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Galltec +mela

D Series Type DZK

Transmitter for Humidity and Temperature Measurement with remote probe

- **calibrated probe, cabled and exchangeable**
- **up to 25 m cable length**
- **probe up to 125°C**
- **output of derived hx values**
- **in situ alignment**
- **optional USB interface**

Technical data

Humidity

Measuring range		0...100 %rh
Measuring uncertainty		
10...90 %rh	at 25°C	±2 %rh
< 10 %rh or > 90 %rh	at 25°C	additional ≤±0.2%rh/%rh
Long term stability		≤0.5%rh/a
Hysteresis		≤±1%rh
Typ. temperature influence at 25°C		±0.02%rh/K

Temperature

Measuring uncertainty		
5...60°C		≤±0.35K
Influence of temperature ref. to +5°C or +60°C		
Standard	-40...5°C	≤12mK/K
	60...80°C	≤14mK/K
High temperature	60...100°C	≤14mK/K additional
	100...125°C	≤20mK/K

Electrical data

Electrical outputs		Voltage supply U_B
2x	0...10 V	15…30 V DC 13...26 V AC
2x	4...20 mA	10…30 V DC ensure galvanic isolation from the power supply

Consumption of electronics (voltage output)	typ. 7 mA
Load resistance (voltage output)	≥ 10 kΩ
Load R_L (current output)	$R_L(\Omega)= \dfrac{\text{voltage supply} - 10\ V}{0,02\ A}$ ± 50 Ω

Directive about electromagnetic compatibility **2014/30/EU**
DIN EN 61326-1 issue 07/13
DIN EN 61326-2-3 issue 07/13

General data

Measuring medium	air, pressureless, non-aggressive

Max. air speed
protective cage with membrane (basic equipment)	10 m/s

Operating temperatures
wall mounted device (with display)	-30...+80°C
(without display)	-40...+80°C
probe (standard)	-40...+85°C
probe and cable firmly connected	-40...+80°C
probe high temperature	-40...+125°C

Storage temperatures	-40...+80°C

Connection — connecting terminals
wire diameter per connector	max. 1.5 mm²
total diameter cable	4-8 mm

Degree of protection / probe
with membrane filter ZE08 (basic equipment)	IP30
PTFE sintered filter up to 125°C (optional)	IP65

Degree of protection / housing	IP 65
Material of housing	PC

Cable length of remote probe
standard	2 m
max.	25 m

Options

Display	2 lines
	3 digits + 1 decimal place
	display approx. 21 x 40 mm²
	digit height approx. 8 mm

2 analogue signal outputs
(freely configurable via optional USB interface)

Relative humidity	0...100 %rh
Temperature	-30...+70°C
	0...100°C
	0...50°C
option high temperature	-40...+125°C
Dew point temperature	-20...70°C
Enthalpy	0...80 kJ/kg
Mixing ratio	0...100 g/kg dry air
Absolute humidity	0...20 g/m³
	or 0...100 g/m³
Wet-bulb temperature	-10...50°C

Load at current output
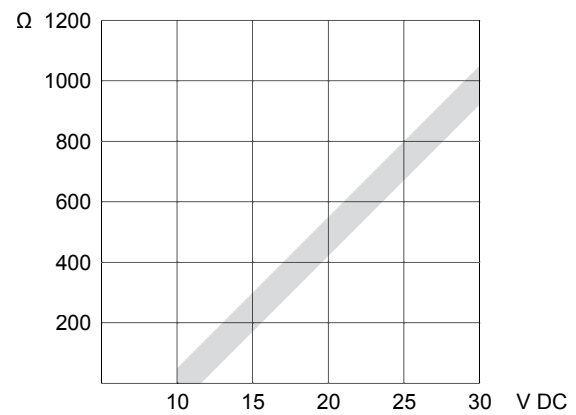
Working range humidity and temperature
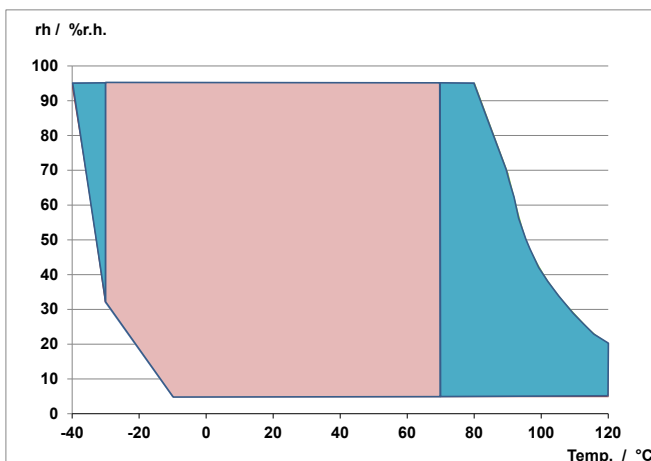
Working range

