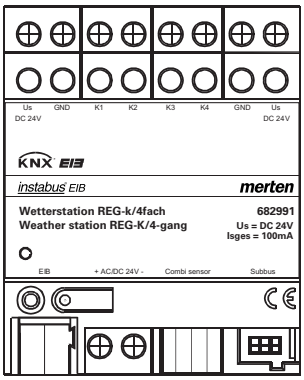
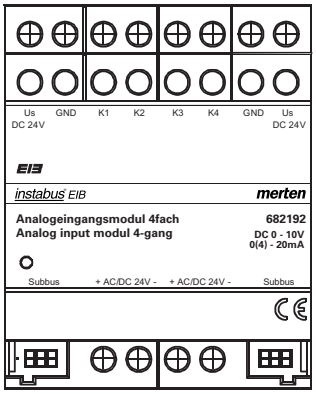
Weather station REG-K/4-gang



Article no.

682991

REG/4-gang analogue input module



Article no.

682192

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1. Function

The EIB weather station detects and forwards climatic data and events. Up to four analogue measuring transducers and one digital combi-sensor can be connected. Additionally, when combined with the weather combi-sensor/DCF77, the weather station can receive a DCF77 time signal and send it to the EIB. The weather station can evaluate both voltage signals and current signals. The current inputs are monitored for continuity (only 4...20 mA).

Current signals	0...20 mA	4...20 mA
Voltage signals	0...1 V	0...10 V

The weather station converts the measured values into value telegrams (EIS 5 or EIS 6). This enables bus devices (visualisation software, info displays, measured value displays) to access the control processes, generate signals or control weather-dependent processes. Two limit values can be defined per measuring transducer. Parameterisable actions are triggered if these values are fallen short of or exceeded. Even complex systems can be controlled by cascading several weather stations. Inputs that are not required can be switched off.

To operate the EIB weather station an external 24 V power supply is required, e.g. power supply REG, AC 24 V/1 A, art. no. 663629. This can also supply heating for sensors or the weather combi-sensor, or a connected analogue input module.

The Us and GND terminals are internally interconnected, and are used to supply external analogue sensors. Voltage is disconnected if there is a short circuit or overload between the Us and GND.

A maximum of four additional analogue sensors can be connected and evaluated with the REG/4-gang analogue input module, art. no. 682192.

An extra digital input can be used to connect up a weather combi-sensor (art. no. 663692), to measure wind force, brightness (3-gang), twilight and rain as well as to receive the DCF77signal.

2. Installation

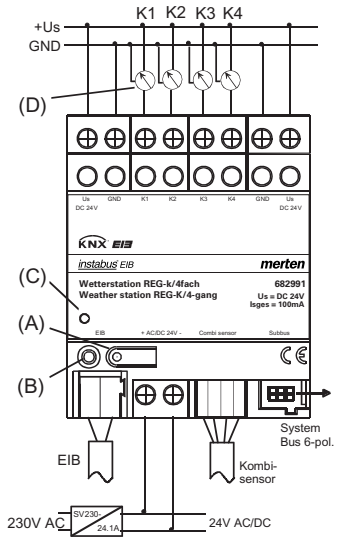
Caution
Use of interconnecting cables that are not approved by Merten is not authorised, and may impair electrical safety and the proper functioning of the system.

Unit snaps on to 35 x 7.5 mm rail in accordance with DIN EN 50022. To operate the EIB weather station an external 24 V power supply is required, e.g. power supply REG, AC 24 V/1 A, art. no. 663629. This can also supply the connected sensors, heating for the sensors, or an analogue input module.

Before connecting to the power supply, fit the socket terminal block for connecting the combi-sensor - even if you do not intend to actually connect one.

Caution
The socket terminal block for connecting the combi-sensor must be fitted before mains voltage is switched on and also throughout the operation of the unit, to ensure that there is no accidental contact between the digital input and live cables! Such contact may make the whole system unsafe. The unit and any connected sensors or extension modules (analogue input) could be destroyed.

Connection, operating elements



+Us:	Power supply for external measuring transducer
GND:	Reference potential for +Us and Inputs K1...K4
K1 ... K4:	Measured value inputs
EIB:	EIB connecting terminal
24 V AC/DC:	External power supply
Combi-sensor: 4-pin	Connecting terminal, 4-pin for combi-sensor (wind, rain, brightness, twilight)
Sub-bus : 6-pin	System connection, 6-pin for connection of an analogue input extension module

(A) : Programming button
(B) : Programming LED
(C) : Status LED, three colours (red, orange, green)
(D) : Measuring transducer

Power supply for connected sensors

- Connected sensors can be supplied using the +US and GND terminals on the weather station (see diagram).
- The current consumption of all sensors that are supplied via these terminals may not exceed 100 mA.
- Two of each kind of terminal (+US and GND) are supplied, and are interconnected in pairs.
- Voltage is disconnected if there is a short circuit between the +US and GND.
- Power for connected sensors can also be supplied via external sources (for instance when their current consumption exceeds100 mA). Terminals K1...K4 and GND are then used to connect to the sensor inputs.

Installing an extension module

The following basic rules should be observed when installing a combi-sensor and extension module:

- One analogue input module can be connected.
- One extension module can be exchanged for another of the same type - e.g. if a module is faulty - during operation (disconnect module from voltage!). After a module has been replaced, the weather station carries out a reset after approx. 25 seconds. This re-initialises all inputs and outputs on the weather station and the connected modules and resets them to their original status.
- It is not permitted to add or remove modules without adapting the application and downloading it into the weather station, as this may lead to system malfunctions.

Compatible sensors

When the following measuring transducers are used, it is possible to access a pre-configuration in the software. If other sensors are used, the parameters to be configured must be determined beforehand.

