

Level- and temperature sensor

Nivotemp NT M-XP



Fluidcontrol

 IO-Link

In hydraulics and lubrication technology the fill level of oil tanks needs to be monitored continuously. Here, modern factory automation requires compatible signals. Despite central system control, visualising the current level on the actual tanks is often desired. The Nivotemp M series was designed to integrate small oil tanks and little space available for add-on units and monitoring equipment in sophisticated system monitors. It combines small installation dimensions with a high functional density and easy operation.

NT M-XP

G3/4 connection thread

Combined, continuous liquid level and oil temperature monitoring

LED display swivels 270°

Menu structure based on VDMA standard sheet 24574 ff.

Up to 6 programmable switching outputs assignable as level or temperature signal

Alternatively with IO-Link and 1 x programmable switching output

Alternatively with one analog output each for level and temperature plus 2 or up to 6 freely programmable switching outputs

Characteristics of switching outputs configurable as window or hysteresis

Switching output configurable as frequency output (1-100 Hz)

Min/max memory, logbook function

M12 plug base

Proven and tested highly dynamic float system

Various immersion tube lengths



Technical Data NT M-XP

Basic unit

Version	MS
Operating pressure	max. 1 bar (14.5 psi)
Operating temperature	-20 °C to +80 °C (-4°F to 176°F)
Float	SK 171
Min. fluid density	0.80 kg/dm ³ (0.029 lb/in ³)
Lengths (all versions)	200 (7.9), 280 (11), 370 (14.6), 500 (19.7), 650 (25.6), 820 (32.3) mm (inch) (other lengths available upon request) Min. 200 mm (7.9 inch). Shorter versions not available for design reasons.

Material/Version	
Float	PU
Immersion tube	Brass
Flange (G3/4)	Brass
Weight at L=280 mm (11 in)	approx. 390 g (0.9 lb)
Each 150 mm (5.9 in) add	approx. 20 g (0.05 lb)
Degree of protection	IP65

Analysis Display Electronics		
Display	4 character 7 segment LED	
Operation	Via 3 keys	
Memory	Min. / Max. Data memory	
Starting current input	approx. 100 mA for 100 ms	
Current input during operation	approx. 50 mA (without current- and switching outputs)	
Supply voltage (U _B)	10 – 30 V DC (nominal voltage 24 V DC) / with IO-Link 18 – 30 V DC	
Ambient temperature	-20 °C to +70°C (-4 °F to 158 °F)	
Display units	Level	Temperature
	%, cm, L, i, Gal	°C / °F
Display range	adjustable	-20 °C to +120 °C (-4 °F to 248 °F)
Alarm setting range	e.g. 0 – 100 %	0 °C to 100 °C (32 °F to 212 °F)
Display accuracy	± 1 % from end value	± 1 % from end value

Input values	Level	Temperature
Principle of measurement	Reed-contact Resolution 10 mm (0.4 in)	Pt100 Cl. B, DIN EN 60751 Tolerance ± 0.8 °C (± 1.4 °F)
Display units	%, cm, L, i, Gal	°C / °F

Optional switching outputs

	1D1S	2S	4S	6S
Plug (base)	1 x M12 – 4-pin	1 x M12 – 4-pin	2 x M12 – 4-pin	1 x M12 – 8-pin
Switching outputs	IO-Link and 1 x freely programmable with level or temperature assignment options	2 x freely programmable with assignment options, e.g. 1 x level / 1 x temperature*	4 x freely programmable with assignment options, e.g. 2 x level / 2 x temperature*	6 x freely programmable with assignment options, e.g. 4 x level / 2 x temperature*
Alarm memory	with 1 x assignable to alarm logbook	with 1 x assignable to alarm logbook	with 1 x assignable to alarm logbook	with 1 x assignable to alarm logbook
max. switching current**	0.5 A per output	0.5 A per output	0.5 A per output continuous short-circuit protected	0.5 A per output continuous short-circuit protected
Contact load	max. 1 A total	max. 1 A total	max. 1 A total	max. 1 A total

