



**GB Assembly Instructions**

**GBAMS, GBLMS, GBMMS**  
**GCAMS, GCMMS**  
**GXAMS, GXLMS, GXMMS**  
**Absolute encoder – Profibus-DP**

**9-16**



**Danger**  
Warnings of possible danger.



**General instructions**  
Information on appropriate product handling.



**General remarks**

**Additional information**

The assembly instruction is supplementary to further existing documentation (e.g. catalog, data sheet, manual).



It is imperative to read the manual carefully prior to starting the device.

**Appropriate use**

- The encoder is a precision measuring device. It is explicitly designed for registration of angular positions and revolutions as well as evaluation and supply of measuring values as electric output signals for the subsequently connected device. The encoder must not be used for any other purpose.

**Start up**

- Installation and assembly of the encoder only by electrically skilled and qualified personnel.  
- Consider also the operation manual of the machine manufacturer.



**Safety instructions**

- All electrical connections are to be revised prior to starting the system.  
- Incorrect assembly and electrical connections or any other inappropriate work at encoder and system may lead to malfunction or failure of the encoder.  
- Any risk of personal injury, damage of the system or company equipment due to failure or malfunction of the encoder has to be eliminated by corresponding safety measures.  
- Do not operate encoder beyond the limit values stated in the data sheet.



Any disregard may lead to malfunctions, material damage and personal injury.

**Disposal**

Encoder components are to be disposed of according to the regulations prevailing in the respective country.

**Transport and storing**

- In original packing only.  
- Do not drop or expose encoder to major shocks.

**Assembly**

- Open clamping ring completely before mounting the encoder.  
- Avoid punches or shocks on case and shaft.  
- Avoid case distortion.  
- Do not open or modify encoder in any mechanical way.  
- The spring arm of the spring coupling has to be free movable.  
- Radial runout tolerance: 0.1 mm max., measured at the very end of the drive shaft (motor shaft).

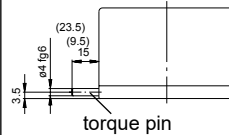
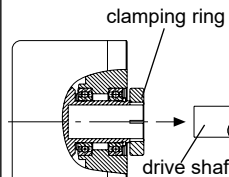
Hollow shaft, bearing, glass disc or electronic components might be damaged and a secure operation is no longer guaranteed.

**Hollow shaft mounting**

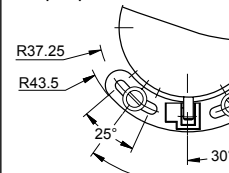
Mounting with clamping ring  
Plug encoder completely onto drive shaft (ISO-fit f7) and tighten clamping ring firmly (max. 1.2 Nm). The drive shaft must penetrate the encoder's hollow shaft to a depth of at least 35 mm.

**Mechanical assembly**

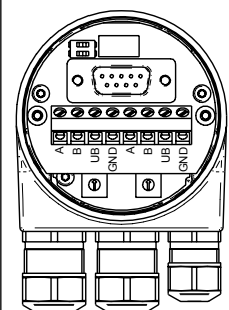
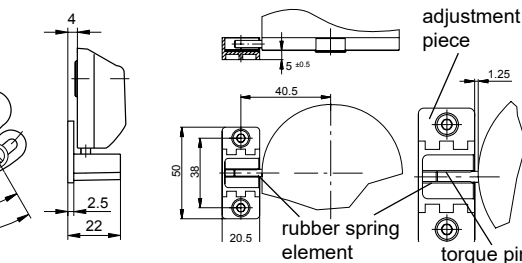
Slide encoder onto the drive shaft and insert torque pin into the adjusting element provided by customer or insert pin into the mounted adjusting part (with rubber spring element) provided by customer.



adjustment piece with torque pin 9.5 mm



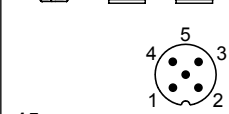
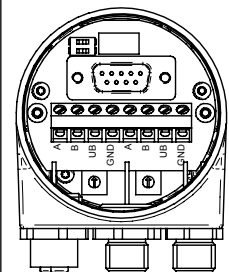
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M12 connector (male/female) for serial data line



M12 connector (male) for supply voltage



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- There must not be any crossing of data lines with lines for power supply.  
- Any cable gland not used has to be sealed by blind plug (included into delivery). The cap nut must be firmly tightened.

