Digital Amplifier EtherNet/IP DA-EN

Scope of Supply
Amplifier in DIN Rail Mount enclosure
Standard: 1 channel EtherNet/IP

Device description file on disk

Variant
2EN: 2 channel EtherNet/IP
in DIN Rail Mount enclosure

Additional Options
GK: Enclosure (IP67) with terminals

M: Potted version only with option GK

F: (Potentially explosive atmospheres):
Use with safety barriers

Pic. similar

EtherNet/IP Strain Gauge Amplifier

Other interfaces on request,
e.g. ProfiNet, ProfiBus

Special Features

- 24 bit Σ-Δ-AD converter for highest precision
- Very fast cycle time for time-critical applications
- Full- and Halfduplex connections of
  10 MBit/s and 100 MBit/s possible
- Support of autonegotiation and auto MDI(X)
- Galvanic separation of bus and application up to 1.5 kV
- ETG certified

The amplifier DA-EN is used whenever full bridge strain gauge sensors (e.g. force sensors) are to be connected with Ethernet/IP networks. The primary field of application is web tension and force measurement.

The sensor signals are converted into digital signals with a cycle time of 0.5 ms. They are averaged and provided to the interface circuit at a distance of approx. 6 ms. From there, they are then switched in the corresponding data format.

Ordering Example

DA-2EN-GKM-1,5

- Nominal rating
- Option
- EtherNet/IP
- 2 channel version
- Type

Please consider with the order:

The amplification of the DA-EN is preset and in particular correlation with the nominal rating of the *HAEHNE* sensor.

Version DA-EN	Nominal rating of the sensor
-1,5	1.5 mV/V
-1,0	1.0 mV/V
-0,75	0.75 mV/V
-0,5	0.5 mV/V

Ordering example for option F:

Indicate the total resistance from measuring chain for option F (e. g. 1000 Ohm):

DA-EN-F1000-1,5

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Technical Data

Power supply Attention: The auxiliary power must be grounded!	Power supply	24 V DC (9 ... 36 V)
	Typical current requirements with standard wiring	approx. 150 mA
Strain gauge excitation supply	Voltage (V_4)	10 V DC
	Option J	5 V DC
	Current max.	160 mA
Signal	-160 % …0 … +160 % ≙ 8000…0000…7FFF	
Data width	1 word	
Resolution	16 bit	
Enclosure protection	Standard: P20	Variant GK: IP67
Nominal temperature range	0…+60° C	
Terminal cross-section	AWG 24-12	

Terminal Assignment

Terminal	Assignment	
1	+24 V	Power supply
2	+24 V*	
3	0 V	
4	0 V*	
5	PE	
6	GND	Reference potential for Ex protection

Terminal	Assignment	
7	V_{4+}	Sensor A
8	V_{4-}	
9	V_{1+}	
10	V_{1-}	
11	V_{4+}	Sensor B
12	V_{4-}	
13	V_{1+}	
14	V_{1-}	

* Power supply for other devices
The maximum current of 1 Ampere must not be exceeded.

V_1: Signal voltage V_4 : Supply voltage

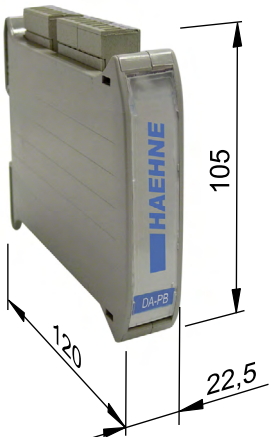
Upper side

Underneath

Port 1	Port 2
RJ45	RJ45

IP-Adress
DHCP-Modus

Dimensions



Option GK
Width x depth x height
170 x 123 x 67 mm

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Technical Information

Design and Data Transmission

The analog processed and digitally converted signals are transmitted to the EtherNet/IP. The measuring range is ± 160 % of nominal force. If the measurement direction has a vertical component, e.g. the roll weight, these force values are already transmitted without acting web forces. In order to determine the web tension force correctly the tare value (roll weight portion) and the web geometry have to be considered.

Measurement Data Transmission

Exemplary presentation in 16 bit register as complement of two

Measure-ment value based on F_{nom}	Measurement value of bridge output signal V_1 [mV]			hex	dez (unsigned)	dez (signed)	MSB 15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	LSB 0
+150 %	Nominal rating x	10 V/ 5 V (option J) x	1,5	7800	30720	30720	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
+100 %			1,0	5000	20480	20480	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+50 %			0,5	2800	10240	10240	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0 %			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-50 %			-0,5	D800	55296	-10240	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
-100 %			-1,0	B000	45056	-20480	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
-150 %			-1,5	8800	34816	-30720	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0

EtherNet/IP Master Adjustment

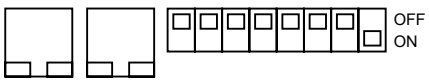
The required device description file (KUNBUS_COMS_EtherNetIP.eds is supplied by *HAEHNE* and must be read in the configuration tool of the PLC.
HAEHNE has integrated an ETG-certified embedded module from KUNBUS into its measuring amplifier.

The device must be added in the configuration software to the project.
The data is displayed as follows:
I.Data [0]: channel 1 MSB
I.Data [1]: channel 1 LSB
I.Data [2]: channel 2 MSB (only with DA-2EN)
I.Data [3]: channel 2 LSB (only with DA-2EN)

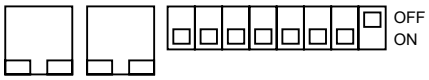
EtherNet/IP adressing

fixed IP adress:
IP adress: 192.168.0.n (1 ...254)

Example:
IP adress 192.168.0.1

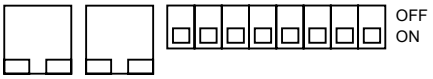


IP adress 192.168.0.254



Netmask: 255.255.255.0
Gateway: 192.168.0.1

DHCP-mode:



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