

B&R Automation - 'M' Manufacturers Connector, Cable & Wiring Information

Current Exlar Feedback configurations are as follows:

- BR1 = Standard Resolver – 8MS/8LS motor wiring w/M23 connectors for 'M' option
- BR2 = EnDat Heidenhain multi-turn absolute encoder – 8MS/8LS motor wiring w/M23 euro connectors for 'M' option

Exlar Actuator Power Wiring

All B&R options are wired from this excerpt taken from the wiring section of the 8MS Motor User's Manual:

1.1.1 8MSA2...8MSA7


| Size 1 | Pin | Description | Function |
|---|-----|-------------|-----------------------------|
|  | 1 | U | Motor connection U |
| | 4 | V | Motor connection V |
| | 3 | W | Motor connection W |
| | 2 | PE | Protective ground conductor |
| | A | T+ | Temperature + |
| | B | T- | Temperature - |
| | C | B+ | Brake + |
| | D | B- | Brake - |

Table 71: Pin assignments for motor cable attachment size 1

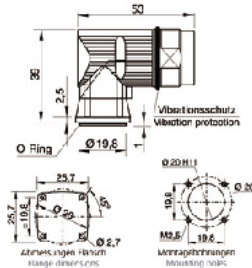
B&R Connector Size 1 is used with the following Exlar Models using the 'M' Manufacturers Connector Option:
 GSM20, GSM30, GSM40
 GSX20, GSX30, GSX40, GSX50
 SLM060, SLM090, SLM115, SLM142
 SLG060, SLG090, SLG115

Housing design

Reference picture
 Configured housing surface: Chromated



Technical drawing



Insulation inserts :
 E-Type , Front view



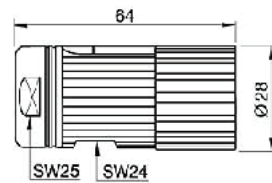
B&R Size 1 from Intercontec Part # - BEDC 089 MR 13 00 0005 000

Housing design

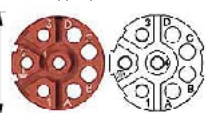
Reference picture
 Configured housing surface: Nickel plated



Technical drawing



Insulation inserts :
 P-Type , Front view



Mating Connector Intercontec Part # - BSTA 078 FR 05 55 0035 000

1.1.2 8MSA8


| Size 1.5 | Pin | Description | Function |
|--|-----|-------------|-----------------------------|
|  | U | U | Motor connection U |
| | V | V | Motor connection V |
| | W | W | Motor connection W |
| | ± | PE | Protective ground conductor |
| | 1 | T+ | Temperature + |
| | 2 | T- | Temperature - |
| | + | B+ | Brake + |
| | - | B- | Brake - |

Table 72: Pin assignments for motor cable attachment size 1.5

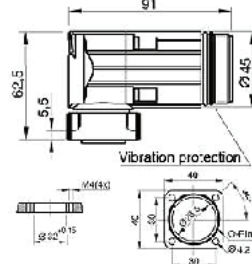
B&R Connector Size 1.5 is used with the following Exlar Models using the 'M' Manufacturers Connector Option:
 GSX60, SLM180

Housing design

Reference picture
 Configured housing surface: Nickel plated



Technical drawing



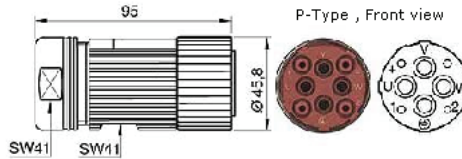
Insulation inserts :
 E-Type , Front view



