



Operating Manual

UMB Analogue/Digital Converter ANACON

Order Number: 8160.UANA

Status: V6; 1425.03.2010

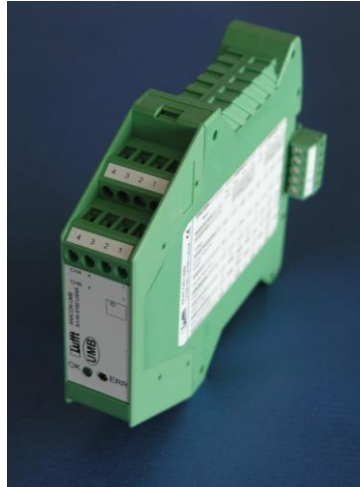


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Version history:

Version	Date	Compiled by	Comments
V1	15.09.2006	EES/SH	First edition
V2	11.01.2007	EES	Sensor connection scheme for wind sensor changed; additional channels for wind speed in knots supplemented
V3	27.03.2007	EES	EC Certificate of Conformity and channels for abs. air pressure / humidity supplemented; grounded DIN rail
V4	09.10.2007	EES	Channel list for precipitation and pulses changed
V5	13.07.2009	EES	Channel list for 2nd Temperature channel added
V6	25.03.2010	FS	New Housing

Please read before use

Before using the equipment, please read the operating manual carefully and follow the instructions in every detail.

Safety instructions

- Installation and commissioning must only be carried out by suitably qualified specialist personnel.
- Never take measurements on or touch live electrical parts.
- Only mount the module on the DIN rail when the power is switched off.
- Protect the device from direct sunlight
- The equipment requires an adjustment period of several minutes on being moved to a location with different climate conditions.
- Pay attention to the technical data and storage and operating conditions.



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.

Guarantee

The guarantee period is 24 months from the date of delivery. The guarantee is forfeited if the designated use is violated.

Symbols used



Important indication concerning possible hazards to the user



Important indication for the correct functioning of the device

Description

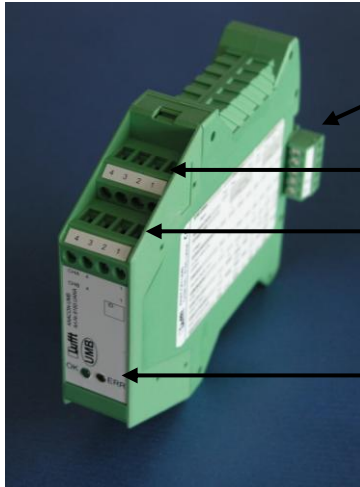
The UMB Analogue/Digital Converter (ANACON) is an intelligent analogue/digital converter with electrical isolation, suitable for integration into UMB networks. The devices are easily installed on standard EN mounting rails and networked together by means of mounting rail bus connectors. The 24V feed for the power supply takes place via the bus connector. Windows software is available for the configuration of the ANACON via RS232 port and an additional ISOCON (8160.UISO).

Features

- 2 analogue inputs with 24 bit resolution and signal conditioning for resistance, PT100/PT1000, voltage, current, frequency and pulses as well as pre-defined settings for a large number of Lufft environmental sensors. A half-duplex RS485 interface for networking the converters together.
- Easy mounting on standard EN mounting rails
- Easy networking of up to 32 subscribers via mounting rail bus connectors
- 24V DC power supply suitable for switchgear cabinets
- ESD protection for all interfaces
- Configuration via Windows software provided
- Functions displayed via LED's
- Low space requirement; width approx. 23mm/module
- Low energy consumption / dissipation

