FLEXMATIC - FLEXFACE
PRODUCT GUIDE

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Section One - General

1.0 General

This user manual describes the Flexface E control system for AET Flexible Space Under Floor Air Conditioning (UFAC) systems. It contains information concerning the architecture of the control systems as well as the settings required to obtain the desired behaviour of the unit.

The Flexface control system manages the functions of the CAM units using different Eprom programmes. (see Chapter 2.2 Eprom). Hardware and software (firmware) are explained in detail in subsequent sections.

Image: Flexmatic Visual Display Unit

Section Two - Hardware

2.0 Flexface Evolution 24V AC

The Flexface Evolution is a microprocessor based electronic card, able to manage the devices and sensors installed in the CAM. The Flexface is installed in the electrical panel of each CAM unit.

NB: To access / set timer and other functions, a visual display Flexmatic E is required.

As the Flexface controls all functions of the unit, some jumpers have to be set in order to tailor the control board. Most of these jumpers are already correctly set in the factory; only the jumper for the units address ("A") has to be set in the field, during start-up of the unit.

WARNING: Never add / remove jumpers when the Flexface is under power
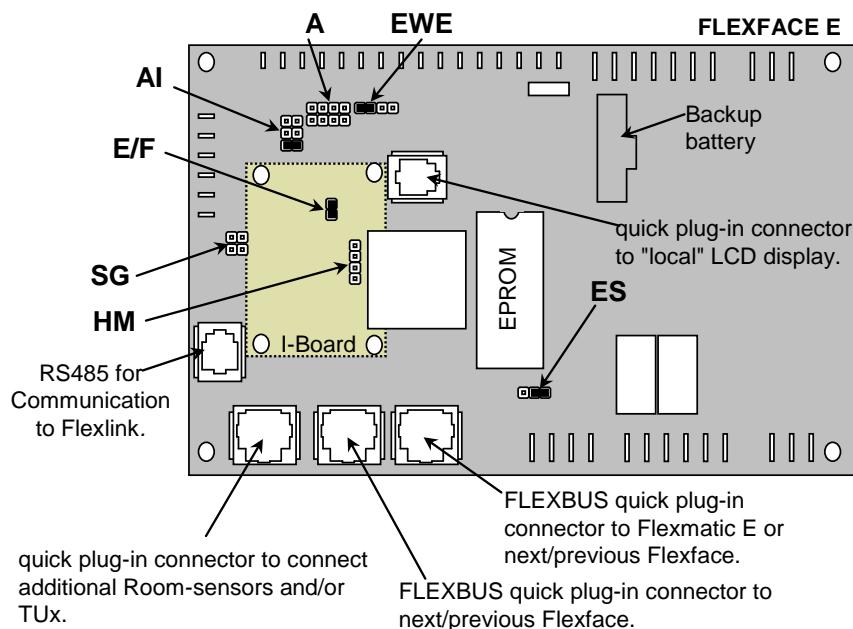
JUMPERS:	
EWE:	EPROM write enable. Always set this jumper.
A:	Address setting. See chapter "Networking" for Details. Units, not connected to others: NO Jumper.
AI:	Analogue Inputs selection. Set indicated jumper only if "PTC Airflow" is used. Do not set any jumper if differential pressure sensor is used for airflow detection.
E/F:	EPROM / Flash memory selection jumper. Set the jumper when EPROM is installed. Do not set this jumper when Flash memory is installed.
SG:	Subgroup ID setting. Do not set these Jumpers.
HM:	Comb connector for I-Module (present when humidifier is installed).
ES:	EPROM /Flash memory size selection jumper. Set jumper between middle and right pins for 1 or 2 Mbit size memory devices. Set jumper between middle and left pins for 4 Mbit size memory devices.

Figure 1 - Flexface E 24V AC with connectors and jumpers

2.1 Networking between Units

2.1.1 How to connect the Flexfaces

Up to sixteen (16) units may be connected together via Flexbus, to ultimately be connected to one or more Flexmatic visual display units. The Flexmatic offers easy access to all unit data, as well as other features; for example graphic data records, timer settings etc.

⚠

WARNING: A poor connection could cause serious problems to the electronic devices (Flexface and Flexmatic); for this reason we strongly recommend use of quality product. Before connecting the cables to the Flexface, check them with a cable tester.
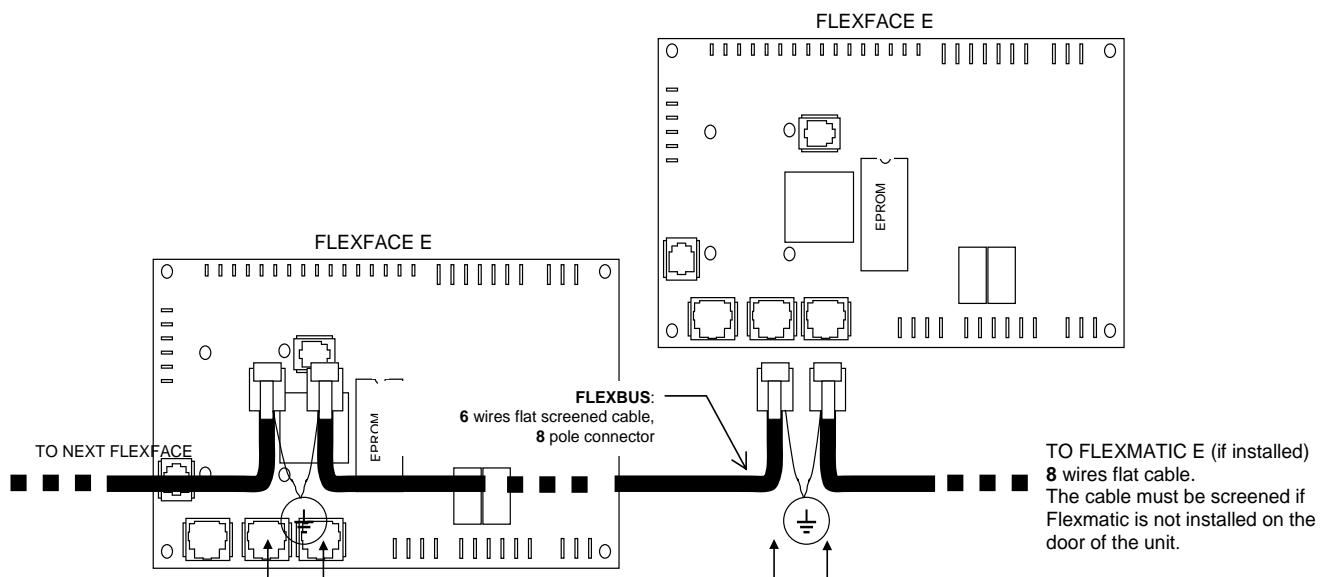
NOTE: CONNECT THE SCREEN OF THE FLAT CABLE TO THE CLOSEST "PE" (EARTH) OF THE EL. PANEL ON BOTH ENDS OF THE CABLE. FLEXBUS CABLES MUST BE INSTALLED SUITABLY SEGREGATED FROM POWER TRANSMISSION CABLES.

Figure 2 - Connecting Flexfaces

⚠

The Flexbus cable must be wired in sequence from the 1ˢᵗ unit to the 2ⁿᵈ, from 2ⁿᵈ to the 3ʳᵈ etc. "Star" or "Ring" connections are not allowed.
The maximum length of the Flexbus cable is 300 metres; including all connected cables. Individual cable lengths are insignificant, as long as the total length of all cables together does not exceed 300 metres.

2.1.2 Typical network with Flexfaces, Terminal Units and external sensors

The maximum length of the Flexbus cable is 300 metres; including all connected cables.

Sensors must be connected first to the Flexface (max. distance 25 metres to the Flexface), with TUx connected "after" the sensors, using "T" connectors.

All Flexbus cables, going out from the CAM-C / CAM-V unit **must be screened and earthed**.

In total **24 Master TUx** are addressable. Including Slave TUx, the number of units connected to one Flexface must not exceed **32 TUx** in total.
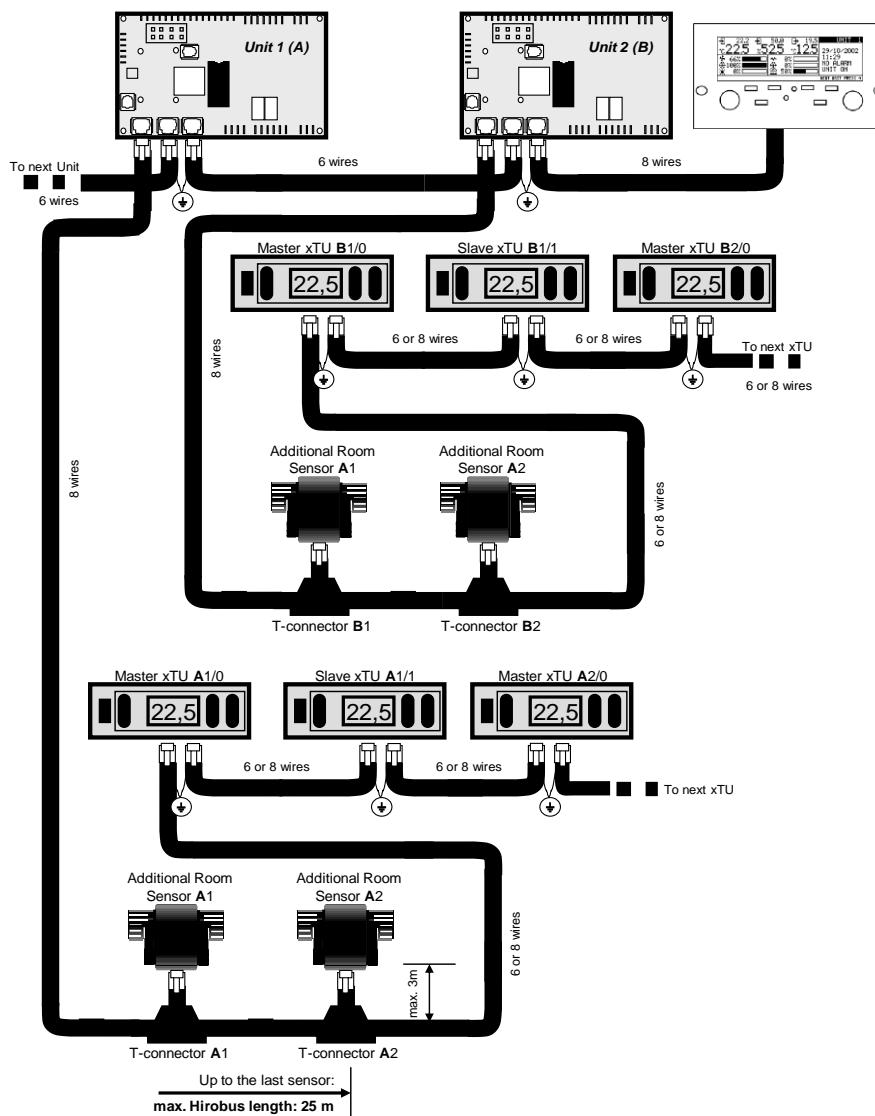
Figure 3 - Network with Flexfaces and TUx

2.2 Eprom / Flash memory

The Eprom / Flash is the device which stores the software program for the Flexface or Flexmatic. It does not store any user settings; this is done by the device itself (in the RAM and the Eprom). The version name and the number are printed on the Eprom / flash label. The following Eproms / flashes are currently used for AET Flexible Space units (the xxx is a placeholder for the actual version):

HVM Eprom..

Bit 1.00.xxx...For Flexface E 24V AC

HVE 1.00.xxx Flash, 4 MBit, For Flexmatic E.
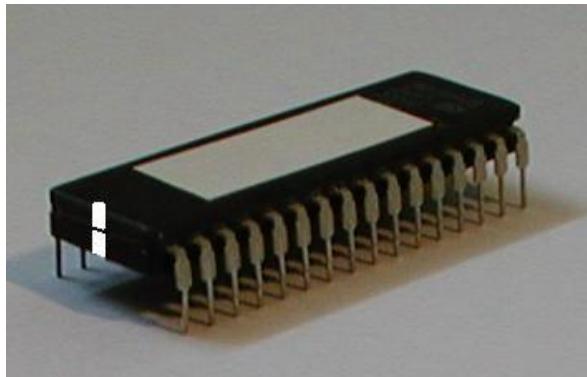
Figure 4 – Eprom (top) and Eprom Remover Tool

Power off the device before mounting/dismounting the Eprom. Remove the Eprom only with a special tool; never use a screwdriver. For correct installation, please refer to Section 2.1 and Section 2.6.2 Flexmatic connection.

2.3 Humitemp and Humitemp Evolution

The Humitemp is a combined Temperature / Humidity Sensor. If connected, the Flexface will use the values of the Humitemp for control according to the sensor priority settings. It is connected to the Flexface via Flexbus-cable (max. length: 25 m). Two (2) sensors can be connected to one (1) Flexface (CAM).

Humitemp,
Humitemp E

Humitemp
open, Rear View

Humitemp Evolution
open, Rear View

Temperature
Reading

Humidity
Reading

Flexbus

Address
Switch

Flexbus
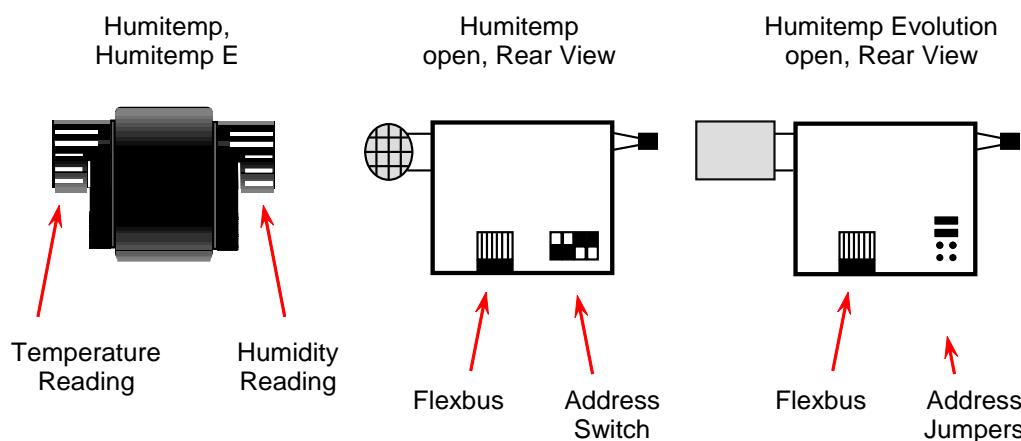
Address
Jumpers

Figure 5 – Humitemp

The Address switches/jumpers inside the Humitemp allow the following setting:
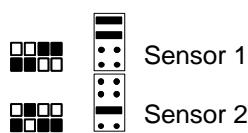
Sensor 1

Sensor 2

Figure 6 – Address switches/jumpers

2.4 PTC Temperature Sensor

The PTC Sensors are used to read return air and supply air temperatures, as well as outdoor temperature. There are different types available.

