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Introduction

Bondioli & Pavesi sensors are used on mechanical and hydraulic components to measure physical quantities so that electronic control system strategies can be implemented.

The choice of sensor must be made according to the application and measuring ranges of the physical quantities to be measured.

The sensors used for this purpose mainly regard the following quantities:

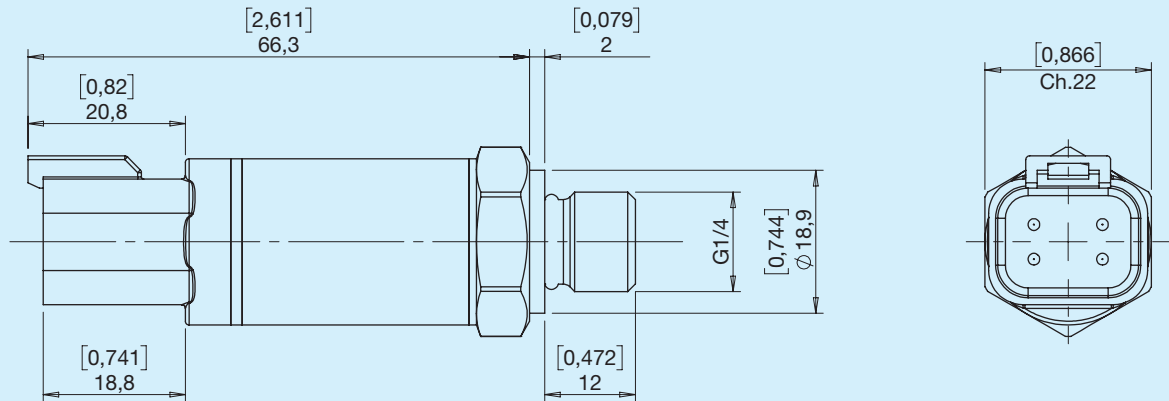
- Pressure;
- Angles and inclinations;
- Distance;
- Speed;
- Proximity and presence/absence;
- Temperature;

Pressure sensors

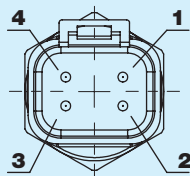


 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

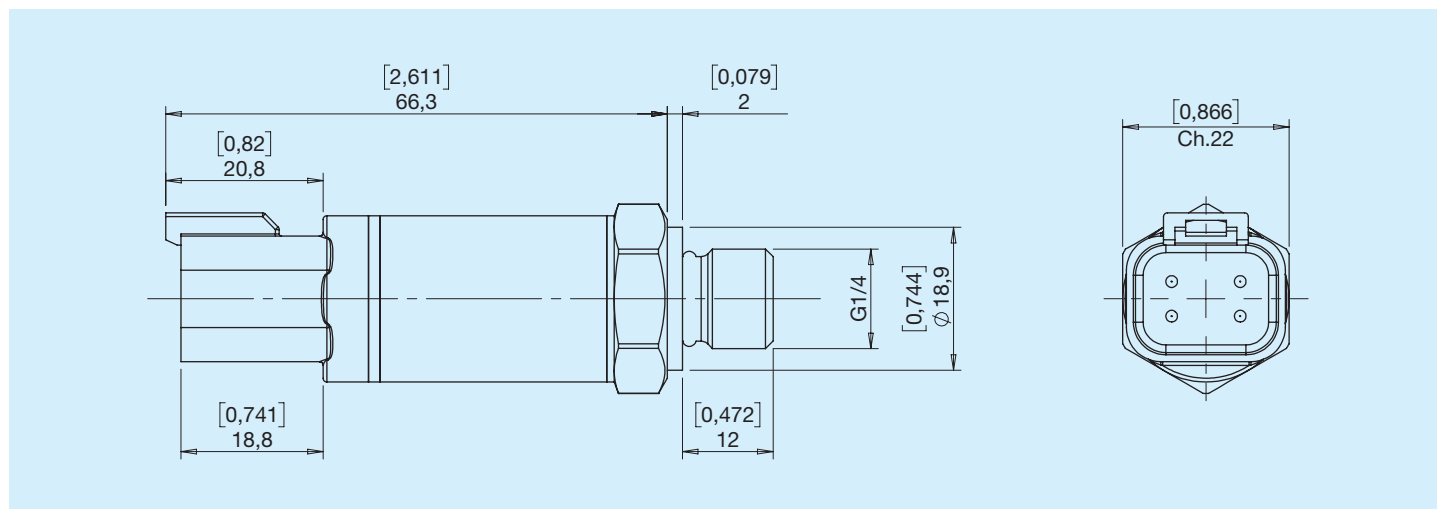
Mechanical and environmental

Measuring range	400 bar
Overpressure limit	800 bar
Burst pressure	1500 bar
Connection port	G 1/4"
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

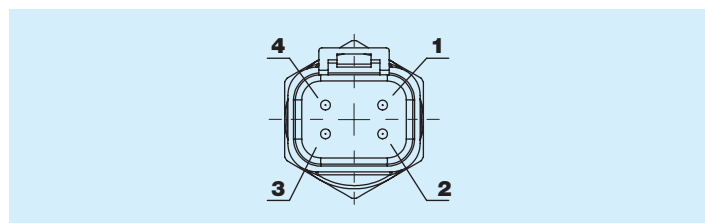
Electrical characteristics

Power supply	(5 ± 0.25) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS @Tamb
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