Type	Use	Art. no.
Wind, brightness, twilight, rain w. DCF77 receiver	Outdoor	663692
Brightness,	Outdoor	663593
Twilight	Outdoor	663594
Temperature	Outdoor	663596
Wind	Outdoor	663591
Wind (with heating)	Outdoor	663592
Rain	Outdoor	663595

Status LED

Off:	no power supply
Orange / on:	module scan by weather station
Orange / flashing slowly:	Combi-sensor module scan: (Waiting for allocation of a combi-sensor)
Orange / flashing fast:	Module scan REG extension module
Red / on:	Error: no project in controller
Red / flashing slowly:	Error: undervoltage at sub-bus
Red / flashing fast:	Error: parametrisation error
Green / flashing slowly:	Address allocation, module scan completed, application OK
LED green / flashing fast:	Parameter download into the modules
LED green / on:	Module scan completed, everything OK

Flashing slowly = 1/s; flashing fast = 2/s

3. Technical data

Power supply	
Supply voltage:	24 V AC ±10 %, 24 V DC +25% / -10%
Power consumption:	max. 250 mA
EIB voltage:	24 V DC (+6 V / -4 V)
EIB power consumption:	typ. 150 mW
Ambient temperature:	-5 °C to +45 °C
Storage/transport temp.:	-25 °C to +70 °C
Humidity	
Environment/storage/ Transport:	max. 93% rel. hum., no moisture condensation
Type of protection:	IP 20 in accordance with DIN EN 60529
Fitting width:	4 depth units / 70 mm
Weight:	approx. 150 g
Connections	
Inputs, power supply:	Screw terminals
single-core	0.5 mm^2 up to 4mm^2
finely stranded (w/o core end sleeve)	0.34 mm^2 up to 4 mm^2
finely stranded (w. core end sleeve)	0.14 mm^2 up to 2.5 mm^2
instabus EIB:	Connection and branch terminal
Weather combi-sensor:	4-pin connection terminal
Extension module:	6-pin system plug
Sensor inputs	
Number:	4x analogue, 1x digital
Calculable sensor signal ranges (analogue):	0 … 1 V DC, 0 … 10 V DC, 0 … 20 mA DC, 4 … 20 mA DC
Voltage measurement impedance:	approx. 18 kΩ
Current measurement impedance:	approx. 100 Ω

Supply for external sensors (+Us): 24 V DC. max.100 mA DC

Connection of extension modules: 24 V DC, max. 80 mA

4. Application description

Objects

Objects are generated automatically depending on which function is parametrised. These objects can be connected with group addresses from a group address pool with drag and drop. It is also possible to create new group addresses. Alongside the group address pool there is another pool for virtual connections, which can be used to connect objects internally without EIB functionality.
The maximum number of objects is 200.
The datapoint ID (DPT-ID) is determined with reference to the document "Datapoint Types" in the KONNEX Standard, Volume 3, Part 7, Chapter 2, Version v1.0.

Object description
Logic operations controller (software module)

Object name:	Function:	Type:	DPT ID:	Flag:
Input *(max 8/logic gate)*	Logic gate input	1 bit	1.001	K,S
Output	Logic gate output	1 bit	1.001	K,Ü

Object description
Analogue input (1...4) (software module)

Object name:	Function:	Type:	DPT ID:	Flag:
Alarm object 1 byte *(if alarm byte = send)*	Analogue input	1 byte	6.020	K,Ü
Alarm object 1 bit *(if alarm bit = send)*	Analogue input	1 bit	1.001	K,Ü
Measured value *(if object type = 16 bit)*	Analogue input	2 byte	9.0xx	K,S
Measured value *(if object type = 8 bit)*	Analogue input	1 byte	5.010	K,S
Limit value 1	Analogue input	1 bit	1.001	K,Ü
Limit value 2	Analogue input	1 bit	1.001	K,Ü
External limit value 1 *(if object type = 16 bit)*	Analogue input	2 byte	9.0xx	K,S
External limit value 1 *(if object type = 8 bit)*	Analogue input	1 byte	5.001	K,S
External limit value 2 *(if object type = 16 bit)*	Analogue input	2 byte	9.0xx	K,S
External limit value 2 *(if object type = 8 bit)*	Analogue input	1 byte	5.001	K,S

Object description
Combi-sensor (sub-bus module)

Object name:	Function:	Type:	DPT ID:	Flag:
Alarm object 1 byte *(if alarm byte = send)*	Combi-sensor	1 byte	6.020	K,Ü
Error1 wind sensor (poss. frosted up) *(if wind signal=monitor)*	Combi-sensor	1 bit	1.001	K,Ü
Error2 wind signal *(if wind signal=monitor)*	Combi-sensor	1 bit	1.001	K,Ü
Connection error combi-sensor *(if connection to combi-sensor = monitor)*	Combi-sensor	1 bit	1.001	K,Ü
Twilight				
Twilight measured value	Combi-sensor	2 byte	9.004	K,Ü
Limit value 1 twilight	Combi-sensor	1 bit	1.001	K,Ü
Limit value 2 twilight	Combi-sensor	1 bit	1.001	K,Ü
External limit value 1 twilight *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 1 twilight *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S
External limit value 2 twilight *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 2 twilight *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S
Sun east				
Measured value sun east	Combi-sensor	2 byte	9.004	K,Ü
Limit value 1 sun east	Combi-sensor	1 bit	1.001	K,Ü
Limit value 2 sun east	Combi-sensor	1 bit	1.001	K,Ü
External limit value 1 sun east *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 1 sun east *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S
External limit value 2 sun east *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S

External limit value 2 sun east *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S

Sun south

Measured value sun south	Combi-sensor	2 byte	9.004	K,Ü
Limit value 1 sun south	Combi-sensor	1 bit	1.001	K,Ü
Limit value 2 sun south	Combi-sensor	1 bit	1.001	K,Ü
External limit value 1 sun south *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 1 sun south *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S
External limit value 2 sun south *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 2 sun south *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S

Sun west

Measured value sun west	Combi-sensor	2 byte	9.004	K,Ü
Limit value 1 sun west	Combi-sensor	1 bit	1.001	K,Ü
Limit value 2 sun west	Combi-sensor	1 bit	1.001	K,Ü
External limit value 1 sun west *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 1 sun west*(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S
External limit value 2 sun west *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 2 sun west*(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S

Wind

Measured value wind	Combi-sensor	2 byte	9.005	K,Ü
Limit value 1 wind	Combi-sensor	1 bit	1.001	K,Ü
Limit value 2 wind	Combi-sensor	1 bit	1.001	K,Ü
External limit value 1 wind *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 1 wind *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S
External limit value 2 wind *(if object type = 16 bit)*	Combi-sensor	2 byte	9.0xx	K,S
External limit value 2 wind *(if object type = 8 bit)*	Combi-sensor	1 byte	5.001	K,S

Precipitation

Precipitation	Combi-sensor	1 bit	1.001	K,Ü

Shade

Shade facade 1 *(if DCF77/slat pos. = enabled)*	Combi-sensor	1 bit	1.008	K,Ü
Shade facade 2 *(if DCF77/slat pos. = enabled)*	Combi-sensor	1 bit	1.008	K,Ü
Shade facade 3 *(if DCF77/slat pos. = enabled)*	Combi-sensor	1 bit	1.008	K,Ü
Shade facade 4 *(if DCF77/slat pos. = enabled)*	Combi-sensor	1 bit	1.008	K,Ü
Angle of opening facade 1 *(if DCF77/slat pos. = enabled + angle of opening to sun = external)*	Combi-sensor	1 byte	5.003	K,Ü
Angle of opening facade 2 *(if DCF77/slat pos. = enabled + angle of opening to sun = external)*	Combi-sensor	1 byte	5.003	K,Ü
Angle of opening facade 3 *(if DCF77/slat pos. = enabled + angle of opening to sun = external)*	Combi-sensor	1 byte	5.003	K,Ü
Angle of opening facade 4 *(if DCF77/slat pos. = enabled + angle of opening to sun = external)*	Combi-sensor	1 byte	5.003	K,Ü
Slat position *(if DCF77/slat pos. = enabled + absolute slat position = percent)*	Combi-sensor	1 byte	5.001	K,Ü