Working range for hx values
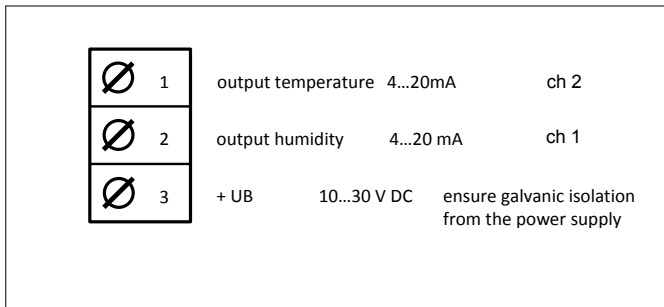

ESD protection advice

The sensors of the D Series contain components, which can be damaged by the effects of electrical fields or by charge equalisation when touched.
The following protective measures must be taken when the housing of the sensor is to be opened for connection or in situ alignment:
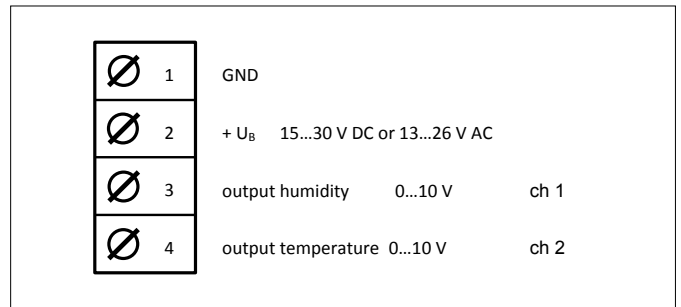
- Before opening the housing of the sensor, ensure electrical potential equalisation between you and your environment.
- Pay particular attention to ensure that this potential equalisation is maintained while you are working with the opened housing.
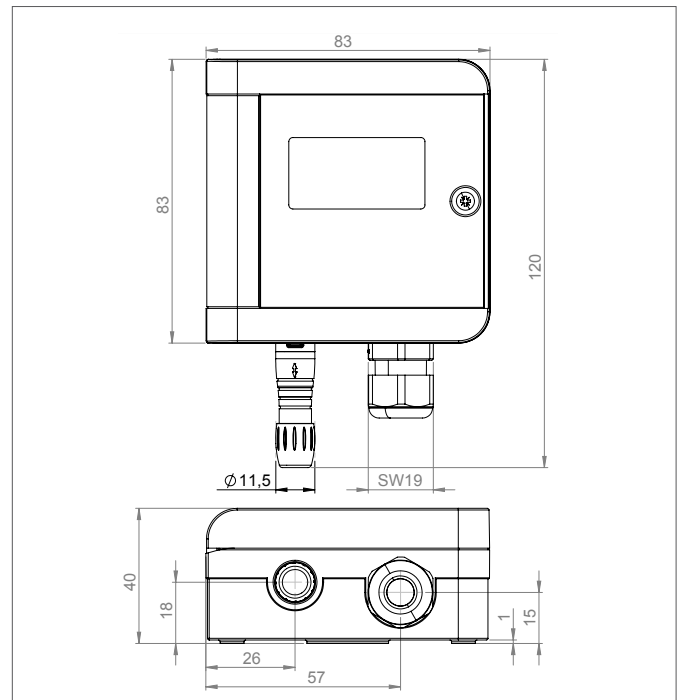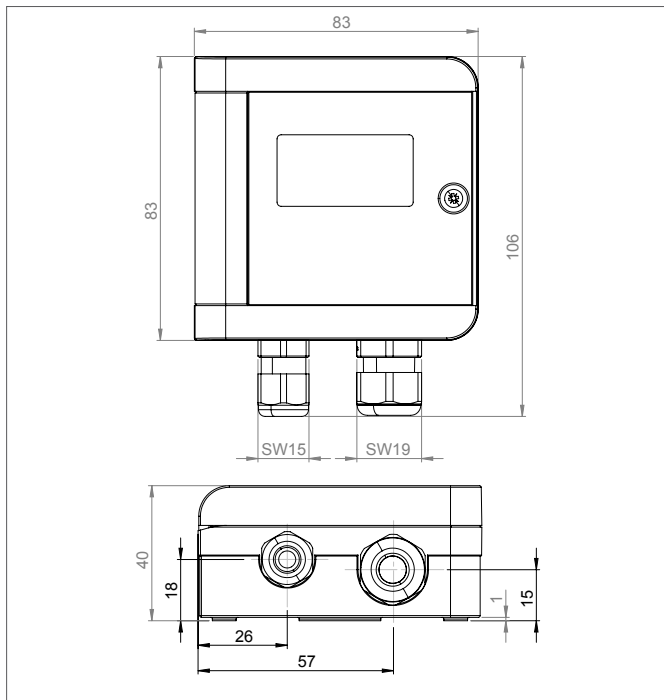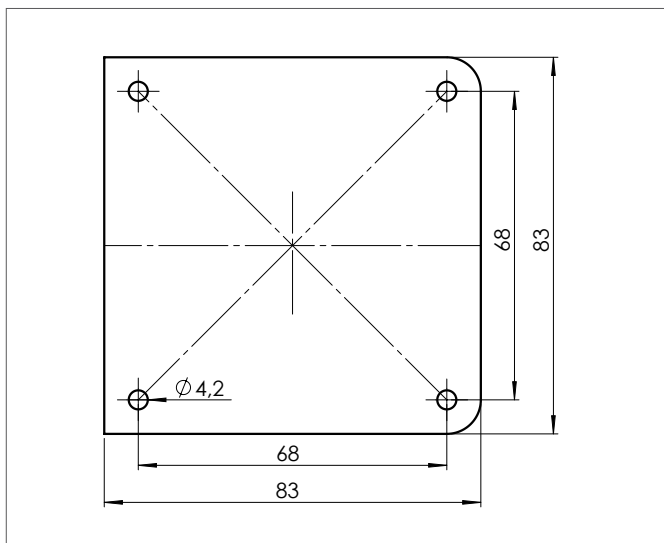
Connection diagrams