**Core cross-section**

Single wire (rigid)	Max. 1.5 mm <sup>2</sup>
Fine wire (flexible)	Max. 1.0 mm <sup>2</sup>
Fine wire (flexible)	With ferrule max. 0.75 mm <sup>2</sup>

**Cable diameter**

Cable gland 1, 2	ø8...10 mm (-40...+85 °C) ø5...9 mm (-25...+85 °C)
Cable gland 3	ø4.5...6 mm (-40...+85 °C) ø3...6 mm (-25...+85 °C)

**Locking torque**

Terminal strip/screwing terminal max. 0.4 Nm  
(recommended locking torque 0.3 Nm)  
Connection bus cover max. 0.9 Nm  
Spring coupling mounting max. 1.2 Nm  
Clamping ring mounting max. 1.2 Nm

**Terminal assignment (bus cover)**

5-pin connector (data line)		
Pin 2	A	Negative serial data line
Pin 4	B	Positive serial data line

**4-pin connector (supply voltage)**

Pin 1	UB	Voltage supply 10...30 VDC
Pin 3	GND	Ground connection relating to 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.

**Terminal assignment for models with additional incremental connector**

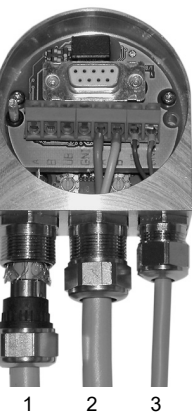
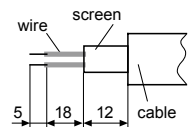
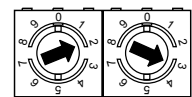
Pin 1	A	Pin 4	B inv.
Pin 2	B	Pin 5	GND
Pin 3	A inv.		

All movable adjusting elements need tolerance in both axial and radial direction in order to equalize shifts by temperature and of mechanical nature. Tighten both fixing and clamp ring screws firmly.

**Electrical installation**

- Do not modify encoder in any electrical way and carry out any wiring work under power supply.  
- Any electrical connection and plugging-on whilst under power supply is not permitted.  
- A separate encoder supply has to be provided with consumers with high interference emission.  
- Installation of the whole system has to be according to EMC standards. Installation environment as well as wiring have an impact on the encoder's EMC. Encoder and supplying lines are to be in separated locations or remote from lines with high interference emission (frequency transformers, protections, etc.).  
- Encoder case and supply cable have to be completely screened.  
- Ground (PE) encoder by using screened cables. The braided shield has to be connected to cable gland or plug. Grounding (PE) on both sides is recommended. Ground the case by the mechanical assembly, if latter is electrically isolated a second connection has to be provided. Ground cable screen by the subsequently connected devices. In case of ground loop problems at least grounding on one side is imperative.

Any disregard may lead to malfunctions, material damage and personal injury.



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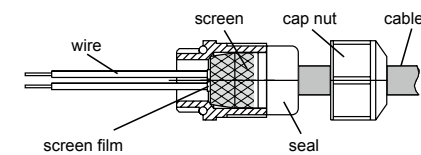
**Electrical connection**

The bus cover is to be stored and transported whilst in the ESD bag only. The bus cover has to fit the case tightly and has to be firmly secured by screws.

- Unscrew both fixing screws of the bus cover.  
- Loosen bus cover carefully and remove it in axial direction.  
- Adjust participant address at the two decimal rotary switches. The participant's address for example 23.  
- For the last participant the terminators are to be switched "ON" by means of the 2-pin Dip switch (default OFF).  
ON = final user / OFF = user X