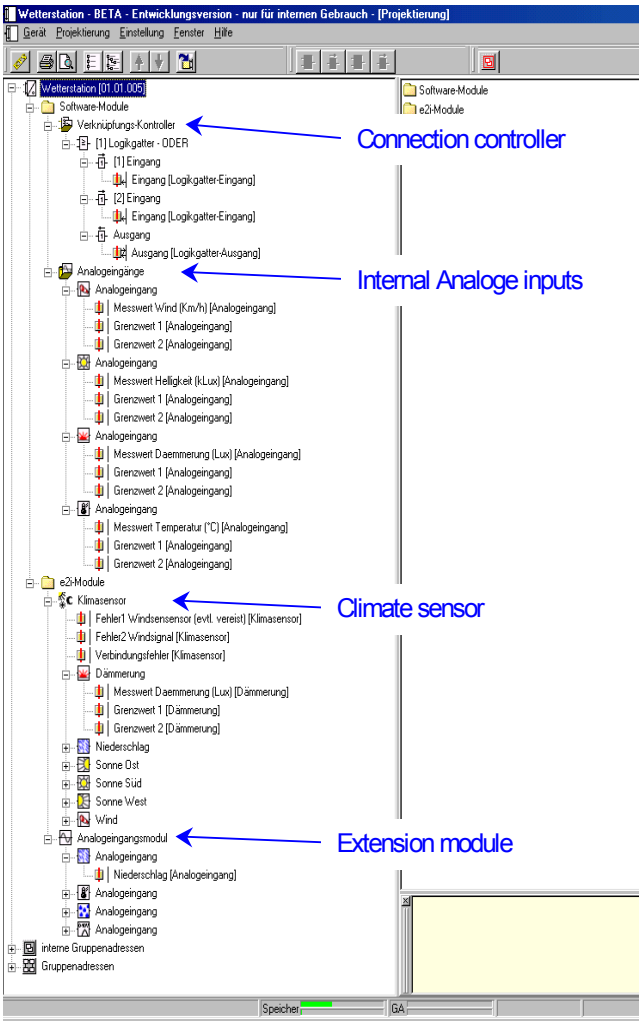
Slat position *(if DCF77/slat pos. = enabled + absolute slat position = degree)*	Combi-sensor	1 byte	5.003	K,Ü
Time *(if DCF77/ slat pos. = enabled)*	Combi-sensor – DCF77	3 byte	10.001	K,Ü
Date *(if DCF77/ slat pos. = enabled)*	Combi-sensor – DCF77	3 byte	11.001	K,Ü
Request date/time *(if DCF77/slat pos. = enabled)*	Combi-sensor – DCF77	1 bit	1.001	K,S

The date and time object flag must always be set so that it cannot be read out! This prevents invalid values from being read out.
Replies to date/time requests may take up to one minute.

Object description
Analogue input module (e2i module)

Object name:	Function:	Type:	DPT ID:	Flag:
Alarm object 1 byte *(if alarm byte = send)*	Analogue input	1 byte	6.020	K,Ü
Alarm object 1 bit *(if alarm bit = send)*	Analogue input	1 bit	1.001	K,Ü
Measured value *(if object type = 16 bit)*	Analogue input	2 byte	9.0xx	K,S
Measured value *(if object type = 8 bit)*	Analogue input	1 byte	5.010	K,S
Limit value 1	Analogue input	1 bit	1.001	K,Ü
Limit value 2	Analogue input	1 bit	1.001	K,Ü
External limit value 1 *(if object type = 16 bit)*	Analogue input	2 byte	9.0xx	K,S
External limit value 1 *(if object type = 8 bit)*	Analogue input	1 byte	5.001	K,S
External limit value 2 *(if object type = 16 bit)*	Analogue input	2 byte	9.0xx	K,S
External limit value 2 *(if object type = 8 bit)*	Analogue input	1 byte	5.001	K,S

Parameter structure



Disable modules

The weather station has up to 16 disable modules. However, the exact number of disable modules available depends on how many EIB objects are available. Add modules by selecting the Disable module menu item / right click or press the speed button.
Each disable module is allocated an input object, an output object and a disable object. The input can be separated from the output by the disable object. So if the disable module is blocked, the input value is not written to the output.

The number of objects in the weather station including all connected modules may not exceed 200

Disable module

Description

A description may be added to the disable module (and is only visible in the application), e.g. for documentation purposes.

Behaviour of disable object

Used to set the disable behaviour Here you can choose between
- Disable in case of "0" telegram
- Disable in case of "1" telegram

as the object value for which the output will be disabled.

Disable behaviour on initialisation

Used to set the disable behaviour on initialisation. Here you can choose between
- Disabled
- Enabled

as starting behaviour.

Input/output object type

Used to set the input and output object types. Here you can choose between
- EIS1 (switch -1 bit)
- EIS5 (value – 2 byte)
- EIS6 (rel. value – 1 byte)

as object types.

Logic operation controller

The number of available logic gates and the number of inputs is highly dependent on how many EIB objects are available. Add by selecting the Logic operation controller menu item / right click or press the speed button. Each logic gate can be parameterised as OR, AND or exclusive-OR. Up to 8 inputs can be allocated to each logic gate. Add by selecting the Edit logic gate menu item / right click or press the speed button. Each input and output on a logic gate can be inverted.
Gates can also be activated in a cascade configuration. Generation of circular logic operations (feedback loops) is not prevented.

The number of objects in the weather station including all connected modules may not exceed 200

Logic gate

Description

A description may be added to the logic gate (and is only visible in the application), e.g. for documentation purposes.

Type of logic operation

Used to set the type of logic operation Here you can choose between

AND gate

OR gate

exclusive-OR gate
as logic components.

Send at

Used to set the gate's transmission behaviour. The two options are "Send at each input event" or "Send at change of output".

Input 1... max. 8

Description

A description may be added to the logic gate (and is only visible in the application), e.g. for documentation purposes.

