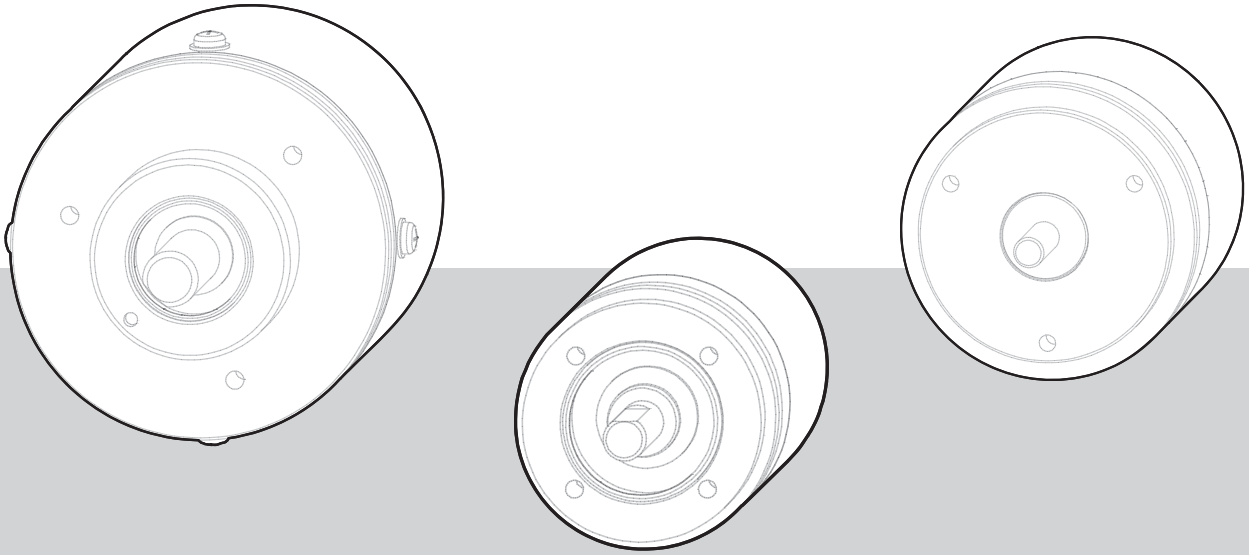
ASM®
perfect in sensors.

posi**hall**®

Magnetic Multiturn Encoders

Installation and operation manual **EN**



Please read carefully before installation and operation!

© ASM Automation Sensorik Messtechnik GmbH, 2019
All rights reserved.

Am Bleichbach 18 - 24
85452 Moosinning
Germany

1 Safety instructions 4
1.1 Signal words and symbols 4
1.2 General safety instructions 4
1.3 Intended use 5

2 Transport and storage 5

3 Installation and initial operation 6
3.1 Mechanical installation 6
3.2 Electrical connection 8
3.3 Operating temperature 9
3.4 Characteristics for magnetic multiturn encoders 10

4 Maintenance and disposal 11
4.1 Maintenance and repair 11
4.2 Disposal 11

5 Output specification 12
5.1 Analog output 12
5.2 Digital output 18

1 Safety instructions

1.1 Signal words and symbols



WARNING, Risk of Injury:
Indicates a potentially hazardous situation, which, if not avoided, can result in serious injury or property damage.

⚠ DANGER

WARNING, Risk of Personal Injury or Death:
Indicates a situation that can result in serious personal injury or death if not properly avoided.

⚠ WARNING

WARNING, Risk of Personal Injury or Death:
Indicates a situation that can result in moderate personal injury or death if not properly avoided.

⚠ CAUTION

WARNING, Risk of Personal Injury:
Indicates a situation that can result in minor personal injury if not properly avoided.

NOTICE

WARNING, Risk of Property Damage:
Indicates a situation that can result in minor to major property damage if not properly avoided.

Product liability

- Disregarding the following instructions may result in malfunction, damage to property and personal injury and releases the manufacturer from product liability.

Safety regulations

- National safety regulations must be observed!