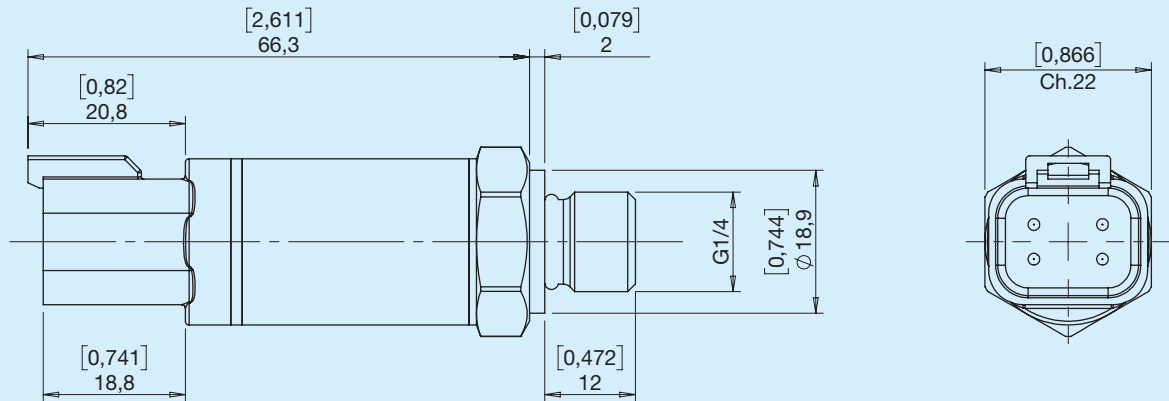
Mechanical and environmental

Measuring range	600 bar
Overpressure limit	1200 bar
Burst pressure	1500 bar
Connection port	G 1/4"
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

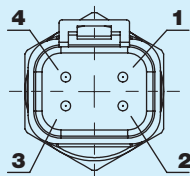
Electrical characteristics

Power supply	(5 ± 0.25) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS @Tamb
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

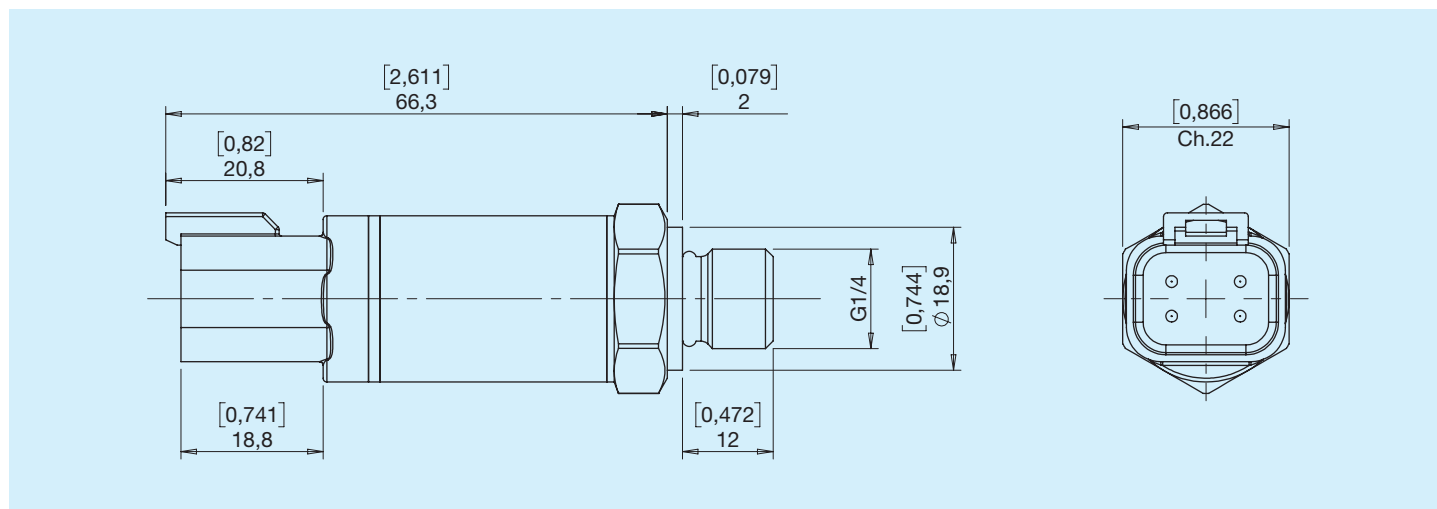
Mechanical and environmental

Measuring range	40 bar
Overpressure limit	80 bar
Burst pressure	160 bar
Connection port	G 1/4"
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

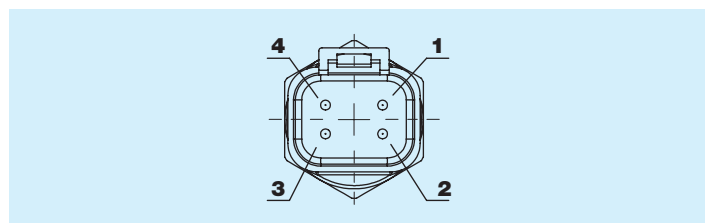
Electrical characteristics

Power supply	(5 ± 0.25) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS @Tamb
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Not used