Input behaviour

Used to set the input behaviour.
A normal or an inverted behaviour can be set here. The chosen setting is displayed graphically (point > inverted, no point > normal, i.e. not inverted) at the input of the symbol in the tree view window.

Output

Description

A description may be added to the logic gate (and is only visible in the application), e.g. for documentation purposes.

Output behaviour

Used to set the output behaviour.
A normal or an inverted behaviour can be set here. The chosen setting is displayed graphically (point > inverted, no point > normal, i.e. not inverted) at the output of the symbol in the tree view window.

ON delay

'No telegram'
No 'ON' telegram is sent under any circumstances.

'Delay active'
An 'ON' telegram is only sent after the time period that is set by base and factor. The delay value range is from 100 msec. to 100 min. (1 x 100 msec to 100 x 1 min.).

'No delay'
An 'ON' telegram is sent immediately.

OFF delay

'No telegram'
No 'OFF' telegram is sent under any circumstances.

'Delay active'
An 'OFF' telegram is only sent after the time period that is set by base and factor. The delay value range is from 100 msec. to 100 min. (1 x 100 msec to 100 x 1 min.).

'No delay'
An 'OFF' telegram is sent immediately.

Cyclical sending of the output (x 10 s)

In addition to the set sending behaviour for the gate 'Send at' , the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

Example: Set 5, i.e. the measured value is sent at intervals of 50 seconds (5x10sec.).

'0' means that the measured value is not sent cyclically.

If 'no telegram' (output) is set in the ON delay or OFF delay fields, the input or output telegram, as relevant, will not be sent cyclically either.

Internal analogue inputs

Settings for the 4 analogue outputs integrated in the weather station can be made here.

Alarm signal

- Do not send
- Send alarm byte
- Send alarm bit

"Send alarm bit" parameterisation

The object has the datapoint format 1.001 in accordance with KONNEX, "Boolean":

An alarm is triggered when overvoltage is measured at an input or overload is detected in the supply voltage for external sensors (+Us). The alarm bit object value is set. When the alarm signal is given using the alarm bit the cause of error cannot be diagnosed.

Object value 0	No alarm
Object value 1	There is a cause for an alarm

"Send alarm byte" parameterisation

All possible error messages for the internal 4-gang analogue input are contained in this byte, so that the relevant error message can be notified at a central point, e.g. with a display of information.
The parameter values 'Send' or 'Do not send' determine whether or not the alarm byte should be sent.

Description of alarm byte:

The alarm byte has the datapoint format 6.020 in accordance with KONNEX, "Status with Mode":

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
A	B	C	D	E	F	F	F

Range: A,B,C,D,E = {0, 1}
FFF = {001_b, 010_b, 100_b}

Decoding:

A,B,C,D,E: 0 = set, 1 = clear
FFF 001_b = mode 1 is active,
010_b = mode 1 is active,
100_b = mode 2 is active

Use in weather station:

A: 1 = Overload, 0 = no Overload(short circuit/overload in sensor feed or combi-sensor)
B: 1 = Channel 4 overflow, 0 = Channel 4 no overflow (measurement signal greater than measurement range)
C: 1 = Channel 3 overflow, 0 = Channel 3 no overflow (measurement signal greater than measurement range)
D: 1 = Channel 2 overflow, 0 = Channel 2 no overflow (measurement signal greater than measurement range)
E: 1 = Channel 1 overflow, 0 = Channel 1 no overflow (measurement signal greater than measurement range)

FFF: 001_b = normal mode,
010_b = reserved,
100_b = reserved

Analogue input

General

Sensor type

Select the system sensor you require. These sensors are already pre-configured and are sent as a 16 bit value (with the exception of the rain sensor, which has a 1 bit value). The following sensors are available:

 Wind sensor

 Brightness sensor

 Twilight sensor

 Temperature sensor

 Rain sensor

 Humidity sensor

 Air pressure sensor

The possible options

 Sensor 0...1V

 Sensor 0...10 V

 Sensor 0...20 mA

 Sensor 4...20 mA

designate general sensors from other manufacturers which are not an integral part of the system. These are not pre-configured.

The 4 to 20 mA input can be monitored for continuity.

'No sensor' marks an analogue input that is not currently in use.

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Example: Send measured value at: 3% measured value differential The last value sent is 100, so the next value to be sent is <= 97 or >= 103.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Example: Set 5, i.e. the measured value is sent at intervals of 50 seconds (5x10sec.).

Measured value format (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA)

Select the format (8 or 16 bit) in which the measured value is to be sent to the EIB here.

The 16 bit value format gives the best transmission accuracy

Measured value base 0% (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA)

Enter the smallest measured value for the sensor here.

Format measured value = 8 bit value set: 0...255
Format measured value = 16 bit value set: -32768... (0)...32767

Measured value base 100% (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA)

Enter the largest measured value for the sensor here.

Format measured value = 8 bit value set: 0...255
Format measured value = 16 bit value set: -32768... (1000)...32767

Measurement range factor (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA and measured value format = 16 bit)

Here enter the smallest factor (base value x factor = measured value) with which the sensor's measurement range can be shown completely.

To obtain the greatest possible precision, select a base value that is as large as possible (absolute) and a factor that is as small as possible.

Example: A pressure transmitter has a measurement range of -50 Pa to +150 Pa. Its output signal is 0 to 10 V. Select the base value for 0% of the measured value (0 V input voltage = smallest sensor measured value) with -5000 (-5000 x 0.01 = -50.00 Pa) and the base value for 100% of the measured value (10 V input voltage = upper sensor measured value): 15000 (15000 x 0.01 = 150.00 Pa)

Note: In the example shown, it was also possible to choose -500 / 1500 / 0.1. In this case however, only one decimal place would be detected (-50.0 Pa to 150.0Pa).

When a pre-configured sensor is selected, the measured value is always in 16 bit format (with the exception of the rain sensor). Depending on the chosen sensor, the following measured value units are configured/can be selected:

- Wind sensor: m/s, km/h
- Brightness sensor kLux
- Twilight sensor Lux
- Temperature sensor ° Celsius, ° Fahrenheit
- Humidity sensor hPa (mbar)
- Air pressure sensor %

Limit value 1/2

Limit value 1/2

Determines the limit value. In the case of pre-configured sensors, the limit values are shown absolutely in the corresponding unit. With 0...1 V and 0...5 V the limit value is shown in V, with 0...20 mA and 4...20 mA sensors in mA.

Hysteresis 1/2

Determines the hysteresis. In the case of pre-configured sensors, these are shown absolutely in the corresponding unit. With 0...1 V and 0...5 V the hystereses are shown in V, with 0...20 mA and 4...20 mA sensors in mA.