PTC Sensors are temperature sensors, changing the resistance according to the temperature (positive temperature coefficient). The connection is 2-wire and the maximum cable length is ten (10) metres.
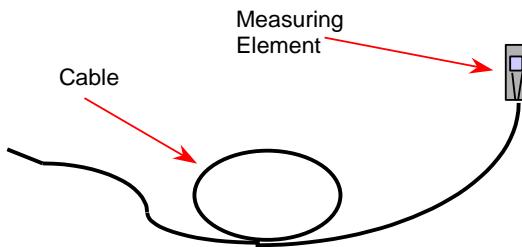
Figure 7 – PTC Sensor

2.5 PTC Airflow Sensor / Differential pressure switch

The PTC airflow sensor measures airspeed in the same way as the one used for Anemometers. There is an automated setup-procedure in the software to assist in setting-up. The PTC Airflow is supplied with 24V, and gives back a signal of 0-10V DC, according the airspeed measured. It must be connected to an analogue input and the connection is 3-wire. The length of the cable for the sensor is two (2) metres and the adjustment is done by software. **Note**: depending on the unit's configuration, a differential pressure switch could be an alternative; this would need mechanical adjustment.
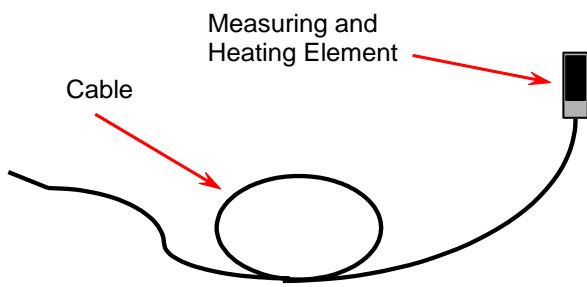
Figure 8 – PTC Airflow **Figure 9 – Differential pressure switch**

2.6 Board / TAM Module

The I-Board for CAM-C / CAM-V Units is the current transformer for the humidifier (cylinder type). The I-Board consists of one (1) current transformer-coil (one phase of the power supply for the humidifier must be wired through the hole); and one (1) output relay (to start humidifier), The I-Board is simply plugged onto the Flexface. Please refer to Section 2.1 for positioning.
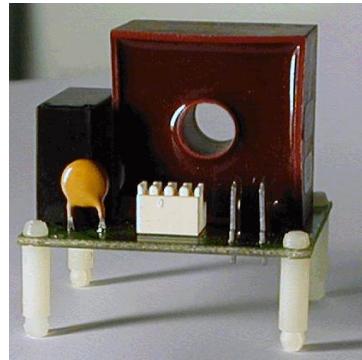
Figure 10 - I-Board

2.6.1 Flexmatic E

The Flexmatic E is a microprocessor-based electronic device, which can visualise and control the functions of one or more Flexface devices; up to a maximum of sixteen (16). The Flexmatic offers programming advantages as well as optimising unit operation; see Section 3.0.

Figure 11 – Flexmatic E Visual Display Device

2.6.2 Flexmatic Direct Connection to Flexface

The Flexmatic can be fixed on the front panel of the unit. Connect the Flexbus cable as shown in Figure 12 below:

FLEXMATIC (REAR VIEW)

FLEXFACE E

FERRITE

Eight wires screened flat cable (max length: 10 m)
(Use direct connection when the distance between
Flexface and Flexmatic is less than 10 m)
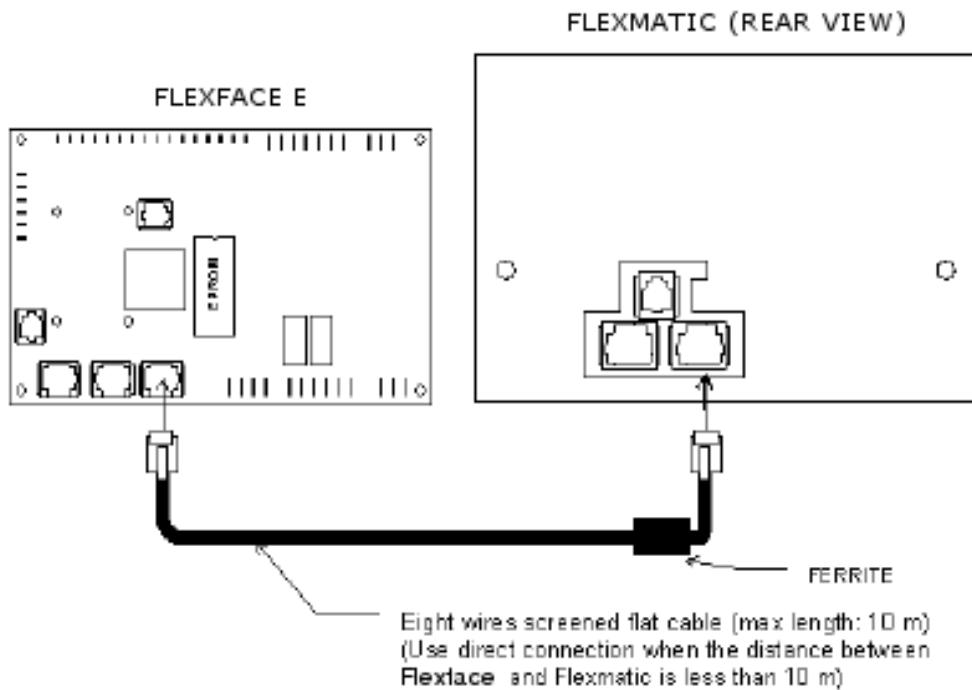
Figure 12 - Direct Connection between Flexface and Flexmatic

2.6.3 How to connect more than one Flexmatic to the network

More than one Flexmatic may be connected to a network. All units will show the same values (as they are reading out the data from the Flexfaces). Changes of parameters can be set from any Flexmatic – the last set of information sent to the Flexfaces through a Flexmatic is valid. The only limitation, aside from the maximum permitted Flexbus cable length of 300 metres, is the power supply of the Flexmatics: One (1) Flexface can supply one (1) Flexmatic. If more Flexmatics are connected, PSM modules are required. (see PSM hardware section 2.7.1)
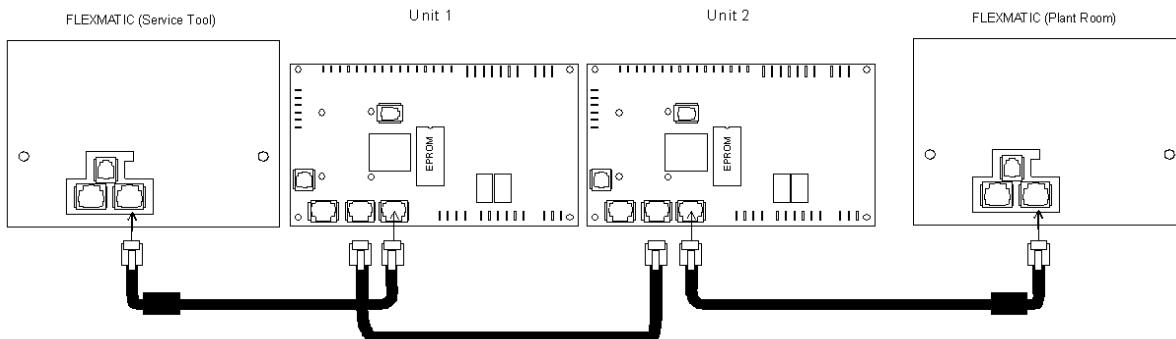
Figure 13 - Connecting two (2) Flexmatics to the network

2.6.4 Flexmatic Evolution Rear View, Jumpers and Eprom Position
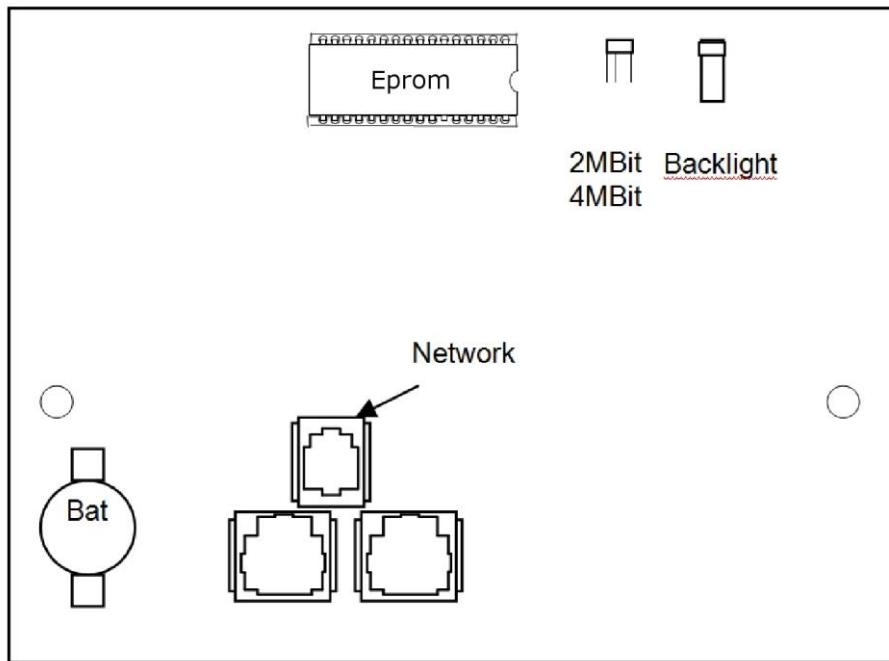
Figure 14 - Flexmatic – Rear View

Description of the jumpers:

Eprom (2M) / Flash Size (4M):

Middle + Upper Jumper: 2 or 4 MBit (standard setting)

Middle + Lower Jumper: not used.

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WARNING: Please take special care regarding the jumpers when installing a replacement Flexmatic.

2.7 Power Supply Module for Flexmatic E

2.7.1 PSM Hardware

The Flexmatic E may be supplied mounted in an independent electrical panel containing a power supply module as well (PSM Power Supply Module) if the distance to the next Flexface is more than 10 metres. The PSM Module itself needs a power of 24V AC / 30 VA.
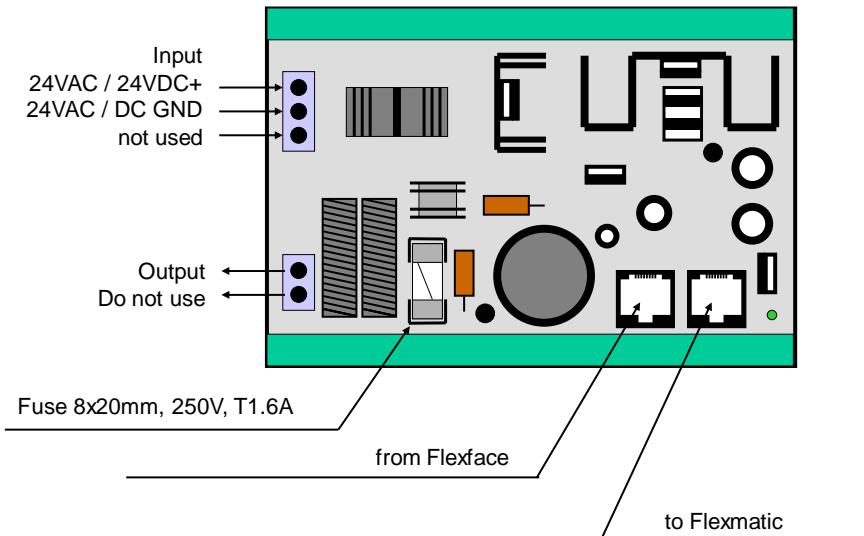
Figure 15 - PSM Module

2.7.2 PSM Connection

The connection between the Flexmatic and the PSM is carried out in the factory by means of an eight wire Flexbus cable. The PSM should be connected to Flexface through a six wire, screened Flexbus cable; the screen needs to be earthed in both terminals. When the system consists of more than one CAM unit, a Flexmatic can be connected to any unit where Flexface has a free Flexbus connector (usually either the first or the last one of the Flexface chain).
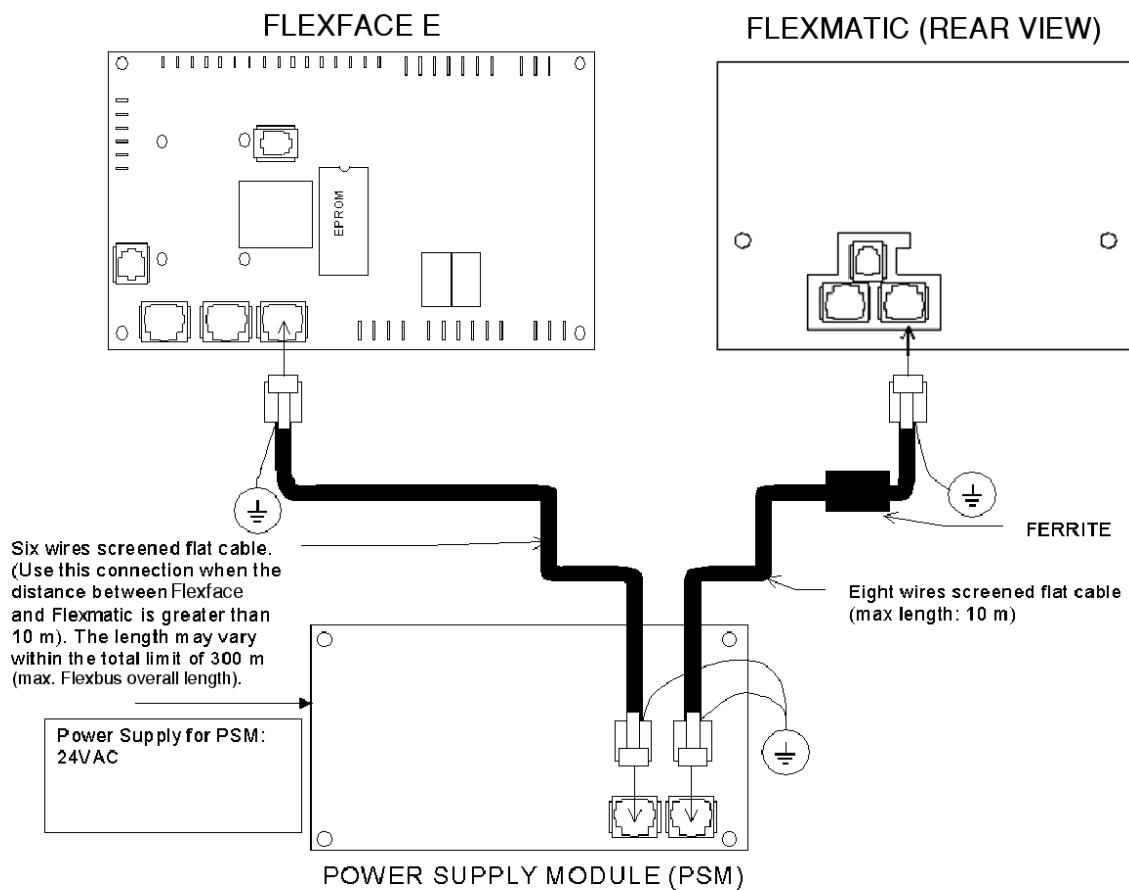
Figure 16 - Connection of Flexface LAN to Flexmatic with PSM.

2.8 Flexbus Cables and other Connection Cables

The connections between various Flexfaces, Flexmatic display and sensors are carried out with cables having a different number of wires and different connectors. See below for configuration information.

WARNING: A poor connection could cause serious problems to the electronic devices (Flexface and Flexmatic); we recommend you only use quality cable products and check them with a cable tester before connecting to the Flexface.

