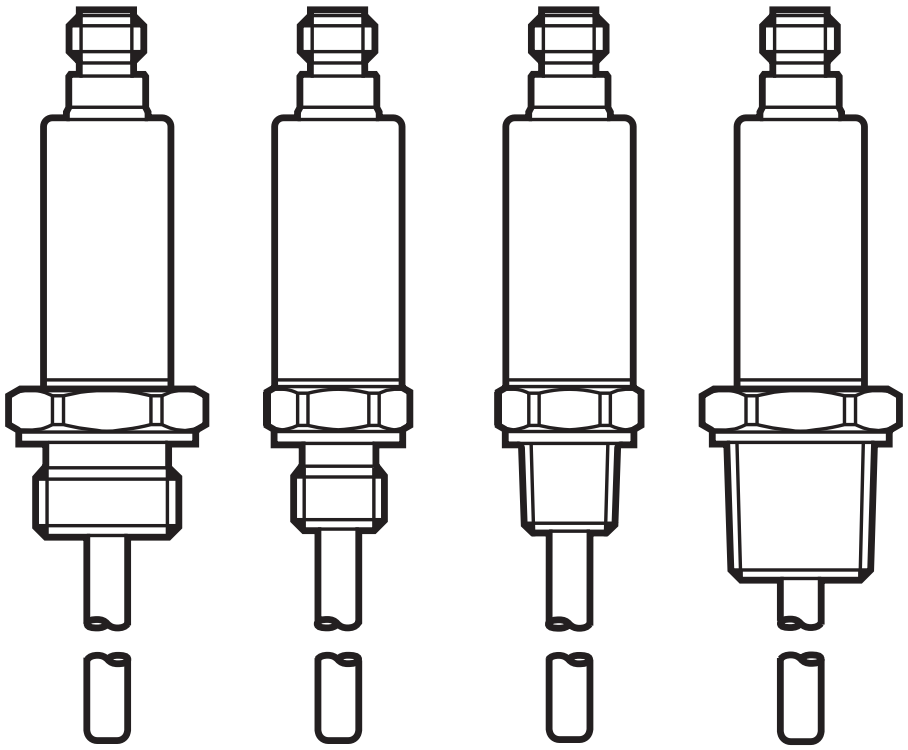
Operating instructions
Electronic temperature sensor

TV7xxx

UK



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1 Preliminary note

▶ Instructions

> Reaction, result

→ Cross-reference

Important note
Non-compliance may result in malfunction or interference.

Information
Supplementary note.

2 Safety instructions

- Please read this document prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property can occur.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application. That is why installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.
- In order to guarantee the correct condition of the device for the operating time it is necessary to use the device only for media to which the wetted materials are sufficiently resistant (→ Technical data).
- The responsibility whether the measurement devices are suitable for the respective application lies with the operator. The manufacturer assumes no liability for consequences of misuse by the operator. Improper installation and use of the devices result in a loss of the warranty claims.

3 Functions and features

The unit monitors the system temperature in machinery and plants.

4 Function

The unit generates 2 output signals according to the parameter setting:

OUT1 / IO-Link:

- Switching signal for temperature limit
- Communication via IO-Link

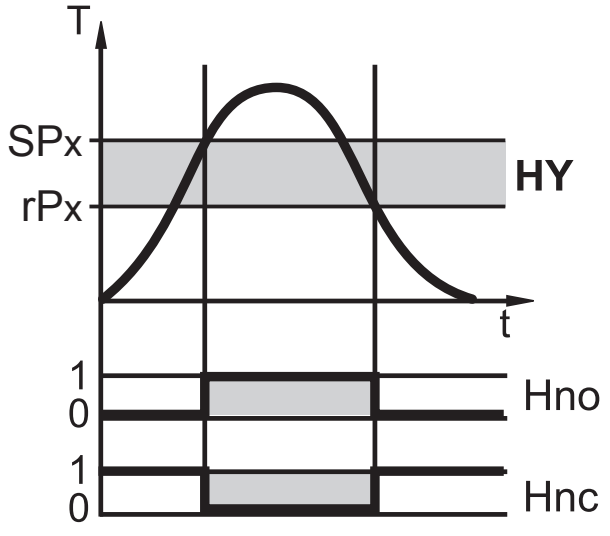
OUT2:

- Switching signal for temperature limit

4.1 Switching function

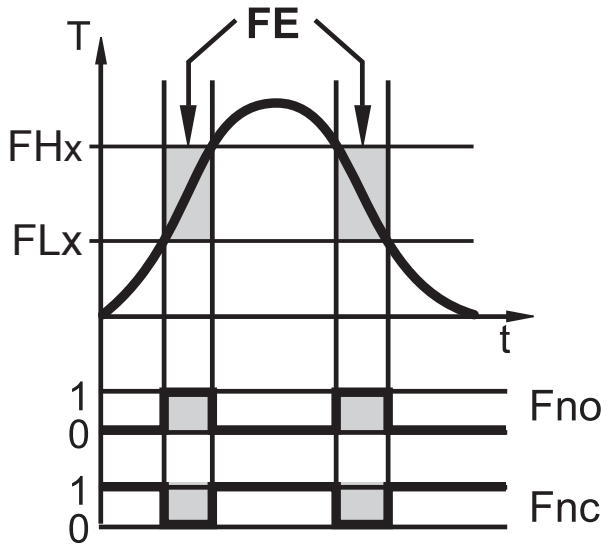
OUTx changes its switching status if it is above or below the set switching limits. Hysteresis or window function can be selected.

Hysteresis function



T = Temperature
SPx = set point (SP1 / SP2)
rPx = reset point (rP1 / rP2)
HY = hysteresis
Hno = Hysteresis NO (normally open)
Hnc = Hysteresis NC (normally closed)

Window function



T = Temperature
FHx = upper limit value (FH1 / FH2)
FLx = lower limit value (FL1 / FL2)
FE = window
Fno = Window NO (normally open)
Fnc = Window NC (normally closed)

When the hysteresis function is set, the set point (SPx) is defined first and then the reset point (rPx) which must be of a lower value. If only the set point is changed, the reset point remains constant.

When set to the window function the upper limit value (FHx) and the lower limit value (FLx) have a fixed hysteresis of 0.25 % of the final value of the measuring range. This keeps the switching state of the output stable if the temperature varies slightly.

4.2 IO-Link

This unit has an IO-Link communication interface which enables direct access to process and diagnostic data. In addition it is possible to set the parameters of the unit during operation. Operation of the unit via IO-Link interface requires an IO-Link capable module (IO-Link master).

With a PC, suitable IO-Link software and an IO-Link adapter cable communication is possible when the system is not in operation.

For the IODDs necessary for the configuration of the unit, detailed information about process data structure, diagnostic information, parameter addresses and the necessary information about the required IO-Link hardware and software visit www.ifm.com.

5 Installation

▶ Ensure that no media can leak at the mounting location during installation.

Horizontal mounting recommended for high medium temperatures.

▶ Insert the unit in a process connection and tighten firmly.

Recommended Tightening torque:

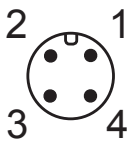
Process connection	Tightening torque
G ¼	35 Nm
G ½	45 Nm
½" NPT	1.5 turns past hand tight
¼" NPT	

6 Electrical connection

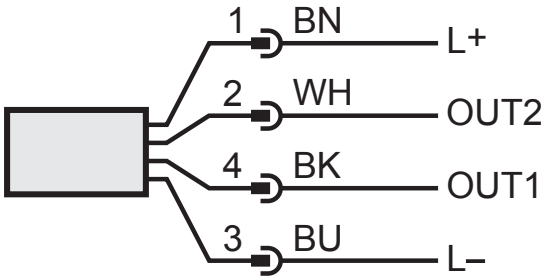
The unit must be connected by a qualified electrician.
The national and international regulations for the installation of electrical equipment must be adhered to.
Voltage supply to EN 50178, SELV, PELV.