1.2 General safety instructions

⚠ WARNING

Danger or injury to the operator or damage to the property

- Connection to power supply must be performed in accordance with safety instructions for electrical facilities and performed only by qualified personnel.
- Any alteration, reconstruction or extension of the sensor is not allowed!
- The sensor must be operated only within values specified in the datasheet.
- The danger of personal injury and danger of property damage due to a malfunction of the sensor in machines or systems must be excluded by additional safety measures.
- In safety-relevant applications, additional facilities must be provided for maintaining safety and preventing damage.
- Check whether the protection class of the sensor is suitable for the application.

NOTICE

Destruction of the sensor!

- Do not open the sensor!
- Avoid shock and vibration to the sensor!

1.3 Intended use

The posihall® true-absolute magnetic multiturn encoders measure angular positions over multiple revolutions using a non-contact magnetic measuring principle. For determining measuring range, environmental compatibility and connection data of the sensor, please note the data sheet. Use the sensor as intended by operating within its specified technical data and ambient conditions.

The installation and operating instructions supplied with the unit must be respected. All maintenance and service work must be carried out. The data sheet of the respective sensor is part of this instruction manual. If not yet available, it may be requested by stating the respective model number.

The sensor must not be improperly mounted, operated or serviced. In addition, operation of the sensor in faulty condition is prohibited.

2 Transport and storage

Observe storage and transport temperatures according to the temperatures specified in the data sheet.

Max. rel. humidity 60%, dew condensation must be prevented at all times.

The device must be secured against slipping and tipping during transport.

Shipment damage

Check sensor immediately for shipment damage. In case of any damage or equipment not operating appropriately, please contact your supplier.

Shipment content

- Sensor
- Installation and operation manual

3 Installation and initial operation

3.1 Mechanical installation

Adjacent magnetic fields or ferromagnetic materials can influence the measurement results of the PH multiturn encoders of the posihall® product family. Therefore, the encoder should be mounted solely with nonmagnetic / non magnetisable screws and washers.

The posihall® magnetic multiturn encoders PH36, PH58 and PH68, PH68R are equipped with an integrated magnetic shield which minimizes the sensitivity against external magnetic fields.

The posihall® magnetic multiturn encoders can be mounted with clamping flange or synchro flange depending on model, and therefore offer universal mounting possibilities.

PH36	Synchro flange for the installation with mounting clamps or mounting brackets and M3 thread at the front
PH58	Clamping flange and M3 / M4 thread at the front
PH68/PH68R	Synchro flange and M4 thread at the front

NOTICE

- Mount the sensor without mechanical strain.
- Use flexible coupling or torque arms to avoid misalignment errors.
- Observe the specified torques for fixing screws (see table).
- Avoid impact or shocks on the shaft and the shaft coupling!

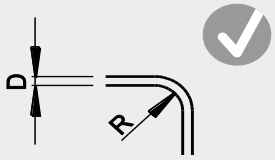
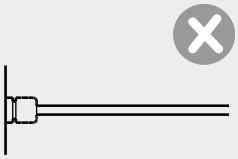
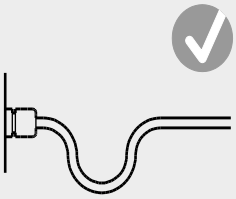
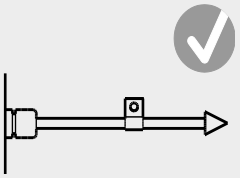
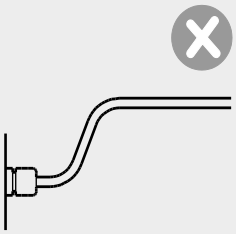
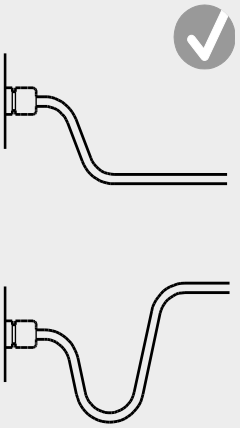
Torque for fixing screws

The specified torques can differ according to application and operating conditions. The user is responsible for the appropriate torque, since ASM does not know the operational conditions of the application.