EIGHT POLES MODULAR JACK

EIGHT WIRES FLAT CABLE. USE SCREENED CABLE WHEN CABLE IS RUNNING OUTSIDE THE UNIT.
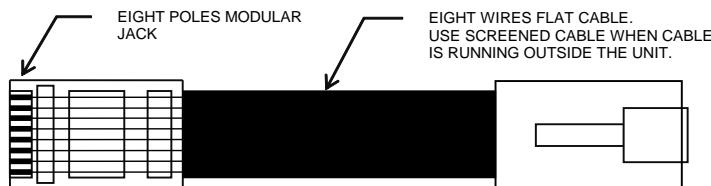
Figure 17 - Eight-wire; eight pole connector Flexbus cable for Flexmatic, Humitemp and TUx connections

EIGHT POLES MODULAR JACK (USE ONLY THE CENTRAL SIX POLES)

SIX WIRES FLAT CABLE. USE SCREENED CABLE WHEN CABLE IS RUNNING OUTSIDE THE UNIT.
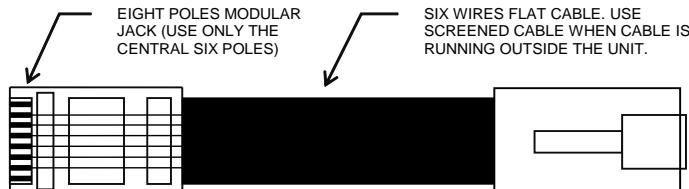
Figure 18 - Six-wire (Pin 1 and 8 not connected) Flexbus cable, for Flexface to Flexface connections, eight pole connectors. This cable must be screened

FOUR POLES MODULAR JACK

FOUR WIRES FLAT CABLE
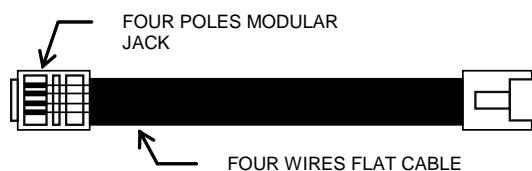
Figure 19 - Four wire flat cable for local LCD Display, four pole connectors

2.8.1 Addressing

When Flexfaces are connected by Flexbus cables, it is necessary to assign a different address to each of them by means of a group of jumpers on the Flexface. The jumper position is described in Figure 20 below.

WARNING: The units must be addressed consecutively, starting from #1. The Flexbus cable does not need to go in the order of the addresses; for example it could also be wired 1-5-4-2-3.
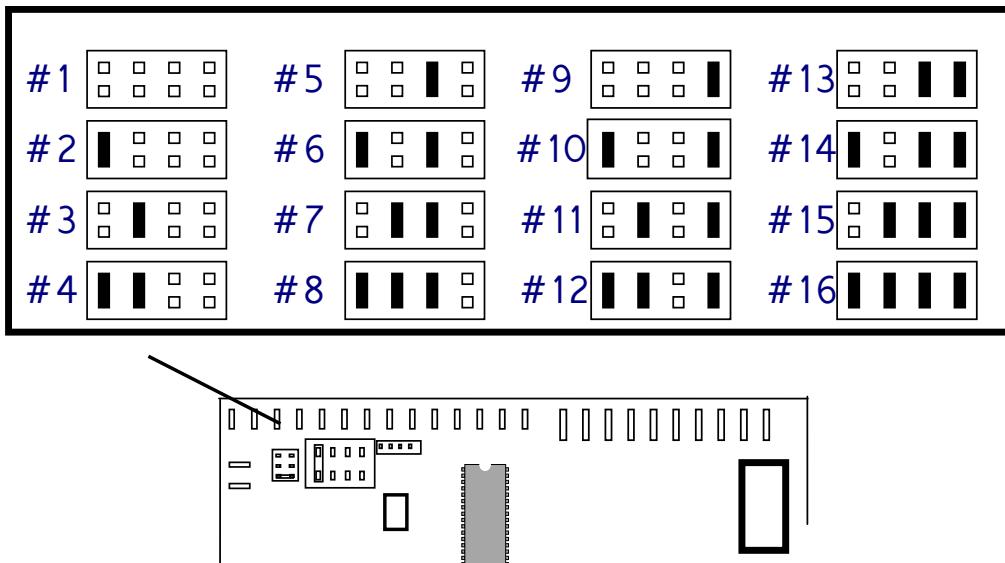
Figure 20 - Address jumpers

2.9 Hardware: Technical Specification

Flexface E 24V AC	
Power Supply	24VAC, $\pm$ 10%; 50 Hz
Digital Out (Triac)	7
Digital Out (Relay)	2 (max. 24V – 1A)
Analogue Out (0-10V)	2
Analogue In (resistive)	8
Analogue In (resistive / 0-10VDC)	3
Storage Temperature	-10 (not condensing) to +65°C
Operating Temperature Range	0 (not condensing) to +55°C
Humitemp	
Power Supply	10VDC (from Flexbus)
Temperature range	0 to 50°C
Humidity range	20 to 90%
Minimum airspeed required	0,5 m/s
Temperature precision	$\pm$ 0,5°C
Humidity precision (@25°C)	40 to 65%: ±2 %r.H. 20 to 90%: ±4 %r.H.
PTC Temperature sensor	
Cable length	10m
Temperature range	-28 to 100°C
Point of calibration	2000Ω at 25.0°C
Flexmatic E	
Power Supply	10VDC (from Flexbus)
Graphic Display	Backlit, 200 x 64 pixels
Mounting hole	175 x 150mm
Power Supply Module (PSM)	
Power supply	24VAC, $\pm$ 10%; 24VDC, $\pm$ 20%
Output	10VDC (Flexbus, stabilised); 24VAC, $\pm$ 10%; 24VDC, $\pm$ 20% (filtered)
I-Board (Current transformer)	
Current Range	0 – 30A
Digital Out (Relay)	1 (max. 24V – 1A)

Section Three - Software

3.0 Flexmatic Layout

The front panel of the Flexmatic display consists of a backlit graphic LCD, with eight (8) push buttons that permit input function and two (2) LEDs.

Power on/off and override button

Green: unit in operation

Yellow: unit is in warning mode

Red: unit in alarm mode

HOME returns to previous page

Help Key

Alarms and warnings silenced and reset

ENTER Button To set parameters

Cursor Button:

Left or Right to access next or previous CAM

Up or Down to access next or previous page
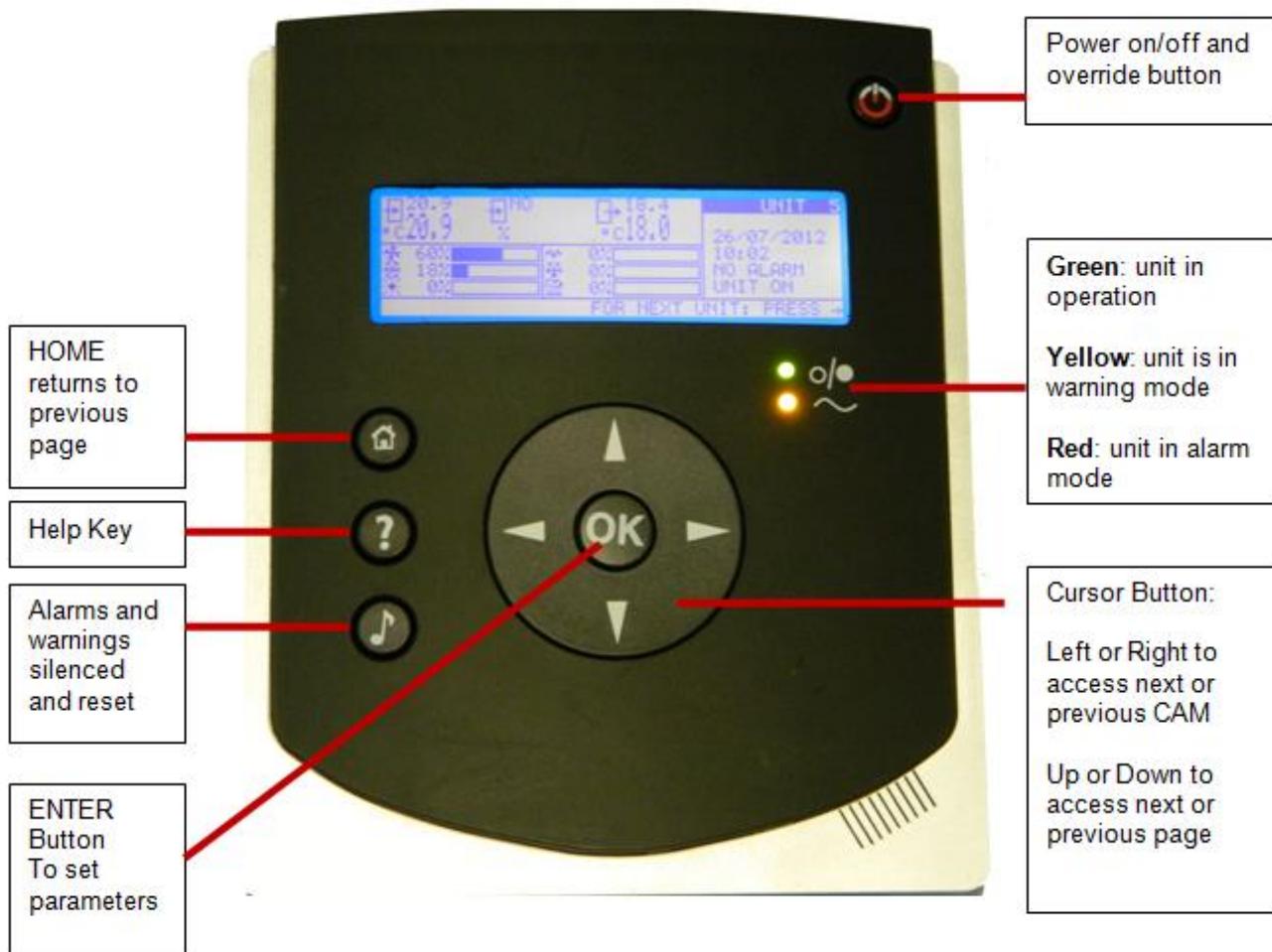
Figure 21 – Flexmatic Front View

3.1 Meaning of the Symbols in the Main Window

Symbol / Value	Description
22.2 / 22.5 °C	Return Air Temperature, composed according the "Sensor Priority" settings. The priority percentage of the sensors (return air sensor, two additional room and TUx temperatures) may be set as required. The large number indicates the Room Temperarure. The small number above the read value indicates the derived zone setpoint (read only). This setpoint (=actual zone setpoint) is the calculated average from all TUx which are not set as "ignored". The control opens / closes the valve(s) according this value compared with the return air temperature reading.
50.0 / 52.5 %	Return Air Humidity. The value is read from the two additional room sensors (Humitemp) composed according the "Sensor Priority" settings. The small number above the read value indicates the actual humidity setpoint (read only). If the humidity compensation is enabled, the actual humidity setpoint is recalculated according to the temperature deviation: every 1°C of temperature deviation from the humidity setpoint is modified by 3%rH. It will be increased by this number if the return air temperature is lower than the actual setpoint and will be decreased by this number if the return air temperature is higher than the actual setpoint.
19.5 / 12.5 °C	Supply Air Temperature. The large number indicates the actual Supply Air Temperature. The small number above the read value indicates the derived setpoint (read only). The supply setpoint is calculated from the deviation of the return air temperature from its setpoint, multiplied by the supply compensation factor.
66%	This graph shows the fanspeed of the CAM-C/CAM-V unit.
100%	This graph shows the actual status of the chilled water valve.
0% (hot)	This graph gives information about the actual status of the water valve.
0%	This graph gives information about the actual status of the electrical heaters. Usually 3 steps are used: 33 / 66 / 100%.
0%	This graph gives information about the actual dehumidification stages in operation.
0%	This graph gives information about the actual humidification output.

UNIT 1
29/06/1998
11:29
REM OFF
NO ALARM

This field of the window shows time, date and status of the unit.

Status indicated	Status Type	Description	Command to TU	Override possible
ALARM OFF	Off	the Unit has an Alarm, and is stopped because of the Alarm	Off	No
REM OFF	Off	the Unit is stopped by Remote On/Off Input	Off	Yes
TIMER OFF	Off	the Unit is in Timer Mode	Off	Yes
SYS OFF	Off	Unit is stopped by Flexmatic button	Off	Yes
BMS OFF	Off	Unit stopped from BMS	Off	Yes
RECOVERY	On	Through User Input or BMS	Off	No
ALARM ON	On	the Unit has an Alarm, but is working	On	-
MANUAL	On	the Unit is in Manual Mode.	On	No
TIMER ON	On	the Unit is in Timer Mode	On	-
OVERRIDE	On	if OFF Status was cancelled using the digital input or through Supervision	On	-
SYS ON	On	if the Unit is working in normal Mode	On	-
WARNING ON	On	if the Unit is working in normal Mode, with active Warning.	On	-
SETBACK	On	Low Zone temperature, unit restarted to heat up	On	No
FAN ONLY	ON	Only the fan is operating, no control of cooling, heating, hum or dehum	On	Yes

3.1.2 How to navigate in the Flexmatic window
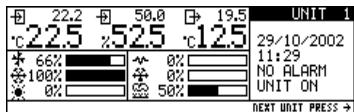
to next unit
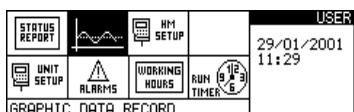
User menus:

◄ ► ▲ ▼ to select the menu, "Enter" to enter the menus,

◄ (2 sec) to go back to previous screen or to un-mark the selected icon.

Service menus:

◄ ► ▲ ▼ to select the menu, "Enter" to enter the menus,

◄ (2 sec) to go back to previous screen or to un-mark the selected icon.

NOTE: changing from one window to the next is possible only with un-marked icons.

3.1.3 The Menus

The menus are divided in two groups: User and Service menus. **User Menu** contains parameters for the daily operation (setpoints, timer settings etc.); **Service Menu** contains parameters for setup, troubleshooting and manual operating mode.
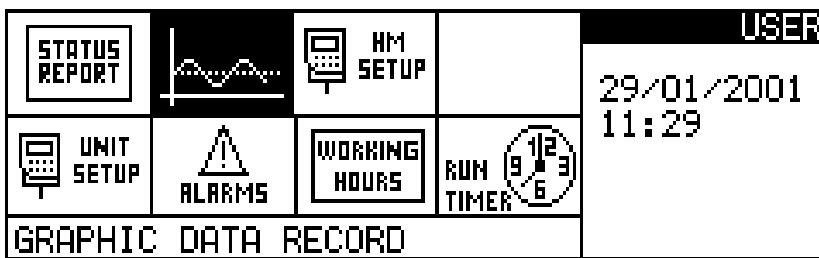
3.2 User Menus

This window contains the following menus (from top left to bottom right).

	Readable w/o Password	Write Access Level
STATUS REPORT	YES	read only
GRAPHIC DATA RECORD	YES	(LEVEL 0)
HM (FLEXMATIC) SETUP	YES	(LEVEL 1)
UNIT SETUP	YES	(LEVEL 1)
WARNINGS / ALARMS	YES	(LEVEL 1)
WORKING HOURS	YES	(LEVEL 1)
TIMER SETTINGS	YES	(LEVEL 1)

3.2.1 Status Report   `STATUS REPORT`

The status report contains the last 200 events (for each individual unit), which occurred to the unit, in order of appearance. Each unit contains its own collection of 66 pages. Use ◄ and ► button to move from one unit to the next.

