DST *Seibu Giken*

EH3/T2 ver 4.
Humidity and Temperature controller

EH3/T2 ver 4.x

NOTE !
Read through the entire manual before you begin installation and programming.

APPLICATION
EH3/T2 is a microprocessor based transmitter/ controller for the measurement of humidity and temperature and calculated dew point, floating dew point and humidity ratio.
Floating dew point [FDP] meaning the wanted temperature difference between the calculated dew point [TDP] and the external surface temperature [T2].
FDP = (TDP-T2)
To avoid condensation on the external surface, a negative value is entered as the set point value.
E.g. -2,5 gives a wanted dew point of 7,5°C if the external surface temperature is 10°C.

With the four keys on the front panel it is possible to access all functions, make settings and scaling the output signal. The double row, 2x16 character, LCD with backlight displays functions and values.

MOUNTING
EH3/T2 is designed for wall mounting but can be fitted with an optional frame kit, MFM-PANEL, for recessed mounting on wall or through a cabinet door. EH3/T2 is screwed to the wall using four screws, max ø 4mm. Location of screw holes are shown on the backside of the enclosure.
Unscrew the lid and use the bottom screws to temporarily fix the lid on the upper edge of the enclosure during installation. See figure.

OUTPUT SIGNAL
EH3/T2 has two analogue output signals which can be used for humidity, temperature, dew point, floating dew point, humidity ratio and control signal. Each output has three terminals, one for Volt DC, one for mA DC and one common zero. The outputs permit using both mA and Volt signal simultaneously.

START MENU
When the transmitter is connected to supply voltage, a start menu is displayed. Using the arrow-keys it is possible to scroll through the different available start menus. To have the unit always displaying the same start menu, it can be selected and programmed in parameter group **System settings**.
By pressing the **ESC**-key when other menus are displayed the selected start menu is displayed

A   A
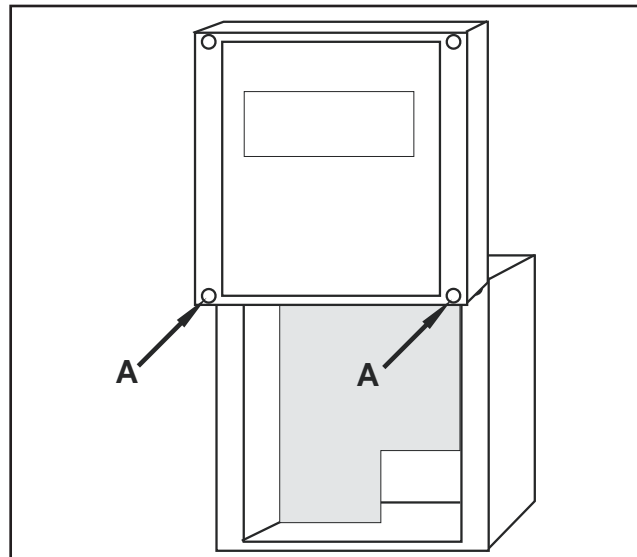
PROGRAMMING
Push the **PGM**-key until "PROGRAM-MENU" is displayed. Release the **PGM**-key and the first parameter group is displayed according to the parameter list on page 2. Using the arrow-keys it is possible to scroll through the different available parameter groups.
Note, If code lock is activated, see page 8, the programmed 4-digit access code must be entered to access the menu.

1. **Internals**
2. **System settings**
3. **Output 1**
4. **Output 2**
5. **Humidity**
6. **Temperature**
7. **Alarm 1**
8. **Alarm 2**
9. **2PC Controller**
10. **PI Controller 1**
11. **PI Controller 2**
12. **Communication**

When the desired parameter group is displayed, press the **PGM**-key to select the group for programming.
The available parameters in the selected parameter group is displayed on the bottom row.
Use the arrow-keys to select which parameter to program and press the **PGM**-key.

