

Digital-Analog Converter DACON8-UMB



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1 Please Read Before Use

1.1 Symbols Used



Important information concerning potential hazards to the user.



Important information concerning correct operation of the equipment.

1.2 Safety Instructions



- Installation and commissioning must only be carried out by suitably qualified specialist personnel.
- Never take measurements on or touch live electrical parts.
- Pay attention to the technical data and storage and operating conditions.

1.3 Designated Use



- The equipment must only be operated within the range of the specified technical data.
- The equipment must only be used under the conditions and for the purposes for which it was designed.
- The safety and operation of the equipment can no longer be guaranteed if it is modified or adapted.

1.4 Incorrect Use

If the equipment is not correctly installed:



- It may not function or its operation may be limited.
- It may be permanently damaged.
- Danger of injury may exist if the equipment is allowed to fall.

If the equipment is not correctly connected:



- It may not function.
- It may be permanently damaged.
- The possibility of an electrical shock may exist under certain circumstances.

1.5 Guarantee

The guarantee period is 12 months from the date of delivery. The guarantee is forfeited if the designated use is violated.

1.6 Brand Names

All brand names referred to are subject without limitation to the valid trademark and ownership rights of the respective owner.

2 Equipment Supplied

- The device



- Bus connector
- 4 current output connectors

3 Order Number

DACON8-UMB

8160.UDAC

3.1 Accessories

Power supply unit
24V/100VA

8366.USV1

3.2 Additional Documents and Software

You can download the following documents and software via the Internet at www.lufft.de.

Operating Manual	<ul style="list-style-type: none">• This document
UMB-Config-Tool	<ul style="list-style-type: none">• Windows® software for testing, firmware updates and configuration of UMB devices
UMB Protocol	<ul style="list-style-type: none">• Communications protocol for UMB devices
Firmware	<ul style="list-style-type: none">• The current equipment firmware

4 Equipment Description

DACON8-UMB facilitates conversion of measurements from UMB devices without an analog interface into current (0 or 4-20 mA) or voltage (0 or 2-10 V), thus allowing UMB sensors to be deployed in an analog environment.

Using UMB protocol, DACON8-UMB requests data from the sensors and generates either current or voltage signals from this data.

If analog data from a single UMB sensor are to be evaluated, the combination of UMB sensor and DACON8-UMB is sufficient.

If analog data from multiple UMB sensors are to be evaluated, each UMB sensor requires its own ISOCON-UMB device. DACON8-UMB is then connected to the RS-485 bus.

DACON8-UMB can convert up to 8 UMB channels into current or voltage. Each channel can be configured separately.

DACON8-UMB works as the master in a UMB measuring network, which is why only one DACON8-UMB can be used per UMB bus. If you wish to convert more than 8 UMB channels into current or voltage, it is necessary to separate the buses and install a further DACON8-UMB device.

Configuration is performed with the aid of the UMB-Config-Tool (Windows ® PC software).

Examples of possible network configurations:

One DACON8-UMB and one UMB sensor:

