

LAMPIRAN



Taylor-Wharton
Since 1742

Vacuum-Jacketed CO₂ /N₂O Tanks



- Newest and most modern production facilities in Malaysia, dedicated to the design and manufacturing of cryogenic storage vessels.
- Technical expertise to design and build storage vessel to meet strict international codes and standards recognized worldwide.
- Replacing mechanically refrigerated storage tanks means lower operating cost.
VIRTUALLY NO MAINTENANCE.
- Superior vacuum insulated technology. **NO LOSS SYSTEM** provided your operation uses the NER (Normal Evaporation Rate)
- Environmental friendly.

Taylor-Wharton Malaysia Sdn. Bhd. (776817-V)

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Specification For Standard SCE Model Available From Taylor-Wharton Malaysia

Tank Designation		SCE 6000	SCE 10000	SCE 11000	SCE 17000	SCE 20000	SCE 28000	SCE 32000	SCE 43000	SCE 50000
Capacity NET Liquid * CO ₂	Metric Ton	5.2	9.4	10.6	16.4	19.3	27.1	30.9	41.5	48.3
Dimension (Height)	Meter	4.8	7.4	5.0	9.0	10.2	10.3	11.6	10.6	11.5
Diameter	Meter	1.9	1.9	2.2	2.2	2.2	2.5	2.5	3.0	3.0
Tare Weight	Metric Ton	4.5	6.8	8.5	10.5	12.4	14.6	18.9	24.9	27.2
Gross Operating Weight	Metric Ton	9.7	16.2	19.1	26.9	31.7	41.7	49.8	66.4	75.5
Normal Evaporation **	% per day	0.07	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03
Max. Allowable Working Pressure	Bar						24			
Min. Design Temperature	Degree Celsius						-60			

Note :

* based on Cold Vessel Volume, with Product Saturated at -17.8 Degree Celsius, 95% full trycock volume

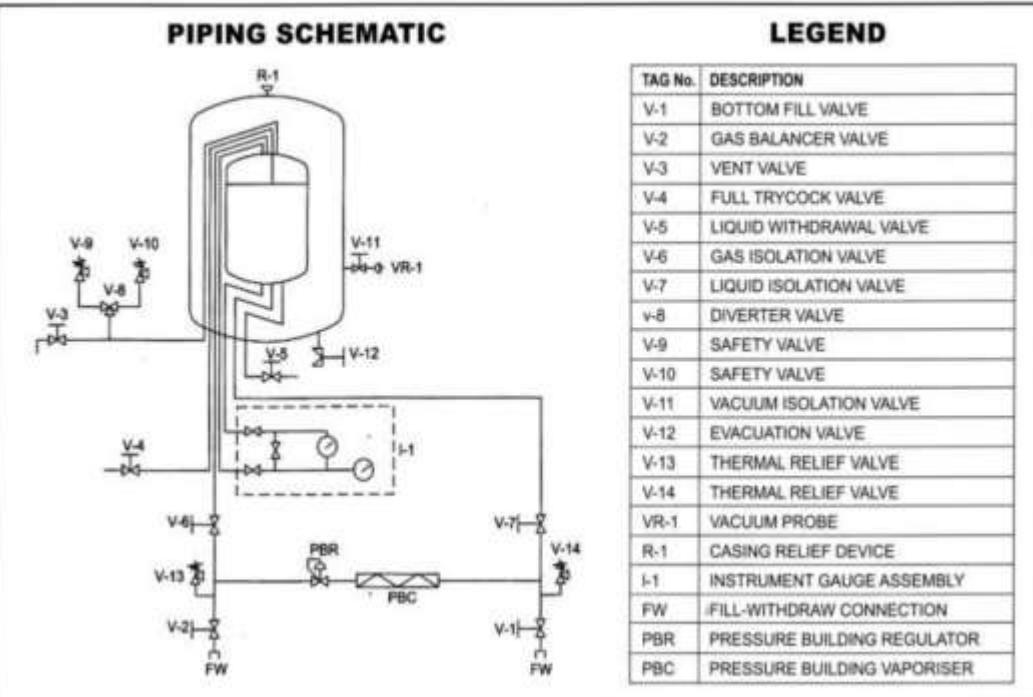
** Normal Evaporation Rate based on Net Liquid Capacity

Design Code : ADM, Inner Material : P355NL1 (1.0566) / P355NL2 (1.1106)

Also available – ASME – Inner Vessel Material : SA612 / SA516 GR70N

Data for N₂O is available upon request.

