EcoLine

Modular wire draw encoder in miniature design

WIRE DRAW ENCODERS

SICK
Sensor Intelligence.

EcoLine
WIRE DRAW ENCODERS
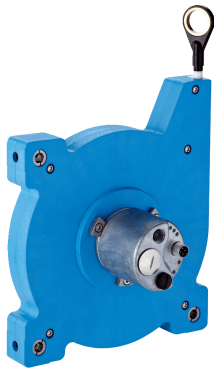
Technical data overview

Sub product family	BCG / PFG (depending on type)
Measuring range	0 m ... 10 m (depending on type)
Resolution	0.001 mm ... 0.14 mm (depending on type)
Communication interface	IO-Link / IO-Link V1.1 / COM3 (230,4 kBaud) CANopen SSI PROFINET EtherCAT® EtherNet/IP™ DeviceNet™ PROFIBUS DP Analog / Current / 4...20 mA Analog / Voltage / 0...10 V Incremental / TTL / RS-422 Incremental / HTL / Push pull Incremental / TTL / HTL

Product description

The slim design of the EcoLine family is ideal for applications with limited space.
Its modularity makes it suitable for a large selection of measuring lengths,
interfaces and encoders. Due to the into the drum integrated spring as well as the
adaption without coupling, it is possible to achieve high precision and stability.
The special nozzle serves to protect the measuring wire from damage caused by
vibration. The intuitive teach-in function provided in analog options also enables
easy system integration.

At a glance

• Measuring lengths: 1.25 m ... 10 m
• Modular measuring system with a wide selection of interfaces/measuring lengths
• Very small, slim housing (55 mm ... 190 mm) with spring integrated in the measurement drum
• Light yet shock-proof and temperature-resistant plastic housing
• Analog interface with teach-in function on encoder

Your benefits

• Space- and cost-saving design thanks to slimline mechanics
• Numerous possible combinations of interfaces and measuring lengths
• Advanced programming options lead to a reduction in the amount of variants, save costs, and reduce storage
• Analog interface speeds up commissioning and cost-effective interface card can be used

Fields of application

• Measuring height and tilt of automated guided systems
• Height measurement in small warehouse systems
• Applications in medical technology (operating tables, MRT)
• Height measurement of scissors lifting platforms
• Height measurement of overhead conveyors in the automotive industry

Ordering information

Other models and accessories ➜ www.sick.com/EcoLine

- **Measuring range:** 0 m ... 1.25 m
- **Mounted mechanic:** MRA-G055-101D4, 5324019

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
Analog / Current / 4...20 mA	Cable, radial, 1.5 m	0.05 mm [1] [2]	ACM36, ACM36-K1K0-K01, 6039751	BCG05-K1KM01PP	6039745
Analog / Voltage / 0...10 V	Cable, radial, 1.5 m	0.04 mm [1] [2]	ACM36, ACM36-L1K0-K01, 6039752	BCG05-L1KM01PP	6039746
CANopen	Male connector, M12, 5-pin, universal	0.01 mm [1] [2]	AHM36 CANopen, AHM36A-SDC-C014x12, 1067977	BCG05-C1QM0199	1068865
IO-Link / IO-Link V1.1 / COM3 (230,4 kBaud)	Male connector, M12, 4-pin, universal	0.009 mm [1] [2]	AHM36 IO-Link Advanced, AHM36A-SDQC014X12, 1101538	BCG05-Q1PM0162	1110588
		0.04 mm [1] [2]	AHM36 IO-Link Basic, AHM36B-SDQC012X12, 1092035	BCG05-Q1PM0161	1097278
Incremental / HTL / Push pull	Cable, 8-wire, universal, 1.5 m	0.06 mm [1] [3]	DBS36 Core, DBS36E-SDEK02500, 1064246	PFG05-E1KM0160	1060971
	Cable, 8-wire, universal, 5 m	0.06 mm [1] [3]	DBS36 Core, DBS36E-SDEM02500, 1072518	PFG05-E1MM0160	1072541
Incremental / TTL / RS-422	Cable, 8-wire, universal, 1.5 m	0.06 mm [1] [3]	DBS36 Core, DBS36E-SDAK02500, 1064245	PFG05-A1KM0160	1060972
	Cable, 8-wire, with male connector, M12, 8-pin, universal, 0.5 m	0.06 mm [1] [3]	DBS36 Core, DBS36E-SDAP02500, 1095510	PFG05-A1PM0160	1102769
SSI	Male connector, M12, 8-pin, universal	0.02 mm [1] [2]	AHM36 SSI, AHM36A-SDPC013X12, 1068328	BCG05-A1NM0155	1068864

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

- **Measuring range:** 0 m ... 3 m
- **Mounted mechanic:** MRA-G080-103D3, 5322778