PARAMETER LIST

No	Lead text	Min	Max	Default
Internals				
P00	SW: I/O			
P01	SW: OPI			
System settings				
P64	Display	T1+RH T1+HR T1+TDP CUSTOM T2+FDP 2PC PI1 PI2		T1+RH
P71	Custom Row 1	RH T1 HR TDP T2 FDP PI1 PI2		RH
P72	Custom Row 2	RH T1 HR TDP T2 FDP PI1 PI2		T1
P65	Number of OPI	1	3	1
P66	Access code	0000	9999	0000
Output 1				
P54	Source	RH T1 HR TDP T2 FDP PI1 PI2		RH
P55	Signal V	0..10 2..10		0..10
P56	Signal mA	0..20 4..20		4..20
P57	Minval	-030.0	360.0	000.0
P58	Maxval	-030.0	360.0	100.0
Output 2				
P59	Source	RH T1 HR TDP T2 FDP PI1 PI2		PI1
P60	Signal V	0..10 2..10		0..10
P61	Signal mA	0..20 4..20		4..20
P62	Minval	-030.0	360.0	000.0
P63	Maxval	-030.0	360.0	100.0
Humidity				
P02	0%RH[V]	0.500	1.100	0.800
P03	75.3%RH[V]	2.800	3.500	3.134
P04	Sensor nr	000	999	000

No	Lead text	Min	Max	Default
P05	Cal Tbl	FACTORY USER 2P USER 1P		FACTORY
P06	UsrCalPt 1	000.0	100.0	000.0
P07	UsrCalPt 2	000.0	100.0	075.3
P08	SinglePt	000.0	100.0	000.0
Temperature				
P09	Temp Unit	C F K		C
P10	Offset Adj	-9.9	9.9	0.0
P11	Offset Adj2	-9.9	9.9	0.0
Alarm 1				
P12	Mode	OFF HIGH LOW		OFF
P13	Source	RH T1 HR TDP T2 FDP		RH
P14	Limit	-030.0	360.0	000.0
P15	Delay [s]	0000	3600	0000
P16	Reset	MANUAL AUTO		AUTO
P17	Beeper	OFF ON		OFF
P18	Mute time	0000	3600	0000
Alarm 2				
P19	Mode	OFF HIGH LOW		OFF
P20	Source	RH T1 HR TDP T2 FDP		RH
P21	Limit	-030.0	360.0	000.0
P22	Delay [s]	0000	3600	0000
P23	Reset	MANUAL AUTO		AUTO
P24	Beeper	OFF ON		OFF
P25	Mute time	0000	3600	0000
2PC Controller				
P26	Ch1	OFF HIGH LOW		HIGH
P27	Ch1 Src	RH T1 HR TDP T2 FDP		RH
P28	Ch1 On	-030.0	360.0	047.0
P75	Ch1 Max RH	000.0	100.0	000.0
P29	Ch1 Diff	00.1	99.9	02.0
P30	Ch1 Delay	0000	3600	0010
P31	Ch2	OFF HIGH LOW		HIGH

No	Lead text	Min	Max	Default
P32	Ch2 Src	RH T1 HR TDP T2 FDP		RH
P33	Ch2 On	-030.0	360.0	050.0
P76	Ch2 Max RH	000.0	100.0	000.0
P34	Ch2 Diff	00.1	99.9	03.0
P35	Ch2 Delay	0000	3600	0010
PI Controller 1				
P36	Mode	OFF ON		OFF
P37	Source	RH T1 HR TDP T2 FDP		RH
P38	Set point	-030.0	360.0	050.0
P73	Max RH	000.0	100.0	050.0
P39	NZ	00.1	50.0	00.1
P40	P-band [%]	000.0	999.9	014.0
P41	I-time [s]	0000	999	420
P42	Output	DIRECT REVERSE		DIRECT
P43	Min output	00	50	00
P44	Max output	030	100	100
PI Controller 2				
P45	Mode	OFF ON		OFF
P46	Source	RH T1 HR TDP T2 FDP		RH
P47	Set point	-030.0	360.0	050.0
P74	Max RH	000.0	100.0	050.0
P48	NZ	00.1	50.0	00.1
P49	P-band [%]	000.0	999.9	014.0
P50	I-time [s]	0000	999	420
P51	Output	DIRECT REVERSE		DIRECT
P52	Min output	00	50	00
P53	Max output	030	100	100
Communication				
P67	Address	1	247	21
P68	Baud	OFF 600 1200 2400 4800 7200 9600 14400 19200 38400 57600 115200 128000		38400
P69	Parity	NONE ODD EVEN		NONE
P70	Protect	NO YES		NO

Programming of a numeric value

Each digit in a numeric value is programmed separately. The selected digit is flashing. Press the up-arrow key for digits between 1 and 9. When passing digit "9", negative digits between -9 and 0 are shown if they are allowed in the parameter value. When all digits are programmed, press the **PGM**-key to save the new value. The entire row is flashing to confirm programming. To abort ongoing programming, press the **ESC**-key and then begin a new programming with the **PGM**-key.

