

AMG 11

Encoder with solid shaft $\varnothing 11$ mm and EURO flange B10

Single and multiturn 13 bit ST / 12 or 16 bit MT SSI / Profibus / CANopen® / DeviceNet / PROFINET

Overview

- Multiturn SSI / Profibus / CANopen® / DeviceNet / PROFINET
- Optical sensing method
- Singleturn 13 bit, multiturn 12 bit / 16 bit
- EURO flange B10 / solid shaft $\varnothing 11$ mm
- Multiturn sensing with microGen technologie, without gear or battery
- Available with redundant absolute signals
- Special protection against corrosion



Technical data

Technical data - electrical ratings

Voltage supply	9...30 VDC
Consumption w/o load	≤ 100 mA (per interface SSI) ≤ 250 mA (per interface bus)
Initializing time	≤ 200 ms after power on
Interface	SSI Profibus-DPV0 CANopen® DeviceNet PROFINET
Function	Multiturn
Transmission rate	9,6 ... 12000 kBaud (Profibus) 10 ... 1000 kBaud (CANopen®) 125 ... 500 kBaud (DeviceNet) 100 MBaud (PROFINET)
Profile conformity	Profibus-DPV0 CANopen® CiA DSP 406 V 3.0 Device Profile Encoder V 1.0 Encoder profile PNO 3.162
Device adress	Rotary switches in bus cover
Steps per revolution	8192 / 13 bit
Number of revolutions	≤ 65536 / 16 bit
Additional outputs	Square-wave TTL (RS422) Square-wave HTL
Sensing method	Optical
Code	Gray (version SSI)
Code sequence	CW default
Inputs	SSI clock (version SSI)
Interference immunity	EN 61000-6-2
Emitted interference	EN 61000-6-3
Programmable parameters	Depending on the selected absolute interface

Technical data - electrical ratings

Diagnostic function	Position or parameter error
Status indicator	DUO-LED integrated in bus cover
Approval	CE UL approval / E256710

Technical data - mechanical design

Size (flange)	$\varnothing 115$ mm
Shaft type	$\varnothing 11$ mm solid shaft
Flange	EURO flange B10
Protection EN 60529	IP 67
Operating speed	≤ 3500 rpm (mechanical)
Operating torque typ.	12 Ncm
Rotor moment of inertia	780 gcm ²
Admitted shaft load	≤ 250 N axial, ≤ 350 N radial
Material	Housing: aluminium alloy Shaft: stainless steel
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) according to ISO 12944-2
Operating temperature	-20...+85 °C
Resistance	IEC 60068-2-6 Vibration 10 g, 10...2000 Hz IEC 60068-2-27 Shock 100 g, 6 ms
Explosion protection	II 3 G Ex nA IIC T4 Gc (gas) II 3 D Ex tc IIIC T135°C Dc (dust) (only with option ATEX)
Weight approx.	3 kg (depending on version)
Connection	Bus cover Terminal box or flange connector M23, 12 pin (SSI/incremental)

Optional

- Additional incremental output (TTL / HTL)

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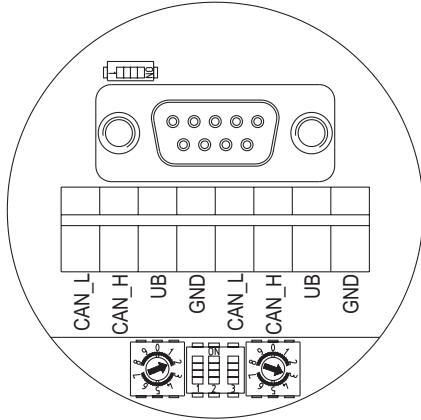
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CANopen® features

Terminal assignment

View A - Connecting terminal in bus cover



Terminal significance

CAN_L	CAN Bus signal (dominant Low)
CAN_H	CAN Bus signal (dominant High)
UB	Voltage supply 9...30 VDC
GND	Ground connection for UB

Terminals of the same significance are internally connected and identical in their functions. Max. load on the internal terminal connections UB-UB and GND-GND is 1 A each.

