

Digital Amplifier ProfiNet DA-PN

Scope of Supply

Amplifier in DIN Rail Mount enclosure
Standard: 1 channel PROFINET

Device description file on disk

Variant

2PN: 2 channel PROFINET
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



Other interfaces also possible,
e.g.: Ethernet (DA-EN)
EtherCAT (DA-EC)
Profibus (DA-PB)



ProfiNet Strain Gauge Amplifier

Special Features

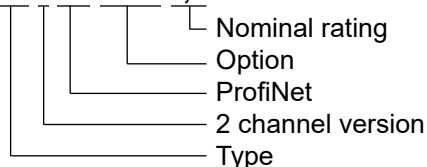
- 24 bit Σ - Δ -AD converter for highest precision
- Very fast cycle time for time-critical applications
- Simple integration of the interface in PROFINET networks
- ProfiNet IRT with 2 Port Switch (2 x RJ-45), Conformance Class C
- Neighborhood detection within the network (LLDP)

The amplifier DA-PN is used whenever full bridge strain gauge sensors (e.g. force sensors) are to be connected with ProfiNet 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-2PN-GKM-1,5



Please consider with the order:

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

Version DA-PN	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-PN-F1000-1,5

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 % $\hat{=}$ 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	



Upper side

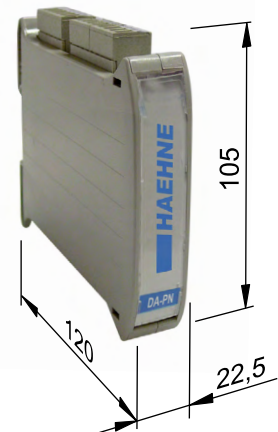


Port 1	Port 2	Underneath
RJ45	RJ45	

Terminal Assignment DIN Rail enclosure

Power Supply					Reference potential for Ex protection	Sensor A				Sensor B			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
+24 V	+24 V*	0 V	0 V*	PE	GND	V_4^+	V_4^-	V_1^+	V_1^-	V_4^+	V_4^-	V_1^+	V_1^-

V_1 : Signal voltage V_4 : Supply voltage



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

Terminal Assignment option GK

Power Supply					Reference potential for Ex protection	Port 1					Port 2					Sensor A				Sensor B				
1	2	3	4	5	6	1	2	3	6	S	1	2	3	6	S	V_4^+ / U_{Br}^+	V_4^- / U_{Br}^-	V_1^+ / U_{Sig}^+	V_1^- / U_{Sig}^-	V_4^+ / U_{Br}^+	V_4^- / U_{Br}^-	V_1^+ / U_{Sig}^+	V_1^- / U_{Sig}^-	
+24 V	+24 V*	0 V	0 V*	PE	GND	TD+	TD-	RD+	RD-	Shield	TD+	TD-	RD+	RD-	Shield									



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

Digital Amplifier ProfiNet DA-PN

Technical Information

Design and Data Transmission

The analog processed and digitally converted signals are transmitted to the ProfiNet. The measuring range is $\pm 160\%$ 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																																	
Measurement value based on F_{nom}	Measurement value of bridge output signal V_1 [mV]		hex	dez (unsigned)	dez (signed)	MSB								LSB																			
						15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	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	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	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	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	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	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	0	0	0	0	0	0	0	0	0	0	0

ProfiNet Master Adjustment

The required device description file (GSDML-V...-KUNBUS-COMS-....xml) is supplied by HAEHNE and must be read in the configuration tool of the PLC.

HAEHNE has integrated a PNO certified embedded module from KUNBUS into its measuring amplifier.

As a result, for example, the device will be listed in the "Hardware Catalog" of the TIA-Portal under "Additional Field Devices \PROFINET IO \ I/O \ Kunbus-Coms-ProfiNetTPS1" and is there available for the configuration.

The device „KUNBUS-COMS-ProfiNetTPS1“ must be added in the configuration software to the project.

The appropriate module must be selected in the device configuration. The data are represented as a two's complement in the 16 bit register. In the configuration software, this is the "Input 2 byte" entry under "Input Modules"

For the 2 channel version, the module must be inserted twice.