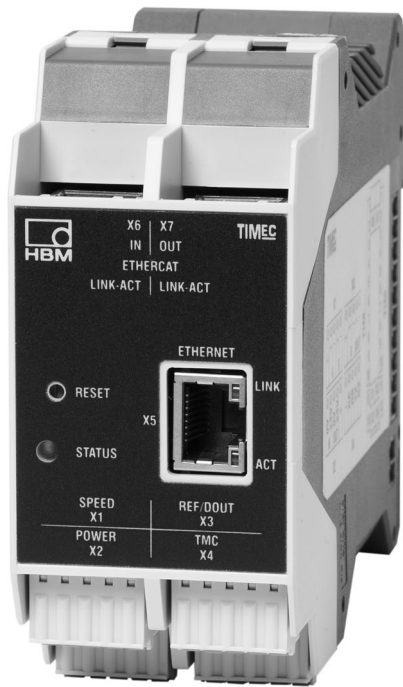


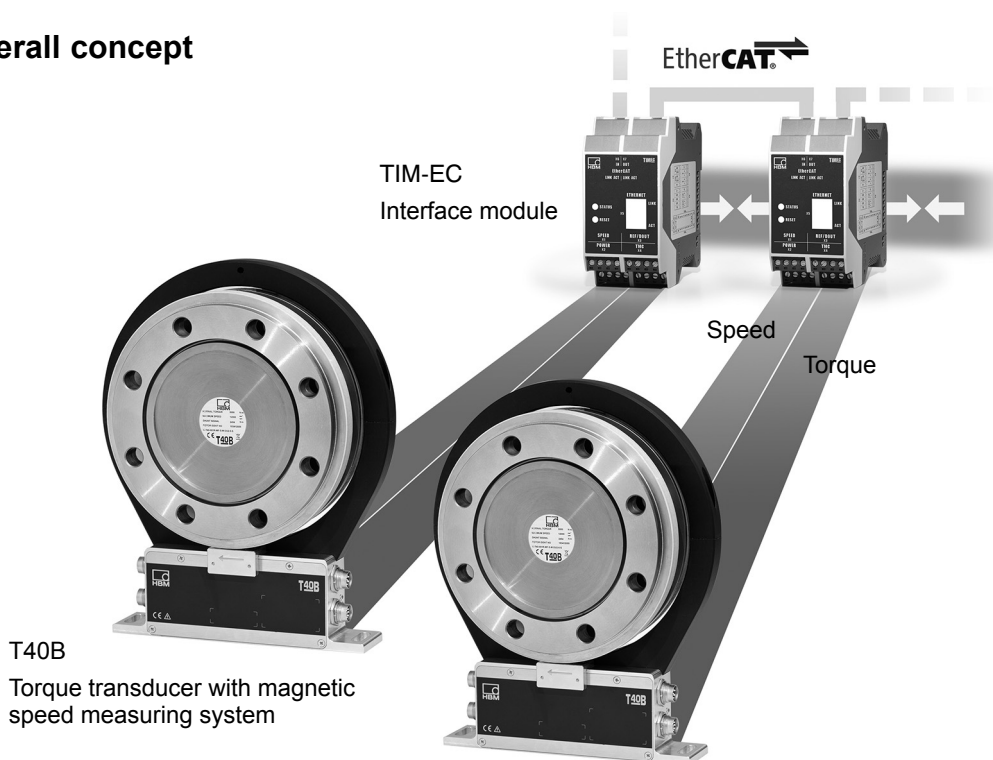
EtherCAT interface module TIM-EC

Characteristic features



- Real-time EtherCAT interface module
- Output of torque, speed, angle of rotation and performance
- Very high dynamics (up to 20 kHz)
- Input resolution up to ± 25 Bit
- Low latency time
- Diagnostic functions
- Integrated web server
- Flexible deployment
- Modular design, expandable

