

Level and temperature switch

Nivotemp NT M, NT MD



Fluidcontrol

In hydraulics and lubrication technology the fill level of oil tanks needs to be monitored. Here, modern factory automation requires compatible signals. The Nivotemp M series features a group of devices for both monitoring the level as well as the level and temperature in hydraulic or lubrication units.

NT M

Vessel connections G3/4, G1, flange or oval flange

Various plug options

Level and/or temperature control

Up to 4 switching outputs

Small, compact design

Proven and tested highly dynamic float system

Brass or stainless steel housing

NT MD

Vessel connections G3/4, G1 or oval flange

Fixed switching outputs for liquid level monitoring

LED display with status of switching outputs, 270° swivel

Standardised VDMA-based menu structure

Up to four programmable temperature switching outputs

Alternatively, continuous temperature output signal plus freely programmable switching output

Switching output configurable as window or hysteresis

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

Min./max. value memory, logbook



Technical Data NT M

Version	MS	VA
Operating pressure:	max. 1 bar (14.5 psi)*	max. 1 bar (14.5 psi)
Operating temperature:	-20 °C to +80 °C (-4 °F to 176 °F)	-20 °C to +80 °C (-4 °F to 176 °F)
Float:	SK 161	SK 161
Min. fluid density:	0.80 kg/dm ³ (0.029 lb/in ³)	0.80 kg/dm ³ (0.029 lb/in ³)
Lengths (all versions):	280, 370, 500 mm (standard) (11, 14.6, 19.7 in) variable to max. 1000 mm (39.4 in)	
Weight at L=500 mm (19.7 in):	approx. 300 g (0.7 lb)	approx. 350 g (0.8 lb)

* max. atmospheric for PA oval flange

Material

Float:	NBR	NBR
Immersion tube:	Brass	1.4571
G3/4 connection:	Brass	1.4571
G1 connection:	Brass	Brass via adapter
Flange connection:	Aluminium	--
Oval flange:	PA	VA/brass via adapter

Level switching output	K8	W9
Max. number	4	3
Function:	NO/NC*	Change-over contact
Max. voltage:	230 V AC/DC	48 V AC/DC
Max. switching current:	0.5 A	0.5 A
Max. contact load:	10 VA	20 VA
Min. contact spacing:	40 mm (1.6 in)	40 mm (1.6 in)

*NO = falling open / NC = falling close

Optional temperature

Temperature contact:	TM xx	
Max. voltage:	230 V AC/DC	
Max. switching current:	2 A	
Max. contact load:	100 VA	
Function:	NC	NO
Switching point °C (°F):	50/60/70/80 (122/140/158/176)	50/60/70/80 (122/140/158/176)
Switching point tolerance:	± 5 K (± 9 Ra)	± 5 K (± 9 Ra)
Max. hysteresis:	18 K ± 5 K (32.4 Ra ± 9 Ra)	26/35/40/45 K ± 5 K (47/63/72/81 Ra ± 9 Ra)

