

# SERIES AI25 BiSS

# HENGSTLER

## Absolute Encoder

### Key Features

- Up to 22 Bit True Singleturn Positioning
- Onboard Diagnostics
- BiSS-B and BiSS-C Interface
- Available with Multiple Shaft Configurations
- Enclosure ratings of IP64 or IP67



## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS:

**Code:** Absolute, Optical  
**Resolution Single-turn:** 12-22 Bit  
**Resolution Multi-turn:** 12 Bit  
**Linearity:** +/- 1/2 LSB  
**Absolute Accuracy:** ± 0.01° mechanical (36 arc-sec.)  
**Repeatability:** ± 0.002° mechanical (7.2 arc-sec.)

### ELECTRICAL:

**Interface:** BiSS  
**Output Code:** Binary, Gray, Gray Excess, parameterization through AcuroSoft  
**Parameterization:** Resolution code type, sense of rotation, warning, alarm  
**Input Power:** 5 VDC +/-10% or 10-30 VDC  
**Intrinsic current consumption:** 5V: 100 mA (ST), 150 mA (MT); 10-30V: 100 mA (ST), 150 mA (MT)  
**Output Current:** 60 mA per bit, short circuit protected  
**Frequency Response (Baud Rate):** 500 kHz  
**Maximum cable length:** 400 m  
**Control Inputs:** Direction  
**Alarm Output:** Warning and Alarm bits  
**Status LED:** Green = OK, Red = Alarm (IP64 only)  
**Preset Switch:** Sets encoder to zero output at present mechanical position (IP64 only)  
**Noise Immunity:** Tested to EN61326-1  
**Electrical Immunity:** Tested to EN61326-1  
**Termination:** Cable, axial or radial;  
 M23 connector (Conin), 12 pole, axial or radial;  
 M12 connector, 8 pole, axial or radial

### MECHANICAL:

**Shaft Diameter:** 6 mm (Servo Mount), 10 mm (Clamping Mount), 3/8" (Square Flange Mount),  
**Hubshaft:** 10mm, 12 mm, 3/8", 1/2"  
**Shaft Load (axial/radial):** 40N (9lb.) / 60N (13lb.)  
**Shaft Tolerance (hubshaft only):** +/- 1.5 mm axial, +/- 0.2 mm radial  
**Shaft Load (hub shaft):** Spring Tether Tolerance: Axial ±0.5mm; Radial ±0.05mm  
**Maximum Shaft Speed:** 10,000 RPM (continuous), 12,000 RPM (peak)  
**Starting Torque:** < 1.4 in-oz  
**Housing Material:** Aluminum  
**Shaft Material:** Stainless Steel  
**Disc Material:** Glass  
**Weight:**  
 Single-Turn: approx. 9.2 oz (260 g)  
 Multi-Turn: approx. 11 oz. (310 g)

### ENVIRONMENTAL:

**Operating Temperature:** -40 °C ...+100 °C  
**Storage Temperature:** -40 °C ...+100 °C  
**Shock:** 100G, 1,000 m/s<sup>2</sup> for 6 msec  
**Vibration:** 10G, 100 m/s<sup>2</sup> (10 to 2,000 Hz)  
**Humidity:** Up to 75%, (no condensation allowed)  
**Enclosure Rating:** IP64 or IP67

