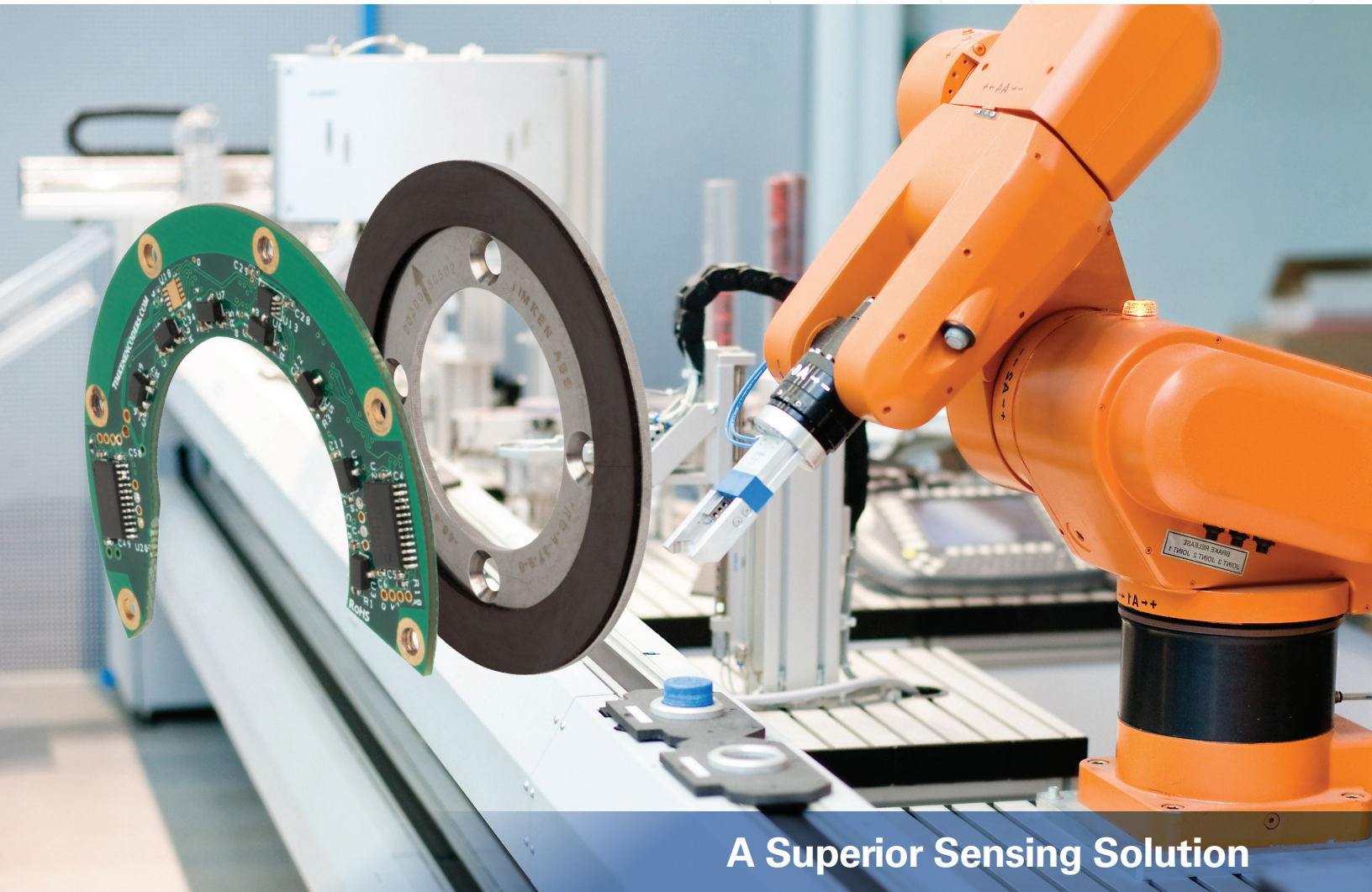


TIMKEN

49MM DUAL ABS KIT MAGNETIC ENCODERS



A Superior Sensing Solution

Timken® absolute position magnetic encoder technology offers clear operational and cost benefits over other commonly used technologies. Our superior sensing products provide reliable speed and position data even in demanding operating environments.