Overall concept



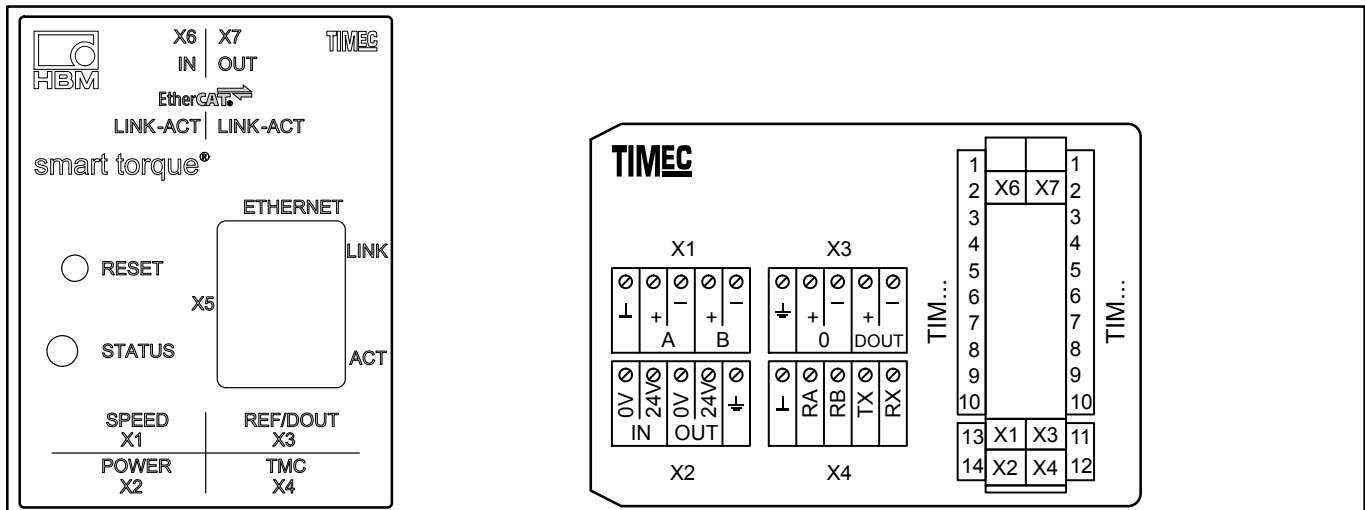
Specifications

Type	TIM-EC	
Supply		
Supply voltage	V _{DC}	24 ± 10%
Galvanic isolation Torque, speed, EtherCAT. Ethernet and supply voltage are electrically isolated from each other		
Isolation voltage	V	500
Voltage discontinuity Test based on PLC standard DIN EN 61131-2: 24 V -10%	ms	10
Power consumption Without supply to transducers	W	< 5
Communication interface		
Ethernet Data connection Protocol/addressing Plug connection Line length Cable type (minimum requirements)	m	IEEE 802.3, 10Base-T / 100Base-TX TCP/IP (direct address or DHCP), HTTP, UDP RJ45, 8-pin ≤ 100 Cat-5, SFTP
EtherCAT Function Data connection Plug connection Line length Cable type (minimum requirements) Baud rate Refresh rate	m Mbit/s kHz	EtherCAT Slave IEEE 802.3, 100Base-TX RJ45 socket, shielded ≤ 100 Cat-5, shielded ≤ 100 ≤ 20
Ambient conditions		
Nominal (rated) temperature range		+10 ... +60
Operating temperature range	°C	-10 ... +60
Storage temperature range		-20 ... +70
Permissible rel. air humidity, non-condensing	%	10 ... 90
Housing		
Material		Polyamide PA 6.6
Dimensions (W x H x D), without connections	mm	23 x 100 x 114
Weight, approx.	g	230
Mechanical stress capability Vibration test based on IEC/DIN EN 60 068, Part 2-6 (30 min in each direction) Shock test based on IEC/DIN EN 60 068, Part 2-27 (3 times in each direction, shock duration 11 ms)	m/s ² m/s ² m/s ²	10 (5 ... 8 Hz) 25 (10 ... 65 Hz) 200
Mounting		Support rail DIN EN 60 715
Connection		Plug terminal
Degree of protection		IP20
EMC conformity		
Emission of interference		DIN EN 61 326:2006, Class A
Immunity from interference		DIN EN 61 326:2006, industrial environment