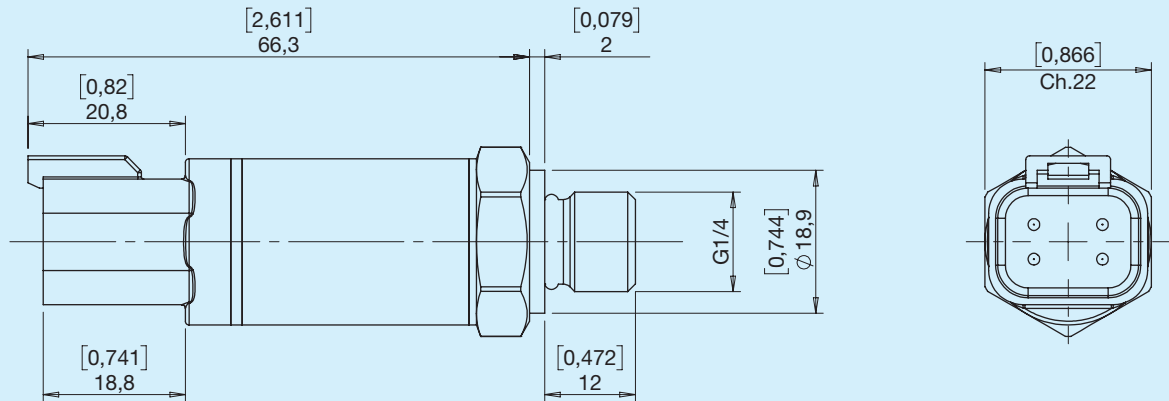
Mechanical and environmental

Measuring range	600 bar
Overpressure limit	1200 bar
Burst pressure	1500 bar
Connection port	G 1/4"
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

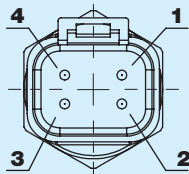
Electrical characteristics

Power supply	(10 ... 30) Vdc
Signal output	(4 ... 20) mA
Error	< ± 0.5% FS @Tamb
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Not used

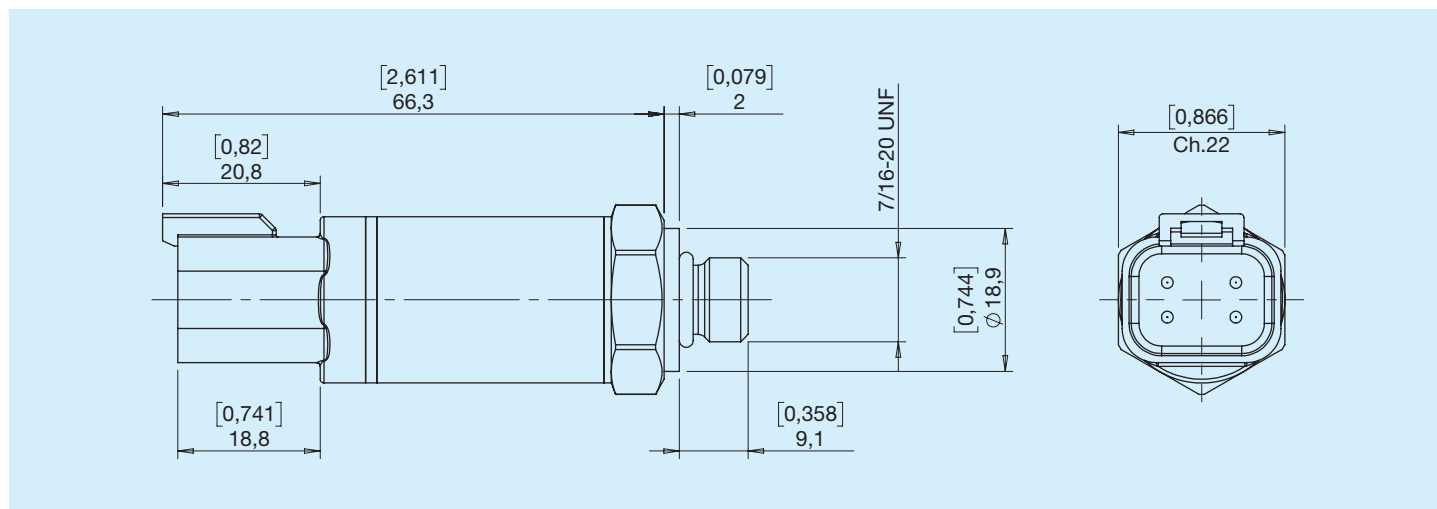
Mechanical and environmental

Measuring range	40 bar
Overpressure limit	80 bar
Burst pressure	160 bar
Connection port	G 1/4"
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

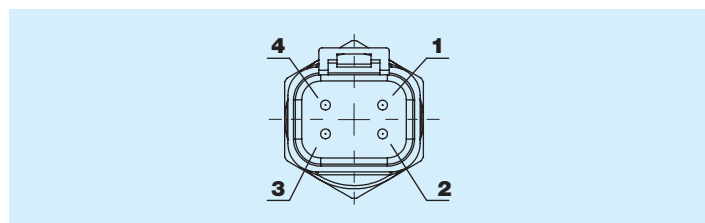
Electrical characteristics

Power supply	(10 ... 30) Vdc
Signal output	(4 ... 20) mA
Error	< ± 0.5% FS @Tamb
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