B&R Size 1.5 from Intercontec Part # - CEDA 258 MR 44 00 0004 000

Housing design
 Reference picture
 Configured housing
 surface: Nickel plated

Technical drawing



Mating Connector Intercontec Part # - CSTA 264 FR 48 25 0001 000

B&R Basic Power Cable Part Numbers

Excerpt from Cable Section of the 8MS Motor User's Manual:

| Model Number | Short Description | Image |
|--------------|--|-------|
| | Motor Cables 1.5 mm² 1) | |
| 8CM005.12-1 | Motor cable, length 5m, 4 x 1.5mm ² + 2 x 2 x 0.75mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM007.12-1 | Motor cable, length 7m, 4 x 1.5mm ² + 2 x 2 x 0.75mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM010.12-1 | Motor cable, length 10m, 4 x 1.5mm ² + 2 x 2 x 0.75mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM015.12-1 | Motor cable, length 15m, 4 x 1.5mm ² + 2 x 2 x 0.75mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM020.12-1 | Motor cable, length 20m, 4 x 1.5mm ² + 2 x 2 x 0.75mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM025.12-1 | Motor cable, length 25m, 4 x 1.5mm ² + 2 x 2 x 0.75mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| | Motor Cables 4 mm² 2) | |
| 8CM005.12-3 | Motor cable, length 5m, 4 x 4mm ² + 2 x 2 x 1mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM007.12-3 | Motor cable, length 7m, 4 x 4mm ² + 2 x 2 x 1mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM010.12-3 | Motor cable, length 10m, 4 x 4mm ² + 2 x 2 x 1mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM015.12-3 | Motor cable, length 15m, 4 x 4mm ² + 2 x 2 x 1mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM020.12-3 | Motor cable, length 20m, 4 x 4mm ² + 2 x 2 x 1mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |
| 8CM025.12-3 | Motor cable, length 25m, 4 x 4mm ² + 2 x 2 x 1mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed | |

Size 1 Power Cables:

Exlar Recommends the following B&R Power Cables:

All Cables include Therm(KTY84) and Brake Leads

8CMxxx.12-1 for use with:

GSM20, GSM30
 GSX20, GSX30
 SLM060, SLM090
 SLG060, SLG090

8CMxxx.12-3 for use with:

GSM40,
 GSX40, GSX50
 SLM115, SLM142
 SLG115

2.1.2 Pin assignments for 8CMxxx.12-1, 8CMxxx.12-3

| Circular connector | Pin | Description | Function |
|--------------------|-----|-------------|-----------------------------|
| | 1 | U | Motor connection U |
| | 4 | V | Motor connection V |
| | 3 | W | Motor connection W |
| | 2 | PE | Protective ground conductor |
| | A | T+ | Temperature + |
| | B | T- | Temperature - |
| | C | B+ | Brake + |
| | D | B- | Brake - |

Table 78: Pin assignments for motor cable 8CMxxx.12-1, 8CMxxx.12-3

| Motor Cables 10 mm ² ³⁾ | |
|---|--|
| 8CM005.12-5 | Motor cable, length 5m, 4 x 10mm ² + 2 x 2 x 1.5mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed |
| 8CM007.12-5 | Motor cable, length 7m, 4 x 10mm ² + 2 x 2 x 1.5mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed |
| 8CM010.12-5 | Motor cable, length 10m, 4 x 10mm ² + 2 x 2 x 1.5mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed |
| 8CM015.12-5 | Motor cable, length 15m, 4 x 10mm ² + 2 x 2 x 1.5mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed |
| 8CM020.12-5 | Motor cable, length 20m, 4 x 10mm ² + 2 x 2 x 1.5mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed |
| 8CM025.12-5 | Motor cable, length 25m, 4 x 10mm ² + 2 x 2 x 1.5mm ² , Motor connector 8pin Intercontec socket, can be used in cable drag chains, UL/CSA listed |



**When selecting part numbers other than Exlar recommends, please consult your B&R Representative, Distributor or Agent.*

Size 1.5 Power Cables

Exlar Recommends the following B&R Power Cables:

All Cables include Therm(KTY84) and Brake Leads

8CMxxx.12-5 for use with:

GSX60, SLM180

2.1.4 Pin Assignments for 8CMxxx.12-5

| Circular connector | Pin | Description | Function |
|--------------------|-----|-------------|-----------------------------|
| | U | U | Motor connection U |
| | V | V | Motor connection V |
| | W | W | Motor connection W |
| | ⊥ | PE | Protective ground conductor |
| | 1 | T+ | Temperature + |
| | 2 | T- | Temperature - |
| | + | B+ | Brake + |
| | - | B- | Brake - |

Table 79: Pin assignments for motor cables 8CMxxx.12-5

Exlar Actuator Feedback Wiring

'M' Manufacturers Connector Option with BR1 Feedback:

Resolver motor connections excerpt from Wiring Section of the 8MS Motor User's Manual:

1.2.2 Resolver

| Resolver | Pin | Description | Function |
|----------|-----|-------------|---------------------------|
| | 1 | --- | --- |
| | 2 | --- | --- |
| | 3 | Cos | Cosine input |
| | 4 | Sin | Sine input |
| | 5 | Ref | Reference output |
| | 6 | --- | --- |
| | 7 | Cos\ | Cosine input inverted |
| | 8 | Sin\ | Sine input inverted |
| | 9 | Ref\ | Reference output inverted |
| | 10 | --- | --- |
| | 11 | --- | --- |
| | 12 | --- | --- |

Table 74: Pin assignments for resolver encoder cable attachment

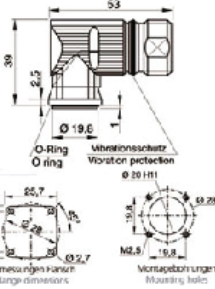
All Exlar Models using 'M' connectors and BR1 feedback option are wired as shown above.

Housing design

Reference picture
Configurated housing
surface: Chromated



Technical drawing



Insulation inserts :
P-Type , Front view

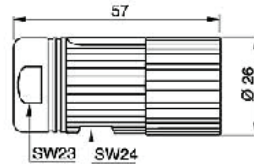


Housing design

Reference picture
Configurated housing
surface: Nickel plated



Technical drawing



Insulation inserts :
E-Type , Front view



Mating Connector from Intercontec Part # - ASTA 021 NN00
40 0036 000

B&R Resolver Connector from Intercontec Part # - AEDC
102 NN00 00 0012 000

‘M’ Manufacturers Connector Option with BR2 Feedback:

EnDat Absolute Encoder motor connections excerpt from Wiring Section of the 8MS Motor User’s Manual:

1.2.1 EnDat

| EnDat | Pin | Description | Function |
|-------|-----|-----------------------------|-----------------------|
| | 1 | Sense +5V | Sense input +5 V |
| | 2 | --- | --- |
| | 3 | --- | --- |
| | 4 | Sense COM | Sense input 0 V |
| | 5 | --- | --- |
| | 6 | --- | --- |
| | 7 | +5V out / 0.25A | Encoder supply +5 V |
| | 8 | T | Clock output |
| | 9 | T̄ | Clock output inverted |
| | 10 | COM (1, 3 - 9, 11, 13 - 15) | Encoder supply 0 V |
| | 11 | --- | --- |
| | 12 | B | Channel B |
| | 13 | B̄ | Channel B inverted |
| | 14 | D | Data input |
| | 15 | A | Channel A |
| | 16 | Ā | Channel A inverted |
| | 17 | D̄ | Data inverted |

Table 73: Pin assignments for EnDat encoder cable attachment

The Heidenhain model EQN1125 – 512 periods per rev is used with the following Exlar models using the BR2 feedback callout:

- GSM20, GSM30
- GSX20, GSX30
- SLM060, SLM090
- SLG060, SLG090

**Physical dimensions of the actuator will be longer than specified in the Exlar Catalog when using EnDat feedback on the above models.*

The Heidenhain model EQN1325 – 512 periods per rev is used with the following Exlar models using the BR2 feedback callout:

- GSM40
- GSX40, GSX50, GSX60
- SLM115, SLM142, SLM180
- SLG115

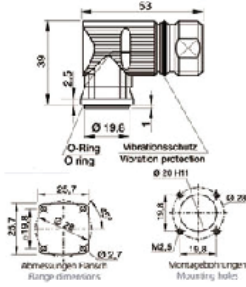
All Exlar Models using ‘M’ connectors and BR2 feedback option are wired as shown above.