Left (◄) from unit no. 1 there is the so called "System Report"; a summary of all events of all connected units.

NOTE: The status report can be entered by pressing "Enter" from a unit's main screen.

```
STATUS REPORT PAGE      66        UNIT1
21.02.2001 20:10        RESET


21.02.2001 20:10        ACKNOWLEDGE


20.02.2001 16:45        WARNING
HIGH ZONE TEMPERATURE
```

3.2.2 Graphic Data Records

For each single unit, an 8-day graphic data record as well as a 24-hour record for return air temperature, supply air temperature and return humidity is available. The temperature/humidity scale can be adjusted (Enter - UP/DOWN). The records are stored after power off.
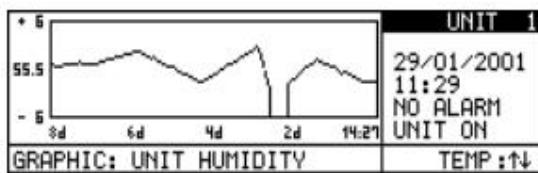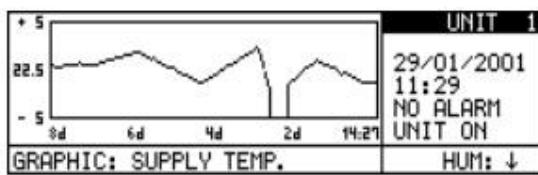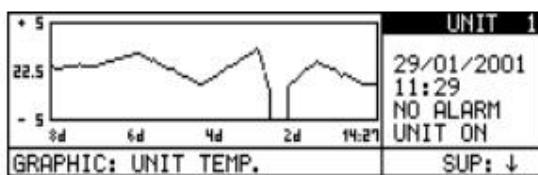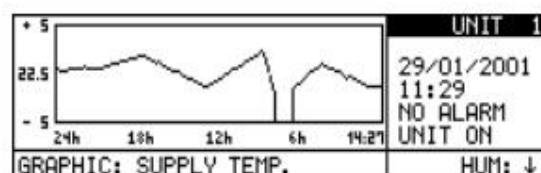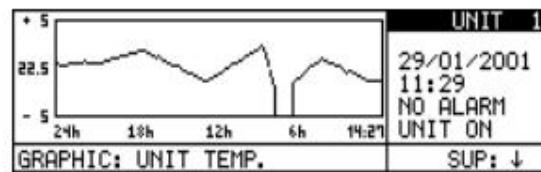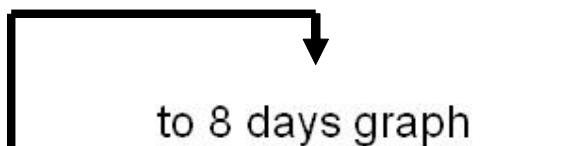
3.2.3 HM (Flexmatic) Setup

```
000  Flexmatic Set-up 1 of 1
001  PASSWORD (LEVEL0)              ????
002  LANGUAGE  :             ENGLISH
003  TIME      :                  22:12
004  DATE      :           TH 22/06/2002
005  TEMP. INDICATION               °C
006  CONTRAST  :                    74
007  BUZZER FRQ:              OFF / 0.6
```

No.	PARAMETER	HELP TIPS
001	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
002	LANGUAGE	Flexmatic language selection
003	TIME	Set Time
004	DATE	Set Date
005	TEMP. INDICATION	
006	CONTRAST	Increase / decrease value to optimise contrast
007	BUZZER FRQ.	

```
110  UNIT SETUP  1  of 1
111  PASSWORD (LEVEL0)          ????
112  ZONE SETPOINT           23,7  °C
113  TU SETP. RANGE          +/- 2 °C
114  HUMIDITY SETPOINT        50 %rH
115  AUTORESTART              23 sec
116  FANSPEED                   MED
117  OVERRIDE TIME            27 min
```

No.	PARAMETER	HELP TIPS
111	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
112	ZONE SETPOINT	Setpoint valid during automatic operation
113	TU SETP. RANGE	The maximum allowed difference between the TUx setpoint set in line 112. If TUx setpoint is set higher or lower than permitted it will default to the highest/lowest possible setpoint.
114	HUMIDITY SETPOINT	For units equipped with humidity control. If no humidity control is requested it must = NO.
115	AUTORESTART	After the unit is powered on, the fan will start at the selected time (+20 seconds time the control needs to boot). 2 minutes later the control starts to work.
116	FANSPEED	Fanspeed selection during normal operation. Can be set to Low, Medium or High.
117	OVERRIDE TIME	Pressing the Power ON/OFF button on the Flexmatic will activate the OVERRIDE time selected for the zone (UNIT set up page) and additionally DELAY time of fantiles if selected (TUx connection page). Override is also possible from BMS.

3.2.4 Alarms

```
120  WARNINGS / ALARMS  1 of 2        130  WARNINGS / ALARMS  2 of 2
121  PASSWORD (LEVEL0)      ????       131  PASSWORD (LEVEL0)          ????
122  HIGH ZONE TEMP.        28 °C      132
123  SET BACK     AVERAGE   14 °C      133  USER INPUT1         WARNING
124  HIGH ZONE HUM.         75 %rH     134  USER INPUT2          ALARM
125  LOW ZONE HUM.          35 %rH     135
126  HIGH SUPPLY TEMP.      47 °C      136
127  LOW SUPPLY TEMP.       12 °C      137
```

No.	PARAMETER	HELP TIPS
121	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
122	HIGH ZONE TEMP.	Gives a warning if the zone temperature is higher than the setting. Note: there is a time delay of 30 minutes after the unit is on. Value may be set to NO.
123	SET BACK. AVERAGE	If the CAM is in operation and the calculated zone temperature (with setting AVERAGE) or one of the connected sensors or TUx values (with setting PEAK) is lower than the selected temperature for more than 2 minutes. A warning 'Low Zone Temperature' appears. If the CAM is not run in operation and the calculated zone temp. (with setting AVERAGE) or one of the connected sensors or calues of TUx (with setting PEAK) is lower than the selected temperature for more than 2 minutes, the CAM starts in automatic mode and continues operation until the temp. will increase +3K (fixed). Value may be set to NO.
124	HIGH ZONE HUM.	Gives a warning if the zone humidity is higher than the setting. Note: there is a time delay of 30 minutes after the unit is on. Value may be set to NO.
125	LOW ZONE HUM.	Gives a warning if the zone humidity is lower than the setting. Note: there is a time delay of 30 minutes after the unit is on. Value may be set to NO.
126	HIGH SUPPLY TEMP.	Gives a warning if the supply temperature is higher than the setting. Note: there is a time delay of 30 minutes after the unit is on. Value may be set to NO.
127	LOW SUPPLY TEMP.	Gives a warning if the supply temperature is lower than the setting. Note: there is a time delay of 30 minutes after the unit is on. Value may be set to NO.

No.	PARAMETER	HELP TIPS
131	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
132		
133	USER INPUT 1	User inputs are digital inputs which can influence the operating mode of the unit. Possible settings are: WARNING: if the input opens, a warning appears. ALARM: if the input opens, an alarm appears and the unit stops. NHUMI: if the input opens, the el. heater and the humidifier will be switched off. NOTUSED: user input is not used. No physical cable bridge required. LSI: Level Sensor Isolator – for protection against over-filling of the humidifier. As soon as a humidifier is selected; User Input 2 automatically sets to LSI RECOVERY: starts the recovery mode: all TUx off, unit on with fan only.
134	USER INPUT 2	See above: USER INPUT 1
135		
136		

3.2.5 Working Hours

140	WORKING HOURS 1/2			
141	PASSWORD (LEVEL0)		????	
142		HOURS	LIMIT	START
143	FAN	123	32100	1
144				
145	CW	456	32000	
146	HW	789	32000	
147				

150	WORKING HOURS 2 of 2			
151	PASSWORD (LEVEL0)		????	
152		HOURS	LIMIT	START
153	HE1	333	32000	2
154	HE2	456	32000	3
155	HUM	789	32000	4
156	DEH	222	32000	6
157				

No.	PARAMETER	HELP TIPS
141	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
142		The actual hours can be read in the column 'HOURS'. For all components individual thresholds can be set (LIMIT). If surpassed a warning will be generated. To overview the unit operation a counter (START) is implemented which counts the starts of the individual components. Working hours are counted and recorded for the components below:
143	FAN	Fan
144		
145	CW	Chilled Water Valve
146	HW	Hot Water Valve
147		

No.	PARAMETER	HELP TIPS
151	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
152		
153	HE1	Electrical heaters step 1
154	HE2	Electrical heaters step 2
155	HUM	Humidifier
156	DEH	Dehumidification
157		

3.2.6 Run Timer

```
RUN    (9 12 3)
TIMER     6
```

There are three windows available for the Timer. The first window sets the general settings.

500 STANDARD DAYS					ENABLED
501 PASSWORD (LEVEL0)			????		
502 DAY MO	TU WE	TH FR	SA SU		
503 TIME	MODE	SPEED	SETP		
504 07:00	ON	LOW	22.2	°C	
505 08:00	OFF	MED	20.0	°C	
506 09:00	REC	HIGH	22.9	°C	
507 10:00	FAN	LOW	30.1	°C	

No.	PARAMETER	HELP TIPS
500	ENABLE/DISABLE	Enable or Disable the Timer mode
501	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
502	DAY	Select the days on which the time settings will be performed
503	TIME	Defines the starting point of the Timer mode
504	07.00	MODE = ON/OFF REC = Recovery FAN = Fan only mode (If set to OFF, SPEED and SETPOINT are ignored but the unit may run when in 'override' mode.
505	08.00	SPEED = Defines the fanspeed during the timer mode SETP = sets the setpoint during the timer mode Note 1: if days are not selected the unit will remain off Note 2: before changing any settings, disable the timer first, set the settings and then re-enable the timer.
506	09.00	Note 3: If the timer is used just to start and atop the units(always keeping the same setpoints), 'private' setpoints remain unchanged. If different setpoints are
507	10.00	used during timer mode, the TUx setpoints are equalised each time the timer setpoint changes.

510 EXCEPTION DAYS				ENABLED
511 PASSWORD (LEVEL0)			????	
512 DAY MO TU	WE TH	FR SA	SU	
513 TIME	MODE	SPEED	SETP	
514 07:00	ON	LOW	22.2	°C
515 08:00	OFF	MED	20.0	°C
516 09:00	REC	HIGH	22.9	°C
517 10:00	FAN	LOW	30.1	°C

520 YEARLY EXCEPT.				ENABLED
521 PASSWORD (LEVEL0)			????	
522	DAY		DAY	
523	D1:	01.01.	D5:	13.07.
524	D2:	31.03.	D6:	00.00.
525	D3:	22.05.	D7:	00.00.
526	D4:	26.06.	D8:	00.00.
527				

No.	PARAMETER	HELP TIPS
510	EXCEPTION DAYS	The exception days override the DAY SETTINGS (if enabled). Exception days are active only on the selected days, unselected days operate either in standard timer mode or in standard mode.
520	YEARLY EXCEPT	Yearly Exception Days have the highest priority inside the timer hierarchy. It overrides the Day Settings as well as the Exception Days. 8 days of the year are selectable (Christmas etc.) On those days the unit will power OFF.

3.3 Service Menus
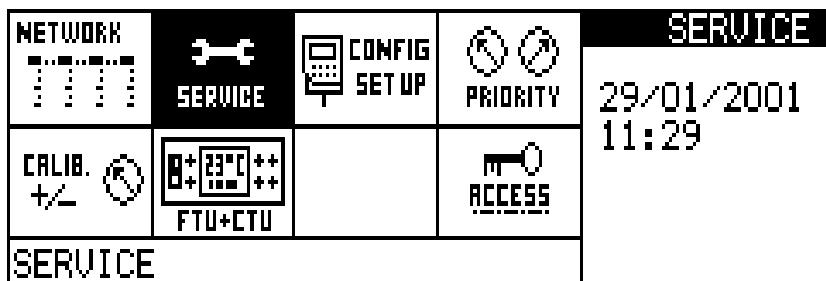
The window contains the following Menus (from top left to bottom right).

	Readable w/o Password	Write Access Level
NETWORK SETUP	YES	(LEVEL 5)
SERVICE	YES	(LEVEL 5)
UNIT CONFIGURATION	YES	(LEVEL 5)
SENSOR PRIORITY	YES	(LEVEL 5)
CALIBRATION	YES	(LEVEL 4)
TU	YES	(LEVEL 5)
PASSWORDS	NO	(LEVEL 3)

3.3.1 Network Setup


```
020 COMMUNICATIONS 1 of 2
021 PASSWORD (LEVEL0)          ????
022 NUMBER OF UNITS             4
023 FLEXNET ID NUMBER           1
024 COMMUNICATION        READ/WRITE
025
026
027
```

No.	PARAMETER	HELP TIPS
021	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
022	NUMBER OF UNITS	Defines the number of Flexfaces (= number of CAM-C / CAM-V)
023	FLEXNET ID NUMBER	Defines the Flexnet ID number
024	COMMUNICATION	Defines if commands from Flexlink will be accepted (read/write) or not (read)
025		
026		
027		

```
COMMUNICATIONS 2 of 2
UNIT 1      UNIT ON      14          8
UNIT 2      UNIT ON      42          9
UNIT 3      UNIT ON      33          10
UNIT 4      UNIT ON      2           11
UNIT 5
UNIT 6
      7
```

No.	PARAMETER	HELP TIPS
	UNIT 1	In this window all connected units are listed with their status. Note: there is auto-detection of new units; the string 'UNIT' appears for configured units only and the status only appears for connected units.
	UNIT 2	
	UNIT 3	The number beside the status shows the number of connected TUx. (Master and Slave units together)
	UNIT 4	

3.3.2 Services

SERVICE

```
200  SERVICE  1 of 3
201  PASSWORD (LEVEL0)              ????
202  MANUAL:      ON      HUM  :      ON
203  FAN  :       ON      DRAIN :     ON
204  3P.CW :      67%     DEHUM :     ON
205  3P.HW :      0%      AL.REL:     ON
206  HEAT 1:      OFF     ANA 1 :     14%
207  HEAT 2:      OFF     SPC  :      73%
```

No.	PARAMETER	HELP TIPS
201	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
202	MANUAL	Allows all components to be run in manual mode (= override of control) with safety devices active. Before starting any component the unit must be started in manual mode and…
203	FAN	Start the fan
204	3P.CW	
205	3P.HW	
206	HEAT 1	
207	HEAT 2	

210	SERVICE 2 of 3		
211			
212	REMOTE	o-o	ON
213	FIRE ALARM	o-o	OK
214	FILTER	o-o	WA
215	USER INPUT1	o-o	ACT
216	USER INPUT2	o-o	AL
217	LSI	o-o	ACT

220	SERVICE 3 of 3		
221			
222	OVERRIDE	o-o	OK
223	HW OK	o-o	ON
224	TSR	o-o	ON
225	RECOVERY	o-o	ON
226			
227			

No.	SERVICE WINDOWS	HELP TIPS
211		
212	The Service windows above give an overview about the digital inputs: there is a graphical symbol about the electrical contact of the input and a description which gives info about the status of the input:	
213		
214	OK: contact closed, no action	
215	WA: input in warning position	
216	AL: input in alarm position ACT: input active	
217	ON: input function	

3.3.3 Unit Configuration

```
 ┌──────┐  CONFIG
 │ ▭▭▭▭ │  SET UP
 └──────┘
```

There are twelve windows, which define the optional devices as well as the control parameters of the unit. Settings in this menu must be done from qualified personnel only.

