



Temperature switch HTS 2200

IO-Link interface

2 switching outputs, scalable analogue output

Int. temperature sensor

Display



Features

- Integrated temperature sensor
- IO-Link interface
- Parameterisation and cyclic transmission of process and service data
- Simplification of installation and commissioning
- Rotatable display
- Any installation position possible
- Colour display
- Device temperature monitoring

Description

The HTS 2200 with IO-Link communication interface is a compact electronic temperature switch.

With its integrated temperature sensor, the HTS 2200 is particularly suitable for direct tank mounting and is available with several sensor lengths. The up to 600 bar pressure-resistant version with an integrated 18 mm temperature sensor can be mounted directly in the pipework or on the hydraulic block.

The device has an IO-Link or switching output and a further output which can be used as a switching or analogue output (4 .. 20 mA or 0 .. 10 V scalable).

IO-Link is a communication interface technology used between the sensor / actuator (IO-Link device) and an IO-Link master based on a point-to-point interface.

Process data, parameters and diagnostic information from the temperature switch can be transmitted via the standard cable (SDCI Mode). The integrated LED display provides information on the operating mode and on the switching statuses.

If IO-Link is not used, the sensor works as a temperature switch with two switching outputs or with one switching output and one analogue output (SIO mode), depending on the settings.

In order to create customised small series or to generate system wide duplications of sensor settings, the sensor can also be adjusted very conveniently outside of the system to suit the application using the HYDAC programming adapter ZBE P1-000 or via the portable measurement unit HMG 4000.

Application fields

Typical application fields of the HTS 2200 IO-Link are in machine tools, handling and mounting automation, intra-logistics or in packaging industry. The bi-directional communication with sensors and actuators on the lowest field level via IO-Link enables services, such as remote diagnostics, remote maintenance and condition-based predictive maintenance.

Technical Data

Input data						
Measuring range		-25..+100 °C (-13..+212 °F)				
Probe length		mm	18	100	250	350
Probe diameter		mm	6	8	8	8
Pressure resistance		bar	600	50 ¹⁾	50 ¹⁾	50 ¹⁾
Mechanical connection		G1/2 A ISO 1179-2				
Tightening torque, recommended		45 Nm				
Parts in contact with fluid		Mech. connection: Stainless steel Seal: NBR				
Output data						
Output signals		Output 1: Switching output Output 2: configurable as switching output or analogue output				
Switching outputs		PNP, NPN and push-pull transistor switching outputs (switchable) Switching current: SP1: max. 0.25 A / SP2: max. 0.25 A Switching cycles: > 100 million				
Analogue output, permitted load resistance		Selectable: 4..20 mA 0..10 V corresponds to -25..+100 °C			Load: max. 500 Ω Load: min. 2 kΩ	
Accuracy (at room temperature)		≤ ± 1.0 °C (≤ ± 2.0 °F)				
Temperature drift (environment)		≤ ± 0.015 % FS / °C				
Rise time acc. to DIN EN 60751		t ₅₀ : t ₉₀ :	3.5 s 8.5 s	3.5 s 12 s	3.5 s 12 s	3.5 s 12 s
Repeatability		≤ ± 0.25 % FS max.				
Environmental conditions / Approvals / Tests						
Operating temperature range		-25..+80 °C (-13..+176 °F) (-25..+55 °C (-13..+131 °F) for UL specifications, <i>see below</i>)				
Storage temperature range		-40..+80 °C (-40..+176 °F)				
Fluid temperature range ²⁾		-40..+100 °C / -25..+100 °C (-40..+212 °F / -13..+212 °F)				
EMC		2014/30/EU EN 61000-6-1 / 2 / 3 / 4				
Vibration resistance	DIN EN 60068-2-6	Probe lengths 18 mm and 100 mm: ≤ 10 g (10..500 Hz) Probe lengths 250 mm and 350 mm: ≤ 2 g (10..500 Hz) ³⁾				
Shock resistance	DIN EN 60068-2-27	Probe lengths 18 mm and 100 mm: ≤ 50 g / 11 ms / half sine Probe lengths 250 mm and 350 mm: ≤ 15 g / 11 ms / half-sine ³⁾				
Protection class ⁴⁾		DIN EN 60529		IP 67		
CE conformity		Available				
UL approval ⁵⁾		Available				
IO-Link specific data						
IO-Link revision		V1.1				
Transmission Rate, Baud rate ⁶⁾		38.4 kbit/s (COM2)				
Minimum Cycle Time		3 ms				
Process input data		32 bit				
Process output data		n/a				
SIO mode supported		Yes				
Master-Port class		Class-A (Class B, if pin 2 is not connected)				
M-Sequence capability		PREOPERATE = TYPE_1_V with 8 octets on-request data OPERATE = TYPE_2_V with 1 octet on-request data ISDU supported				
Profile characteristics		0x0010 (measuring and Switching Sensor, 1 channel) 0x4000 (Identification & Diagnosis) 0x8011 (Multi teach two value Extension) 0x8012 (Multi teach Dynamic Extension) 0x8014 (quantity detection) 0x8101 (Visual Localisation)				
Download of the IO Device Description (IODD) at:		https://ioddfinder.io-link.com/#/				

