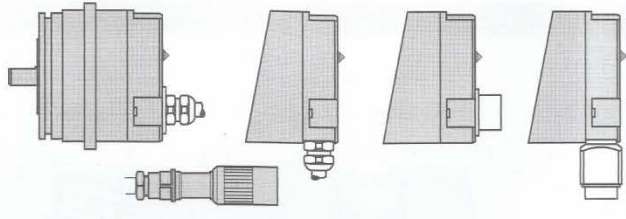


User's Guide Encoders

BRGC5-W_P_ _ _ - _ _ -G-0-K/KA/S/SR/SA3

Nr. 719 100 E • Edition 1702.



CE The CE-Mark certifies that our products have met the requirement of the CE Guideline 89/336/EEG (EMC Guideline):

- EN 61 326-2-3 (Emission and Noise Immunity)

Emission Tests:

RF Emission: EN 55011:1997+A1

Immunity Tests:

Static Electricity (ESD):

EN 61 000-4-2, Severity Level 3

Elektromagnetic Fields (RFI):

EN 61 000-4-3, Severity Level 3

Fast Transients (BURST):

EN 61 000-4-4, Severity Level 4

Line-fed disturbances by high-frequency fields

EN 61 000-4-6, Severity Level 3

Technical Data

Outputs	10, push-pull, short circuit protected
Resolution max.	1024
Accuracy	±½ bit (at 24 V DC)
Repeatability	±45° el.
Switching frequency	≤ 25 kHz (LSB)
Supply voltage V_s	10 ... 30 V DC
Ripple	≤ 10%
Output voltage V_o	≥ $U_B - 3 V$
No-load current I_R	typ. 50 mA (at $V_o = 24 V DC$)
Output current I_o	< 50 mA (at $V_o = 24 V DC$)
Current draw Control inputs I_c	< 1 mA
Load Capacitance C	100 nF (incl. cable capacity)
Housing material	aluminium
Mounting method	clamps
Operating temperature	0 to 60 °C
Storage temperature	-20 to +80 °C
Enclosure	IP 67 IEC 529
RPM	max. 6000/min
shaft loading	$F_{AX} \leq 25 N$; $F_{RAD} \leq 40 N$
Vibration	10 g, 10...150 Hz (IEC 68: 2-6)
Shock	50 g/ 11 ms (IEC 68: Part 2-27)

Safety Advisory

Series BRG encoders are used for electrical detection of mechanical positions (e.g. tool revolvers, drill heads) and may only be used for these or similar purposes.

Installation and Operation:

Installation and Operation should be carried out by trained personnel only. Unauthorized handling and use will lead to loss of warranty and liability claims. When mounting and wiring, carefully read the corresponding sections of this guide.

Use and Checking:

Follow all relevant safety procedures when using this product. Take all steps necessary to ensure that failure of this product will not cause danger to persons or equipment (e.g. limit switches, safety devices). Regularly check the functionality of the encoder and all associated components.

Fault Conditions:

When it is suspected that the encoder is faulty, take it out of service and take measures to ensure that it is not used.

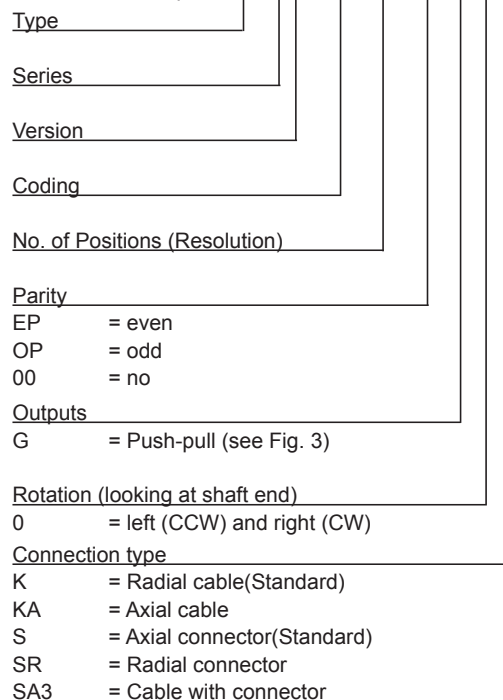
Scope:

This descriptions pertains to encoders in Balluff Series BRGC5-...-K/KA/S/SR/SA3.