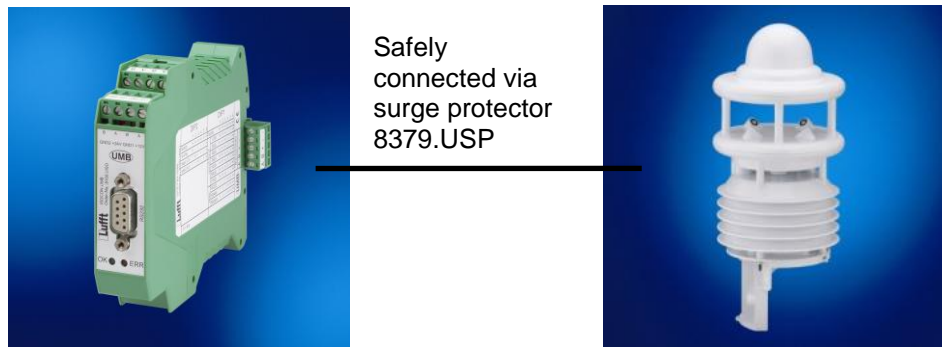
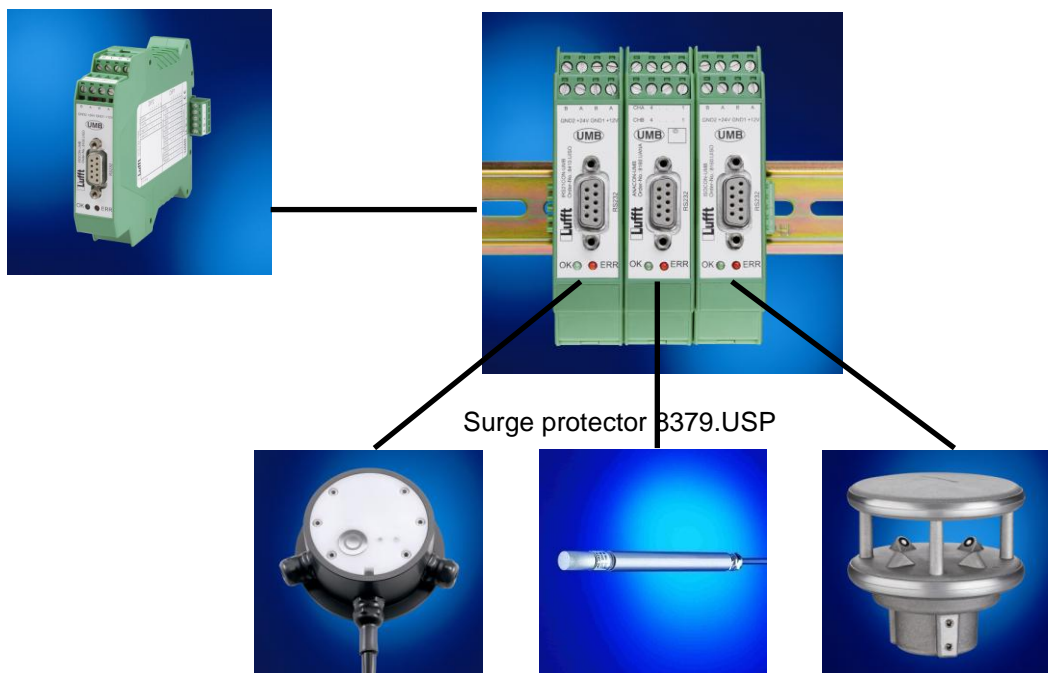


Fig. 1: Sample Configuration

One DACON8-UMB and three UMB sensors (example only):



5 Installation

1. The system must be switched off.
2. Clip the DACON8-UMB bus connector and the ISOCON-UMB modules of the connected sensors to the mounting rail and then snap on the DACON8-UMB device.
3. Connect the sensor to be polled (see respective operating instructions).
4. Now connect the 24V power supply to the mounting rail bus connector.
5. For configuration, connect your host system to the RS-232 interface of the DACON8-UMB device.

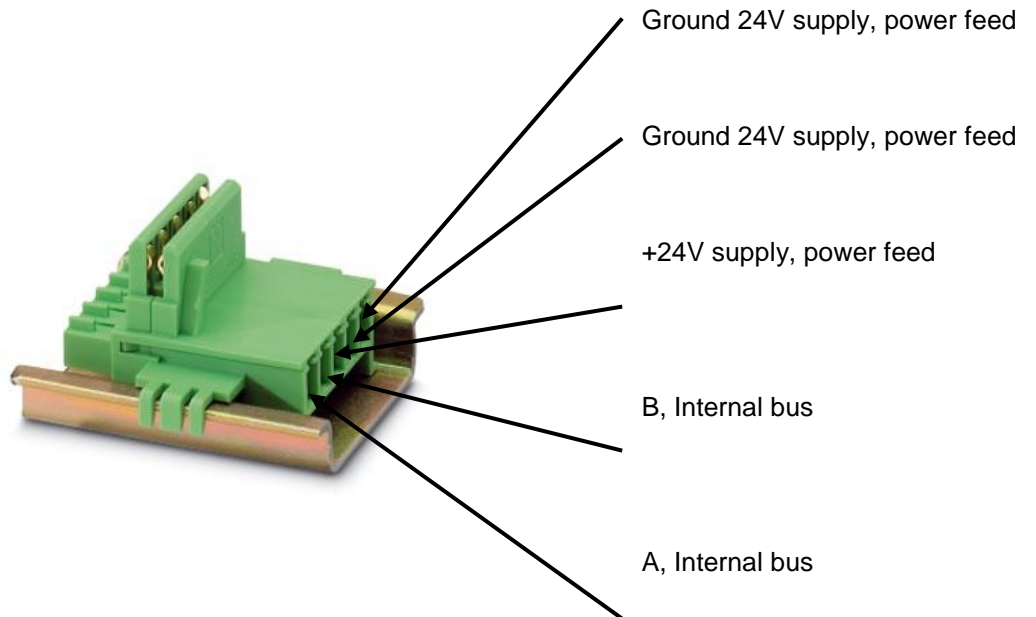
Fig. 2: Attachment to Mounting Rail



WARNING: Only attach equipment to the mounting rail when the power is switched off. Equipment must be installed on a grounded mounting rail.

