Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical information

Flow switch
Flowphant T DTT31, DTT35

Flow switch for safe measurement and monitoring of mass flow and temperature in industrial processes

Application
Flow switch for monitoring, displaying and measuring relative mass flow rates of liquid media in the range from 0.03 to 3 m/s (0.1 to 9.84 ft/s):

Flowphant T DTT31
– with thread connections or coupling
Flowphant T DTT35
– with process connections for hygienic applications

Application examples:
- Monitoring cooling water circulation systems of pumps, turbines, compressors and heat exchangers
- Pump dry running protection
- Leak monitoring in process lines
- Monitoring and displaying dosing quantities of chemical additives
- Monitoring CIP cleaning processes
- Monitoring lubrication systems
- Filter monitoring in the beverage industry

Benefits at a glance
This compact flow switch impresses with the latest in technology being used:

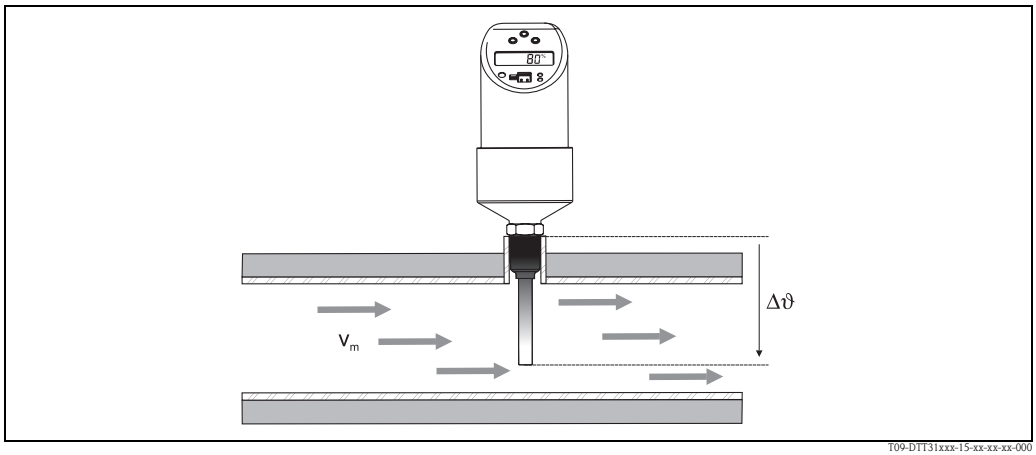
- Easy mounting and flexible process connection thanks to modular connections
- Large turndown
- Practically no pressure loss
- PC and configuration software ReadWin® 2000 for quick configuration and reliable storage of device settings
- Optional: second switch output for temperature monitoring
- Function check and process information onsite thanks to digital display at device
- Top housing section which can be rotated 310° and rotatable display make it possible to read the measured values in all orientations
- 3-A approval for DTT35

TI125R/09/en
71009492

Endress+Hauser
People for Process Automation

Function and system design

Measuring principle

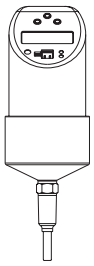
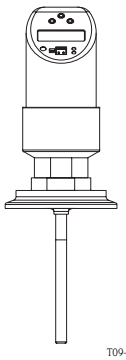


T09-DTT31xxx-15-xx-xx-xx-000

The device measures the mass flow of a liquid medium with the calorimetric measurement method. The calorimetric measuring principle is based on cooling a heated temperature sensor. Heat is removed from the sensor by forced convection due to medium flowing by. The extent of this heat transfer depends on the medium velocity and the difference in temperature between the sensor and medium (King's law). The higher the velocity or the mass flow of the medium, the greater the temperature sensor cooling.

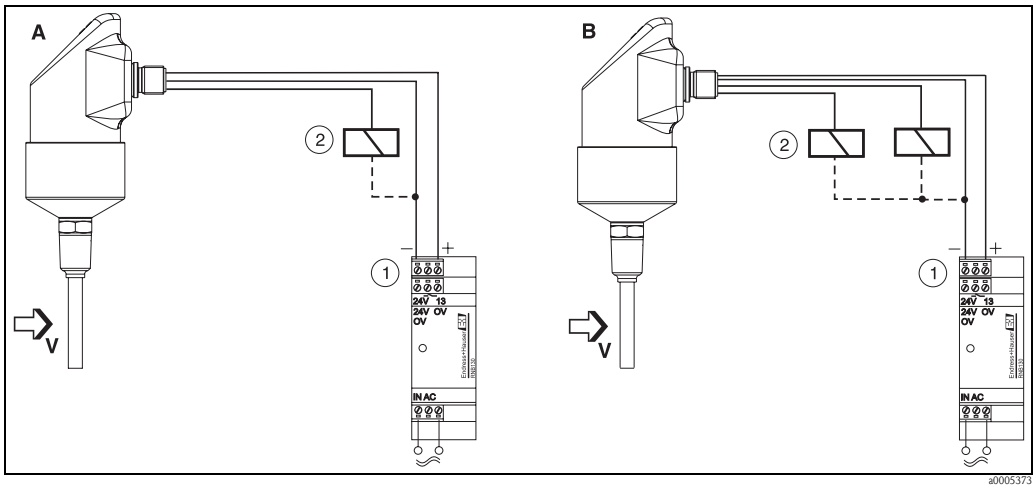
Measuring system

Overview

Flowphant product family	**DTT31**	**DTT35**
	 a0005276	 T09-TTR35xxx-14-xx-xx-xx-000
Measurement probe	RTD	RTD
Field of application	Measurement and monitoring of the mass flow of liquid media.	Measurement and monitoring of the mass flow of liquid media in hygienic processes.
Process connection	■ Compression fitting ■ Thread: – G ½ and G ¼ – ANSI ¼" NPT and ½" NPT	■ Hygiene: – Clamp 1" - 1½", 2" – Varivent F, N – DIN 11851 – APV-Inline
Measuring range	Mass flow as a relative value between 0 and 100%. Process measuring limit, liquids: 0.03 to 3 m/s (0.1 to 9.84 ft/s)	

DC voltage version

PNP switch output of electronics.
Power supply e.g. with a power supply unit.
Preferably in conjunction with programmable logic controllers (PLC) or for controlling a relay.