300	UNIT CONFIGURATION 1 of 12		
301	PASSWORD (LEVEL0)		????
302	UNIT TYPE:		SINGLE COIL
303	STD. SETTINGS		YES
304	HM ON/OFF ENABLED		NO
305	CW/HW ACT.RUNTIME	170 sec	170 sec
306	EL. HEATING STEPS		3
307	HW + EL HEATERS		YES

No.	PARAMETER	HELP TIPS
301	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
302	UNIT TYPE	Single or double coil to be set according to the unit configuration.
303	STD. SETTINGS	See parameter list. After modifying the Flexface, the standard settings should be loaded at the start. This sets all parameters to pre-defined values.
304	HM ON/OFF ENABLED	Defines if the unit can be switched on or off from the Flexmatic.
305	CW/HW ACT. RUNTIME	The time needed from the actuators to move from closed to fully open.
306	EL. HEATING STEPS	Defines the number of heating steps.
307	HW + EL HEATERS	If set to YES, both the electric eaters and the hotwater valve may work at the same time if the control requests. If set to NO, electric heaters will only work if hot water is not available.

310	UNIT CONFIGURATION 2 of 12		
311	PASSWORD (LEVEL0)	????	
312	FANSPEED LOW	33	%
313	FANSPEED MED	66	%
314	FANSPEED HIGH	100	%
315			
316	HUMIDITY P-BAND	15	% rH
317	HUM COMPENSATION	YES	

No.	PARAMETER	HELP TIPS
311	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
312	FANSPEED LOW	Sets the output voltage (0-100%) for the different fanspeed levels: low, medium and high.
313	FANSPEED MED	
314	FANSPEED HIGH	
315		
316	HUMIDITY P-BAND	The selected bandwidth divides in two equal parts: one for humidification, one for dehumidification. Both functions start at their end of the proportional band and stop at the setpoint.
317	HUM COMPENSATION	If enabled, the control recalculates the humidity setpoint according to the actual return temperature. 1^oC deviation from the temp.setpoint changes the humidity setpoint with 4% rH. (indirect proportional function).

```
320  UNIT CONFIGURATION 3 OF 12
321  PASSWORD (LEVEL0)                    ????
322  RET. INTEGRATION                     123   sec
323  SUP.COMPENS.FACTOR                   3.2   K
324  SUP MIN/MAX               10 C /     30    C
325  SUPPLY P/I               4.0 K /     123   sec
326  SUPPLY DEADBAND                      3     K
327  OPP. FUNCT. DELAY                    10    min
```

No.	PARAMETER	HELP TIPS
321	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
322	RET.INTEGRATION	Integration factor (PI control) for return air control.
323	SUP.COMPENS FACTOR	This factor is multiplied with the actual return deviation and the supply air setpoint is modified accordingly.
324	SUP MIN/MAX	Highest/lowest permitted supply air temperature.
325	SUPPLY P/I	Proportional / Integral settings for the supply air control.
326	SUPPLY DEADBAND	Defines a 'dead zone' (no control operation) around the setpoint.
327	OPP.FUNCT.DELAY	A delay between cooling and heating and vice versa.

```
330  UNIT CONFIGURATION 4 OF 12
331  PASSWORD (LEVEL0)                    ????
332  OUTDOOR COMPENS.         ENABLED
333  ACT.OUTDOOR TEMP.        22.2    C
334  SU COMP. STARTS AT       25      C
335  WI COMP. STARTS AT       10      C
336  SU / WI FACTOR           0.1 / 0.2   K
337  MAX K+ SU / WI           3 / 4   K
```

No.	PARAMETER	HELP TIPS
331	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
332	OUTDOOR COMPENS	To enable or disable the outdoor compensation. (= increase zone temp.in summer, decrease in winter
333	ACT. OUTDOOR TEMP.	Read only value
334	SU COMP. STARTS AT	Outdoor temperature at which the compensation starts (Summer)
335	WI COMP. STARTS AT	Outdoor temperature at which the compensation starts (Winter)
336	SU/WI FACTOR	The zone setpoint will be slightly increased (Summer) or decreased (Winter) according to the calculation: outdoor deviation from "compensation starts at" point multiplied by factor.
337	MAX K+SU/WI	Limits the compensation to a maximum/minimum change of the actual zone setpoint.

```
340  UNIT CONFIGURATION 5 OF 12
341 PASSWORD (LEVEL0)           ????
342 HUMIDIFIER ENABLE           NO
343 MODEL / SUP VOLT      93H/ 400   V
344 STEAM RATE              100   %
345 CONTROL               ON/OFF
346 AMPS NOM/ACT         10.3 / 5.2  A
347 DEADBAND                10   % rH
```

No.	PARAMETER	HELP TIPS
341	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
342	HUMIDIFIER ENABLE	Enable or disable the humidifier
343	MODEL / SUP VOLT	According to the steam cylinder mounted in the unit
344	STEAM RATE	Selectable to NO (Humdifier off), or from 30 – 100%
345	CONTROL	ON-OFF: Humdifier starts at the end of the proportional band and operates with the selected steamrate until humidity reaches the setpoint. Proportional: Steamrate is modulated acc. to the deviation from the setpoint.
346	AMPS NOM/ACT	Read only value of the current to be reached (nominal) and the actual current (act.)
347	DEADBAND	Humidity control deadband. Defines a 'dead zone' (no control operation) around the setpoint.

```
350  UNIT CONFIGURATION 6 of 12
351 MULTIDIG INPUT
352 DEHUM ENABLE                NO
353
354 DEADBAND                 20   % rH
355 LWD / LWD INPUT      NO   / 1,5   V
356 ANALOG OUTPUT 1       COOLING
357 ANALOG OUTPUT 2
```

No.	PARAMETER	HELP TIPS
351	MULTI-DIGIT INPUT	
352	DEHUM ENABLE	To enable / disable dehumidification
353		
354	DEADBAND	
355	LWD/LWD INPUT	Shows the values of the Leakage Water Detector. NO = No sensor connected WARNING – warning at water detection ALARM = stops unit at water detection The value informs about the act. Status: dry sensors: around 1.4 and 1.6 volts
356	ANALOG OUTPUT 1	Analogue Output 1 – can be used for several functions: COOLING gives the cooling deviation (0-100% = 0-10V) HEATING gives the heating deviation (0-100% = 0-10V) ALARMB. (Alarmboard) drives an additional card to get volt free alarm contacts HUMID. Gives the humidifier deviation (0-100% = 0-10V) NOT USED = nothing connected RET.TEMP gives the actual zone temp. (0-50ºC = 0-10V)S SUP. TEMP gives the actual supply air temperature (0-50ºC = 0-10V) HEATERB. (Heaterboard) drives an additional board to control the electric heater steps
357	ANALOG OUTPUT 2	

```
360  UNIT CONFIGURATION 7 of 12
361  PASSWORD (LEVEL0)          ????
362  LOW AIRFLOW AT             SWI
363  AUTOSET AIRFLOW            YES
364  AIRFLOW VALUE             44    %
365  FAN FAILURE            WARNING
366  MIN. FRESH AIR             0
367  MAX. FRESH AIR             3
```

No.	PARAMETER	HELP TIPS
361	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
362	LOW AIRFLOW AT	To detect low airflow warning / alarm. Shall be set to 'SWI' if differential pressure switches are used, shall be set to a value in % if the PTC airflow sensor is used. The value will be found automatically with parameter 373
363	AUTOSET AIRFLOW	Stop unit first – set parameter to YES. Unit will start the fan for 30 seconds and then wait 30 seconds with the fan off. After that the value will be set automatically. If a warning appears, there was no reaction from the airflow device
364	AIRFLOW VALUE	Read only feedback from the airflow device
365	FAN FAILURE	If set to warning, the unit continues to operate in case of fan failure without electric heaters and humidifier. If set to alarm the unit shuts down on fan failure
366	MIN FRESH AIR	
367	MAX FRESH AIR	

```
370  UNIT CONFIGURATION 8 OF 12
371  PASSWORD (LEVEL0)          ????
372  AIR VOL.RED.EN.            NO
373  TU GR.A NA/KPA          3 / 0.7
374  TU GR. B NB/KPB         3 / 0.8
375  TU GR. C NC/KPC         3 / 0.9
376  TU GR. D ND/KPD         3 / 1.0
377  SPEED AT BUS INT.        MED
```

No.	PARAMETER	HELP TIPS
371	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
372	AIR.VOL.RED.EN	Enable / Disable the airflow
373	TU GR.A.NA/KPA	
374	TU GR.B.NB/KPB	NA,NB,NC,ND: no. of TUs in Group A-D
375	TU GR.C NC/KPC	KPA - KPD: speed reduction factor for the 4 Groups (use std. settings)
376	TU GR.D.ND/KPD	
377	SPEED AT BUS INT.	Fanspeed if TUx are disconnected

380	UNIT CONFIGURATION 9 of 12	
381	PASSWORD (LEVEL 0)	
382	DIFF.PRESS.CTRL.	DISABLED
383	DP SENSOR ADDRESS	3
384	DP SENSOR ERRORS	1
385	DP SENSOR FILTER	10P/s
386	DP SETPOINT (Pa)	12Pa
387	DP PROP/INTG (Pa) / (s)	20Pa/120s

No.	PARAMETER	HELP TIPS
381	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
382	DIFF.PRESS.CTRL.	
383	DP SENSOR ADDRESS	Pressure sensor address should equal 3
384	DP SENSOR ERRORS	
385	DP SENSOR FILTER	Set the sensor reaction time in pascal per second. If the sensor is reacting too fast, lower values can be set
386	DP SETPOINT (Pa)	Change requested pressure setpoint if required
387	DP PRPO/INTG (Pa)/(s)	

390	UNIT CONFIGURATION 10 of 12	
391	PASSWORD (LEVEL 0)	
392	DP PI RESULT	1.11
393	DP FANSPEED RESULT	1%
394	FANSPEED FILTER	1.0 % /s
395	USE MASTER MODE	NO
396	SuP DEADBAND 2	0.0K
397	DP PRESSURE ACT	1.1Pa

No.	PARAMETER	HELP TIPS
391	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
392	DP PI RESULT	
393	DP FANSPEED RESULT	
394	FANSPEED FILTER	If the fanspeed is reacting too fast, a lower value is recommended. (fanspeed change in percent % per second)
395	USE MASTER MODE	To enable 'Master Mode' at units with address 2 to 16, set this parameter to YES. In the master unit (address 1) this parameter has no effect. If set to YES, the COOLING/HEATING/FANSPEED request of the master unit (address 1) is used.
396	SuP DEADBAND 2	You can set a TEMPERATURE deadband around the setpoint. A value of 2.0K means no cooling/heating request 1K above and 1K below the setpoint.
397	DP PRESSURE ACT	

```
┌─────────────────────────────────────────────┐
│ 3A0  UNIT CONFIGURATION 11 of 12             │
│ 3A1 PASSWORD (LEVEL 0)                       │
│ 3A2 BLOCK COOL AT AMB <            0⁰C       │
│ 3A3 BLOCK HEAT AT AMB >            0⁰C       │
│ 3A4 HEATER DEADBAND                 1        │
│ 3A5 AMB TEMP EXT-BMS (⁰C)         10P/s      │
│ 3A6 USE 3-DIGIT DISPLAY           12Pa       │
│ 3A7 T      0 H      0 F              0        │
└─────────────────────────────────────────────┘
```

No.	PARAMETER	HELP TIPS
3A1	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
3A2	BLOCK COOL AT AMB	Set the BLOCK COOL/HEAT THRESHOLDS at desired outdoor temperature
3A3	BLOCK HEAT AT AMB	
3A4	HEATER DEADBAND (K)	-10.0 to +30.0
3A5	AMB TEMP EXT-BMS (°C)	
3A6	USE 3 DIGIT DISPLAY	YES/NO
3A7	T 0H 0F	View the current Temperature (T), Humidity (H) and Fanspeed (F) request: T: 0 = no request, 10000 = full cooling request, -10000 = full heating request H: 0 = no request, 10000 = full dehumification request, -10000 = full humidifcation request F: 0 = no request, 100 = full fanspeed request

```
┌─────────────────────────────────────────────┐
│ 3B0  UNIT CONFIGURATION 12 OF 12             │
│ 3B1 PASSWORD (LEVEL 0)                       │
│ 3B2 TEMP SET MIN SUMMER °C SETPOINT          │
│ 3B3 TEMP SET MIN SUMMER oC SETPOINT          │
│ 3B4 TEMP SET MIN SUMMER oC SETPOINT          │
│ 3B5 TEMP SET MIN SUMMER oC SETPOINT          │
│ 3B6 ACTIVE LIMITS                            │
│                                              │
└─────────────────────────────────────────────┘
```

No.	PARAMETER	HELP TIPS
3B1	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
3B2	Temp. set MIN. Summer (setpoint) °C	+15.0°C to +22.0°C
3B3	Temp. set MAX. Summer (setpoint) °C	+23.0 °C to +30.0°C
3B4	Temp. set MIN. Winter (setpoint) °C	+15.0 °C to +22.0°C
3B5	Temp. set MIN. Winter (setpoint) °C	+23.0 °C to +30.0°C
3B6	ACTIVE LIMITS	Select Summer / Winter

3.3.4 Sensor Priority

PRIORITY

600	SENSOR PRIORITY 1 of 1				
601	PW ???? (L0)	TEMP	PRI	HUM	PRI
602	PTC	23,4	50		
603	SENSOR 1	22,1	100	40	100
604	SENSOR 2	34,2	90	30	100
605	TU PEAK	22,2	100		
606	TUs	22,9	10	0	0
607	RESULT	25.4 C		35	%rH

No.	PARAMETER	HELP TIPS
		This window allows the user to give different priority to the various sensor values. The calculation is based on relation: if all priorities are set to 100%, the calculation will perform just the mathematical average. If one of the sensors has lower priority, it's value will have less impact on the calculation. If priority was set to 0%,the value of the specific sensor is ignored. NOTE: only TU temps. are used for the calculation
601	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
602	PTC	PTC sensor will be used in case of Bus interruption. PTS: the return sensor of the unit
603	SENSOR 1	Additional Temp. / Hum. Sensor
604	SENSOR 2	Additional Temp. / Hum. Sensor
605	TU PEAK	Shows the temp. of the TU with the highest deviation from the setpoint. Ignored TUx are not included in the peak value
606	TUx	The average of all TUs which are not ignored due to the ignore strategy
607	RESULT	Shows the actual calculated value for temperature and humidity which is used to control the unit

3.3.5 Sensor Calibration

240	CALIBRATION 1 of 2			
241	PASSWORD (LEVEL0)			????
242			ACTUAL	OFFSET
243	RET TEMP.		20.0	- 2.2
244	SUP TEMP.		21.0	1.1
245	MODE:			NO
246	TU MID:	1/1 RT	23.1	11 / 11
247	TU SID:	0/0 UT	11.1	33 / 33