Note! It is always possible to abort or cancel incorrect programming using the **ESC**-key unless you have pressed the **PGM**-key after programming the last digit.

Programming of alternative units or values

Press the arrow-keys to select the desired alternative unit or value. Press the **PGM**-key to save the change. The entire row is flashing to confirm programming.

Note! It is always possible to abort or cancel incorrect programming using the **ESC**-key unless you have pressed the **PGM**-key after selected unit/value.

End programming mode

Press the **ESC**-key to return to parameter group selection display. Press the **ESC**-key a second time to close the programming menu and return to the start menu. If no key has been pressed during 5 minutes, the program menu is closed automatically.

1. INTERNALS

Displays the program versions for the I/O-board (motherboard) and Operator Interface (display).

No	Lead text	Min	Max	Default
P00	SW: I/O			
P01	SW: OPI			

2. SYSTEM SETTINGS

General settings in EH3/T2

No	Lead text	Min	Max	Default
P64	Display	T1+RH T1+HR T1+TDP CUSTOM T2+FDP 2PC PI1 PI2		T1+RH
P71	Custom Row 1	RH T1 HR TDP T2 FDP PI1 PI2		RH
P72	Custom Row 2	RH T1 HR TDP T2 FDP PI1 PI2		T1
P65	Number of OPI	1	3	1
P66	Access code	0000	9999	0000

- P64 *Display*, Default start menu to be displayed is programmed.
- P71/P72 *Custom Row* is used together with the selection 'CUSTOM' in P64 *Display* to get a customized start menu with 2 values. RH is the relative humidity content, T1 is the temperature at the humidity sensor, HR is the calculated humidity ratio, TDP is the calculated dew point, T2 is the temperature at the cold surface, FDP is the floating dew point and PI1, PI2 are the control signals from the PI-controller.
- P65 *Number of OPI*, number of operator interfaces connected. See separate instruction.
- P66 *Access code* is used to activate/deactivate the code lock, see page 8.

3-4. OUTPUT 1 & 2
Settings for 2 output signals.

No	Lead text	Min	Max	Default
Output 1				
P54	Source	RH T1 HR TDP T2 FDP PI1 PI2		RH
P55	Signal V	0..10 2..10		0..10
P56	Signal mA	0..20 4..20		4..20
P57	Minval	-030.0	360.0	000.0
P58	Maxval	-030.0	360.0	100.0
Output 2				
P59	Source	RH T1 HR TDP T2 FDP PI1 PI2		PI1
P60	Signal V	0..10 2..10		0..10
P61	Signal mA	0..20 4..20		4..20
P62	Minval	-030.0	360.0	000.0
P63	Maxval	-030.0	360.0	100.0

EH3/T2 is equipped with 2 output signals, selectable between 0..10 Volt, 2..10 Volt, 0..20 mA or 4..20 mA.

- P54/P59 *Source* is used for selecting which measuring value/signal to use. 'PI' is the control signal from the PI-controller, 'RH' is the relative humidity, 'T1' is the temperature at the humidity sensor, 'HR' is the calculated humidity ratio and 'TDP' is the calculated dew point. 'T2' is the temperature at the cold surface. 'FDP' is the floating dew point and 'PI1', 'PI2' are the control output signals from the PI-controllers.
- P55/P60 *Signal V* changes between 0..10 Volt or 2..10 Volt output signal.
- P56/P61 *Signal mA* changes between 0..20 mA or 4..20 mA output signal.
- P57/P62 *Minval* and P58/P63 *Maxval* is used to

scale the output signal if the source (Source) is 'RH', 'T1', 'HR' ,'TDP', 'T2' and 'FDP'. If 'PI1' or 'PI2' is the source, the scale is always 0..100% and can not be altered. Any scaling is set in the same unit as the measuring value. Measuring values that are less than the value set in *Minval* will result in 0% output signal, measuring values greater than the value set in *Maxval* result in a 100% output signal.