A: 1x PNP switch output
B: 2x PNP switch output
① *Transmitter power supply unit, e.g. RNB130*
② *Load (e.g. programmable logic controller, process control system, relay)*

① Transmitter power supply unit, e.g. RNB130:
Primary pulsed sensor power supply. Space-saving top-hat rail mounting to IEC 60715.
Input: 100-240 V AC; output: 24 V DC, max. 30 V in event of fault. Connection to single-phase A/C electricity networks or to two external conductors of D/C electricity networks.

Input

Measured variable

- Flow velocity of liquid media (calorimetric measuring principle)
- Temperature (RTD), optional for two switch outputs

Measuring range

- Flow: 0.03 m/s to 3 m/s (0.1 to 9.84 ft/s), as relative value between 0 and 100%; maximum display resolution: 1%
- Temperature: -20 °C to +85 °C (-4 to 185 °F); display resolution: 1 °C (1 °F)

Output

Output signal

DC voltage version: (short-circuit proof version)
- 1x PNP switch output (flow)
- 2x PNP switch outputs (flow or temperature, adjustable)

Signal on alarm

Switch outputs: at safety condition (switch open)

Range of adjustment

- Switch output:
  Switch point (SP) and Switch-back point (RSP) in increments of 1% with min. hysteresis of 5%
- Damping: freely adjustable: 0 = off (no damping) or 10...40 s in increments of 1 s
- Unit: %

Switching capacity

DC voltage version:

- Switch status ON: $I_a \leq 250$ mA, switch status OFF: $I_a \leq 1$ mA
- Switching cycles: > 10,000,000
- Voltage drop PNP: ≤ 2 V
- Overload protection
  Automatic testing of switching current; output is switched off in case of overcurrent, the switching current is tested again every 0.5 s; max. capacitance load: 14 µF for max. supply voltage (without resistive load)
  Periodic disconnection from a protective circuit in event of overcurrent (f = 2 Hz) and indication of 'Warning'

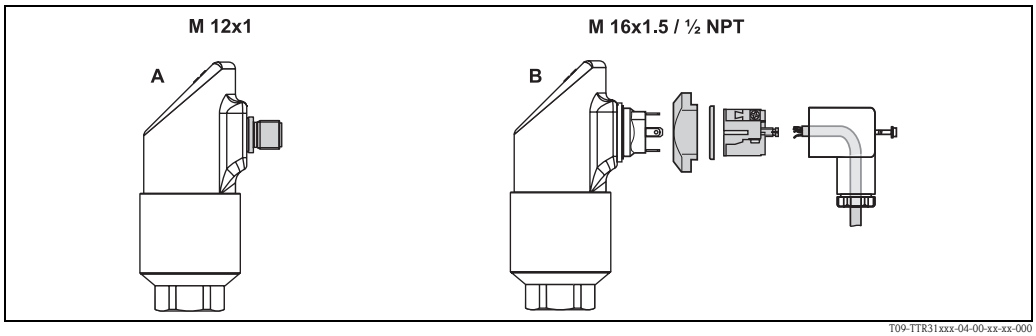
Inductive load

To prevent electrical interference, only operate an inductive load (relays, contactors, solenoid valves) when directly connected to a protective circuit (free-wheeling diode or capacitor).

Power supply

Electrical connection

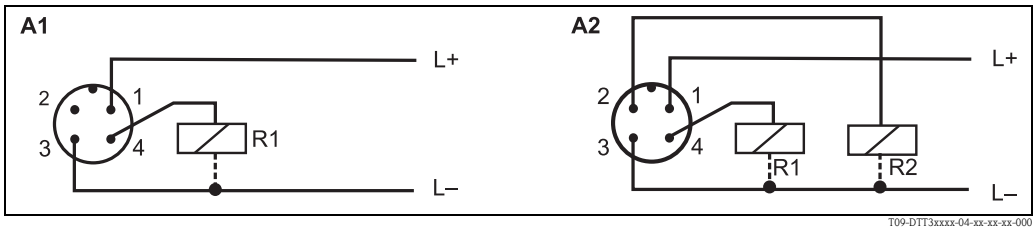
Plug connection



A: M 12x1 connector
B: M 16x1.5 or ½ NPT valve plug

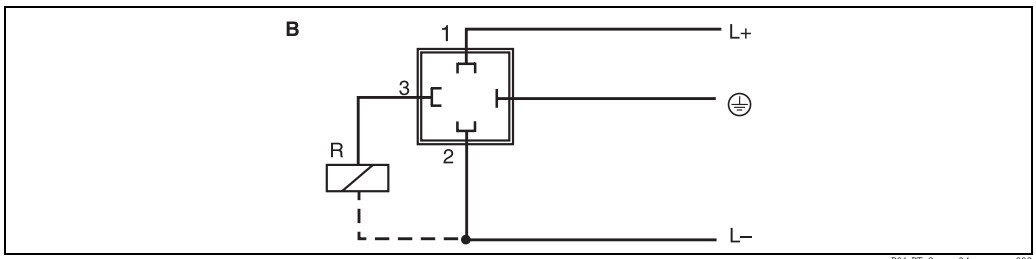
Device connection

- DC voltage version with M 12x1 connector



A1: 1x PNP switch output R1
A2: 2x PNP switch output R1 and R2

- DC voltage version with M 16x1.5 or ½ NPT valve plug



B: 1 x PNP switch output

Supply voltage

DC voltage version
18...30 V DC (reverse polarity protection)

Current consumption

< 100 mA (without load) at 24 V DC, max. 150 mA (without load); with reverse polarity protection

Power supply failure

- Behaviour in case of overvoltage (> 30 V)
  The device works continuously up to 34 V DC without any damage.
  No damage is caused to the device in case of a short-term overvoltage up to 1 kV (as per EN 61000-4-5).
  The specific properties are no longer guaranteed if the supply voltage is exceeded.
- Behaviour in case of undervoltage
  If the supply voltage drops below the minimum value, the device switches off (status as if not supplied with power = switch open).

Performance characteristics

The percentage information in the "Performance characteristics" section refers to the sensor nominal value.