*also programmable as frequency output

**Output 1 max. 0.2 A.

	2S-KN-KT	4S-KN-KT	6S-KN-KT
Plug (base)	2 x M12 – 4-pin	1 x M12 – 8-pin	2 x M12 – 4-pin / 8-pin
Switching outputs	2 x freely programmable with arbitrary assignment	4 x freely programmable with arbitrary assignment	6 x freely programmable with arbitrary assignment
Alarm memory	with 1 x assignable to alarm logbook	with 1 x assignable to alarm logbook	with 1 x assignable to alarm logbook
max. switching current**	0.5 A per output continuous short-circuit protected	0.5 A per output continuous short-circuit protected	0.5 A per output continuous short-circuit protected
Contact load	max. 1 A total	max. 1 A total	max. 1 A total
Analogue outputs	1 x level 1 x temperature	1 x level 1 x temperature	1 x level 1 x temperature
Programmable as	1 x 4 – 20 mA, 2- 10 V DC, 0-10 V DC, 0-5 V DC	1 x 4 – 20 mA, 2- 10 V DC, 0-10 V DC, 0-5 V DC	1 x 4 – 20 mA, 2- 10 V DC, 0-10 V DC, 0-5 V DC
Max. burden Ω as current output	$(U_B - 8V) / 0.02 A$	$(U_B - 8V) / 0.02 A$	$(U_B - 8V) / 0.02 A$
Min. input load as voltage output	10 k Ω	10 k Ω	10 k Ω

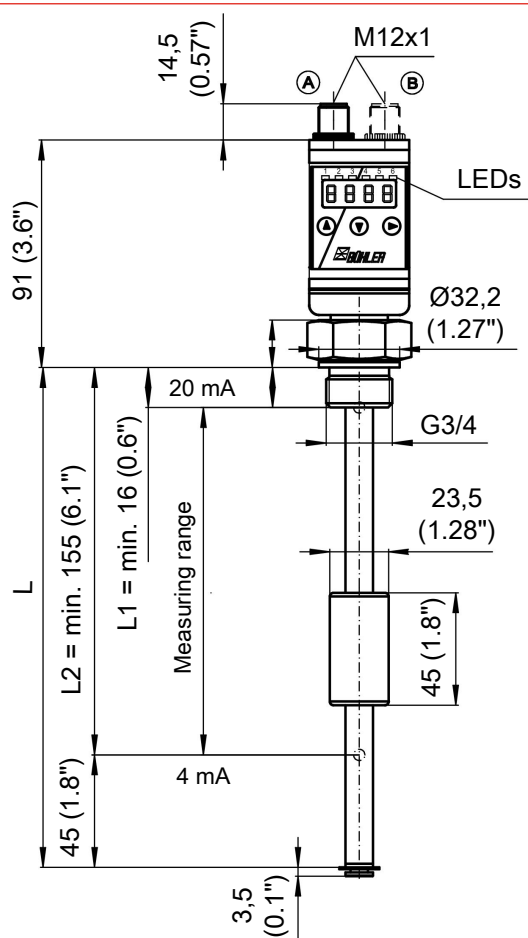
*also programmable as frequency output

**Output 1 max. 0.2 A.

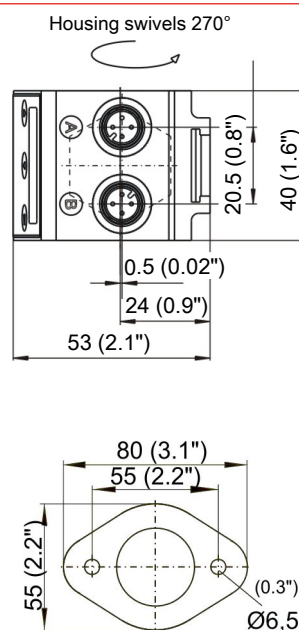
Other output cards available upon request.

