

Temperature transmitter or switch

Loop powered

Type: TTS 500 FA

Replaces all previous types: LTT420M, STT1000FSA, TS334 and TS334S

Select function:

Loop powered temperature transmitter 4-20 mA or loop powered
Temperature switch, where switch off = 3,40 mA and switch on = 34,00 mA

Clamp-on temperature measurement. Measure on pipes from DN4 and upwards

Quick configuration with simple windows software by connecting the PC's USB port directly to the device's M12 connector (4 pole).

Technical data:

Supply voltage	: 7 - 34VDC
Measuring range °C	: -40 til 180 °C, Configuration resolution = 0,1°C (IEC 751)
Output in transmitter-mode	: I - Load = 4-20 mA (effect of variations in supply voltage $\leq 0,1\mu\text{A/V}$)
Output in switch-mode	: I - Load off = 3,40 mA $\pm 30\%$ / I load on = 34,00 mA, $\pm 1\text{mA}$
Ambient temperature coefficient	: $\leq \pm 0.002\%$ F.S. / °C (from -30 to +80 °C)
Direct invertet function	: Optional
Hysteresis from switch on to off	: Free configurable by 0,1°C resolution. (symmetrical around set point's value, minimum value = 0,2°C)
Temperature sensor	: PT100 1/3 din B curve Accuracy in °C better than $\pm (0,1 + (\text{measured temperature} \times 0,0017))$
Accuracy on electronic unit	: Better than $\pm 0,1^\circ\text{C}$ according to the IEC751 standard.
Calibration facilities	: With PC connected, Off set and Gain can be adjusted. (with Off set = 0,00 °C and Gain = 1,0000 the IEC 751 standard is followed).
Measurement error due to thermal loss	: $(\text{TP-TA}) \times 0,003^\circ\text{C}$ (where TP= process temperature and TA= ambient temperature).
2 color LED indicator (green/red)	: LED in side of the house indicate the device phases during operation.
Physical dimentions mm	: B x H x L = 22 x 30 x 38

Connections:

4 pole M12 connector (male) in house

Pin 1	24VDC
Pin 2	D + (USB) only in use during configuration
Pin 3	Signal I-Load (4-20mA eller 3,40 / 34,00 mA)
Pin 4	D - (USB) only in use during configuration

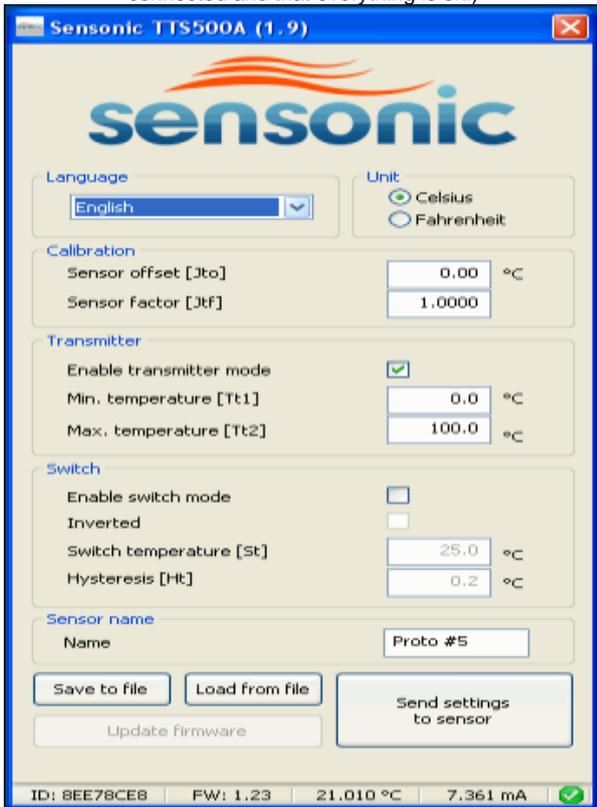
Flip→

Windows Applikation

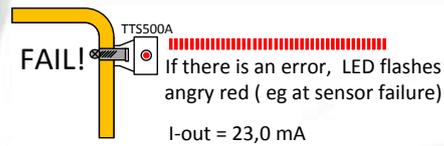
Temperature transmitter

Activate transmitter mode

(LED flashes green every 5 sec. to indicate that the power is connected and that everything is ok.)