Reference operating conditions

As per DIN IEC 60770 or DIN IEC 61003
T = 25 °C ± 5 °C (77 °F ± 9 °F), relative humidity 45 to 75 %, ambient air pressure 860 to 1060 kPa (124 to 153 PSI), water test medium. Supply voltage U = 24 V DC.

Maximum measured error

Flow

Measuring range	Repeatability	Influence of medium temperature[1]	Influence of ambient temperature
0.03 to 0.5 m/s (0.1 to 1.6 ft/s)	2 %	0.05 %/K	0.04 %/K
0.03 to 1 m/s (0.1 to 3.28 ft/s)	3 %	0.10 %/K	0.05 %/K
0.03 to 2 m/s (0.1 to 6.56 ft/s)	5 %	0.15 %/K	0.10 %/K
0.03 to 3 m/s (0.1 to 9.84 ft/s)	10 %	0.20 %/K	0.30 %/K

1) The values indicated only apply to the device itself without taking the temperature-dependent change of the thermo-physical properties of the medium into account. For this reason, we recommend you commission the device at the process temperature and set the switch points (see 'Learn function' → Page 10).

Temperature

- Accuracy: 2 K (3.6 °F)
- Repeatability: 1 K (1.8 °F)
- Influence of medium temperature: 0.05 %/K of full scale value

Switch point repeatability

See 'Maximum measured error' table

Sensor reaction time

6 to 12 s

Long-term drift

0.5% per year under reference operating conditions

Long-term reliability

Mean time between failure (MTBF) > 100 years
(calculated according to "British Telecom Handbook of Reliability Data No. 5")

Switch output response time

100 ms

Operating conditions: Installation instructions

Installation instructions

- Any orientation
- Housing can be rotated up to 310 °
- The sensor of the device requires a fully developed flow profile as a prerequisite for correct flow measurement

Operating conditions: Environment

Ambient temperature range

–40...+85 °C (-40 to 185 °F)

Storage temperature

–40...+85 °C (-40 to 185 °F)

Climate class

4K4H as per DIN EN 60721-3-4

Degree of protection

- With M 16x1.5 or ½ NPT valve plug: IP65
- With M 12x1 connector: IP66

Shock resistance

50 g as per DIN IEC 68-2-27 (11 ms)

Vibration resistance

- 20 g as per DIN IEC 68-2-6 (10-2000Hz)
- 4 g as per German Lloyd GL Guidelines

Electromagnetic compatibility

- Interference emission as per EN 61326, class B electrical equipment
- Interference immunity as per EN 61326, appendix A (industrial use) and NAMUR Recommendation NE 21

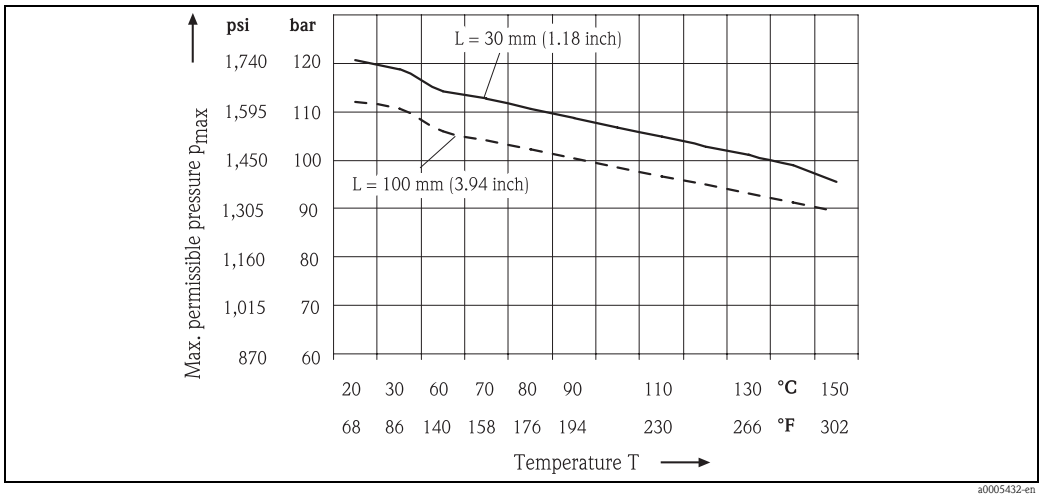
EMC influence: ≤ 0.5 %

Operating conditions: Process

Process temperature limits

-20 to 85 °C (-4 to 185 °F)

Process pressure limits



p/T load diagram as per DIN 43763 or Dittrich/Kohler (or as per ASME/ANSI PTC 19.3)

L = insertion length
v_W = medium velocity water = 3 m/s (9.84 ft/s)

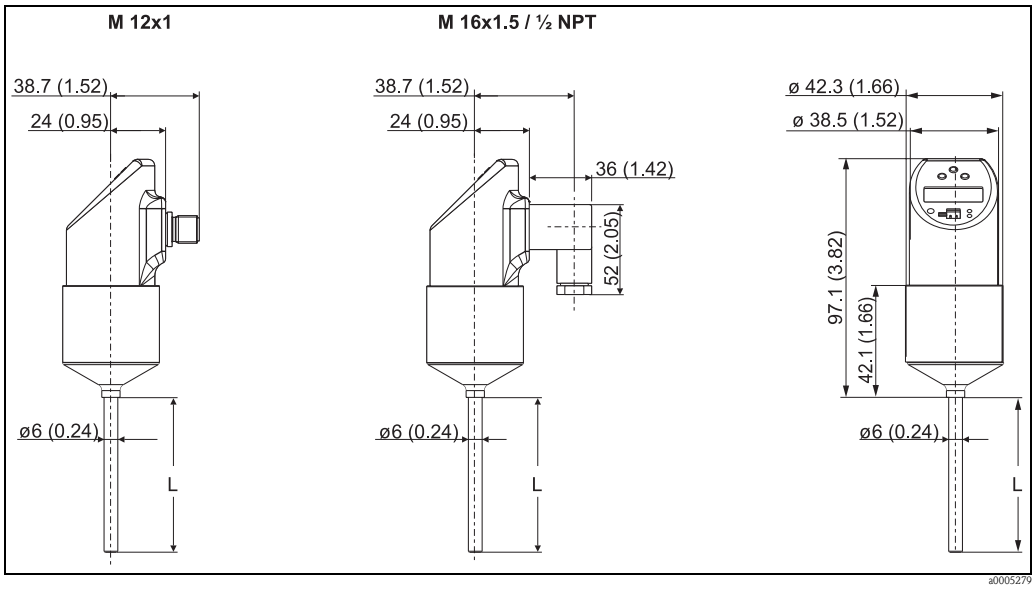
Process flow limit Liquids: 0...3.0 m/s (0...9.84 ft/s)

