXH exchanger.
** For systems when the heater after the main heater.

4. UNIT CONFIGURATION

4.1 Application code

HMI Advanced ► Menu ► Unit cfg. ► I02

To change application codce Running change to NO and go mask above I01.

Application code is a combination of elements, functions and option sub-codes.

	Code	Val	Options
	Letter code	0	AS: supply application
		1	AD: Supply&Exhaust (S/E)
		2	AR: S/E & Rotary wheel
		3	AG: S/E & Glycol
		4	AP: S/E & Plate cross
1	Main-Heater	0	None
		1	Hot water
		2	Direct expansion
		3	Electric heater
		4	Steam
2	Main-Cooler	0	None
		1	Chilled water
		2	Direct expansion
3	Reverse heat/cool	0	None
		1	Hydronic
		2	Direct expansion
4	Pre-Heater	0	None
		1	Hot water
		2	Direct expansion
		3	Electric heater
5	Re-Heater	0	None
		1	Hot water
		2	Direct expansion
		3	Electric heater
6	Economizer	0	None
		1	Yes
7	Humidifer	0	None
		1	Evaporative Humidifying
		2	Steam
8	uPC3 configuration	6*	Standard
		3	+ HMI Basic (th-Tune)

* For this value the controller has the correct behavior for the value of 0,1,6 for uPC3 XS or 3 for unit with HMI Basic.

In unit configuration mask a parameter “running mode” is provided. It will put the SW in running operation, while in stop mode all the functions, inputs and outputs are bypassed. Before to start the unit, the service must check that everything is set in a correct way.

The application code can change only if the unit is in configuration mode.

Description for other values in the automation code:

For example:
AR|0|2|0|0|1|1|0|6|3|0|0|0|0|0|1

Recovery mode:
0: None
1: Winter
2: Summer
3: Winter + Summmer

For active recovery, winter recovery is the standard. Summer recovery should be activated on the
Menu ► Recovery ► D03 screen

AR|0|2|0|0|1|1|0|6|3|**0**|0|0|0|0|0|1

Redundant fan:
0: NO
1: YES

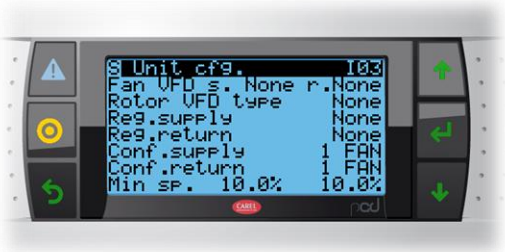
The number of fans is selected on the screen
Menu ► Unit cfg. ► I03

AR|0|2|0|0|1|1|0|6|3|0|**0|0|0|0|1**

The remaining values are system values.

4.2 Modbus devices

HMI Advanced ► Menu ► Unit cfg. ► I03



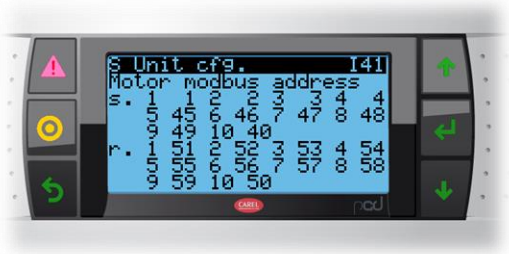
The inverter type can be selected separately for the supply fan, exhaust fan and rotary exchanger.
Type VFD:

- LS iC5
- LS iG5
- ABB ACS
- EC
- DFI

ATTENTION! For the underlined type of VFD it is needed to input the required parameters by VFD keyboard. There is no possibility to configure by uPC3.

Depending on the configuration selected, it is possible to manually change the modbus address of individual motors for supply and return for maximum 10 fans.

HMI Advanced ► Menu ► Unit cfg. ► I41



4.2.1 **LS VFD (iC5 and iG5A)**

For iC5

Parameter	Code	Value	Comment
Way of Control	DRV	3	
Frequency setting metod	Frq	8	
Converter's address in Modbus Network	I60	-	Motor modbus address
Reaction on communication time-out	I62	2	Stop
Communication time-out	I63	30	30 sec.

For iG5

Parameter	Code	Value	Comment
Way of Control	DRV	3	
Frequency setting metod	Frq	7	
Converter's address in Modbus Network	I60	-	Motor modbus address
Reaction on communication time-out	I62	2	Stop

4.2.2 **VTS EC motor**

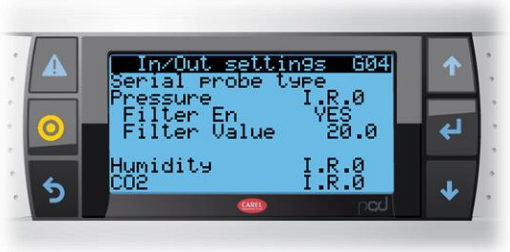
All necessary information in DTR for EC motor.

Additional information.
Procedure how to configure the rotary wheel:
- go to the motor mask Menu ► Unit cfg. ► I03, chose "Rotor VFD type" as EC.
- After that there will new mask " I15" appear below, enter this line
- You'll see the mask "old address: 4, new address: 4"
- There is "Set" option, choose "YES"
- The procedure of setting the fan will be carried out. Once it is successfully finished you'll see the sign "test mode". Note that during setting procedure the other modbus members might give errors, but this is all right.
- Change "Set" option to "NO"
- After the whole procedure restart the controller

4.2.3 **Pressure / Humidity / CO2 sensor**

HMI Advanced ► Menu ► In/Out settings ► G03

Screen on which pressure / humidity / CO2 transducers can be activated. In addition, we can choose the type of pressure transducer on the G04 screen



I.R. – Input register
H.R – Holding register

Command type	Data type	Addr.
InputRegister	INT	0
InputRegister	INT	1
InputRegister	INT	2
InputRegister	INT	3
HoldingRegister	INT	0
HoldingRegister	INT	1
HoldingRegister	INT	2
HoldingRegister	INT	3

Pressure sensor

uPC3 (new)	uPC (old)	
I.R.0	SPS	
I.R.1		
H.R.0	DPT	
	DPC	VTS
H.R.1		

Important information when using an external pressure transducer, turn off the measurement on the Control-Circuit board.
HMI Advanced ► Menu ► Other ► J03/J04

Humidity sensor

uPC3 (new)	uPC (old)	
I.R.0		
I.R.1	DXH	
I.R.2		
H.R.0	HCRH	VTS
H.R.1		
H.R.2	RH	

Important information when using an external humidity transducer, turn off the measurement on the Control-Circuit board.
HMI Advanced ► Menu ► Other ► J03/J04

CO2 sensor

uPC3 (new)	uPC (old)	
I.R.0		
I.R.1		
I.R.2		
H.R.0	HTC	VTS
H.R.1	CDD	
H.R.2		
I.R.3	DSC	
H.R.3		

4.2.4 **Module I/O**

HMI Advanced ► Menu ► Other ► J03

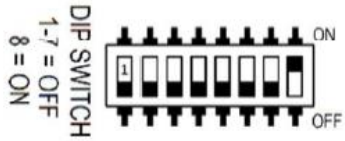
The menu from which we activate individual extension modules.

VTS – MainBoard – Control Circuit

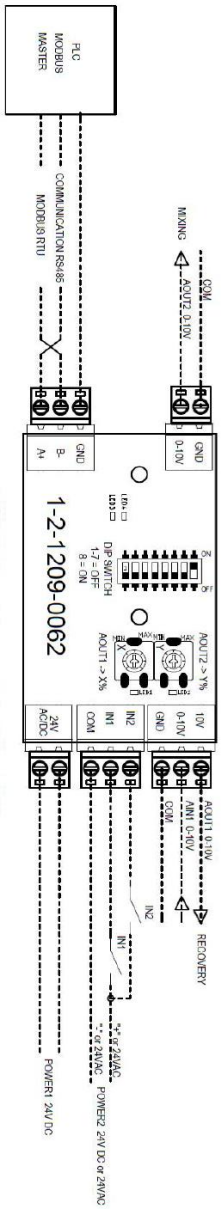
Additional settings for the Control-Circuit module on the screens:

VTS – PCB-EC

For proper operation with the controller uPC3, it is necessary to set the dip switch 8 to ON. This will switch RS-485 communication on the PCB-EC board from Master to Slave and work correctly with the controller.



EC_board is Modbus Slave, can not work without outside plc. Change outputs and read inputs by commands from external PLC controller



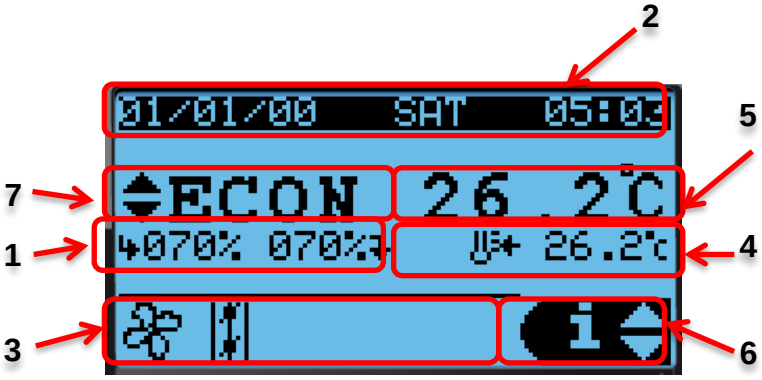
5. USER INTERFACE

5.1 Display HMI Advanced

The terminal, which is shown in the figure above, has 6 buttons whose meanings are described below:

- *Alarm*	Display the list of active alarms Manually reset alarms
- *Prg*	Change work mode
- *Esc*	Return to the previous screen
- *Up* - *Down*	Navigate between the display screens or increase/decrease the value.
- *Enter*	Switch from parameter display to edit Confirm value and return to the parameter list

The following screen displays an example of the main screen with an active unit, highlighting the fields and icons used:



1. Fans speed
2. Date and Time
3. Current unit status:

4. Main temperature regulation
5. Set point
6. Indicates access to the user menu using the UP, DOWN and ENTER keys to confirm
7. Selection of operating mode
   - STOP
   - ECO
   - OPTIMAL
   - COMFORT
   - AUTO (scheduler)

- opening / closing dampers
- fans work
- heating
- cooling
- humidification
- dehumidification
- active recovery
- normal stop
- emergency stop
- active scheduler

Changing the control panel operating mode is possible by pressing the PRG (1) button as many times until the desired operating mode appears on the screen. The mode is accepted by pressing the "ENTER" (2) button. Lack of acceptance within 30s will return you to the previously set mode. In order to cancel the selected mode in advance, you can use the "ESC" button.

