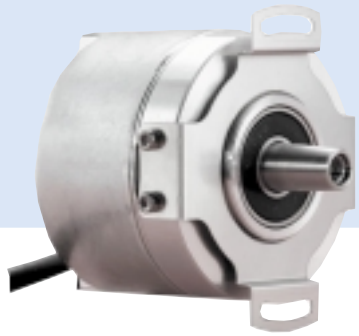
Series AD25 Drive

- *For high performance BLDC Motors*
- *Up to 22 Bit Single-turn Resolution*
- *4096 Revolutions of Multi-turn Resolution*
- *Safety through self-diagnostics*
- *Data storage on the encoder*
- *Tapered Shaft*
- *-15°C to +120°C Operation*

CE

ACURO



APPLICATION/INDUSTRY

Fully digital position information with up to 22 Bit Single-turn + 12 Bit Multi-turn resolution for speed and position applications.

DESCRIPTION

The ***Acuro AD25*** is an optical absolute encoder with an optical multi-turn gearbox (non magnetic). Double ball bearing design with flexible spring tether as a torque support. Designed for integration into BLDC servomotors for demanding applications such as CNC, precision positioning and high quality printing. Low current consumption of 85 mA contributes to lowering the drive cost.

The ***AD25*** features new, fully digital technology ... Conventional top of the range absolute encoders for motor feedback still provide analog sinusoidal signals to feedback the speed and position of the motor. This information is transmitted over a bidirectional synchronous interface with a variable clock rate up to 10 MHz, resulting in over 4 million measuring steps.

BiSS Interface

BiSS is a new, fully-digital and bi-directional sensor interface. It defines communication between one master and several slaves (sensors) in industrial control systems. BiSS manifests a new standard in technology and is available license-free. Due to its high performance, it constitutes an efficient alternative to the standard combination of data interface and analog sine/cosine incremental output.

BiSS needs only 6 wire, does not require any hardware for analog signals (cables and drive interpolation electronics) - and therefore, helps to reduce system costs.

Self-configuration capabilities allow "plug+play" and keep the system in an operable condition even after a power failure. For more detailed information on BiSS and implementation support please visit www.biss-ic.de

FEATURES AND BENEFITS

- Compact design to save valuable space
- Low power consumption
- Fast delivery of any model variant
- High Speed digital interface BiSS
- Downward compatible (SSI + sincos)
- PCB connector

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Supply Voltage: 5 VDC, +10% / –5%
Current Consumption (w/o output current):
Single-turn: ≤ 45 mA (at 5V)
Multi-turn: ≤ 85 mA (at 5V)
Absolute Accuracy: ± 0.01° mechanical (36 arc-sec.)
Repeatability: ± 0.002° mechanical (7.2 arc-sec.)
Connection: 1 ft. Cable (30 cm)
Incremental Signals (SSI models only)
Resolution: 2048
Format: A, B Quadrature,1 Vpp Sine wave
SSI Interface
Resolution:
Single-turn: 13 Bits
Multi-turn resolution: 12 Bits
Interface:
Number of lines: 4 unidirectional (2 for clock; 2 for data)
Electrical Interface: RS 422
Transmission speed: 70 kHz to 2 MHz per SSI definition
BiSS Interface
Resolution:
Single-turn resolution: 22 Bits
Multi-turn resolution: 12 Bits
Interface:
Signals: Clock unidirectional (from master to encoder); Data unidirectional (from encoder to master)
Electrical Interface: RS 422
Number of lines: 4 unidirectional (2 for clock and 2 for data)
Transmission speed: 70 kHz – 10 MHz
Transmission security: 1 start bit, 1 stop bit, 4 Bit CRC
Diagnostic functions: possible failure modes are constantly checked with the following functions
LED current sensing: Pollution, condensation, over-temperature
Single-step check: Disk pollution or damage, condensation, mechanical overload
Temperature monitoring: Warning message if the user-defined limits have been reached/ exceeded

For further information on the BiSS interface please consult: http://www.biss-ic.de/

MECHANICAL

Shaft Size:
Tapered solid shaft: 10 mm diameter; Cone 1:10
Tapered hub shaft: 10 mm diameter; Cone 1:10
Shaft Loading: 5 lb axial, 20 lb radial
Shaft Speed: 12,000 RPM (continuous), 15,000 RPM (peak-ST only)
Starting Torque: < 1.4 in-oz
Weight: 6.2 oz.
Diameter: 2.28"
Length: 1.85"

