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Galltec +mela

PM15PS
Sensor for humidity and temperature with RS232 signal level converter
for digital transfer of the measurement values
Rod design

with **exchangeable „Plug and Measure Unit" PMU**

Description

The PM15PS transmitter by Galltec+Mela combines digital Plug-and-Measure technology with the advantages of a digital RS232 output, making it suitable for data transfer via a network or the Internet.
Equipped with the serial Sub-D jack, the PM15PS is suitable for being installed in systems and also for local applications, for example with a laptop.

Like all Plug-and-Measure sensors, the PM15PS is equipped with a digital PMU: The capacitively measured humidity values and the temperature values measured by using a PT1000, are calculated in the calibrated Plug-and-Measure Unit PMU, with the calibration values stored there, and are passed on as digital measurement values. The PMU measuring heads are exchangeable and can be factory-calibrated and readjusted using software.

General Technical Data

General
measuring medium .... air, non-aggressive
min. air speed across the measuring head 0.3m/s
supply voltage .... using RS232 level (RTS, DTR)
consumption of electronics .... < 7 mA
electromagnetic compatibility .... EN 61326-1 / A1
max. transfer distance for RS232 ....15 m
max. ambient temperature at the housing (PMO) ..... 70° C
housing .... plastic, black
degree of protection .... housing (PMO) IP64
                 measuring head (PMU) IP30
9 pin SUB-D data line (jack) .... 2.3 m

Technical Data for Humidity and Temperature

Humidity
measuring range .... 0...100% rh
measuring accuracy 10...90 % rh at 23° C .... ±1.5% rh
        at <10%rh and >90%rh .... ±2% rh
        at <10°C and >40°C .... ±0.05% rh/K additional
influence of temperature .... <0.04% rh/K
response time T_{90} at v=2m/s .... < 10 s
resolution .... 0.01% rh (read out)
filter .... PTFE element filter

Temperature
measuring element (ref. DIN IEC 751) ..... Pt1000 1/3-DIN cl.B
accuracy @ 23°C .... ±0.15 K
influence of temperature (TK) .... <0.004 K/K
resolution .... 0.01°C (read out)

Type Survey

Type	Product No.	Measuring Range		PMU-Type	max. ambient temperature at PMU	Output
		rel. humidity	temperature			
PM15PS	700101023583	0 … 100 % rh	-40 ... +85°C	PMU-P	-20 ... +70°C	RS232

Software „VisualPMU" (Freeware)

This simple and very clear visualisation software supports the data output of a sensor via a serial interface on the PC or Laptop without an additional power supply.
For USB connections, a *USB adapter* can be supplied.

The relative humidity, the dew point and the temperature (°C or F) can be displayed and can be depicted as a graph. Apart from that, the programme has a simple data logger function. Recorded data can be exported to other programmes.
This freeware version can be obtained from our Homepage www.galltec-mela.de as a free of charge download..
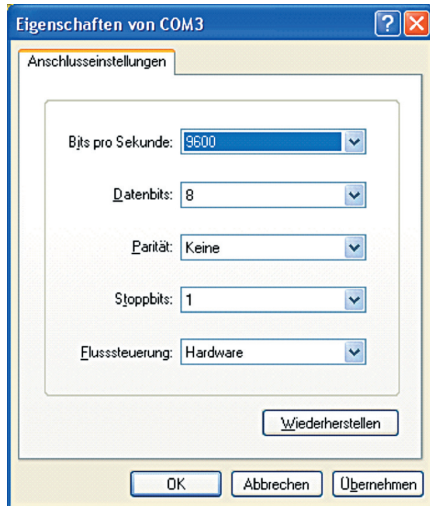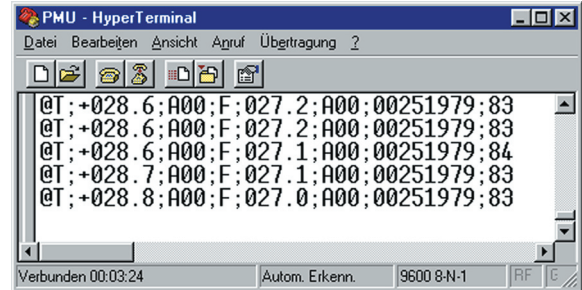
Connection settings

HyperTerminal (Windows)

The sensor PM15PS can be read via the Hyper Terminal programme from Windows. The picture below shows the character string of the data issued by the P15PS.