5.2 User Menu

On the main screen, the UP and DOWN buttons can be used to scroll through the functions and ENTER used to select them. No password is needed to access and edit these parameters.
PRG button is used to change the work mode. Changing the work mode must be confirmed by the user within 6s by ENTER button. In the absence of confirmation work mode returns to the last value

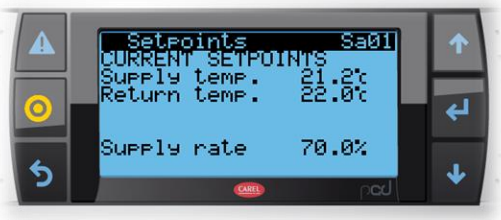
Info
Set
Menu

5.2.1 **Info**

The general synoptics for the unit can be shown from the user menu. The physical status of the inputs, device outputs and probes are available in a menu connected to the synoptics.
The individual screens of the synoptics are shown below.

5.2.2 **Set**

In this menu is possible to see the current setpoint and the working mode, defined by the scheduler. It's possible to set the setpoint of the unit and the scheduler. Set Point is represented by one variable for each mode.



The transition to the setting screen is done using the "UP" / "DOWN" keys. On screens from you can find (depending on the active configuration):

- supply air temperature
- room / extract temperature
- air humidity
- air quality
- efficiency of the supply fan
- exhaust fan efficiency

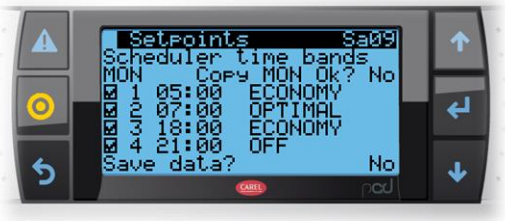
On the screen you can change the settings for each operating mode individually. Moving the cursor to the active field is done by pressing the "ENTER" button. Change in value - with the arrow keys. Accepting the set value and moving to the next field is done by the "ENTER" button.

5.2.3 **Scheduler**

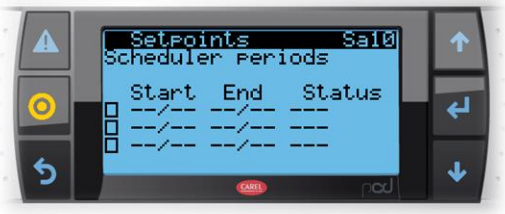
Time zone / date / time
On the scheduler screen, you can select the time zone in which the controller is located and set the current date, time and day of the week.

Time schedule
On clock screen you can set a time schedule.
The time schedule is active when the control is in the AUTO mode.

Basic schedule
The basic daily schedule allows you to program 4 work mode changes, individually for each day.
After setting the schedule for the selected day, this selection should be saved. After saving, it is possible to copy the settings to other days or immediately for the whole week.



Special periods
On the periods screen it is possible to set periods (dates from - to) in which the schedule will be modified. There are settings for three intervals and they have a higher priority than the basic schedule. In this way, the control panel can be programmed eg during holiday periods.



Special days
On the special day screen is possible to set six special days, which have the highest priority.

Implementation of the schedule
Considering the priorities of time schedule settings, the order of their implementation is as follows:

- The first special day settings are those with the highest priority. The other settings are then ignored.
- If a given day is not defined as special, but is in a special period, then the mode for the special period is implemented.
- If both of these do not occur, the basic schedule is implemented.

5.2.4 Menu

Access the main menu

5.3 Menu description

Regardless of the displayed screen, pressing the programming key accesses the password entry screen which allows access to the main menu shown below.
The code of the mask is determined by the menu tree.

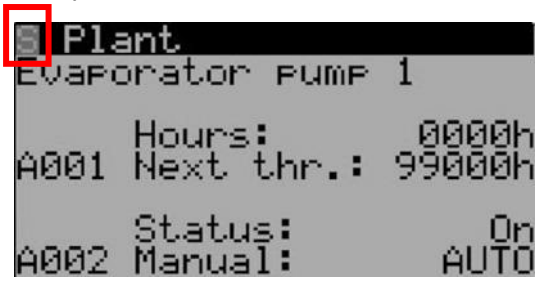
First letter	Second letter	N.
A. Heating	0	0..99
B. Cooling	0	0..99
C. Fans	0	0..99
D. Recovery	0	0..99
E. Mixing	0	0..99
F. Humidifier	0	0..99
G. In/Out settings	0	0..99
	a. Activation sensors	
	b. Offset sensors	
	c. Rotate DI	
	d. Type sensor	
	e. Manual sensor	
H. Settings	0	0..99
I. Unit cfg.	0	0..99
	a. Application code	
	b. Type VFD	
	c. Type regulation	
J. Other	0	0..99
	a. Module I/O	
	b. Export logs	
K. LogOut		0.99

5.3.1 Password Management

The program has 3 different password levels:

1. Advanced user (maintenance): read only access to all parameters. Default password: 0000.
2. Service: read access to all parameters with the ability to edit some of them (for more information on the parameters that can be changed, see the parameters table). Default password: 0001.
3. Manufacturer: read/write access to all parameters. Default password: 0002.

In the parameters screen, the access needed to edit the parameters is shown, always with the same codes. An example follows.



Once the password is entered it will be maintained for 5 minutes from the last time a key was pressed and then the password will need to be re-entered in order to access the parameters of the advanced functions. In the Log-Out menu, the password can be force entered without waiting 5 minutes.

5.4 Display HMI Basic

The basic interface with built-in temperature and humidity sensor (humidity measurement is optional and occurs depending on the chosen configuration).

- HMI Basic also has a built-in clock with support for time schedules.
- LCD display: Indicates the actual temperature in the room or on the main control sensor and the selected setpoint, operating mode, fan speed, time and day of the week.
- On / off button. : Switch between ON / OFF status. (forces the control panel to stop or enables selection of the operating mode)
- Fan button: Setting the fan speed
- Clock button: Entering the Auto mode. The driver will work according to the schedule from the Calendar settings.
- Attention! There are two options for the calendar program. Details in the chapters on the Calendar and Service menu.
- Rotary button: Change of settings - by turning, accepting new values - by pressing.

Attention! To change the temperature setpoints, simply turn the knob.

The terminal, which is shown in the figure above, has 4 buttons whose meanings are described below:

Mode	StandBy mode/Auto
Clock	Enable scheduler
Clock 3s	HMI Basic scheduler settings
Fan	Change working setpoint: 1. ECO 2. OPTIMAL 3. COMFORT 4. STOP
On-Off	Switch ON-OFF HMI Basic display Exit from settings
Encoder 1 press	Check setpoint
Encoder change	Change setpoint
Encoder 2 press	External temperature

PLC waits 5 seconds before saving changed operating mode.

In case of alarm present, the alarm code will appear in the second row of the HMI Basic and the alarm icon will blink.

In case of humidity or temperature setpoint change from th-Tu HMI Basic ne, the setpoint will change until the next change, by scheduler, HMI Advanced or HMI Basic.

In case of StandBy mode by HMI Basic, the unit will be switched OFF. After a settable time from HMI Advanced, the unit will switch ON and it will check the conditions. When the set conditions are reached again, the unit will go to standby condition and it will wait until the next check.

5.5 User setpoint

Temperature setpoint of the unit can be changed by:

- Scheduler
- HMI Basic
- HMI Advanced
- Comfort zone

The last setpoint change that come will wins.

HMI Basic and HMI Advanced can change the working setpoint between ECO, OPTIMAL and COMFORT. This working mode can change the following sets if the functions are activated:

1. Temperature (supply, return or room)
2. Humidity
3. Air pressure (in percentage)
4. Air quality

6. FUNCTIONS

6.1 On request

The On status requires the AND logic of:

- Unit configured by Service
- No serious alarm
- On by digital input
- On by the OR of the following conditions:
  - On by pGD
  - On by BMS
  - On by HMI Basic, if present
  - On by scheduler, if enabled

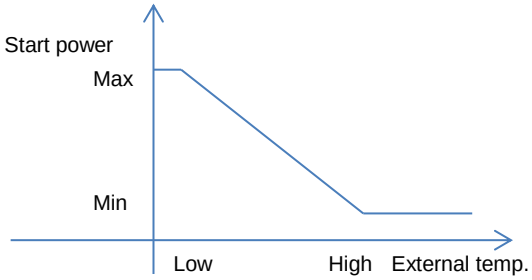
Variable mode is shared with all the control sources

If any condition go to OFF, the uni twill turn OFF.

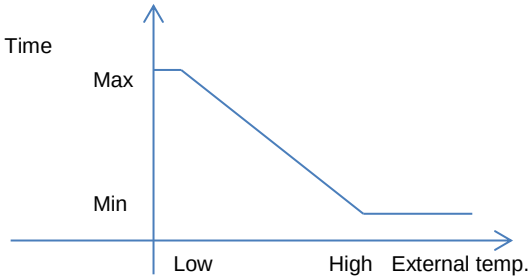
6.2 Start/Stop sequence

When the unit is turned ON by a previous condition the sequence to start will be enabled.
The start sequence is divided into the following steps:

1. The external temperature is checked.
2. If the external temperature is lower than antifreeze setpoint, the heating devices after recovery, will be activated in 60s at power determined by the graph below:

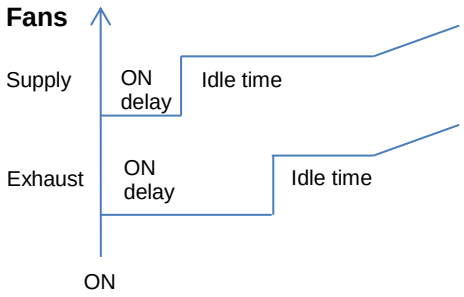


3. The heating power will be kept for a certain time determined by the following graph:

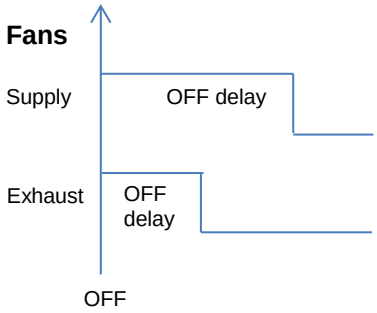


4. In case of external temperature greater than antifreeze setpoint or after the antifreeze sequence timer, the damper can be opened.
5. After 30s the fan can start and devices can regulate. If heating devices are in regulation mode from antifreeze condition, the release of manual mode should not cause a peack on the heating outputs.

When the fans start to regulate, another sequence will start, described below:

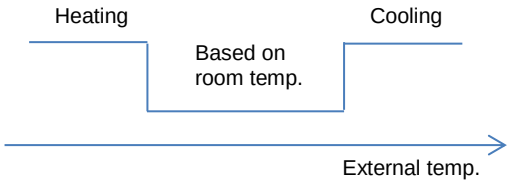


When the unit is turned OFF, the fans will be kept at the previous power and after a settable time they can be turned OFF.

