PROFIBUS-DP profile
The PNO (PROFIBUS user organization) has defined a standard, nonproprietary profile for the connection of absolute encoders to the PROFIBUS-DP, thus ensuring high flexibility and simple configuration on all systems that use this standardized profile.
You can request the profile for absolute encoders from the PNO in Karlsruhe, Germany, under the order number 3.062. There are two classes defined in the profile, whereby class 1 provides minimum support, and class 2 allows additional, in part optional functions.

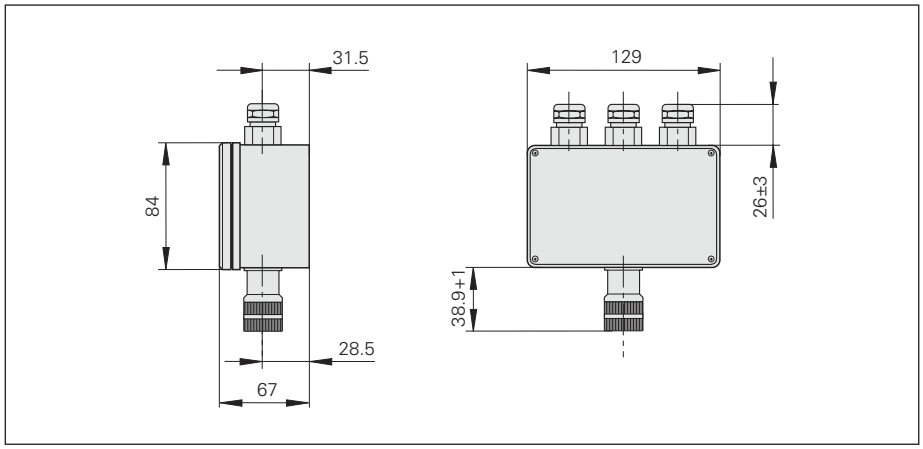
Supported functions
Particularly important in decentralized field bus systems are the **diagnostic functions** (e.g. warnings and alarms), and the **electronic ID label** with information on the type of encoder, resolution, and measuring range. But also programming functions such as counting direction reversal, **preset/ zero shift** and **changing the resolution (scaling)** are possible. The **operating time** of the encoder can also be recorded.

Characteristic	Class	ECN 113[1)] ECN 413[1)] ROC 413	EQN 425[1)] ROQ 425	ROC 415[1)] ROC 417[1)]	LC 483[1)] LC 183[1)]
Position value in pure binary code	1, 2	✓	✓	✓	✓
Data word length	1, 2	16	32	32	32
Scaling function					
Measuring steps/rev	2	✓	✓	✓[2)]	–
Total resolution	2	✓	✓	–	–
Reversal of counting direction	1, 2	✓	✓	✓	–
Preset/Datum shift	2	✓	✓	✓	–
Diagnostic functions					
Warnings and alarms	2	✓	✓	✓	✓
Operating time recording	2	✓	✓	✓	✓
Profile version	2	✓	✓	✓	✓
Serial number	2	✓	✓	✓	✓

Encoders with EnDat interface for connection via gateway
All absolute encoders from HEIDENHAIN with **EnDat interface** are suitable for PROFIBUS-DP. The encoder is electrically connected through a **gateway.**
The complete interface electronics are integrated in the gateway, as well as a voltage converter for supplying EnDat encoders with 5 V ± 5 %. This offers a number of benefits:
- Simple connection of the field bus cable, since the terminals are easily accessible.
- Encoder dimensions remain small.
- No temperature restrictions for the encoder. All temperature-sensitive components are in the gateway.
- No bus interruption when an encoder is exchanged.

Besides the EnDat encoder connector, the gateway provides connections for the PROFIBUS and the power supply. In the gateway there are coding switches for addressing and selecting the terminating resistor. Since the gateway is connected directly to the bus lines, the cable to the encoder is not a stub line, although it can be up to 150 meters long.

