Rexroth
Bosch Group

Rexroth GDS/GDM1.1
Digital Singleturn/Multiturn Encoder

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Edition 01

Applications

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GDM 1.1 Digital multiturn encoder

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This documentation is used: This document outlines:
- technical data,
- information about mounting,
- dimensional sheets,
- electrical schematic diagrams, and,
- general information about accessories.

Change procedures

Designation of documentation up to present edition	**Release-date**	**Coments**
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Table of Contents

Page

1. General summary

INDRAMAT offers digital single-turn (GDS 1.1) and multiturn (GDM 1.1) encoders.

The GDS 1.1 has a resolution of one motor revolution, while the GDM 1.1 has an absolute resolution of 4096 motor revolutions.

The encoder signals are evaluated by the auxiliary plug-in card DFF1.1 or the feedback input of the drive controller. The card is inserted into one of the slots on the digital drive controller.

The encoders are in an enclosure which has a protection category of IP 65. A coupling unit makes it possible to directly mount these onto the mechanical system of a machine or plant.

2. Technical data

Protection category:	IP 65
Resolution:	256 x 2^{13} = 2 097 152 increments per revolution
Accuracy of the system:	+/- 0.5 angular minutes
The resolution of the multiturn encoder DSM:	4096 revolutions of the rotor
Operating principle of the sensor:	optical scanning of a code disc
Maximum RPM:	6000 RPMs
Mass:	1120 grams
Rotor moment of inertia:	100.6 10^{-6} kgm^2
Torque at 20° C:	> 0.01 Nm
Vibrations (10 to 2000 Hz):	< 100 m/s^2
Shock (11 ms):	max. 1000 m/s^2
Operating temperature range:	0° C to 105° C
Storage temperature range:	-30° C to +105° C
Axial shaft load:	maximum 100 N
Radial shaft load:	maximum 200 N
Recommended type of coupling unit:	Control - flex CPQ 15 - xx - xx Made by Schmidt-Kupplung
Permissible cable length:	150 meters

3. Ordering information

Type of encoder	Order number
Digital single-turn encoder GDS 1.1	250531
Digital multiturn encoder GDM 1.1	250532