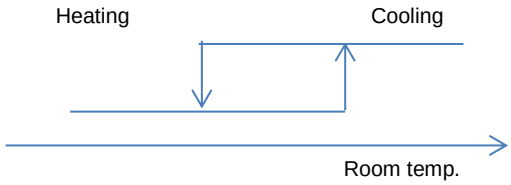


6.3 Cooling/Heating changeover

The external and room/return temperatures are considered: if the external temperature is lower than a minimum threshold or greater than a upper threshold the heating or cooling mode can be forced:



In the middle, between the heating and cooling external temperature thresholds, or when the external temperature probe isn't available the heating or cooling mode will be decided considering the room temperature or the return temperature (if the probes are available), here below it is represented the behaviour in case of room temperature:



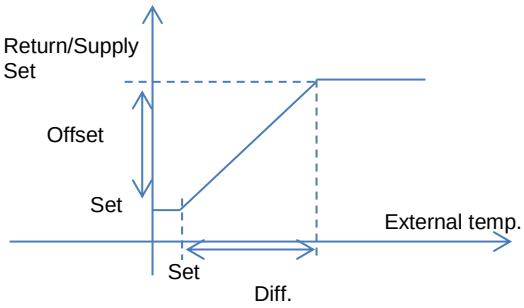
If the room temperature is greater than the setpoint, the unit starts in cooling mode and remains in cooling mode until the room temperature becomes lower than the heating setpoint for a settable time, then the heating mode is activated with the heating setpoint. In the same way, if the starting temperature is lower than the heating setpoint the unit starts in heating mode and remains in heating mode until the room temperature becomes greater than the cooling setpoint for a settable time.

6.4 Temperature regulation strategy

6.4.1 External compensation

In case the external temperature probe is present, it is possible to adjust the temperature setpoint accordingly to the value read by this probe. The compensation can be direct or reverse and it is done adding an offset to the temperature setpoint.

The compensation is done only with room or return air temperature regulation. In case of supply temperature regulation there is no need for compensation, because it is the regulation itself that acts to compensate the external conditions.



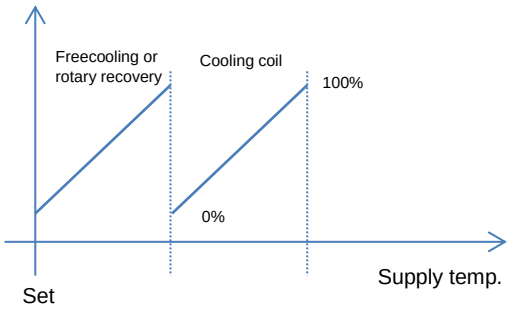
6.4.2 Return/Room regulation

The regulation of the unit could be done according to return, supply or room set.
The calculation of supply set in case of return or room regulation is done by a PID that change the setpoint between a min and max value.

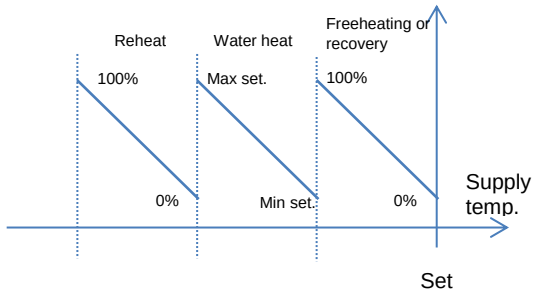
6.4.3 Supply regulation

The temperature regulation is based on supply temperature and its setpoint. If the setpoint set is the room set or return set, this will be converted to supply set.

To calculate the power of devices, a PID sequence is used.
The following graph show the PID sequence in case of cooling:



The following graph show the PID sequence in case of heating:



With a unique setpoint and different sets of PID parameters, the first request is calculated with a standard PID. The second request starts when the first one has reached 100%. The setpoint for the second device regulation is the same, while the PID set of parameters is different. According to the PID behaviour of the second device, the percentage of activation of the second device at the start up should be equal to ‘’offset’’, but thanks to the incremental PID it is possible to consider only the last calculated delta so that there aren’t any bumps, then the second device will start from the minimum output, then it will regulate according to PID parameters and supply temperature.

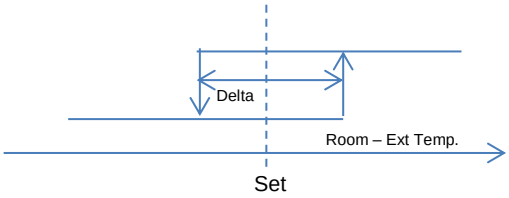
In case we have 2 devices and one is not available when required from the sequential PID regulation - for activation conditions not verified (i.e. freecooling/freeheating conditions) or active alarms - the request passes to the other one. If the first device becomes available again the device will be turned on at 100%.

6.5 Fresh air regulation

In case of unit without the mixing damper, the supply air is always coming from the outside: if the external temperature is better than the room or return temperature and the activation of freecooling/freeheating is verified (external temperature lower than the regulation temperature

of a settable delta), the bypass damper opens and the heat exchanger is bypassed.

In the following picture we represent the ''freecooling'' enabling, that in case of unit without the mixing damper is the by-pass damper activation condition, considering as example the room temperature as regulation variable.
The freecooling is enabled if the external temperature is higher than the lower supply temperature threshold, while the freeheating is enabled if the external temperature is lower than the upper supply temperature threshold.



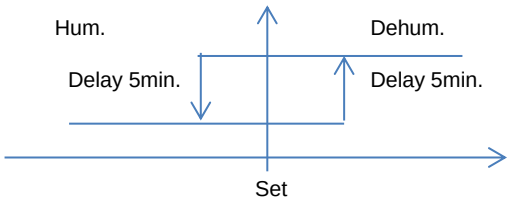
The bypass damper can be modulated to reach the desired temperature for the supply air temperature, because the freecooling can be considered as the first step of sequential PID regulation.
In case of unit with the mixing damper, the freecooling/freeheating conditions are the same, but mixing damper and external one modulate accordingly, and the logic acts on the bypass damper as in the previous case.

6.5.1 Night kick

If the unit is in standby mode, the unit start at a certain hour in the night to check the conditions and if there is requests, the unit switch ON. When conditions are reached, the unit goes back to standby.

6.6 Humidity regulation

The regulation of the unit could be done according to return, supply or room set.
The regulation of humidity in this SW is done by absolute humidity.
Absolute humidity set is the conversion between the actual temperature setpoint (room, return or supply) and the humidity set that the user can change.
Absolute humidity is the conversion between the actual temperature and the humidity of room, return or supply.
Based of these convertions it's possible to determine if the unit should go in humidifying or dehumidifying mode. When the humidity goes to change mode, a delay of 5 minutes is provided to avoid fast change of humidity control.



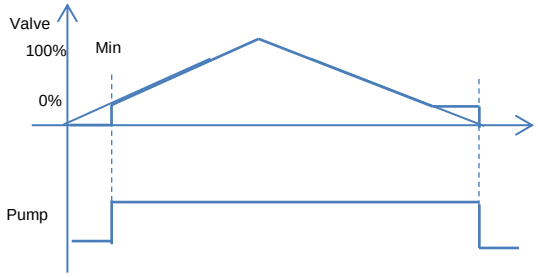
In case of regulation on return or room temperature, the application check the supply humidity limits to avoid water of the ducts. Closer the supply humidity is to the limits, lower the humidity PID can act.
In case of regulation on supply, the humidity request goes directly to the devices.

In case of dehumidifying:
- The signal to control the cooling devices is calculate from the maximum between output temperature PID and the output humidity PID.
- The main heating devices are disabled and the reheaters works to compensate the cooling effect.

6.7 Devices activation

6.7.1 Hydronic circuits

Below the description of how the water circuits works in the application. Valves could be present according application code in main cool, main heat, reverse, preheat and reheat sides.
The PID sequence calculate a request 0-100% that could be directly executed by the valves or in some cases, the request is used to calculate the setpoint for the water, in case the water temperature is present.
Here below the regulation of hot water devices:



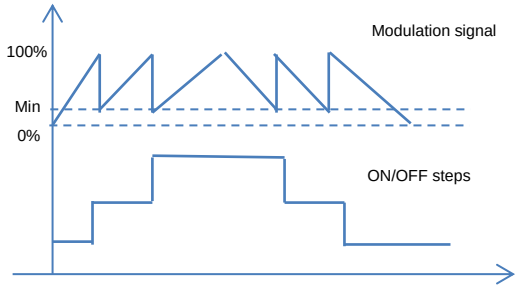
6.7.2 Heaters

Below the description of how the heaters works in the application. Heaters could be present according application code in main, preheat and reheat sides.
The PID sequence calculate a request 0-100% that is directly executed by the heaters.
Maximum heaters managed are 2 ON-OFF and 1 modulating.
The SW need the power of each heater to divide the power in the best way.
The modulating device has the highest priority and there isn't any rotation, but in case of devices with different power, the priority of ON-OFF devices can

change to satisfy in the best way the request by thermoregulation.

Here below an example with devices with the same power:
Min inverter power: 20%
Max heaters power: 33.3kW
In this case the second heater will start when the request reach the threshold calculated in the following way:

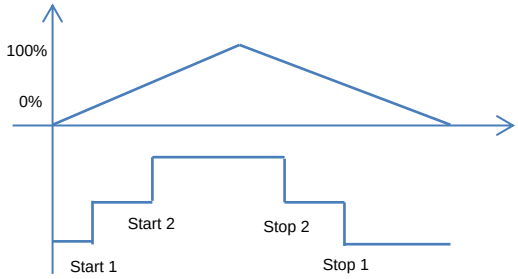
Before to start the ON-OFF device, the request must be greater than 20% of the power of the second device.
Here below the graph:



It's possible to set different power of the heaters, so the ON sequence will be different to follow the request from PID loop.

6.7.3 Direct expansion (DX)

Below the description of how the direct expansions circuit works in the application. DX could be present according application code in main cool, main heat, reverse, preheat and reheat sides.
The PID sequence calculate a request 0-100% that is executed by ON-OFF devices and by a modulating device.
Each ON-OFF device has a threshold to start the device and a threshold to stop the device.
The modulating element will follow the request from PID sequence.