Dimensions NT M-XP

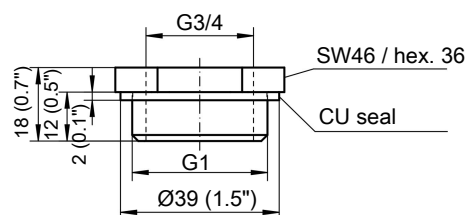
Basic version



Flange drawing



Adapter G3/4 to G1



Ordering Instructions NT M-XP

Model key

NT M-XP-□□-□□-□□-□□-□□			
Type designation with display, control unit		Option OV G1	Oval flange adapter to G1"
Version MS Brass		Output card	
Plug connection M12 ¹⁾ - 4-pin 2M12 - 4-pin M12 ²⁾ - 8-pin 2M12 ³⁾ - 1 x 4-pin, 1 x 8-pin		1D1S	1 x IO-Link 1 x PNP switching output
		2S	2 x PNP switching output
		4S	4 x PNP switching output
		6S	6 x PNP switching output
		2S-KN-KT	2 x PNP switching output 1 x analogue level output 1 x analogue temperature output
		4S-KN-KT	4 x PNP switching output 1 x analogue level output 1 x analogue temperature output
		6S-KN-KT	6 x PNP switching output 1 x analogue level output 1 x analogue temperature output
Length (max. 1400 mm/55.1") 200 (7.9") 280 (11") 370 (14.6") 500 (19.7") 650 (25.6") 800 (31.5")			

- ¹⁾ Version 2S and 1D1S only
²⁾ Version 4S-KN-KT and 6S only
³⁾ Version 6S-KN-KT only

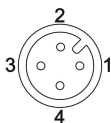
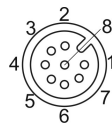
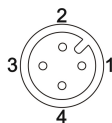
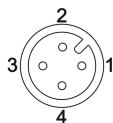
Accessories

Item no. 4-pin	Item no. 8-pin	Description
9144050010	9144050048	Connecting cable M12x1, 1.5 m (4,92 ft), angular coupling and straight plug
9144050046	9144050049	Connecting cable M12x1, 3.0 m (9,84 ft), angular coupling and straight plug
9144050047	9144050033	Connecting cable M12x1, 5.0 m (16,40 ft), angular coupling and strands

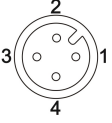
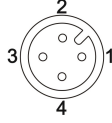
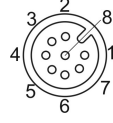
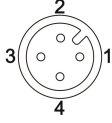
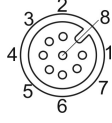
Ordering example

You require:	Level and temperature measurement, 2xM12 connector, length L=650 mm (25.6") with 2 programmable PNP switching points and analogue output for level and temperature.
Order:	NT M-XP- MS-2M12 / 650-2S-KN-KT

Standard pin assignment NT M-XP

Version	1D1S	2S	4S		6S
Plug	1x M12 4-pin		2x M12 4-pin		1x M12 8-pin
Connection schematic			Plug A	Plug B	
					
			Display		
Pin					
1	+24 V DC	+24 V DC	+24 V DC*	+24 V DC*	+24 V DC
2	S2 (PNP)	S2 (PNP)	S2 (PNP)	S4 (PNP)	S2 (PNP)
3	GND	GND	GND	GND	GND
4	C/Q (IO-Link)	S1 (PNP)	S1 (PNP)	S3 (PNP)	S1 (PNP)
5					S3 (PNP)
6					S4 (PNP)
7					S5 (PNP)
8					S6 (PNP)

*Plugs A & B must be connected to ensure proper function! It is important to note here that the plug for the display should be connected last, otherwise an error will occur (error 1024).

Version	2S-KN-KT		4S-KN-KT	6S-KN-KT	
Plug	2x M12 4-pin		1x M12 8-pin	2x M12 4-pin/8-pin	
Connection schematic	Plug A 	Plug B 		Plug A 	Plug B 
		Display			Display
Pin					
1	+24 V DC*	+24 V DC*	+24 V DC	+24 V DC	+24 V DC
2	Temp (analog)	S2 (PNP)	S2 (PNP)	Temp (analog)	S2 (PNP)
3	GND	GND	GND	GND	GND
4	Level (analog)	S1 (PNP)	S1 (PNP)	Level (analog)	S1 (PNP)
5			S3 (PNP)		S3 (PNP)
6			S4 (PNP)		S4 (PNP)
7			Level (analog)		S5 (PNP)
8			Temp (analog)		S6 (PNP)

*Plugs A & B must be connected to ensure proper function! It is important to note here that the plug for the display should be connected last, otherwise an error will occur (error 1024).