

SERIES AI25 Parallel

HENGSTLER

Absolute Encoder

Key Features

- Up to 14 Bit of Singleturn and 12 Bits of True Multiturn Absolute Positioning
- Onboard Diagnostics
- Parallel Interface
- Available with multiple shaft configurations
- Enclosure ratings of IP64 or IP67



E321846



SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS:

Code: Absolute, Optical
Resolution Single-turn: 12-22 Bit
Resolution Multi-turn: 12 Bit
Absolute Accuracy: $\pm 0.01^\circ$ mechanical (36 arc-sec.)
Repeatability: $\pm 0.002^\circ$ mechanical (7.2 arc-sec.)

ELECTRICAL:

Interface: Parallel
Output Code: Binary, Gray, Gray Excess
Input Power: 5 VDC -5%/+10% or 10-30 VDC
Intrinsic Current Consumption: 5V: 150 mA (ST), 300 mA (MT); 10-30V: 200 mA (ST), 300 mA (MT)
Output Current: 60 mA per bit, short circuit protected on single-turn, 1.5m cable.
Frequency Response (Baud Rate): 500 kHz on single-turn, 1.5m cable. **Update Rate:** 1mHz for Single-turn; 100kHz for Multi-turn
Latch Delay: 20 μ Sec.
Alarm Output: NPN open collector max 5 mA
Maximum Cable Length: 100 m
Status LED: Green = OK, Red = Alarm (IP64 only, not available on connector type J)
Preset Switch: Sets encoder to zero output at present mechanical position (Multi-turn IP64 only, not available on connector type J)

ELECTRICAL (Cont.)

Control Inputs: Latch, Direction, Tri-state (see table below)
Noise Immunity: Tested to EN 61326-1
Electrical Immunity: Tested to EN 61326-1
Termination: Cable, Conin Connector, MS Connector, Cable with Sub-D Connector (MT only)

Control Inputs		
Input	Logic Level	Function
Direction	1	Ascending code values when turning clockwise
	0	Descending code values when turning clockwise
Latch	1	Encoder data continuously changing at output
	0	Encoder data stored and constant at output
Tristate (ST)	1	Outputs active
	0	Outputs at high impedance (Tristate mode)
Tristate (MT)	1	Outputs at high impedance (Tristate mode)
	0	Outputs active

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
Maximum Shaft Speed: 10,000 RPM (continuous), 12,000 RPM (peak)
Starting Torque: < 1.4 in-oz
Weight (approx.): 350 g ST, 400 g MT
Housing Material: Aluminum
Shaft Material: Stainless Steel
Disc Material: Glass

Weight:
 Single-Turn: approx. 12.3 oz (350 g)
 Multi-Turn: approx. 14.1 oz. (400 g)

ENVIRONMENTAL:

Operating Temperature: -40 °C ... +100 °C
Storage Temperature: -40 °C ... +100 °C
Shock: 1,000 m/s² for 6 msec
Vibration: 100 m/s² (10 to 2,000 Hz)
Humidity: Up to 75%, (no condensation allowed)
Enclosure Rating: IP64 or IP67