Operating range Liquids: 0.03...3.0 m/s (0.1...9.84 ft/s)

Mechanical construction

Design, dimensions

Dimensions



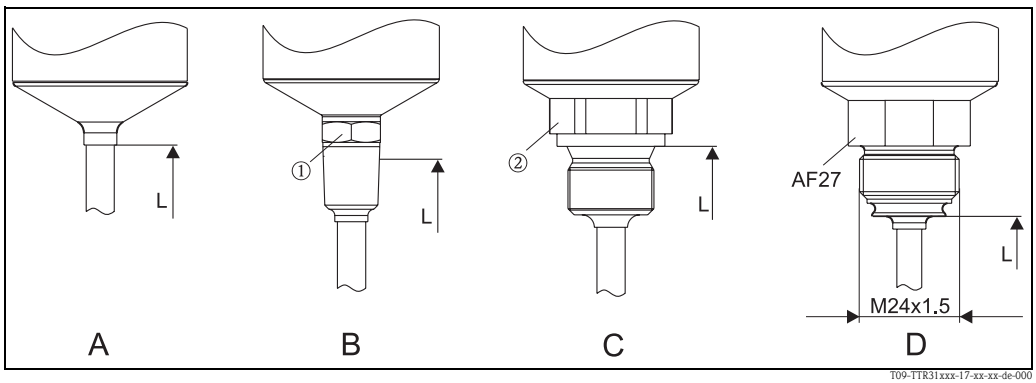
All dimensions in mm (inches)

Version L in 30 and 100 mm (1.18" and 3.94")

M 12x1 connector as per IEC 60947-5-2

M 16x1.5 or ½ NPT valve plug as per DIN 43650A/ISO 4400

Process connection



Pos. A: Version without process connection ('w'). For suitable welding boss and coupling see 'Accessories'.

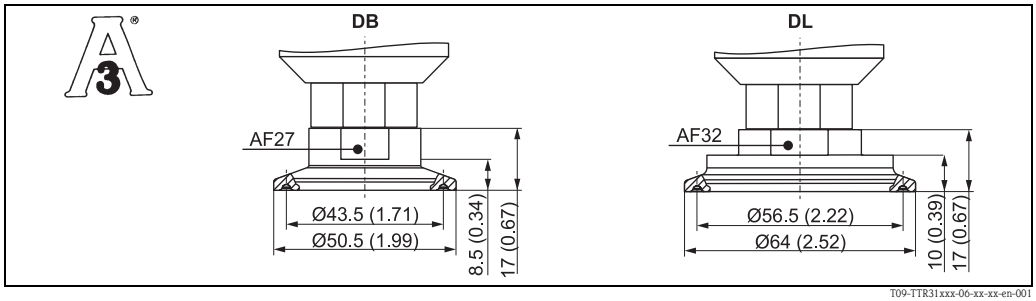
Pos. B: Version with thread process connection ANSI ¼" NPT (① = AF14) and ½" NPT (① = AF27).

Pos. C: Version with thread process connection G ¼ (② = AF14) and G ½ (② = AF27) as per ISO 228.

Pos. D: Adapter concept - version with M24x1.5 thread for adapters with process connection for hygienic processes.

Version L in 30 and 100 mm (1.18" and 3.94")

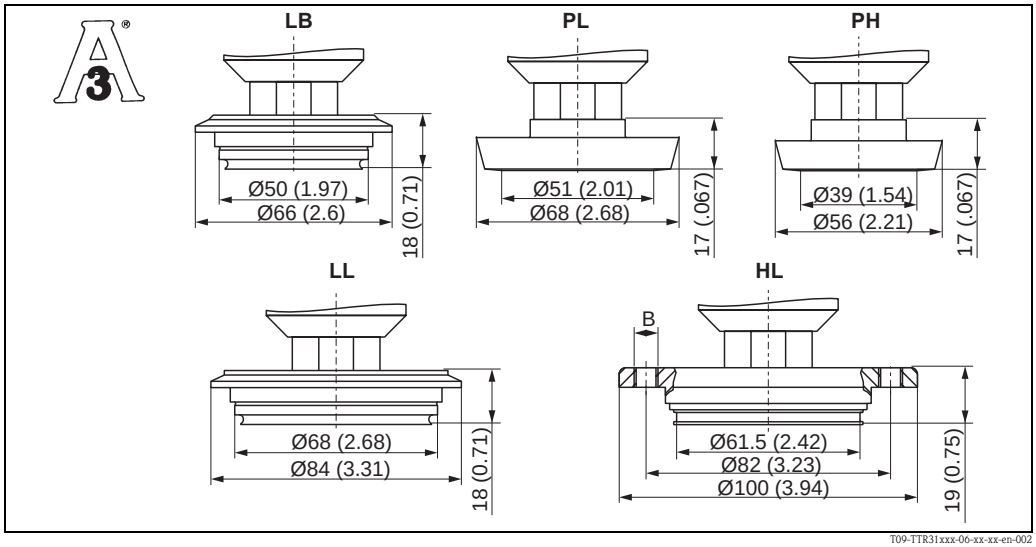
Adapter Clamp connections



Process connection versions (adapters)
DB: clamp 1"...1½" (ISO 2852) or DN 25...DN 40 (DIN 32676)
DL: clamp 2" (ISO 2852) or DN 50 (DIN 32676)

See also "Ordering information" section
(all dimensions in mm / inches)