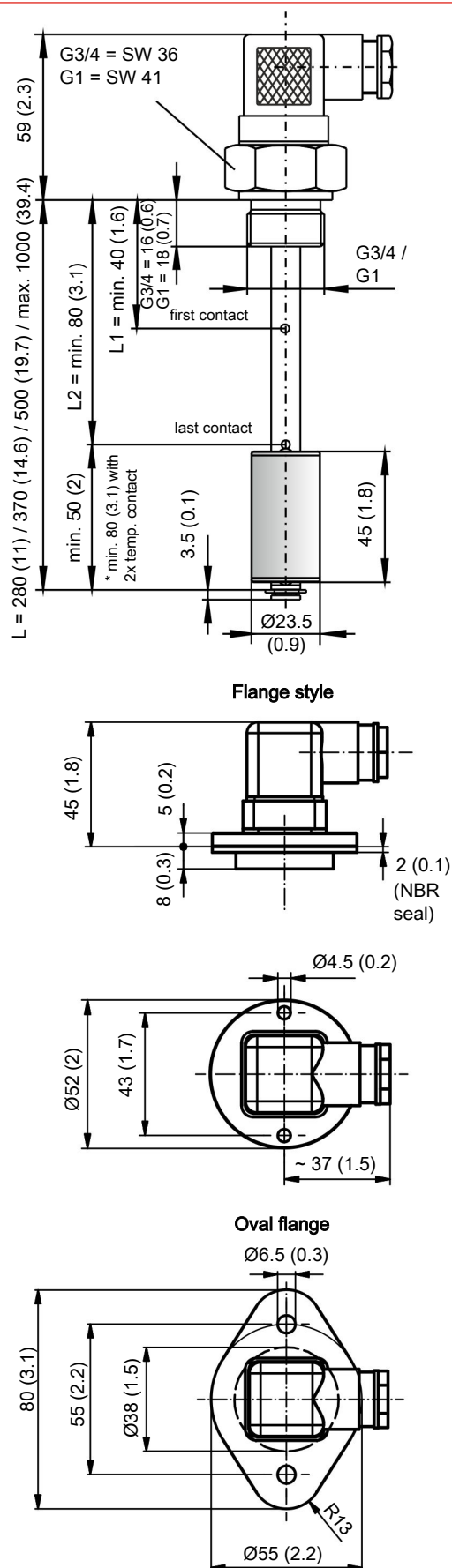
Temperature sensor

Pt100:	DIN EN 60 751 (tolerance ± 0.8 °C/1.4 °F)
Analogue output:	See "Technical Data NT M with Analogue Output for Temperature"

Adapter

OV:	Adapter to oval flange incl. seal and locking nut
G1:	Adapter G3/4 to G1

Dimensions



NT M ordering instructions

Model key

NT M-XX-XX-XX-XX-XX-XX-A-B-XX									
Model designation									
Version									
MS = brass									
VA = stainless steel									
Connection									
G3/4									
G1 *									
FL *									
OV *									
Plug **									
M3									
GS4 ***									
M12									
C7 ***									
Length									
280 (11 in)									
370 (14.6 in)									
500 (19.7 in)									
Variable (please specify)									
Number of level contacts									
1-4									
Contact type									
K8 NC/NO									
W9 change-over contact (max. 3)									

Options

OV	= oval flange (for G3/4)
G1	= adapter G3/4 to G1

2nd Temperature contact

(double temperature contact only)

NC contact	NO contact
TM50NC	TM50NO = 50 °C (122 °F)
	TM55NO = 55 °C (131 °F)
TM60NC	TM60NO = 60 °C (140 °F)
TM70NC	TM70NO = 70 °C (158 °F)
TM80NC	TM80NO = 80 °C (176 °F)

1st temperature signal

Pt100 **** = temperature sensor

Temperature contact	
NC contact	NO contact
TM50NC	TM50NO = 50 °C (122 °F)
	TM55NO = 55 °C (131 °F)
TM60NC	TM60NO = 60 °C (140 °F)
TM70NC	TM70NO = 70 °C (158 °F)
TM80NC	TM80NO = 80 °C (176 °F)

* not with VA version

** see "Connector"

*** only available with G3/4 connector

**** Cannot be combined with temperature contact

Ordering example

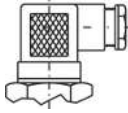
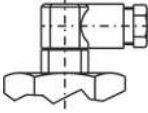
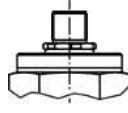
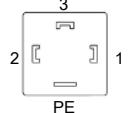
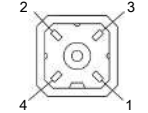
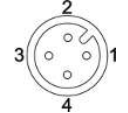
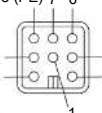
You require: Level switch with G3/4 connection, brass version, length L= 500 mm (19.7 in),
2 level switches, 1st contact 100 mm (3.9 in) NC, 2nd contact 450 mm (17.7 in) NO