5.1 Mounting Rail Bus Connector

Fig. 3: Bus connector



WARNING: Equipment must be installed on a grounded mounting rail.

6 Connections

The DACON8-UMB analog outputs are distributed across 4 connectors, each of which has 2 outputs. The outputs are designated O1 - O8. The respective ground terminal is designated GD (GND).

The numbering of the outputs is shown in the image below:

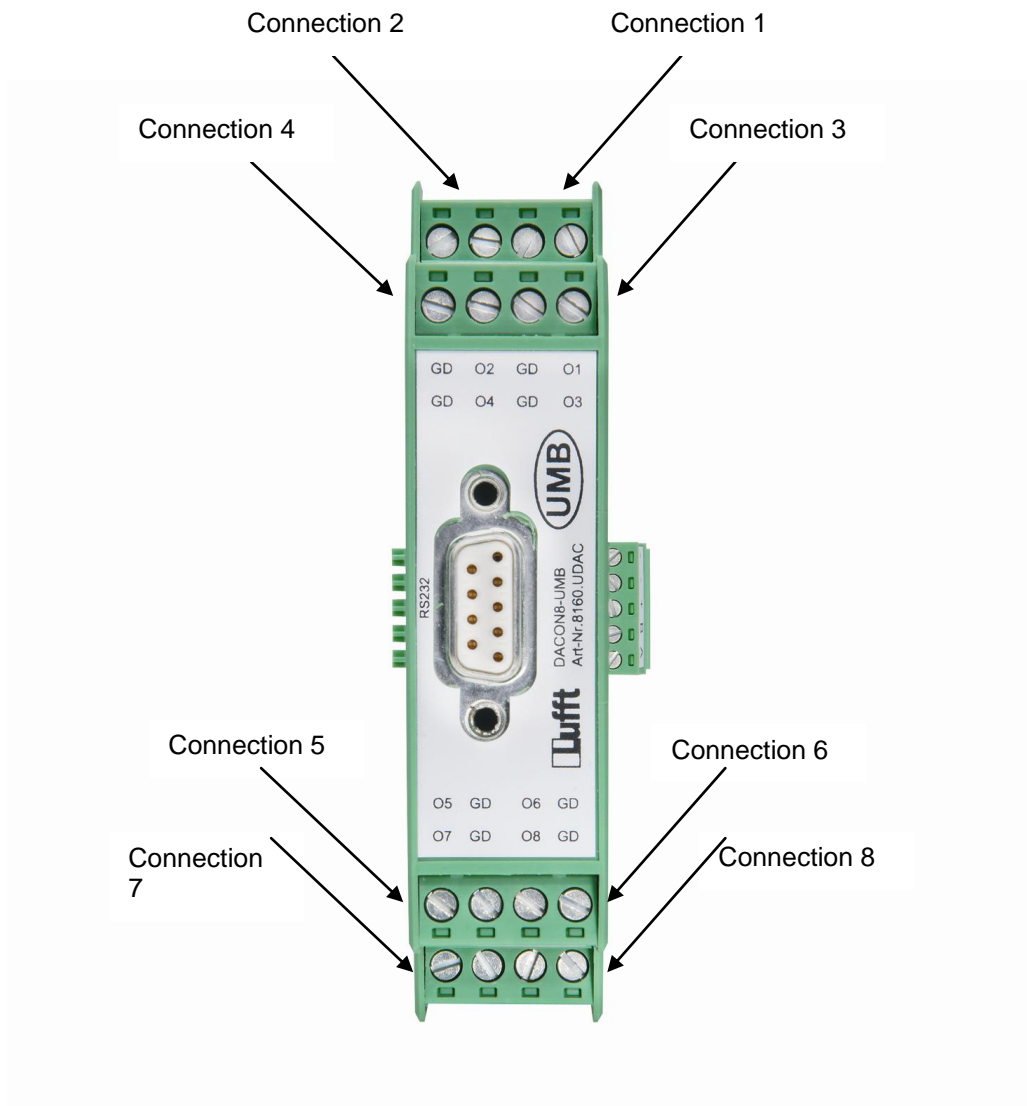


Fig. 4: Numbering of Connections

6.1 Connecting to the Sensor

If analog data from **a single UMB sensor** are to be evaluated, the combination of UMB sensor and DACON8-UMB device is sufficient. In this case, communication lines A and B of the respective sensor are connected to the DACON8-UMB device via the connection plugs on the bus connector.