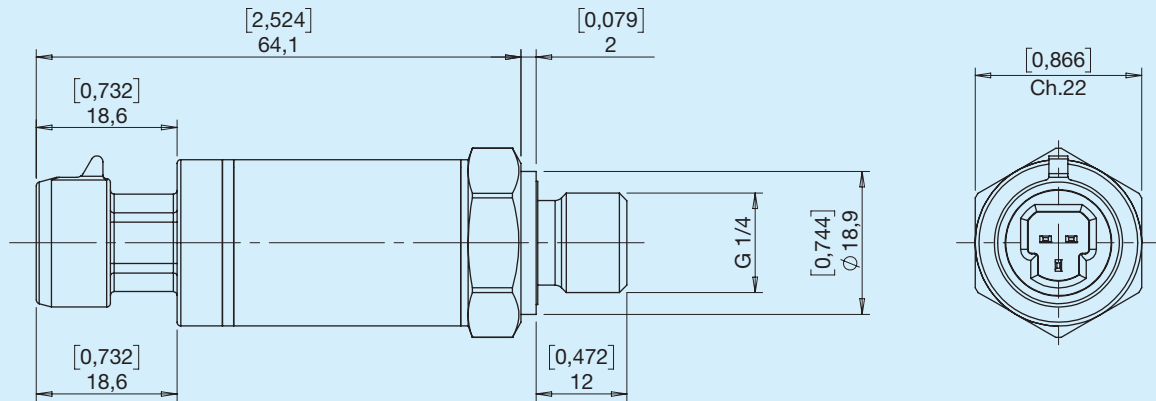
Mechanical and environmental

Measuring range	400 bar
Overpressure limit	800 bar
Burst pressure	1500 bar
Connection port	7/16-20 UNF
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

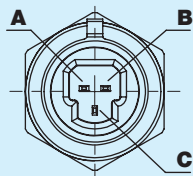
Electrical characteristics

Power supply	(5 ± 0.25) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS @Tamb
Connection	DT04-4P

Dimensions



Electrical connections



A	Power supply -
B	Power supply +
C	Signal output

Mechanical and environmental

Measuring range	600 bar
Overpressure limit	1200 bar
Burst pressure	1500 bar
Connection port	G 1/4"
Maximum tightening torque	40 Nm
Operating temperature range	(-40 ... 105) °C
Protection rating	IP67
Resistance to vibration and shock	20g max at 10...2000 Hz according to IEC 60068-2-6 100g/11msec according to IEC 60068-2-27

Electrical characteristics

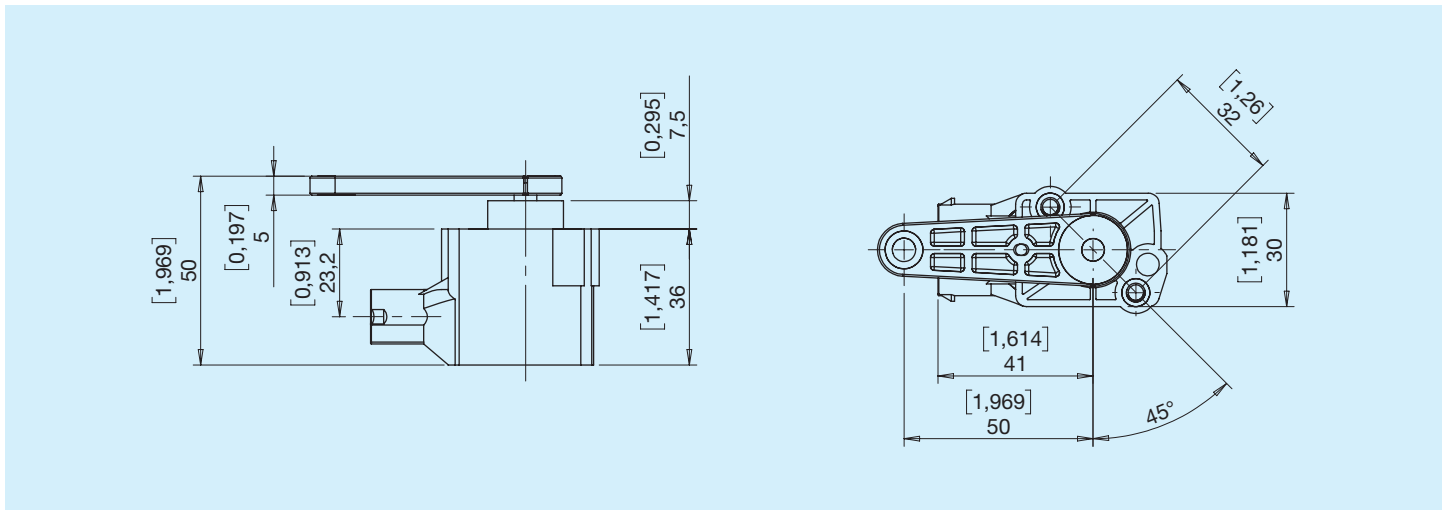
Power supply	(5 ± 0.25) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS @Tamb
Connection	Metri-Pack 150 (3 pin)