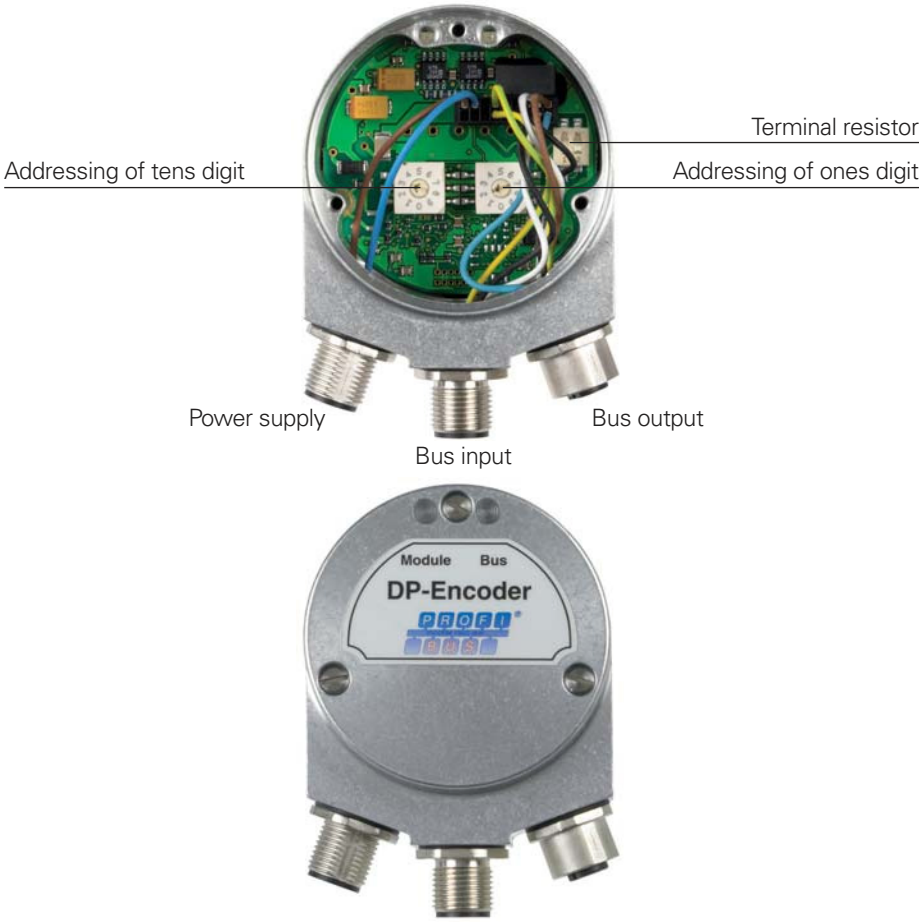
	Gateway
Power supply	10 to 30 V Max. 400 mA
Protection	IP 67
Operating temp.	–40 °C to +80 °C
Electrical connection EnDat PROFIBUS-DP	Flange socket, 17-pin terminations, PG9 cable outlet
ID	325 771-01



Encoders with PROFIBUS-DP
The absolute rotary encoders with **integrated PROFIBUS-DP interface** are connected directly to the PROFIBUS. LEDs on the rear of the encoder display the power supply and bus status **operating states.**

The coding switches for the addressing (0 to 99) and for selecting the terminating resistor are easily accessible under the bus housing. The terminating resistor is to be activated if the rotary encoder is the last participant on the PROFIBUS-DP.

Connection
PROFIBUS-DP and the power supply are connected via the M12 connecting elements. The necessary mating connectors are:
Bus input:
M12 connector (female), 5-pin, B-coded
Bus output:
M12 coupling (male), 5-pin, B-coded
Power supply:
M12 connector, 4-pin, A-coded



Pin layout

Bus input **5-pin coupling (male)** M12 B-coded					**Bus output** **5-pin connector (female)** M12 B-coded	
	Power supply				Absolute position values	
	1	**3**	**5**	**Housing**	**2**	**4**
BUS-in	**/**	**/**	**Shield**	**Shield**	**DATA (A)**	**DATA (B)**
BUS-out	**U**[1)]	**0 V**[1)]	**Shield**	**Shield**	**DATA (A)**	**DATA (B)**

[1)] For supplying the external terminal resistor

Power supply **4-pin coupling (male)** M12 A-coded				
	1	**3**	**2**	**4**
	U_P	**0 V**	**Vacant**	**Vacant**