5. HUMIDITY
Settings for humidity measurement.

No	Lead text	Min	Max	Default
P02	0%RH[V]	0.500	1.100	0.800
P03	75.3%RH[V]	2.800	3.500	3.134
P04	Sensor nr	000	999	000
P05	Cal Tbl	FACTORY USER 2P USER 1P		FACTORY
P06	UsrCalPt 1	000.0	100.0	000.0
P07	UsrCalPt 2	000.0	100.0	075.3
P08	SinglePt	000.0	100.0	000.0

Calibration data for the humidity sensor
The sensor has an measurement error less than ± 2% RH. With each sensor, a calibration protocol is attached where two reference values in volt for 0% and 75,3% RH (factory calibration) are noted. The programmed values must be the same as in the sensors attached calibration protocol. If the sensor is replaced, the new values in the calibration protocol for the new sensor must be programmed for 0% and 75.3 % RH to achieve the same accuracy as before the replacement. Also programme the new 3 digit sensor number which is found on the small label located on the sensor chip. Use leading zero´s "0" if the number is below 100.
NOTE! Always save the calibration protocol that was attached with the installed sensor.

Calibration tables
EH3/T2 has 3 tables for storing alternative calibration, one factory calibration table 'FACTORY' and 2 user calibration tables 'USER 2P' and 'USER 1P' for field calibration in 1 or 2 points. When the field calibration are made, it is possible to switch between the different calibration tables and use the desired one.

Factory calibration
Calibration table 'FACTORY' must be selected if factory calibration should be used.

Field calibration
Field calibration can be made in one or two calibration points. During field calibration the calibration table 'FACTORY' must be selected. After the field calibration is made it is possible to selected the desired table to use.

Two-point field calibration
Normally this calibration is made using salt solutions with a predefined humidity content.

1. Programme P05 *Cal Tbl* to 'FACTORY'

2. Place the probe in a predefined humidity content for calibration of the lower point of humidity content.

3. Programme the predefined value of the humidity content in parameter P06 *UsrCalPt 1*.

When programming is made and the **PGM**-key is pressed, the calibration process of the lower point is started. It is of great importance that the sensor is surrounded of the predefined humidity during the entire calibration process.
The bottom row is flashing during calibration.
When calibration is done for the lower calibration point, continue with programming and calibration of the higher point.

4. Place the probe in a predefined humidity content for calibration of the higher point of humidity content.

5. Programme the predefined value of the humidity content in parameter P07 *UsrCalPt 2*.

When programming is made and the **PGM**-key is pressed, the calibration process of the higher point is started. It is of great importance that the sensor is surrounded of the predefined humidity during the entire calibration process. The bottom row is flashing during calibration.
When calibration is done for the higher calibration point:

6. Programme parameter P05 *Cal Tbl* to 'USER 2P'.

The 2 calibration points can be re-calibrated separately if necessary later.

One-point field calibration:
This type of calibration is often made using a reference instrument or similar.

1. Programme P05 *Cal Tbl* to 'FACTORY'

2. Programme the read value in % RH of the reference instrument in parameter P08 *SinglePt*.

When programming is made and the **PGM**-key is pressed, the calibration process of the current humidity content is started. It is of great importance that the sensor is surrounded of the same current humidity content during the entire calibration process. The bottom row is flashing during calibration.
When calibration is done:

3. Programme P05 *Cal Tbl* to 'USER 1P'.

The calibration point can be re calibrated if necessary later.

Changing calibration table
The 3 calibration tables are stored separately which makes it possible to switch between the tables if they contain any calibration data. Programme parameter P05 *Cal Tbl* to the desired calibration table.

6. TEMPERATURE
Settings for temperature measurement at the humidity sensor and at the cold surface.

No	Lead text	Min	Max	Default
P09	Temp Unit	C F K		C
P10	Offset Adj	-9.9	9.9	0.0
P11	Offset Adj2	-9.9	9.9	0.0

- P09 *Temp Unit*. Select measurement unit. Selected unit also apply for indication of calculated dew point. During special conditions, the measured value can deviate from a desired reference value. To obtain similar readings, the temperature deviation can be adjusted so the EH3/T2 indicate the same temperature as the reference value.
- P10 *Offset Adj* is used for adjusting the measurement at the humidity sensor (T1).
- P11 *Offset Adj2* is used for adjusting the measurement at the cold surface (T2).

7-8. ALARM 1 & 2
Settings for 2 alarm limits.