Order NT M-MS-G3/4-M3/500-2K-100NC-450NO

NT M Accessories

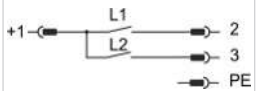
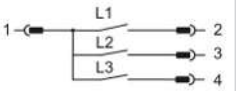
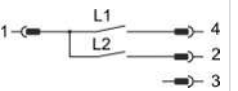
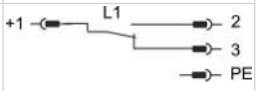
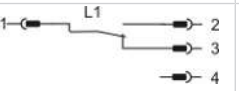
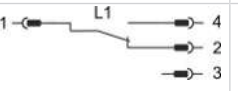
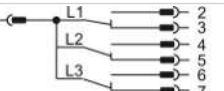
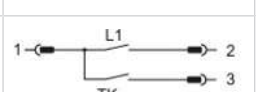
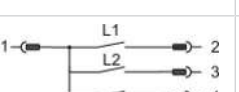
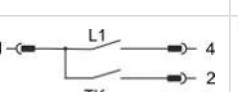
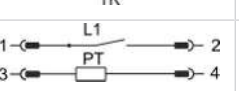
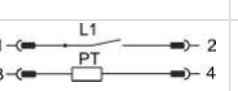
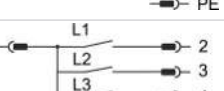
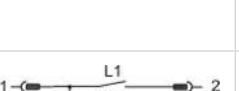
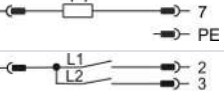
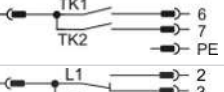
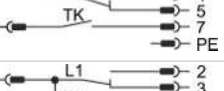
Item no.	Description
9144050010	Connecting cable M12x1, 4-pin, 1.5 m (4.9 ft), angular coupling and straight plug
9144050046	Connecting cable M12x1, 4-pin, 3.0 m (9.8 ft), angular coupling and straight plug
9144050047	Connecting cable M12x1, 4-pin, 5.0 m (16.4 ft), angular coupling and strands

NT M connector

Plug connection	M3 valve connector	GS4	M12 plug A coded	C7
G3/4	X	X	X	X
G1	X	-*	X	-*
Flange	X	-	X	-
OV	X	-*	X	-*
* G3/4 connection with respective adapter				
Dimensions				
Connection schematic				
Number of pins	3-pin + PE	4-pin	4-pin	7-pin + PE
DIN EN	175301-803		61076-2-101	175301-801
Max. voltage	230 V AC/DC*	30 V DC	30 V DC	230 V AC/DC*
IP rating	IP65	IP65	IP67**	IP65***
Cable fitting	PG 11	PG 7		PG 11
Max. Number of contacts				
Level/temp. contacts	1 x K8, 1 x TK	2 x K8, 1 x TK	1 x K8, 1 x TK	3 x K8, 1 x TK
Level contacts only	2 x K8 1 x W9	3 x K8 1 x W9	2 x K8 1 x W9	4 x K8 3 x W9

*Max. 48 V AC/V DC for change-over contact. **IP67 with cable box attached. ***IP44 with gland/without gasket.

Standard pin assignment NT M

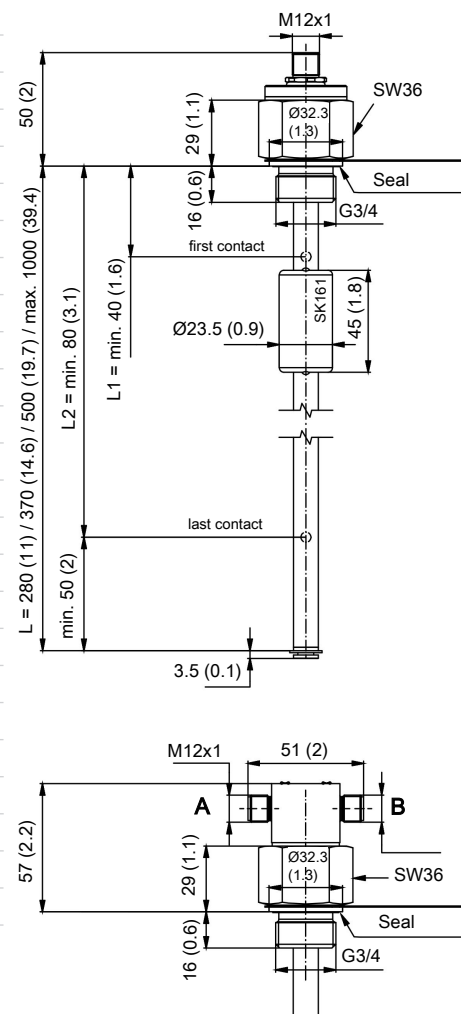
	M3 valve connector	GS4	M12 plug A coded	C7
K8 Level contact(s)				
W9 Level contact(s)				
K8 Level contact(s) and temperature contact				
K8 / Pt100 Level- and temperature sensor				
K8 Level- and temperature contact(s)				
W9 Level contact(s) and temperature contact				
W9 / Pt100 Level- and temperature sensor				