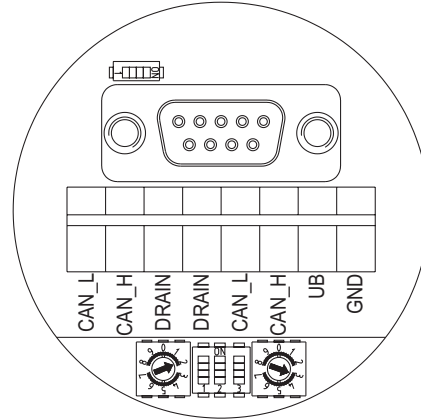
Features

Bus protocol	CANopen®
Features	Device Class 2 CAN 2.0B
Device profile	CANopen® CiA DSP 406, V 3.0
Operating modes	<ul style="list-style-type: none"> ■ Polling mode (asynch, via SDO) ■ Cyclic mode (asynch-cyclic) ■ Synch mode (synch-cyclic) ■ Acyclic mode (synch-acyclic)
Diagnosis	The encoder supports the following error warnings: <ul style="list-style-type: none"> ■ Position error
Factory setting	User address 00

DeviceNet features

Terminal assignment

View A - Connecting terminal in bus cover



Terminal significance

CAN_L	CAN Bus Signal (dominant Low)
CAN_H	CAN Bus Signal (dominant High)
DRAIN	Shield
UB	Voltage supply 9...30 VDC
GND	Ground for UB

Terminals of the same significance are internally connected and identical in their functions. Max. load on the internal terminal connections UB-UB and GND-GND is 1 A each.

Features

Bus protocol	DeviceNet
Device profile	Device Profil for Encoders V 1.0
Operating modes	<ul style="list-style-type: none"> ■ I/O-Polling ■ Cyclic ■ Change of State
Preset value	The „Preset“ parameter can be used to set the encoder to a predefined value that corresponds to a specific axis position of the system. The offset of encoder zero point and mechanical zero point is stored in the encoder.
Parameter functions	<p>Rotating direction: The relationship between the rotating direction and rising or falling output code values can be set in the operating parameter.</p> <p>Scaling: The parameter values set the number of steps per turn and the overall resolution.</p>
Diagnostic	The encoder supports the following error warnings: <ul style="list-style-type: none"> ■ Position and parameter error
Factory setting	User address 00

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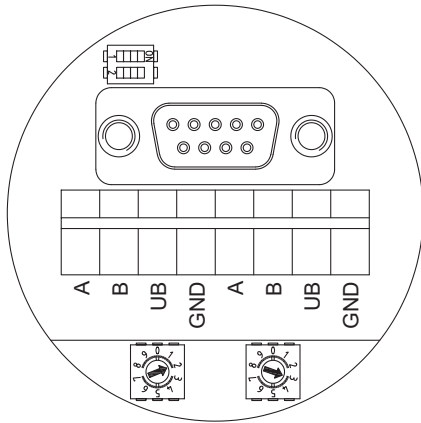
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Profibus-DP features

Terminal assignment

View A - Connecting terminal in bus cover



Terminal significance

A	Negative serial data transmission, pair 1 and pair 2
B	Positive serial data transmission, pair 1 and pair 2
UB	Voltage supply 9...30 VDC
GND	Ground connection for UB

Terminals of the same significance are internally connected and identical in their functions. Max. load on the internal terminal connections UB-UB and GND-GND is 1 A each.

Features

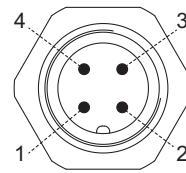
Bus protocol	Profibus-DP V0
Features	Device Class 1 and 2
Data exchange functions	Input: Position value Output: Preset value
Preset value	The „Preset“ parameter can be used to set the encoder to a predefined value that corresponds to a specific axis position of the system.
Parameter functions	Rotating direction: The relationship between the rotating direction and rising or falling output code values can be set in the operating parameter. Scaling: The parameter values set the number of steps per turn and the overall resolution.
Diagnostic	The encoder supports the following error messages: <ul style="list-style-type: none"> Position error
Factory setting	User address 00

PROFINET features

Terminal assignment

View D - View onto connector „Voltage supply“

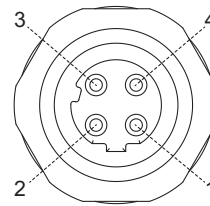
Male	Connection	Description
1	UB	Voltage supply 10...30 VDC
2	-	Do not use
3	GND	Ground for UB
4	-	Do not use