Adapter hygiene connections



Process connection versions (adapters)
LB: Varivent F pipe DN 25-32, PN 40
LL: Varivent N pipe DN 40-162, PN 40
PH: DIN 11851, DN 40, PN 40 (including coupling nut)
PL: DIN 11851, DN 50, PN 40 (including coupling nut)
HL: APV inline, DN 50, PN 40, 316L, 3A (B = 6 x Ø8.6 bores + 2 x M8 thread)

See also "Ordering information" section
(all dimensions in mm /inches)

Weight

approx. 300 g (10.6 oz), depends on sensor length and process connection

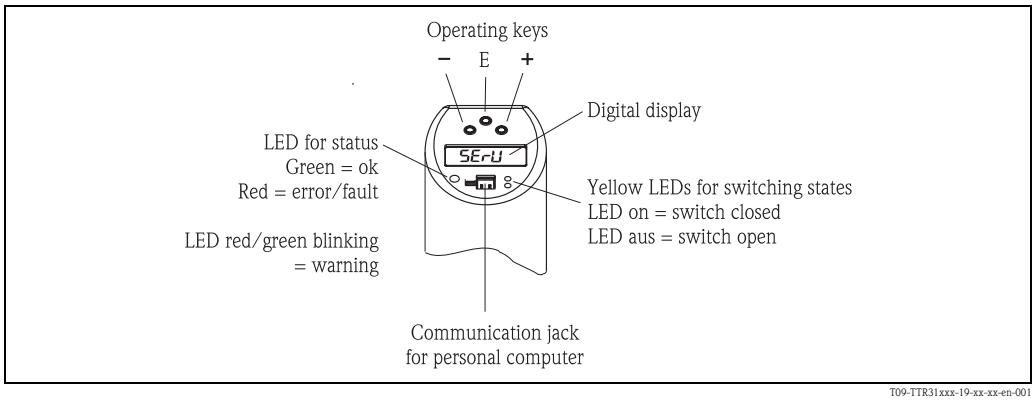
Material

- Process connection: AISI 316L
  Surfaces in contact with process in hygienic version with surface quality $R_a \leq 0.8$ µm
  Coupling nut: AISI 304
- Seals:
  EPDM, FDA number 21–CFR 177.2600, 3-A approved
- Housing: AISI 316L, with surface quality $R_a \leq 0.8$ µm
  O ring between housing and sensor modul: EPDM
- Electrical connection:
  M12 connector: exterior AISI 316L, interior polyamide (PA)
  Valve plug: outer polyamide (PA)
  M12 connector: exterior 316L
  Cable outer covering: polyurethane (PUR)
  O ring between electrical connection and housing: FKM
- Display:
  Polycarbonate PC-FR (Lexan®)
  Seal between display and housing: SEBS THERMOPLAST K®
- Keys: Polycarbonate PC-FR (Lexan®)

Human interface

Operating elements

Position of display and operating elements



T09-TTR31xxx-19-xx-xx-en-001

Onsite operation

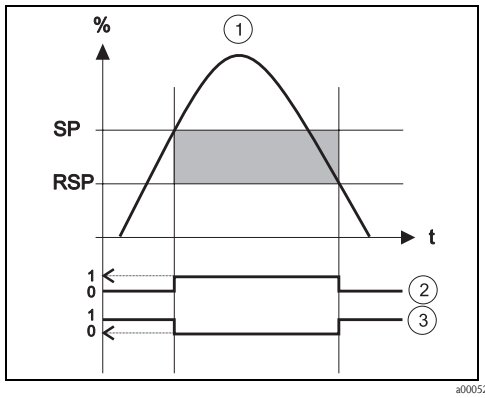
Menu-guided operation using operating keys.

Function group	Function (display)	Description
BASE (basic functions)	Display (DISP)	Display assignment: – OFF – Display of current measured value or of configured switch point (switch 1) – Display of current measured value or of configured switch point (switch 1) rotated 180° – Display of current medium temperature – Display of current medium temperature rotated 180° Factory setting: **current measured value**
	UNIT	Display medium temperature unit °C or °F Factory setting: **°C** Note! Only visible if the current medium temperature is selected in the DISP mode.
	Damping (TAU)	Measured value damping with regard to display value and output: 0 (no damping) or 9 to 40 s (in increments of 1 second) Factory setting: **0 s**
	DESINA (DESI) Only for 2 x PNP switch outputs	Behavior as per DESINA: The PIN of the M12 connector is assigned in accordance with the guidelines of DESINA. (DESINA = DistributEd and Standardized INstAllation technology for machine tools and manufacturing systems)
CAL (calibration)	Learn High Flow (HIF)	Setting for maximum flowrate occurring. 100% value
	Learn Low Flow (LOWF)	Setting for minimum flowrate occurring. 0% value

Function group	Function (display)	Description
OUT (Setting for the 1st output) OUT2 (Setting for the 2nd output, optional)	Switching mode (MODE)	Output switching mode for channel 2: flow or temperature Factory setting: **flow**
	UNIT	Temperature unit selection (°C/°F) Note! Function only visible if switching mode (MODE) is set to temperature in the 2nd output.
	Function 1 (FUNC) Function 2 (FNC2), optional	Switch output function: hysteresis function NC contact or NO contact (see diagram)
	Switch point (SP) Switch point 2 (SP2), optional	■ Enter value 5 to 100% in increments of 1%, only if High and Low Flow (HIF and LOWF) have been configured beforehand. Factory setting: **50%** **Or optionally for SP2:** ■ Enter value -15 to 85 °C (-5 to 185 °F) in increments of 1 °C (1 °F) if the switching mode (MODE) is set to temperature. Factory setting: **55 °C (131 °F)**
	Switch point learn (SPL) Switch point learn 2 (SP2L), optional	Take current flowrate as SP.
	Switch-back point (RSP) Switch-back point 2 (RSP2), optional	■ Enter value 0 to 95% in increments of 1%. Factory setting: **40%** Note! Value has to be at least 5% smaller than switch point 2 (SP2). **Or optionally for RSP2:** ■ Enter value -20 to 80 °C (-4 to 176 °F) in increments of 1 °C (1 °F) if the switching mode (MODE) is set to temperature. Factory setting: **50 °C (122 °F)** Note! Value has to be at least 5 °C (9 °F) smaller than switch point 2 (SP2).
	Switch point delay (TSP) Switch point delay (TSP2), optional	Can be set anywhere between 0 and 99 s in increments of 1 second. Factory setting: **0 s**
SERV (service functions)	Preset (PRES)	Resetting of all settings to factory settings.
	Static revision counter (REVC)	Configuration counter, incremented each time the configuration is changed.
	Operating code (LOCK)	Enter the device locking code.
	Edit operating code (CODE)	Locking, only visible with valid operating code.
	Device status (STAT)	
	Last error (LSTA)	Display of last error to occur.
	Simulation 1 (SIMU) Simulation 2 (SIM2), optional	Simulation switch output 1: on/off with display, optionally corresponding to switch output 2.