4. Dimensional data

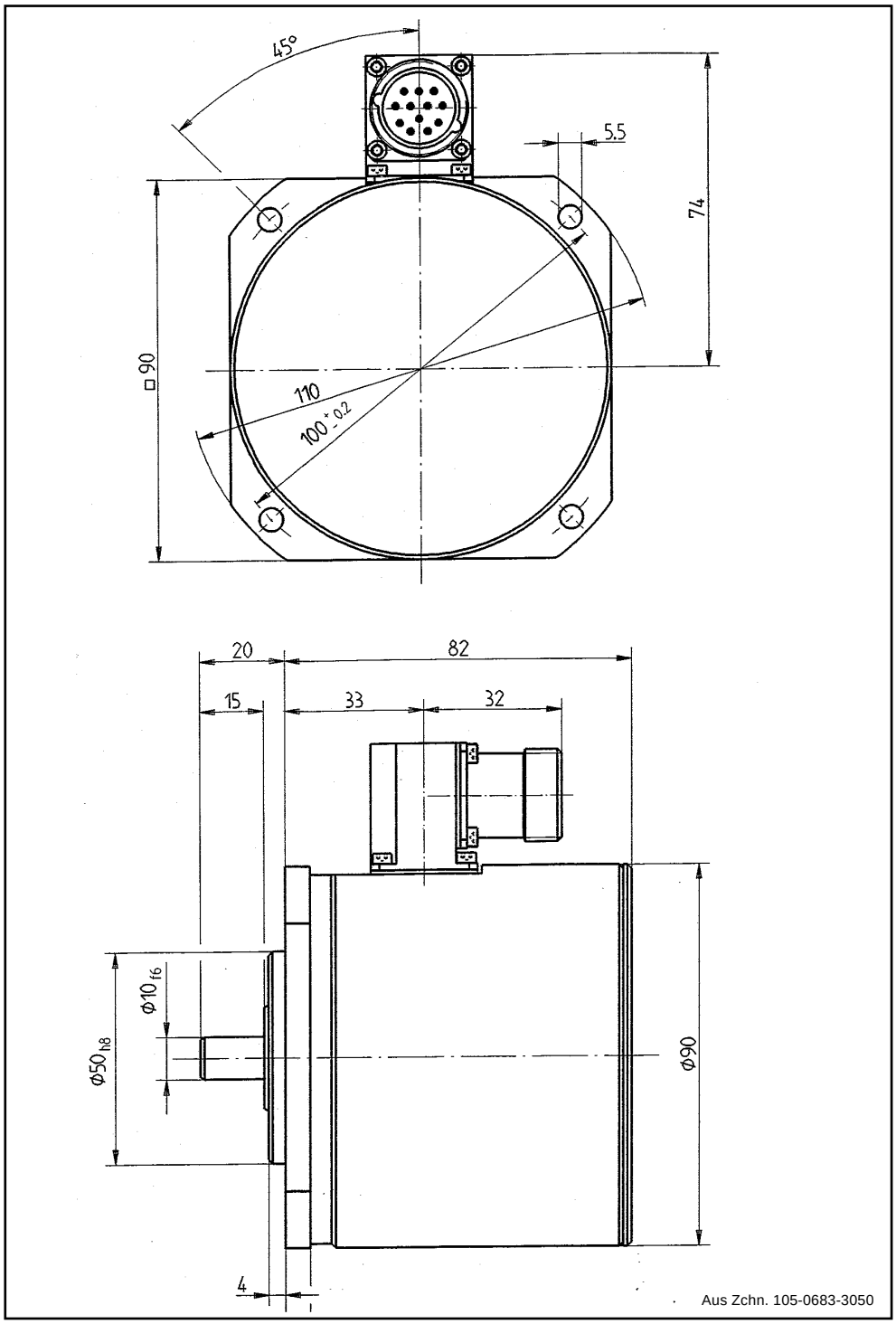


Figure 1: GDS and GDM - dimensional data

5. Electrical connections

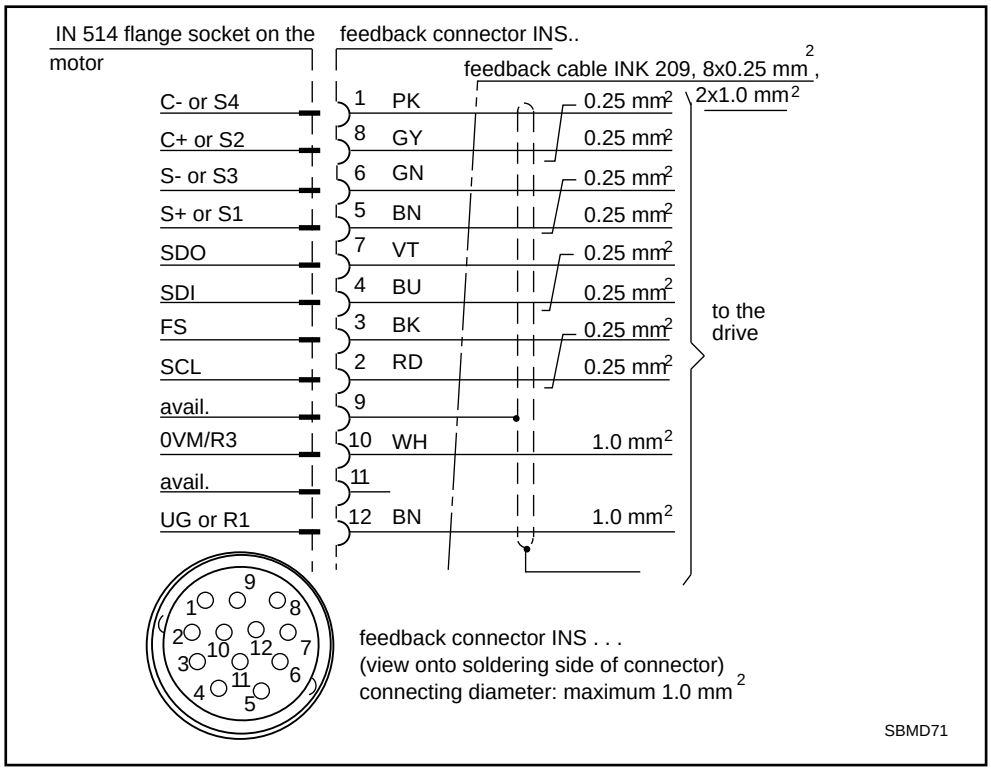


Figure 2: GDS 1.1 and GDM 1.1 - schematic diagram