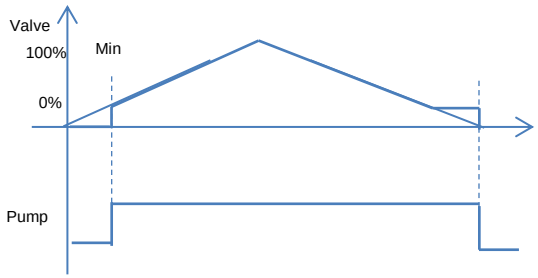


Between the stages activation there is a timinings control, listed below:

1. Minimum On time
2. Minimum Off time
3. Time between same device.

6.7.4 Steam

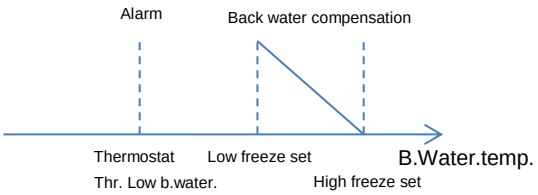
Below the description of how the steam device works in the application. Steam device could be present in the main heater only.
The PID sequence calculate a request 0-100% that is directly executed by the steam actuator.
Here below the regulation of device:



Steam device doesn't need antifreeze and frost protection.

6.8 Antifreeze management

Antifreeze management is divided in different stages.
Startup: described in start/stop sequence paragraph.
Running: see preheater regulation.
Low temperature by thermostat: in case of low temperature by thermostat the fans are stopped, the damper are closed and the heating devices are forced to 100%.



Low back water condition: if the back water temp. is too low the unit behave in the same way of low temperature by thermostat.
If the back water temp. is lower, according to another threshold, the back water temperature set is compensated with a delta according to the external temperature.

6.8.1 PreHe: Preheater

The device will modulate accoding to its PID settings to keep the setpoint based on after preheater coil temperature.
Main goal of this device is prepare air for recovery and to avoid antifreeze condition for heat recovery device. In case of hot water coil, the request from the PID on after coil temperature is used to calculate the setpoint of the water, then another PID calculate the opening of the valve.

6.9 Fans control

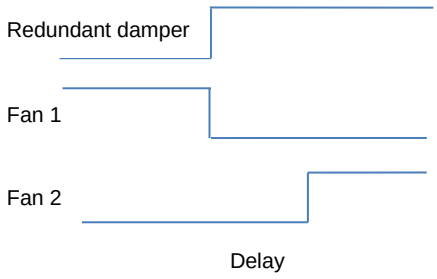
There could be up to 4 fans in supply and exhaust according to unit size.

6.9.1 Single fan

In case of single fan, the fan will start according to sequence and it will regulate according to the setpoint calculated by the application.

6.9.2 Redundant fans

In case of redundant fans, one fan will be on, while the other is an emergency fan. Every settable hour, the fan will switch to keep the same working hours. Even in case of alarm on the working fan, the SW will try to switch to the other fan that can work.
The procedure for the redundant fans are:



A delay is provided to allow the damper to open or close.

6.9.3 Multi Fan

In the multifan regulation, the fans will start at the same time and they will regulate according to the same request.

6.9.4 Regulation

The regulation of the fan can be done according to:

1. None
2. CAV regulation
3. VAV regulation
4. Follow supply (for exaust only)

If there isn't any regulation, the setpoint defined by scheduler will be actuated by the fans.
In case of VAV regulation, the air pressure is used as input of the PID and the setpoint is in Pa.
In case of CAV regulation, the air pressure is used to calculate the air volume in m3/h.
The formula to calcula the air volume is:
*AirFlow:=K_Factor*SQRT(AirPress)*

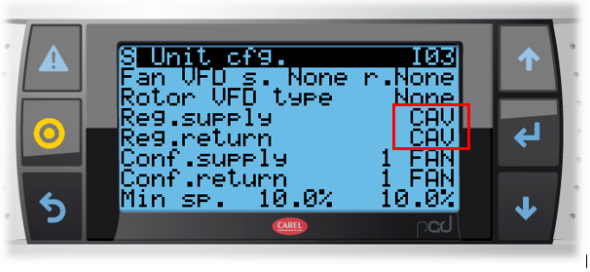
Perc – value is changed when is changing work mode.

K factor is defined by the fan code:

Id.	Mask description	K factor value
0	CUSTOM	Custom by UI
1	VS-225	46.0
2	VS-250	56.0
3	VS-315	105.0
4	VS-355	132.0
5	VS-400	154.0
6	VS-450	205.0
7	VS-500	258.0
8	VS-560	336.0
9	VS-630	402.0
10	VS-190	36.0

It's possible in Setpoint loop to change the fan speed according to unit mode (Eco, Optimal, Comfort). The value is in percentage of the setpoint of the fan in service menu.

Selecting the adjustment mode for fan on the screen Menu ► Unit cfg. ► I03



In the case of CAV regulation (To maintain a constant output) on the fan configuration screen we set extreme parameters for a given device:
Menu ► Fans ► C05

In the case of VAV regulation (To maintain constant pressure) on the fan configuration screen we set extreme parameters for a given device:
Menu ► Fans ► C06

Change of set point is at following screens Sa06 and Sa07 – you set the percentage of 0-100% in reference to the value set in parameters.
For example: 60% - means 60% of nominal airflow.

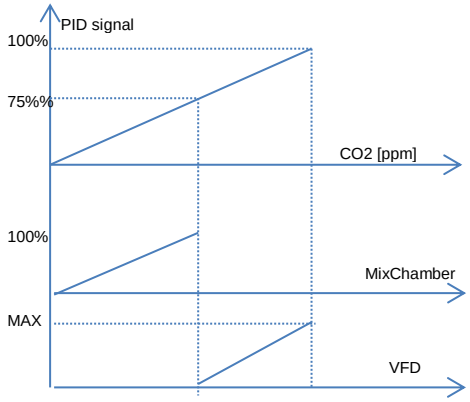
6.10 Mixing chamber control

Acccording to CO2 value, if present, a PID will calculate the request for the mixing chamber.
If the PID is higher, then the mixing chamber will close more and more.
The greater request between CO2 request and freecooling/freeheating, will actuate the damper.

The mixing chamber can be setup from service in the following ways to bypass the request by freecooling and CO2 in the following ways:
Disabled: the mixing chamber is always closed and the recovery is always active.
Enabled at startup: at startup there could be a fast heating option to by pass the external condition for a while and allows the devices to warm up quickly.
Enabled by request: by request from HMI Advanced is possible to enable the mixing damper until the temperature conditions reach the setpoint.

6.11 CO_2 Regulation

A signal is split and has a direct impact on the degree of participation of outside air and provides a correction signal to drive the VFD. VFD correction signal is limited to the MAX allowable adjustments.



6.12 Minor functions

6.12.1 Antistuck procedure

In case of pumps or steam configured, the SW must check if the pumps stayed OFF for a long time. After one week of pump off, it has to start in any condition to avoid the risk of stack. The valve will open at 100%. Time is not saved in permanent memory.

6.12.2 Fire alarm

In case of fire alarm by digital input or in case of exhaust temperature > 70°C, the fire alarm procedure is activated.
All the devices are stop, but the fan can run according to service parameter.

6.12.3 Filter alarm

When the dirty filter alarm is active, it is possible to increment the fans speed of a settable %.

6.12.4 Forcing I/O

It's possible to force the input values and the outputs values in In/Out settings menu.

6.12.5 Scheduler

On the HMI Basic it is possible to set the number of enabled bands (maximum 6), for each one the starting time and the setpoint of the room temperature.
Both for uPC3 scheduler and HMI Basic it will be possible to apply the time bands set to all the days of the week, Monday to Friday, Saturday and Sunday, day by day.

On the uPC3 there will be 4 time bands and for each one it will be possible to set the starting time and the unit status (Off, Economy, Pre-comfort, Comfort). For each status there will be a set of values applied: main regulation setpoint, humidity setpoint (if any humidity probe is present), CO2

level or air flow setpoint (if differential pressure probe is present).
Besides the daily time band, it will be possible to set up to 3 special periods and 6 special days, for each one it will be possible to set the unit status (Off, Economy, Pre-comfort, Comfort, Auto).

The time bands of the uPC3 and the set of the HMI Basic have the same priority. The last set that comes it will wins.
The options of the scheduler are:

1. No scheduler
2. Scheduler by uPC3
3. Scheduler by HMI Basic
4. Scheduler by uPC3, activation by HMI Basic

7. SUPERVISOR

Communication protocols uPC3:

1. Internal ethernet connection:
   - Modbus TCP/IP: 192.168.1.111:502
   - Webserver: http://192.168.1.111/

2. External (optional) card:
   - Modbus TCP_IP with webserver (pCOWeb) - DHCP
   - Modbus RS-485

List of variables available in the document: uPC3 – BMS Variable

8. ALARMS

8.1 Alarms interface

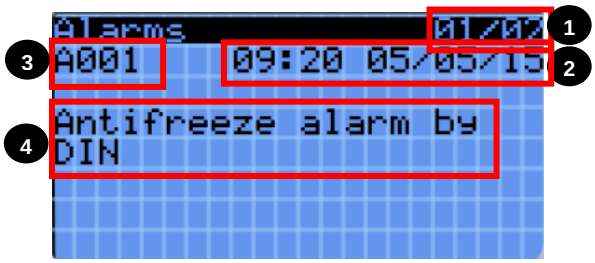
8.1.1 Alarms screen and LEDs

Pressing the ALARM key can occur in two different situations - no alarm or one alarm present.

If there is no alarm, the following screen is displayed:

This screen makes it possible to easily enter the alarms log using the ENTER key.

If there is at least one alarm, the alarms screen is displayed sorted by alarm code from lesser to greater.



Each alarm contains the information needed to understand the cause of the alarm.
The information available in the screen is shown below:

1. Alarm number/total alarms;
2. Alarm date and time;
3. Unique alarm code;
4. Long alarm description;
5. Value of the probe linked to the alarm;

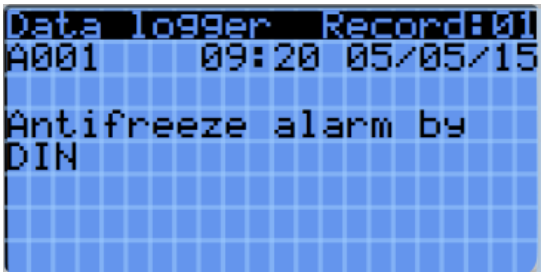
In every alarm screen, the alarms log can be displayed by pressing ENTER.

The red LED under the ALARM button can be:

- Off: no active alarm;
- Flashing: there is at least one active alarm and the display shows a screen that is not part of the alarms loop.
- On: there is at least one active alarms and a screen that is part of the alarms loop is displayed.

8.1.2 Alarms log

From the main menu, entering the Alarms Log menu allows access to the following alarms log display screen.



The alarms log memorizes the operation status when the alarms are triggered. Each log entry is an even that can be displayed from among all of the events available in the memory.
The information saved in the alarms screen will also be saved in the alarms log. The maximum number of events that can be saved is 100. Once the limit is reached, the most recent alarm will overwrite the oldest one. The alarms log can be cleared in the Settings menu or by restoring the uPC3 to default values.