Other data

Supply voltage	9..35 V DC, if PIN 2 = SP2 18..35 V DC, if PIN 2 = Analogue output (respectively 18..30 V DC for communication operation) - limited energy – acc. to 9.4 UL 61010; Class 2 UL 1310/1585; LPS UL 60950				
when applied acc. to UL specifications (see above)					
Residual ripple of the supply voltage	≤ 5 %				
Current consumption	≤ 60 mA without switch point and analogue output currents				
Display	4 digits, LED, 7 segment, red / green (switchable), height of characters 8.4 mm				
Weight	g	~ 240	~ 255	~ 280	~ 300

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.

FS (Full Scale) = relative to complete measuring range

- 1) Higher pressure resistance on request
- 2) In the standard up to -25 °C with NBR seal, -40 °C on request
- 3) Additional attachment of the sensor probe necessary
- 4) With mounted mating connector in corresponding protection type
- 5) Environmental conditions acc. to 1.4.2 UL 61010-1; C22.2 no. 61010-1
- 6) Connection with unshielded standard sensor line possible up to a max line length of 20 m.

Setting options

All the terms and symbols used for setting the HTS 2200 as well as menu structure comply with the specifications of the German Engineering Federation Standard (VDMA 24574-1) for temperature switches.

Setting ranges for the switching outputs

Measuring range	Lower limit of RP / FL	Upper limit of SP / FH	Minimum distance between RP and SP or FL and FH	Increment ¹⁾
Integrated sensor				
-25..+100 °C	-23.8 °C	100.0 °C	1.2 °C	0.2 °C
-13..+212 °F	-11.0 °F	212.0 °F	2.0 °F	0.5 °F

¹⁾ All ranges listed in the table are adjustable within the grid of the increment.

SP = Switch point;

RP = Switch-back point;