Angle sensor

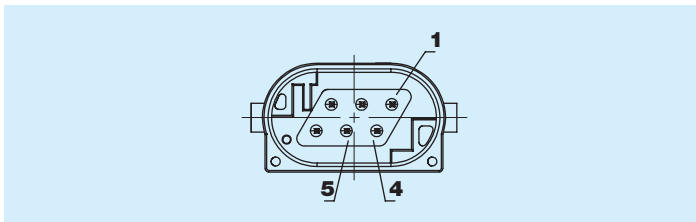


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 5 **Power supply +**

Pin 1 **Power supply -**

Pin 4 **Signal output**

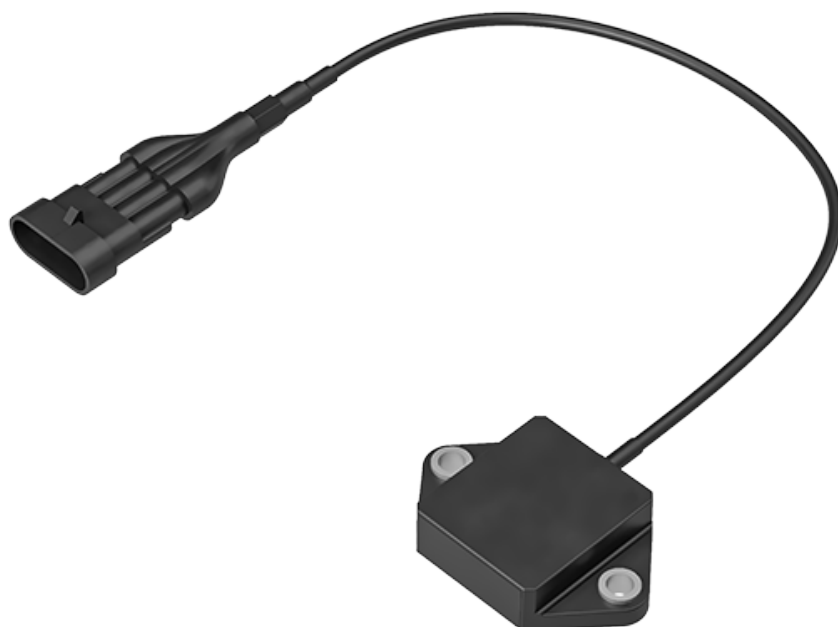
Mechanical and environmental

Measuring range	$\Delta\alpha = 70^\circ$
Fastening	Pedal connection (lever)
Operating temperature range	(-40 ... 100) °C
Protection rating	IP6K6 sensor body IP6K9K connector

Electrical characteristics

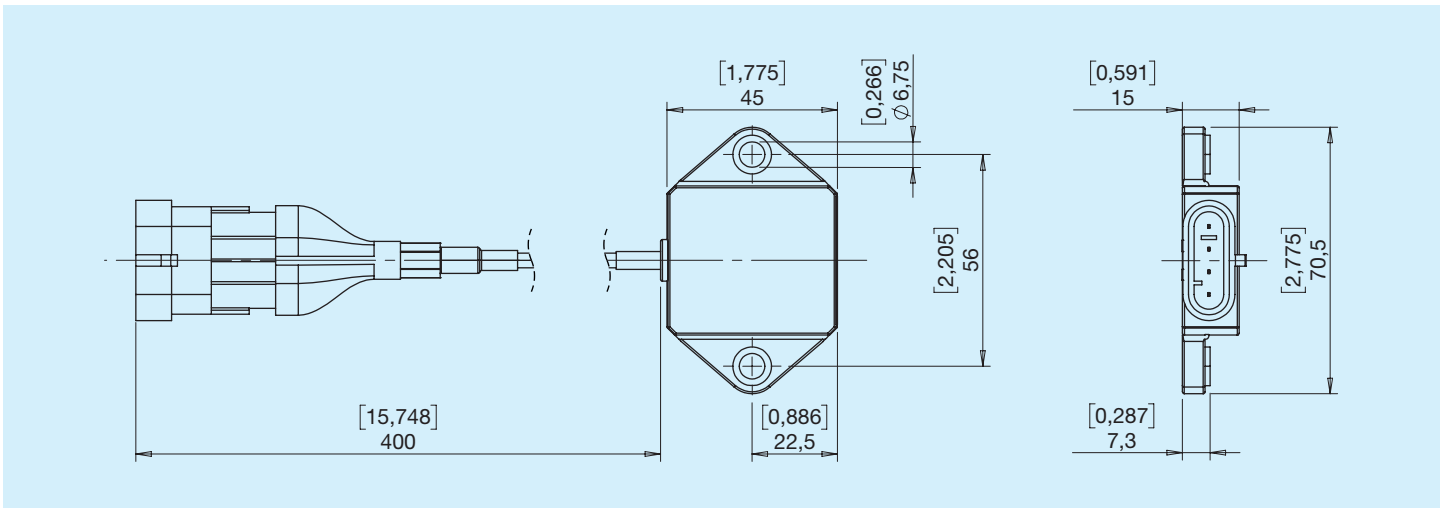
Power supply	(5.0 ± 0.25) V
Signal output	(0.5...4.5) V
Error	± 1%
Connection	MQS 6 terminals

Tilt sensor

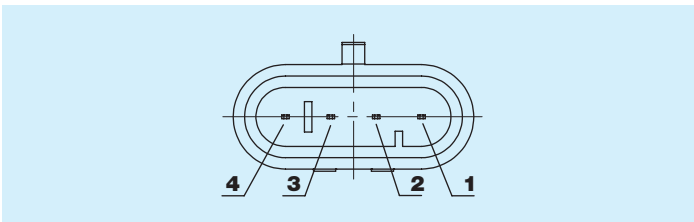


 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Power supply +
Pin 2	Power supply -
Pin 3	CAN H
Pin 4	CAN L

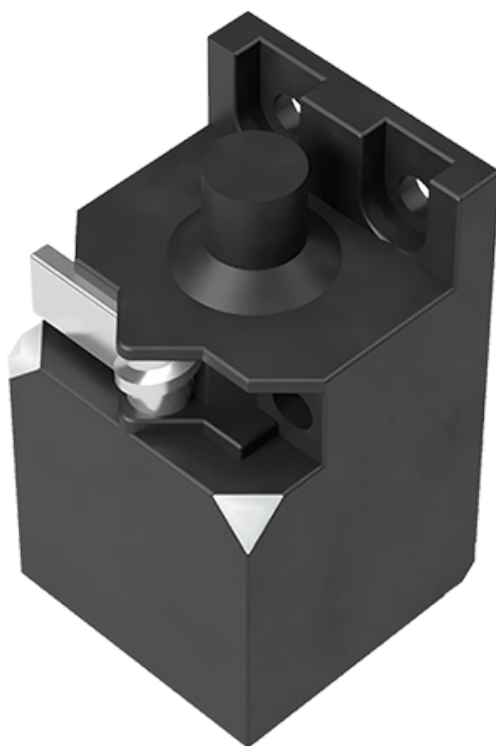
Mechanical and environmental

Measuring range	-90° ... 90°
Fastening	Screw
Operating temperature range	(-40 ... 85) °C
Protection rating	IP67
Resistance to vibration and shock	Up to 5000 G (random)