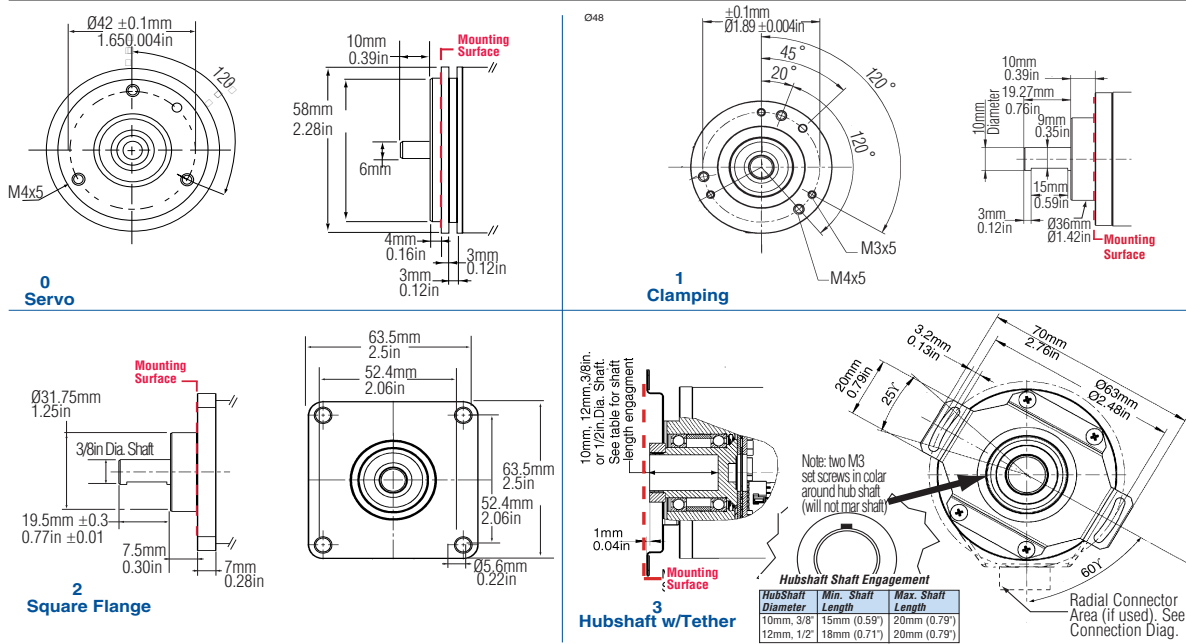
### Ordering Information

To order, complete the model number with code numbers from the table below:

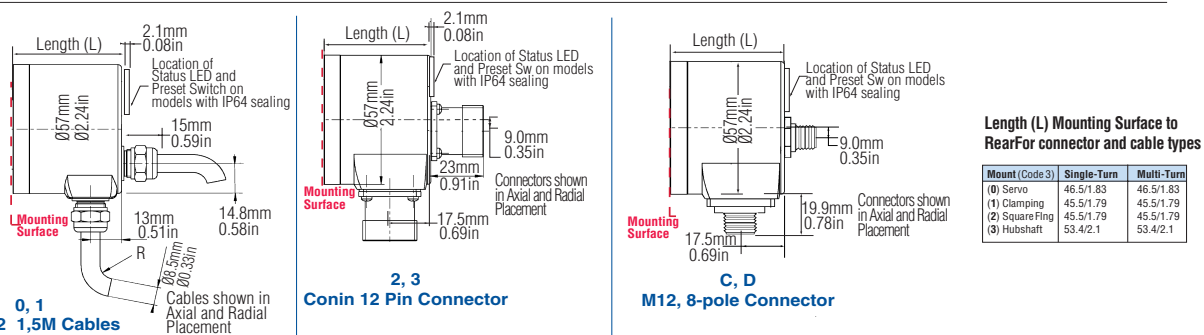
Code 1: Model	Code 2: Resolution	Code 3: Mounting	Code 4: Shaft Size	Code 5: Interface	Code 6: Output	Code 7: Termination
<b>AI25</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AI25</b> Size25 Absolute Encoder	<b>0010</b> 10 Bit ST <b>0012</b> 12 Bit ST <b>0013</b> 13 Bit ST <b>0014</b> 14 Bit ST <b>0017</b> 17 Bit ST <b>0019</b> 19 Bit ST <b>0022</b> 22 Bit ST  <b>1212</b> 12 Bit MT 12 Bit ST <b>1213</b> 12 Bit MT 13 Bit ST <b>1214</b> 12 Bit MT 14 Bit ST <b>1217</b> 12 Bit MT 17 Bit ST <b>1219</b> 12 Bit MT 19 Bit ST <b>1222</b> 12 Bit MT 22 Bit ST	Available when Code 4 is 0 or A  <b>0 Servo*</b>  Available when Code 4 is 1, 2 or B, C  <b>1 Clamping*</b> <b>2 Square Flange**</b>  Available when Code 4 is 3, 4, 5 or 6  <b>3 Hubshaft w/ Tether†</b>  * 58mm Dia. ** 2.5" Square † 63mm BC	<b>w/o shaft seal (IP64)</b> <b>0</b> 6 mm <b>1</b> 3/8" <b>2</b> 10 mm <b>3</b> 3/8" Hubshaft <b>4</b> 12 mm Hubshaft <b>5</b> 1/2" Hubshaft <b>6</b> 10mm Hubshaft  <b>w/ shaft seal (IP67)</b> <b>A</b> 6 mm <b>B</b> 3/8" <b>C</b> 10 mm  Available only when Code 2 is ST (Single Turn)  <b>K</b> 1/4" Hubshaft	<b>A</b> BiSS-B ( <b>BI</b> ) <b>L</b> BiSS-B (+Sin- Cos 1Vpp) ( <b>BC</b> )  <b>M</b> BiSS-C ( <b>BE</b> ) <b>N</b> BiSS-C (+Sin- Cos 1Vpp) ( <b>BV</b> )	<b>0</b> 5 VDC <b>2</b> 10-30 VDC	<b>0</b> Cable, axial <b>1</b> Cable, radial <b>2</b> M23 Conin 12 pin axial, CW <b>3</b> M23 Conin 12 pin radial, CW <b>4</b> M23 12 pin axial, CCW <b>5</b> M23 12 pin radial, CCW <b>C</b> M12 , 8-pole connector axial <b>D</b> M12 , 8-pole connector radial