The pin assignments shown always show the max. population possible for the respective plug connection.

Technical Data NT M with analogue output for temperature

Version	MS
Material	
Float:	NBR
Immersion tube:	Brass
G3/4 connection:	Brass
Level switching output	
Max. number:	2
Function:	NO/NC*
Max. voltage:	30 V DC
Max. switching current:	0.5 A
Max. contact load:	10 VA
Min. contact spacing:	40 mm (1.6 in)
*NO = falling open / NC = falling close	
Optional temperature	
Temperature	KT
Detector:	PT100 Class B, DIN EN 60 751
Measuring range*:	0 °C to 100 °C (32 °F to 212 °F)
Operating voltage (UB):	10-30 V DC
Outlet:	4-20 mA
Max. burden Ω:	= (UB-7.5 V)/0.02 A
*Other measuring ranges available upon request	
Adapter	
OV:	Adapter to oval flange incl. seal and locking nut
G1:	Adapter G3/4 to G1

Dimensions



Connector NT M with analogue output for temperature

Plug connection	M12 plug A coded		2 x M12 plug A coded
Number of pins	4-pin		2 x 4-pin
DIN EN	61076-2-101		175201-804
Connection schematic	1 x level contact and analog output		
	2 x level contact and analog output		

Technical Data NT MD

Version	MS
Operating pressure:	max. 1 bar (14.5 psi)
Operating temperature:	-20 °C to +80 °C (-4 °F to 176 °F)
Float:	SK 161
Min. fluid density:	0.80 kg/dm ³ (0.029 lb/in ³)
Lengths:	280 (11), 370 (14.6), 500 mm (19.7 in) (standard) variable to max. 1000 mm (39.4 in)
Weight at L=280 mm (11 in):	approx. 500 g (1.1 lb)

Material

Float:	NBR
Immersion tube:	brass
G3/4 connection:	brass

Level switching output	K8
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Number max.:	2 (not adjustable)
Function:	NO/NC*
Max. voltage:	30 V DC
Max. switching current:	0.5 A
Max. contact load:	10 VA
Min. contact spacing:	40 mm (1.6 in)