Also available in horizontal model.



Specification are general and subject to change without notice.

Differential Pressure Transmitter Model DPT-10

WIKA Data Sheet PE 86.21



Applications

- Process engineering
- Pharmaceutical
- Food and beverage industries

Special features

- High measuring accuracy
- Scaleable measuring ranges
- Various hazardous area approvals
- Seven different housing variants
- Configuration via DTM (Device Type Manager) according to FDT (Field Device Tool) - concept (e.g. PACTware)



Differential Pressure Transmitter Model DPT-10

Description

With its 4 ... 20 mA, 4 ... 20 mA HART®, PROFIBUS® PA or FOUNDATION Fieldbus™ output signals, combined with either intrinsically-safe or flameproof ignition protection (in accordance with ATEX), the DPT-10 is ideally suited to applications requiring these features. The electronics of all of these transmitters, even for the flameproof variant, are intrinsically safe. Thus it is possible to make adjustments on the instrument in EX areas while the instrument is live.

Versatile in application

The DPT-10 is suitable for many industrial measuring requirements, such as flow measurement using differential pressure transducers, level measurement or filter and pump monitoring. With diaphragm seals fitted, the DPT-10 is also suitable for harsh process conditions. As a result of the available measuring ranges of 0 ... 10 mbar up to 0 ... 40 bar and a static pressure limitation of up to 420 bar, the instrument can be used in almost any application. The internal digital signal processing, combined with proven sensors, guarantees high accuracy and the best long-term stability.

There are seven different housing variants available, and thus, it is possible to select a variant suited to every operating environment. The housing itself can be rotated through 330°, and is available in plastic, aluminium and stainless steel. An electropolished stainless steel housing (316 L) is available to meet the high demands of the food industry and pharmaceutical industry.

Easy configuration and operation

Service and configuration at the instrument is carried out using the optional display and operation module, which can be fitted in four positions. The operation menu has a simple and self-explanatory structure and has seven selectable languages as standard. Alternatively, the operating parameters can be set using the PACTware™ free and non-proprietary configuration software. An instrument-specific DTM enables easy integration into a corresponding Distributed Control Systems.