### DIMENSIONS

Code 3: Mounting



Code 7: Connector



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## ELECTRICAL CONNECTIONS

M23 connector (Conin), 12 pole / cable  
Interface BE and BI

Cable	M23 (Conin)	Signal
brown <sup>3</sup>	1	0 V (supply voltage)
pink	2	Data
yellow	3	Clock
	4	N.C.
blue	5	$\overline{\text{Direction}}$ <sup>1</sup>
red	6	N.C.
violet	7	N.C.
white <sup>3</sup>	8	DC 5/ 10 - 30 V
	9	N.C.
grey	10	$\overline{\text{Data}}$
green	11	$\overline{\text{Clock}}$
black	12	0 V-signal output <sup>2</sup>

<sup>1</sup>  $\overline{\text{Direction}}$ : UB or unconnected = ascending code values with rotation cw  
0 V = descending code values with rotation cw

<sup>2</sup> Connected with 0 V in the encoder.

Use this output to lay Direction on "0V" if required.

<sup>3</sup> use only thin wires  $\varnothing = 0.14$  mm)

M23 connector (Conin), 12 pole / cable  
Interface BC, BV

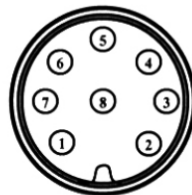
Cable	M23 (Conin)	Signal
brown <sup>2</sup>	1	0 V (supply voltage)
pink	2	Data
yellow	3	Clock
white/green	4	A+
blue	5	$\overline{\text{Direction}}$ <sup>1</sup>
red/blue	6	B+
brawn/green	7	A-
white <sup>2</sup>	8	DC 5/10 - 30 V
grey/pink	9	B-
grey	10	$\overline{\text{Data}}$
green	11	$\overline{\text{Clock}}$
black	12	Sense

<sup>1</sup>  $\overline{\text{Direction}}$  : +UB or unconnected = ascending code values with rotation cw  
0 V = descending code values with rotation cw

<sup>2</sup> use only thin wires ( $\varnothing = 0.14$  mm)

### 8 pole M12

Colour	Pin	Signal
white	1	DC 10 - 30 V
brown	2	0 V
	3	N.C.
green	4	$\overline{\text{Clock}}$
pink	5	Data
yellow	6	Clock
blue	7	$\overline{\text{Direction}}$ <sup>1</sup>
grey	8	$\overline{\text{Data}}$



View on  
connector

<sup>1</sup>  $\overline{\text{Direction}}$ : + UB or unconnected = ascending code values with rotation cw  
0 V = descending code values with rotation cw

12 pin CONIN Connector	<b>Part Number: G3 539 202</b>
Bulk Cable (sold by the meter)	<b>Part Number: 113101-0001</b>
Cable Assembly (with Connector)	
3 meters	<b>Part Number: G1 542 003</b>
5 meters	<b>Part Number: G1 542 004</b>
10 meters	<b>Part Number: G1 542 005</b>
8 pin M12 Connector	<b>Part Number: G3 539 597</b>
Bulk Cable (sold by the meter)	<b>Part Number: G3 280 220</b>
Cable Assembly (with Connector)	
3 meters	<b>Part Number: G1 565 329</b>
5 meters	<b>Part Number: G1 565 330</b>
10 meters	<b>Part Number: G1 565 331</b>

**INDUSTRIAL DUTY**

# HENGSTLER

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