2 x 4...20 mA

Ø	1	output temperature	4...20mA	ch 2
Ø	2	output humidity	4...20 mA	ch 1
Ø	3	+ UB	10...30 V DC	ensure galvanic isolation from the power supply

DWK 2 x 0...10 V DC

Ø	1	GND		
Ø	2	+ U_B	15...30 V DC or 13...26 V AC	
Ø	3	output humidity	0...10 V	ch 1
Ø	4	output temperature	0...10 V	ch 2

Dimensions
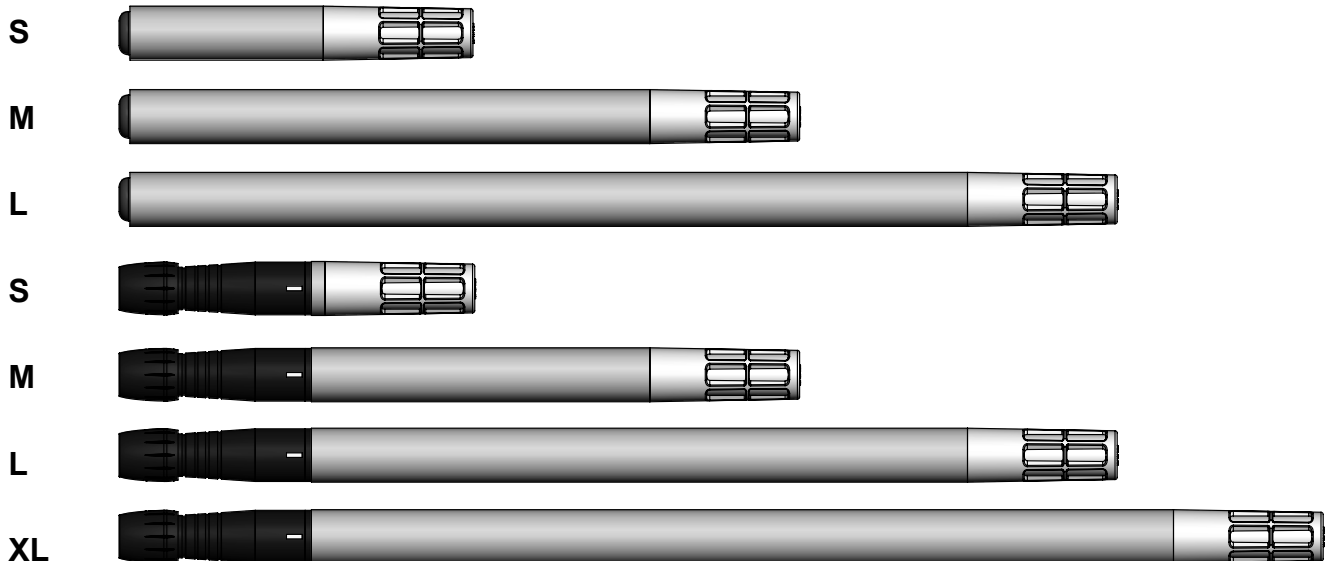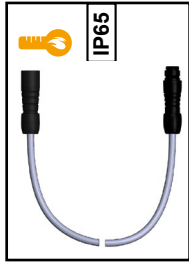