▶ Disconnect power.

▶ Connect the unit as follows:



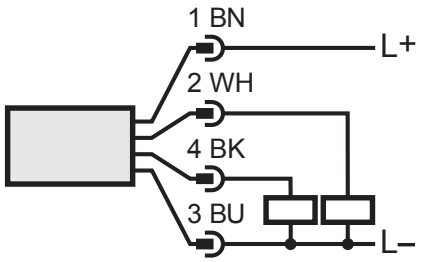
BK: black
BN: brown
BU: blue
WH: white



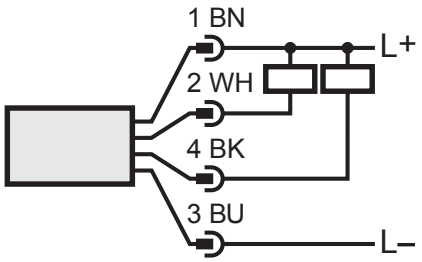
Colours to DIN EN 60947-5-2

Sample circuits:

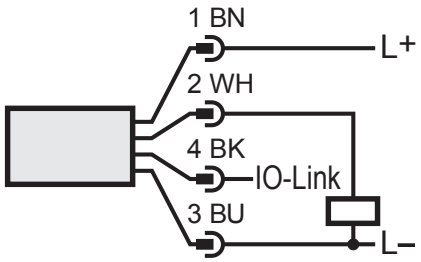
2 x positive switching



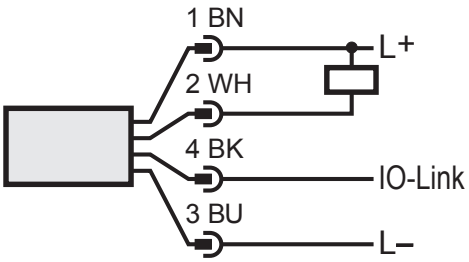
2 x negative switching



1 x positive switching / 1 x IO-Link



1 x negative switching / 1 x IO-Link



7 Parameter setting

The parameters are set via the IO-Link interface (→ 4.2).

Parameters can be set before installation and set-up of the unit or during operation.

If you change parameters during operation, this will influence the function of the plant.

▶ Ensure that there will be no malfunctions in your plant.

During parameter setting the unit remains in the operating mode. It continues to monitor with the existing parameter until the parameter setting has been completed.

7.1 Adjustable parameters

Parameter	Function
SPx	Set point (upper limit value) with hysteresis function
rPx	Reset point (lower limit value) with hysteresis function
FHx	Set point (upper limit value) with window function
FLx	Set point (lower limit value) with window function
oux	Output function OUTx: Hno = Hysteresis function normally open Hnc = Hysteresis function normally closed Fno = Window function normally open Fnc = Window function normally closed
dSx	Switching delay on OUTx in seconds
drx	Switch-off delay on OUTx in seconds
uni	Standard unit of measurement for temperature (°C or °F)
P-n	Output logic: pnp / npn
Lo	Minimum value of the temperature measured in the process.
Hi	Maximum value of the temperature measured in the process.
dAP	Measured value damping: damping constant in seconds.
coF	Zero-point calibration. The internal measured value "0" is shifted by the set value.
HITS	Setting of the threshold for the overload counter
HITC	Number of overload processes

8 Technical data

Technical data and scale drawing at www.ifm.com.

9 Factory setting

Parameter	Factory setting		User setting
	TV7xx5	TV7xx3	
SP1	60 °C	140 °F	
rP1	50 °C	122 °F	
SP2	120 °C	248 °F	
rP2	100 °C	212 °F	
uni	°C	°F	
ou1	Hno		
ou2	Hno		
dS1	0		
dr1	0		
dS2	0		
dr2	0		
FOU1	OFF		
FOU2	OFF		
P-n	PnP		
coF	0		

Technical data, approvals, accessories and further information at www.ifm.com.