

JAQUET T400 Speed measurement, switching and indicating instruments

TYPICAL APPLICATIONS

DIESEL ENGINE START CONTROL AND OVER-SPEED PROTECTION

MICRO TURBINE MEASUREMENT AND PROTECTION

TURBOCHARGER SPEED MEASUREMENT

MACHINE PROTECTION IN SAFETY CRITICAL APPLICATIONS

UNIVERSAL SPEED MEASUREMENT AND INDICATION

FEATURES

- Converts absolute speed into an analog signal
- Including 2 limits (A/B) with programmable hysteresis
- One changeover relay assigned via binary input to limit (A or B)
- T411 and T412 models with display
- Isolated signal input with automatic trigger level adjustment
- Built in isolated sensor supply with sensor monitoring
- Open collector output of sensor frequency
- Accuracy class 0.05% for limits and 0.5% for analog signals
- Configuration and status via Windows® software
- 5 digit machine factor allowing configuration and display in machine units
- Wide tolerance 10...36 VDC power supply

T400 ADVANTAGE

- Fast response to over speed conditions
- Germanischer Lloyd's and ABS approval for marine applications
- Digital display of speed value for the models T411 and T412
- 0/4...20 mA or 0/2...10 V analog output with rising or falling characteristics
- Adaptive trigger provides high noise immunity e.g. with electromagnetic sensors
- Digital input for direct treatment of frequency signals
- 2 possible relay configuration sets e.g. for start up bridging, controlled via binary inputs
- Pluggable terminals
- Integrated 2 or 3 wire sensor monitoring and system watchdog

One channel tachometer family T400

Type and part numbers	T401.00 4...20mA output	383Z-05307
	T402.00 2...10 V output	383Z-05308
	T411.00 display; 4...20 mA output	383Z-05318
	T412.00 display; 2...10 V output	383Z-05319
	T411.03 display; 5 VDC sensor supply; 4...20 mA output	383Z-05595
	T412.03 display; 5 VDC sensor supply; 2...10 V output	383Z-05596
Optional accessories	Power supply 100-240 VAC / 24 VDC / 1 A	383Z-05764
	Interface cable RS232 for configuration	830A-36889
	USB adapter for interface cable	830A-37598
Technical data		
Measuring range	Lowest: 0...1.000 Hz Highest: 0...35.00 kHz	
Measurement time	Configurable min. measurement time (t_M): 2/5/10/20/50/100/200/500 ms, 1/2/5 s	
Reaction time	Current output: Typical $t_M + 7.5$ ms Maximum Input period + $t_M + 7.5$ ms	
	Relays: Typical $t_{\phi} + 10.5$ ms Maximum Input period + $t_M + 10.5$ ms	
Accuracy	0.5% referred to the analog output end of range value	
Analog output (1)	T401/T411: Current output 0...20 mA resp. 4...20 mA	
	T402/T412: Voltage output 0...10 V resp. 2...10 V	
	Programmable rising or falling transfer function (min. end value 1.00 Hz)	
	Load T401/T411: max. 500 Ohms corresponding to a maximum of 10 V	
	Load T402/T412: min. 7 kOhm corresponding to a maximum of 1.4 mA	
	Maximum open circuit voltage: 12 V	
	Resolution: 12 bit corresponding to 1:4096	
	Maximum linearity error: 0.1 %	
	Temperature drift: typ. ± 100 ppm/degree K, max. ± 300 ppm/degree K	
	Hysteresis: For each limit an upper and a lower set point may be set independently	
Set points /relay (2)	Change over contact: max. 250 VAC, 1250 VA (DC: see operating instructions)	
Data I/O	RS232 interface with +5 V-CMOS level 3-pole. 3.5 mm stereo headphone connector on the front side.	
Sensor input (1)		
	Input resistance	Analog 30 kOhm / Digital 46 kOhm
	Frequency range	0.01 Hz / 35 kHz
	Trigger level	Analog input: Adaptive trigger level from 28 mV to 6.5 V or 250 mV to 6.5 V peak depending on the amplitude of the input signal. Digital input: Digital fixed trigger at $3 \text{ V} \pm 1.5 \text{ V}$ hysteresis
Sensor supply		
	Standard	+ 14 V, max. 35 mA, short-circuit proof
	S5 version	+ 5 V, max. 35 mA, short-circuit proof Built-in pull up and pull down resistor 820 Ohm for connection of two-wire transmitters or daisy chaining of T400's
Sensor monitoring	Sensor monitoring 3 wire sensors: programmable current consumption limits of 0.5...35mA. Outside the selected range the sensor is signaled as faulty.	
	Electromagnetic sensors: continuity checked. Open circuit signaled as a fault.	
	None: Both sensor monitoring functions may be disabled.	
Open collector output (1)	Galvanically separated output of sensor frequency	

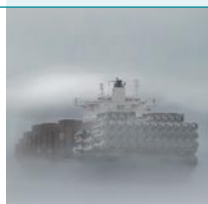
JAUQUET TECHNOLOGY GROUP offers the world's most versatile and advanced range of solutions for the detection, measurement, diagnosis and management of rotational speed.

Our industry and application specific expertise ensures that you will achieve an optimum solution. Completely matched to your individual requirements, meeting key industrial standards and certifications, our products help boost the performance of your machinery while reducing cost of ownership.



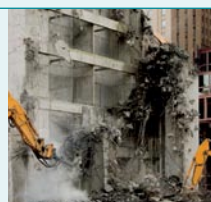
TYPICAL INDUSTRIES SERVED

- Automotive and truck
- Aerospace
- Diesel / Gas engines
- Hydraulics
- Railway
- Turbines
- Turbochargers
- Industrial machinery



PRODUCTS – SPEED SENSORS

- Various technologies
- Standard, custom and OEM models
- For demanding applications, e.g. 300,000 rpm, temperature up to 320 °C / 600 °F, high vibration, shock to 200 g, etc.
- GreenLine speed sensors for general applications
- Ex models for hazardous areas
- Pole bands and target wheels available where needed

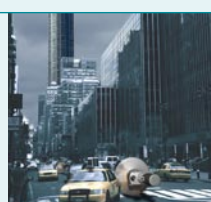


PRODUCTS – SYSTEMS

- Multi-channel overspeed protection systems
- 1–2 channel measurement, protection and control modules
- Engine diagnostic systems
- Redundant speed measurement and indication

SPECIAL PROJECT EXAMPLES

- An automotive linear movement sensor
- Integrated power and torque measurement for display and gearbox control
- Naval spec. turbine protection for nuclear submarines
- Speed measurement in turreted, tracked vehicles



QUALITY MANAGEMENT AND STANDARDS

- Quality management: TS 16949 and ISO 9001, ZELM ATEX 1020, KWU
- Sensors: GL, KWU, TÜV, ATEX, EN 50155, NF F 16-101 102, ABS, EMC
- Systems: IEC 61508 SIL 2 and SIL 3, API 670, GL, TÜV, KWU, EX
- Environmental: RoHS - EU directive 2002/95/EC

JAUQUET – YOUR PARTNER

- Efficient and professional service - JAUQUET TECHNOLOGY GROUP is headquartered in Basel, Switzerland and has subsidiaries in Belgium, China, Germany, the Netherlands, United Kingdom and United States along with a worldwide distributor and end-user service network.
- Flexible production quantities; from 1 to millions per project
- Reduction of total costs by intelligent and cost-effective solutions