WARNING: In this case, the **voltage supply to the sensor must come direct from the power supply unit** (provided that the voltage range allows this – please consult the respective operating manual).

For safety reasons, we recommend that you fit surge protector 8379.USB between the sensor and the DACON8-UMB device.



Fig. 5: Connecting a Single Sensor to the DACON8-UMB

If analog data from **multiple UMB sensors** are to be evaluated, each UMB sensor requires its own ISOCON-UMB device. DACON8-UMB is then connected to the RS-485 bus.

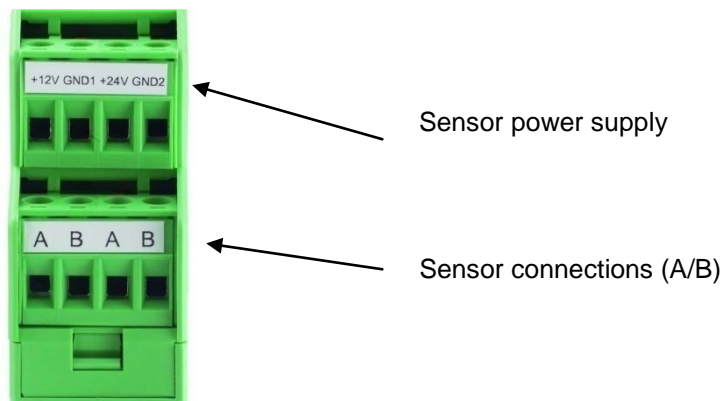


Fig. 6: Connecting Multiple Sensors to an ISOCON-UMB Device



WARNING: If you wish to convert more than 8 UMB channels into current or voltage, it is necessary to separate the buses and install a further DACON8-UMB device.

7 Commissioning

After installation and proper connection of the sensors, the converter automatically starts to request measurements, provided that it has been configured. A Windows® PC with serial interface, UMB-Config-Tool software and interface cable (9-pin D-sub; connector to socket; 1:1) are required for configuration and testing purposes.

No transport protection or similar equipment that needs to be removed is fitted to the DACON8-UMB device.

8 Configuration and Testing

Lufft provides Windows® PC software (UMB-Config-Tool) for configuration purposes. The sensor can also be tested and the firmware updated with the aid of this software.

8.1 Factory Settings

The Digital-Analog Converter is delivered with the following settings:

Class ID: 15 (cannot be modified)
 Device ID: 1 (gives address 1501h = 61441d)
 Baud rate: 19200
 RS-485 protocol: Binary
 Calculation interval: 10 measurements

All channels are disabled.

8.2 Configuration with UMB-Config-Tool

The operation of the UMB-Config-Tool is described in detail in the operating instructions for the Windows® PC software. For this reason only the device-specific menus and functions are described here.

8.2.1 Sensor Selection

In 'Sensor Selection', the DACON8-UMB is displayed as DACON8-UMB (Class ID 15).