Electrical characteristics

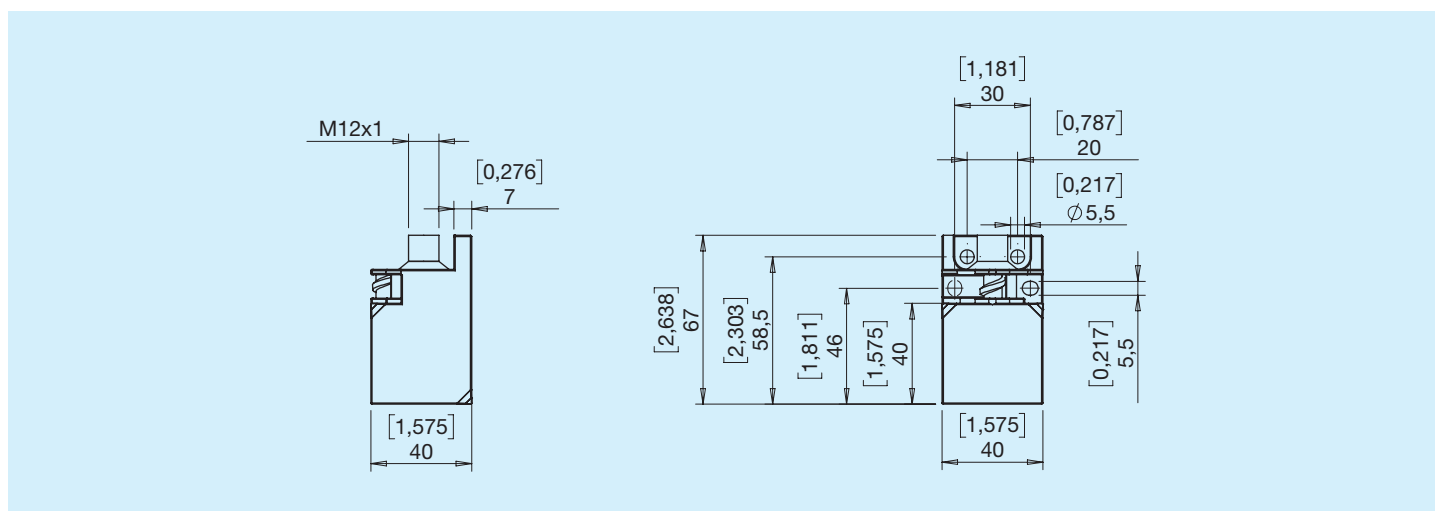
Power supply	(8 ... 30) Vdc
Signal output	CAN BUS SAE J1939 protocol
Error	± 0.5°
Connection	AMP Superseal 1.5 4-way

Distance sensor

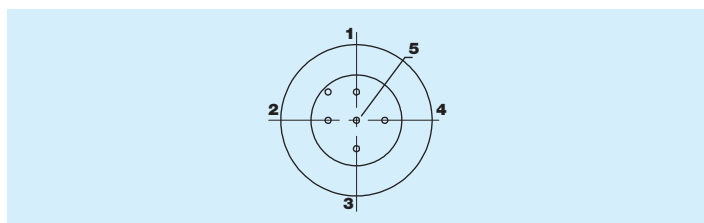


 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Power supply +
Pin 2	Programming
Pin 3	Power supply -
Pin 4	Signal output
Pin 5	Synchronisation

Mechanical and environmental

Measuring range	(200 ... 4000) mm
Fastening	Mounting with bracket
Reading frequency	85 kHz (response time < 180 ms)
Operating temperature range	(-25 ... 70) °C
Protection rating	IP67
Resistance to vibration	(10 ... 50) Hz, 1 mm, 12g cycles per axis: 10 EN 60068-2-6
Resistance to shock	30g, 18ms cycles per axis: 3 EN 60068-2-27