Housing design

Reference picture
Configured housing
surface: Chromated



Technical drawing



Insulation inserts :
E-Type , Front view

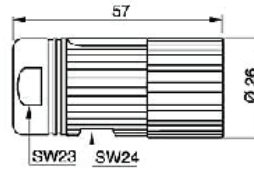


Housing design

Reference picture
Configured housing
surface: Nickel plated



Technical drawing



Insulation inserts :
P-Type , Front view



B&R EnDat Absolute Encoder Connector from Intercontec
Part # - AEDC 113 NN00 00 0012 000

Mating Connector from Intercontec Part # - ASTA 035 NN00
40 0036 000

Drive Connections

Excerpt of Motor connections from the ACOPOS plug-in module Technical Data Sheets:

6.4.1 Pin Assignments

| Image | X1 | Pin | Description | Function |
|-------|----|-----|-------------|---------------------------|
| | | 1 | --- | --- |
| | | 2 | --- | --- |
| | | 3 | Cos | Cosine input |
| | | 4 | Sin | Sine input |
| | | 5 | Ref | Reference output |
| | | 6 | --- | --- |
| | | 7 | Cos\ | Cosine input inverted |
| | | 8 | Sin\ | Sine input inverted |
| | | 9 | Ref \ | Reference output inverted |

Table 113: Pin assignments for AC122 - Resolver Interface

ACOPOS plug-in resolver module



ACOPOSmulti plug-in resolver module

6.3.1 Pin Assignments

| Image | X1 | Pin | Description | Function in EnDat mode | Function in Incremental mode |
|-------|----|-----|----------------------------|------------------------|------------------------------|
| | | 1 | A | Channel A | Channel A |
| | | 2 | COM (1, 3- 9, 11, 13 - 15) | Encoder supply 0 V | Encoder supply 0 V |
| | | 3 | B | Channel B | Channel B |
| | | 4 | +5V out / 0.25A | Encoder supply +5 V | Encoder supply +5 V |
| | | 5 | D | Data input | --- |
| | | 6 | --- | --- | --- |
| | | 7 | R\ | --- | Reference Pulse Inverted |
| | | 8 | T | Clock output | --- |
| | | 9 | A\ | Channel A inverted | Channel A inverted |
| | | 10 | Sense COM | Sense input 0 V | Sense input 0 V |
| | | 11 | B\ | Channel B inverted | Channel B inverted |
| | | 12 | Sense +5V | Sense input +5 V | Sense input +5 V |
| | | 13 | D\ | Data Inverted | --- |
| | | 14 | R | --- | Reference Pulse |
| | | 15 | T\ | Clock output Inverted | --- |

Table 112: Pin assignments for AC120 - EnDat Encoder Interface

ACOPOS plug-in EnDat module



ACOPOSmulti plug-in EnDat module

2.3.2 Pin Assignments



| Circular connector | Pin | Description | Function | Pin | DSUB plug |
|---|-----|-------------|---------------------------|-----|---|
|  | 1 | --- | | |  |
| | 2 | --- | | | |
| | 3 | Cos | Cosine input | 3 | |
| | 4 | Sin | Sine input | 4 | |
| | 5 | Ref | Reference output | 5 | |
| | 6 | --- | | | |
| | 7 | CosI | Cosine input inverted | 7 | |
| | 8 | SinI | Sine input inverted | 8 | |
| | 9 | Ref I | Reference output inverted | 9 | |
| | 10 | --- | | | |
| | 11 | --- | | | |
| | 12 | --- | | | |