ANACON UMB Analogue/Digital Converter

Summary



Power supply & RS485 bus interface

Input Channel A

Input Channel B

Status LED's

Analogue Inputs Channel A and Channel B



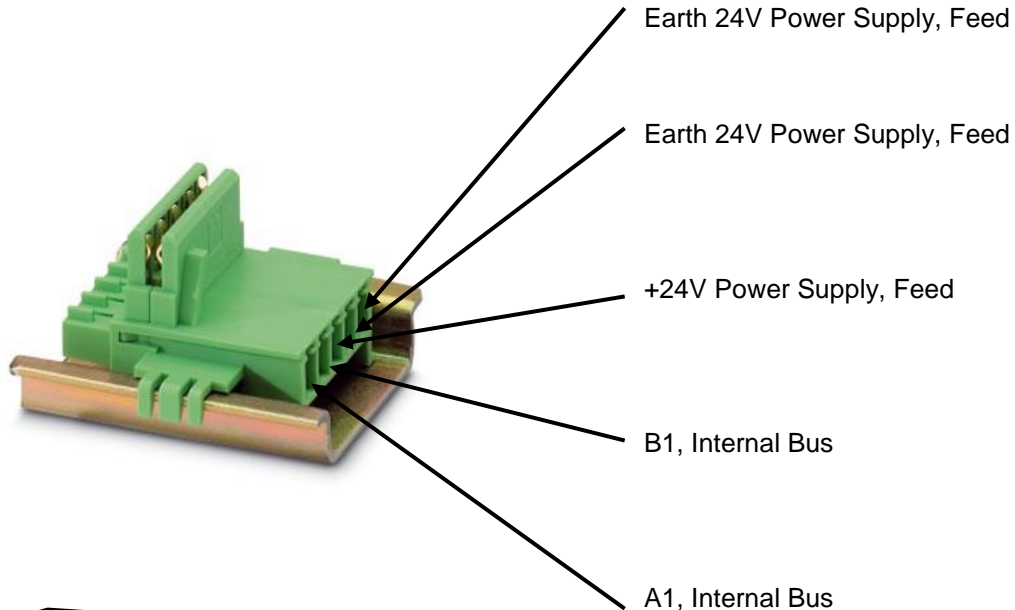
**ANACON-UMB
Connection**

← Channel B

← Channel A

PIN	Name
1	Power, Sensor Power Supply
2	ANA_+, Sense High Input
3	ANA_I, Force Low Input
4	ANA_-, Force High Input

Mounting Rail Bus Connector



NOTE: The assembly must take place on a grounded DIN rail !

Status LED's

There are 2 LED's on the front side of the device in order to display the correct configuration and functioning of the ANACON. Their meanings are as follows:

- Red LED:
- If this LED lights up permanently after switch-on there is a configuration fault.
 - If this LED lights up during operation an unforeseen fault has occurred; the device must be reset.
- Green LED:
- This LED flashes briefly (20ms) every 10 seconds to display the function of the device.
 - This LED lights up for a longer period (>500ms) during measurement.

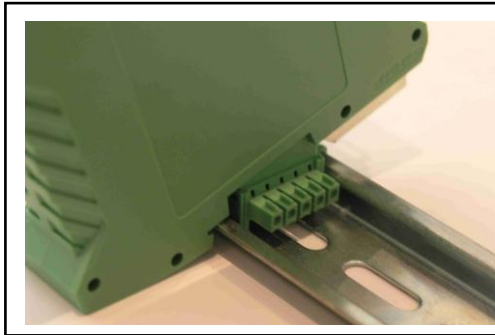
Configuration

The ANACON modules are all supplied from the factory with ID 1. If several modules are installed in a UMB network, it must be ensured that all modules on the network have a different ID. The following steps should be taken in order to configure the device:

1. Clip a mounting rail bus connector onto the Din rail and connect the 24V supply with the aid of the connector provided. Please ensure that the polarity and pin assignment are correct on connection. Incorrect connection can cause the destruction of the ANACON module!
2. Next mount the ANACON module which you wish to configure.
3. For the connection to the RS232 port of your PC a additional ISOCON (8160.UISO) is necessary. Clip the ISOCON also on the mounting rail and connect the module to your PC via the RS232 interface.
4. Set the desired ID and channel configuration using the **UMB-Config-Tool** software. You can enter the configured ID in the inscription field on the front side of the module.
5. The ANACON is now ready for operation and can be detached from the DIN rail. Please repeat steps 2 to 5 for all additional ANACON modules.

Installation and Commissioning

1. First configure all the modules using the **UMB-Config-Tool** configuration software in accordance with your requirements (see **Configuration** chapter).
2. Clip the required number of mounting rail bus connectors onto the DIN rail and then connect all the ANACON modules.
3. Connect the sensors to channels A and B of the ANACON module. Please note that a fixed assignment is specified for channels A and B for the combined sensors for temperature and relative humidity as well as the wind speed and wind direction sensors. A summary of the sensor connection scheme is provided in the table below.
4. Now connect the 24V power supply to the mounting rail bus connectors.
5. Connect your host system to any desired ISOCON RS232 interface. The equipment is now ready for operation.



