DATASHEET

SpeedSys® T10 – T20 – T30

speed transmitters, monitors & switches

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Speed transmitters, monitors & switches

The SpeedSys® tachometer series is a range of speed measurement systems that deliver extensive speed monitoring functions for rotating equipment. The tachometers convert speed sensor signals into processed outputs.

The tachometers feature a small technical footprint with low-impact installation and are available in single, double, and triple-channel versions to suit any application.

SPEED MONITORING FOR A WIDE RANGE OF APPLICATIONS

- Speed monitoring and switching on rotating equipment.
- Advanced signal conditioning and conversion into highly accurate outputs for further processing
- Multi-channel devices feature extensive monitoring functions, including reverse rotation, creep, overspeed, underspeed, acceleration, standstill, and dynamic sensor monitoring.

Typical applications include:

- Compressors and pumps
- Microturbines
- Wind turbines
- Gas and steam turbines
- Marine applications
- Elevators
- General automation

KEY FEATURES

- Very fast system response to overspeed condition
- Two fast responding relays per channel.
- Modbus connectivity
- Suitable for 3-wire voltage sensors and 2-wire voltage sensors

SYSTEM OVERVIEW

Interfaces	*T10*	*T20*	*T30*
Sensor inputs	1x sensor input	2x sensor input	3x sensor input
Digital inputs	1x digital input	2x digital input	3x digital input
Relay outputs	1x DPST	2x DPST	3x DPST
	1x SPST	2x SPST	3x SPST
Analog outputs	1x analog output	2x analog output	3x analog output
Frequency outputs	1x frequency output	2x frequency output	3x frequency output
Power supply	1x power supply	2x power supply	3x power supply
Modbus	1x Modbus TCP	1x Modbus TCP	1x Modbus TCP

Speed monitoring	*T10*	*T20*	*T30*
Overspeed	Yes	Yes	Yes
Underspeed	Yes	Yes	Yes
Acceleration		Yes	Yes
Standstill / creep		Yes	Yes
Reverse rotation		Yes*	Yes*
Dynamic channel monitoring		Yes	Yes
Software voting		1oo2; 2oo2*	1oo2; 2oo2;*
			1oo3; 2oo3; 3oo3*
Cross coupling inputs		Yes*	Yes*

INPUT

Sensor input

Sensor input	Input for (a) 3-wire voltage, (b) 2-wire voltage
Frequency range T10, T20, T30	0.025 Hz to 35 kHz
Measurement accuracy	0.05 %

(a) 3-wire voltage input

Input type	3-wire voltage input (typical: Hall effect or proximity sensor)
Sensor power supply	24.0 V (@ 25 mA)
Input range	0 V to 24 V
Trigger level (programmable)	0 V to 12 V
Impedance	500 kΩ (typical)
Sensor monitoring	Open circuit detection, sensor power supply short circuit detection

(b) 2-wire voltage input

Input type	2-wire voltage input (typical: electromagnetic sensor)
Sensor power supply	n/a
Input range	50 mV_{RMS} to 80 V_{RMS}
Trigger level (programmable)	-12 V to 12 V
Impedance	100 kΩ
Sensor monitoring	Open circuit detection

*Expected in Q1 2024

Digital input

Input range	0 V to 24 V, max 25 mA
Logic “0”	< 10 V
Logic “1”	> 14 V
Impedance	1 kΩ

OUTPUT

Relays

Number	T10 – 2 high speed relays T20 – 4 high speed relays T30 – 6 high speed relays
Types	T10 – 1x DPST (2x COM & 2x NO) and 1x SPST (1x COM and 1x NO) T20 – 2x DPST (2x COM & 2x NO) and 2x SPST (1x COM and 1x NO) T30 – 3x DPST (2x COM & 2x NO) and 3x SPST (1x COM and 1x NO)
Function	User-configurable relays for speed limits (e.g., overspeed or underspeed)
Maximum switching capacity	30 V_{DC} / 2 A (resistive load) 30 V_{DC} / 100 mA (inductive load)
Hysteresis	User-configurable
Trip state	User-configurable normally open or normally closed

Analog output

Number	T10 – 1x analog output. T20 – 2x analog output. T30 – 3x analog output.
Type	4 to 20 mA current loop.
Function	User-configurable range to transmit current output value equivalent to the measured speed.
Resolution	16 bit (0 – 24 mA)
Accuracy	0.05 %

Digital frequency output

Number	T10 – 1x frequency output. T20 – 2x frequency output. T30 – 3x frequency output.
Type	Digital open collector output.
Signal	Max 24 V_{DC} / 10 mA.