The specified torques and mounting methods are general recommendations:

Mounting method	Material	Torque [Nm]
M2.5 screws for mounting brackets	Aluminium	0.8
M3 screws for mounting flange	Aluminium	1.0
Screws M4	Aluminium	1.8

Installation of the sensor supply cable

	incorrect	correct
Admissible bending radius of the cable must be observed: R ~ 5 x D R ~ 10 x D (underwater cable)		
Length compensation for the cable must be observed		
A separate cord grip for cable strain relief is recommended		
Observe cable routing in case of splashing water, water condensation and humidity		

3.2 Electrical connection

NOTICE

Damage or destruction of the sensor due to excessive operating voltage or mounting error

- The applied operating voltage must not exceed the value specified in the data sheet.
- Operate the sensor only within the limits specified in the data sheet.
- Connection to the power supply only by qualified personnel and in accordance with the applicable safety regulations for electrical equipment.
- Do not connect or disconnect the sensor under voltage!

Corrosion in the sensor due to moisture penetration

- Use the sensor only according to protection class.
- The mating connector should have the same protection class as the sensor, otherwise the lower protection class of the mating connector is valid.
- Avoid crossing the dew point.
- Cable outputs must be installed in such a way that no moisture can get into the cable.
- The protection class of sensors with connector output is valid only if the electrical plug is connected!

Damage of the sensor cable due to mechanical stress

- Do not twist the M12 connector inserts.
- It is important that the knurled nuts on the connectors are tightened to the correct torque for each different size of the connector:
  - M12-ASM connectors / couplings: 1.0 Nm
  - connectors / couplings of other manufacturers: according to manufacturer instruction.
  - Use a torque wrench.
- Do not strain the connection cable.
- A separate strain relief is recommended.

Connector Pin assignment

According to the definitions of the output types contained in the appendix. Observe different color code for pre-assembled accessory cables. See catalog information for accessories.

Supply voltage

See specification in the data sheet of the sensor. The maximum operating voltage must not be exceeded.

Electromagnetic Compatibility (EMC)

Electromagnetic compatibility of posihall® Magnetic Multiturn Encoders is influenced by the sensor wiring.

NOTICE

Possible malfunction of the sensor when used in systems with highly interference-prone components such as frequency inverters

Recommended wiring:

- Use single shielded sensor cable with twisted pair conductors for power supply and signal output.
- Connect the cable shield to ground on one side of the control cabinet. Connect the shield connection over a large area using cable clamps before or at the cable entry into the control cabinet. When preassembled cables are delivered, the screen is not connected to the housing on the sensor side.
- Do not install sensor cables close to power conductors such as motor or contactor control cables (use separate cable ducts for signal and power cables).
- Install the cables in metal cable ducts connected to ground.

3.3 Operating temperature

posihall® PH36	-40 … +85°C
posihall® PH58	-40 … +85°C
posihall® PH68 / PH68R	-40 … +85°C

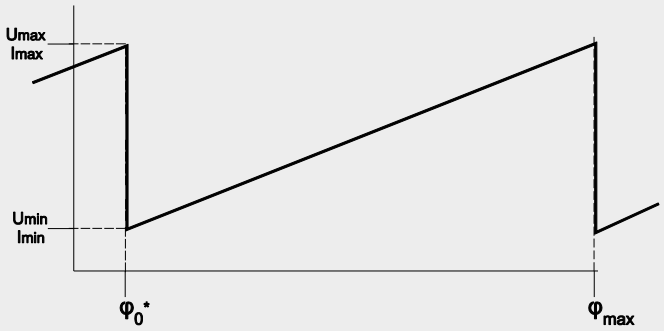
3.4 Characteristics for magnetic multiturn encoders

Output signal for maximum measurement range

Measurement range φ_{max} = 31 x 360° (PH36)

Measurement range φ_{max} = 255 x 360° (PH58, PH68)

(CW increasing)

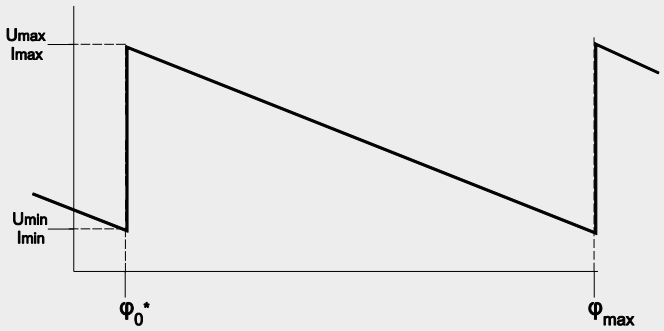


Output signal for maximum measurement range

Measurement range φ_{max} = 31 x 360° (PH36)