Electrical characteristics

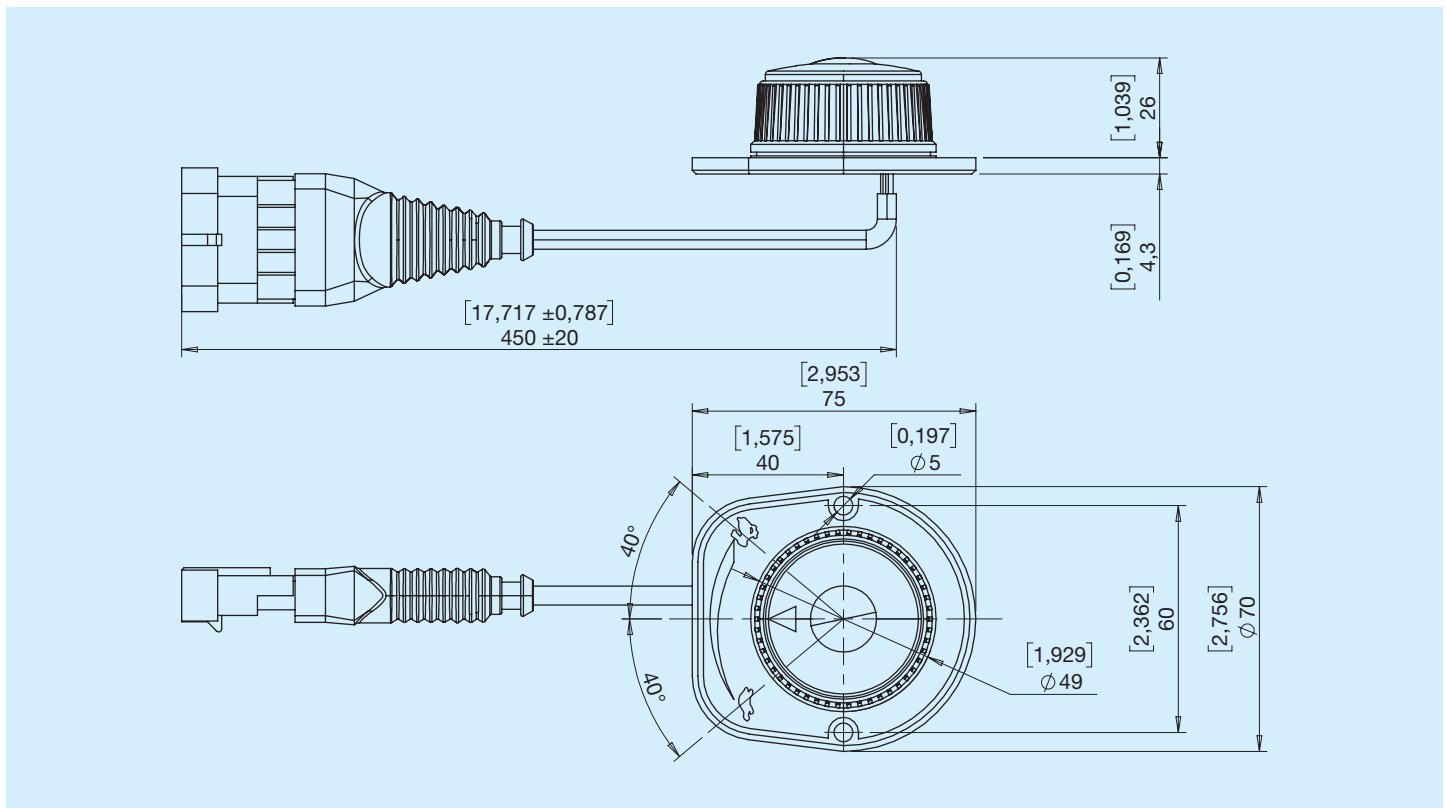
Power supply	(10 ... 30) Vdc
Signal output	(4 ... 20) mA
Error	< 1.5 % FS
Connection	M12x1, 5 pin

Speed regulator

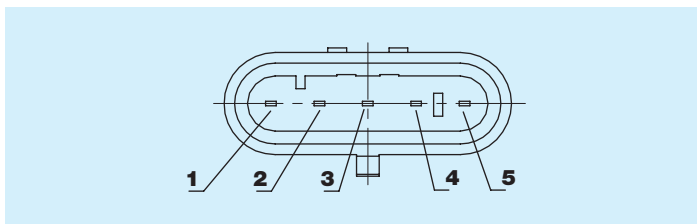


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Power supply +
Pin 2	Signal output
Pin 3	Power supply -
Pin 4	IVS 1
Pin 5	IVS 2

Mechanical and environmental characteristics

Measuring range	(-40° ... 40°)
Fastening	Screw
Maximum tightening torque	7 Nm
Operating temperature range	(-30 ... 80) °C
Protection rating	IP67
Resistance to vibration	f = 2000 Hz @PSD=0.96 g2/Hz / 3 axes, 24 hours per axis Sine: (12.87÷200) Hz @ dis. ≤15 mm @5g, 20 sweep cycles

Electrical characteristics

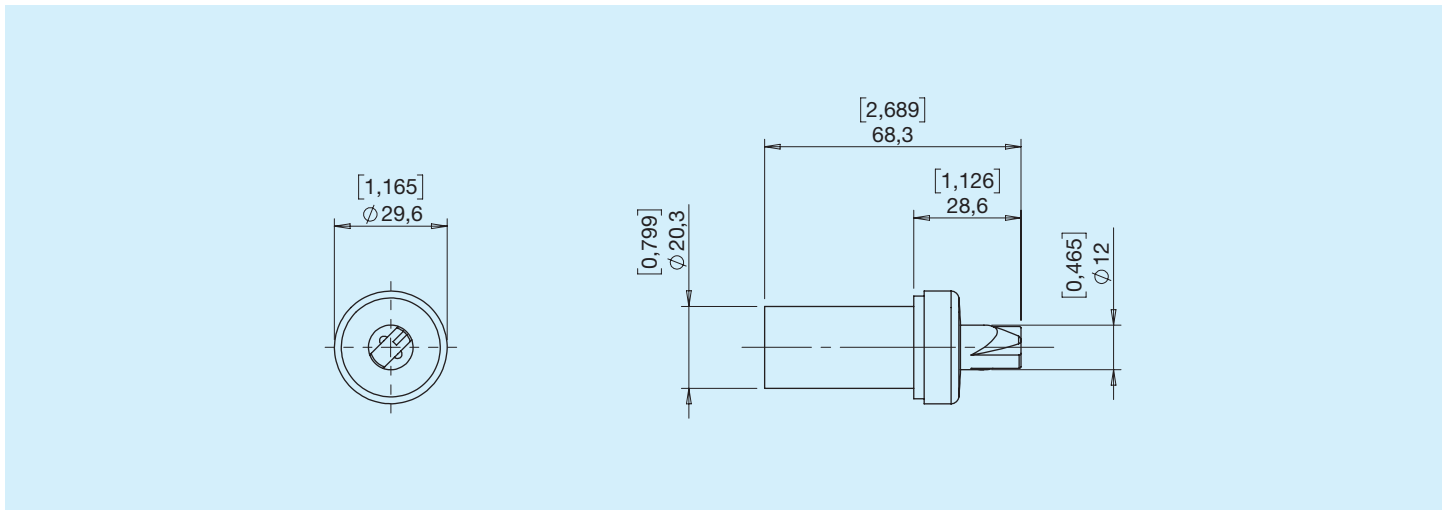
Power supply	(5 ± 0.5) V
Signal output	(0.6 ... 4) V
Error	± 0.5 V
Connector	Tyco Superseal 1.5 - 5 pin