Drilling pattern

Fixing flange (accessories)

drilling pattern of fixing flange

Probe with cable

Probe lengths:
S=78
M=150
L=220

standard, firmly connected
-40°...+80°C

high temperature
-40°...+125°C

Ø12

33

-40°...+85°C (ZE08+ZE05)
-40°...+125°C (high temperature
with ZE05)
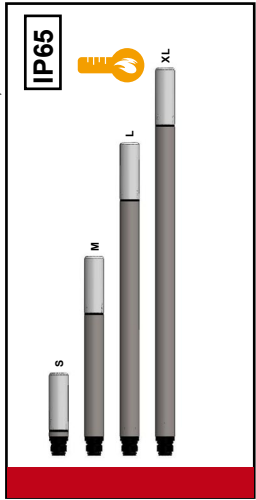
for IP65 (PTFE sintered filter)
add another +4 mm
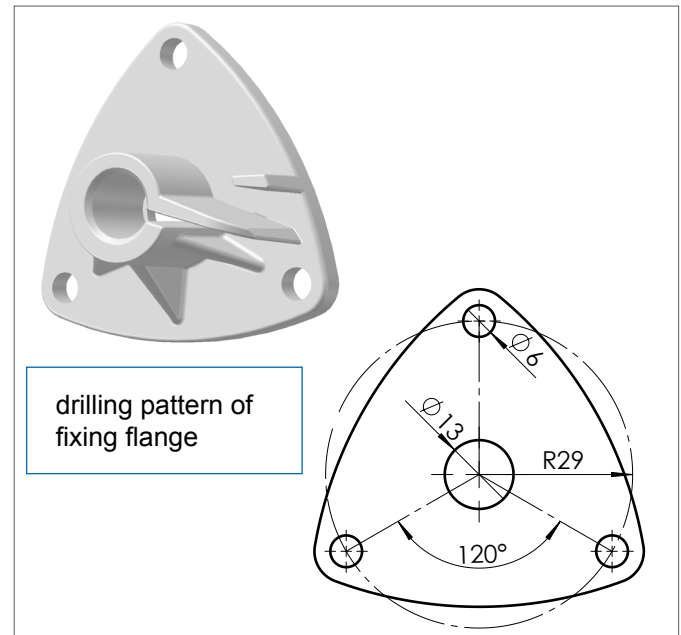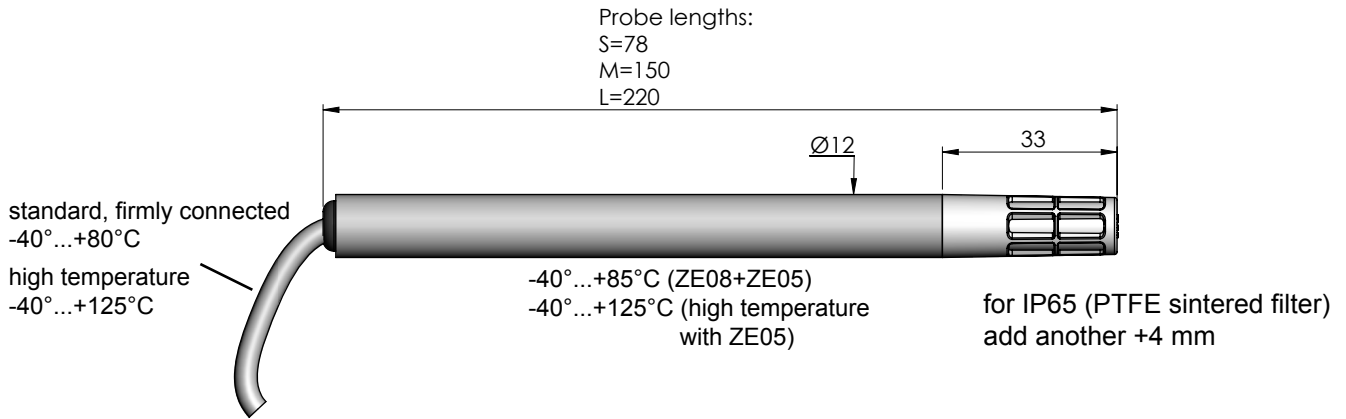
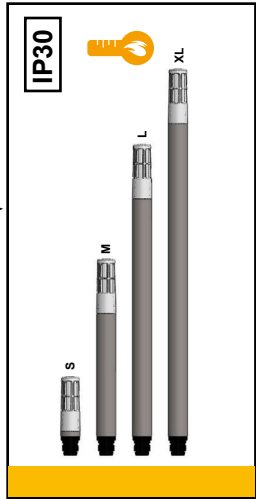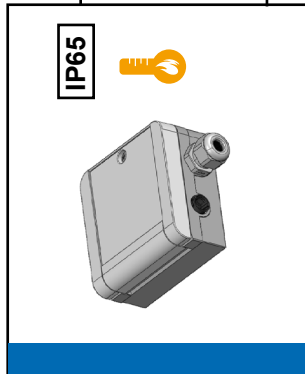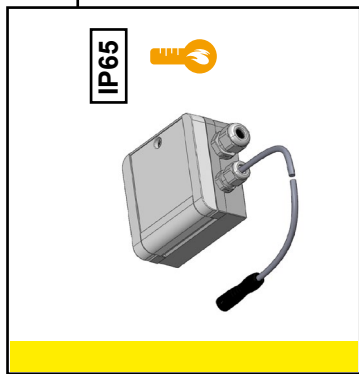## Probe pluggable