No	Lead text	Min	Max	Default
Alarm 1				
P12	Mode	OFF HIGH LOW		OFF
P13	Source	RH T1 HR TDP T2 FDP		RH
P14	Limit	-030.0	360.0	000.0
P15	Delay [s]	0000	3600	0000
P16	Reset	MANUAL AUTO		AUTO
P17	Beeper	OFF ON		OFF
P18	Mute time	0000	3600	0000
Alarm 2				
P19	Mode	OFF HIGH LOW		OFF
P20	Source	RH T1 HR TDP T2 FDP		RH
P21	Limit	-030.0	360.0	000.0
P22	Delay [s]	0000	3600	0000
P23	Reset	MANUAL AUTO		AUTO
P24	Beeper	OFF ON		OFF
P25	Mute time	0000	3600	0000

EH3/T2 is equipped with a visual and acoustic alarm. The visual alarm is indicated with a green LED at normal conditions and a red LED in alarm state on the front panel. The acoustic alarm is a beeper fitted to the front panel and can be enabled or disabled for each alarm.

There are two separate alarm for high or low level, both with their own programmable time delay. If both alarms are used simultaneously, the red LED will be activated by the first alarm occurrence. At the alarm set point, the red LED is lit and after set time delay the LED start to flash. The display will indicate which level that caused the alarm condition

- P12/P19 *Mode* is used to set the alarm to occur for high or low level. It is also used to deactivate the alarm function.
- P13/P20 *Source* is used for selecting which measuring value/signal to monitor. 'RH' is the relative humidity, 'T1' is the temperature at the humidity sensor, 'HR' is the calculated humidity ratio and 'TDP' is the calculated dew point. 'T2' is the temperature at the cold surface and 'FDP' is the floating dew point.
- P14/P21 *Limit* is the alarm set point.
- P15/P22 *Delay [s]* determines the time delay in seconds before an alarm condition is triggered.
- P16/P23 *Reset* 'MANUAL' will set the alarm condition to be reset manually by pressing the **ESC**-key when the level is back to normal. 'AUTO' will set the alarm condition to reset automatically when the level is back to normal.
- P17/P24 *Beeper* 'OFF' will deactivate the built-in beeper. 'ON' activates the beeper when an alarm is triggered.
- P18/P25 *Mute time* is set to silence the alarm for a set time in seconds when the **ESC**-key is pressed. If the time is set to '0000' seconds, the beeper will be muted until the alarm condition is reset and until the next alarm condition occur.

9. 2PC CONTROLLER
Settings for On/Off-controller.

No	Lead text	Min	Max	Default
P26	Ch1	OFF HIGH LOW		HIGH
P27	Ch1 Src	RH T1 HR TDP T2 FDP		RH
P28	Ch1 On	-030.0	360.0	047.0
P75	Ch1 Max RH	000.0	100.0	000.0
P29	Ch1 Diff	00.1	99.9	02.0
P30	Ch1 Delay	0000	3600	0010
P31	Ch2	OFF HIGH LOW		HIGH
P32	Ch2 Src	RH T1 HR TDP T2 FDP		RH
P33	Ch2 On	-030.0	360.0	050.0
P76	Ch2 Max RH	000.0	100.0	000.0
P34	Ch2 Diff	00.1	99.9	03.0
P35	Ch2 Delay	0000	3600	0010

EH3/T2 has 2 voltage-free relays for connecting in 1 or 2 steps used for dehumidifying or humidifying or for On-Off control of other unit, e.g. temperature.
- P26/P31 *Ch1/2* Select 'HIGH' for closing contact at high/increasing signal (dehumidifying). 'LOW' will result in a closing contact at low/decreasing signal (humidifying). 'OFF' will disable any control.
- P27/P32 *Ch1/2 Src* is used to select which measuring value or signal to control. 'RH' is the relative humidity, 'T1' is the temperature at the humidity sensor, 'HR' is the calculated humidity ratio, 'TDP' is the calculated dew point, 'T2' is the temperature at the cold surface and 'FDP' is the floating dew point.
- P28/P33 *Ch1/2 On* is used to set a control limit. At set limit, the relay contact is closing.
- P75/P76 *Ch1/2 Max RH* is used to guarantee a max RH value when controlling a different parameter than RH. If floating dew point is selected, the control set point is initially the max RH value and then decrease until desired deviation is reached. This function is disabled if the parameter is set to "0" and enabled when otherwise.
  The hysteresis is factory set to 2 % RH.
- P29/P34 *Ch1/2 Diff* is used to set a hysteresis for the control. At 'HIGH', the hysteresis is below the set limit and at 'LOW' above the limit.
- P30/P35 *Ch1/2 Delay*, set a time delay for the relay to close.