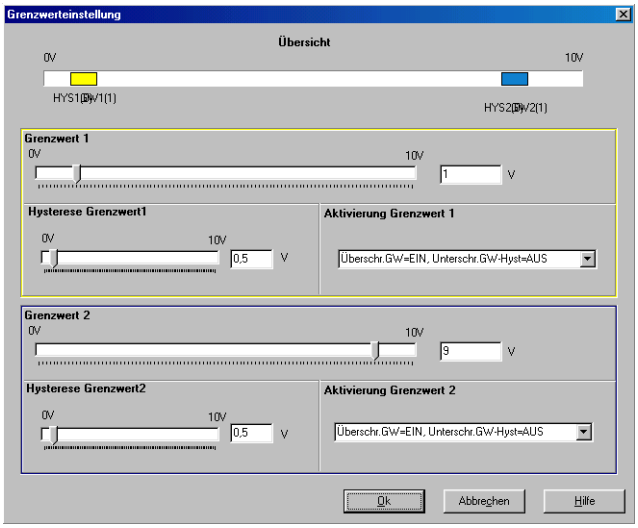
Activation limit value 1/2

Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:

- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV+hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV+Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.
The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

Please note that it is not possible to set a value that is below the left stop or above the right stop. In such cases, the object value remains constant, after being modified once if necessary.



External limit value 1/2

Select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

Caution: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value

A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

Use the percentage values (in square brackets) for the limit values and hysteresis as a guide. Include 1% tolerance so that the values can be exceeded or under-run.

Limit value activation.

...-Hyst => Add hysteresis to the lower end value,
...+Hyst => Subtract hysteresis from the upper end value.

Example: Internal limit value 5[50%], hysteresis limit value 0.5[5%], above LV=ON, below LV-Hyst=OFF. For this example, limit the value range for the external limit value to 6% (1% tolerance + 5% hysteresis) up to 99% (100% - 1% tolerance).

16 bit value

The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Include a small tolerance value so that the values can be exceeded or under-run.

Limit value activation.
...-Hyst => Add hysteresis to the lower end value,
...+Hyst => Subtract hysteresis from the upper end value.

Example: Brightness sensor 0 to 60 kLux, hysteresis limit value 5 kLux, above LV=ON, below LV-Hyst=OFF. For this example, limit the value range for the external limit value to 5.2 kLux (0.2 kLux tolerance + 5 kLux hysteresis) up to 58.9 kLux (60 kLux - 0.2 kLux tolerance).

Continuity

Continuity checking

When the 4... 20 mA sensor is chosen, continuity checking can be activated. Depending on the parameterisation, a '0' or '1' telegram can be sent via a 1 bit object.

Combi-sensor

The settings for a weather combi-sensor (art.no. 663692), which can be connected to the weather station to measure wind force, brightness (3-gang), twilight and rain, with a DCF77receiver, can be made here.

Alarm signal

- Do not send
- Send alarm byte

All possible error messages for the combi-sensors are contained in this byte, so that the relevant error message can be notified at a central point, e.g. with a display of information.
The parameter values 'Send' or 'Do not send' determine whether or not the alarm byte should be sent.
Description of alarm byte - see above.

DCF77/ slat position

The following functions
- Slat angle positioning depending on the position of the sun (astro function) and
- sending the DF77 time standard to the EIB
- can be activated.

Enabled
Activates the sun-dependent slat control and transmission of the DCF77 time standard (time and date). This function can only be used with a combi-sensor with DCF77 option.

Disabled
Select disabled from the list when using a combi-sensor without DCF77 option.

DCF77 (can only be seen if DCF77/slat position is enabled)

The combi-sensor automatically synchronises after a reset or daily at 04:00. When synchronisation is successful, it continues to measure time internally with a precision of 40 ppm (approx 4s/24h) until the following synchronisation the next morning. If synchronisation failed, the combi-sensor tries to synchronise itself again every hour.

Send date and time

Here you can determine whether the DCF77 time standard is sent to the EIB, and when.
The date and time object flag must always be set so that it cannot be read out! This prevents invalid values from being read out.
Possible values are:
- do not send,
- send on request,
- at 1 minute intervals,
- at 1 hour intervals,
- at 24 hour intervals

Request time/date by

In addition to a set time interval for 'Send date and time', the time and date are sent to the EIB no more than 1 minute after a 1-telegram or 0-telegram is received.
The weather station waits for the minute that has just begun to expire and then sends the current date and time.
If the date and/ or time object contains invalid values, no answer is sent to a request telegram.
The date and time object flag must always be set so that it cannot be read out! This prevents invalid values from being read out.

Sun position cycl. Send (0 = off, basis = 10s)

The time interval set here determines how often the values for the azimuth and elevation objects are sent to the EIB.
Cyclical sending of the sun position is carried out only when the time and date have been transmitted, as this date is required to calculate the azimuth and elevation values.

Value range 0...255, (corresponds to 0...2550 sec. i.e. 0...42.5 min.)

'0' means that the calculated values are not sent cyclically.

Example: Set 96, i.e. the calculated values are sent at intervals of 960 seconds (96x10sec.), i. e. every 16min. (960/60).

Slat control (can only be seen if DCF77/slat position is enabled)

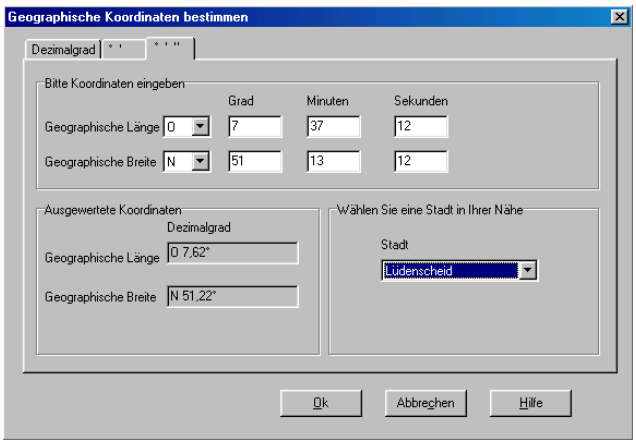
Transmission of slat control telegrams is carried out only when the time and date have been transmitted, as this date is required to calculate the slat control values.
The shade control process must have been carried out with at least one blind before the slats can be adjusted.

Geographical longitude of building

Click on the [...] button to access the input menu for the building's geographical latitude and longitude.

Geographical latitude of building

Click on the [...] button to access the input menu for the building's geographical latitude and longitude.



Absolute slat position

Select 'Degree' or 'Percent' here, depending on the EIB blind actuator you are using. The settings to be made here are detailed in the technical data for the relevant blind actuator.