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
Analog / Current / 4...20 mA	Cable, radial, 1.5 m	0.08 mm [1] [2]	ACM36, ACM36-K1K0-K01, 6039751	BCG08-K1KM03PP	6039747
Analog / Voltage / 0...10 V	Cable, radial, 1.5 m	0.06 mm [1] [2]	ACM36, ACM36-L1K0-K01, 6039752	BCG08-L1KM03PP	6039748

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
CANopen	Connection adapter for CANopen [3]	0.03 mm [1] [2]	ATM60 CANopen, ATM60-C1H13X13, 1030025	BCG08-C1HM0336	1061026
	Male connector, M12, 5-pin, universal	0.01 mm [1] [2]	AHM36 CANopen, AHM36A-S3C-C014x12, 1065999	BCG08-C1QM0371	1068867
DeviceNet™	Connection adapter for DeviceNet [3]	0.03 mm [1] [2]	ATM60 De-viceNet, ATM60-D1H13X13, 1030018	BCG08-D1HM0336	1061027
EtherCAT®	Male connector, 1x, M12, 4-pin, axial Female connector, 2x, M12, 4-pin, axial	0.001 mm [1] [2]	AFM60 EtherCAT®, AFM60A-S1E-B018x12, 1059061	BCG08-E1BM0399	1061030
EtherNet/IP™		0.001 mm [1] [2]	AFM60 Ether-Net/IP, AFM60A-S1IB018x12, 1055331	BCG08-I1BM0399	1061029
IO-Link / IO-Link V1.1 / COM3 (230,4 kBaud)	Male connector, M12, 4-pin, universal	0.014 mm [1] [2]	AHM36 IO-Link Advanced, AH-M36A-S3QC014X12, 1101532	BCG08-Q1PM0362	1110589
		0.06 mm [1] [2]	AHM36 IO-Link Basic, AHM36B-S3QC012X12, 1092014	BCG08-Q1PM0361	1097274
Incremental / HTL / Push pull	Male connector, M12, 8-pin, radial	0.01 mm [1] [4]	DFS60, DFS60A-S1EC16384, 1037616	PFG08-E1CM0371	1060979
	Male connector, M23, 12-pin, radial	0.01 mm [1] [4]	DFS60, DFS60A-S1EA16384, 1037615	PFG08-E1AM0371	1060981
Incremental / TTL / HTL	Male connector, M12, 8-pin, radial	0.0035 mm [1] [4]	DFS60, DFS60A-S1PC65536, 1036761	PFG08-P1CM03PP	1060984
	Male connector, M23, 12-pin, radial	0.0035 mm [1] [4]	DFS60, DFS60A-S1PA65536, 1036760	PFG08-P1AM03PP	1075495
Incremental / TTL / RS-422	Male connector, M12, 8-pin, radial	0.01 mm [1] [4]	DFS60, DFS60A-S1AC16384, 1037566	PFG08-A1CM0371	1060974
	Male connector, M23, 12-pin, radial	0.01 mm [1] [4]	DFS60, DFS60A-S1AA16384, 1037565	PFG08-A1AM0371	1060977
PROFIBUS DP	Male connector, 2x, M12, 5-pin, axial Female connector, 1x, M12, 5-pin, axial	0.03 mm [1] [2]	A3M60 PROFIBUS, A3M60B-S1P-B013X13, 1051018	BCG08-P1BM0336	1052618
PROFINET	Male connector, 1x, M12, 4-pin, axial Female connector, 2x, M12, 4-pin, axial	0.001 mm [1] [2]	AFM60 PROFINET, AFM60A-S1N-B018x12, 1059040	BCG08-N1BM0399	1061028

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
SSI	Male connector, M12, 8-pin, radial	0.03 mm [1] [2]	AFM60 SSI, AFM60B-S1AC008192, 1037863	BCG08-A1CM0336	1054131
		0.06 mm [1] [2]	AFM60 SSI, AFM60E-S1AC004096, 1037649	BCG08-A1CM0318	1054129
	Male connector, M12, 8-pin, universal	0.03 mm [1] [2]	AHM36 SSI, AHM36A-S3PC013X12, 1068330	BCG08-A1NM0336	1068866
	Male connector, M23, 12-pin, radial	0.06 mm [1] [2]	AFM60 SSI, AFM60E-S1AA004096, 1037438	BCG08-A1AM0318	1061025

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

- **Measuring range:** 0 m ... 5 m
- **Mounted mechanic:** MRA-G130-105D3, 5322779