8.1.3 Reset alarms

The alarms can be reset manually, automatically or automatically with retries:

- Manual reset: when the cause of the alarm has stopped, the buzzer must first be reset using the ALARM button and then the ALARM button pressed a second time for a true reset. At this point, even the specific alarm action is reset and the device can restart.
- Automatic reset: when the alarm condition stops automatically, the buzzer is silenced and the alarm reset.
- Automatic reset with retries: The number of interventions per hour is checked. If that number is less than the set maximum, the alarm is on automatic reset, once the limit is exceeded it becomes manual.

Code	Description	Reset	Counter	Time [ms]
A000	Supply fan 1 - Ground fault	User reset		
A001	Supply fan 1 - Inverter overheat	User reset		
A002	Supply fan 1 - Motor overheat	User reset		
A003	Supply fan 1 - Overload	User reset		
A004	Supply fan 1 - Phase open	User reset		
A005	Supply fan 1 - Overvoltage	User reset		
A006	Supply fan 1 - Low voltage	User reset		
A007	Supply fan 1 - Overcurrent	User reset		
A008	Supply fan 1 - Inverter overload	User reset		
A009	Supply fan 1 - Heat sink overheat	User reset		
A010	Supply fan 1 - DC overload	User reset		
A011	Supply fan 1 - Phase lost	User reset		
A012	Supply fan 1 - Electric thermal	User reset		
A013	Supply fan 1 - Parameter save error	User reset		
A014	EC Supply fan 8 - Overvoltage	User reset		
A015	Supply fan 1 - HW fault	User reset		
A016	Supply fan 1 - Communication error	User reset		
A017	Supply fan 1 - Cooling fan fault	User reset		
A018	Supply fan 1 - Cut off	User reset		
A019	Supply fan 1 - External fault A	User reset		
A020	Supply fan 1 - External fault B	User reset		
A021	Supply fan 1 - Option	User reset		
A022	Supply fan 1 - Offline	User reset		
A023	Supply fan 1 - Alarm	User reset		
A024	Supply fan 2 - Ground fault	User reset		
A025	Supply fan 2 - Inverter overheat	User reset		
A026	Supply fan 2 - Motor overheat	User reset		
A027	Supply fan 2 - Overload	User reset		
A028	Supply fan 2 - Phase open	User reset		
A029	Supply fan 2 - Overvoltage	User reset		
A030	Supply fan 2 - Low voltage	User reset		
A031	Supply fan 2 - Overcurrent	User reset		
A032	Supply fan 2 - Inverter overload	User reset		
A033	Supply fan 2 - Heat sink overheat	User reset		
A034	Supply fan 2 - DC overload	User reset		
A035	Supply fan 2 - Phase lost	User reset		
A036	Supply fan 2 - Electric thermal	User reset		
A037	Supply fan 2 - Parameter save error	User reset		
A038	Supply fan 2 - HW fault	User reset		
A039	Supply fan 2 - Communication error	User reset		
A040	Supply fan 2 - Cooling fan fault	User reset		
A041	Supply fan 2 - Cut off	User reset		
A042	Supply fan 2 - External fault A	User reset		
A043	Supply fan 2 - External fault B	User reset		
A044	Supply fan 2 - Option	User reset		

A045	Supply fan 2 - Offline	User reset
A046	Supply fan 2 - Alarm	User reset
A047	Supply fan 3 - Ground fault	User reset
A048	Supply fan 3 - Inverter overheat	User reset
A049	Supply fan 3 - Motor overheat	User reset
A050	Supply fan 3 - Overload	User reset
A051	Supply fan 3 - Phase open	User reset
A052	Supply fan 3 - Overvoltage	User reset
A053	Supply fan 3 - Low voltage	User reset
A054	Supply fan 3 - Overcurrent	User reset
A055	Supply fan 3 - Inverter overload	User reset
A056	Supply fan 3 - Heat sink overheat	User reset
A057	Supply fan 3 - DC overload	User reset
A058	Supply fan 3 - Phase lost	User reset
A059	Supply fan 3 - Electric thermal	User reset
A060	Supply fan 3 - Parameter save error	User reset
A061	Supply fan 3 - HW fault	User reset
A062	Supply fan 3 - Communication error	User reset
A063	Supply fan 3 - Cooling fan fault	User reset
A064	Supply fan 3 - Cut off	User reset
A065	Supply fan 3 - External fault A	User reset
A066	Supply fan 3 - External fault B	User reset
A067	Supply fan 3 - Option	User reset
A068	Supply fan 3 - Offline	User reset
A069	Supply fan 3 - Alarm	User reset
A070	Supply fan 4 - Ground fault	User reset
A071	Supply fan 4 - Inverter overheat	User reset
A072	Supply fan 4 - Motor overheat	User reset
A073	Supply fan 4 - Overload	User reset
A074	Supply fan 4 - Phase open	User reset
A075	Supply fan 4 - Overvoltage	User reset
A076	Supply fan 4 - Low voltage	User reset
A077	Supply fan 4 - Overcurrent	User reset
A078	Supply fan 4 - Inverter overload	User reset
A079	Supply fan 4 - Heat sink overheat	User reset
A080	Supply fan 4 - DC overload	User reset
A081	Supply fan 4 - Phase lost	User reset
A082	Supply fan 4 - Electric thermal	User reset
A083	Supply fan 4 - Parameter save error	User reset
A084	Supply fan 4 - HW fault	User reset
A085	Supply fan 4 - Communication error	User reset
A086	Supply fan 4 - Cooling fan fault	User reset
A087	Supply fan 4 - Cut off	User reset
A088	Supply fan 4 - External fault A	User reset
A089	Supply fan 4 - External fault B	User reset
A090	Supply fan 4 - Option	User reset

A091	Supply fan 4 - Offline	User reset
A092	Supply fan 4 - Alarm	User reset
A093	Return fan 1 - Ground fault	User reset
A094	Return fan 1 - Inverter overheat	User reset
A095	Return fan 1 - Motor overheat	User reset
A096	Return fan 1 - Overload	User reset
A097	Return fan 1 - Phase open	User reset
A098	Return fan 1 - Overvoltage	User reset
A099	Return fan 1 - Low voltage	User reset
A100	Return fan 1 - Overcurrent	User reset
A101	Return fan 1 - Inverter overload	User reset
A102	Return fan 1 - Heat sink overheat	User reset
A103	Return fan 1 - DC overload	User reset
A104	Return fan 1 - Phase lost	User reset
A105	Return fan 1 - Electric thermal	User reset
A106	Return fan 1 - Parameter save error	User reset
A107	Return fan 1 - HW fault	User reset
A108	Return fan 1 - Communication error	User reset
A109	Return fan 1 - Cooling fan fault	User reset
A110	Return fan 1 - Cut off	User reset
A111	Return fan 1 - External fault A	User reset
A112	Return fan 1 - External fault B	User reset
A113	Return fan 1 - Option	User reset
A114	Return fan 1 - Offline	User reset
A115	Return fan 1 - Alarm	User reset
A116	Return fan 2 - Ground fault	User reset
A117	Return fan 2 - Inverter overheat	User reset
A118	Return fan 2 - Motor overheat	User reset
A119	Return fan 2 - Overload	User reset
A120	Return fan 2 - Phase open	User reset
A121	Return fan 2 - Overvoltage	User reset
A122	Return fan 2 - Low voltage	User reset
A123	Return fan 2 - Overcurrent	User reset
A124	Return fan 2 - Inverter overload	User reset
A125	Return fan 2 - Heat sink overheat	User reset
A126	Return fan 2 - DC overload	User reset
A127	Return fan 2 - Phase lost	User reset
A128	Return fan 2 - Electric thermal	User reset
A129	Return fan 2 - Parameter save error	User reset
A130	Return fan 2 - HW fault	User reset
A131	Return fan 2 - Communication error	User reset
A132	Return fan 2 - Cooling fan fault	User reset
A133	Return fan 2 - Cut off	User reset
A134	Return fan 2 - External fault A	User reset
A135	Return fan 2 - External fault B	User reset
A136	Return fan 2 - Option	User reset

A137	Return fan 2 - Offline	User reset
A138	Return fan 2 - Alarm	User reset
A139	Return fan 3 - Ground fault	User reset
A140	Return fan 3 - Inverter overheat	User reset
A141	Return fan 3 - Motor overheat	User reset
A142	Return fan 3 - Overload	User reset
A143	Return fan 3 - Phase open	User reset
A144	Return fan 3 - Overvoltage	User reset
A145	Return fan 3 - Low voltage	User reset
A146	Return fan 3 - Overcurrent	User reset
A147	Return fan 3 - Inverter overload	User reset
A148	Return fan 3 - Heat sink overheat	User reset
A149	Return fan 3 - DC overload	User reset
A150	Return fan 3 - Phase lost	User reset
A151	Return fan 3 - Electric thermal	User reset
A152	Return fan 3 - Parameter save error	User reset
A153	Return fan 3 - HW fault	User reset
A154	Return fan 3 - Communication error	User reset
A155	Return fan 3 - Cooling fan fault	User reset
A156	Return fan 3 - Cut off	User reset
A157	Return fan 3 - External fault A	User reset
A158	Return fan 3 - External fault B	User reset
A159	Return fan 3 - Option	User reset
A160	Return fan 3 - Offline	User reset
A161	Return fan 3 - Alarm	User reset
A162	Return fan 4 - Ground fault	User reset
A163	Return fan 4 - Inverter overheat	User reset
A164	Return fan 4 - Motor overheat	User reset
A165	Return fan 4 - Overload	User reset
A166	Return fan 4 - Phase open	User reset
A167	Return fan 4 - Overvoltage	User reset
A168	Return fan 4 - Low voltage	User reset
A169	Return fan 4 - Overcurrent	User reset
A170	Return fan 4 - Inverter overload	User reset
A171	Return fan 4 - Heat sink overheat	User reset
A172	Return fan 4 - DC overload	User reset
A173	Return fan 4 - Phase lost	User reset
A174	Return fan 4 - Electric thermal	User reset
A175	Return fan 4 - Parameter save error	User reset
A176	Return fan 4 - HW fault	User reset
A177	Return fan 4 - Communication error	User reset
A178	Return fan 4 - Cooling fan fault	User reset
A179	Return fan 4 - Cut off	User reset
A180	Return fan 4 - External fault A	User reset
A181	Return fan 4 - External fault B	User reset
A182	Return fan 4 - Option	User reset