Status LED indicators

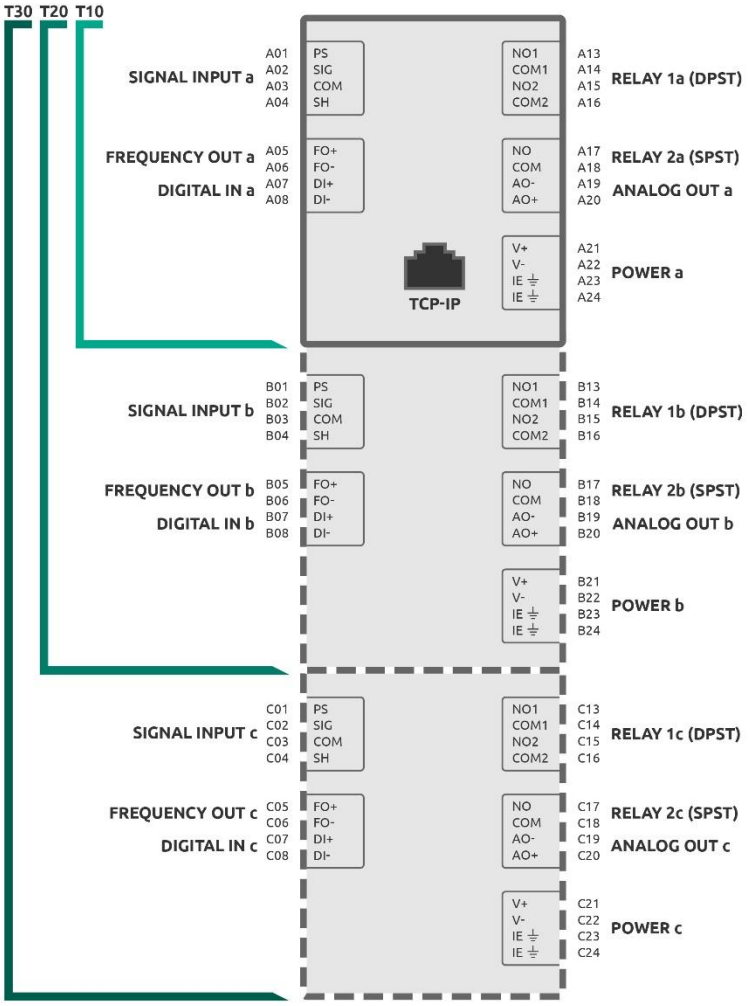
LED indicators	T10 – 1x relay status & 1x system status T20 – 2x relay status & 2x system status T30 – 3x relay status & 3x system status

SYSTEM FEATURES

Reaction time		
Speed measurement time (T_m)	Dependent on selected measurement time. (2 – 1000 ms, 10 ms default)	
Hardware reaction time (T_h)	Relays:	≤ 4 ms
	Analog out:	≤ 100 ms
Total reaction time ($T_h + T_m$)	Relays, typical:	≤ 6 ms @ T_m = 2 ms
		≤ 14 ms @ T_m = 10 ms (default)
	Analog out, typical:	≤ 100 ms
PC interface	TCP/IP programming and status reading	
	(Windows® 10 and higher proprietary software application)	
Modbus interface	Modbus TCP	
Power supply input		
Input voltage range	24 V_{DC} (18 V_{DC} – 31,2 V_{DC})	
Current consumption	T10 – max 160 mA	
	T20 – max 320 mA (max 160 mA / channel)	
	T30 – max 480 mA (max 160 mA / channel)	
Reverse polarity protection	Yes	
Heat dissipation	T10 – max 4 W	
	T20 – max 8 W	
	T30 – max 12 W	
Housing		
Material	Polyamide (PA 66 GF 30)	
Dimensions	T10 – 22,5 x 117 x 114 mm (0.89 x 4.61 x 4.49”)	
	T20 – 45,0 x 117 x 114 mm (1.78 x 4.61 x 4.49”)	
	T30 – 67.5 x 117 x 114 mm (2.67 x 4.61 x 4.49”)	
Weight	T10 – 240 g	
	T20 – 324 g	
	T30 – 414 g	
Mounting assembly	DIN rail	
Connectors	Push-in type terminals	
Environmental conditions		
Operating temperature	-20 to 60 °C (-4 to 140 °F)	
Storage temperature	-40 to 85 °C (-40 to 185 °F)	
Operating & storage humidity	75% averaged over the year; up to 90% for max 30 days. Condensation to be avoided.	
Ingress protection	IP20 according to IEC 60529	
	Indoor use or use in a protective enclosure	
Other	Overvoltage category II	
	Pollution degree 2	

DIMENSIONS AND MOUNTING

CONNECTION DIAGRAM



APPROVALS

International standards	CE; UKCA
Electromagnetic compatibility	Conform EN 61326-1
Environmental	RoHS 2
Marine type approval	DNV Type approved product

ABOUT ISTEC

We ensure maximal value generation of your critical machinery with advanced protection and monitoring solutions. Every Istec product is designed to meet the increasing demands of industrial applications and taps into our 50 years of experience in the industry.

Our expertise is to support and maintain these critical sensors and systems in the field throughout their operational life; to increase safety, maximize machine availability and to provide new monitoring data and machine insights.

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