Value range in degrees: -90°...0°...+90°

Value range in percent: 0%...100°

Offset slat adjustment

Depending on the blinds used or their specifications (max. glare shield, max. brightness, max. thermal insulation) it may be necessary to enter a correction value here.

Slat adjustment depending on sun position sets the slats so that they are perpendicular to the sun.

Cycl. transmission (x 10 s)

The time interval set here determines how often a positioning telegram is sent to the EIB.

Value range 0...255, (corresponds to 0...2550 sec., i.e. 0... approx. 42 min.)

'0' means that the measured value is not sent cyclically.

Example: Set 96, i.e. the measured value is sent at intervals of 960 seconds (96x10sec.), i. e. every 16min. (960/60).

Do not set too short a time interval, as depending on the blind used, each positioning telegram may cause a clearly audible "jerk" to occur.

Monitoring

Connection to the combi-sensor

The electrical connection between the weather station and combi-sensor is constantly monitored, to protect drapes, blinds etc. which may be very costly. If the connection is interrupted, a 1 bit connection error telegram and (if activated) the combi-sensor alarm byte are sent to the EIB. Protective measures can then be taken: e.g. the drapes can be drawn back. Activate this function by selecting 'monitor'.

Wind signal

By selecting 'monitor' you also activate the coherency check for the wind sensor signals. Monitoring of the wind signal is particularly important in protecting drapes, blinds etc. which may be very costly. If the signals are recognised as "incoherent" (see 'Max. time for no wind' and 'Max. time for wind constant'), a 1 bit error1 or/and an error2 telegram, as well as (if activated) the combi-sensor alarm byte are sent to the EIB. Protective measures can then be taken: e.g. the drapes can be drawn back.

max. time for 'no wind' in hours

Coherency check for the wind sensor signals to determine if this sensor is frosted up or mechanically defective. If a zero value is received for longer than the set time, the signal is classified as "incoherent", i.e. it is assumed that an error has occurred. To trigger protective measures a 1 bit error1 telegram and (if activated) the combi-sensor alarm byte is sent to the EIB.

Value range: 0 to 180 (10) hours
'0' means that error telegrams are not sent.

Do not set too small a time, as this may lead to bothersome, possibly unnecessary actions being triggered. Request a sensible value for the building location from the local meteorological station.

max. time for 'wind constant' in minutes

Coherency check for the wind sensor signals to determine if this sensor is electronically defective. If a constant value is received for longer than the set time, the signal is classified as "incoherent", i.e. it is assumed that an error has occurred. To trigger protective measures a 1 bit error2 telegram and (if activated) the combi-sensor alarm byte is sent to the EIB.

Value range: 0 to 255 (10) minutes
'0' means that error telegrams are not sent.

Do not set too small a time, as this may lead to bothersome, possibly unnecessary actions being triggered. Request a sensible value for the building location from the local meteorological station.

Shading facades 1-4

General

Background brightness threshhold

Select 'external' here if building users should be able to modify the background brightness threshold during operation (external valuator required).

Background brightness shading [kLux]

Background brightness hysteresis [kLux]

Cycl. transmission (x 10 s)

The background brightness set is sent to the EIB at the interval configured here.
Value range 0...255, (corresponds to 0...2550 sec., i.e. approx. 42 min.)

'0' means that the measured value is not sent cyclically.

Shading angle facades 1.4

Alignment of facade 1

0/360° corresponds to north
90° corresponds to east
180° corresponds to south
270° corresponds to west

Angle of opening to the sun

Internal
Select 'internal' here if the angle of opening* to the sun is to be pre-determined.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

External
Select 'external' here if building users should be able to modify the angle of opening* during operation (external valuator required!).

Value range: 0...180°
'0' corresponds to "No shading of this facade"

Caution: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

*) Angle (azimuth) vertical to the facade. If the sun is within this angle of opening, shade is created.

Example 1: Angle of opening 1°, i. e. shade is only created when the sun is vertical to the facade.

I
I O
I

Example 2: Angle of opening 179°, i.e. shade is created as soon as the sun shines into the window to even the smallest degree.
O
I O
I O
I O
O

Angle of opening in ° for facade 1

Internal angle of opening* preset and fixed by this application.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

Alignment of facade 2

0/360° corresponds to north
90° corresponds to east
180° corresponds to south
270° corresponds to west

Angle of opening to the sun

Internal
Select 'internal' here if the angle of opening* to the sun is to be pre-determined.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

External
Select 'external' here if building users should be able to modify the angle of opening* during operation (external valuator required!).

Value range: 0...180°
'0' corresponds to "No shading of this facade"

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

*) Angle (azimuth) vertical to the facade. If the sun is within this angle of opening, shade is created.

Example 1: Angle of opening 1°, i. e. shade is only created when the sun is vertical to the facade.

I
I O
I

Example 2: Angle of opening 179°, i.e. shade is created as soon as the sun shines into the window to even the smallest degree.
O
I O
I O
I O
O

Angle of opening in ° for facade 2

Internal angle of opening* preset and fixed by this application.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

Alignment of facade 3

0/360° corresponds to north
90° corresponds to east
180° corresponds to south
270° corresponds to west

Angle of opening to the sun

Internal
Select 'internal' here if the angle of opening* to the sun is to be pre-determined.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

External
Select 'external' here if building users should be able to modify the angle of opening* during operation (external valuator required!).

Value range: 0...180°
'0' corresponds to "No shading of this facade"

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

*) Angle (azimuth) vertical to the facade. If the sun is within this angle of opening, shade is created.

Example 1: Angle of opening 1°, i. e. shade is only created when the sun is vertical to the facade.

I
I O
I

Example 2: Angle of opening 179°, i.e. shade is created as soon as the sun shines into the window to even the smallest degree.
O
I O
I O
I O
O

Angle of opening in ° for facade 3

Internal angle of opening* preset and fixed by this application.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

Alignment of facade 4

0/360° corresponds to north
90° corresponds to east
180° corresponds to south
270° corresponds to west

Angle of opening to the sun

Internal
Select 'internal' here if the angle of opening* to the sun is to be pre-determined.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

External
Select 'external' here if building users should be able to modify the angle of opening* during operation (external valuator required!).

Value range: 0...180°
'0' corresponds to "No shading of this facade"

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

*) Angle (azimuth) vertical to the facade. If the sun is within this angle of opening, shade is created.

Example 1: Angle of opening 1°, i. e. shade is only created when the sun is vertical to the facade.

I
I O
I

Example 2: Angle of opening 179°, i.e. shade is created as soon as the sun shines into the window to even the smallest degree.
O
I O
I O
I O
O

Angle of opening in ° for facade 4

Internal angle of opening* preset and fixed by this application.