Connector M12 (male)
4-pin, A-coded

View E - View into connector „Data transmission“

Female	Connection	Description
1	TxD+	Transmission data+
2	RxD+	Receiving data+
3	TxD-	Transmission data-
4	RxD-	Receiving data-



Connector M12 (female)
4-pin, D-coded

Features

Bus protocol	PROFINET
Device profile	Encoder Profil PNO 3.162
Features	<ul style="list-style-type: none"> 100 Mbaud Fast Ethernet IP address programmable Realtime (RT) Class 1, IRT Class 2, IRT Class 3
Process data	Position value 32 bit input data

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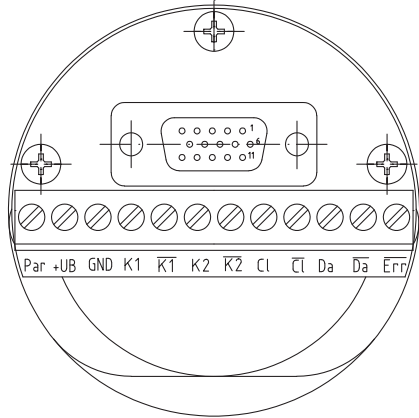
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SSI/Incremental features

Terminal assignment

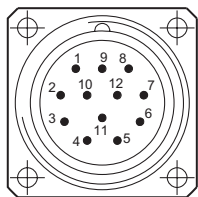
View B - Connecting terminal in cover



View C - Option

Flange connector M23, 12-pin, male contacts, counter-clockwise

Male	Assignment
1	K2
2	Clock *
3	Data *
4	Data *
5	K1
6	K1-bar
7	Param *
8	K2
9	Error *
10	GND
11	Clock *
12	+UB *

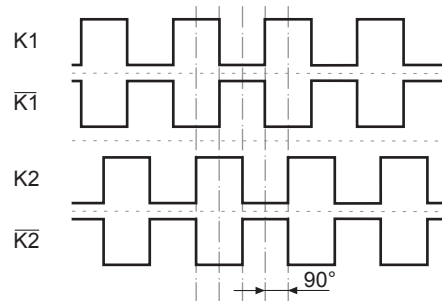


* only for SSI

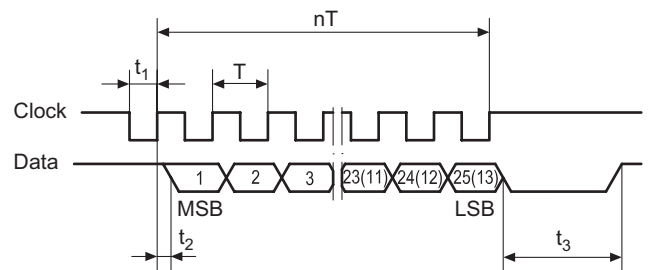
Output signals

HTL/TTL

At positive rotating direction (see dimension)



Data transfer



$T = 1.25 \dots 10 \mu s$

$t_1 = 0.63 \dots 5 \mu s$

$t_2 = 0.4 \mu s$

$t_3 = 12 \dots 30 \mu s$

$n =$ Number of bits

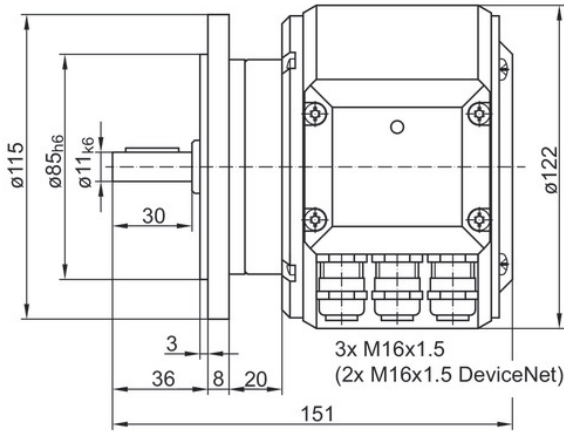
Clock frequency $100 \dots 800 \text{ kHz}$