(not possible for cable probe high temperature +125°C)

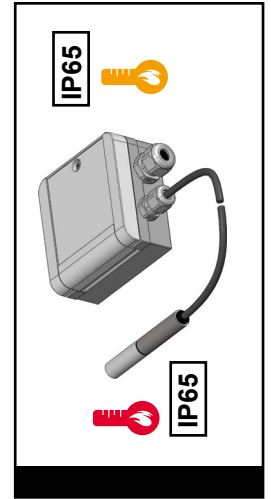Probe lengths:
S=78
M=150
L=220
XL=266

Ø12

33

probe
-40°...+85°C

for IP65 (PTFE sintered filter)
add another +4 mm

41

-40°...+80°C
cable firmly connected

Probe Versions

S

M

L

S

M

L

XL

IP65

+

IP65
S M L XL

IP30
S M L XL

IP65

IP65

IP65
S M L

IP65
S M L

IP30
S M L

IP65

IP65
IP65

IP65

IP65
IP65

IP65
IP30
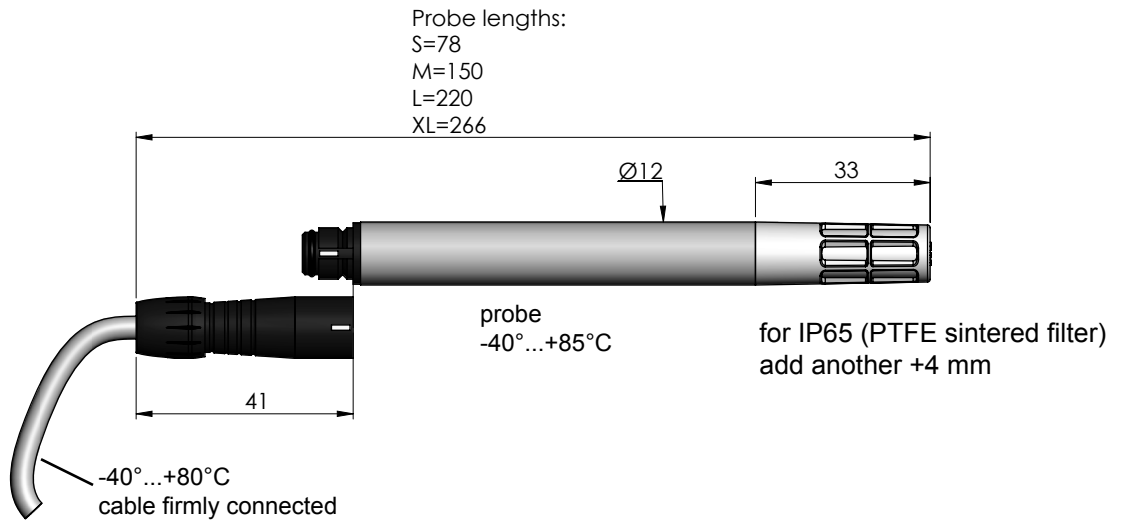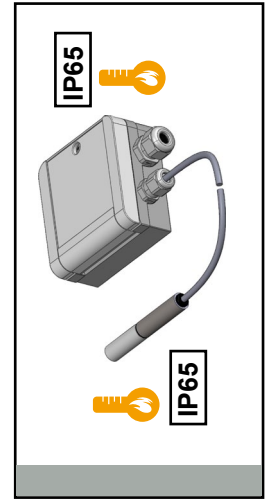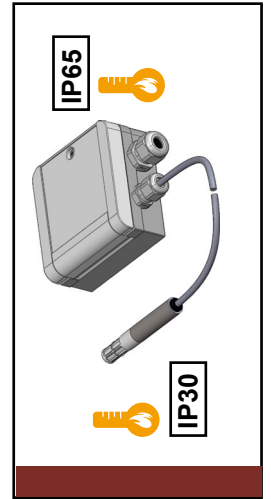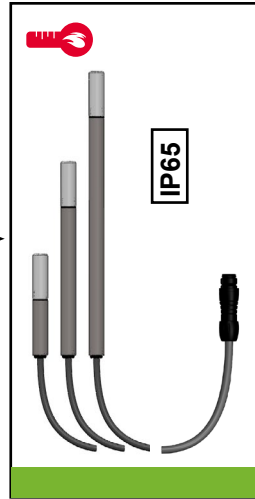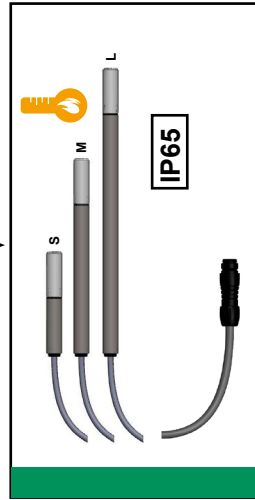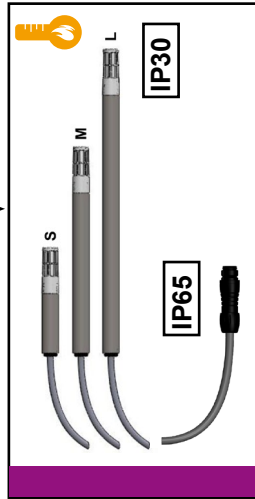
-40°C...+85°C
(probe + connector)
-40°C...+80°C
(cable)