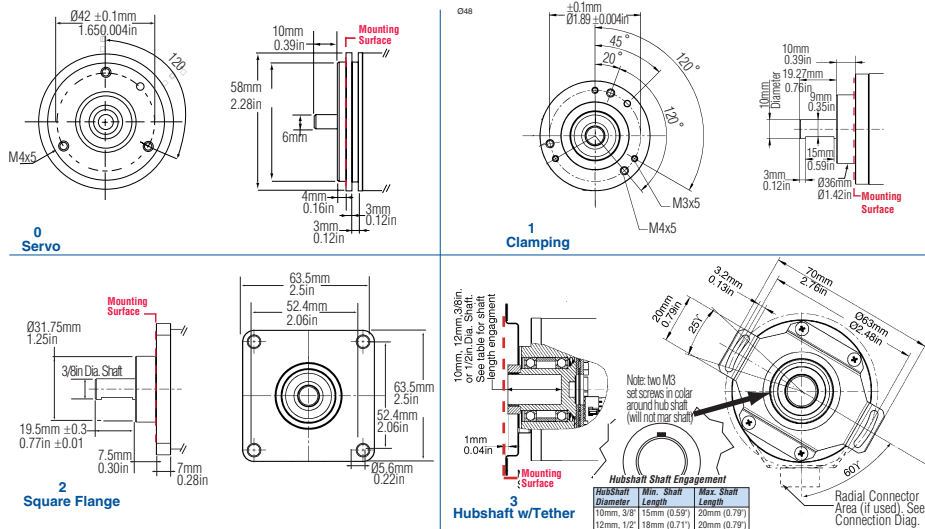
Ordering Information

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

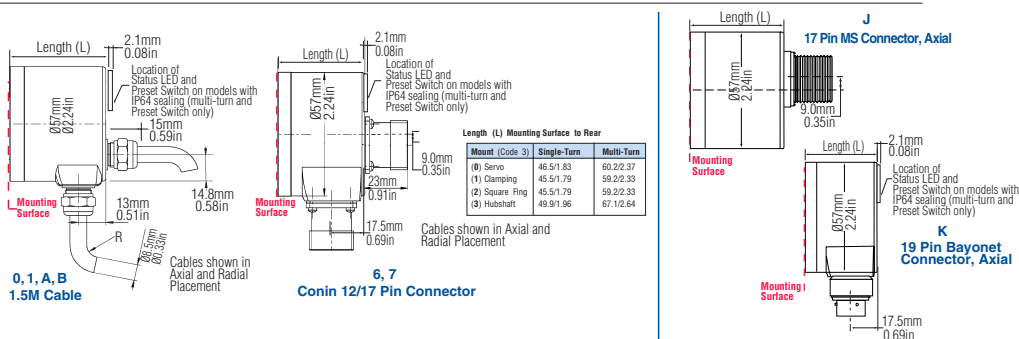
Code 1: Model	Code 2: Resolution	Code 3: Mounting	Code 4: Shaft Size	Code 5: Interface	Code 6: Electrical	Code 7: Termination
AI25	□□□□	□	□	□	□	□
AI25 Size25 Absolute Encoder	0010 10 Bit ST 0012 12 Bit ST 0013 13 Bit ST 0014 14 Bit ST 0360 360 PPR (Gray excess) 0720 720 PPR (Gray excess) Available when Code 6 is 2 0412 4 Bit MT 12 Bit ST 0812 8 Bit MT 12 Bit ST 1212 12 Bit MT 12 Bit ST	Available when Code 4 is 0 or A 0 Servo* Available when Code 4 is 1, 2 or B, C 1 Clamping* 2 Square Flange** Available when Code 4 is 3, 4, 5 or 6 3 Hubshaft w/ Tether† * 58mm Dia. ** 2.5" Square † 63mm BC	w/o shaft seal (IP64) 0 6 mm 1 3/8" 2 10 mm 3 3/8" Hubshaft 4 12 mm Hubshaft 5 1/2" Hubshaft 6 10 mm Hubshaft w/ shaft seal (IP67) A 6 mm B 3/8" C 10 mm	0 Parallel Binary 1 Parallel Gray	0 5 VDC 2 10-30 VDC	0 Cable, axial 1 Cable, radial Available when Code 2 is 00XX, 0360 or 0720 6 M23 Conin 17 pin axial, CW 7 M23 Conin 17 pin radial, CW 8 17 pin Conin axial, CCW 9 17 pin Conin radial, CCW Available when Code 2 is 1212 A Cable 1.5m radial w/37 pin sub-D B Cable 1.5m axial w/37 pin sub-D Available when Code 2 is 00XX. Status LED and Preset Switch features not available with "J" J 17 pin MS axial Available when Code 2 is 00XX or 0720 K 19 pin Bayonet radial

DIMENSIONS

Code 3: Mounting



Code 7: Connector



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Explanation of Terms		
Tristate	+UB =	Outputs at high impedance (Tristate mode)
	0 V ²⁾ =	Outputs active
Tristate	+UB ²⁾ =	Outputs active
	0 V =	Outputs at high impedance (Tristate-Mode)
Latch	+UB ²⁾ =	Encoder data continuously changing at output
	0 V =	Encoder data stored and constant at output
Direction	+UB ²⁾ =	Ascending code value when turning cw
	0 V =	Descending code value when turning cw
N.C.	=	Not Connected
LSB	=	Least Significant Bit
MSB	=	Most Significant Bit
S0, S1, ...	=	Data bits for resolution per turn
M0, M1, ... (Multiturn)	=	Data bits for number of turns

2) Or unattached (floating)

PVC-cable (Singleturn) 9-12 Bit			
Color	9 Bit / 360 ³⁾	10 Bit/720 ³⁾	12 Bit
brn/gry	N.C.	N.C.	S0 (LSB)
red/blu	N.C.	N.C.	S1
vio	N.C.	S0 (LSB)	S2
wht/brn	S0 (LSB)	S1	S3
wht/grn	S1	S2	S4
wht/yel	S2	S3	S5
wht/gry	S3	S4	S6
wht/pnk	S4	S5	S7
wht/blu	S5	S6	S8
wht/red	S6	S7	S9
wht/blk	S7	S8	S10
brn/grn	S8 (MSB)	S9 (MSB)	S11 (MSB)
yel	Tristate D0...D8	Tristate D0...D9	Tristate D0... D11
pnk	Latch ⁴⁾	Latch ⁴⁾	Latch ⁴⁾
grn	Direction	Direction	Direction
blk	0 V	0 V	0 V
red	5/10...30VDC	5/10...30VDC	5/10...30VDC
brn	Alarm	Alarm	Alarm