No.	PARAMETER	HELP TIPS
241	PASSWORD (LEVEL 0)	For read/write access password level 4 needs to be entered
242		
243	RET TEMP.	= Return Air Temperature ACTUAL shows the read value (already including the offset) OFFSET – a value can be entered on the parameter which changes the actual value of the sensor
244	SUP TEMP.	= Supply Air Temperature ACTUAL shows the read value (already including the offset) OFFSET – a value can be entered on the parameter which changes the actual value of the sensor
245	MODE:	
246	TU MID:	TUx Master ID To read the value of a TUx, set the left hand values to the requested ID, go to MODE and set to READ the sensor values (RT = Room Temperature) UT = Underfloor Temperature) of the selected TU including the calibration will appear. To calibrate overwrite the RIGHT hand calibration values, go to MODE (in line 245) and set it to SET.Continue with next ID if requested, starting from setting the LEFT hand values to the requested ID, going to MODE (in line 245) and setting to READ.
247	TU SID:	TUx Slave ID

250	CALIBRATION 2 of 2		
251	PASSWORD (LEVEL0)		????
252		ACTUAL	OFFSET
253	SENSOR 1T	24.1	0.0
254	SENSOR 1H	52.6	0.1
255	SENSOR 2T	22.2	0.2
256	SENSOR 2H	49.7	0.3
257	OUT TEMP.	22.0	0.0

No.	PARAMETER	HELP TIPS
251	PASSWORD (LEVEL 0)	For read/write access password level 4 needs to be entered
252		
253	SENSOR 1T	The temperature of the additional room-sensor 1
254	SENSOR 2H	The humidity of the additional room-sensor 1 / 2
255	SENSOR 2T	The temperature of the additional room-sensor 2
256	SENSOR 2H	The humidity of the additional room-sensor 1 / 2
257	OUT TEMP.	Outdoor Air Temperature

3.3.6 TUx

FTU+CTU
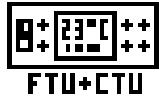
340	TUx CONFIGURATION		
341	PASSWORD (LEVEL0)	????	
342	MASTER TUx CONNECT	12	
343	AUTO-IGNORED TUx	1	
344	TUx OFF DELAY	15	min
345			
346			
347			

No.	PARAMETER	HELP TIPS
341	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
342	MASTER TUX CONNECT	To be set carefully: the number master TUx which are connected. Setting a wrong value here will corrupt the reading of the temperatures. **NOTE**: Master TUx must be numbered starting from 1 consecutively (1,2,3,…).
343	AUTO-IGNORED TUx	The number of most demanding TUx which should not be included in the calculation of the zone temperature. The ignore function will be adapted according to the function of the CAM unit: during cooling TUx with the highest temperature, during heating the TUx with the lowest temperature will be ignored.
344	TUx OFF DELAY	after stopping the CAM the TUx will continue to operate for the selected time.
345		
346		
347		

	TUx OVERVIEW	
	PASSWORD (LEVEL0)	????
	XTU 1/ 7/13/19:	10 / 12 / 00 / 00
	XTU 2/ 8/14/20:	10 / 00 / 00 / 00
	XTU 3/ 9/15/21:	10 / 00 / 00 / 00
	XTU 4/10/16/22:	10 / 00 / 00 / 00
	XTU 5/11/17/23:	10 / 00 / 00 / 00
	XTU 6/12/18/24:	10 / 00 / 00 / 00

No.	PARAMETER	HELP TIPS
	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
	TUx OVERVIEW	The TUx overview informs about all connected TUx; Masters & Slaves In the first line masters and slaves with ID 01/07/13/and 19 are listed: The first number stands for the master, the second for the number of slaves.

```
 TUx SUMMARY
     RT       UT       SET      FAN      IG
1:   22.1     21.9     23.0     67       N
2:   22.2     21.4     23.0     68       N
3:   22.3     21.4     23.0     69       Y
4:   21.8     21.1     23.0     40       Y
5:   23.4     22.1     23.0     55       A
6:   24.8     21.9     23.0     44       A
```

No.	PARAMETER	HELP TIPS
	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
	xTU SUMMARY	RT (room temperature) and UT (underfloor temperature) are read values. Setpoint (SET) and Fanspeed (FAN) can be set in these windows. IG = Ignore: N for Never, A for Automatic, Y for YES (=always).

```
 xTU 1
IG:  AUTO          RT/UT:    25.8 / 25.2 C

     + 6
SP:  26.5 C
     - 6

FS:  23%            24h       12h       13:22
```

No.	PARAMETER	HELP TIPS
	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
	xTU 1	This window is read only. It displays room temperature (RT), underfloor temperature (UT) and actual TU setpoint (SP). FS (Fanspeed) is shown in % The room temperature draws a graphic of the last 24 hours.

```
 xTU STATUS
ADR / MOD      1/    NO
DM:         YES
STB:        OFF      RT SL 0 / 4      23.3 / 25.9
SYS:         ON      RT SL 1 / 5      23.3 / 25.9
DAM:        OFF      RT SL 2 / 6      23.3 / 25.9
HEA:        OFF      RT SL 3 / 7      23.3 / 25.9
```

No.	PARAMETER	HELP TIPS
	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
	xTU STATUS	To read data the command MOD = READ must be performed first. ADR: to select the address of the TU MOD: NO = no action, READ = read values SET = set values. DM: for double sensor xTU: for indication only. YES =Heating, NO =Cooling. For single sensor xTU: to be set to YES for heating operation, NO for cooling operation.STB: xTU in standby. Not used read only. SYS: xTU in operation (SYS ON) or off (SYS OFF). (read only) DAM: position of the damper: on = open, off = closed. HEA:status of the el. heater: on or off.

XTU CONFIGURATION			
MODE:	READ	RTOFF:	20 / 20
MA ID:	1 / 1	UTOFF:	24 / 24
SL ID:	0 / 0	FSMIN:	0 / 0
FSC:	Y / Y	FANSP:	0 / 0
TYPE:	O / O	XTU T:	NO / NO
SW CO	3 / 3	R.INT:	X / X
HTR D:	0 / 0	C.TIM:	X / X

No.	PARAMETER	HELP TIPS
	PASSWORD (LEVEL 0)	Read/write access: USER – password level 1 SERVICE – password level 5
	TUx CONFIGURATION	MODE: NO = no action, READ = read values, SET = set values. MA ID: Master ID (select the left hand number to read data, select the right hand number to write) SL ID: Slave ID (select the left hand number to read data, select the right hand number to write) NOTE: Changing the address of a TUx: never change both addresses at the same time. If a TUx needs to be changed from master to a slave of a different address group, do it in to steps: change master (or slave) ID first, afterwards set the slave (or master) ID. FAN L: Local fanspeed management: Y (Master), N (Slave) or D (Default) M TYP: Mounting: U (CTU) / O (FTU) SET S: Summer / Winter setpoint shifting. Set from 0 – 4 K HTR D: Electrical heaters delay. Set from 0,10 .. 310 (0-31 minutes), 320 means heater excluded RT OF:offset of room temperature sensor UT OF:offset of underfloor temp. sensor FA OF: Slave speed offset FAN R: Fanspeed 0 - 58 = 0 - 100% XTU T: BLACK = Black TU, STD. = Fatronic EVOL. = Fatronic Evolution R.INT: Read interval Black TU: 0-60 min C.TIM: Read time Black TU, 0-200 sec

3.3.6   Access

This window allows changing the default passwords and is protected by a password. Please contact your local Flexible Space representative if you want to have the passwords changed.

LEVEL	ACCESS RIGHTS	PASSWORD
Level 1	User level	
Level 5	Service level	
Level 4	Sensor calibration	

3.4 Flexmatic Parameter List

Parameter Name	Nr.	Read Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set.
UNIT MAIN WINDOW	**-**						
ZONE TEMPERATURE	-	R	-28.0 - 100	°C	0.1	-	
ZONE SETPOINT	-	R	-	°C	0.1	-	
ZONE HUMIDiTY	-	R	0 - 100	%rH	1	-	
HUMIDITY SETPOINT	-	R	-	sec	1	-	
SUPPLY TEMPERATURE	-	R	-28.0 - 100	°C	0.1	-	
SUPPLY SETPOINT	-	R	-	°C	0.1	-	
FANSPEED	-	R	0 - 100	%	1	-	
COOLING OUTPUT	-	R	0 - 100	%	1	-	
LPHW OUTPUT	-	R	0 - 100	%	1	-	
EL. HEATING OUTPUT	-	R	0 - 100	%	1	-	
HUM OUTPUT	-	R	0 - 100	%	1	-	
DEHUM OUTPUT	-	R	0 - 100	%	1	-	
FLEXMATIC SETTINGS 1 OF 1	**000**						
PASSWORD (LEVEL0)	001	W	-	-	-	-	-
LANGUAGE :	002	W	ENGLISH	-	-	ENGLISH	-
TIME :	003	W	hh:mm	-	-	-	-
DATE :	004	W	dd:mm:yy	-	-	-	-
FLEXNET :	005	W	RW, RO	-	-	°C	-
CONTRAST :	006	W	170 – 255	-	1	200	-
BUZZER FRQ:	007	W	0.1 – 2.0	-	0.1	0.5	-
USER SETTINGS 1 of 1	**110**						
PASSWORD (LEVEL0)	111	W	-	-	-	-	-
ZONE SETPOINT	112	W	18.0 - 28.0	°C	0.1	23.0	23.0
TU SETPOINT RANGE	113	W	0 - 10	K	1	0.	0.
HUMIDITY SETPOINT	114	W	NO , 20 - 80	%rH	1	NO	NO
AUTORESTART	115	W	0 - 999	sec	1	1	1
FANSPEED	116	W	LOW ,MED ,HIGH	-	-	MED	MED
OVERRIDE TIME	117	W	0 - 60	min	1	30	30
WARNINGS / ALARMS 1 of 2	**120**						
PASSWORD (LEVEL0)	121	W	-	-	-	-	-
HIGH ZONE TEMP.	122	W	NO , 1 - 99	°C	1	NO	NO
SET BACK	123	W	NO , 1 - 99	°C	1	NO	NO
SET BACK	123	W	AVERAGE , PEAK	-	-	NO	NO
HIGH ZONE HUM.	124	W	NO , 1 - 99	%rH	1	NO	NO
LOW ZONE HUM.	125	W	NO , 1 - 99	%rH	1	NO	NO
HIGH SUPPLY TEMP.	126	W	NO , 1 - 99	°C	1	NO	NO
LOW SUPPLY TEMP.	127	W	NO , 1 - 99	°C	1	NO	NO
WARNINGS / ALARMS 2 of 2	**130**						
PASSWORD (LEVEL0)	131	W	-	-	-	-	-
USER INPUT1	133	W	WARNING , ALARM , NHumi , NotUsed , LSI , Recover	-	-	WARNING	WARNING
USER INPUT2	134	W	WARNING , ALARM , NHumi , NotUsed , LSI , Recover	-	-	LSI	LSI
WORKING HOURS 1 of 2	**140**						
PASSWORD (LEVEL0)	141	W	-	-	-	-	-
FAN HOURS	143	R	0 - 32000	Hrs	1	-	-
FAN LIMIT	143	W	0 - 32000	Hrs	1	20800	20800
FAN START	143	R	0 - 32000	-	1	-	-
CW HOURS	145	R	0 - 32000	Hrs	1	-	-
CW LIMIT	145	W	0 - 32000	Hrs	1	10400	10400
CW	145	R	0 - 32000	-	1	-	-
HW HOURS	146	R	0 - 32000	Hrs	1	-	-
HW LIMIT	146	W	0 - 32000	Hrs	1	10400	10400
HW	146	R	0 - 32000	-	1	-	-

Parameter Name	Nr.	Read Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set.
WORKING HOURS 2 of 2	**150**						
PASSWORD (LEVEL0)	151	W	-	-	-	-	-
HE1 HOURS	153	R	0 - 32000	Hrs	1	-	-
HE1 LIMIT	153	W	0 - 32000	Hrs	1	10400	10400
HE1 START	153	R	0 - 32000	-	1	-	-
HE2 HOURS	154	R	0 - 32000	Hrs	1	-	-
HE2 LIMIT	154	W	0 - 32000	Hrs	1	10400	10400
HE2 START	154	R	0 - 32000	-	1	-	-
HUM HOURS	155	R	0 - 32000	Hrs	1	-	-
HUM LIMIT	155	W	0 - 32000	Hrs	1	1000	1000
HUM START	155	R	0 - 32000	-	1	-	-
DEH HOURS	156	R	0 - 32000	Hrs	1	-	-
DEH LIMIT	156	W	0 - 32000	Hrs	1	500	500
DEH START	156	R	0 - 32000	-	1	-	-
DAY SETTINGS	**500**						
DAY SETTINGS	500	W	ENABLED , DISABLED	-	-	DISABLED	DISABLED
PASSWORD (LEVEL0)	501	W	-	-	-	-	-
DAY	502	W	MO TU WE TH FR SA SU	-	-	Mo - Fr	Mo - Fr
TIME	504 - 507	W	4 x hh:mm	-	-	8:00 - 18:00	8:00 - 18:00
MODE	504 - 507	W	ON , OFF	-	-	ON	ON
SPEED	504 - 507	W	LOW ,MED ,HIGH	-	-	MED	MED
SETP	504 - 507	W	5.0 - 40.0	°C	0.1	23.0	23.0
EXCEPTION DAYS	**510**						
EXCEPTION DAYS	510	W	ENABLED , DISABLED			DISABLED	DISABLED
PASSWORD (LEVEL0)	511	W	-	-	-	-	-
DAY	512	W	MO TU WE TH FR SA SU	-	-	Sa, Su	Sa, Su
TIME	514 - 517	W	4 x hh:mm	-	-	8:00 - 12:00	8:00 - 12:00
MODE	514 - 517	W	ON , OFF	-	-	ON	ON
SPEED	514 - 517	W	LOW ,MED ,HIGH	-	-	MED	MED
SETP	514 - 517	W	5.0 - 40.0	-	-	23.0	23.0
YEARLY EXCEPT.	**520**						
YEARLY EXCEPT.	520	W	ENABLED , DISABLED	#REF!	-	DISABLED	-
PASSWORD (LEVEL0)	521	W	-	-	-	-	-
DAY	523 - 526	W	8 x dd:mm	-	-	00.00	-
NETWORK SETUP 1 of 2	**020**						
PASSWORD (LEVEL0)	021	W	-	-	-	-	-
NUMBER OF UNITS	022	W	1 - 16	-	1	1	-
MIC ID NUMBER	023	W	1 - 99	-	1	1	-
COMMUNICATION	024	W	READ/WRITE	-	-	-	-
NETWORK SETUP 2 of 2	**-**						
STATUS UNIT 01 - 16	-	R	-	-	-	-	-
NUMBER TUx 01 - 16	-	R	-	-	-	-	-
SERVICE 1 of 3	**200**						
PASSWORD (LEVEL0)	201	W	-	-	-	-	-
MANUAL:	202	W	ON , OFF	-	-	-	-
FAN :	203	W	0 - 100	%	1	-	-
3P.CW :	204	W	0 - 100	%	1	-	-
3P.HW :	205	W	0 - 100	%	1	-	-
HEAT 1:	206	W	ON , OFF	-	-	-	-
HEAT 2:	207	W	ON , OFF	-	-	-	-
HUM :	202	W	ON , OFF	-	-	-	-
DRAIN :	203	W	ON , OFF	-	-	-	-
DEHUM :	204	W	ON , OFF	-	-	-	-
AL.REL:	205	W	ON , OFF	-	-	-	-
ANA 1 :	206	W	0 - 100	%	1	-	-
SPC :	207	W	0 - 100	%	1	-	-