Greater reliability, ease of installation and a flexible, compact design are why you should select Timken® 49mm dual ABS kit magnetic encoders.

RELIABILITY: To ensure the product's reliability, target-to-shaft alignment must be accurate. We compensate for target-to-chip misalignment with our dual sensor design. The encoders dual configuration has two opposing sensor chips (patent pending). The sensor chips combine and average signals for greater accuracy and reliability. The dual sensor encoder also has the capability to handle larger tolerance demands. Our latest encoder now has more capability in the same compact space.

INSTALLATION: Easier installation is another plus for using Timken encoders. Standard encoders need to be calibrated at installation. Timken® 49mm ABS kit magnetic encoders are ready for installation. No calibration is needed.

FLEXIBLE DESIGN: The encoder's higher mechanical tolerance and wider air gap make it the right fit for compact joints. By making the design flexible, and increasing the encoder's mechanical tolerance, the product can operate with precision through an extended lifecycle.

APPLICATIONS: Cobots and other robotic applications, and frameless servo motors where an absolute position encoder is required.

49MM DUAL ABS KIT MAGNETIC ENCODERS FULL DATA

MECHANICAL SPECIFICATIONS	Hub Material	400 series stainless steel	Air Gap: Magnet to Sensor Chip Nominal / Ideal: 0.35 – 0.80 mm Minimum: 0.015 mm Maximum: 1.2 mm
	Magnet Material	Nitrile bonded ferrite	
	Connector	8 pin Molex 0532617008	
	Mating Connector	8 pin Molex 0510210800	
	Max Speed	6,000 RPM	
	Target Mass	15.77 g	
	PCB Mass	3.1 g	
ENVIRONMENTAL SPECIFICATIONS	Operating Temperature	-30° – 85°C	
	Humidity	0 - 90 % non-condensing	
	External Bias Field	12 mT (External fields over 50 mT can permanently damage the magnetic target)	
	ESD Protection	6kV	
SYSTEM SPECIFICATIONS	Protocol	BiSS-C Waveforms (N=resolution for single turn; n=16+resolution for multi turn)	* Based on factory filter selection
	Interface	SSI, BiSS	
	Resolution	19bit	
	Positional Accuracy	16-19bits	
	Max Sampling Rate	18 khz	
	Max Refresh Rate	44 khz	
	Signal Latency	50, 150, 200 uS *	

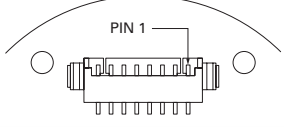
ELECTRICAL SPECIFICATIONS		Min.	Typical	Max.	Units
	Supply Voltage	4.5	5.0	5.5	V
	Current Draw	72	92	112	mA
	Output Voltage	0	5.0	5.5	V
	Output Current			+/-60	mA
	Data Clock	2.4	2.5	2.6	MHz
	Data Rate			44	kHz

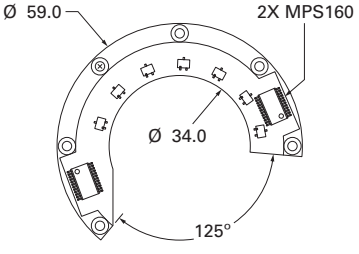
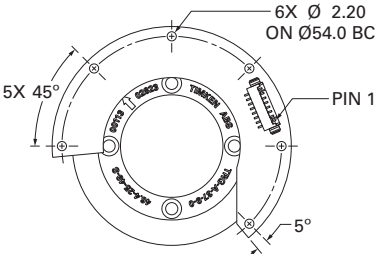
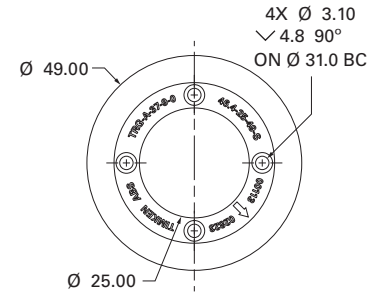
BISS-C INTERFACE	
BiSS-C Waveforms (N=resolution for single turn; n=16+resolution for multi turn) *For bidirectional BiSS-C, please refer to: http://biss-interface.com/download/biss-c-protocol-description-english	