3) Increments 4) Binary Only

Connector 17pol. (CONIN) 9-12 Bit			
Pin	9 Bit / 360 ³⁾	10 Bit / 720 ³⁾	12 Bit
1	S0 (LSB)	S0 (LSB)	S0 (LSB)
2	S1	S1	S1
3	S2	S2	S2
4	S3	S3	S3
5	S4	S4	S4
6	S5	S5	S5
7	S6	S6	S6
8	S7	S7	S7
9	S8 (MSB)	S8	S8
10	N.C.	S9 (MSB)	S9
11	N.C.	N.C.	S10
12	Tristate S0...S8	Tristate S0...S9	S11 (MSB)
13	Latch ⁴⁾	Latch ⁴⁾	Latch ⁴⁾
14	Direction	Direction	Direction
15	0 V	0 V	0 V
16	5/10...30VDC	5/10...30VDC	5/10...30VDC
17	Alarm	Alarm	Alarm

3) Increments 4) Binary Only

CONNECTOR WIRING

Connector 17pol. (CONIN) 13-14 Bit		
Pin	13 Bit	14 Bit
1	S12 (MSB)	S13 (MSB)
2	S11	S12
3	S10	S11
4	S9	S10
5	S8	S9
6	S7	S8
7	S6	S7
8	S5	S6
9	S4	S5
10	S3	S4
11	S2	S3
12	S1	S2
13	S0 (LSB)	S1
14	Direction	S0 (LSB)
15	0 V	0 V
16	5/10...30VDC	5/10...30VDC
17	Latch (Binarycode) Alarm (Graycode)	Latch (Binarycode) Alarm (Graycode)

TPE-cable (Multiturn 13-14 Bit) 37 pol. Sub-D		
Color	Pin	
brn	2	S0
grn	21	S1
yel	3	S2
gry	22	S3
pnk	4	S4
vio	23	S5
gry/pnk	5	S6
red/blu	24	S7
wht/grn	6	S8
brn/grn	25	S9
wht/yel	7	S10
yel/brn	26	S11
wht/gry	8	M0
gry/brn	27	M1
wht/pnk	9	M2
pnk/brn	28	M3
wht/blu	14	M4
brn/blu	33	M5
wht/red	15	M6
brn/red	34	M7
wht/blk	16	M8
brn/blk	35	M9
gry/grn	17	M10
yel/gry	36	M11
pnk/grn	18	Alarm
yel/pnk	10	Direction
grn/blu	30	Latch
yel/blu	12	Tristate
red	13	10...30 VDC
wht	31	10...30 VDC
blu	1	0 V
blk	20	0 V

MS style 17 pin connectors

PVC-cable (Singleturn 13-14 Bit)

4) Binary Only

Bayonet style 19 pin connectors

Pin	Function 14 Bit 16384 CPR	112077 Cable Accessory* Color Code	Function 13 it 8192 CPR	112076 Cable Accessory* Color Code	Function		110158 Cable Accessory* Color Code
					12 Bit 4096 CPR	10 Bit 1024 CPR	
A	S13 (MSB)	White/Black/Brown	S12	White/Black/Brown	S11 (MSB)	S9 (MSB)	White/Black/Brown
B	S12	White/Grey	S11	White/Grey	S10	S8	White/Grey
C	S11	White/Violet	S10	White/Violet	S9	S7	White/Violet
D	S10	White/Blue	S9	White/Blue	S8	S6	White/Blue
E	S9	White/Green	S8	White/Green	S7	S5	White/Green
F	S8	White/Orange	S7	White/Orange	S6	S4	White/Orange
G	S7	White/Yellow	S6	White/Yellow	S5	S3	White/Yellow
H	S6	White/Red	S5	White/Red	S4	S2	White/Red
J	S5	White/Brown	S4	White/Brown	S3	S1	White/Brown
K	S4	White/Black	S3	White/Black	S2	S0 (LSB)	White/Black
L	S3	Brown	S2	Blue	S1	N.C.	White
M	S2	Blue	S1	White	S0 (LSB)	N.C.	Grey
N	S1	White	S0 (LSB)	Grey	N.C	N.C.	
P	S0 (LSB)	Grey	GND	Black	GND		Black
R	Direction	Orange	Direction	Orange	Direction		Orange
S	Case	Violet	Case	Violet	Case		Violet
T	GND	Black	GND	Yellow	GND		Yellow
U	Latch	Green	Latch	Green	Latch (binary only)		Green
V	Vin	Red	Vin	Red	Vin		Red
10ft Cable # 112077-0010			10ft Cable # 112076-0010		10ft Cable # 110158-0010		
Mating Connector: 19 pin Bayonet style PT06E-14-19S part # 606219-0001							