EH3/T2 is factory programmed for dehumidifying in 2 steps.
Step 1 (Ch1) closes its relay output when the humidity content, RH, (Ch1 Src) exceeds 47.0 % (Ch1 On) for 10 seconds (Ch1 Delay). The contact release when the humidity content falls below 45.0 % (47.0 - 2.0 or P28-P29).
Step 2 (Ch2) closes its relay output after 10 seconds (Ch2 Delay) when humidity content is above 50.0 % (Ch2 On). The contact release at 47.0 % (50.0 - 3.0 or P33-P34).

10-11. PI CONTROLLER 1 & 2
Settings for control with 2 PI-controllers.

No	Lead text	Min	Max	Default
PI Controller 1				
P36	Mode	OFF ON		OFF
P37	Source	RH T1 HR TDP T2 FDP		RH
P38	Set point	-030.0	360.0	050.0
P73	Max RH	000.0	100.0	050.0
P39	NZ	00.1	50.0	00.1
P40	P-band [%]	000.0	999.9	014.0
P41	I-time [s]	0000	999	420
P42	Output	DIRECT REVERSE		DIRECT
P43	Min output	00	50	00
P44	Max output	030	100	100

PI Controller 2				
P45	Mode	OFF ON		OFF
P46	Source	RH T1 HR TDP T2 FDP		RH
P47	Set point	-030.0	360.0	050.0
P74	Max RH	000.0	100.0	050.0
P48	NZ	00.1	50.0	00.1
P49	P-band [%]	000.0	999.9	014.0
P50	I-time [s]	0000	999	420
P51	Output	DIRECT REVERSE		DIRECT
P52	Min output	00	50	00
P53	Max output	030	100	100

EH3/T2 is equipped with 2 PI-controllers for a selectable measuring value. The control signals can be directed and set to a desired output in parameter group **Output 1** or **Output 2**.

- P36/P45 *Mode* activates/deactivates the control function.
- P37/P46 *Source* determines which measuring value/signal to be controlled. 'RH' is the relative humidity, 'T1' is the temperature at the humidity sensor, 'HR' is the calculated humidity ratio and 'TDP' is the calculated dew point. 'T2' is the temperature at the cold surface and 'FDP' is the floating dew point..
- P38/P47 *Set point,* Controllers set point value.
- P73/P74 *Max RH* is used to guarantee a max RH value when controlling a different parameter than RH. If floating dew point is selected, the control set point is initially the max RH value and then decrease until desired deviation is reached. This function is disabled if the parameter is set to "0" and enabled when otherwise.
  Neutral zone is factory set to 2 % RH
- P39/P48 *NZ* sets a neutral zone surrounding the set point. Half zone on each side of the set point value. The neutral zone is set in the same unit as the controlled unit, e.g.. °C for 'T1'.
- P40/P49 *P-band [%]* Selects a suitable value of the P-band to achieve a stable control. If the P-band is programmed to 0 %, the P-function is disabled and the I-time is calculated for a P-band of 100 %.
- P41/P50 *I-time [s]* Select a suitable I-time to achieve a stable control.
- P42/P51 *Output* 'DIRECT' result in an increasing control signal when the measuring value is higher than the set point value. 'REVERSE' result in a decreasing control signal when the measuring value is higher than the set point value.
- P43/P52 *Min output* and P44/P53 *Max output* is used to limit the control signal.

Manual operation of the PI-controller
Manual operation is done from the start menu. Select the menu that show "AUTO X" on the bottom row. "X" varies between "1" and "2" depending on which PI-controller that is selected. Press the **PGM**-key to switch between "HAND X" and "AUTO X" position. Use the arrow keys in the "HAND" position to change the control signal manually.
Press the **ESC**-key to exit manual operation. If the function is left in position "HAND", the last value in manual operation is valid until other selection is made or until the EH3/T2 is restarted. In normal state, a green LED is flashing to indicate that the control signal is in "HAND" position.

12. COMMUNICATION
Modbus RTU through RS-485 serial connection.
This parameter group is only visible when communication module is installed.

No	Lead text	Min	Max	Default
P67	Address	1	247	21
P68	Baud	OFF 600 1200 2400 4800 7200 9600 14400 19200 38400 57600 115200 128000		38400
P69	Parity	NONE ODD EVEN		NONE
P70	Protect	NO YES		NO

EH3/T2 can be fitted with a built-in expansion module (Option) for network communication with a computer.
- P67 *Address*, network address for EH3/T2, factory default as 21.
- P68 *Baud*, transfer rate, factory default 38400 baud.
- P69 *Parity*, Parity bit in data transfer. Factory default 'NONE'.
- P70 *Protect*, Protection for parameter programming through network communication. 'YES' = write protection. This parameter can only be set to 'NO' using the EH3/T2 keypad.