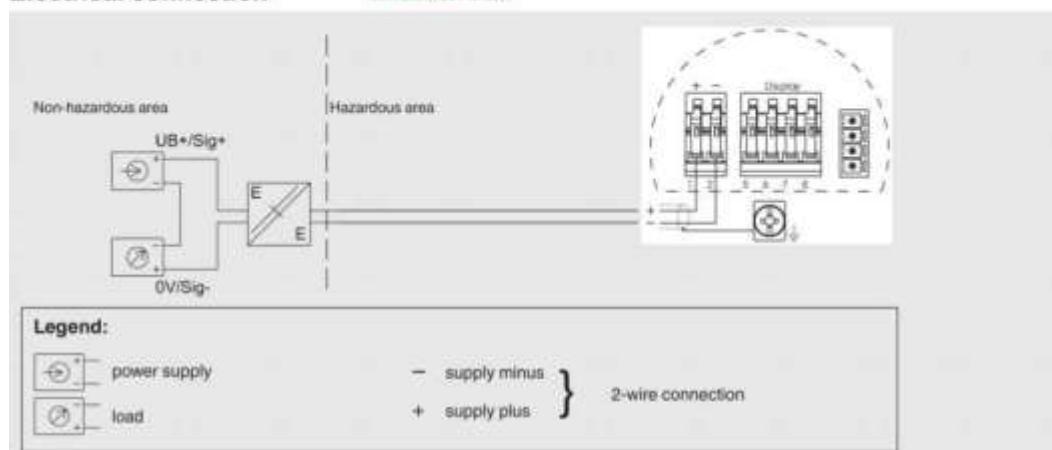
Specifications		Model DPT-10									
Measuring range ¹⁾	bar	0.01	0.03	0.1	0.5	3	16	40 ²⁾			
Max. static working pressure	bar	160	160	160	160 (420)	160 (420)	160 (420)	160 (420)			
Smallest possible span	mbar	0.25	0.3	1	5	30	160	400			
Lowest static pressure ³⁾	mbar abs	0.1									
Overload on one side	bar	160			160 (420)						
Overload on both sides	bar	240			240 (630)						
Accuracy											
Measuring ranges	bar	< 0.5			≥ 0.5						
Long-term stability	% URL/Year	± 0.18			± 0.05						
Reference accuracy ⁴⁾	% of the span	Measuring ranges 10, 30 mbar: from TD 1:1 $\pm 0.15\% \times TD$ 100 mbar: up to TD 4:1 $\pm 0.075\%$ from TD 4:1 $\pm (0.012 \times TD + 0.027)\%$			up to TD 15:1	$\pm 0.075\%$					
Total Performance ⁵⁾⁽⁶⁾		$\pm 0.15\%$			$\pm 0.15\%$						
Influence of the system pressure ⁸⁾											
Zero point	% URL	$\pm 0.35 / 70$ bar Measuring range 10 mbar: $0.15 / 7$ bar			$\pm 0.075 / 70$ bar						
Span	% URL	$\pm 0.14 / 70$ bar Measuring range 10 mbar: $0.035 / 7$ bar			$\pm 0.14 / 70$ bar						
Influence of the media and ambient temperature ⁹⁾											
-10 ... +60 °C		10 mbar and 30 mbar $\pm (0.31 \times TD + 0.06)\%$ 100 mbar $\pm (0.18 \times TD + 0.06)\%$			0.5 bar, 3 bar, 40 bar	$\pm (0.08 \times TD + 0.05)\%$					
-40 ... -10 / +60 ... +85 °C		10 mbar and 30 mbar $\pm (0.45 \times TD + 0.1)\%$ 100 mbar $\pm (0.3 \times TD + 0.15)\%$			16 bar	$\pm (0.1 \times TD + 0.1)\%$					
Mounting position influence	mbar	≤ 4			0.5 bar, 3 bar	$\pm (0.12 \times TD + 0.1)\%$					
Permitted temperature ranges											
Ambient ⁷⁾	°C	-40 ... +80 (without Display)			-20 ... +70 (with Display)						
Transport/Storage		$-40 \dots +80$									
Process limits dependent upon the sealing material ⁷⁾	°C	FKM/NBR: -20 ... +85 PTFE, copper: -40 ... +85 FKM, free of oil and grease: -10 ... +85									
for oxygen applications		Copper, PTFE: -20 ... +60; FKM: -10 ... +60									
Temperature limits	°C	With differential pressure lines longer than 100 mm: -40 ... +120 (-10 ... +120 with lateral flanges C22.8)									
Material											
Wetted parts		Process connection C22.8, (316L, C276) Diaphragm: 316L, C276, (Tantalum, C276 Gold-Rhodium coated, Monel400®) Seals: FKM/FPM, NBR, copper, (PTFE)									
Internal transmission fluid ⁸⁾		Silicone oil (halocarbon oil for oxygen applications)									
Case		Plastic (PBT; polyester), (aluminium), (stainless steel 316L)									
Weight	kg	approx. 4.2 ... 4.5 depending on the process connection and case version									
Electrical data											
Power supply U _B	V DC	non-hazardous: 14 ... 36 Ex ia: 14 ... 30; Ex d: 20 ... 36; (FOUNDATION Fieldbus™ und PROFIBUS® PA Ex ia: 9 ... 24 Ex d 12 ... 32)									
Output signal		4 ... 20 mA, 2-wire (4 ... 20 mA, 2-wire with a superimposed communication signal HART®), (FOUNDATION Fieldbus™), (PROFIBUS® PA)									
Dead time	ms	100									
Time constant (63 %)	ms	180 (measuring ranges 10, 30 mbar: 250)									
Damping	s	0 ... 999, adjustable									
Permissible max. load	R _A in Ω	$R_A = (U_B - U_{Bmin}) / 0.023 A$									