-40°C...+125°C

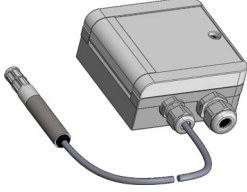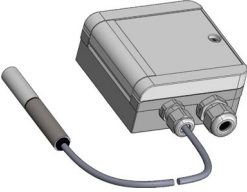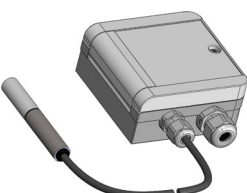|	Description Transmitter	„Description probe optional equipment / accessories"
	TRANSMITTER DZK for wall mounting (without display) **with integrated connector (without probe)** -40…+80°C IP65 (probe connected)	
		Probe pluggable with female socket Selection from 4 probe lengths: S, M, L, XL protective cage with membrane filter (ZE08) -40…+85°C IP30 (when plugged)
		Probe pluggable with female socket Selection from 4 probe lengths: S, M, L, XL PTFE sintered filter (ZE05) -40…+85°C IP65 (when plugged)
	TRANSMITTER DZK for wall mounting (without display) IP65 (housing) **with cable connected connector** cable length 2m **(without probe)** -40…+80°C	
		Probe Selection from 3 probe lengths: S, M, L protective cage with membrane filter (ZE08) -40…+85°C (probe), cable max. +80°C IP30 (probe) **with cable connected female cable connector**, cable length 2m (pluggable in the housing)
		Probe Selection from 3 probe lengths: S, M, L PTFE sintered filter (ZE05) -40…+85°C (probe), cable max. +80°C IP65 (when plugged) **with cable connected female cable connector,** cable length 2m (pluggable in the housing)
		Probe Selection from 3 probe lengths: S, M, L PTFE sintered filter (ZE05) -40…+125°C (probe + cable) IP65 (when plugged) **with cable connected female cable connector,** cable length 2m (pluggable in the housing)
	connecting cable pluggable on both sides: cable end with cable plug connector to connect to the probe cable end with female cable connector to connect to the housing cable length 2m -40…+80°C	

	Description Transmitter	„Description probe optional equipment / accessories"
	TRANSMITTER DZK for wall mounting without display IP65 (housing) **with cable connected probe** Selection from 3 probe lengths: S, M, L cable length 2m membrane filter (ZE08) -40…+85°C (probe), cable max. +80°C IP30 (probe)	
	TRANSMITTER DZK for wall mounting without display **with cable connected probe** Selection from 3 probe lengths: S, M, L cable length 2m PTFE sintered filter (ZE05) -40…+85°C (probe), cable max. +80°C IP65	
	TRANSMITTER DZK for wall mounting without display -40…+80°C (housing) **with cable connected probe** Selection from 3 probe lengths: S, M, L cable length 2m PTFE sintered filter (ZE05) -40…+125°C (probe + cable) IP65 (probe)	