*NO = falling open / NC = falling close

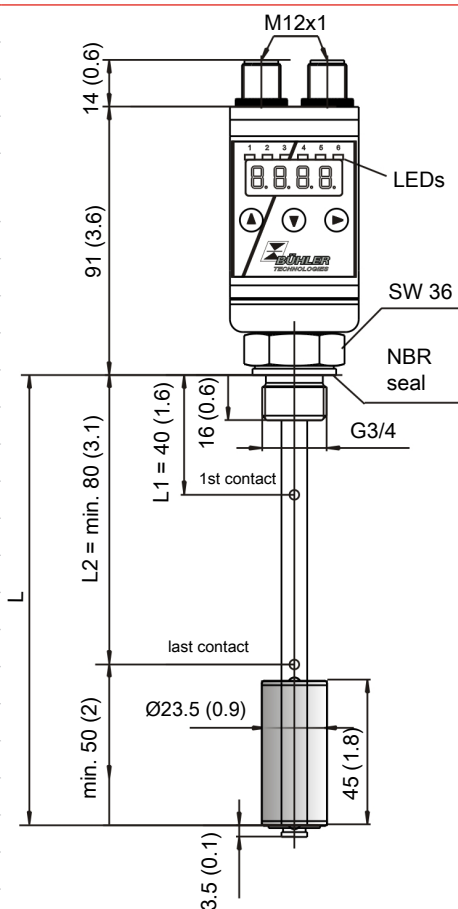
Temperature display electronics

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)
Ambient temperature:	-20 °C to +70 °C (4 °F to 158 °F)
Temperature display units:	°C/°F
Display range:	-20 °C to +120 °C (4 °F to 248 °F)
Alarm setting range:	0 °C to 100 °C (32 °F to 178 °F)
Display accuracy:	± 1 % from end value
Measuring principle:	Pt 100 Class B, DIN EN 60751, resolution 0.5 °C (1 °F)

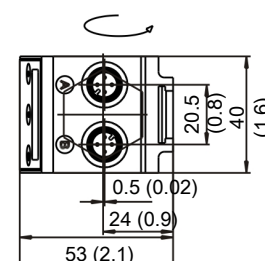
Adapter

OV:	adapter to oval flange incl. seal and locking nut
G1:	adapter G3/4 to G1

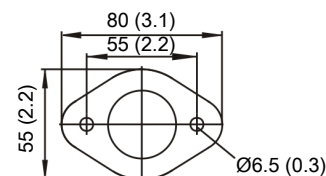
Dimensions



Housing swivels 270°



Oval flange



Temperature outputs NT MD

Choose from the following temperature outputs:

	2T	1T-KT	4T
Plug (base)	2 x M12 – 4-pin	2 x M12 – 4-pin	1 x M12 – 4-pin 1 x M12 – 8-pin
Switching outputs	2 x freely programmable*	1 x freely programmable*	4 x freely programmable*
Alarm memory	1 switching output assignable to alarm logbook	1 switching output assignable to alarm logbook	1 switching output 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
Analog output		1 x 4 – 20 mA, 2 - 10 V DC, 0 - 10 V DC, 0 - 5 V DC	
Max. burden Ω as current output		$= (U_B - 8 \text{ V}) / 0.02 \text{ A}$	
Min. input load as voltage output		10 k Ω	

*Switching output 1 + 2 also programmable as frequency output 1-100 Hz.

**Output 1 max. 0.2 A.

NT MD ordering instructions

Model key

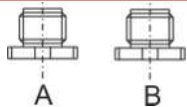
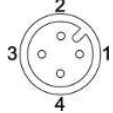
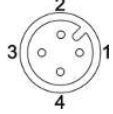
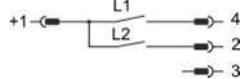
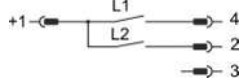
	NT MD	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	Options
Model designation															OV = Oval flange G1 = Adapter G3/4 to G1
Version MS Brass															LED temperature display
Connection G3/4															2T 2 x temperature output
Plug 2 x M12															4T 4 x temperature output
Length 280 (11 in) 370 (14.6 in) 500 (19.7 in) Variable (please specify)															1T-KT 1x temperature output 1x analogue output
Number of level contacts 1 or 2 K8 NC/NO															switching function 2nd contact NO/NC
Installation dimensions L1 = ...mm 1st level contact															Installation dimensions L2 = ...mm 2nd level contact
															Switching function 1st contact NO/NC

Ordering example

You require: Level switch with G3/4 connection, brass, length L= 500 mm (19.7 in), 2 level contacts, 1st contact 100 mm (3.9 in) NC, 2nd contact 450 mm (17.7 in) NO, Temperature analysis with display and 2 programmable outputs.

Order NT MD-MS-G3/4-2M12 / 500-2K-100NC-450NO-2T

Standard pin assignment NT MD

Standard pin assignment	2T	4T	1T-KT
 Plug A level  Plug B temperature 	Level contact(s) 2x temperature output 	Level contact(s) 4x temperature output 	Level contact(s) 1x temperature output 1x analogue output 