Switch-point function

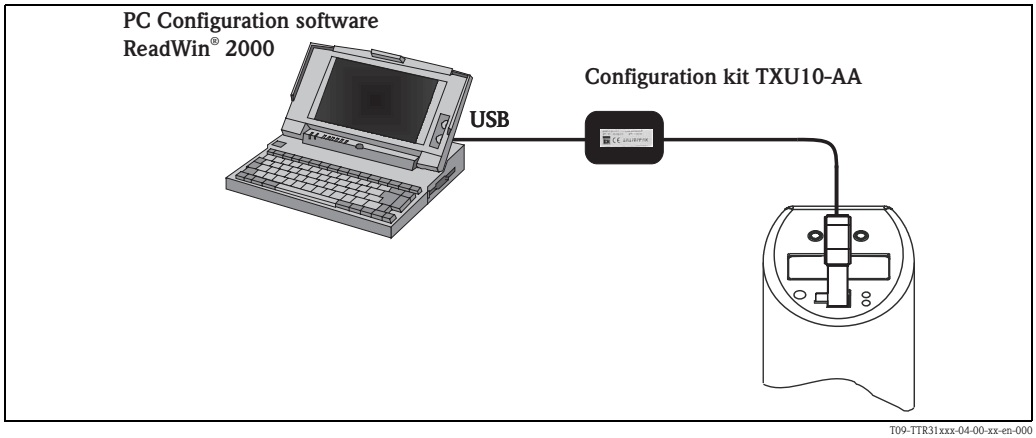
- Hysteresis function
  The hysteresis function enables two-point control via a hysteresis. Depending on the flow, the hysteresis can be set via the switch point SP and the switch-back point RSP.
- NO contact or NC contact.
  This switch function is freely selectable.



① Hysteresis function, ② NO contact, ③ NC contact
SP switch point; RSP switch-back point

Operation with ReadWin® 2000

Operation, visualization and maintenance with PC and ReadWin® 2000 PC configuration software.



In addition to the operating options listed in the previous "Onsite operation" section, the ReadWin® 2000 configuration software provides further information on the Flowphant T:

Function group	Function (display)	Description
SERV (service functions)	Switching processes 1 Switching processes 2, optional	Number of changes in switching status for switch output 1; optionally switch output 2
INFO (device information)	TAG 1 TAG 2, optional	Tagging, 18-digit
	Order code	Order code
	Serial number	Device serial number
	Sensor serial number	Sensor serial number
	Electronics serial number	Electronics serial number
	Device revision	Display of entire revision
	Hardware revision	Hardware version
	Software revision	Software version

Certificates and approvals

CE-Mark

The device meets the legal requirements of the EC directives. Endress+Hauser confirms that the device has been successfully tested by applying the CE mark.

Other standards and guidelines

- IEC 60529:
  Degree of protection provided by housing (IP-Code)
- IEC 61010:
  Safety requirements for electrical measurement, control and laboratory use.
- IEC 61326:
  Electromagnetic compatibility (EMC requirements)
- NAMUR
  Standards working group for measurement and control technology in the chemical industry.
  (www.namur.de)

Hygiene standard

The DTT35 flow switch meets the requirements of Sanitary Standard no. 74-02. Endress+Hauser confirms this by applying the 3–A symbol.

UL listed for Canada and USA

The device was examined by Underwriters Laboratories Inc. (UL) in accordance with the standards UL 61010B-1 and CSA C22.2 No. 1010.1-92 and listed under the number E225237 UL.

Ordering information

Flowphant T DTT31
Product structure

Flowphant T DTT31
Flow switch, intelligent, programmable. Sensor: calorimetric measurement method

Approval:											
A	For non-hazardous areas										
	Electrical connection:										
	1	Plug M12, IP66									
	2	Valve plug M16x1.5, ISO4400, IP65									
	3	Valve plug NPT½", ISO4400, IP65									
		Power supply; Output signal:									
		A	18-30 V DC; 1 x switch PNP								
		B	18-30 V DC; 2 x switch PNP								
			Display:								
			1	Digital							
				Application; Measuring range:							
				1	Liquid, -20 °C...85 °C (-4...185 °F), 0...3 m/s (0...9.84 ft/s)						
					Adjustment:						
					1	on site					
					S	Switch 1 (see questionnaire)					
					T	Switch 1+2 (see questionnaire)					
					V	Switch 1+2 DESINA (see questionnaire)					
						Process connection:					
						AA	Compr. fitting, 316L, L ≥ 100 mm (3.94 in) Insertion length				
						AB	Thread ISO228 G¼, 316L				
						AE	Thread ISO 228 G½, 316L				
						DA	Thread ANSI ¼" NPT, 316L				
						DE	Thread ANSI ½" NPT, 316L				
						YY	Special version to be specified				
							Insertion length L; Diameter D:				
							2A	L = 30 mm (1.18 in); D = 6 mm (0.24 in)			
							2C	L = 100 mm (3.94 in); D = 6 mm (0.24 in)			
								Additional option:			
								A	Basic version		
									Version:		
									A	Standard, Documentation German	
									B	Standard, Documentation English	
									C	Standard, Documentation French	
DTT31-	**A**			**1**	**1**				**A**		**⇒ Order code**

Flowphant T DTT35 product structure

Flowphant T DTT35
Flow switch, intelligent, programmable. Sensor: calorimetric measurement method. Hygienic applications. 3-A 74-02 compliant.