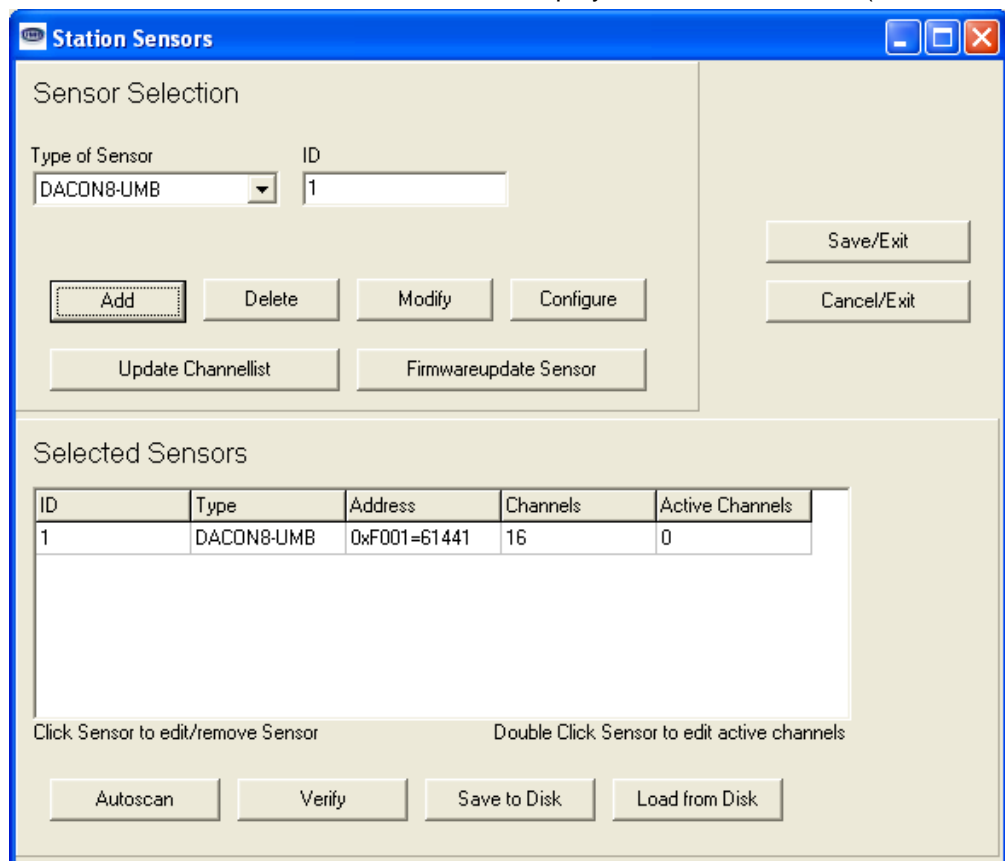


Fig. 7: Sensor Selection



Note: If the UMB-Config-Tool does not recognize the DACON8-UMB sensor type, select the number '15' under 'Sensor Type'. With the DACON8-UMB connected, click on 'Update Channel List'.



However, you do require the current version of the UMB-Config-Tool to configure the DACON8-UMB.

Note: When operating a DACON8-UMB on a UMB network, no other polling devices may be installed (e.g. LCOM).

8.2.2 Configuration

After a configuration has been loaded, all relevant settings and values can be adjusted.

8.2.3 General Settings

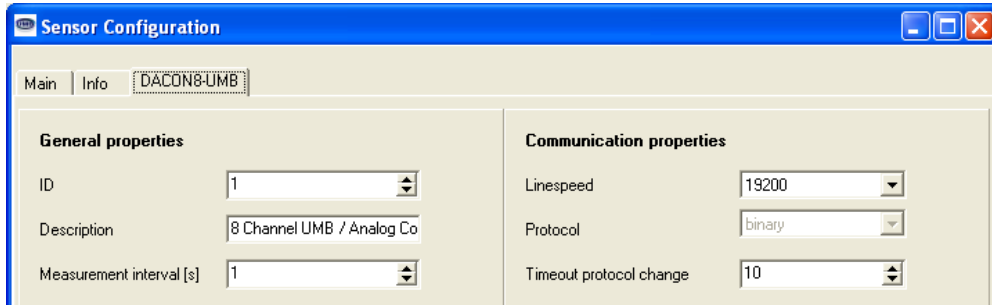


Fig. 8: General Settings

- ID: Device ID (factory setting 1; assign device IDs to additional devices in ascending order)
- Description: In order to differentiate the devices you can enter a description here, e.g. location.
- Sampling rate: Indicates how often the DACON8-UMB polls the connected sensors and updates the current / voltage values.
- Baud rate: Transmission speed of the RS-485 interface (factory setting 19200; **DO NOT CHANGE for operation with ISOCON-UMB**).
- Protocol: Sensor communications protocol (only binary protocol is currently supported).
- Timeout: In the event of a temporary changeover of the communications protocol, the system switches back to the configured protocol after this time (in minutes) (no function at present).

8.2.4 Current / Voltage Settings

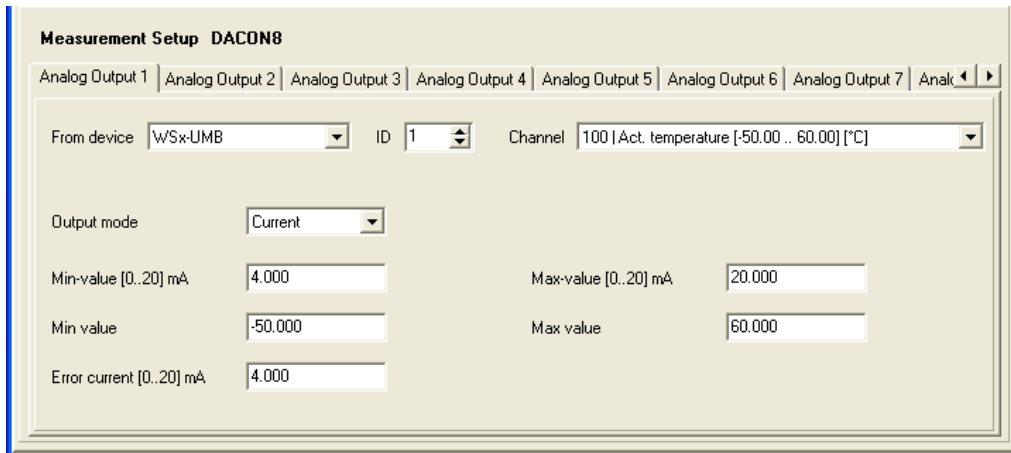


Fig. 9: Current Settings

The analog channels are configured via the various “Analog Output” tabs (1-8).