Table 83: Pin assignments for resolver cable


| Model Number | Short Description | Image |
|--------------|--|---|
| 8CR005.12-1 | Resolver cable, length 5m, 3 x 2 x 24 AWG/19, resolver plug 12-pin interconnect socket, servo plug 9-pin DSUB plug, can be used in cable drag chains, UL/CSA listed |  |
| 8CR007.12-1 | Resolver cable, length 7m, 3 x 2 x 24 AWG/19, resolver plug 12-pin interconnect socket, servo plug 9-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CR010.12-1 | Resolver cable, length 10m, 3 x 2 x 24 AWG/19, resolver plug 12-pin interconnect socket, servo plug 9-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CR015.12-1 | Resolver cable, length 15m, 3 x 2 x 24 AWG/19, resolver plug 12-pin interconnect socket, servo plug 9-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CR020.12-1 | Resolver cable, length 20m, 3 x 2 x 24 AWG/19, resolver plug 12-pin interconnect socket, servo plug 9-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CR025.12-1 | Resolver cable, length 25m, 3 x 2 x 24 AWG/19, resolver plug 12-pin interconnect socket, servo plug 9-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |

Table 57: Order data for resolver cables

2.2.2 Pin Assignments


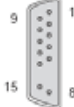
| Circular connector | Pin | Description | Function | Pin | DSUB plug |
|---|-----|-----------------------------|-----------------------|-----|---|
|  | 15 | A | Channel A | 1 |  |
| | 10 | COM (1, 3 - 9, 11, 13 - 15) | Encoder supply 0 V | 2 | |
| | 12 | B | Channel B | 3 | |
| | 7 | +5V out / 0.25A | Encoder supply +5 V | 4 | |
| | 14 | D | Data input | 5 | |
| | 8 | T | Clock output | 8 | |
| | 16 | Ai | Channel A inverted | 9 | |
| | 4 | Sense COM | Sense input 0 V | 10 | |
| | 13 | Bi | Channel B inverted | 11 | |
| | 1 | Sense +5V | Sense input +5 V | 12 | |
| | 17 | Di | Data inverted | 13 | |
| | 9 | Ti | Clock output inverted | 15 | |

Table 81: Pin assignments for EnDat encoder cables


| Model Number | Model Number | Image |
|--------------|--|---|
| 8CE005.12-1 | EnDat cable, length 5m, 10 x 0.14mm ² + 2 x 0.5mm ² , EnDat connector 17-pin interconnect socket, servo connector 15-pin DSUB plug, can be used in cable drag chains, UL/CSA listed |  |
| 8CE007.12-1 | EnDat cable, length 7m, 10 x 0.14mm ² + 2 x 0.5mm ² , EnDat connector 17-pin interconnect socket, servo connector 15-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CE010.12-1 | EnDat cable, length 10m, 10 x 0.14mm ² + 2 x 0.5mm ² , EnDat connector 17-pin interconnect socket, servo connector 15-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CE015.12-1 | EnDat cable, length 15m, 10 x 0.14mm ² + 2 x 0.5mm ² , EnDat connector 17-pin interconnect socket, servo connector 15-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CE020.12-1 | EnDat cable, length 20m, 10 x 0.14mm ² + 2 x 0.5mm ² , EnDat connector 17-pin interconnect socket, servo connector 15-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |
| 8CE025.12-1 | EnDat cable, length 25m, 10 x 0.14mm ² + 2 x 0.5mm ² , EnDat connector 17-pin interconnect socket, servo connector 15-pin DSUB plug, can be used in cable drag chains, UL/CSA listed | |

Table 55: Order data for EnDat cables

Excerpt from Wiring Section of the 8MS Motor User's Manual:

Exlar recommends part number **8CRxxx.12-1** for use with ACOPOS or ACOPOSmulti resolver module and all Exlar models using the 'M' connector option and BR1 Resolver feedback option.

Excerpt from Wiring Section of the 8MS Motor User's Manual:

Exlar recommends part number **8CExxx.12-1** for use with ACOPOS or ACOPOSmulti EnDat module and all Exlar models using the 'M' connector option and BR2 EnDat feedback option.