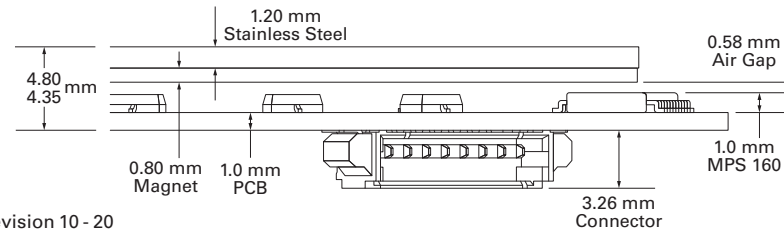
BISS-C TIMING CHARACTERISTICS	Parameter	Symbol	Min.	Typical	Max.	Unit	Note
	First Data Shifted to Output Register	t_{FE}	2.75			μs	
	Idle Time	t_{IC}	15			μs	
	Data Output Valid	t_{DO}			80	ns	
	Clock Pulse Width	$t_{CLK/2}$		400		ns	
	Clock Frequency	f_{CLK}	2.4	2.5	2.6	MHz	Other frequencies also available
	Line Delay			2.8		μs	
	ACK			7		Bits	At 2.5MHz

DATA FRAME BIT DEFINITIONS	Field	Description
	Dn-1:D0 n=19 for 19 bit single turn resolution n= 19+16 for 19 bit with 16 bit turns counter	ABS Data output, MSB first For Multi-turn output: Dn-1: Dn-16 are 16bit turn counter data; Dn-16: D0 are single turn ABS data
	ERR	Error Flag: signal error / Turn counter past 90° – LED goes Red
	ALM	Alarm Flag: ABS data Alarm – Air gap out of range – LED goes Red
	C5:C0	CRC Bits. CRC polynomial: $x^6 + x + 1$, inverted

MULTI TURN COUNTER: The sensor will count turns when power is on. The sensor records its position when powered down. If the sensor is powered on within 90 degrees of the power down position the sensor will retain the turns counter information. If the sensor powers on more than 90 degrees from the power down position the sensor will set a turns counter flag , turn on the red LED and clear the turns count total. The user clears the turns counter flag through a BiSS command or by power cycling. 1. Write 0xCD to register 0x48 2. Write 0xCD to register 0x14.
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CONNECTOR PINOUT	Pin #	1	2	3	4	5	6	7	8	
	Symbol	V_{dd}	GND	NC	NC	MA+	MA-	SLO+	SLO-	



Air Gap: Magnet to Sensor Chip
Nominal / Ideal: 0.35 – 0.80 mm
Minimum: 0.015 mm
Maximum: 1.2 mm

Mounting Recommendations
Sensor PCB
Fastener: M2 Screw, ISO 7045 (DIN 7985)
Torque (Max): 0.28 N-m
Magnetic Target
Fastener: M2.5, ISO 7046 (DIN 965)
Torque (Max): 0.80 N-m

Revision 10 - 20

ORDERING INFORMATION

Configuration Example

ABS-49 - 19 - B - C - 2 - 10 - 0

Type	49 mm OD	Resolution (Bits)	Interface	Interface Description	Connection	Connection Description	Sensors	Filter	Filter Speed	Options	Option Description
ABS	49	16	B	BiSS	C	Connector	2	10	10 RPM	0	None
		17	S	SPI	W	Flying Leads	1	100	100 RPM	1	Conformal Coated PCB
		18	U	UART				1000	1000 RPM		
		19									

More details regarding specifications, installation and instructions available at www.timkenencoders.com.

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets bearings, gear drives, automated lubrication systems, belts, brakes, clutches, chain, couplings, linear motion products and related power transmission rebuild and repair services.

www.timkenencoders.com

Stronger. By Design.