A183	Return fan 4 - Offline	User reset		
A184	Return fan 4 - Alarm	User reset		
A185	Rotary VFD - Ground fault	User reset		
A186	Rotary VFD - Inverter overheat	User reset		
A187	Rotary VFD - Motor overheat	User reset		
A188	Rotary VFD - Overload	User reset		
A189	Rotary VFD - Phase open	User reset		
A190	Rotary VFD - Overvoltage	User reset		
A191	Rotary VFD - Low voltage	User reset		
A192	Rotary VFD - Overcurrent	User reset		
A193	Rotary VFD - Inverter overload	User reset		
A194	Rotary VFD - Heat sink overheat	User reset		
A195	Rotary VFD - DC overload	User reset		
A196	Rotary VFD - Phase lost	User reset		
A197	Rotary VFD - Electric thermal	User reset		
A198	Rotary VFD - Parameter save error	User reset		
A199	Rotary VFD - HW fault	User reset		
A200	Rotary VFD - Communication error	User reset		
A201	Rotary VFD - Cooling fan fault	User reset		
A202	Rotary VFD - Cut off	User reset		
A203	Rotary VFD - External fault A	User reset		
A204	Rotary VFD - External fault B	User reset		
A205	Rotary VFD - Option	User reset		
A206	Rotary VFD - Offline	User reset		
A207	Rotary VFD - Alarm	User reset		
A208	IO Module - c.pCOe - Offline	Auto reset		
A209	IO Module - c.pCOe - Configuration error	Auto reset		
A210	Supply air pressure - Offline	Auto reset		
A211	Return air pressure - Offline	Auto reset		
A212	Supply humidity - Offline	Auto reset		
A213	Return humidity - Offline	Auto reset		
A214	Supply temperature - Probe not working	Auto reset		
A215	Cooling device - Alarm	User reset		
A216	Antifreeze alarm - By digital input	Auto reset until counter	3	3600
A217	Prototype software	Auto reset		
A218	High number of retain - Memory writings	User reset		
A219	Error in retain - Memory writings	User reset		
A220	Return temperature - Probe not working	Auto reset		
A221	External temperature - Probe not working	Auto reset		
A222	CO2 air quality - Probe not working	Auto reset		
A223	Return recovery temp. - Probe not working	Auto reset		
A224	Basic - TH-Tune - Offline	Auto reset		
A225	Supply temperature - Out of range	User reset		
A226	Supply air flow - Warning	User reset		
A227	Return air flow - Warning	User reset		
A228	Humidifier - Alarm	User reset		

A229	Humidifier - Maintenance required	Auto reset		
A230	Return fan - Maintenance required	Auto reset		
A231	Supply fan - Maintenance required	Auto reset		
A232	Reheating coil - Maintenance required	Auto reset		
A233	Heat recovery - Maintenance required	Auto reset		
A234	Supply filter - Alarm	Auto reset		
A235	Return filter - Return filter alarm	Auto reset		
A236	Basic - TH-Tune - Clock not working	Auto reset		
A237	Basic - TH-Tune - Temperature probe not working	Auto reset		
A238	Basic - TH-Tune - Humidity probe not working	Auto reset		
A239	BMS offline - BMS offline	Auto reset		
A240	Supply diff. pressure - Probe not working	User reset		
A241	Return diff. pressure - Probe not working	User reset		
A242	Fire alarm - By digital input	User reset		
A243	Heating coil - Water temperature probe not working	Auto reset		
A244	Preheating coil - Water temperature probe not working	Auto reset		
A245	After preheating coil - Water temperature probe not working	Auto reset		
A246	Heating device - Alarm	Auto reset until counter	3	3600
A247	Fire alarm - By temperature	User reset		
A248	Fan group - Alarm	Auto reset		
A249	Antifreeze alarm - Heat back water temperature	Auto reset until counter	3	3600
A250	Antifreeze alarm - Preheat back water temperature	Auto reset until counter	3	3600
A251	Supply fan 5 - Ground fault	User reset		
A252	Supply fan 5 - Inverter overheat	User reset		
A253	Supply fan 5 - Motor overheat	User reset		
A254	Supply fan 5 - Overload	User reset		
A255	Supply fan 5 - Phase open	User reset		
A256	Supply fan 5 - Overvoltage	User reset		
A257	Supply fan 5 - Low voltage	User reset		
A258	Supply fan 5 - Overcurrent	User reset		
A259	Supply fan 5 - Inverter overload	User reset		
A260	Supply fan 5 - Heat sink overheat	User reset		
A261	Supply fan 5 - DC overload	User reset		
A262	Supply fan 5 - Phase lost	User reset		
A263	Supply fan 5 - Electric thermal	User reset		
A264	Supply fan 5 - Parameter save error	User reset		
A265	Supply fan 5 - HW fault	User reset		
A266	Supply fan 5 - Communication error	User reset		
A267	Supply fan 5 - Cooling fan fault	User reset		
A268	Supply fan 5 - Cut off	User reset		
A269	Supply fan 5 - External fault A	User reset		
A270	Supply fan 5 - External fault B	User reset		
A271	Supply fan 5 - Option	User reset		
A272	Supply fan 5 - Offline	User reset		
A273	Supply fan 5 - Alarm	User reset		
A274	Return fan 5 - Ground fault	User reset		

A275	Return fan 5 - Inverter overheat	User reset
A276	Return fan 5 - Motor overheat	User reset
A277	Return fan 5 - Overload	User reset
A278	Return fan 5 - Phase open	User reset
A279	Return fan 5 - Overvoltage	User reset
A280	Return fan 5 - Low voltage	User reset
A281	Return fan 5 - Overcurrent	User reset
A282	Return fan 5 - Inverter overload	User reset
A283	Return fan 5 - Heat sink overheat	User reset
A284	Return fan 5 - DC overload	User reset
A285	Return fan 5 - Phase lost	User reset
A286	Return fan 5 - Electric thermal	User reset
A287	Return fan 5 - Parameter save error	User reset
A288	Return fan 5 - HW fault	User reset
A289	Return fan 5 - Communication error	User reset
A290	Return fan 5 - Cooling fan fault	User reset
A291	Return fan 5 - Cut off	User reset
A292	Return fan 5 - External fault A	User reset
A293	Return fan 5 - External fault B	User reset
A294	Return fan 5 - Option	User reset
A295	Return fan 5 - Offline	User reset
A296	Return fan 5 - Alarm	User reset
A297	EC Supply fan 1 - Undervoltage	Auto reset
A298	EC Supply fan 1 - Overvoltage	Auto reset
A299	EC Supply fan 1 - IGBTOvercurrent	User reset
A300	EC Supply fan 1 - Hot	User reset
A301	EC Supply fan 1 - Phase Loss	User reset
A302	EC Supply fan 1 - Parameters CRC	User reset
A303	EC Supply fan 1 - Circuit fault	User reset
A304	EC Supply fan 1 - Motor fault	User reset
A305	EC Supply fan 1 - Too hot	User reset
A306	EC Supply fan 1 - I2R IGBT fault	User reset
A307	EC Supply fan 2 - Undervoltage	Auto reset
A308	EC Supply fan 2 - Overvoltage	Auto reset
A309	EC Supply fan 2 - IGBTOvercurrent	User reset
A310	EC Supply fan 2 - Hot	User reset
A311	EC Supply fan 2 - Phase Loss	User reset
A312	EC Supply fan 2 - Parameters CRC	User reset
A313	EC Supply fan 2 - Circuit fault	User reset
A314	EC Supply fan 2 - Motor fault	User reset
A315	EC Supply fan 2 - Too hot	User reset
A316	EC Supply fan 2 - I2R IGBT fault	User reset
A317	EC Return fan 1 - Undervoltage	Auto reset
A318	EC Return fan 1 - Overvoltage	Auto reset
A319	EC Return fan 1 - IGBTOvercurrent	User reset
A320	EC Return fan 1 - Hot	User reset

A321	EC Return fan 1 - Phase Loss	User reset
A322	EC Return fan 1 - Parameters CRC	User reset
A323	EC Return fan 1 - Circuit fault	User reset
A324	EC Return fan 1 - Motor fault	User reset
A325	EC Return fan 1 - Too hot	User reset
A326	EC Return fan 1 - I2R IGBT fault	User reset
A327	EC Return fan 2 - Undervoltage	Auto reset
A328	EC Return fan 2 - Overvoltage	Auto reset
A329	EC Return fan 2 - IGBTOvercurrent	User reset
A330	EC Return fan 2 - Hot	User reset
A331	EC Return fan 2 - Phase Loss	User reset
A332	EC Return fan 2 - Parameters CRC	User reset
A333	EC Return fan 2 - Circuit fault	User reset
A334	EC Return fan 2 - Motor fault	User reset
A335	EC Return fan 2 - Too hot	User reset
A336	EC Return fan 2 - I2R IGBT fault	User reset
A337	Temperature Probe - Recovery Supply	Auto reset
A338	IO Module - MainBoard - Offline	User reset
A339	IO Module - MainBoard - Alarm sensor temperature	User reset
A340	IO Module - MainBoard - Alarm sensor humidity	User reset
A341	IO Module - MainBoard - Alarm pressure supply fan	User reset
A342	IO Module - MainBoard - Alarm pressure supply filter	User reset
A343	IO Module - MainBoard - Alarm pressure return fan	User reset
A344	IO Module - MainBoard - Alarm pressure return filter	User reset
A345	IO Module - MainBoard - Alarm analog output 1	User reset
A346	IO Module - MainBoard - Alarm analog output 2	User reset
A347	IO Module - MainBoard - Alarm analog output 3	User reset
A348	IO Module - MainBoard - Alarm analog output 4	User reset
A349	IO Module - MainBoard - Alarm temperature supply fan	User reset
A350	IO Module - MainBoard - Alarm temperature supply filter	User reset
A351	IO Module - MainBoard - Alarm temperature return fan	User reset
A352	IO Module - MainBoard - Alarm temperature return filter	User reset
A353	IO Module - MainBoard - Alarm supply 24V	User reset
A354	IO Module - MainBoard - Alarm control temperature	User reset
A355	IO Module - MainBoard - Alarm control supply	User reset
A356	IO Module - MainBoard - Alarm AO - PWM	User reset
A357	Config - Offline	User reset
A358	Config - Error Alarm	User reset
A359	Supply fan 6 - Offline	User reset
A360	Supply fan 7 - Offline	User reset
A361	Supply fan 8 - Offline	User reset
A362	Supply fan 9 - Offline	User reset
A363	Supply fan 10 - Offline	User reset
A364	Return fan 6 - Offline	User reset
A365	Return fan 7 - Offline	User reset
A366	Return fan 8 - Offline	User reset