Notes on ASCII protocol

start of protocol	end of protocol	separation sign
@	"CR" and "LF"	"; "

The measurement data is sent in the measurement phase as ASCII-protocol on the RxD-pin:

@T	<sign>	<temperature>	<alarm-code>	F	<humidity>	<alarm-code>	<serial number>	<check-sum>	<CR>	<LF>

Example:

@T;	+	021.37;	A00;	F;	038.92;	A00;	00000121;	38	control character Carriage Return	control character Line Feed

The check sum is calculated as follows:

check sum =	255	-	$(\sum_{dez}$ % 256)	=	check sum $_{dez}$	=	check sum $_{hex}$

Example:

check sum = 255 - (1991 Modulo 256) = 255 - 199 = 56 = 38 $_{hex}$

The check sum is not transmitted as a hexadecimal character with 1 byte, but is translated into readable digits with 2 bytes. Through the comparison of the transmitted check sum with a check sum calculated at the read-out point, the user has the opportunity to check whether the transmission of the data is error-free.

Alarm codes:

Temperature channel:		Humidity channel:	
A00 =	no alarm, the temperature value is within the limits	A00 =	no alarm, the humidity value is within the limits
A01 =	temperature measurement range exceeded	A01 =	humidity measurement range exceeded (=100% rh)
A02 =	below temperature measurement range	A02 =	below humidity measurement range (= 0% rh)
A03 =	no sensor signal	A03 =	no sensor signal
A04 =	short circuit at PT1000 (resistance < 500 Ω)	A04 =	humidity sensor defective

Accessories

Description	Data sheet	Description
USB-Adapter serial -> USB	-	USB adapter for Sub-D-data line *To connect up the Sub-D-data line to a USB interface on the PC or Laptop*
ZA 24	F5.1	Attachment plate for attaching ducts or wall bushings for sensor tubes 15 mm
ZE 31/1-12 ZE 31/1-33 ZE 31/1-75 ZE 31/1-84	F5.2	Standard humidity to check the accuracy of the sensors 12 %rh and 25°C Standard humidity to check the accuracy of the sensors 33 %rh and 25°C Standard humidity to check the accuracy of the sensors 75 %rh and 25°C Standard humidity to check the accuracy of the sensors 84 %rh and 25°C
ZE33	F5.2	Adapter for humidity standards ZE 31/1

User information

Installation
The sensors are to be attached in a position representative for the climate measurement.
The position the sensor is mounted in (horizontal, vertical) does not matter. However, it should be mounted in such a way that no water can get into it.

Please note the maximum permissible ambient temperature when installing it (max. +70°C).

In a clean environment, the sensor is maintenance-free.
The capacitive MELA sensor element is also protected by the integrated PTFE filter.
Dust does not cause any harm to the humidity sensor, however, if there is an increased build-up of dust this does affect dynamic performance.
If there is too much dust around, then the protective basket can be carefully removed and washed. Loose dirt can also be removed from the PTFE filter above the sensor element by being blown on or carefully rinsed with distilled water.
Caution! The PTFE filter may not be removed from the sensor element!

Dew formation
Dew formation and splashes do not damage the sensor, although corrupted measurement readings are recorded until all the moisture on and directly around the sensor element has dried up.

Damaging Influences
Agents that are corrosive and contain solvents, depending upon the type and concentration of the agent, can result in faulty measurements and cause the measuring element to break down. Substances deposited on the sensor are damaging as they form a water-repellent film (this applies to all humidity sensors with hygroscopic measuring elements); e.g. resin aerosols, lacquer aerosols, smoke deposits etc.
In order to check functioning in the place of installation, we recommend that you use our *ZE31/1*-type *humidity standard... (accessories)* .

To ensure the given accuracy of the sensors, we recommend a regular calibration cycle (timing depends on the kind of application).

Please consult the ***application instructions*** for the sensing elements (product info sheet no. A 1 and B1.1), which you can get from www.galltec-mela.de, for further information which you need to bear in mind when using humidity sensors with capacitive sensing elements.

Dimensions