Measurement range φ_{max} = 255 x 360° (PH58, PH68)

(CCW increasing)

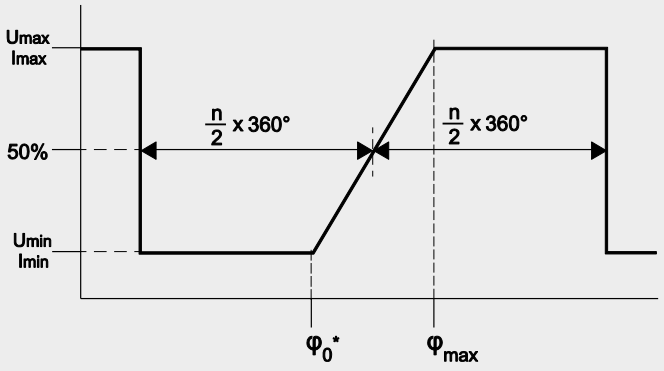


Output signal at configuration on partial angle

Measurement range 1…30 x 360° (PH36)

Measurement range 1…254 x 360° (PH58, PH68)

(CW increasing)



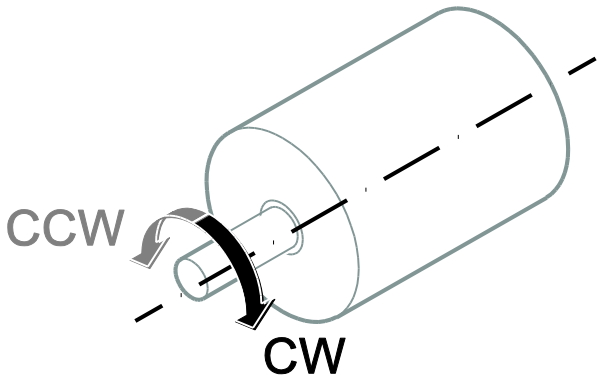
*) φ_0: Angle position at delivery

φ_{max} - φ_0: Measurement range [°]

n: max. sensor revolutions

(e.g. PH36: n = 31)

Rotation direction of the sensor with a view to the sensor



Output	Value range	50% value of output signal
U2	0.5 ... 10 V	5.25 V
U6	0.5 ... 4.5 V	2.5 V
U8	0.5 ... 4.5 V	2.5 V
I1	4 ... 20 mA	12 mA

4 Maintenance and disposal

4.1 Maintenance and repair

⚠ CAUTION

Opening all the posihall®sensors will cause damage and void the warranty

- Do not open the sensor.
- Due to possible risk of injury by improper handling, we strongly advise against repair attempts.

Check sensor regularly for possible damage:

	Integrity of housing, connector, cable	Mounting elements	Visual check of shaft sealing
PH36	X	X	X
PH58	X	X	-
PH68, PH68R	X	X	X
Actions	Damaged parts: remove sensor from service and replace damaged parts resp. send sensor to ASM for repair	Loose mounting parts: Screw tight mounting parts with recommended torque, if applicable use bolt adhesive	Damaged shaft sealing: remove sensor from service and send it to ASM for repair

4.2 Disposal

Disposal according to applicable government regulations.

5 Output specification

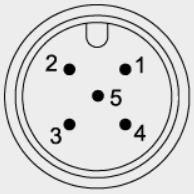
5.1 Analog output

U2 Voltage output 0.5 ... 10 V 	Excitation voltage	8 … 36 V DC
	Excitation current	20 mA typical at 24 V DC 38 mA typical at 12 V DC max. 50 mA
	Output voltage	0.5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

U6 Voltage output 0.5 … 4.5 V 	Excitation voltage	5 V DC ±5%
	Excitation current	typical 140 mA max.
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

U8 Voltage output 0.5 … 4.5 V 	Excitation voltage	8 … 36 V DC
	Excitation current	17 mA typical at 24 V DC 32 mA typical at 12 V DC 50 mA max.
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