Approval:

A	Non-hazardous area

Electrical connection:

1	Plug M12, IP66
2	Plug M16x1.5, ISO4400, IP65
3	Plug NPT½", ISO4400, IP65

Power supply; Output:

A	18-30 V DC; 1 x switch PNP
B	18-30 V DC; 2 x switch PNP

Display:

1	Digital

Application; Measuring range:

1	Liquid, -20 °C...85 °C (-4...185 °F), 0...3 m/s (0...9.84 ft/s)

Adjustment:

1	on site
S	Switch 1 (see questionnaire)
T	Switch 1+2 (see questionnaire)
V	Switch 1+2 DESINA (see questionnaire)

Process connection:

	Tri-Clamp-connections
DB	ISO2852 DN25-38, 1-1½", 316L, 3A, DIN32676 DN25-40
DL	ISO2852 DN40-51, 2", 316L, 3A, DIN32676 DN50
HL	APV-Inline DN50 PN40, 316L, 3A
LB	Varivent F pipe DN25-32, PN40, 316L, 3A
LL	Varivent N pipe DN40-162, PN40, 316L, 3A
PH	DIN11851, DN40 PN40, 316L, 3A
PL	DIN11851, DN50 PN40, 316L, 3A

Insertion length L; Diameter D:

2A	L = 30 mm (1.18 in); D = 6 mm (0.24 in)
2C	L = 100 mm (3.94 in); D = 6 mm (0.24 in)

Additional option:

A	Basic version

Version:

A	Standard, Documentation German
B	Standard, Documentation English
C	Standard, Documentation French

DTT35-	**A**			**1**	**1**				**A**		⇒ **Order code**

Questionnaire

Questionnaire Endress+Hauser Flowphant T DTT31/DTT35
Customer specific setup / Kundenspezifische Einstellung

Ausgang 1 / Output 1

Type:
( ) 1 = Hysterese Öffner / Hysteresis normally closed
( ) 2 = Hysterese Schließer / Hysteresis normally open

SP: ☐☐☐ 5...100%*, **50%**

RSP: ☐☐ 0...95%*, **40%**, RSP ≤ (SP - 5%)

Ausgang 2 (nur wenn vorhanden)/ Output 2 (only if available)

Mode:

( ) Durchfluss / Flow

Type:
( ) 1 = Hysterese Öffner / Hysteresis normally closed
( ) 2 = Hysterese Schließer / Hysteresis normally open

SP2: ☐☐☐ 5...100%*, **50%**

RSP2: ☐☐ 0...95%*, **40%**, RSP ≤ (SP - 5%)

( ) Temperatur / Temperature

Unit / Einheit **( ) °C** ( ) °F

Type:
( ) 1 = Hysterese Öffner / Hysteresis normally closed
( ) 2 = Hysterese Schließer / Hysteresis normally open

SP2: ☐☐☐ -15...85 °C (-5...185 °F)**, **55 °C (131 °F)**

RSP2: ☐☐☐ -20...80 °C (-4...176 °F)**, **50 °C (122 °F)**, RSP ≤ (SP - 5°C [9 °F])

Anschluss DESINA konform / Connection conform to DESINA
(nur bei 2 Ausgängen / only for two outputs)
( ) NO ( ) YES

TAG (2 x 18 Zeichen / characters)

Endress+Hauser
People for Process Automation

a0005277

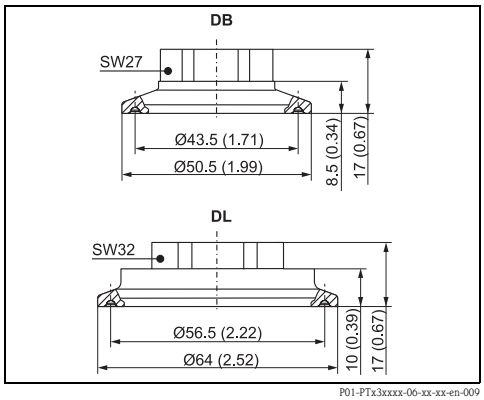
Factory settings in bold
** Input in increments of 1%*
*** Input in increments of 1 °C (1 °F)*

Accessories

All dimensions in mm (inches).

Clamp adapter

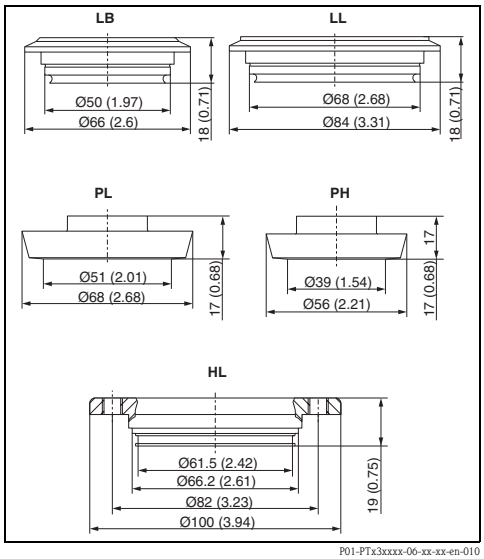
Order numbers for clamp adapter versions.
DB version: order no. 52023994
DL version: order no. 52023995



P01-PTx3xxxx-06-xx-xx-en-009

Hygiene adapter

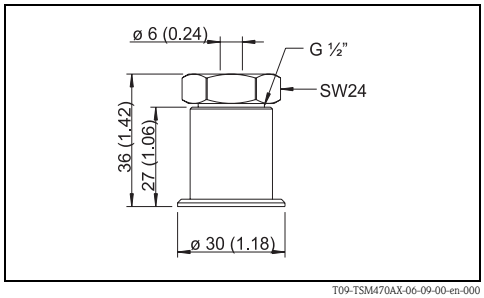
Order numbers for hygiene adapter versions.
LB version: order no. 52023996
LL version: order no. 52023997
PL version: order no. 52023998
PH version: order no. 52023999
HL version: order no. 52024000