Explosion protection		
Ex protection ⁸⁾	ATEX	Category II 1G, II 1/2G, II 2G Ex ia IIC T6...T1 II 1/2 G, II 2 G Ex d ia IIC T6...T1
Ambient conditions		
CE-mark		EMC 2004/108/EC interference emission and interference immunity per EN 61 326-1 industrial application Interference emission Limit Class A and B, 94/9/EC EN 50 014 (general part), EN 50 020 (intrinsic safe), EN 50 284 (zone 0), (EN 50 281-1 (dust Ex))
Shock resistance	g	100 per IEC 60 068-2-27 (Shock mechanical)
Vibration resistance ¹⁰⁾	g	4 (5 ... 100 Hz) (Vibration under resonance)
Electrical ingress protection		Overvoltage Category III Protection Class II IP66/67 (standard housing)

- (⁸⁾) Items in curved brackets are optional extras for additional price.
 1) Other measuring ranges can be set via the respective Turndown.
 2) Measuring range 40 bar, ^{1/2} side overfilled range universal up to 100 bar.
 3) Valid with reference conditions according to IEC 60 770.
 4) Includes non-linearity after limit point setting, hysteresis and non-repeatability in accordance with IEC 60 770.
 5) Includes non-linearity, hysteresis, non-repeatability, thermal changes, zero point and static pressure influence (Pstat= 70 bar) in the temperature range -10 ... +60 °C.
 6) Values are not valid for tantalum diaphragms.
 7) Restrictions of process temperature for oxygen -20 ... +60 °C / the lowest temperature for PN 420: -10 °C.
 8) Operating pressure with halocarbon oil - higher than 1 bar abs.
 9) The operating conditions and safety-relevant data in the approval documents must be read.
 10) Tested in accordance with directives, GL characteristic line 2 (not for double chamber cases in stainless steel).
 URL = basic measuring range
 TD = Turndown

Electrical connection

HART
communications protocol



Electrical connection

PROFIBUS



Controller - AXC 1050 - 2700988

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Axio control for direct open-loop control of AxioLine I/Os. With 2 Ethernet interfaces and programming capabilities according to IEC 61131-3. Complete with connector connector and labeling field.

Product Description

The AXC 1050 modular small-scale controller for the AxioLine I/O system is fast, robust, and easy, i.e., it is consistently designed for maximum performance, easy handling, and use in harsh industrial environments.

Your advantages

- PROFINET controller (up to 16 devices) and/or PROFINET device
- Modbus/TCP-Client
- Numerous protocols supported such as: http, https, FTP, SNTP, SNMP, SMTP, SQL, MySQL, DCP, etc.
- Free engineering with PC Worx Express (IEC 61131-3)
- Up to 63 AXIO I/O modules can be mounted side by side
- Integrated UPS for targeted shutdown of the application
- Configuration via USB
- Web server HTML5 and JAVA
- SD card up to 2 GB as optional plug-in parameterization memory
- 2 x Ethernet interfaces (integrated switch)
- Increased resistance to EMI
- Extended temperature range of -25°C ... +60°C

HTML



Key Commercial Data

Packing unit	1 pc
GTIN	 4 046356731195
GTIN	4046356731195
Weight per Piece (excluding packing)	225.600 g
Custom tariff number	85371091
Country of origin	Germany

Controller - AXC 1050 - 2700988

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Width	45 mm
Height	126.1 mm
Depth	74 mm

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 60 °C up to 2000 m above mean sea level
	-25 °C ... 55 °C up to 3000 m above mean sea level
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (according to DIN EN 61131-2, non-condensing, no ice formation)
Permissible humidity (storage/transport)	5 % ... 95 % (according to DIN EN 61131-2, non-condensing, no ice formation)
Air pressure (operation)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Air pressure (storage/transport)	58 kPa ... 106 kPa (up to 4500 m above mean sea level)
Shock	30g, 11 ms period, half-sine shock pulse, according to IEC 60068-2-27
Vibration (operation)	5g

Control system

Engineering tool	PC WORX
	PC WORX EXPRESS
Programming languages supported	Programming in acc. with IEC 61131-3
Diagnostics tool	DiAG+

IEC 61131 runtime system

Engineering tool	PC WORX
	PC WORX EXPRESS
Program memory	2 Mbyte
Mass storage	2 Mbyte
Retentive mass storage	48 kByte (NVRAM)
Number of control tasks	8
Realtime clock	Yes