I1 Current output 4 … 20 mA, 3 wires 	Excitation voltage	8 … 36 V DC
	Excitation current	typical 36 mA at 24 V DC typical 70 mA at 12 V DC 120 mA max.
	Load R_L	500 Ω max.
	Output current	4 … 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

Signal wiring **Connector M12, 5 pin**	**Output signals**	**Connector pin no.**	**Cable color**
 View to the sensor connector	Excitation +	1	brown
	Signal	2	white
	GND	3	blue
	Do not connect!	4	black
	Do not connect!	5	(grey)

Analog output, programmable / tare function

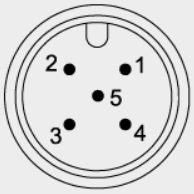
U2/PMU programmable **U2/PMZ tare function** Voltage output 0.5 ... 10 V 	Excitation voltage	8 … 36 V DC
	Excitation current	20 mA typical at 24 V DC 38 mA typical at 12 V DC max. 50 mA
	Output voltage	0,5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

U6/PMU programmable **U6/PMZ tare function** Voltage output 0.5 … 4.5 V 	Excitation voltage	5 V DC ±5%
	Excitation current	typical 140 mA
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

U8/PMU programmable **U8/PMZ tare function** Voltage output 0.5 … 4.5 V 	Excitation voltage	8 … 36 V DC
	Excitation current	17 mA typical at 24 V DC 32 mA typical at 12 V DC max. 50 mA
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

I1/PMU programmable **I1/PMZ tare function** Current output 4 … 20 mA, 3 wire 	Excitation voltage	8 … 36 V DC
	Excitation current	typical 36 mA at 24 V DC typical 70 mA at 12 V DC max. 120 mA
	Load R_L	500 Ω max.
	Output current	4 … 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

Signal wiring
Connector M12, 5 pin



View to the sensor connector

Output signals	Connector pin no.	Cable color
Excitation +	1	brown
Signal	2	white
GND	3	blue
Do not connect!	4	black
SPAN/ZERO	5	grey

Output -PMU

Programming of the start and end value by the customer (programmable)

Programming of the start value and the end value of the output range is provided by a programming signal SPAN/ZERO available at the connector. This Signal SPAN/ZERO must be connected with GND via a push button, and then the position magnet of the sensor must be moved to the start resp. the end position. Pushing the button between 2… 3 seconds sets the current position as start position, pushing the button more than 6 seconds sets the current position as end position. The values will be stored and are available after switching off the sensor.

To reset the sensor to the factory values the button must be pushed for 2...3 seconds when the sensor is switched on.

Output …/PMZ

Programming of the zero point by the customer (tare function)

Teach-In of the zero point for the analog outputs U2/PMZ, U6/PMZ, U8/PMZ and I1/PMZ is provided by a binary signal SPAN/ZERO. At the start position connect signal SPAN/ZERO for a period of 2 ... 3 seconds to GND via push button. The sensitivity of the output signal remains unchanged. The programmed position will be stored non-volatile. To reset the sensor to the factory values the button must be pushed for a period of 2 ... 3 seconds when the sensor is switched on.

Analog output, redundant

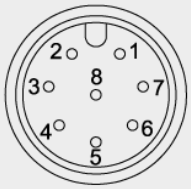
U2R Voltage output 0.5 ... 10 V 	Excitation voltage	8 … 36 V DC
	Excitation current	20 mA typical at 24 V DC 38 mA typical at 12 V DC max. 50 mA per channel
	Output voltage	0.5 ... 10 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

U6R Voltage output 0.5 … 4.5 V 	Excitation voltage	5 V DC ±5%
	Excitation current	typical 140 mA per channel
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

U8R Voltage output 0.5 … 4.5 V 	Excitation voltage	8 … 36 V DC
	Excitation current	17 mA typical at 24 V DC 32 mA typical at 12 V DC max. 50 mA per channel
	Output voltage	0.5 … 4.5 V DC
	Output current	2 mA max.
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