- From device: The connected sensor is selected here.
- ID: Device ID of the connected sensor.
- Channel: Selection of the channel to be converted into current.
- Output type: The type of output on the channel, i.e. voltage, current or disabled (off), is defined here.

After this the channels to be displayed are set, together with their associated scaling, beginning with the analog current outputs. In addition to the analog limit values (in this case 4-20 mA, alternatively 0-20 mA), the digital limit values must also be set (e.g. -50°C to +60°C).

Example: For the values shown above and for a temperature of 19°C, a current of $(20 \text{ mA} - 4 \text{ mA}) / (60^\circ\text{C} - (-50^\circ\text{C})) * (19^\circ\text{C} + 50^\circ\text{C}) + 4 \text{ mA} = 14.04 \text{ mA}$ is transmitted.

Fault current: Indicates the current that is transmitted in the event of a fault.

With the exception of the various limit values, the settings in the “Voltage” operating mode are the same:

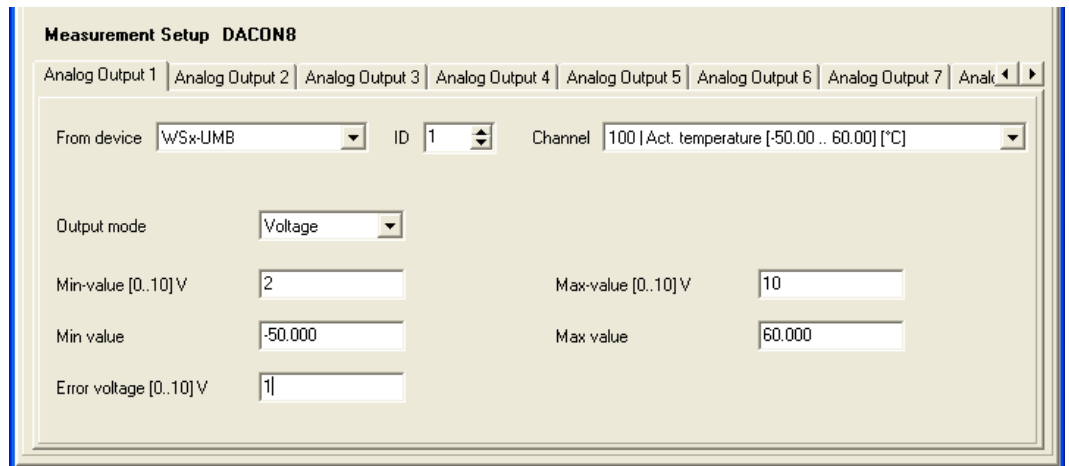


Fig. 10: Voltage Settings

Once configuration has taken place, the settings must be written back to the sensor (saved). After this it is recommended to update the channel list:

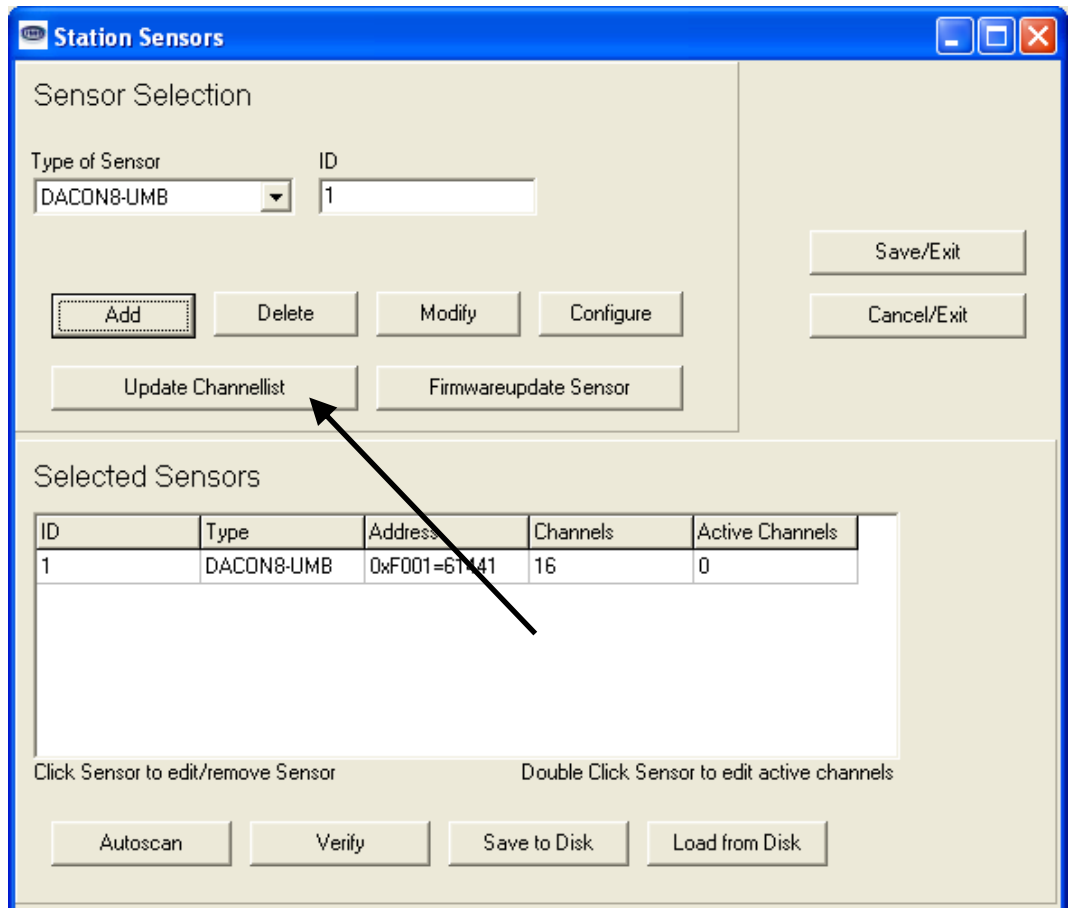


Fig. 11: Update Channel List

8.3 Function Test with UMB-Config-Tool

The function of the DACON8-UMB device can be tested with UMB-Config-Tool by polling the configured channels.



Note: When operating a DACON8-UMB device on a UMB network, no other polling devices may be installed (e.g. LCOM).

8.3.1 Channels for Measurement Polling

You can select the channel for measurement polling by UMB-Config-Tool by clicking on the respective channel.

ChNr.	Measurement	Unit	Range	active
100	Act. 7001 00100 i-x	**	-50.00 .. 60.00	active
101	Act. 7001 00100 i-x	**	4.00 .. 20.00	active
200	Act. 7001 00200 i-x	**	0.00 .. 100.00	inactive
201	Act. 7001 00200 i-x	**	4.00 .. 20.00	inactive
300	Act. 7001 00400 i-x	**	0.00 .. 60.00	inactive
301	Act. 7001 00400 i-x	**	5.00 .. 6.00	inactive
400	Act. 7001 00500 i-x	**	0.00 .. 359.90	inactive
401	Act. 7001 00500 i-x	**	4.00 .. 20.00	inactive
500	Act. 7001 00600 i-x	**	0.00 .. 100000.00	inactive
501	Act. 7001 00600 i-x	**	4.00 .. 20.00	inactive
600	Act. 7001 00300 i-x	**	300.00 .. 1200.00	inactive
601	Act. 7001 00300 i-x	**	4.00 .. 20.00	inactive
700	Act. 7001 00700 i-x	**	0.00 .. 255.00	inactive
701	Act. 7001 00700 i-x	**	4.00 .. 20.00	inactive
800	Act. 7001 00800 i-x	**	0.00 .. 200.00	inactive
801	Act. 7001 00800 i-x	**	4.00 .. 20.00	inactive

Click on Channel to toggle active

OK

Fig. 12:
Measurement
Polling Channels

Channels x00 and x01 refer to configured Channel x in all cases. In the above configuration example, therefore, Channel 1 of a WSx-UMB device is configured for temperature. Simulation of the temperature range from -50 to +60°C is transmitted on 4 – 20 mA.

Channel 100 transmits the channel polled by UMB protocol and Channel 101 transmits the corresponding current value, which can also be measured on Output 1.