Fieldbus function

Amount of process data	max. 8192 Bit (per station)
	max. 4096 Bit (AxioLine F local bus (input))
	max. 4096 Bit (AxioLine F local bus (output))
	max. 32768 Bit (internal Modbus/TCP client)
Number of supported devices	max. 63 (per station)

Controller - AXC 1050 - 2700988

Technical data

Fieldbus function

Number of local bus devices that can be connected	max. 63 (observe current consumption)
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Data interfaces

Interface	Axioline F local bus
Number	1
Connection method	Bus base module
Transmission speed	100 Mbit/s
Interface	Ethernet
Number	2
Connection method	RJ45 socket
Transmission speed	10/100 Mbps (half or full duplex (automatic detection))
Interface	Service
Number	1
Connection method	Micro USB type B
Transmission speed	max. 115.2 kbps

PROFINET

Device function	PROFINET controller, PROFINET device
Specification	Version 2.3
Update rate	min. 32 ms (16 devices)
	min. 32 ms (8 devices)
	min. 16 ms (4 devices)
	min. 8 ms (2 devices)
	min. 4 ms (1st device)

Power supply

Typical current consumption	125 mA
Max. current consumption	160 mA
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC
Residual ripple	± 5 %
Power dissipation	max. 3 W

Mechanical design

Weight	195 g
Note on weight specifications	with connector and bus base module
Diagnostics display	No
Controller redundancy	No
Safety function	No

General data

Processor	Altera Nios II 1x 100 MHz
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Standards and Regulations

Controller - AXC 1050 - 2700988

Technical data

Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Interference emission	Noise emission test according to EN 61000-6-3 Class B
Immunity to surge	Noise immunity test in accordance with EN 61000-6-2 Transient overvoltage (surge) EN 61000-4-5/IEC 61000-4-5 Criterion B, DC supply lines: $\pm 0.5 \text{ kV}/\pm 0.5 \text{ kV}$ (symmetrical/asymmetrical), fieldbus cable shield: $\pm 1 \text{ kV}$
Immunity to burst	Noise immunity test in accordance with EN 61000-6-2 Fast transients (burst) EN 61000-4-4/IEC 61000-4-4 Criterion B, 2 kV
Immunity to EF	Noise immunity test in accordance with EN 61000-6-2 Electromagnetic fields EN 61000-4-3/IEC 61000-4-3 Criterion A, Field intensity: 10 V/m
Immunity to ESD	Noise immunity test in accordance with EN 61000-6-2 Electrostatic discharge (ESD) EN 61000-4-2/IEC 61000-4-2 Criterion B, 6 kV contact discharge, 8 kV air discharge
Immunity to conducted interference	Noise immunity test in accordance with EN 61000-6-2 Conducted interference EN 61000-4-6/IEC 61000-4-6 Criterion A; Test voltage 10 V
Vibration (storage/transport)	5g
Shock	30g, 11 ms period, half-sine shock pulse, according to IEC 60068-2-27
Vibration (operation)	5g
Shock (operation)	10g (Bump endurance test according to DIN EN 60068-2-27)

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration".

Router - TC ROUTER 2002T-3G - 2702531

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Industrial 3G router, European version, fallback to 2G GPRS/EDGE, 2 Ethernet interfaces, firewall, NAT, SMA-F antenna socket, SMS and e-mail transmission, 2 digital inputs, 1 digital output.

Your advantages

- Industrial 3G mobile router (UMTS/HSPA)
- Fallback to 2G (GPRS/EDGE)
- Networking of Ethernet end devices via the mobile network
- Ethernet SMS gateway for easy alerting
- Two switching inputs and one switching output
- Stateful inspection firewall for dynamic filtering
- NAT table and port forwarding for direct remote access to an end device
- Configuration via web-based management or microSD card
- Two local Ethernet connections
- Switchable energy-saving mode
- Integrated logbook
- Connection monitoring
- Extended temperature range, -40 °C ... +70 °C



Key Commercial Data

Packing unit	1 pc
GTIN	 4 055626 212838
GTIN	4055626212838
Weight per Piece (excluding packing)	232.800 g
Custom tariff number	85176200
Country of origin	Germany