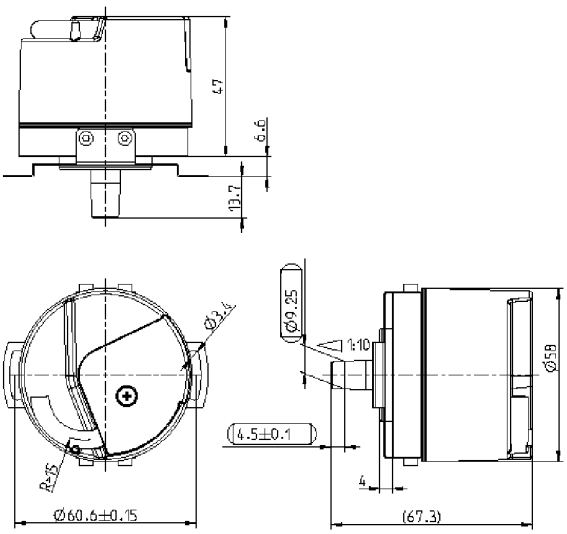
ENVIRONMENTAL

Operating Temperature: -15 to +120° C
Storage Temperature: -25 to +85° C (due to packaging)
Enclosure Rating: IP40
Shock: 100 g's for 6 msec duration
Vibration: 10 g's (10 to 2000 Hz)

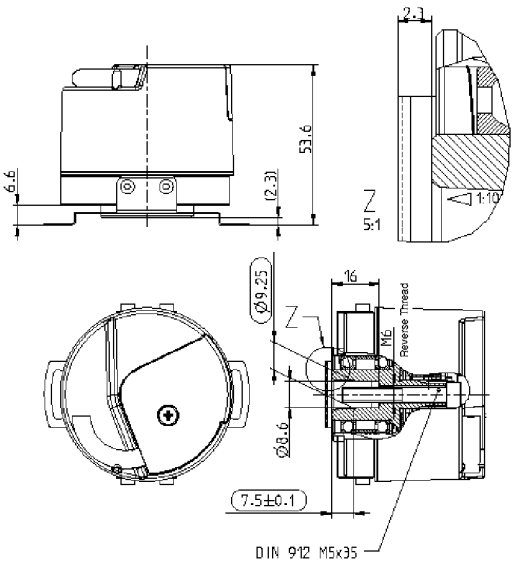
Code 1: Model	Code 2: Bits	Code 3 :Mounting	Code 4: Shaft Size	Code 5: Protocol	Code 6: Electrical	Code 7: Connector
AD25	☐☐☐☐	☐	☐	☐	☐	☐
AD25 Size25 Acuro Absolute Encoder	**Single-Turn** **0013** 13 Bit **0022** 22 Bit **Multi-Turn** **1213** 12 Bit Multi-Turn, 13 Bit Single-Turn **1222** 12 Bit Multi-Turn, 22 Bit Single-Turn	**4** Spring Tether	**Y** 10mm Shaft (10:1 Taper) **Z** 10mm Hub Shaft (10:1 Taper)	Available when Code 2 is 0022 or 1222 **A** BiSS Available when Code 2 is 0013 or 1213 **F** SSI-Gray Code, + 1Vpp	**0** 5 VDC	**M** Drive cable, 1 foot (30 cm)

Series AD25 Drive

Code 4: Shaft Size



Y
10mm (10:1 taper) Shaft



Z
10mm Hub Shaft

Electrical Connections

Row b	U_p	Clock	B -	0V (U_n)*	A -	Data
Row a	$\overline{\text{Data}}$	A +	0V Sensor	B +	$\overline{\text{Clock}}$	Up - Sensor
PIN	1	2	3	4	5	6

PIN	1b	2b	3b	4b	5b	6b
Name	Power Supply	Clock	B -	0 V (U_n)	A -	Data
Signal	**Up**	**Clk**	**B -**	**0 V**	**A -**	**Dat**
Color	Gray/Pink	White	Red	White/Green	Yellow	Black

PIN	1a	2a	3a	4a	5a	6a
Name	$\overline{\text{Data}}$	A +	0 V -Sen	B +	$\overline{\text{Clock}}$	U_p Sensor
Signal	**$\overline{\text{Dat}}$**	**A +**	**0V - Sen**	**B +**	**$\overline{\text{Clk}}$**	**U_p-Sen**
Color	Violet	Green	Brown/Green	Blue	Brown	Blue/Red

U_p = power Supply
Sensor is connected to Power Supply and 0 V (U_n)
Shield connected to case