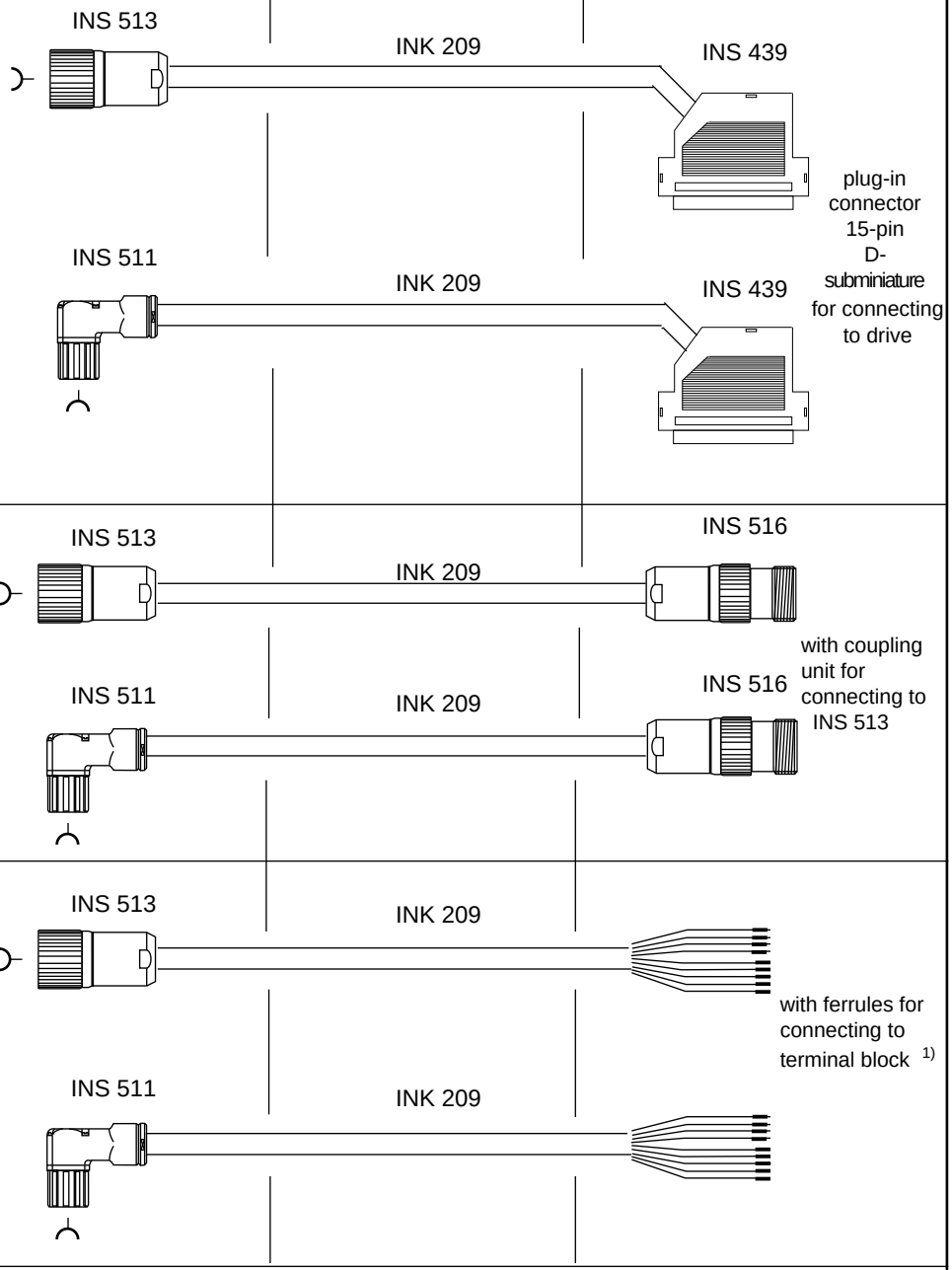
Type	connectors of INDRAMAT cable NK 209	connectors suited for all cables for outside diameter of 6 to10 mm
straight connector	INS 513	INS 512
angle connector	INS 511	INS 510