P01-PTx3xxxx-06-xx-xx-en-010

Welding boss with clamping ring

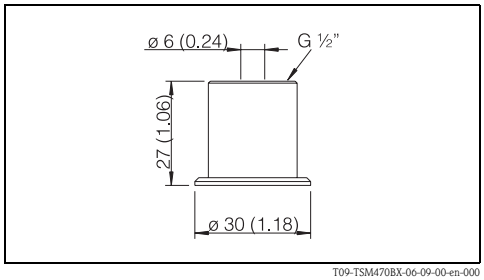
Collar welding boss
Seal, moveable coupling, material of parts in contact with process: 316L, PEEK
Order no. 51004751



T09-TSM470AX-06-09-00-en-000

Collar welding boss

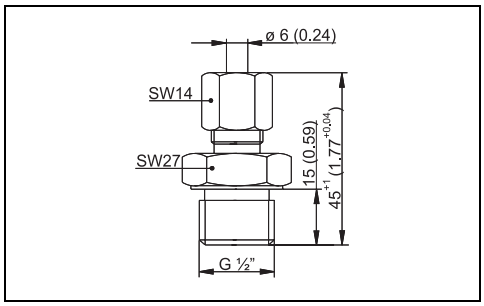
Material of parts in contact with process: 316L
Order no. 51004752



T09-TSM470BX-06-09-00-en-000

Coupling

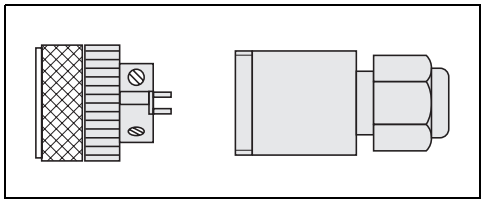
G ½" process connection
Seal, moveable coupling, material of parts in contact with process: 316L
Order no. 51004753



T09-TSM470AX-06-09-00-en-001

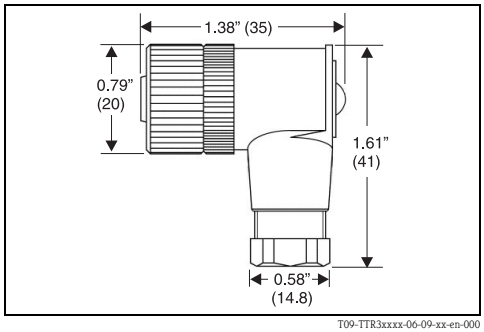
Plug-in jack

M 12x1 plug-in jack
Self-made connection to M 12x1 housing connector
Order number: 52006263


P01-PMP13xxx-00-xx-00-xx-003

Elbow plug

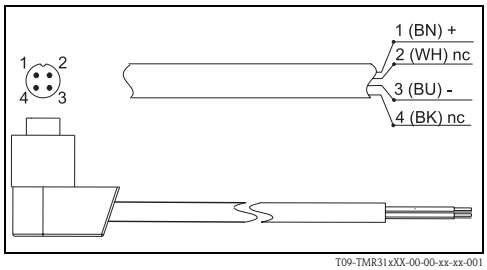
Elbow plug
4-pole M12 connector for customized cable construction, elbowed, IP67, PG7
Order number: 51006327



T09-TTR3xxxx-06-09-xx-en-000

Connecting cable

Cable, 4 x 0.34 mm² (22 AWG) with M12 socket, elbowed, screw plug, length 5 m (16.4 ft), PVC cable
Order number: 51005148
Core colours:
- 1 = BN brown
- 2 = WH white
- 3 = BU blue
- 4 = BK black

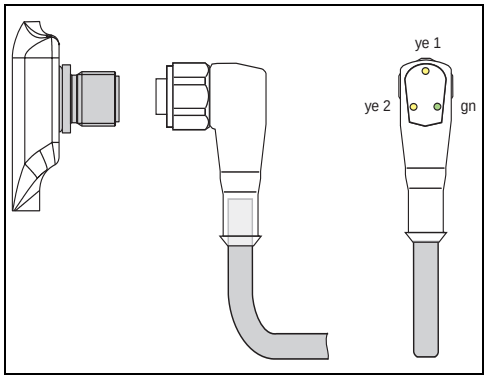


T09-TMR31xXX-00-00-xx-xx-001

Connecting cable with LED

Cable, 4 x 0.34 mm² (22 AWG) with M12 socket, with LED, elbowed, 316L screw plug, length 5 m (16.4 ft), PVC cable, specially for hygiene applications,
Order number: 52018763
Display:
–gn: device operational
–ye1: switch status 1
–ye2: switch status 2

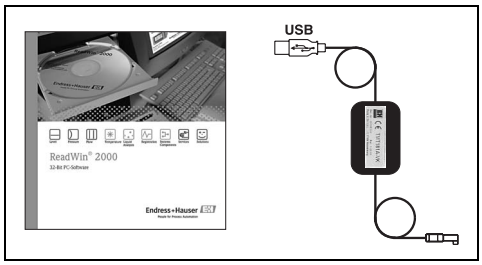
Note!
Not for use at devices with "4 to 20 mA analog output" option!



T09-TTR31xxx-00-00-xx-xx-001

Configuration kit

- Configuration kit for PC-programmable transmitters - ReadWin® 2000 setup program and interface cable for PCs with USB port; Adapter for transmitters with 4-pole post connector
  Order code: TXU10-AA
- ReadWin® 2000 can be downloaded free of charge directly from the internet at the following address:
  www.endress.com/readwin



T09-TTR31xxx-00-00-xx-xx-000

Power supply

- Power supply Easy Analog RNB130 by Endress+Hauser with nominal output current I_N = 1.5 A.
  Details see Technical information **TI120R/09/en**.
- Process display RIA452 by Endress+Hauser with transmitter power supply, max. output current 250 mA.
  Details see Technical information **TI113R/09/en**.

Documentation

Technical information

- Easy Analog RNB130: TI120R/09/en
- Process display RIA452: TI113R/09/en

Operating manual

- Flow switch Flowphant T DTT31, DTT35: BA218R/09/en
- Configuration software ReadWin® 2000: BA137R/09/en

International Head Quarter

Endress+Hauser
GmbH+Co. KG
Instruments International
Colmarer Str. 6
79576 Weil am Rhein
Deutschland

Tel. +49 76 21 9 75 02
Fax +49 76 21 9 75 34 5
www.endress.com
info@ii.endress.com

Endress+Hauser

People for Process Automation

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