8.3.2 Sample Measurement Request

DACON8-UMB ID1 7001 00100 i-x [°C] Act	DACON8-UMB ID1 7001 00100 i-x [mA] Act
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50
22.21	14.50

Fig. 13: Sample Measurement Request



In the above example, a measured temperature of 26.14°C produces a current of 15.07 mA.

Note: The UMB-Config-Tool is provided for test and configuration purposes only. It is not suitable for the permanent acquisition of measurement data.

9 Firmware Update

To keep the sensor in accordance with the latest state-of-the-art, it is possible to carry out a firmware update on site with no need to remove the sensor and return it to the manufacturer. The firmware update is carried out with the aid of the UMB-Config-Tool.

The description of the firmware update can be found in the instructions for the UMB-Config-Tool. Please download the latest firmware and UMB-Config-Tool from our website www.lufft.de and install it on a Windows® PC. You can find the instructions here:



10 Maintenance

In principle, the device is maintenance-free.

11 Technical Data

Power supply:	24 V DC +/- 10%
Current consumption: and DC power input	max. approx. 130 mA / 3.1 VA at 24 V DC
Housing:	PA-V0, green
Dimensions W x H x D:	22.5 x 99 x 118.6 mm
Weight:	approx. 125 g
Protection class:	IP20
Storage conditions	
Permissible storage temperature:	-40°C to +70°C
Permissible relative humidity:	0 to 95% R.H. non-condensing
Operating conditions	
Permissible operating temperature:	-30°C to +70°C
Permissible relative humidity:	0 to 95% R.H.
Permissible altitude: above sea level	N/A
RS-232 interface	
Data bits:	8
Stop bit:	1
Parity:	No
Adjustable baud rates:	1200, 2400, 4800, 9600, 14400, 19200 ¹ , 28800, 57600
Accuracy:	max. 0.5% over the entire measuring range
Analog interfaces:	
Maximum load:	0 or 4 - 20mA / 0 or 2 .. 10V
Resolution:	500 Ω
Channels:	16 bit
Update rate:	Adjustable
	1-10 ¹ seconds

¹ Factory setting and baud rate for firmware update

12 EC Certificate of Conformity

Product: Digital-Analog Converter
Type: DACON-UMB (Order No.: 8160.UDAC)

We herewith certify that the above mentioned equipment complies in design and construction with the Directives of the European Union and specifically the EMC Directive in accordance with 89/336/EC and the Low Voltage Directive in accordance with 73/23/EC.

The above mentioned equipment conforms to the following specific EMC Standards:

EN 61000-6-2:2005 Part 6-2: Generic Standards - Immunity for Industrial Environments

EN 61000-4-2 (2009)	ESD
EN 61000-4-3 (2008)	Radiated electromagnetic field
EN 61000-4-4 (2010)	Burst
EN 61000-4-5 (2006)	Surge
EN 61000-4-6 (2009)	Conducted disturbances
EN 61000-4-8 (2001)	Magnetic field 50Hz

EN 61000-6-3:2007 Part 6-3: Generic Standards - Emission Standard for Residential, Commercial and Light Industrial Environments

EN 55022:2006 +A1:2007	Line-conducted disturbances
prEN 50147-3:2000	Radiated emission
IEC / CISPR 22 Class B	



Fellbach, 28.11.2010

Axel Schmitz-Hübsch

13 Fault Description

Description

Device does not allow configuration

Cause - Remedy

Check supply voltage

Check interface connection

Incorrect device ID → check ID

14 Disposal

14.1 Within the EC

The device must be disposed of in accordance with European Directives 2002/96/EC and 2003/108/EC (waste electrical and electronic equipment). Waste equipment must not be disposed of as household waste! For environmentally sound recycling and the disposal of your waste equipment please contact a certified electronic waste disposal company.



14.2 Outside the EC

Please comply with the applicable regulations for the proper disposal of waste electrical and electronic equipment in your respective country.

15 Repair / Corrective Maintenance

Please arrange for any faulty equipment to be checked and, if necessary, repaired by the manufacturer exclusively. Do not open the equipment and do not under any circumstances attempt to carry out your own repairs.

In matters of guarantee or repair please contact:

G. Lufft Mess- und Regeltechnik GmbH

Gutenbergstraße 20

70736 Fellbach

PO Box 4252

70719 Fellbach

Germany

Tel.: +49 711 51822-0

Hotline: +49 711 51822-52

Fax: +49 711 51822-41

E-Mail: info@lufft.de

or your local distributor.

15.1 Technical Support

Our Hotline is available for technical questions via the following e-mail address:

hotline@lufft.de

You can also consult frequently asked questions at <http://www.lufft.de/> (menu header: FAQs).

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