Connecting the ANACON modules to the DIN rail

**ATTENTION: Only mount or remove modules from the DIN rail when the power is switched off
The assembly must take place on a grounded DIN rail!**

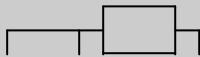

8160.UANA	Channel A				Channel B			
Input	Pin1	Pin2	Pin3	Pin4	Pin1	Pin2	Pin3	Pin4
Resistance (3 wire), PT100/PT1000								
Voltage		V+	V-			V+	V-	
Current self powered	I-		I+		I-		I+	
Current ANACON powered	I+		I-		I+		I-	
Frequency	F-		F+		F-		F+	
Impulse/ Digital Input	D-		D+		D-		D+	
Lufft Sensors								
8160.TF (T)		red	red	white		red	red	white
8160.TFF (T/H)		brown	orange	black	red		yellow	
8355.03 (Baro)	red		orange		red		orange	
8368.01 (WSWD)		orange	black	black		brown	brown	black
8352.USH4M/US6M	blue		brown		blue		orange	
8353.02/4/5	brown		orange		brown		orange	

Table: Sensor connection scheme

Sensor Channel List

Channel assignment equipment class 6 universal measurement transmitters

UMB Channel							Measurement Range		
Act	Min	Max	Avg	Special	Input	Variable	Min	Max	Unit
Temperature									
100	120	140	160		A	temperature	-200.0	450.0	°C
105	125	145	165		A	temperature	-328.0	842.0	°F
101	121	141	161		B	temperature	-200.0	450.0	°C
106	126	146	166		B	temperature	-328.0	842.0	°F
110	130	150	170			dewpoint	-200.0	450.0	°C
111	131	151	171			dewpoint	-328.0	842.0	°F
Humidity									
201	221	241	261		B	relative humidity	0,0	100,0	%
206	226	246	266		B	absolute humidity			g/m ³
211	231	251	271		B	mixing ratio			g/kg
Pressure									
300	320	340	360		A	air pressure	0	1200	hPa
305	325	345	365		A	abs. air pressure	0	1200	hPa
301	321	341	361		B	air pressure	0	1200	hPa
306	326	346	366		B	abs. air pressure	0	1200	hPa

Wind									
				Vect. avg					
400	420	440	460	480	A	Wind Speed	0	100.0	m/s
405	425	445	465	485	A	Wind Speed	0	360.0	km/h
410	430	450	470	490	A	Wind Speed	0	223.7	mph
415	435	455	475	495	A	Wind Speed	0	194,4	kts
501	521	541	561	581	B	Wind Direction	0	359.9	°
Precipitation									
600					A	precipitation absol.			mm
601					B	precipitation absol.			mm
620					A	precipitation diff.			mm
621					B	precipitation diff.			mm
640					A	precip. intens.			mm/h
641					B	precip. intens.			mm/h
Digital input									
700	720	740	760		A	Digital Input	0	1	
701	721	741	761		B	Digital Input	0	1	
Voltage									
10000	10020	10040	10060		A	Voltage	0	1000	mV
10001	10021	10041	10061		B	Voltage	0	1000	mV
Current									
10100	10120	10140	10160		A	Current	0	24	mA
10101	10121	10141	10161		B	Current	0	24	mA

Resistance									
10200	10220	10240	10260		A	Resistance	0	2000	Ohm
10201	10221	10241	10261		B	Resistance	0	2000	Ohm
Frequency									
10300	10320	10340	10360		A	Frequency	10	10000	Hz
10301	10321	10341	10361		B	Frequency	10	10000	Hz
Pulses									
10500					A	impulse absol.	0	65520	pulse
10501					B	impulse absol.	0	65520	pulse
10520					A	impulse diff.	0	65520	pulse
10521					B	impulse diff.	0	65520	pulse

Technical Data

Power supply

Power supply	24VDC +/- 10%
Power consumption	< 50mA at 24V; excluding sensor
Connection	Phoenix bus connector, gold, 5 pole
Function display	Green LED, flashes every 10 seconds

RS485 interface internal bus

Standard	RS485 2 wire, half-duplex
Transmission type	Protocol-transparent, 8 data bits, 1 stop bit, no parity
Tri-State	2 bit after stop bit edge
Transmission rate	19200 baud
Connection	Phoenix bus connector, gold, 5 pole, maximum 8A
24V output	max. 2 A (note the maximum current of the internal bus)

