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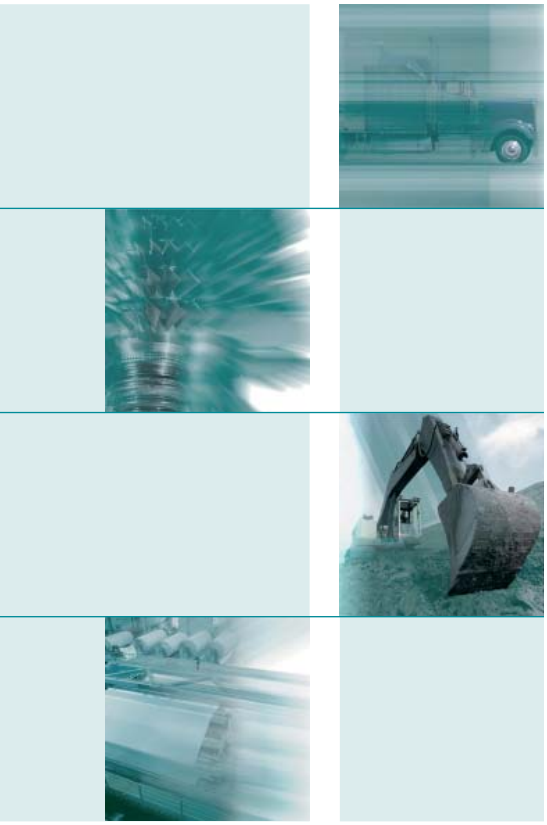
JAQUET T400

UNIVERSAL TACHOMETER

JAQUET TECHNOLOGY GROUP



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

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One channel tachometer family T400

Type and part numbers	T401.00	4..20mA output	383Z-05307
	T402.00	2...10 V ouput	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

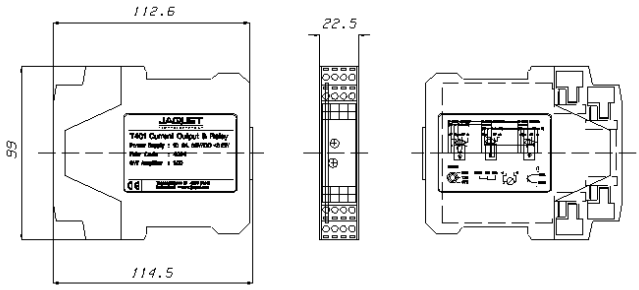
Technical data

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_M + 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				
Set points /relay (2)	Hysteresis: For each limit an upper and a lower set point may be set independently 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 V ± 1.5 V hysteresi				
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				

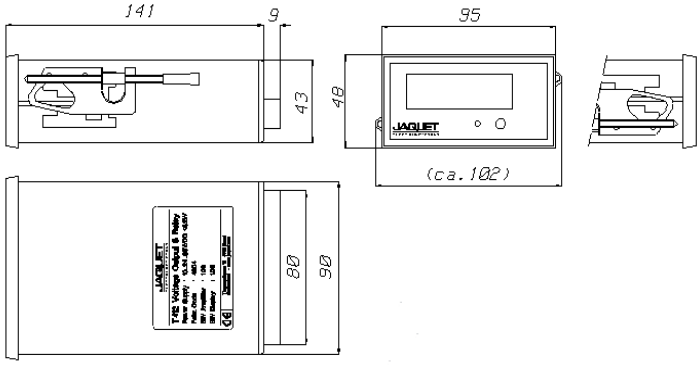
Binary inputs (1)	For external selection between two sets (A/B) of programmable relay control and acknowledge functions: (No external pull up needed) Low active :U ‹ +1.5V High (open) :U › +3.5V
Environmental	KUE according to DIN 40 040 Operating temperature: - 40...+85 °C Storage temperature: -40...+90 °C Relative humidity up to 75% average over one year period, up to 90% max. for 30 days
Power supply	10...36 VDC power consumption max. 3 W
Insulation	Galvanic separation between power supply, current output and the sensor power supply. Isolation 700 VDC / 500 VAC. Relay contact isolation: 1500 AC
EMC	Electromagnetic compatibility: Radiation in accordance with international standards and EN 50081-2. Immunity in accordance with international standards and EN 50082-2 Conducted emissions: CISPR 16-1, 16-2 Radiated emissions: EN 55011 Electrostatic discharge: IEC 61000-4-2 Electromagnetic fields: IEC 61000-4-3 Conducted fast transients: IEC 61000-4-4 Conducted slow transients: IEC 61000-4-5 Conducted high frequency: IEC 61000-4-6 Pulse modul. elec. field: ENV 50140 Power frequency magnetic field: IEC 1000-4-8
Standards	EN 50155, GL / Germanischer Lloyd, ABS

Dimensions

T401/402



T411/412



Rail	Rail DIN 4622713 (EN 50022) or mounting plate to DIN 43660 (46121)
Housing	Protection class IP40, terminals IP20
Terminals	Pluggable
Weight	T401/T402: 150 g , T411/T412: 210 g

T400 systems are supplied with a full documentation and the T400 Windows® Software.
The software allows:

- Quick and easy configuration of all operating parameters
- Unit interrogation of identity and parameters
- PC display of current measurement and relay status
- Archiving and printing of the configuration

RS-232 cable not included, see page 2 for optional accessories.

Please note: Information is subject to change. For more technical information please refer to operating instructions.

COMPANY PROFILE

JAQUET TECHNOLOGY GROUP

JAQUET 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

JAQUET – YOUR PARTNER

- Efficient and professional service - JAQUET 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

IN CHARGE OF SPEED

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