Temperature transmitter or switch
Loop powered
Type: TTS 500 FA

Replaces all previous types: LTT420M, STT1000FSA, TS334F and TS334FS

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.
From DN4 to DN8 a special centering and insolation adaptor ADPT-04 should be used.

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≤ 0,1µA/V)
Output in switch-mode	: I - Load off = 3,40 mA ± 0,2 mA / I load on = 34,00 mA, ± 0,2mA
Ambient temperature coefficient	: ≤ ± 0.002 % F.S. / °C (from -30 to +80 °C)
Direct inverted function	: Free configurable
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 ± (0,1+ (measured temperature x 0,0017))
Accuracy on electronic unit	: Better than ± 0,1°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).
Measuring error due to thermal loss	: Measured value -0,35% (Adjusted with adwantage during setup of the sensor, Sensor factor (Jtf) = 1.0035)
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
Protection Class	: IP 68

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→

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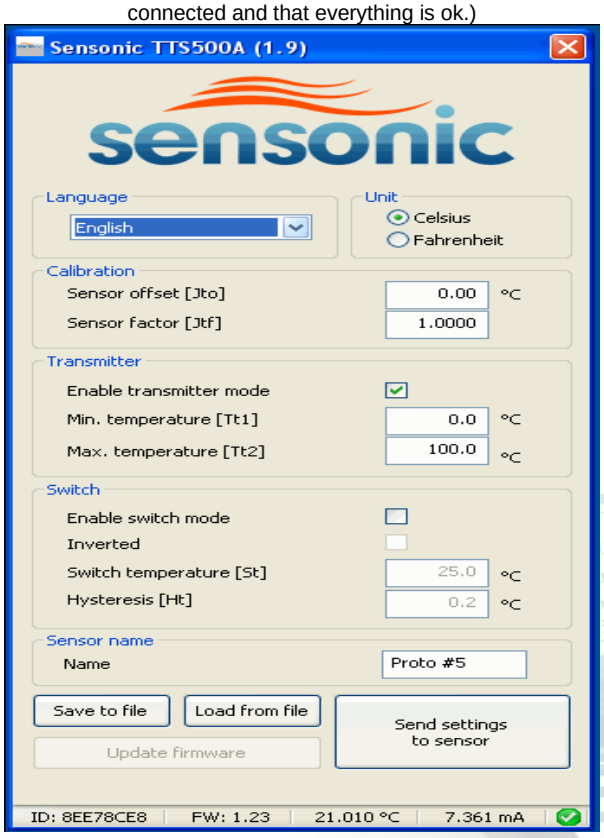
Windows Applikation

Temperature transmitter

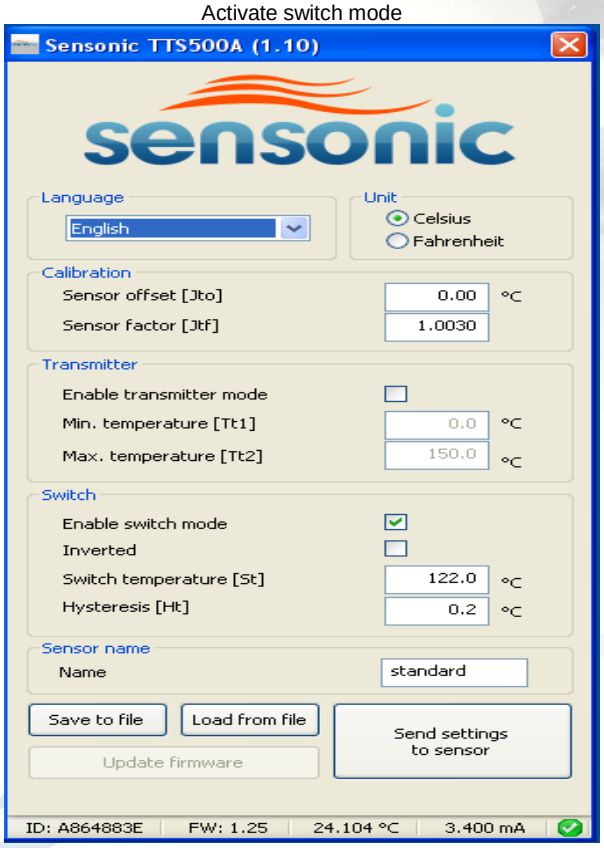
Activate transmitter mode

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

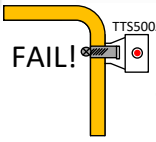


Temperature switch

Activate switch mode



Unit

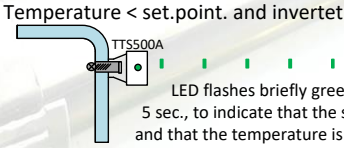


If there is an error, LED flashes angry red (eg at sensor failure)

I-out = 23,0 mA

Face description - switch function:

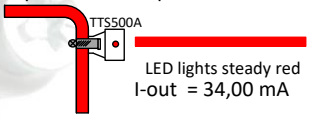
Temperature < set.point. and invertet not selected



LED flashes briefly green every 5 sec., to indicate that the supply is on and that the temperature is < set. point.