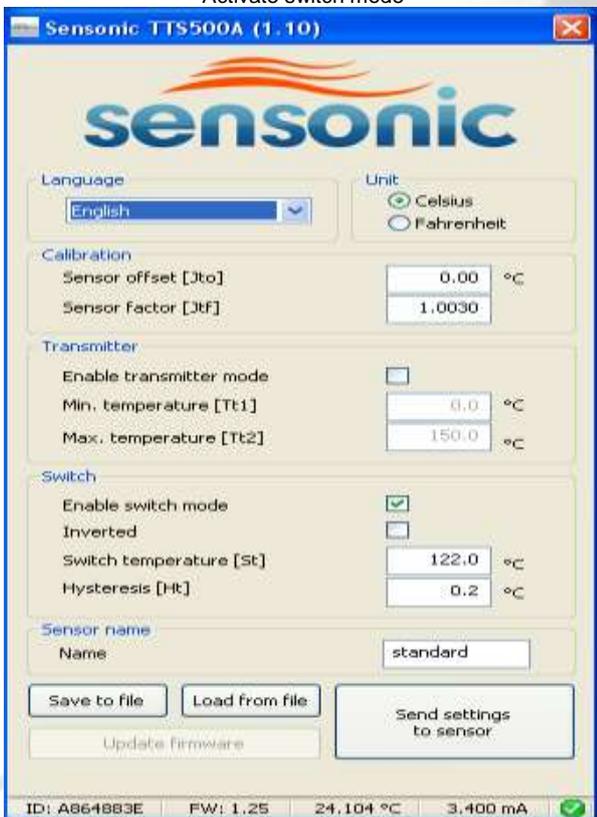


Unit



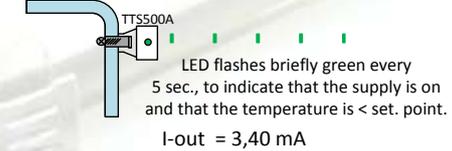
Temperature switch

Activate switch mode

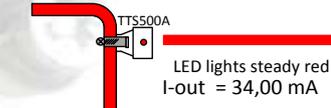


Face description - switch function:

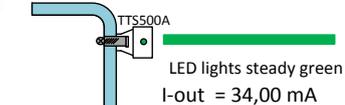
Temperature < set.point. and invertet not selected



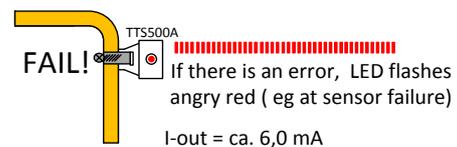
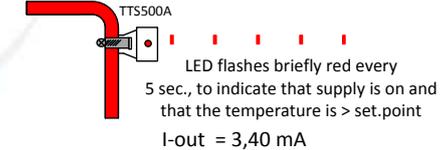
Temperature > set.point and invertet not selected