Identifying the Encoder

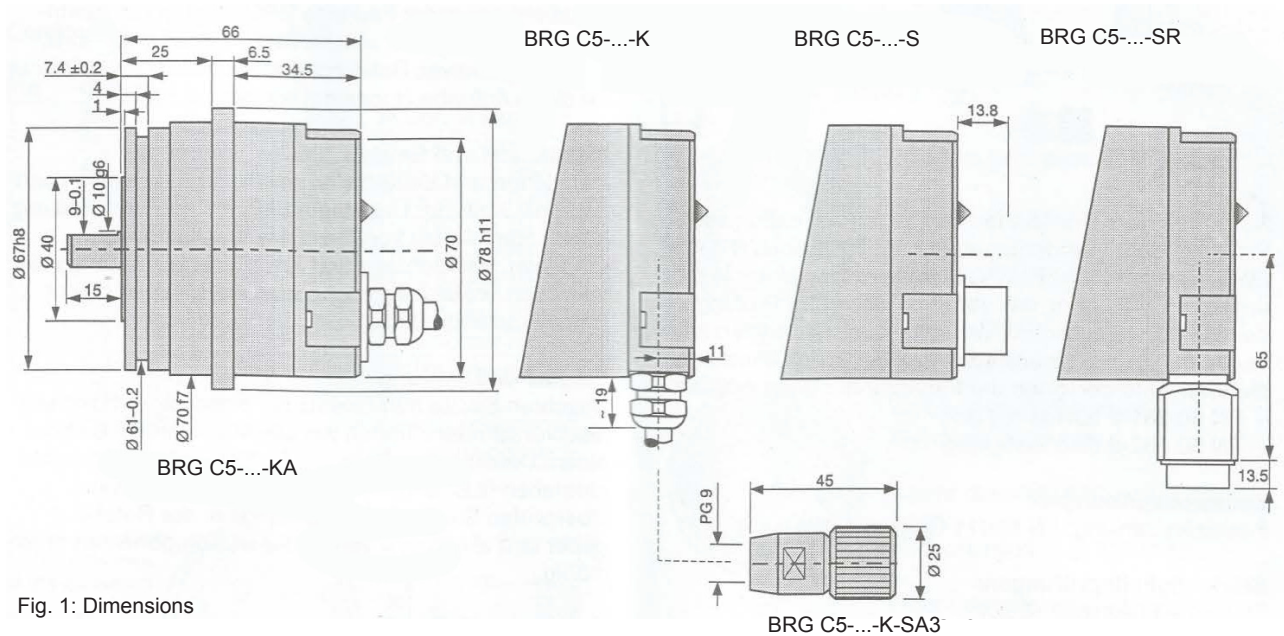
Ordering Code

Example: BRGC5-WAP360-OP-G-0-S



Subject to change without notice

Installation

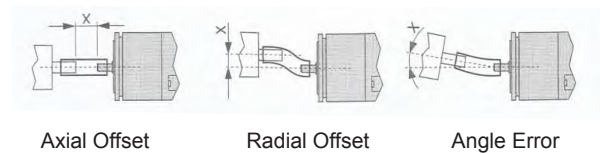


Please note the following:

- Never use force (e.g. hammer or blows) to install or align the encoder.
- Do not exceed the bad tolerances given for the encoder shaft (see technical data).
- Never step on the encoder, cord seal, or connector.

Using the coupling:

- Attach the encoder to the drive rigidly at one point only: either flange to flange or shaft to shaft. Use the couplings.
- Be sure that the encoder shaft and the drive are on the same axis. Check the data sheet for the coupling to find the permissible axial or radial offset and the maximum angle error of the two shafts.



- Be sure not to damage or bend the coupling excessively while installing and aligning it.
- Tighten all mounting screws very carefully.