A367	Return fan 9 - Offline	User reset
A368	Return fan 10 - Offline	User reset
A369	Supply fan 6 - Ground fault	User reset
A370	Supply fan 6 - Inverter overheat	User reset
A371	Supply fan 6 - Motor overheat	User reset
A372	Supply fan 6 - Overload	User reset
A373	Supply fan 6 - Phase open	User reset
A374	Supply fan 6 - Overvoltage	User reset
A375	Supply fan 6 - Low voltage	User reset
A376	Supply fan 6 - Overcurrent	User reset
A377	Supply fan 6 - Inverter overload	User reset
A378	Supply fan 6 - Heat sink overheat	User reset
A379	Supply fan 6 - DC overload	User reset
A380	Supply fan 6 - Phase lost	User reset
A381	Supply fan 6 - Electric thermal	User reset
A382	Supply fan 6 - Parameter save error	User reset
A383	Supply fan 6 - HW fault	User reset
A384	Supply fan 6 - Communication error	User reset
A385	Supply fan 6 - Cooling fan fault	User reset
A386	Supply fan 6 - Cut off	User reset
A387	Supply fan 6 - External fault A	User reset
A388	Supply fan 6 - External fault B	User reset
A389	Supply fan 6 - Option	User reset
A390	Supply fan 6 - Alarm	User reset
A391	Return fan 6 - Ground fault	User reset
A392	Return fan 6 - Inverter overheat	User reset
A393	Return fan 6 - Motor overheat	User reset
A394	Return fan 6 - Overload	User reset
A395	Return fan 6 - Phase open	User reset
A396	Return fan 6 - Overvoltage	User reset
A397	Return fan 6 - Low voltage	User reset
A398	Return fan 6 - Overcurrent	User reset
A399	Return fan 6 - Inverter overload	User reset
A400	Return fan 6 - Heat sink overheat	User reset
A401	Return fan 6 - DC overload	User reset
A402	Return fan 6 - Phase lost	User reset
A403	Return fan 6 - Electric thermal	User reset
A404	Return fan 6 - Parameter save error	User reset
A405	Return fan 6 - HW fault	User reset
A406	Return fan 6 - Communication error	User reset
A407	Return fan 6 - Cooling fan fault	User reset
A408	Return fan 6 - Cut off	User reset
A409	Return fan 6 - External fault A	User reset
A410	Return fan 6 - External fault B	User reset
A411	Return fan 6 - Option	User reset
A412	Return fan 6 - Alarm	User reset

A413	Supply fan 7 - Ground fault	User reset
A414	Supply fan 7 - Inverter overheat	User reset
A415	Supply fan 7 - Motor overheat	User reset
A416	Supply fan 7 - Overload	User reset
A417	Supply fan 7 - Phase open	User reset
A418	Supply fan 7 - Overvoltage	User reset
A419	Supply fan 7 - Low voltage	User reset
A420	Supply fan 7 - Overcurrent	User reset
A421	Supply fan 7 - Inverter overload	User reset
A422	Supply fan 7 - Heat sink overheat	User reset
A423	Supply fan 7 - DC overload	User reset
A424	Supply fan 7 - Phase lost	User reset
A425	Supply fan 7 - Electric thermal	User reset
A426	Supply fan 7 - Parameter save error	User reset
A427	Supply fan 7 - HW fault	User reset
A428	Supply fan 7 - Communication error	User reset
A429	Supply fan 7 - Cooling fan fault	User reset
A430	Supply fan 7 - Cut off	User reset
A431	Supply fan 7 - External fault A	User reset
A432	Supply fan 7 - External fault B	User reset
A433	Supply fan 7 - Option	User reset
A434	Supply fan 7 - Alarm	User reset
A435	Return fan 7 - Ground fault	User reset
A436	Return fan 7 - Inverter overheat	User reset
A437	Return fan 7 - Motor overheat	User reset
A438	Return fan 7 - Overload	User reset
A439	Return fan 7 - Phase open	User reset
A440	Return fan 7 - Overvoltage	User reset
A441	Return fan 7 - Low voltage	User reset
A442	Return fan 7 - Overcurrent	User reset
A443	Return fan 7 - Inverter overload	User reset
A444	Return fan 7 - Heat sink overheat	User reset
A445	Return fan 7 - DC overload	User reset
A446	Return fan 7 - Phase lost	User reset
A447	Return fan 7 - Electric thermal	User reset
A448	Return fan 7 - Parameter save error	User reset
A449	Return fan 7 - HW fault	User reset
A450	Return fan 7 - Communication error	User reset
A451	Return fan 7 - Cooling fan fault	User reset
A452	Return fan 7 - Cut off	User reset
A453	Return fan 7 - External fault A	User reset
A454	Return fan 7 - External fault B	User reset
A455	Return fan 7 - Option	User reset
A456	Return fan 7 - Alarm	User reset
A457	Supply fan 8 - Ground fault	User reset
A458	Supply fan 8 - Inverter overheat	User reset

A459	Supply fan 8 - Motor overheat	User reset
A460	Supply fan 8 - Overload	User reset
A461	Supply fan 8 - Phase open	User reset
A462	Supply fan 8 - Overvoltage	User reset
A463	Supply fan 8 - Low voltage	User reset
A464	Supply fan 8 - Overcurrent	User reset
A465	Supply fan 8 - Inverter overload	User reset
A466	Supply fan 8 - Heat sink overheat	User reset
A467	Supply fan 8 - DC overload	User reset
A468	Supply fan 8 - Phase lost	User reset
A469	Supply fan 8 - Electric thermal	User reset
A470	Supply fan 8 - Parameter save error	User reset
A471	Supply fan 8 - HW fault	User reset
A472	Supply fan 8 - Communication error	User reset
A473	Supply fan 8 - Cooling fan fault	User reset
A474	Supply fan 8 - Cut off	User reset
A475	Supply fan 8 - External fault A	User reset
A476	Supply fan 8 - External fault B	User reset
A477	Supply fan 8 - Option	User reset
A478	Supply fan 8 - Alarm	User reset
A479	Return fan 8 - Ground fault	User reset
A480	Return fan 8 - Inverter overheat	User reset
A481	Return fan 8 - Motor overheat	User reset
A482	Return fan 8 - Overload	User reset
A483	Return fan 8 - Phase open	User reset
A484	Return fan 8 - Overvoltage	User reset
A485	Return fan 8 - Low voltage	User reset
A486	Return fan 8 - Overcurrent	User reset
A487	Return fan 8 - Inverter overload	User reset
A488	Return fan 8 - Heat sink overheat	User reset
A489	Return fan 8 - DC overload	User reset
A490	Return fan 8 - Phase lost	User reset
A491	Return fan 8 - Electric thermal	User reset
A492	Return fan 8 - Parameter save error	User reset
A493	Return fan 8 - HW fault	User reset
A494	Return fan 8 - Communication error	User reset
A495	Return fan 8 - Cooling fan fault	User reset
A496	Return fan 8 - Cut off	User reset
A497	Return fan 8 - External fault A	User reset
A498	Return fan 8 - External fault B	User reset
A499	Return fan 8 - Option	User reset
A500	Return fan 8 - Alarm	User reset
A501	Supply fan 9 - Ground fault	User reset
A502	Supply fan 9 - Inverter overheat	User reset
A503	Supply fan 9 - Motor overheat	User reset
A504	Supply fan 9 - Overload	User reset

A505	Supply fan 9 - Phase open	User reset
A506	Supply fan 9 - Overvoltage	User reset
A507	Supply fan 9 - Low voltage	User reset
A508	Supply fan 9 - Overcurrent	User reset
A509	Supply fan 9 - Inverter overload	User reset
A510	Supply fan 9 - Heat sink overheat	User reset
A511	Supply fan 9 - DC overload	User reset
A512	Supply fan 9 - Phase lost	User reset
A513	Supply fan 9 - Electric thermal	User reset
A514	Supply fan 9 - Parameter save error	User reset
A515	Supply fan 9 - HW fault	User reset
A516	Supply fan 9 - Communication error	User reset
A517	Supply fan 9 - Cooling fan fault	User reset
A518	Supply fan 9 - Cut off	User reset
A519	Supply fan 9 - External fault A	User reset
A520	Supply fan 9 - External fault B	User reset
A521	Supply fan 9 - Option	User reset
A522	Supply fan 9 - Alarm	User reset
A523	Return fan 9 - Ground fault	User reset
A524	Return fan 9 - Inverter overheat	User reset
A525	Return fan 9 - Motor overheat	User reset
A526	Return fan 9 - Overload	User reset
A527	Return fan 9 - Phase open	User reset
A528	Return fan 9 - Overvoltage	User reset
A529	Return fan 9 - Low voltage	User reset
A530	Return fan 9 - Overcurrent	User reset
A531	Return fan 9 - Inverter overload	User reset
A532	Return fan 9 - Heat sink overheat	User reset
A533	Return fan 9 - DC overload	User reset
A534	Return fan 9 - Phase lost	User reset
A535	Return fan 9 - Electric thermal	User reset
A536	Return fan 9 - Parameter save error	User reset
A537	Return fan 9 - HW fault	User reset
A538	Return fan 9 - Communication error	User reset
A539	Return fan 9 - Cooling fan fault	User reset
A540	Return fan 9 - Cut off	User reset
A541	Return fan 9 - External fault A	User reset
A542	Return fan 9 - External fault B	User reset
A543	Return fan 9 - Option	User reset
A544	Return fan 9 - Alarm	User reset
A545	Supply fan 10 - Ground fault	User reset
A546	Supply fan 10 - Inverter overheat	User reset
A547	Supply fan 10 - Motor overheat	User reset
A548	Supply fan 10 - Overload	User reset
A549	Supply fan 10 - Phase open	User reset
A550	Supply fan 10 - Overvoltage	User reset

A551	Supply fan 10 - Low voltage	User reset
A552	Supply fan 10 - Overcurrent	User reset
A553	Supply fan 10 - Inverter overload	User reset
A554	Supply fan 10 - Heat sink overheat	User reset
A555	Supply fan 10 - DC overload	User reset
A556	Supply fan 10 - Phase lost	User reset
A557	Supply fan 10 - Electric thermal	User reset
A558	Supply fan 10 - Parameter save error	User reset
A559	Supply fan 10 - HW fault	User reset
A560	Supply fan 10 - Communication error	User reset
A561	Supply fan 10 - Cooling fan fault	User reset
A562	Supply fan 10 - Cut off	User reset
A563	Supply fan 10 - External fault A	User reset
A564	Supply fan 10 - External fault B	User reset
A565	Supply fan 10 - Option	User reset
A566	Supply fan 10 - Alarm	User reset
A567	Return fan 10 - Ground fault	User reset
A568	Return fan 10 - Inverter overheat	User reset
A569	Return fan 10 - Motor overheat	User reset
A570	Return fan 10 - Overload	User reset
A571	Return fan 10 - Phase open	User reset
A572	Return fan 10 - Overvoltage	User reset
A573	Return fan 10 - Low voltage	User reset
A574	Return fan 10 - Overcurrent	User reset
A575	Return fan 10 - Inverter overload	User reset
A576	Return fan 10 - Heat sink overheat	User reset
A577	Return fan 10 - DC overload	User reset
A578	Return fan 10 - Phase lost	User reset
A579	Return fan 10 - Electric thermal	User reset
A580	Return fan 10 - Parameter save error	User reset
A581	Return fan 10 - HW fault	User reset
A582	Return fan 10 - Communication error	User reset
A583	Return fan 10 - Cooling fan fault	User reset
A584	Return fan 10 - Cut off	User reset
A585	Return fan 10 - External fault A	User reset
A586	Return fan 10 - External fault B	User reset
A587	Return fan 10 - Option	User reset
A588	Return fan 10 - Alarm	User reset
A589	EC Supply fan 3 - Undervoltage	Auto reset
A590	EC Supply fan 3 - Overvoltage	Auto reset
A591	EC Supply fan 3 - IGBTOvercurrent	User reset
A592	EC Supply fan 3 - Hot	User reset
A593	EC Supply fan 3 - Phase Loss	User reset
A594	EC Supply fan 3 - Parameters CRC	User reset
A595	EC Supply fan 3 - Circuit fault	User reset
A596	EC Supply fan 3 - Motor fault	User reset