Parameter Name	Nr.	Read Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set.
SERVICE 2 of 3	**210**						
REMOTE	212	R	ON , OFF	-	-	-	-
FIRE ALARM	213	R	OK , AL	-	-	-	-
FILTER	214	R	OK , WA	-	-	-	-
USER INPUT1	215	R	OK , ACT , WA , AL	-	-	-	-
USER INPUT2	216	R	OK , ACT , WA , AL	-	-	-	-
LSI	217	R	OK , ACT	-	-	-	-
SERVICE 3 of 3	**220**						
OVERRIDE	222	R	ON , OFF	-	-	-	-
HW OK	223	R	OK , OFF	-	-	-	-
TSR	224	R	OK , AL	-	-	-	-
RECOVERY	225	R	ON , OFF	-	-	-	-
UNIT CONFIGURATION 1 OF 12	**300**						
PASSWORD (LEVEL0)	301	W	-	-	-	-	-
UNIT TYPE:	302	W	SINGLE COIL , DOUBLE COIL	-	-	DOUBLE COIL	-
STD. SETTINGS	303	W	YES , NO	-	-	-	-
HM ON/OFF ENABLED	304	W	YES , NO	-	-	YES	0
CW/HW ACT.RUNTIME	305	W	30 - 500	sec	1	170	170
CW/HW ACT.RUNTIME	305	W	30 - 500	sec	1	170	170
EL. HEATING STEPS	306	W	0, 1, 2, 3	-	-	0.	-
HW + EL HEATERS	307	W	YES , NO	-	-	NO	-
UNIT CONFIGURATION 2 OF 12	**310**						
PASSWORD (LEVEL0)	311	W	-	-	-	-	-
FANSPEED LOW	312	W	0 - 100	%	1	0.	0.
FANSPEED MED	313	W	0 - 100	%	1	70	70
FANSPEED HIGH	314	W	0 - 100	%	1	100	100
HUMIDITY P-BAND	316	W	2 - 60	%rH	1	10	10
HUM COMPENSATION	317	W	YES , NO	-	-	YES	YES
UNIT CONFIGURATION 3 OF 12	**320**						
PASSWORD (LEVEL0)	321	W	-	-	-	-	-
RET. INTEGRATION	322	W	NO , 60 - 900	sec	1	300	600
SUP.COMPENS.FACTOR	323	W	1.0 - 10.0	-	0.1	4.0	3.7
SUP MIN/MAX	324	W	0 - 50	°C	0.1	10.0	13
SUP MIN/MAX	324	W	0 - 50	°C	0.1	30.0	32
SUPPLY P/I	325	W	1 - 30	K	1	4	10
SUPPLY P/I	325	W	NO , 60 - 900	sec	1	180	22
SUPPLY DEADBAND	326	W	0 - 10	K	1	2	1
OPP. FUNCT. DELAY	327	W	0 - 30	min	1	3	5
UNIT CONFIGURATION 4 OF 12	**330**						
PASSWORD (LEVEL0)	331	W	-	-	-	-	-
OUTDOOR COMPENS.	332	W	ENABLED , DISABLED			DISABLED	-
ACT.OUTDOOR TEMP.	333	R	-28.0 - 100.0	°C	0.1	-	-
SU COMP. STARTS AT	334	W	0 - 40	°C	1	32	32
WI COMP. STARTS AT	335	W	0 - 40	°C	1	16	16
SU / WI FACTOR	336	W	0.0 - 5.0	K	0.1	2.0	2.0
SU / WI FACTOR	336	W	0.0 - 5.0	K	0.1	2.0	2.0
MAX K+ SU / WI	337	W	0 - 10	K	1	3	3
MAX K+ SU / WI	337	W	0 - 10	K	1	3	3
UNIT CONFIGURATION 5 OF 12	**340**						
PASSWORD (LEVEL0)	341	W	-	-	-	-	-
HUMIDIFIER ENABLE	342	W	YES , NO	-	-	NO	-
MODEL / SUP VOLT	343	W	21L, 53L, 53H, 93L, 93H,	-	-	53H	53H
MODEL / SUP VOLT	343	W	230, 400, 460, 575	V	-	400	400
STEAM RATE	344	W	NO , 30 - 100	%	10	NO	NO
CONTROL	345	R	ON/OFF , PROP	-	-	ON/OFF	ON/OFF
AMPS NOM/ACT	346	R	0.0 - 40.0	A	0.1	-	-
AMPS NOM/ACT	346	W	0.0 - 40.0	A	0.1	-	-
DEADBAND	347	W	0 - 50	%rH	1	0.	

Parameter Name	Nr.	Read Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set.
UNIT CONFIGURATION 6 of 12	**350**						
PASSWORD (LEVEL0)	351	W	-	-	-	-	-
DEHUM ENABLE	352	W	YES , NO	-	-	NO	-
DEADBAND	354	W	0 - 50	%rH	1		-
LWD / LWD INPUT	355	W	NO , WARNING , ALARM	-	-	NO	-
LWD / LWD INPUT	355	R	0 - 2.5	V	0.1	-	-
ANALOG OUTPUT 1	356	W	COOLING , ALARMB. , HEATING , HUMID. , RET.TEMP , SUP.TEMP , HEATERB. , SUPERS.			HEATERB.	HEATERB.
ANALOG OUTPUT 2	357	W	COOLHEAT , FANSPEED			FANSPEED	FANSPEED
UNIT CONFIGURATION 7 of 12	**360**						
PASSWORD (LEVEL0)	361	W	-	-	-	-	-
LOW AIRFLOW AT	362	W	SWI , 0 100	%	1	00:00	28
AUTOSET AIRFLOW	363	W	YES , NO	-	-	NO	-
AIRFLOW VALUE	364	R	0 - 100	%	1	-	-
FAN FAILURE	365	W	WARNING , ALARM	-	-	WARNING	-
MIN. FRESH AIR	366	W	0-3	-	1	-	-
MAX. FRESH AIR	367	W	0-3	-	1	-	-
UNIT CONFIGURATION 8 of 12	**370**						
PASSWORD (LEVEL0)	371	W	-	-	-	-	-
AIR VOL.RED.EN.	372	W	YES , NO	-	-	NO	-
xTU GR. A NA/KPA	373	W	0 - 24	-	1	0.	-
xTU GR. A NA/KPA	373	W	0.1 - 10	-	0.1	0.5	-
xTU GR. B NB/KPB	374	W	0 - 24	-	1	0.	-
xTU GR. B NB/KPB	374	W	0.1 - 10	-	0.1	0.8	-
xTU GR. C NC/KPC	375	W	0 - 24	-	1	0.	-
xTU GR. C NC/KPC	375	W	0.1 - 10	-	0.1	0.9	-
xTU GR. D ND/KPD	376	W	0 - 24	-	1	0.	-
xTU GR. D ND/KPD	376	W	0.1 - 10	-	0.1	1.0	-
SPEED AT BUS INT.	377	W	LOW ,MED ,HIGH	-	-	LOW	-
UNIT CONFIGURATION 9 of 12	**380**						
PASSWORD (LEVEL0)	381	W					
DIFF.PRESS.CTRL	382	W	ENABLED, DISABLED				
DP SENSOR ADDRESS	383	R				3	3
DP SENSOR ERRORS	384						
DP SENSOR FILTER	385	W			Pa/s		
DP SETPOINT (Pa)	386	W					
DP PROP/INTG (Pa) / (s)	387				Pa/s		
UNIT CONFIGURATION 10 of 12	**390**						
PASSWORD (LEVEL0)	391	W					
DP PI RESULT	392						
DP FANSPEED RESULT	393						
FANSPEED FILTER	394	W			% / s		
USE MASTER MODE	395	W	YES, NO				
SuP DEADBAND2	396	W			K		
DP PRESSURE ACT	397				Pa		
UNIT CONFIGURATION 11 of 12	**3A0**						
PASSWORD (LEVEL0)	3A1	W					
BLOCK COOL AT AMB<	3A2	W			°C		
BLOCK HEAT AT AMB>	3A3	W			°C		
HEATER DEAD BAND	3A4	W	-10 to +30		K		
AMB TEMP EXT-BMS (°C)	3A5	R			°C		
USE 3-DIGIT DISPLAY	3A6	W	YES, NO				
T 0H 0F 0	3A7	R	0, +10000, -10000				
UNIT CONFIGURATION 12 of 12	**3B0**	**R**					
PASSWORD (LEVEL0)	3B1	W					
TEMP SET MIN SUMMER SETPOINT°C	3B2	W	+15.0 to 22.0	°C			
TEMP SET MAX SUMMER SETPOINT°C	3B3	W	+23.0 to 30.0	°C			
TEMP SET MIN WINTER SETPOINT°C	3B4	W	+15.0 to 22.0	°C			
TEMP SET MAX WINTER SETPOINT°C	3B5	W	+23.0 to 30.0	°C			
ACTIVE LIMITS	3B6	W	SUMMER, WINTER				

Parameter Name	Nr.	Read Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set.
SENSORS PRIORITY 1 of 1	**600**						
PW	601	W	-	-	-	-	-
PTC TEMP PRI	602	W	0 - 100	%	1	0.	-
SENSOR 1 TEMP PRI	603	W	0 - 100	%	1	0.	-
SENSOR 1 HUM PRI	603	W	0 - 100	%	1	0.	-
SENSOR 2 TEMP PRI	604	W	0 - 100	%	1	0.	-
SENSOR 2 HUM PRI	604	W	0 - 100	%	1	0.	-
xTU PEAK TEMP PRI	605	W	0 - 100	%	1	0.	-
xTU's TEMP PRI	606	W	0 - 100	%	1	100	-
RESULT TEMP	607	R	-	°C	0.1	-	-
RESULT HUM	607	R	-	%rH	1	-	-
CALIBRATION 1 of 2	**240**						
PASSWORD (LEVEL0)	241	W	-	-	-	-	-
RET TEMP.	243	W	+/- 9.9	°C	0.1	0.	-
SUP TEMP.	244	W	+/- 9.9	°C	0.1	0.	-
MODE:	245	W	+/- 9.9	°C	0.1	0.	-
TU MID: RT	246	W	0 - 99	°C	1	0.	-
TU MID: UT	246	W	0 - 99	°C	1	0.	-
CALIBRATION 2 of 2	**250**						
PASSWORD (LEVEL0)	251	W	-	-	-	-	-
SENSOR 1T	253	W	+/- 9.9	°C	0.1	0.	-
SENSOR 1H	254	W	+/- 9.9	%rH	0.1	0.	-
SENSOR 2T	255	W	+/- 9.9	°C	0.1	0.	-
SENSOR 2H	256	W	+/- 9.9	%rH	0.1	0.	-
EXT.TEMP.	257	W	+/- 9.9	%rH	0.1	0.	-
xTU CONNECTIONS	**340**						
PASSWORD (LEVEL0)	341	W	-	-	-	-	-
xTU SUMMARY	-	W	0 - 24	-	1	24	24
1 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
1 : FAN	-	W	0 - 100	%	1	-	-

Parameter Name	Nr.	Read/Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set.
xTU SUMMARY	**-**						
1 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
1 : FAN	-	W	0 - 100	%	1	-	-
1 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
2 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
2 : FAN	-	W	0 - 100	%	1	-	-
2 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
3 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
3 : FAN	-	W	0 - 100	%	1	-	-
3 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
4 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
4 : FAN	-	W	0 - 100	%	1	-	-
4 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
5 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
5 : FAN	-	W	0 - 100	%	1	-	-
5 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
6 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
6 : FAN	-	W	0 - 100	%	1	-	-
6 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
7 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
7 : FAN	-	W	0 - 100	%	1	-	-
7 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
8 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
8 : FAN	-	W	0 - 100	%	1	-	-
8 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
9 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
9 : FAN	-	W	0 - 100	%	1	-	-
9 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
10 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
10 : FAN	-	W	0 - 100	%	1	-	-
10 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
11 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
11 : FAN	-	W	0 - 100	%	1	-	-
11 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
12 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
12 : FAN	-	W	0 - 100	%	1	-	-
12 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
13 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
13 : FAN	-	W	0 - 100	%	1	-	-
13 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
14 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
14 : FAN	-	W	0 - 100	%	1	-	-
14 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
15 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
15 : FAN	-	W	0 - 100	%	1	-	-
15 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
16 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
16 : FAN	-	W	0 - 100	%	1	-	-
16 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
17 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
17 : FAN	-	W	0 - 100	%	1	-	-
17 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
18 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
18 : FAN	-	W	0 - 100	%	1	-	-
18 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
19 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
19 : FAN	-	W	0 - 100	%	1	-	-
19 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO

Parameter Name	Nr.	Read/ Write	Flexmatic Range	Unit	Res.	Init Value	Std. Set
20 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
20 : FAN	-	W	0 - 100	%	1	-	-
20 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
21 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
21 : FAN	-	W	0 - 100	%	1	-	-
21 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
22 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
22 : FAN	-	W	0 - 100	%	1	-	-
22 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
23 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
23 : FAN	-	W	0 - 100	%	1	-	-
23 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
24 : SET	-	W	18.0 - 28.0	°C	0.1	-	-
24 : FAN	-	W	0 - 100	%	1	-	-
24 : IG	-	W	NO , YES , AUTO	-	-	AUTO	AUTO
TUx STATUS							
ADR / MOD	-	W	1 - 24	-	-	-	
ADR / MOD	-	W	NO , READ , SET	-	-	-	
DM:	-	W	YES , NO	-	-	-	
STB:	-	W	ON , OFF	-	-	-	
SYS:	-	W	ON , OFF	-	-	-	
DAM:	-	R	ON , OFF	-	-	-	
HEA:	-	R	ON , OFF	-	-	-	
TUx CONFIGURATION							
MODE:	-	W	NO , READ , SET	-	-	-	
MA ID:	-	W	1 - 24	-	1	-	
SL ID:	-	W	0 - 7	-	1	-	
FAN L:	-	W	D, N, Y	-	-	-	
M TYP:	-	W	O, U	-	-	-	
SET S:	-	W	0 - 4	-	1	-	
HTR D:	-	W	0 - 32	min	1	-	
RT OF:	-	W	0 - 99	-	1	-	
UT OF:	-	W	0 - 99	-	1	-	
FA OF:	-	W	1 - 9	-	1	-	
FAN R:	-	W	0 - 58	-	1	-	
BLACK:	-	W	YES , NO	-	-	-	
R.INT:	-	W	0 - 60	-	1	-	
C.TIM:	-	W	0 - 200	-	1	-	