Value range: 0...180°
'0' corresponds to "No shading of this facade"

Twilight

Settings for the twilight sensor integrated in the combi-sensor can be made here.

General

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Limit value 1/2

Determines the limit value. These limit values are given absolutely in Lux.

Hysteresis 1/2

Determines the hysteresis absolutely in Lux.

Activation limit value 1/2

Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:

- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV-hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV-Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.
The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

External limit value 1/2

Select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value
A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

16 bit value
The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Precipitation

Settings for the rain sensor integrated in the combi-sensor can be made here.

General

Rain detection is carried out optically, and there is no ON delay inside the sensor. There is an OFF delay in the sensor of approx. 3 min.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Output

Determines the object value for rain (no precipitation =0, precipitation =1 or no precipitation =1, precipitation =0).

Sun east

Settings for the eastwards oriented brightness sensor integrated in the combi-sensor can be made here.

General

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Limit value 1/2

Determines the limit value. These limit values are given absolutely in kLux.

Hysteresis 1/2

Determines the hysteresis absolutely in kLux.

Activation limit value 1/2

Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:
- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV-hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV-Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.
The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

External limit value 1/2

Select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value
A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

16 bit value
The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Sun south

Settings for the southwards oriented brightness sensor integrated in the combi-sensor can be made here.

General

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Limit value 1/2

Determines the limit value. These limit values are given absolutely in kLux.

Hysteresis 1/2

Determines the hysteresis absolutely in kLux.

Activation limit value 1/2

Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:
- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV-hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV-Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.
The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

External limit value 1/2

Select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value
A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

16 bit value
The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Sun west

Settings for the westwards oriented brightness sensor integrated in the combi-sensor can be made here.

General

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Limit value 1/2

Determines the limit value. These limit values are given absolutely in kLux.

Hysteresis 1/2

Determines the hysteresis absolutely in kLux.

Activation limit value 1/2

Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:

- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV-hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV-Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.
The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

External limit value 1/2

Select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value
A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

16 bit value
The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Wind

Settings for the wind sensor integrated in the combi-sensor can be made here.

General

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value

can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Measured value unit

The unit for the wind sensor is determined here (m/s or km/h).

⚠ **Caution** the value sent is highly dependent on the chosen unit.

Example: Measured value 6 m/s. If the unit m/s is set, a value of 6 is sent, but if the unit km/h is set, a value of 21.6 is sent.

Limit value 1/2

Determines the limit value. These limit values are shown absolutely in m/s or km/h.

Hysteresis 1/2

Determines the hystereses absolutely in m/s or km/h.

Activation limit value 1/2

Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:

- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV-hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV-Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.
The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

External limit value 1/2

Select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

⚠ **Caution**: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value

A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

16 bit value
The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Start-up

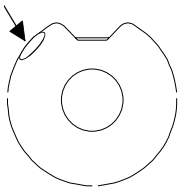
Connection

The combi-sensor is fitted with a 10 m connecting cable. The cable can be extended to max. 50 m.
The combi-sensor connecting cable cores are colour coded for connection to the weather station.

green (1)	: System voltage 24 V DC, > 15 mA, +
yellow (2)	: Data
white (3)	: bus clock cycle
brown (4)	System earth (24 V DC, > 15 mA, -)
pink	: Power supply 24 V AD/DC, 600 mA, +
grey	: Earth power supply

Log-on

After connecting and switching on voltage, the combi-sensor must be logged on to the weather station. The combi-sensor indicates this state with two short acoustic tones which are repeated every 5 s. The integrated reed contact (see arrow) can be activated with a small magnet, so that five short tones can be heard.



After the magnet is removed, the combi-sensor is logged on and is now sending data to the weather station. The weather station saves the data. Finally, the weather station and combi-sensor carry out a reset. The combi-sensor signals this with a short tone.

Alignment of aerials

If the combi-sensor is equipped with a DCF77 receiver, the next task is to align the aerial. This is done after logging on.
To check reception of a DCF77 time signal, the reed contact is again activated with the magnet, until five short tones are heard. The magnet must be kept in the same position. The combi-sensor now indicates that the time signal is being received with a short acoustic tone. Where reception is perfect, the complete time signal is sounded. The time signal should make a short beep every second. A pause one tone long is made to mark each full minute. The tones are of different lengths, corresponding to the binary information.
If the signals are not sounded, or sounded only irregularly, the receiving aerial must be aligned. The aerial can be accessed underneath the combi-sensor. It can be rotated through 45° and can be aligned with a small screwdriver until the signal is heard every second.
The magnet can now be removed. To complete the process, the combi-sensor acknowledges this with a 5 second-long tone, and is then ready for operation.

Analogue input module

A REG/4-gang analogue input module, art. no. 682192 can be connected to the weather station, to add a maximum of four additional analogue sensors. This module is parameterised in this node.

Alarm signal

- Do not send
- Send alarm byte
- Send alarm bit

"Send alarm bit" parameterisation

The object has the datapoint format 1.001 in accordance with KONNEX, "Boolean":

An alarm is triggered when overvoltage is measured at an input or overload is detected in the supply voltage for external sensors (+Us). The alarm bit object value is set. When the alarm signal is given using the alarm bit the cause of error cannot be diagnosed.

- Object value 0 No alarm
- Object value 1 There is a cause for an alarm

"Send alarm byte" parameterisation

All possible error messages for the analogue input module are contained in this byte, so that the relevant error message can be notified at a central point, e.g. with a display of information.
The parameter values 'Send‘ or 'Do not send' determine whether or not the alarm byte should be sent.
Description of alarm byte - see above.

Analogue input

General

Sensor type

Select the system sensor you require. These sensors are already pre-configured and are sent as a 16 bit value (with the exception of the rain sensor, which has a 1 bit value). The following sensors are available:

 Wind sensor

 Brightness sensor

 Twilight sensor

 Temperature sensor

 Rain sensor

 Humidity sensor

 Air pressure sensor

The possible options

 Sensor 0...1 V

 Sensor 0...10 V

 Sensor 0...20 mA

 Sensor 4...20 mA

designate general sensors from other manufacturers which are not an integral part of the system. These are not pre-configured.

The 4 to 20 mA input can be monitored for continuity.

'No sensor' marks an analogue input that is not currently in use.

Send measured value at: (10 s transmission delay)

Possible values are: 0,5%, 1%, 3%, 10%.
The next measured value is only sent when the differential from the last value sent, which is set here, is exceeded.

Example: Send measured value at: 3% measured value differential The last value sent is 100, so the next value to be sent is <= 97 or >= 103.

Cycl. sending of measured value (x 10 s)

In addition to the function for sending measured values depending on the value differential, the measured value can also be sent to the EIB at an interval which can be set here.