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
Analog / Current / 4...20 mA	Cable, radial, 1.5 m	0.1 mm [1] [2]	ACM36, ACM36-K1K0-K01, 6039751	BCG13-K1KM05PP	6039749
Analog / Voltage / 0...10 V	Cable, radial, 1.5 m	0.1 mm [1] [2]	ACM36, ACM36-L1K0-K01, 6039752	BCG13-L1KM05PP	6039750
CANopen	Connection adapter for CANopen [3]	0.05 mm [1] [2]	ATM60 CANopen, ATM60-C1H13X13, 1030025	BCG13-C1HM0521	1061034
	Male connector, M12, 5-pin, universal	0.02 mm [1] [2]	AHM36 CANopen, AHM36A-S3C-C014x12, 1065999	BCG13-C1QM0543	1068869
DeviceNet™	Connection adapter for DeviceNet [3]	0.05 mm [1] [2]	ATM60 DeviceNet, ATM60-D1H13X13, 1030018	BCG13-D1HM0521	1061035
EtherCAT®	Male connector, 1x, M12, 4-pin, axial Female connector, 2x, M12, 4-pin, axial	0.001 mm [1] [2]	AFM60 EtherCAT®, AFM60A-S1E-B018x12, 1059061	BCG13-E1BM0599	1061038
EtherNet/IP™		0.001 mm [1] [2]	AFM60 EtherNet/IP, AFM60A-S1IB018x12, 1055331	BCG13-I1BM0599	1061037
IO-Link / IO-Link V1.1 / COM3 (230,4 kBaud)	Male connector, M12, 4-pin, universal	0.02 mm [1] [2]	AHM36 IO-Link Advanced, AHM36A-S3QC014X12, 1101532	BCG13-Q1PM0562	1110590
		0.09 mm [1] [2]	AHM36 IO-Link Basic, AHM36B-S3QC012X12, 1092014	BCG13-Q1PM0561	1097306

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

EcoLine
WIRE DRAW ENCODERS

Communication interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
Incremental / HTL / Push pull	Male connector, M12, 8-pin, radial	0.02 mm [1] [4]	DFS60, DFS60A-S1EC16384, 1037616	PFG13-E1CM0544	1061017
	Male connector, M23, 12-pin, radial	0.02 mm [1] [4]	DFS60, DFS60A-S1EA16384, 1037615	PFG13-E1AM0544	1061018
Incremental / TTL / HTL	Male connector, M12, 8-pin, radial	0.0058 mm [1] [4]	DFS60, DFS60A-S1PC65536, 1036761	PFG13-P1CM05PP	1061019
	Male connector, M23, 12-pin, radial	0.0058 mm [1] [4]	DFS60, DFS60A-S1PA65536, 1036760	PFG13-P1AM05PP	1075498
Incremental / TTL / RS-422	Male connector, M12, 8-pin, radial	0.02 mm [1] [4]	DFS60, DFS60A-S1AC16384, 1037566	PFG13-A1CM0544	1061015
	Male connector, M23, 12-pin, radial	0.02 mm [1] [4]	DFS60, DFS60A-S1AA16384, 1037565	PFG13-A1AM0544	1061016
PROFIBUS DP	Male connector, 2x, M12, 5-pin, axial Female connector, 1x, M12, 5-pin, axial	0.05 mm [1] [2]	A3M60 PROFIBUS, A3M60B-S1P-B013X13, 1051018	BCG13-P1BM0521	1052619
PROFINET	Male connector, 1x, M12, 4-pin, axial Female connector, 2x, M12, 4-pin, axial	0.001 mm [1] [2]	AFM60 PROFINET, AFM60A-S1N-B018x12, 1059040	BCG13-N1BM0599	1061036
SSI	Male connector, M12, 8-pin, radial	0.05 mm [1] [2]	AFM60 SSI, AFM60B-S1AC008192, 1037863	BCG13-A1CM0521	1061032
		0.09 mm [1] [2]	AFM60 SSI, AFM60E-S1AC004096, 1037649	BCG13-A1CM0511	1061031
	Male connector, M12, 8-pin, universal	0.05 mm [1] [2]	AHM36 SSI, AH-M36A-S3PC013X12, 1068330	BCG13-A1NM0521	1068868
	Male connector, M23, 12-pin, radial	0.09 mm [1] [2]	AFM60 SSI, AFM60E-S1AA004096, 1037438	BCG13-A1AM0511	1061033

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

- **Measuring range:** 0 m ... 10 m
- **Mounted mechanic:** MRA-G190-110D3, 5326242

Communication interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
Analog / Current / 4...20 mA	Male connector, M12, 5-pin, radial	0.05 mm [1] [2]	ACM60, ACM60B-S1KE13X06, 6045312	BCG19-K1EM10PP	6048294
Analog / Voltage / 0...10 V	Male connector, M12, 5-pin, radial	0.04 mm [1] [2]	ACM60, ACM60B-S1LE13X06, 6045313	BCG19-L1EM10PP	6048295