Technical data

Note

Router - TC ROUTER 2002T-3G - 2702531

Technical data

Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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Dimensions

Width	45 mm
Height	130 mm
Depth	126 mm

Ambient conditions

Ambient temperature (operation)	-40 °C ... 70 °C (Maximum transmission power 10 dBm) -40 °C ... 60 °C (Maximum transmission power 23 dBm)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
Altitude	5000 m (For restrictions see manufacturer's declaration)
Degree of protection	IP20
Noise immunity	EN 61000-6-2

General

Electrical isolation	VCC // UMTS // Ethernet // PE
Electromagnetic compatibility	Conformance with RED Directive 2014/53/EU
Net weight	232.8 g
Housing material	Plastic
Color	gray
MTTF	383 Years (SN 29500 standard, temperature 25 °C, operating cycle 21 % (5 days a week, 8 hours a day))
	184 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
	78 Years (SN 29500 standard, temperature 40 °C, operating cycle 100 % (7 days a week, 24 hours a day))
Conformance	CE-compliant

Power supply

Supply voltage range	10 V DC ... 30 V DC (via pluggable COMBICON screw terminal block)
Max. current consumption	1.7 A
Typical current consumption	< 200 mA (24 V DC)
	65 mA (With activated energy-saving mode)

Serial interface

Interface 1	Ethernet interface, 10/100Base-T(X) in acc. with IEEE 802.3u
Interface	Ethernet
No. of ports	2
Connection method	RJ45 socket, shielded
Transmission length	100 m (shielded twisted pair)
Protocols supported	TCP/IP, UDP/IP, FTP, HTTP(S)

Router - TC ROUTER 2002T-3G - 2702531

Technical data

Serial interface

Auxiliary protocols	ARP, DHCP, PING (ICMP), SNMP V1/V2, SMTP(S), NTP, SSL/TLS, STARTTLS
Serial transmission speed	10/100 Mbps, auto negotiation

Wireless interface

Interface description	GSM / GPRS / EDGE / UMTS / HSPA
Frequency	850 MHz (2 W (EGSM))
	900 MHz (2 W (EGSM))
	1800 MHz (1 W (EGSM))
	1900 MHz (1W (EGSM))
	900 MHz (UMTS/HSPA B8)
	2100 MHz (UMTS/HSPA B1)
Data rate	≤ 21.6 Mbps (HSPA (DL))
	≤ 5.76 Mbps (HSPA (UL))
Antenna	50 Ω impedance SMA antenna socket
SIM interface 1	1.8 volt, 3 volt
GPRS	Class 12, Class B
	C51 ... CS4
EDGE	Multislot Class 10
UMTS	HSPA 3GPP R7

Function

Web-based management	yes
Management	Web-based management, SNMP

Digital outputs

Output name	Digital output
Number of outputs	1
Voltage output signal	10 V DC ... 30 V DC (depending on the operating voltage)
Current output signal	≤ 50 mA (Not short-circuit proof)

Digital inputs

Description of the input	Digital input
Number of inputs	2
Switching level "1" signal	10 V DC ... 30 V DC
Voltage input signal	10 V DC ... 30 V DC

Standards and Regulations

Electromagnetic compatibility	Conformance with RED Directive 2014/53/EU
Type of test	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6
Test result	5g, 10...150 Hz, 2.5 h, in XYZ direction
Type of test	Shock in acc. with EN 60068-2-27/IEC 60068-2-27
Test result	15g
Noise immunity	EN 61000-6-2

Router - TC ROUTER 2002T-3G - 2702531

Technical data

Standards and Regulations

Standards/regulations	EN 61000-4-2
Contact discharge	± 6 kV (Test Level 3)
Standards/regulations	EN 61000-4-3
Frequency range	80 MHz ... 3 GHz (Test Level 3)
Standards/regulations	EN 61000-4-4
Comments	Criterion B
Standards/regulations	EN 61000-4-5
Signal	± 1 kV (Data line, asymmetrical)
Standards/regulations	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz
Conformance	CE-compliant
Noxious gas test	ISA-S71.04-1985 G3 Harsh Group A

Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50
	For details about hazardous substances go to tab "Downloads". Category "Manufacturer's declaration"