I-out = 3,40 mA

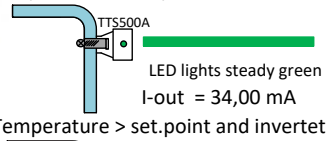
Temperature > set.point and inverteret not selected



LED lights steady red

I-out = 34,00 mA

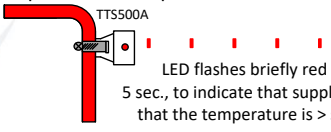
Temperature < set.point and invertet selected



LED lights steady green

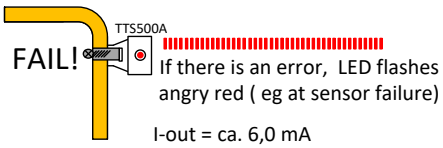
I-out = 34,00 mA

Temperature > set.point and invertet selected



LED flashes briefly red every 5 sec., to indicate that supply is on and that the temperature is > set.point

I-out = 3,40 mA



If there is an error, LED flashes angry red (eg at sensor failure)

I-out = ca. 6,0 mA

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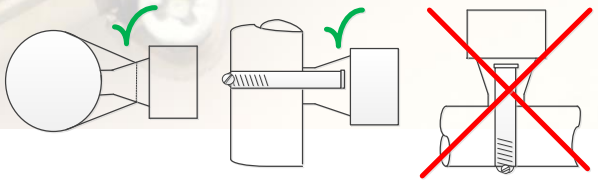
Configuring the TTS 500FA

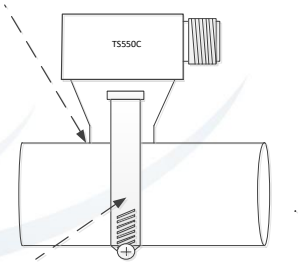
1. Go to Sensonic´s webside www.sensonic.dk
2. Click on the picture of TTS 500 FA - and look at the bottom left of the page.
3. Click on Download PC application to TTS 500A (zip) or Download PC application to TTS 500A (exe)
4. Connect the programming cable to your PC´s USB port and the M12 connector to TTS 500FA.
5. TTS 500FA ´s data is now automatically uploaded to the PC applikation. In the status bar in the bottom, you can read the TTS500FA´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 newley entered values are first send to the TTS500FA 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 temperatur (St) is entered, and the desired hysteresis vallue (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, if the Sensor factor (Jtf) is set to 1.0035.
    If you decide to perform a calibration, follow the method below.
    With Sensor offset (Jto) standing at 0,00°C and Sensor factor (Jtf) standing at 1,0000 is the IEC751 standard followed, and these values should be the basis values for the calibration.
    Calibration method: Mount the TTS500FA 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 examble shows + 0,18 °C, then enter -0,18°C in the Sensor offset field (Jto) and click Send settings to the sensor. Then mount TTS 500FA 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 examble shows + 99,70 °C, Then enter 100 / 99,70 = 1,0030 in the Sensor faktor field (Jtf) and click Send settings to the sensor.
12. Your progamming data, sensor name, such as TAG.No (Max 10 characters) can be saved to file and also downloaded from file to TTS 500FA. When a file is retrieved it must subsequently be send to the sensor Send settings to the sensor.

MOUNTING INSTRUKTIONS:

When mounting onto a pipe, where the temperature exeeds 120°C, followe the instruktions on the drawing ----->
If the pipe is insulated, keep the electronic part outside the insulation.



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 (FDA) if the sensor regularly and quickly have to be mounted and dismounted, in exactly the same position.(see mounting brackets on www.sensonic.dk)

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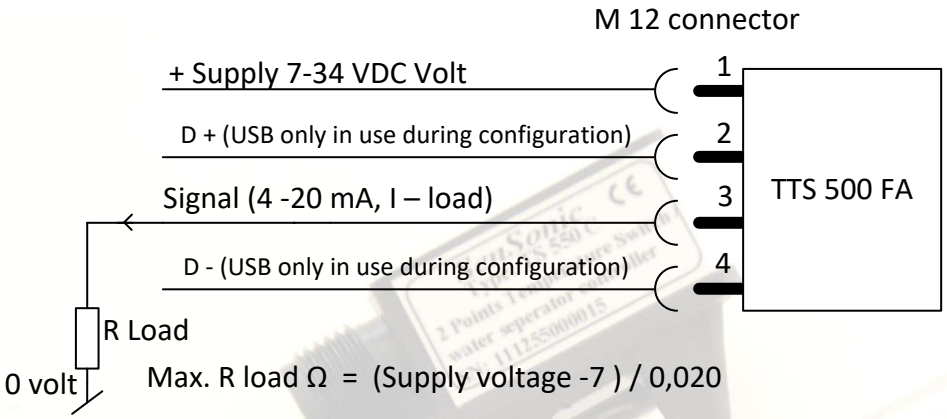
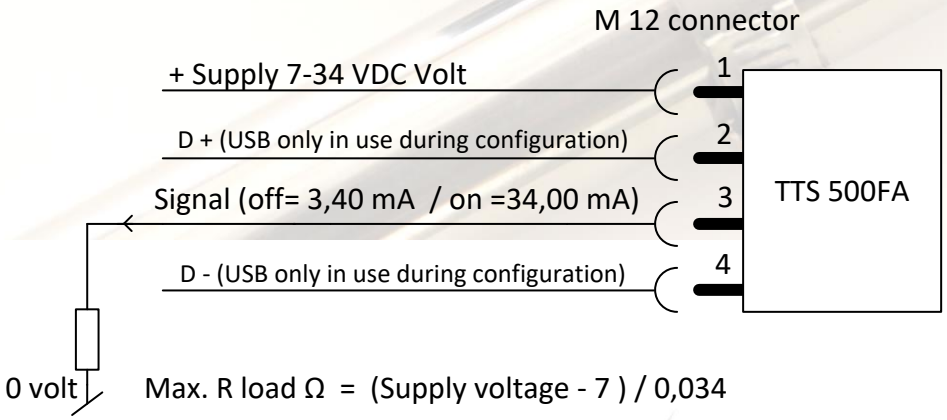
WIRING EXAMBLES

TEMPERATURE TRANSMITTER



TEMPERATURE SWITCH



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