CODE LOCK PROTECTION

The code lock is used to protect against an authorized programming. A four-digit code must be entered to access the program menu and the functions menu. It is still possible to read measuring values and operating state without entering the access code.

At delivery, the code is set to '0000', unless otherwise agreed on. When the code is set to '0000', the code lock is inactivated and no protection against an authorized programming is present.

Activation

To activate the code lock, a 4-digit code must be programmed in parameter P05 *Access code* which is found in parameter group **System settings**. The code can not be '0000', since this code is used to deactivate the function. When a code has been programmed and saved, the next time it will be necessary to enter the code to access the program menu and the functions menu.

Deactivating

The code lock can only by deactivated in the program menu and therefore the access code must be available to deactivate the code lock. Set the parameter P05 *Access code* to '0000'. The parameter is found in the parameter group **System settings**.

Contact Micatrone if the code has been lost!

Entering the code

To access the program menu or functions menu it is necessary to enter the access code.
Example:

- Press the **PGM**-key to open the program menu. Press the **PGM**-key until "PROGRAM- MENU" is displayed.
- Release the **PGM**-key. Following text is displayed if key code is activated: "ENTER CODE:" and "0***".
- The first digit of the access code can be entered using the arrow keys. When ready press the **PGM**-key to continue with the next digit. Repeat until all digits are entered.
  When the 4 digits are entered, press the **PGM**-key a final time. The entered code is now compared with the programmed code in parameter P05 *Access code*. If the codes match, the program menu is displayed. The program menu is available until it has been exited using the **ESC**-key.
- If the entered access code is incorrect, the text "INVALID CODE" is displayed during 2 seconds. Restart from the beginning.
- By pressing the **ESC**-key, the entering code operation is cancelled and the default start menu is displayed.

FUNCTIONS MENU

Functions that are not used frequently on daily basis are found in the functions menu. The functions menu is accessed by pressing simultaneously the **PGM** and **ESC**-key until the text "FUNCTIONS-MENU" is displayed. If code lock is activated, see page 8, a valid access code must be entered to access the menu.

Use the arrow keys to scroll through the different functions, when displayed, select the desired function by pressing the **PGM**-key. Exit the present menu by pressing the **ESC**-key.

Functions

- *Serial number* Display the serial number xxxxx-xxx.
- *Date of cal.* Display the latest factory calibration date.
- *Reset Defaults* Restore all data to the latest factory calibration.
- *List of params* All values in the entire parameter list is restored to default values at factory delivery.
- *Calibrations* All calibrations is restored to the original values at factory delivery.
  Note: field calibrations will be reset .
- *Calibration*
  - *Input*, five-point calibration of the pressure measurement
- *Statistics* Displays statistics for internal restarts.
  - *Power on*, Number of normal power-on´s.
  - *Brown out*, Number of restarts due to poor supply voltage.
  - *Watchdog reset*, Number of restarts due to runtime error.
  - *SW error reset*, Number of restarts due to software error.
  - *Last reset cause,* The cause for the latest restart.
  - *Operating time*, Operting time since latest start.
  Shown in days, hours and minutes (d:hh:mm).

TECHNICAL DATA

Display:	Alphanumeric LCD 2 row, 2x16 characters with backlight
Power supply:	230 ± 15% VAC
Pwr consumption:	Max 5 VA
Measuring range,	
- Temperature:	-30..80 °C
- Humidity:	0..100 % non condensing
- Dew point:	-30..80 °C
- Humidity ratio:	0..25 g/kg
Measuring error,	
- Humidity:	< +/- 2 % RH
- Temperature:	< +/- 0,3 °C
Response time:	30 seconds in slow moving air
RH-stability:	+/- 1 % at 50% RH during 5 years
Output signal:	Two analogue outputs, 0/2...10 VDC, 0/4...20 mA selectable and scalable. Both mA and Volt output can be used simultaneously
Temperature input 2:	Pt-1000
Load relay output:	Max 230 VAC, 16 A at cos φ = 1 8 A at cos φ = 0,4 (L/R = 7 ms).
Ambient temperature:	0...50°C
Alarm:	Two separate alarms for high & low level, alarm indication with red LED and buzzer (joint)
Degree of protection:	IP 65, ABS plastic
Sensor protection:	Sintered plastic filter

El-connection,	
- Motherboard:	1 x 2,5 mm^2 / terminal
- Relay module	1 x 2,5 mm^2 / terminal
- Measuring module:	1 x 1,5 mm^2 / terminal
Cable entries:	4x M16x1,5 and 1x M12x1,5 reserved for sensor. Cable gland not included.
Dimensions:	WxHxD = 122x120x90 mm
Weight:	0,70 kg excl. sensor

MAINTENANCE

EH3/T2 normally needs no service. The sintered filter on the sensor should be checked and, if clogged cleaned or replaced.