Elektrical Connections

Note the following:

- Connect all cable according to the table at lower right.
- Isolate all unused grounds (to avoid short circuit).
- Make sure that self-wired connectors are sealed properly. Oil or water entering along the cable can enter the electronics area and destroy the unit.
- The IP 67 rating can be assured only if your connections, especially in the case of short cables, meet the IP 67 specification also.
- Do not route the BRG encoder cable parallel to AC lines, in order to avoid noise coupling.
- Use shielded cable only, in order to avoid noise coupling.
- Ground the shield on the control side only.
- Plug or unplug the encoder connector only after power has been turned off.
- Turn power on and off to the encoder and the input device at the same time only.

Output Driver:

At overload all outputs will be switched off. Switch off supply voltage and after the fault has been removed, turn power on.

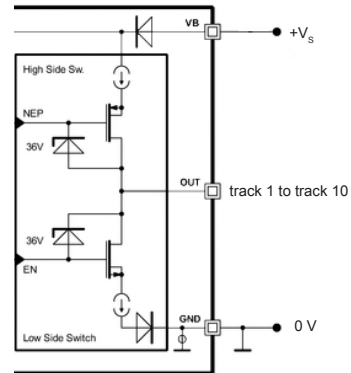


Fig. 3: Output circuit

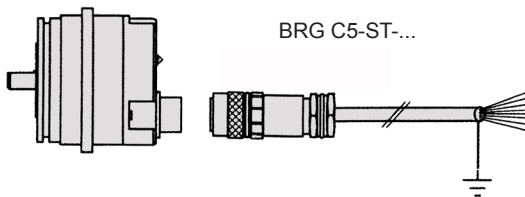


Fig. 2: Cable/connector assembly for BRGC5-...-S/SR

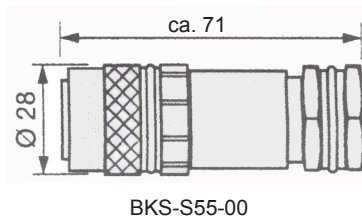
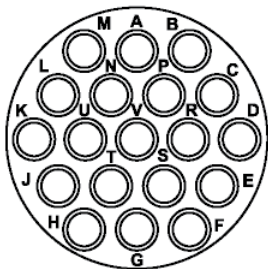
Electrical Connections

Connections BRGC5-...-K/KA/S/SR:

Determine your BRG model and its resolution. The resolution is critical for the wiring.

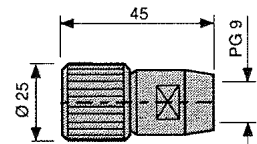
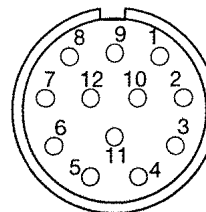
BRG-Type	Resolution	Data format	
WAP	360; 512	720; 1024	Binary
WBP	120	360	BCD
WCP	256		Gray
WGP	360; 512	720; 1024	Gray
WSP		alle	Special format

Pin	SA3	Cable				Remarks
A	1	BN	+V _B	+V _B	+V _B	Supply voltage
B	2	BU	0 V	0 V	0 V	Supply voltage - Ground
C	3	BK	1	1	1	Data output Bit 1
D	4	WH	2	2	2	Data output Bit 2
E	5	YE	3	3	3	Data output Bit 3
F	6	GN	4	4	4	Data output Bit 4
G	7	VI	5	5	5	Data output Bit 5
H	8	PK	6	6	6	Data output Bit 6
J	9	GY	7	7	7	Data output Bit 7
K	-	RD	8	8	8	Data output Bit 8
L	-	GY/PK	Parity	9	9	Parity-Bit or Data output Bit 9
M	-	RD/BU	not con.	Parity	10	Parity-Bit or Data output Bit 10
N	-	WH/YE	not con.	not con.	Parity	Parity-Bit
P	-	YE/BN	Up/Down	Up/Down	Up/Down	Output count direction increasing or decreasing
U	10	BN/GN	External	Direction	Select	Input for changing count direction
V	11	WH/GN	Select	Select	Select	Input for selecting/deselecting BRG
-	12	transparent	Shield	Shield	Shield	Cable shield



Pin Configuration: Solder side view of the connector

Fig. 4: Connector for BRGC5-...-S/SR



Pin Configuration: Solder side view of the connector

Fig. 5: Connector for BRGC5-...-SA3