**Assignment – cable gland (bus cover)**

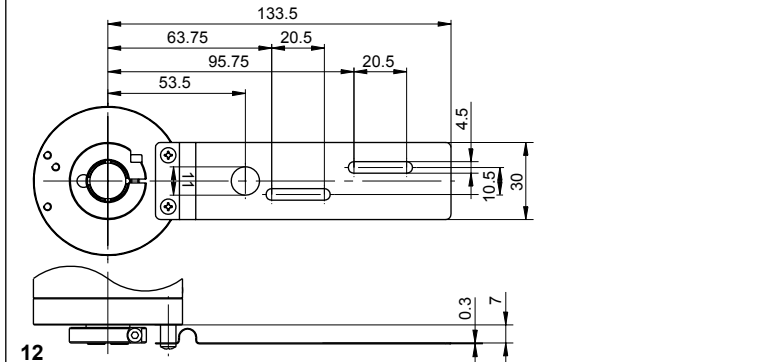
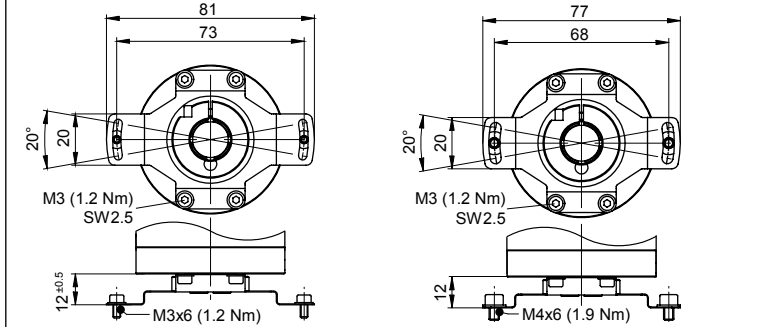
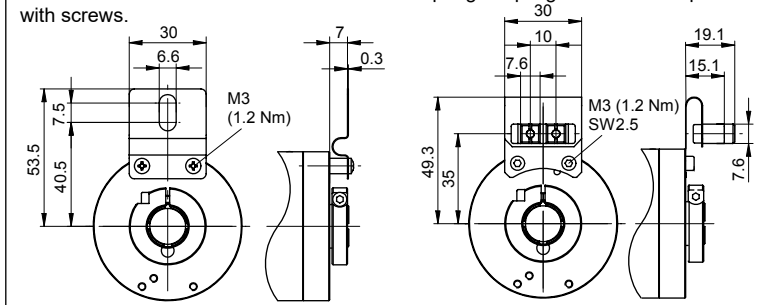
- Unscrew cap nut of cable gland. Push cap nut and seal insertion onto the cable coat.  
- Strip isolation of cable coat and cores and cut shielding foil, if any (picture).  
- Bend the braided shield for about 90°.  
- Push seal insertion to the braided shield. Insert seal and cable flush into the cable gland. Secure by carefully tightening the cap nut.



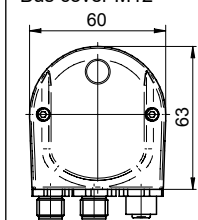
- Terminals of the same designation are internally connected to each other.  
- Use cable gland no. 3 for supply only. Cable glands No. 1 and 2 are for optional use as bus lines. Consider the permitted cable cross-section.  
- Use the shortest way to insert the cores into the terminals and mind the maximum core cross-section. Use core tip sleeves with flexible cores.

**Spring coupling**

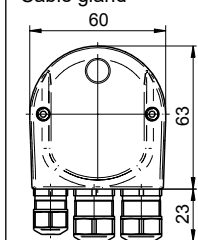
Fasten spring coupling at the fixing holes provided on housing by means of screws. Slide encoder onto the drive shaft and fasten spring coupling at the surface provided with screws.



**Bus cover M12**



**Cable gland**



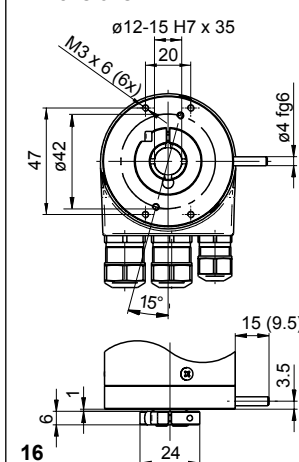
**Assignment – connector M12 (bus cover)**

Follow also the instructions of the respective supplier.  
- Press mating connector softly into the plug.  
- Turn mating connector carefully until the code mark is interlocking the corresponding space provided by the plug.  
- Insert bushing completely.  
- Tighten the nut as far as possible.

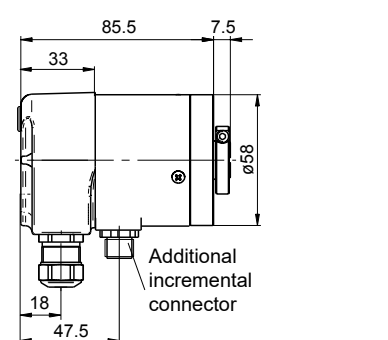
An optimized connection between encoder case and the braided shield of the connection cable is only achieved by the braided shield being placed generously onto the connector and the nut being secured firmly.

- Plug the bus cover carefully onto the D-SUB plug of the basic encoder, then push it over the rubber seal. Avoid the case getting wedged. The bus cover has to fit tightly the basic encoder.  
- Tighten both fixing screws firmly and conformable.  
- An optimized connection between encoder case and the braiding shield of the supply cable is only achieved by a complete and close fit of the bus cover onto the basic encoder (interlock).

**Dimensions**



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