Figure 3: Connectors for GDS 1.1 and GDM 1.1

Type designation	**IN 209**
Protection cate. transition cable/connector	**IP 65**
Cable diameter	**8.8 mm**
Bending radius fixed routing	**40 mm**
Bending radius flexible routing	**90 mm**
(lifespan > 500 000 bending loads)	
Specific weight	**0.102 kg/m**
Permissible ambient temperature for operation and storage	**-30° to + 80°**
Cable surface	**poor adhesion, prevents sticking in drag chains**
Maximum cable length	**75 meters**
Chemical characteristics	**absolute resistance to mineral oils and greases, silicone and halogen free**

Figure 4: INDRAMAT cable IN 209 - technical data

order designation of the ready-made feedback cable	type designations of the feedback connector	INDRAMAT feedback cable	cable end
IKS 374/...	INS 513	INK 209	INS 439
IKS 375 /...	INS 511	INK 209	INS 439
IKS 376 /...	INS 513	INK 209	INS 516
IKS 377 /...	INS 511	INK 209	INS 516
IKS 378 /...	INS 513	INK 209	
IKS 379 /...	INS 511	INK 209	



1) To be avoided because of possible interference in shield.

Figure.5: Ready-made cables for connecting GDS1.1 and GDM 1.1 (feedback cables)

Order sample for cables: example: IKS 374 / 12.0

length in meters

(Available in increments of 0.5 meters from a length of five meters. Shorter lengths available upon request.)

6. Assembly guidleines

The encoders are high-precision measuring systems which must be handled accordingly.

- Avoid all impacts to shaft and encoder housing!
- Use only flexible coupling units!
- The type of coupling unit used is determined by the RPM, the acceleration torque and the angular and shaft offset to be shunted.
- During assembly, maintain the shaft and angular offsets recommended by the manufacturer of the coupling unit!
- Maintain the shaft load values of the encoder!
- Mount the encoder according to the
  - terminal diagram of the DFF 1.1 auxiliary plug-in card, or,
  - terminal diagram of the motor feedback of the drive controller!
- Use INDRAMAT ready-made cables when connecting the encoder
- Neither pull out nor insert the connectors when power is being applied!
- Route the encoder lines in such a way that no interference can occur!

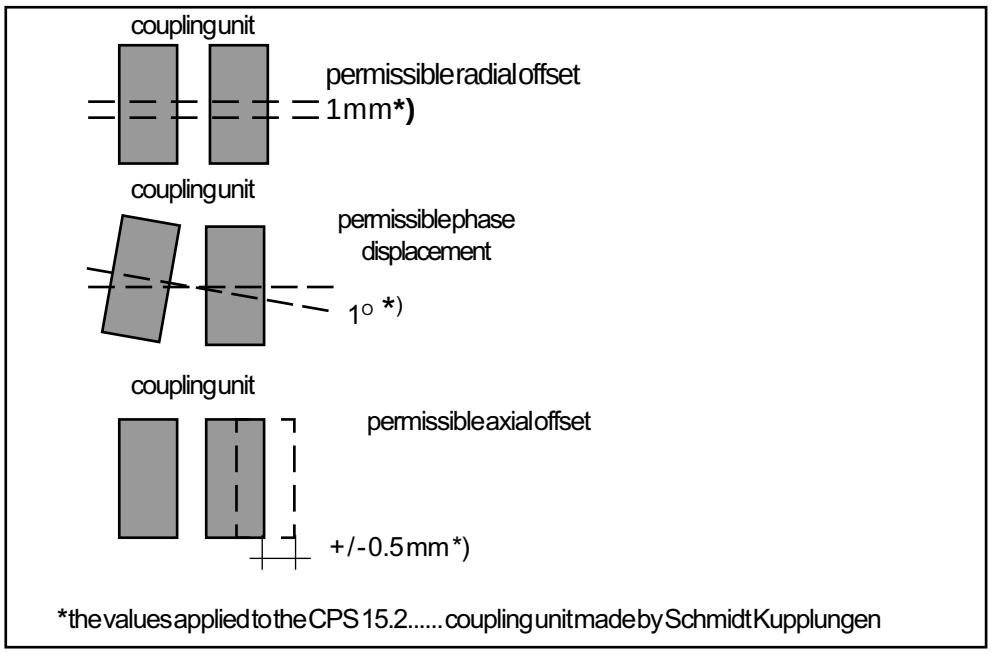


Figure 6: Tolerances as they relate to the coupling unit when integrating the encoder into the mechanical system

7. Index

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