3.5 Messages / Warnings / Alarms

0	GENERAL ALARM	RESETACKNOWLEDGE	
1	NOT USED		
2	NOT USED		
3	NOT USED		
4	NOT USED		
5	ELECTRICAL HEATERS OVERHEATED	WARNING	
6	FAN FAILURE	WARNING	Warning only, stops humidifier + el. heaters
7	FAN FAILURE	ALARM	Stops the whole unit
8	CLOGGED FILTERS	WARNING	
9	WATER LEAKAGE	WARNING	Warning only
10	WATER LEAKAGE	ALARM	Stops the whole unit
11	USER INPUT 1 TRIGGERED	WARNING	Warning only
12	USER INPUT 1 TRIGGERED	ALARM	Stops the whole unit
13	HUMIDIFIER FAILURE	WARNING	
14	HUMIDIFIER HIGH CURRENT	WARNING	
15	HUMIDIFIER FAILURE	WARNING	
16	HUMIDIFIER FAILURE	WARNING	
17	HUMIDIFIER CYLINDER WORN	WARNING	
18	HIGH ZONE TEMPERATURE	WARNING	30 minutes delayed after start
19	LOW ZONE TEMPERATURE	WARNING	30 minutes delayed after start
20	HIGH ZONE HUMIDITY	WARNING	30 minutes delayed after start
21	LOW ZONE HUMIDITY	WARNING	30 minutes delayed after start
22	HIGH SUPPLY TEMPERATURE	WARNING	30 minutes delayed after start
23	LOW SUPPLY TEMPERATURE	WARNING	30 minutes delayed after start
24	NOT USED		
25	NOT USED		
26	CONDITIONER WORKING HOURS EXCEEDED	WARNING	
27	NOT USED		
28	HUMIDIFIER WORKING HOURS EXCEEDED	WARNING	
29	PTC SENSOR FAILURE	WARNING	
30	ROOM SENSOR FAILURE	WARNING	Warning only
31	ROOM SENSOR FAILURE	ALARM	Stops the whole unit
32	T+H SENSOR 2 FAILURE	WARNING	
33	WATER PRESENCE SENSOR FAILURE	WARNING	
34	NETWORK FAILURE	WARNING	Double Flexbus addresses (Sensors)
35	OUT OF MEMORY	WARNING	Hardware defective
36	UNIT ON	MESSAGE	
37	UNIT OFF	MESSAGE	
38	TIMER MODE	MESSAGE	
39	STANDBY MODE	MESSAGE	
40	POWER ON UNIT LOGIN	MESSAGE	
41	POWER OFF	MESSAGE	
42	Unit 1 disconnected	WARNING	Flexbus connection missing
43	Unit 2 disconnected	WARNING	Flexbus connection missing
44	Unit 3 disconnected	WARNING	Flexbus connection missing
45	Unit 4 disconnected	WARNING	Flexbus connection missing
46	Unit 5 disconnected	WARNING	Flexbus connection missing
47	Unit 6 disconnected	WARNING	Flexbus connection missing
48	Unit 7 disconnected	WARNING	Flexbus connection missing

49	Unit 8 disconnected	WARNING	Flexbus connection missing
50	Unit 9 disconnected	WARNING	Flexbus connection missing
51	Unit 10 disconnected	WARNING	Flexbus connection missing
52	Unit 11 disconnected	WARNING	Flexbus connection missing
53	Unit 12 disconnected	WARNING	Flexbus connection missing
54	Unit 13 disconnected	WARNING	Flexbus connection missing
55	Unit 14 disconnected	WARNING	Flexbus connection missing
56	Unit 15 disconnected	WARNING	Flexbus connection missing
57	Unit 16 disconnected	WARNING	Flexbus connection missing
58	NOT USED		
59	NOT USED		
60	NOT USED		
61	OUTDOOR TEMP. SENSOR FAILURE	WARNING	
62	NOT USED		
63	NOT USED		
64	ON-OFF BY FLEXMATIC NOT ENABLED	MESSAGE	
65	NOT USED		
66	NOT USED		
67	NOT USED		
68	USER INPUT 2 TRIGGERED	WARNING	
69	USER INPUT 2 TRIGGERED	ALARM	
70	NO CONNECTION TO UNIT 1	WARNING	unit #1 not reachable from other units
71	NOT USED		
72	NOT USED		
73	FIRE ALARM	ALARM	
74	OUT OF MEMORY	WARNING	Flexmatic memory overflow.
75	NOT USED		
76	NOT USED		
77	NETWORK PING	WARNING	Flexbus error. 2 sensors with same address.
78	NOT USED		
79	NOT USED		
80	NOT USED		
81	NOT USED		
82	NOT USED		
83	NOT USED		
84	NOT USED		
85	UNIT SYNCHRONISATION	MESSAGE	unit comes back to the Flexbus network (happens after power off)
86	NOT USED		
87	NOT USED		
88	NOT USED		
89	NOT USED		
90	AIRFLOW DEVICE NOT READY, PLS. CHECK	WARNING	no reaction of airflow device during selfsetting of threshold.
91	CW WORKING HOURS EXCEEDED	WARNING	
92	HW WORKING HOURS EXCEEDED	WARNING	
93	HEATER 1 WORKING HOURS EXCEEDED	WARNING	
94	HEATER 2 WORKING HOURS EXCEEDED	WARNING	
95	DEHUMIDIFICATION WORKING HOURS EXCEEDED	WARNING	
96	NOT USED		
97	NOT USED		
98	LOC OFF	MESSAGE	not used
99	REM OFF	MESSAGE	switched off from remote or from unit switch
100	NOT USED		
101	NOT USED		
102	TIMER OFF	MESSAGE	
103	BMS OFF	MESSAGE	
104	RECOVERY	MESSAGE	
105	MANUAL	MESSAGE	
106	OVERRIDE	MESSAGE	
107	SETBACK	MESSAGE	

Section Four - Connections

4.0 Connection Guide

The following gives general information about the Inputs and Outputs of the Flexface and how they have to be used. For detailed information please refer to the electrical diagram of the unit.

Inputs

| Inputs	Description	Function
PTC 0	Remote On/Off Fire Alarm (2400 Ω)	0Ω = Remote On 2400Ω = Fire Alarm $\infty\,\Omega$ = Remote Off
PTC 1	User Input 1	1 = Ok, 0 = UI active
PTC 2	Clogged Filter	1 = Ok, 0 = Clogged Filter
PTC 3	Local Override Electrical Heaters Overheated	3300Ω = Normal operation 0Ω = Override (Push Button) 2300Ω = El. Heaters overheated
PTC 4	Changeover Cycle Recovery Mode	3300Ω = No HW, no Rec.M. 2300Ω = HW OK, no Rec.M. 2800Ω = No HW, Rec.M. on 1800Ω = HW OK, Rec.M. on
PTC 5	Outdoor Sensor	
PTC 6	Room Sensor / Return Sensor	
PTC 7	Supply Air Sensor	
ANA In 0	Airflow Sensor 0-10V / Airflow Pressure switch On/Off / Pressure Control 0-10V	
ANA In 1	LSI / User Input 2	
ANA In 2	Water Leakage Detector	

Outputs

Outputs	Description	Function
Out 0	Warning	
Out 1	Open Chilled water Valve (changes to Heater 1 if 0-10V CW Output was selected on PWM 0)	
Out 2	Close Chilled Water Valve (changes to Heater 1 if 0-10V CW Output was selected on PWM 0)	
Out 3	Open Hot Water Valve	
Out 4	Close Hot Water Valve	
Out 5	Fill Humidifier	
Out 6	Drain Humidifier	
Out 7	Alarm	
Out 8	Fan	
Out 9	Humidifier (on I-Module)	
PWM 0	Alarm Board or Heater Board or CW Valve	
PWM 1	Fanspeed	

Power supply and PTC temperature sensors

Flexface

| 24 0 | PTC 5 GND P5 | PTC 6 GND P6 | PTC 7 GND P7 |

Power Supply 24VAC

Outdoor sensor

Room (Return) sensor

Supply Air sensor
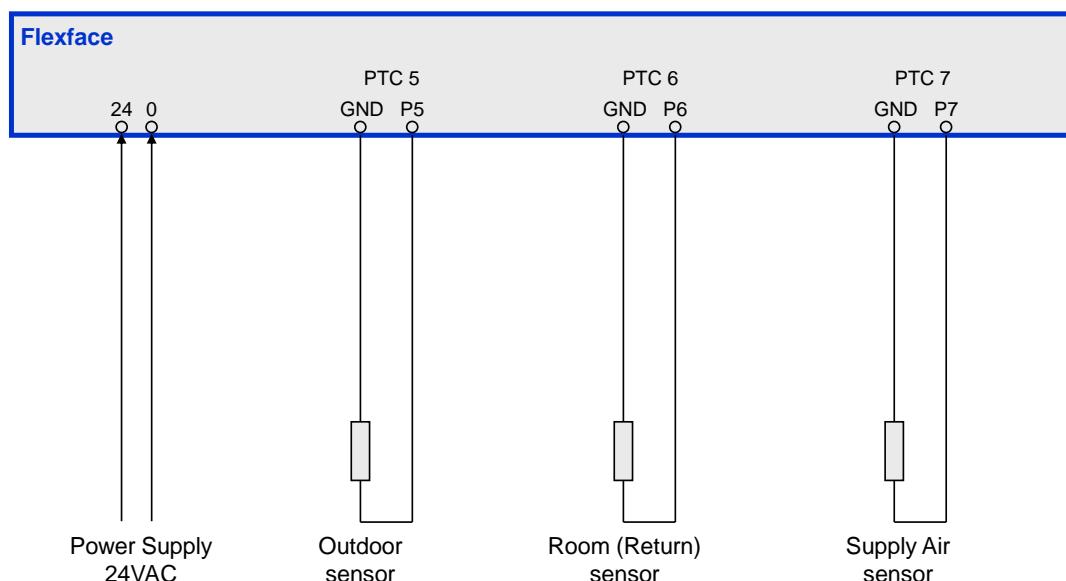
Warning, Alarm, fan output

Flexface

DIG Out 0	DIG Out 7	DIG Out 8
Nc Co No	Nc Co No	AC2 Out8

24V AC

0V AC

Warning (max.24VAC)

Alarm (max.24VAC)

Fan Contactor
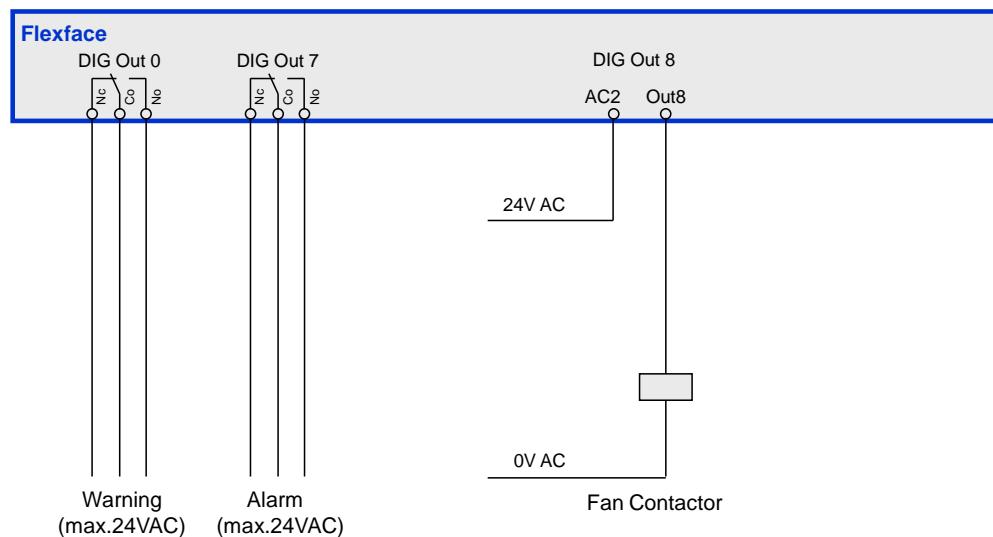
Chilled water + hot water actuator + el. heater alternative

Flexface

| G | DIG Out 1 | DIG Out 2 | DIG Out 3 | DIG Out 4 | DIG Out 1 | DIG Out 2 | G |

open   close   open   close

PC1   PC2

Safety Thermostat

Heater 1   Heater 2

Chilled Water actuator

Hot Water actuator

NOTE: This alternative can be used only if The chilled-water actuator was selected as 0-10V by software (Parameter 366, analogue out 1 set to "cooling)..

Analogue outputs

Flexface

ANA Out 0
G0 G 0

G

G0

ANA Out 1
G0 G 1

Aux. contact from
Fan Contactor

Safety
Thermostat

PC2

PC1

0V AC

24V AC

0 – 10VDC

Alternatives for Analog Out 0, if not used for Heater Board:

•Digital Expansion Board

•CW Valve 0-10V

Heater 1   Heater 2

0 – 10VDC
for fanspeed device

Humidifier control

Flexface

DIG Out 5   DIG Out 6   DIG Out 9
G   5   6   9

Fill Valve   Drain Valve   Humidifier
Contactor

Digital inputs (1)

Digital inputs (2)

Flexface

Digital Expansion Board

A1 C	A2 C	A3 C	B2 C	B3 C	C1 C	C2 C	C3 C

PC1 PC2

Local override

Heaters feedback

HW-thermostat

Recovery mode

Remote On / Off

Fire Alarm
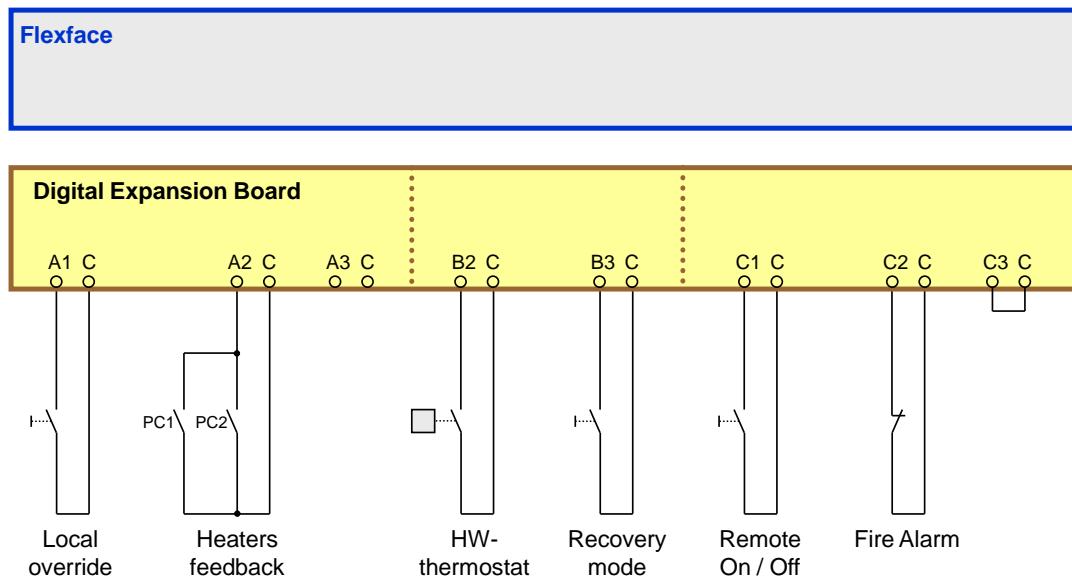
Airflow device, user input 2 and LWD

alternative

Flexface

ANA IN 0
(Jumper not set)

GND   0

ANA IN 0
(Jumper set)

G   G0   0

ANA IN 1
(Jumper not set)

GND   1

ANA IN 2 (Jumper not set)

GND   2

blue   black   red

Open : OK
Closed : Fan Failure

Open : UI active
Closed : UI inactive

in case of LSI:
Open : Cylinder empty
Closed : Cylinder full

Airflow
switch

Airflow Sensor

LSI
User Input 2

Water Leak Detector

AET Flexible Space
Under Floor Air Conditioning