Accessories

Product n°	Description
20.078	sintered filter ZE05 (instead of ZE08) made of fine-pored PTFE, IP 65
20.077	PTFE sintered filter ZE05 with O-Ring, IP65 - spare part
20.045	fixing flange, synthetic material, with fixing mechanism for easy sensor mounting and removal for sensors Ø 12 mm, with rubber sealing
ZE 31/1-12 ZE 31/1-75	humidity standard to check the accuracy of the sensor at 12 %RH humidity standard to check the accuracy of the sensor at 75 %RH
ZE 31/1-33 ZE 31/1-84	humidity standard to check the accuracy of the sensor at 33 %RH humidity standard to check the accuracy of the sensor at 84 %RH
ZE36	testing adapter for humidity standards for sensor tubes Ø 12 mm

In situ alignment   (Instruction for transmitters without USB interface)

During the in situ alignment the sensor does not necessarily have to be taken out of the control circuit.

We offer humidity standards for alignment of the sensors (page 3: accessories).
Before calibrating the sensor, standards should remain at least 2 hours on the sensors.
The temperature must remain constant during this time. For the correct temperature according to the humidity standard used, please refer to data sheet F5.2 Humidity Standards.
During calibration temperature and humidity must remain constant.

During calibration, especially during storage of data, uninterrupted power supply of the sensor must be provided.

During calibration the following measurement ranges are shown on the display/ are used for calibration:

|			
CH 1:	all sensors		always: relative humidity, measuring range 0...100 % RH
CH 2:	sensors with relative humidity RH output and temperature °C output		the programmed temperature range, unaltered
	sensors with other hx-values outputs		the standard temperature measuring range of -40...85°C

The accuracies shown in the technical data of this data sheet refer exclusively to works calibration.

Command		Operation	Transmitter / LED
default attention: all user adjustments will be reset.	possible only when adjustment mode is off. (LED must not be lit.)	press buttons UP and DOWN simultaneously for at least 8 sec.	until LED lights up for 1 sec.
calibration mode		press button DOWN for at least 3 sec.	until LED blinks 1 time per second
selection of type of calibration	humidity 1-point-adjustment (offset)	no further command necessary	LED blinks 1 time per second.
	humidity 2-point-adjustment lower point at 12 %RH and 20...30°C humdity standard ZE31/1-12	press button DOWN 1 time shortly	LED blinks twice per second.
	humidity 2-point-adjustment upper point at 75 %RH and 20...30°C humdity standard ZE31/1-75	press button DOWN twice shortly	LED blinks 3 times per second.
	temperature 1-point-adjustment	press button DOWN 3 times shortly	LED blinks 4 times per second.
Confirmation of selection		press button UP for at least 3 sec.	until LED lights up permanently
adjustment		buttons UP / DOWN: (press shortly) +/- 0.1 %RH respectively +/- 0.1°C per keystroke	
saving		press button DOWN for at least 3 sec.	until LED is off
program termination (at any time)		press button UP for at least 3 sec.	until LED blinks 6 times and then switches off.

Option: transmitter USB interface

Figure 1
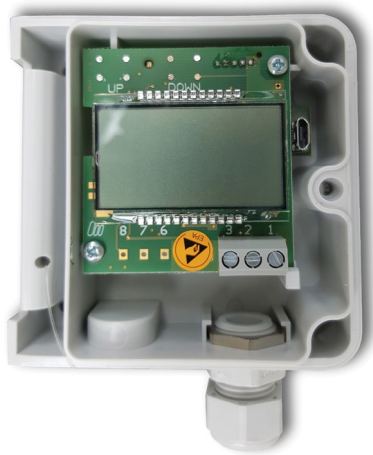
General information:

The following settings can be made using the „Galltec-Mela USB Configuration Software" and a standard micro USB cable. The transmitter is powered via USB. Except for adjustments, the transmitter requires no power via a power supply unit.

- Change of physically measured values
- Change of analogue output scaling / measuring range
- Change of temperature variables to °C or °F
- Air pressure input
- Single point adjustment of temperature and relative humidity

Download:

Software	www.galltec-mela.de/downloads
	System requirements: Operating system: Win 10 / Win 8 / Win 7 / Win Vista / Win XP USB Port: USB 2.0 Software license agreement: www.galltec-mela.de/downloads
Galltec Configuration Manual:	www.galltec-mela.de/downloads

Connecting Cable
(not part of the standard delivery)

Standard USB micro cable - USB „A" plug to USB „micro B"

Registration in Windows:

The transmitter is automatically registered in Windows via the USB cable after connecting to the PC. **No drivers are required**. Only one Galltec Mela transmitter can be configured and adjusted at a time.