A597	EC Supply fan 3 - Too hot	User reset
A598	EC Supply fan 3 - I2R IGBT fault	User reset
A599	EC Return fan 3 - Undervoltage	Auto reset
A600	EC Return fan 3 - Overvoltage	Auto reset
A601	EC Return fan 3 - IGBTOvercurrent	User reset
A602	EC Return fan 3 - Hot	User reset
A603	EC Return fan 3 - Phase Loss	User reset
A604	EC Return fan 3 - Parameters CRC	User reset
A605	EC Return fan 3 - Circuit fault	User reset
A606	EC Return fan 3 - Motor fault	User reset
A607	EC Return fan 3 - Too hot	User reset
A608	EC Return fan 3 - I2R IGBT fault	User reset
A609	EC Supply fan 4 - Undervoltage	Auto reset
A610	EC Supply fan 4 - Overvoltage	Auto reset
A611	EC Supply fan 4 - IGBTOvercurrent	User reset
A612	EC Supply fan 4 - Hot	User reset
A613	EC Supply fan 4 - Phase Loss	User reset
A614	EC Supply fan 4 - Parameters CRC	User reset
A615	EC Supply fan 4 - Circuit fault	User reset
A616	EC Supply fan 4 - Motor fault	User reset
A617	EC Supply fan 4 - Too hot	User reset
A618	EC Supply fan 4 - I2R IGBT fault	User reset
A619	EC Return fan 4 - Undervoltage	Auto reset
A620	EC Return fan 4 - Overvoltage	Auto reset
A621	EC Return fan 4 - IGBTOvercurrent	User reset
A622	EC Return fan 4 - Hot	User reset
A623	EC Return fan 4 - Phase Loss	User reset
A624	EC Return fan 4 - Parameters CRC	User reset
A625	EC Return fan 4 - Circuit fault	User reset
A626	EC Return fan 4 - Motor fault	User reset
A627	EC Return fan 4 - Too hot	User reset
A628	EC Return fan 4 - I2R IGBT fault	User reset
A629	EC Supply fan 5 - Undervoltage	Auto reset
A630	EC Supply fan 5 - Overvoltage	Auto reset
A631	EC Supply fan 5 - IGBTOvercurrent	User reset
A632	EC Supply fan 5 - Hot	User reset
A633	EC Supply fan 5 - Phase Loss	User reset
A634	EC Supply fan 5 - Parameters CRC	User reset
A635	EC Supply fan 5 - Circuit fault	User reset
A636	EC Supply fan 5 - Motor fault	User reset
A637	EC Supply fan 5 - Too hot	User reset
A638	EC Supply fan 5 - I2R IGBT fault	User reset
A639	EC Return fan 5 - Undervoltage	Auto reset
A640	EC Return fan 5 - Overvoltage	Auto reset
A641	EC Return fan 5 - IGBTOvercurrent	User reset
A642	EC Return fan 5 - Hot	User reset

A643	EC Return fan 5 - Phase Loss	User reset
A644	EC Return fan 5 - Parameters CRC	User reset
A645	EC Return fan 5 - Circuit fault	User reset
A646	EC Return fan 5 - Motor fault	User reset
A647	EC Return fan 5 - Too hot	User reset
A648	EC Return fan 5 - I2R IGBT fault	User reset
A649	EC Supply fan 6 - Undervoltage	Auto reset
A650	EC Supply fan 6 - Overvoltage	Auto reset
A651	EC Supply fan 6 - IGBTOvercurrent	User reset
A652	EC Supply fan 6 - Hot	User reset
A653	EC Supply fan 6 - Phase Loss	User reset
A654	EC Supply fan 6 - Parameters CRC	User reset
A655	EC Supply fan 6 - Circuit fault	User reset
A656	EC Supply fan 6 - Motor fault	User reset
A657	EC Supply fan 6 - Too hot	User reset
A658	EC Supply fan 6 - I2R IGBT fault	User reset
A659	EC Return fan 6 - Undervoltage	Auto reset
A660	EC Return fan 6 - Overvoltage	Auto reset
A661	EC Return fan 6 - IGBTOvercurrent	User reset
A662	EC Return fan 6 - Hot	User reset
A663	EC Return fan 6 - Phase Loss	User reset
A664	EC Return fan 6 - Parameters CRC	User reset
A665	EC Return fan 6 - Circuit fault	User reset
A666	EC Return fan 6 - Motor fault	User reset
A667	EC Return fan 6 - Too hot	User reset
A668	EC Return fan 6 - I2R IGBT fault	User reset
A669	EC Supply fan 7 - Undervoltage	Auto reset
A670	EC Supply fan 7 - Overvoltage	Auto reset
A671	EC Supply fan 7 - IGBTOvercurrent	User reset
A672	EC Supply fan 7 - Hot	User reset
A673	EC Supply fan 7 - Phase Loss	User reset
A674	EC Supply fan 7 - Parameters CRC	User reset
A675	EC Supply fan 7 - Circuit fault	User reset
A676	EC Supply fan 7 - Motor fault	User reset
A677	EC Supply fan 7 - Too hot	User reset
A678	EC Supply fan 7 - I2R IGBT fault	User reset
A679	EC Return fan 7 - Undervoltage	Auto reset
A680	EC Return fan 7 - Overvoltage	Auto reset
A681	EC Return fan 7 - IGBTOvercurrent	User reset
A682	EC Return fan 7 - Hot	User reset
A683	EC Return fan 7 - Phase Loss	User reset
A684	EC Return fan 7 - Parameters CRC	User reset
A685	EC Return fan 7 - Circuit fault	User reset
A686	EC Return fan 7 - Motor fault	User reset
A687	EC Return fan 7 - Too hot	User reset
A688	EC Return fan 7 - I2R IGBT fault	User reset

A689	EC Supply fan 8 - Undervoltage	Auto reset
A690	EC Supply fan 8 - IGBTOvercurrent	User reset
A691	EC Supply fan 8 - Hot	User reset
A692	EC Supply fan 8 - Phase Loss	User reset
A693	EC Supply fan 8 - Parameters CRC	User reset
A694	EC Supply fan 8 - Circuit fault	User reset
A695	EC Supply fan 8 - Motor fault	User reset
A696	EC Supply fan 8 - Too hot	User reset
A697	EC Supply fan 8 - I2R IGBT fault	User reset
A698	EC Return fan 8 - Undervoltage	Auto reset
A699	EC Return fan 8 - Overvoltage	Auto reset
A700	EC Return fan 8 - IGBTOvercurrent	User reset
A701	EC Return fan 8 - Hot	User reset
A702	EC Return fan 8 - Phase Loss	User reset
A703	EC Return fan 8 - Parameters CRC	User reset
A704	EC Return fan 8 - Circuit fault	User reset
A705	EC Return fan 8 - Motor fault	User reset
A706	EC Return fan 8 - Too hot	User reset
A707	EC Return fan 8 - I2R IGBT fault	User reset
A708	EC Supply fan 9 - Undervoltage	Auto reset
A709	EC Supply fan 9 - Overvoltage	Auto reset
A710	EC Supply fan 9 - IGBTOvercurrent	User reset
A711	EC Supply fan 9 - Hot	User reset
A712	EC Supply fan 9 - Phase Loss	User reset
A713	EC Supply fan 9 - Parameters CRC	User reset
A714	EC Supply fan 9 - Circuit fault	User reset
A715	EC Supply fan 9 - Motor fault	User reset
A716	EC Supply fan 9 - Too hot	User reset
A717	EC Supply fan 9 - I2R IGBT fault	User reset
A718	EC Return fan 9 - Undervoltage	Auto reset
A719	EC Return fan 9 - Overvoltage	Auto reset
A720	EC Return fan 9 - IGBTOvercurrent	User reset
A721	EC Return fan 9 - Hot	User reset
A722	EC Return fan 9 - Phase Loss	User reset
A723	EC Return fan 9 - Parameters CRC	User reset
A724	EC Return fan 9 - Circuit fault	User reset
A725	EC Return fan 9 - Motor fault	User reset
A726	EC Return fan 9 - Too hot	User reset
A727	EC Return fan 9 - I2R IGBT fault	User reset
A728	EC Supply fan 10 - Undervoltage	Auto reset
A729	EC Supply fan 10 - Overvoltage	Auto reset
A730	EC Supply fan 10 - IGBTOvercurrent	User reset
A731	EC Supply fan 10 - Hot	User reset
A732	EC Supply fan 10 - Phase Loss	User reset
A733	EC Supply fan 10 - Parameters CRC	User reset
A734	EC Supply fan 10 - Circuit fault	User reset

A735	EC Supply fan 10 - Motor fault	User reset		
A736	EC Supply fan 10 - Too hot	User reset		
A737	EC Supply fan 10 - I2R IGBT fault	User reset		
A738	EC Return fan 10 - Undervoltage	Auto reset		
A739	EC Return fan 10 - Overvoltage	Auto reset		
A740	EC Return fan 10 - IGBTOvercurrent	User reset		
A741	EC Return fan 10 - Hot	User reset		
A742	EC Return fan 10 - Phase Loss	User reset		
A743	EC Return fan 10 - Parameters CRC	User reset		
A744	EC Return fan 10 - Circuit fault	User reset		
A745	EC Return fan 10 - Motor fault	User reset		
A746	EC Return fan 10 - Too hot	User reset		
A747	EC Return fan 10 - I2R IGBT fault	User reset		
A748	IO Module - IO PCB - Offline	User reset		
A749	DX Reverse - Alarm	Auto reset until counter	3	3600
A750	Filter alarm - high pressure	User reset		
A751	RRG alarm - no work confirmation	User reset		