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
CANopen	Connection adapter for CANopen [3]	0.07 mm [1] [2]	ATM60 CANopen, ATM60-C1H13X13, 1030025	BCG19-C1HM1015	1061041
	Male connector, M12, 5-pin, universal	0.03 mm [1] [2]	AHM36 CANopen, AHM36A-S3C-C014x12, 1065999	BCG19-C1QM1029	1068871
DeviceNet™	Connection adapter for DeviceNet [3]	0.07 mm [1] [2]	ATM60 De-viceNet, ATM60-D1H13X13, 1030018	BCG19-D1HM1015	1061042
EtherCAT®	Male connector, 1x, M12, 4-pin, axial Female connector, 2x, M12, 4-pin, axial	0.002 mm [1] [2]	AFM60 EtherCAT®, AFM60A-S1E-B018x12, 1059061	BCG19-E1BM1099	1061045
EtherNet/IP™		0.002 mm [1] [2]	AFM60 Ether-Net/IP, AFM60A-S1IB018x12, 1055331	BCG19-I1BM1099	1061044
IO-Link / IO-Link V1.1 / COM3 (230,4 kBaud)	Male connector, M12, 4-pin, universal	0.03 mm [1] [2]	AHM36 IO-Link Advanced, AH-M36A-S3QC014X12, 1101532	BCG19-Q1PM1062	1110591
		0.14 mm [1] [2]	AHM36 IO-Link Basic, AHM36B-S3QC012X12, 1092014	BCG19-Q1PM1061	1097277
Incremental / HTL / Push pull	Male connector, M12, 8-pin, radial	0.03 mm [1] [4]	DFS60, DFS60A-S1EC16384, 1037616	PFG19-E1CM1029	1061022
	Male connector, M23, 12-pin, radial	0.03 mm [1] [4]	DFS60, DFS60A-S1EA16384, 1037615	PFG19-E1AM1029	1061023
Incremental / TTL / HTL	Male connector, M12, 8-pin, radial	0.008 mm [1] [4]	DFS60, DFS60A-S1PC65536, 1036761	PFG19-P1CM10PP	1061024
	Male connector, M23, 12-pin, radial	0.008 mm [1] [4]	DFS60, DFS60A-S1PA65536, 1036760	PFG19-P1AM10PP	1075581
Incremental / TTL / RS-422	Male connector, M12, 8-pin, radial	0.03 mm [1] [4]	DFS60, DFS60A-S1AC16384, 1037566	PFG19-A1CM1029	1061020
	Male connector, M23, 12-pin, radial	0.03 mm [1] [4]	DFS60, DFS60A-S1AA16384, 1037565	PFG19-A1AM1029	1061021
PROFIBUS DP	Male connector, 2x, M12, 5-pin, axial Female connector, 1x, M12, 5-pin, axial	0.07 mm [1] [2]	A3M60 PROFIBUS, A3M60B-S1P-B013X13, 1051018	BCG19-P1BM1015	1052620
PROFINET	Male connector, 1x, M12, 4-pin, axial Female connector, 2x, M12, 4-pin, axial	0.002 mm [1] [2]	AFM60 PROFINET, AFM60A-S1N-B018x12, 1059040	BCG19-N1BM1099	1061043

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

Communica-tion interface	Connection type	Resolution (wire draw + encoder)	Mounted encoder	Type	Part no.
SSI	Male connector, M12, 8-pin, radial	0.07 mm [1] [2]	AFM60 SSI, AFM60B-S1AC008192, 1037863	BCG19-A1CM1015	1061040
		0.14 mm [1] [2]	AFM60 SSI, AFM60B-S1AC004096, 1037869	BCG19-A1CM1007	1061039
	Male connector, M12, 8-pin, universal	0.07 mm [1] [2]	AHM36 SSI, AH-M36A-S3PC013X12, 1068330	BCG19-A1NM1015	1068870
	Male connector, M23, 12-pin, radial	0.14 mm [1] [2]	AFM60 SSI, AFM60B-S1AA004096, 1037868	BCG19-A1AM1007	1056983

[1] The values shown have been rounded.

[2] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

[3] Please order the bus adaptor seperately.

[4] Example calculation based on the PFG08 with HTL Push Pull: 230 mm (wire draw length per revolution - see Mechanical data): 16,384 (pulses per revolution) = 0.014 mm (resolution of wire draw + encoder combination).

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

WORLDWIDE PRESENCE:

Contacts and other locations –**www.sick.com**

SICK AG | Waldkirch | Germany | www.sick.com

SICK
Sensor Intelligence.