Value range 0...120, (corresponds to 0...1200 sec.)

'0' means that the measured value is not sent cyclically.

Example: Set 5, i.e. the measured value is sent at intervals of 50 seconds (5x10sec.).

Measured value format (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA)

Select the format (8 or 16 bit) in which the measured value is to be sent to the EIB here.

The 16 bit value format gives the best transmission accuracy

Measured value base 0% (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA)

Enter the smallest measured value for the sensor here.

Format measured value = 8 bit value set: 0...255
Format measured value = 16 bit value set:-32768... (0)...32767

Measured value base 100% (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA)

Enter the largest measured value for the sensor here.

Format measured value = 8 bit value set: 0...255
Format measured value = 16 bit value set:-32768... (1000)...32767

Measurement range factor (only for 0...1 V, 0...5 V, 0...20 mA and 4...20 mA and measured value format = 16 bit)

Here enter the smallest factor (base value x factor = measured value) with which the sensor's measurement range can be shown completely.

To obtain the greatest possible precision, select a base value that is as large as possible (absolute) and a factor that is as small as possible.

Example: A pressure transmitter has a measurement range of -50 Pa to +150 Pa. Its output signal is 0 to 10 V. Select the base value for 0% of the measured value (0 V input voltage = smallest sensor measured value) with -5000 (-5000 x 0.01 = -50.00 Pa) and the base value for 100% of the measured value (10 V input voltage = upper sensor measured value): 15000 (15000 x 0.01 = 150.00 Pa)

Note: In the example shown, it was also possible to choose -500 / 1500 / 0.1. In this case however, only one decimal place would be detected (-50.0 Pa to 150.0Pa).

When a pre-configured sensor is selected, the measured is always in 16 bit format (with the exception of the rain sensor). Depending on the chosen sensor, the following measured value units are configured/can be selected:

Wind sensor:m/s, **km/h**

Brightness sensor**kLux**

Twilight sensor**Lux**

Temperature sensor**° Celsius**, ° Fahrenheit

Humidity sensor**%**

Air pressure sensor**hPa (mbar)**

Limit value 1/2

Limit value 1/2

Determines the limit value. In the case of pre-configured sensors, the limit values are shown absolutely in the corresponding unit. With 0...1 V and 0...5 V the limit value is shown in V, with 0...20 mA and 4...20 mA sensors in mA.

Hysteresis 1/2

Determines the hysteresis. In the case of pre-configured sensors, these are shown absolutely in the corresponding unit. With 0...1 V and 0...5 V the hystereses are shown in V, with 0...20 mA and 4...20 mA sensors in mA.

Activation limit value 1/2

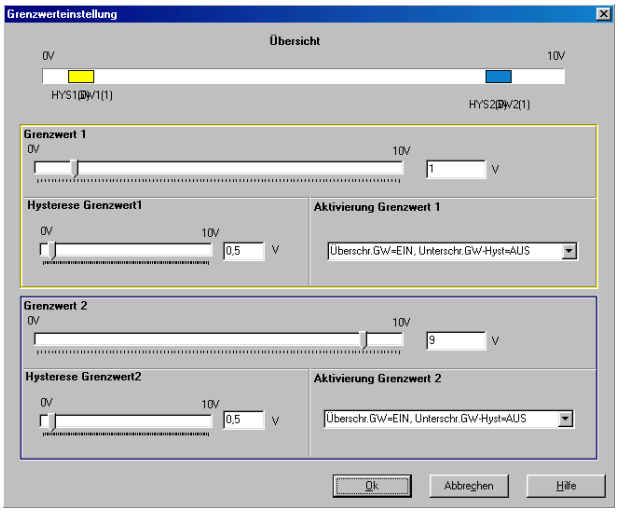
Determines whether the limit value should be activated if exceeded (deactivation if limit value – hysteresis) or if fallen below (deactivation if limit value + hysteresis) and defines the value of the active limit value.
Possible settings are:

- Above LV=ON, below LV-hyst.=OFF(*default for LV2*)
- Above LV=OFF, below LV-hyst.=ON
- Below LV=ON, above LV-hyst.=OFF(*default for LV1*)
- Below LV=OFF, above LV-Hyst=ON

Please click on the [...] button to set the internal limit values and hystereses. The limit value setting window opens. Limit values and hystereses are set using the slide rules. Select when the corresponding limit value should be activated, i.e. a 0 or 1 sent, in the Limit value activation field. Select the required behaviour from the list.

The set behaviour is displayed graphically in the Overview field. Limit values may overlap.

Please note that it is not possible to set a value that is below the left stop or above the right stop. In such cases, the object value remains constant, after being modified once if necessary.



External limit value 1/2

Click on the [?] button to select here '8 bit value' or '16 bit value' if building users should be able to modify the limit value during operation (external valuator required).

Caution: The external value overwrites the internal value. The internal value is only reactivated after the project has been downloaded again.

8 bit value
A value from 0 to 100% of the end value of the sensor is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hystereses cannot occur. So the valuator value range should also be limited accordingly. In doing this please also ensure that the setting does not fall below the sensor's starting value.

Use the percentage values (in square brackets) for the limit values and hysteresis as a guide. Include 1% tolerance so that the values can be exceeded or under-run.

Limit value activation.
...-Hyst => Add hysteresis to the lower end value,
...+Hyst => Subtract hysteresis from the upper end value.

Example: Internal limit value 5 [50%], hysteresis limit value 0.5 [5%], above LV=ON, below LV-Hyst=OFF. For this example, limit the value range for the external limit value to 6% (1% tolerance + 5% hysteresis) up to 99% (100% - 1% tolerance).

16 bit value
The real sensor end value (in phys. unit) is expected here. Please configure the external valuator so as to ensure that conflicts with the limit value +/- hysteresis cannot occur. So the valuator value range should also be limited accordingly. Please also ensure that the setting does not fall below the sensor's starting value.

Include a small tolerance value so that the values can be exceeded or under-run.

Limit value activation.
...-Hyst => Add hysteresis to the lower end value,
...+Hyst => Subtract hysteresis from the upper end value.

Example: Brightness sensor 0 to 60 kLux, hysteresis limit value 5 kLux, above LV=ON, below LV-Hyst=OFF. For this example, limit the value range for the external limit value to 5.2 kLux (0.2 kLux tolerance + 5 kLux hysteresis) up to 58.9 kLux (60 kLux - 0.2 kLux tolerance).

Continuity

Continuity checking

When the 4... 20 mA sensor is chosen, continuity checking can be activated. Depending on the parameterisation, a '0' or '1' telegram can be sent via a 1 bit object.