Measurement Variables

Variable	Measurement Range	Resolution	Accuracy (25°C)
Voltage	0 ... 100mV	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Voltage	0 ... 1000 mV	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Current *1)	0 ... 20 mA (max: 24mA)	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Current *2)	4 ...20mA (max: 24mA)	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Resistance	0 ... 200 Ohm	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Resistance	0 ... 2000 Ohm	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Temperature with PT100	-200 ... 500 °C	0.02°C for (-50°C<t<150°C) otherwise 0.1°C	+/- 0.1°C for (-50°C<t<150°C) otherwise +/- 0.5°C
Temperature with PT1000	-200 ... 500 °C	0.02°C for (-50°C<t<150°C) otherwise 0.1°C	+/- 0.1°C for (-50°C<t<150°C) otherwise +/- 0.5°C
Frequency *3)	0 ... 1000 Hz	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Frequency *3)	0 ... 10 kHz	0.02% of EV	+/- 0.1% of m.v. +/- 2 digits
Pulses *4)	0 ... 65520	1 pulse	
Digital input *5)	0 / 1		

1. Shunt resistance 51 Ohms
2. Shunt resistance 51 Ohms, voltage on Pin 1 in ANACON powered mode approx. 12V
3. Pulse duty ratio 50%, internal resistance approx. 500 Ohms, U_{high}>6V, U_{low}<3V
4. Pulse length > 100µs, pulse spacing > 100µs, internal resistance approx. 500 Ohms, U_{high}>6V, U_{low}<3V
5. Internal resistance approx. 500 Ohms, U_{high}>6V, U_{low}<3V

LUFFT Sensors

Sensor	Measurement Variable	Measurement Range	Physical Variable	Physical Measurement Range
Temperature Sensor 8160.TF	Temperature PT100	-50 ... 100 °C	Resistance	60.34 – 138.5 Ohms
Temperature/Humidity Sensor 8160.TFF	Temperature PT1000	-30 ... 70 °C	Resistance	882.2 – 1270.8 Ohms
	Humidity	0 ... 100 % RH	Frequency	
Barometric Air Pressure Sensor 8355.03	Air Pressure	0 ... 1200 hPa	Current	4 ... 20 mA
Wind Speed and Wind Direction 8368.01	Wind Speed	0.9 ... 50 m/s	Voltage	0 - 1000 mV
	Wind Direction	0 ... 358 °	Resistance	0 – 1000 Ohms
Wind Speed and Wind Direction 8352.USH4M/US6M	Wind Speed	0 ... 60 m/s	Current	4 - 20 mA
	Wind Direction	0 ... 359 °	Current	4 - 20 mA
Rain Gauge with 1mm; 0.2mm; 0.1mm resolution	Precipitation		Pulses	0...65620

Storage conditions

Permissible ambient temp. -40 ... 70°C

Permissible rel. humidity 0 ... 95% RH (non-condensing)

Operating conditions

Permissible operating temp. -30 ... 60°C

Permissible rel. humidity 0 ... 95% RH (non-condensing)

Housing

Material PA-V0, green

Width x Height x Depth 22.5 x 99 x 118.6 mm

Protection class IP20

Weight approx. 120 g

Connections COMBICON plug-in connectors 0.2 – 2.5 mm² (AWG 24 – 12)

Maintenance and Care

The product is designed in such a way as to require no maintenance. It does not contain any parts (e.g. batteries) requiring maintenance or exchange.

Disposal



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.

Manufacturer

For matters of guarantee or repair please contact:

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EC Certificate of Conformity

Product: Analogue/Digital Converter
Type: ANACON UMB (Part No.: 8160.UANA)

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 specifically conforms to the following EMC Standards:

EN 61000-6-2:2005 Part 6-2: Generic Standards - Immunity for industrial environment

EN 61000-4-2	ESD
EN 61000-4-3	RF Field
EN 61000-4-4	Burst
EN 61000-4-5	Surge
EN 61000-4-6	Conducted RF
EN 61000-4-8	Magnetic Field 50Hz

EN 61000-6-3:2001 Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

EN 55022:1998 +A1:2000 +A2:2003	Conducted Interferences
prEN 50147-3:2000	Radiated Emission



Fellbach, 27.03.2007

Axel Schmitz-Hübsch