I1R Current output 4 … 20 mA, 3 wires 	Excitation voltage	8 … 36 V DC
	Excitation current	36 mA typical at 24 V DC 76 mA typical at 12 V DC max. 120 mA per channel
	Load R_L	500 Ω max.
	Output current	4 … 20 mA
	Measuring rate	1 kHz standard
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Protection	Reverse polarity, short circuit
	Operating temperature	See specification of the respective sensor
	EMC	DIN EN 61326-1:2013

Signal wiring
Connector M12, 8 pin



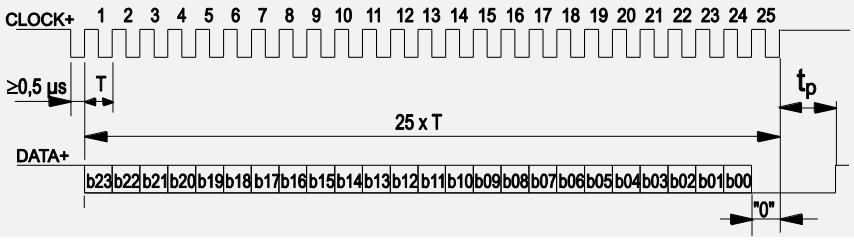
View to the sensor connector

Channel	Output signals	Connector pin no.	Cable color
1	Excitation +	1	white
	Signal	2	brown
	GND	3	green
	Do not connect!	4	yellow
2	Excitation +	5	grey
	Signal	6	pink
	GND	7	blue
	Do not connect!	8	red

5.2 Digital output

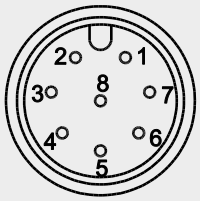
MSSI Synchronous serial SSI	Interface	EIA RS-422
	Excitation voltage	8 ... 36 V DC
	Excitation current	19 mA typical at 24 V DC 35 mA typical at 12 V DC max. 80 mA
	Clock frequency	100 kHz ... 500 kHz
	Code	Gray-Code, continuous progression
	Delay between pulse trains (t_p)	30 µs min.
	Stability (temperature)	±50 x 10^{-6} / °C f.s. (typical)
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	EMC	DIN EN 61326-1:2013

Data format
(Train of 26 pulses)



Transmission rate	**Cable length**	**Baud rate**	**Note:**
	50 m	100-400 kHz	Extension of the cable length will reduce the maximum transmission rate.
	100 m	100-300 kHz	

Signal wiring
Connector M12, 8 pin

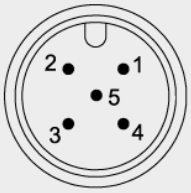


View to the sensor connector

Output signals	**Connector pin no.**	**Cable color**
Excitation +	1	white
Excitation GND	2	brown
CLOCK	3	green
$\overline{\text{CLOCK}}$	4	yellow
DATA	5	grey
$\overline{\text{DATA}}$	6	pink
-	7	blue
-	8	red

CANOP CANopen 	CAN Specification	ISO 11898, Basic and Full CAN 2.0 B
	Communication profile	CANopen CiA 301 V 4.02, Slave
	Device profile	Encoder CiA 406 V 3.2
	Configuration services	Layer Setting Service (LSS), CiA Draft Standard 305 (transmission rate, node id)
	Error Control	Node Guarding, Heartbeat, Emergency Message
	Node ID	Default: 127; programmable via LSS or SDO
	PDO	3 TxPDO, 0 RxPDO, static mapping
	PDO Modes	Event-/Time triggered, Remote-request, Sync cyclic/acyclic
	SDO	1 server, 0 Client
	CAM	8 cams
	Certified	Yes
	Transmission rates	50 kBaud to 1 MBaud, default: 125 kBaud; programmable via LSS or SDO
	Bus connection	M12 connector, 5 pin
	Integrated bus terminating resistor	Adjustable by the customer
	Bus, galvanic isolated	No

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	20 mA typical at 24 V DC 40 mA typical at 12 V DC, 80 mA max.
	Resolution	0.05° max.
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Repeatability	1 LSB
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMC	DIN EN 61326-1:2013

Signal wiring Connector M12, 5 pin	Output signals	Connector pin no.	Cable color
 View to the sensor connector	Shield	1	brown
	Excitation +	2	white
	GND	3	blue
	CAN-H	4	black
	CAN-L	5	grey

CANopen – Set up (MCANOP)

WWW.