Temperature < set.point and invertet selected



Temperature > set.point and invertet selected

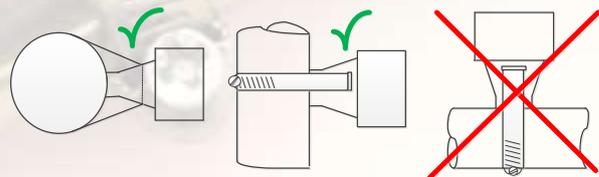


Configuring the TTS 500A

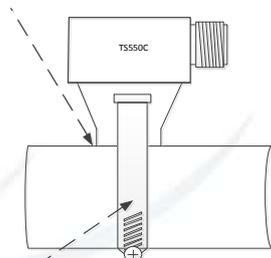
1. Go to Sensonic's website www.sensonic.dk
2. Click on the picture of TTS 500 A - and look at the bottom left of the page.
3. Click on [Download PC application to TTS 500A \(zip\)](#) or [Download PC application to TTS 500A \(exe\)](#)
4. Connect the programming cable to your PC's USB port and the M12 connector to TTS 500A.
5. TTS 500A's data is now automatically uploaded to the PC application. In the status bar at the bottom, you can read the TTS500A's ID nr. (ID), Firmware version (FW), the temperature and status for the output signal in mA.
6. Now you can enter new values in the various fields. The newly entered values are first sent to the TTS500A when clicked the [Send setting to the sensor](#).
7. Activating the transmitter mode, the fields in switch mode are inactive and vice versa.
8. **Transmitter mode:** After selected transmitter mode, you can enter Min. temperature (Tt1) and Max. temperature (Tt2), (e.g. Min. = 0,0 °C = 4,00mA and Max.=100,0°C = 20,00 mA), Furthermore, you can enter Tag. Number. in the field sensor name (max. 10 characters). Finally click, [Send settings to the sensor](#).
9. **Switch mode:** After selected switch mode, you can choose inverted or not inverted output. The desired switch temperature (St) is entered, and the desired hysteresis value (Ht) is entered (Ht is symmetrical about St). Finally click [Send settings to the sensor](#).
10. **Invertet output:** With inverted output selected (checkbox set), the output will go off when the temperature is > selected Switch temperatur (St). When inverted output not selected (checkbox not set), the output will go on, when the temperature is > selected Switch temperature (St).
11. **Calibration:** Usually it will not be necessary to perform a calibration. With sensor offset (Jto) standing at 0,00°C and sensor factor (Jtf) standing at 1,0000 follow's the IEC751 standard. If it is desired to perform a calibration, follow the method below.
12. **Calibration method:** Mount the TTS500A on a known surface temperature in the lower part of the measuring range eg 0,00 °C (or it could be ice water under stirring). If the the display in the status bar for example shows + 0,18 °C, then enter -0,18°C i off set field (Jto) and click [Send settings to the sensor](#). Then mount TTS 500A on a known surface temperature in the upper part of the measuring area eg 100,00 °C. If the the display in the status bar for example shows + 99,75 °C, Then enter 100 / 99,75 = 1,0025 in the sensor faktor field (Jtf) and click [Send settings to the sensor](#).
13. Your progamming data, sensor name, such as TAG.No (Max 10 characters) can be saved to file and also downloaded from file to TTS 500A. When a file is retrieved it must subsequently be send to the sensor [Send settings to the sensor](#).

MOUNTING INSTRUKTIONER:

When mounting onto a pipe, where the temperature exceeds 120°C, follow the instructions on the drawing ----->



Heat conducting paste, type HTSP (-50 to 200°C) is applied to the sensor before mounting (about 0,01ml)

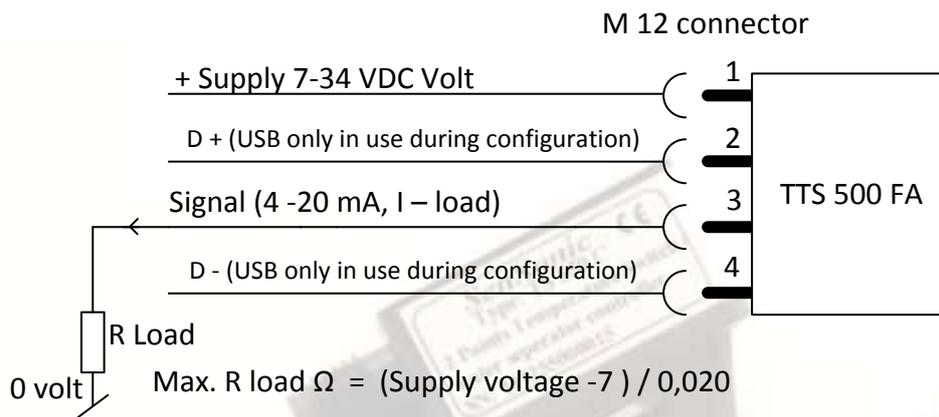


Fasten to the pipe with steel string band, tighten the string band so that the sensor is absolute fastened to the pipe.

Sensor bracket type LHRS-345 is recommended if the sensor regularly and quickly have to be mounted and dismantled, in exactly the same position. (see mounting brackets on www.sensonic.dk)

WIRING EXAMBLES

TEMPERATURE TRANSMITTER



TEMPERATURE SWITCH