Warning: ⚠	If the transmitter has <u>current outputs (4-20mA)</u> and an USB interface ensure galvanic isolation between PC and power supply on the connection terminals of the sensor. (see separate Galltec Configuration Manual „USB Configuration Manual" at www.galltec-mela.de Downloads). We recommend the use of an USB isolator. We successfully tested: https://de.muc89.com/isar520 for that purpose. With this USB isolator please leave the jumpers in the delivery state for the USB full speed mode we use.

Change of physical measuring values and analogue output scaling:

Based on the measured sizes of relative humidity and temperature you can select the below listed derived physical values.
All temperature values can be displayed in °F or °C.
The scaling of the physical values can be freely selected within the limits below.
The sensor is powered via USB for configuration - no power supply unit is required.

Physical values:		Scaling ranges
Relative humidity	[% RH]	0 %RH .... 100 %RH
Dew point temperature	[°C] / [°F]	-20 °C .... 70 °C -4 °F .... 158 °F
Mixing ratio	[g/kg]	0 g/kg .... 100 g/kg
Enthalpie	[kJ/kg]	0 kJ/kg .... 80 kJ/kg
Absolute humidity	[g/m³]	0 g/m³ .... 100 g/m³
Wet bulb temperature	[°C] / [°F]	-10 °C .... 50 °C 14 °F .... 122 °F
Temperature	[°C] / [°F]	-100 °C .... 200 °C -148 °F .... 392 °F

Air pressure and altitude:

For the following physical values, the air pressure is relevant to obtain a correct reading:

- Mixing ratio   [g/kg]
- Enthalpie   [kJ/kg]
- Wet bulb temperature [°C/°F]

If a physical value is selected, for which the air pressure is relevant, the input field automatically appears. The air pressure can be entered either directly or indirectly via the altitude (m above sea level).

Adjustment:

The transmitter can be matched to the measuring task by means of adjustment. To do this, supply the transmitter with power via the connection terminal and connect to the PC. This can also be done in situ using a portable computer.

There are two types of adjustment:

1. Offset adjustment: An offset in temperature and / or relative humidity can be entered.
                               Actual values are adjusted by this offset.
2. Adjustment with reference: By entering reference measuring values, sensor readings are adjusted to the reference.

Warning: ⚠	see warning concerning galvanic isolation previous page

Information:
The measuring accuracies specified in the technical data refer exclusively to factory adjustments.
The adjustment values in T & RH influence all physical values.

Mounting instructions

Position	The installation site of the remote probe should be chosen such that a representative measurement of air humidity can be guaranteed. Avoid areas in the vicinity of radiators, doors and exterior walls, as well as direct sunlight.
	Do not position the sensor where ingress of water could occur.
	IP65 protection is - only ensured with PTFE sintered filter ZE05 with O-Ring - only ensured when the probe is plugged, see „Probe pluggable" on page 4.
	To close the housing securely turn screw until dead stop.
	We recommend that you lay the connection lines in a loop so that any water that may be present can run off.
Operating temperature	Please note the maximum permissible ambient temperature for probe and housing when installing the sensor. When firmly connected the standard cable must not be exposed to an increased ambient temperature > +80°C.
Connection	The electrical connection must be carried out by qualified personnel only.
	The sensor contains sensitive electrical components. When opening the housing, make sure you comply with the electrostatic discharge precautions (ESD).
	Please pay attention to the ohmic resistance according to the operating voltage when using sensors with a current output.
	Lines to and from the sensor must not be installed parallel to strong electromagnetical fields.
	If there is any chance of an electrical surge, please install surge protection devices.

User instructions

Cleaning of filters and protective baskets	If necessary, soiled filters and protective baskets can carefully be unscrewed and rinsed. Bear in mind the sensors will not measure accurately again until filters are completely dry.
Damaging influences	Depending on type and concentration, agents that are corrosive and contain solvents, can result in faulty measurements and can cause the sensor to break down. Substances deposited on the sensor (e. g. resin aerosols, lacuer aerosols, smoke deposits etc.) are damaging as they eventually form a water-repellent film.
Exchanging the measuring probe	After the exchange of the measuring probe reset the adjustment or adjust again. The in situ alignment refers to the transmitter in conjunction with the remote probe.