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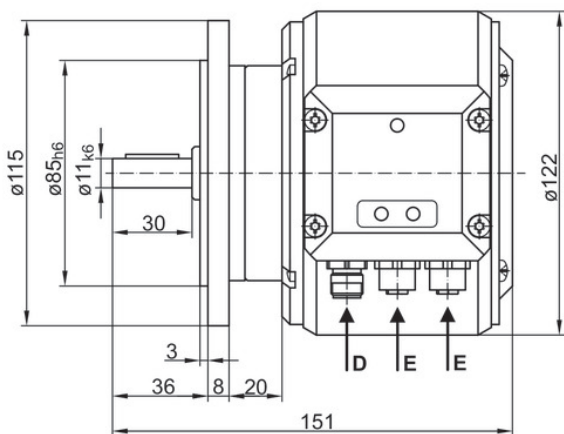
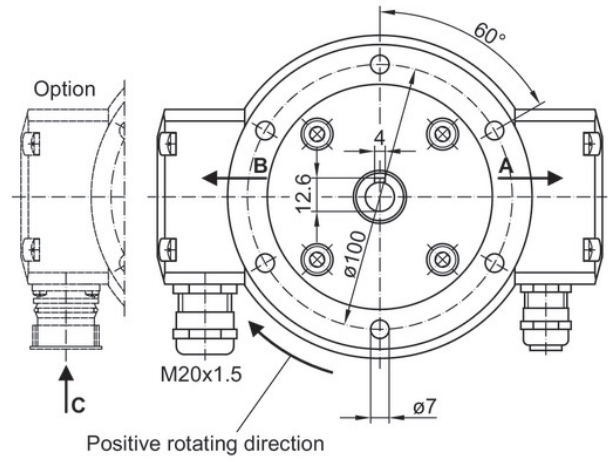
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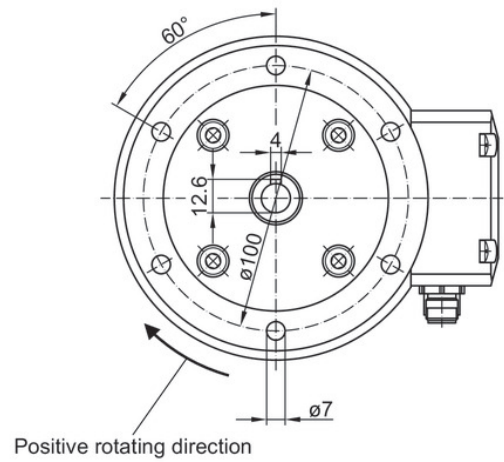
Dimensions



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AMG 11 - PROFINET



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Ordering reference

	AMG11	#	##	#####	#####
Product	AMG11				
Interface/interfaces					
SSI		S			
Profibus		P			
CANopen®		C			
DeviceNet		D			
PROFINET		N			
2 x SSI		SS			
Profibus and SSI		PS			
CANopen® and SSI		CS			
DeviceNet and SSI		DS			
2 x Profibus		PP			
CANopen® and Profibus		CP			
DeviceNet and Profibus		DP			
2 x CANopen®		CC			
DeviceNet and CANopen®		DC			
2 x DeviceNet		DD			
Absolute share					
13 bit singleturn			13		
13 bit singleturn + 12 bit multitem			25		
13 bit singleturn + 16 bit multitem			29		
Additional output⁽¹⁾					
Without				Z0	
TTL level, 1024 pulses				T1024	
TTL level, 2048 pulses				T2048	
HTL level, 1024 pulses				H1024	
HTL level, 2048 pulses				H2048	
Connection					
Without SSI/incremental					
Terminal box, radial					KLK
Flange connector M23, radial (only SSI/incremental)					ST-M23

(1) The incremental signals are duplicated with configuration SS

Please note: additional incremental output signals are not feasible with PP, CP, DP, CC, DC and DD interface.

Accessories

Mounting accessories

Spring disk coupling K 35 (shaft $\varnothing 6...12$ mm)

Spring disk coupling K 60 (shaft $\varnothing 11...22$ mm)

Connectors and cables

Sensor cable for encoders HEK 8

Diagnostic accessories

11075858 Analyzer for encoders HENQ 1100

11075880 Analyzer for encoders HENQ 1100 B