
# T400 TACHOMETER

## T400 Speed measurement, switching and indicating instruments

### 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

### The 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

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| **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 |
| | T401.03 | 5 VDC sensor supply; 4...20 mA output | 383Z-05671 |
| | T402.03 | 5 VDC sensor supply; 2...10 V output | 383Z-05672 |
| | 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** Example specification text example specification text example specification text example specification text example specification text example specification text

## Technical Data

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| **Measuring range** | | Lowest: 0…1.000 Hz Highest: 0...35.00 kHz |
| **Measurement time** | | Configurable min. measurement time (tM): 2/5/10/20/50/100/200/500 ms, 1/2/5 s |
| **Reaction time** | | Current output: Typical tM + 7.5 ms Maximum Input period + tM + 7.5 ms<br>Relays: Typical tM + 10.5 ms Maximum Input period + tM + 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<br>T402/T412: Voltage output 0...10 V resp. 2...10 V<br>Programmable rising or falling transfer function (min. end value 1.00 Hz)<br>Load T401/T411: max. 500 Ohms corresponding to a maximum of 10 V<br>Load T402/T412: min. 7 kOhm corresponding to a maximum of 1.4 mA<br>Maximum open circuit voltage: 12 V<br>Resolution: 12 bit corresponding to 1:4096<br>Maximum linearity error: 0.1 %<br>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<br>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 inputs (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.<br>Digital input: Digital fixed trigger at 3 V ± 1.5 V hysteresis |
| **Sensor supply** | | |
| | **Standard** | + 14 V, max. 35 mA, short-circuit proof |
| | **S5 version** | + 5 V , max. 35 mA, short-circuit proof<br>Built-in pull up resistor 820 Ohm for connection of two-wire transmitters or daisy chaining of T400's |
| **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 |

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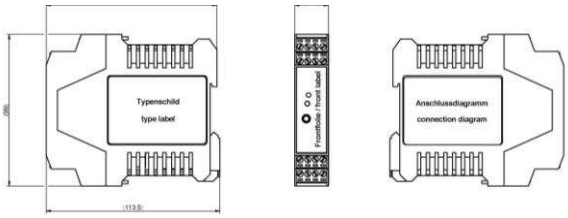
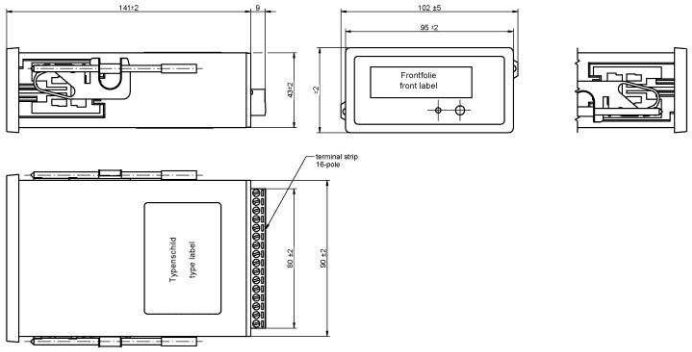
| **Binary inputs (1)** | For external selection between two sets (A/B) of programmable relay control and acknowledge functions:<br>(No external pull up needed)<br>Low active :U < +1.5V High (open) :U > +3.5V |
| **Environmental** | KUE according to DIN 40 040<br>Operating temperature: - 40…+85 ˚C<br>Storage temperature: -40…+90 ˚C |
| **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<br>Electrostatic discharge: IEC 61000-4-2 Electromagnetic fields: IEC 61000-4-3<br>Conducted fast transients: IEC 61000-4-4 Conducted slow transients: IEC 61000-4-5<br>Conducted high frequency: IEC 61000-4-6<br>Pulse module. elec. field: ENV 50140<br>Power frequency magnetic field: IEC 1000-4-8 |
| **Standards** | EN 50155, GL / Germanischer Lloyd, ABS |

## Dimensions

### T401/402




### T411/412

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| **Rail** | Rail DIN 46277-3 (EN 50022) or mounting plate to DIN 43660 (41612) |
| **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.

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