DELIVERY OPTIONS SENSOR

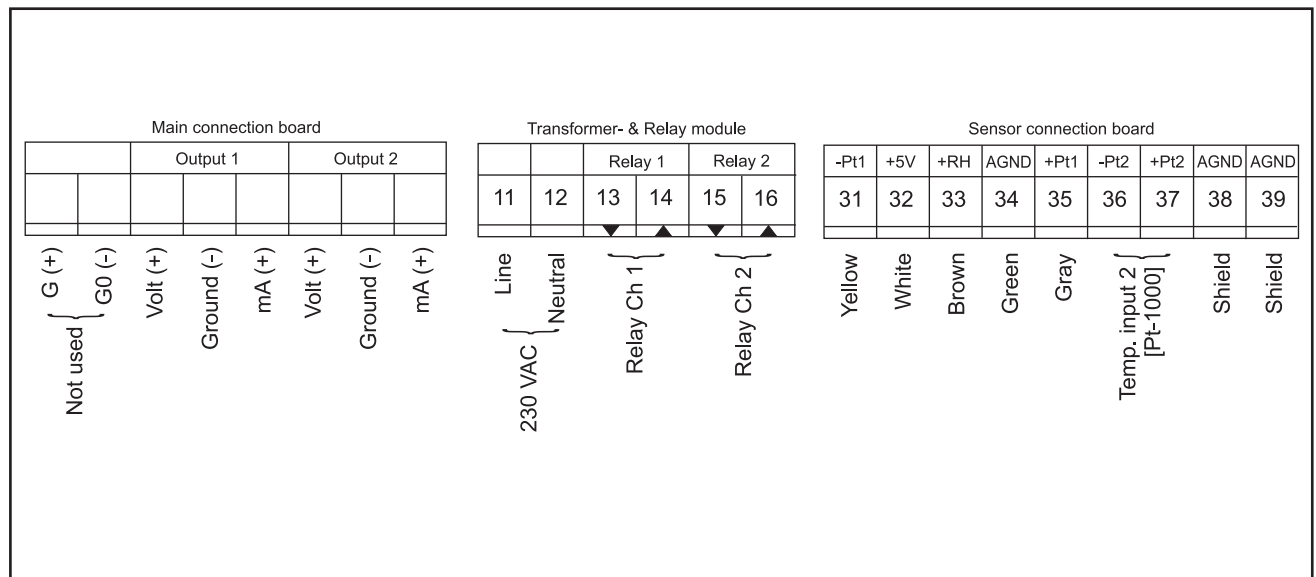| Part no	Probe	Cable	Note
60-5462-1	100 mm	0 m	"ROOM SENSOR"
60-5462-20	100 mm	2 m	
60-5462-21	200 mm	2 m	
60-5462-30	100 mm	5 m	
60-5462-31	200 mm	5 m	
60-5462-40	100 mm	10 m	
60-5462-41	200 mm	10 m	

ACCESSORIES

- Duct mounting kit for probe
- Wall mounting kit for probe
- Mounting kit for recessed mounting
- MODBUS Data communication module

EMC/LVD:

Applied EU directives:
- EMC   SS-EN 61000-6-3:2007 + A1:2011
                  SS-EN 61000-6-2:2005 + C1:2005
- LVD   SS-EN 61010-1:2010

ELECTRICAL CONNECTIONS:

Main connection board

		Output 1			Output 2		
Not used { G (+)	G0 (-)	Volt (+)	Ground (-)	mA (+)	Volt (+)	Ground (-)	mA (+)

Transformer- & Relay module

		Relay 1		Relay 2	
11	12	13	14	15	16
Line	Neutral	Relay Ch 1		Relay Ch 2	
230 VAC					

Sensor connection board

-Pt1	+5V	+RH	AGND	+Pt1	-Pt2	+Pt2	AGND	AGND
31	32	33	34	35	36	37	38	39
Yellow	White	Brown	Green	Gray	Temp. input 2 [Pt-1000]		Shield	Shield

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