Download

- A detailed specification of this interface can be downloaded from the ASM website:

  www.asm-sensor.com/en/downloads.html > Configuration files

⚠ WARNING

Risk of injury by unexpected machine movement

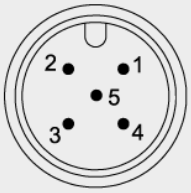
- Change parameters only when machine is in a safe condition!
- Changing parameters may cause unexpected machine movement.
- Changing parameters may influence dependent parameters e.g. changing the resolution may have influence on position of CAM switches.
- Precautions have to be taken to avoid damage to human and machine parts!

CANJ1939 SAE J1939 	CAN Specification	ISO 11898, Basic and Full CAN 2.0 B	
	Transceiver	24V-compliant, not isolated	
	Communication profile	SAE J1939	
	Baud Rate	250 kbit/s	
	Internal termination resistor	adjustable by the customer	
	Address	Default 247d, configurable	

NAME Fields	Arbitrary address capable	1	Yes
	Industry group	0	Global
	Vehicle system	7Fh (127d)	Non specific
	Vehicle system instance	0	
	Function	FFh (255d)	Non specific
	Function instance	0	
	ECU instance	0	
	Manufacturer	145h (325d)	Manufacturer ID
	Identity number	0nnn	Serial number 21 bit

Parameter Group Numbers (PGN)	Configuration data	PGN EF00h	Proprietary-A (PDU1 peer-to-peer)
	Process data	PGN FFnnh	Proprietary-B (PDU2 broadcast); nn Group Extension (PS) configurable

Specifications	Excitation voltage	8 ... 36 V DC
	Excitation current	20 mA typical at 24 V DC 40 mA typical at 12 V DC 80 mA max.
	Measuring rate	1 kHz (asynchronous)
	Stability (temperature)	±50 x 10^{-6}/°C f.s. (typical)
	Repeatability	1 LSB
	Operating temperature	See specification of the respective sensor
	Protection	Reverse polarity, short circuit
	Dielectric strength	1 kV (V AC, 50 Hz, 1 min.)
	EMV	DIN EN 61326-1:2013

Signal wiring Connector M12, 5 pin	Output signals	Connector pin no.	Cable color
 View to the sensor connector	Shield	1	brown
	Excitation +	2	white
	GND	3	blue
	CAN-H	4	black
	CAN-L	5	grey

SAE J1939 – Set up (MCANJ1939)

WWW.

Download

- A detailed specification of this interface can be downloaded from the ASM website:

  www.asm-sensor.com/en/downloads.html > Configuration files

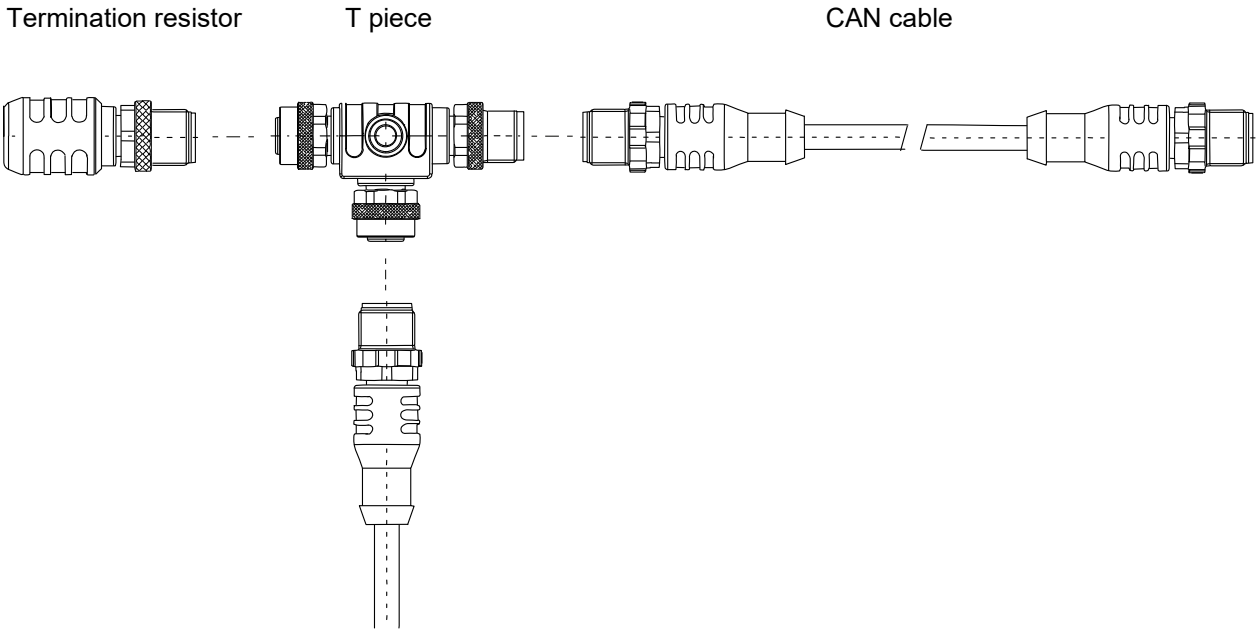
⚠ WARNING

Risk of injury due to unexpected machine movement

- Change parameters only when machine is in a safe condition!
- Changing parameters may cause unexpected machine movement.
- Changing parameters may influence dependent parameters e.g. changing the resolution may have influence on position of CAM switches.
- Precautions have to be taken to avoid damage to human and machine parts!

CAN-Bus wiring

Connect the device by a T-connector to the CAN trunk line. Total length of stubs should be minimized. Do not use single stub lines longer than 0.5 m. Connect terminating resistors 120 Ohm at both ends of the trunk line.



Reliability Characteristics

Models	**PH36, PH58, PH68, PH68R**	
Outputs	**single-channel**	
	U2, U2/PMU, U2/PMZ	Voltage output 0.5 ... 10 V
	U6, U6/PMU, U6/PMZ	Voltage output 0.5 ... 4.5 V
	U8, U8/PMU, U8/PMZ	Voltage output 0.5 ... 4.5 V
	I1, I1/PMU, I1/PMZ	Current output 4 ... 20 mA
	MSSI	Synchronous serial interface SSI
	MCANOP, MCANJ1939	CAN interface (CANopen, CAN SAEJ1939)
	dual-channel	
	U2R	Voltage output 0.5 ... 10 V, redundant
	U6R	Voltage output 0.5 ... 4.5 V, redundant
	U8R	Voltage output 0.5 ... 4.5 V, redundant
	I1R	Current output 4 ... 20 mA, redundant
	MCANOPR, MCANJ1939R	CAN interface redundant (CANopen, SAEJ1939)
Characteristics	Device type	B
	Life period (electronics) $MTTF_d$	320 years / channel*)
	Probability of failure PFH (λ_{DU})	350 Fit / channel
	Working life	10 years
	Life period (mechanics) B_{10}	1.2* 10^9 revolutions
	Probability of failure (mechanics) (λ_{MECH})	0.1* Ch / B100,1 * Ch / B_{10} Ch = cycles per hour
	Allowable shaft load	PH36: 20N radial, 10N axial
		PH58: 80N radial, 50 N axial
		PH68: 70N radial, 50N axial
Standards	Failure rate of electronic components (Siemens)	SN 29500

*) = Reference Conditions: Reference Supply Voltage UB_{REF}= 24 V, Reference Temperature ϑ_{REF}= 60 °C

perfect in sensors.

www.asm-sensor.com

ASM Automation Sensorik Messtechnik GmbH
Am Bleichbach 18 - 24
85452 Moosinning
Germany
Tel. +49 8123 986-0
Fax +49 8123 986-500
info@asm-sensor.com

ASM Sensors, Inc.
650 W. Grand Ave., Unit 205
Elmhurst, IL 60126
USA
Tel. +1 630 832-3202
Fax +1 630 832-3204
info@asmsensors.com

ASM Sales Office UK
Tanyard House, High Street
Measham, Derbs DE12 7HR
United Kingdom
Tel. +44 845 1222-123
Fax +44 845 1222-124
info@asm-sensor.com

© ASM Automation Sensorik Messtechnik GmbH, 2019
All rights reserved. Subject to changes without notice.