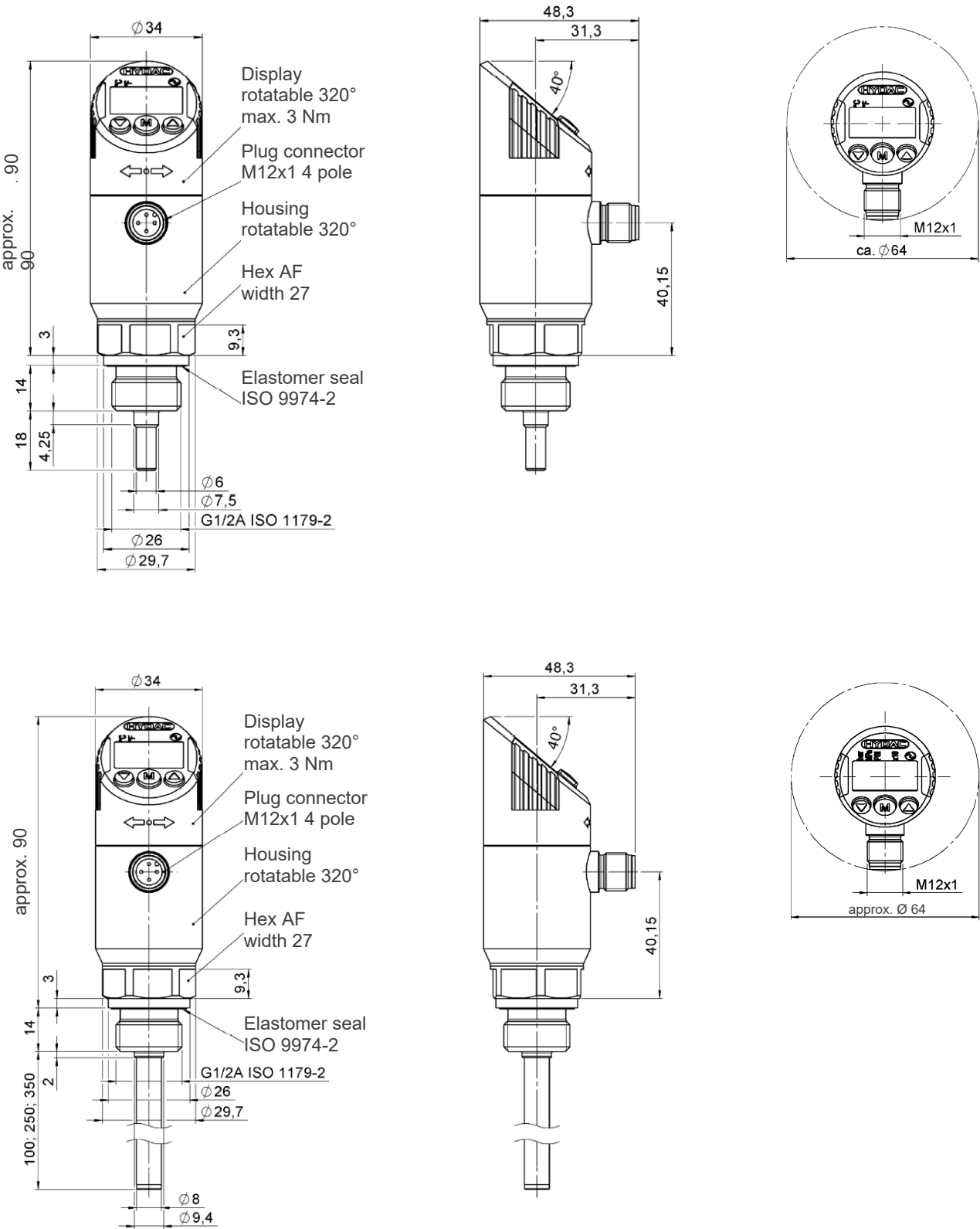
FL = Temperature window lower value;

FH = Temperature window upper value

Additional functions

- Switching mode of the switching outputs adjustable (switch point function or window function)
- Switching direction of the switching outputs adjustable (N/C or N/O)
- Switch-on and switch-back delay adjustable
- Analogue output adjustable to 4.. 20 mA or 0.. 10 V
- Scalable analogue output
- Display of the temperature in the units °C and °F

Dimensions



Pin connections

M12x1, 4 pole	Pin	Output signal: F31	
		Signal	Description
	1	L+	+U _B
	2	Q2/QA	Switching output (SP2) / analogue output
	3	L-	0 V
	4	C/Q1	IO-Link communication / switching output (SP1)

Model code

HTS 2 2 2 6 - F31 - XXX - 000

Version

2 = With integrated temperature probe

Mechanical connection

2 = G1/2 A ISO 1179-2

Electrical connection

6 = Plug connector M12x1, 4 pole (without mating connector)

Output signal

F31 = IO-Link interface

Rod length in mm

018; 100; 250; 350

Modification number

000 = Standard

Accessories:

Appropriate accessories, such as mating connectors for the electrical connection, can be found in the Accessories brochure.

Note

The information in this brochure relates to the operating conditions and applications described.
For applications and/or operating conditions not described please contact the relevant technical department.
Subject to technical modifications.

HYDAC ELECTRONIC GMBH

Hauptstrasse 27

D-66128 Saarbruecken

Phone: +49 (0)6897 509-1

Fax: +49 (0)6897 509-1726

Email: electronic@hydac.com

Website: www.hydac.com