Specifications (continued)

Type	TIM-EC	
Torque		
Input signal		TMC (digital interface torque)
Termination resistor, internal	Ω	120
Input resolution	Bit	±25
Dynamic, approx.	Samples/s	39 000
Filter Low-pass filter IIR, 4th order	Hz	0.1 / 1 / 10 / 100 / 1000 / 3000 / Off
Run times filter 1 and 2		
Filter off	μs	0.944
3000 Hz	μs	54.4
1000 Hz	μs	212
100 Hz	ms	2.6
10 Hz	ms	26.8
1 Hz	ms	230
0.1 Hz	s	3.12
Linearization (right, left, up to 11 points)		Calibration coefficients direct input
Maximum cable length TIM - torque transducer	m	50
Speed		
Input signal		Quadrature / Single / Direct for T40 family
Level		RS-422
Termination resistor, internal	Ω	120
Input resolution	Bit	±25
Counter frequency	MHz	≤ 125
Dynamic, approx.	Samples/s	39 000
Input filter		Glitch filter, can be disabled
Filter Low-pass filter IIR, 4th order	Hz	0.1 / 1 / 10 / 100 / 1000 / 3000 / Off
Run times filter 1 and 2		
Filter off	μs	0.944
3000 Hz	μs	54.4
1000 Hz	μs	212
100 Hz	ms	2.6
10 Hz	ms	26.8
1 Hz	ms	230
0.1 Hz	s	3.12
Maximum cable length TIM - torque transducer	m	50
Angle of rotation		
Resolution		1x / 2x / 4x with interpolation
Zeroing		360° / 720° / EtherCAT / manual / zero-index
Power		
Filter Low-pass filter IIR, 4th order	Hz	0.1 / 1 / 10 / 100
Run times filter 1 and 2		
100 Hz		
10 Hz	ms	2.6
1 Hz	ms	26.8
0.1 Hz	ms	230
The power calculation in HBM transducers is run time corrected.	s	3.12
Flags Transducer inputs Torque / Speed / Power		Overflow Faulty measured values
EtherCAT		
Control via EtherCAT		Zero balance / Shunt actuation / Parameter set selection
Parameter sets (saved in device and selectable via EtherCAT)		32

Terminal assignment



Terminal X1, speed signal TMC

Pin	Assignment
1	DGND (digital GND), wire color black
2	A + F1 (RS-422 A), wire color red
3	A - F1 (RS-422 B), wire color white
4	B + F2 (RS-422 A), wire color grey
5	B - F2 (RS-422 B), wire color green

Terminal X2, voltage supply

Pin	Assignment
1	Connection for energy supply, input
2	GND (TIM-EC and stator supply)
3	+24 V ± 10% supply (TIM-EC and stator)
4	Output for the supply voltage of the torque transducer
5	GND (looped through from X2-1): wire color blue
6	+24V (looped through from X2-2): wire color black
7	Shield (TMC), connected with ground

Terminal X3, speed encoder

Pin	Assignment
1	Shield (speed), connected with ground
2	+, Reference pulse (RS-422 A), wire color black
3	-, Reference pulse (RS-422 B), wire color blue
4	Reserved
5	Reserved

Terminal X4, speed transducer TMC

Pin	Assignment
1	DGND (digital GND), wire color violet
2	RS-422 RA, wire color red
3	RS-422 RB, wire color white
4	RS-232-TX, wire color grey
5	RS-232-RX, wire color green

Subject to modifications.
All product descriptions are for general information only. They are not to be understood as a guarantee of quality or durability.

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