Potentiometer, 4K7

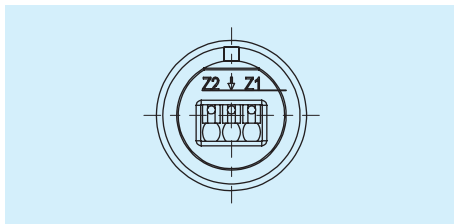


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

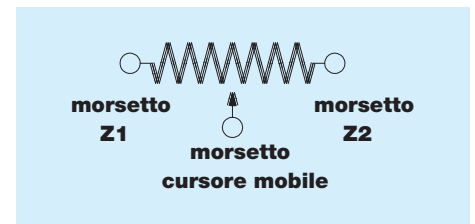
Dimensions



Electrical connections



Z1	Power supply -
Moving cursor	Signal output
Z2	Power supply +



Mechanical and environmental

Measuring range	(0° ... 250°)
Fastening	Clip - PUSH IN type
Maximum tightening torque	2.5 Nm
Operating temperature range	(-40 ... 80) °C
Protection rating	IP67

Electrical characteristics

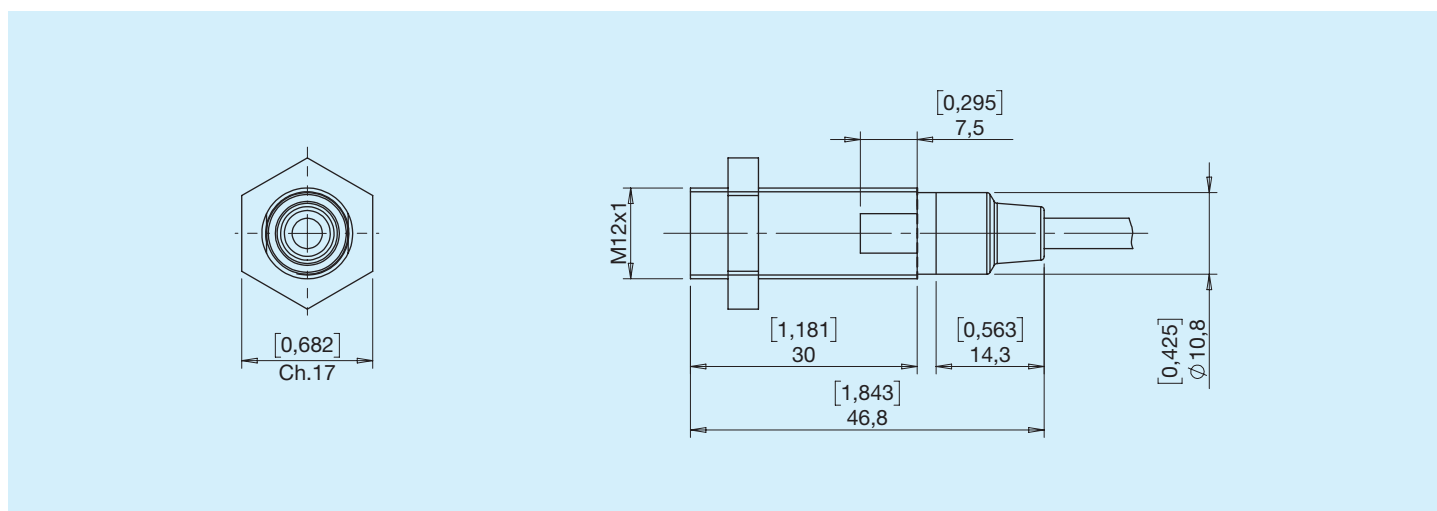
Maximum rated voltage	63 V
Signal output	(0 ... 4700) Ω
Error	± 10%
Connector	Clamped

Proximity sensor

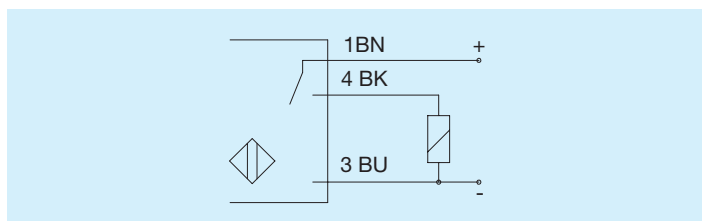


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Wire 1 (brown)	Power supply -
Wire 4 (black)	Signal output
Wire 3 (blue)	Power supply -

Mechanical and environmental

Measuring range	(3.6 ... 4.4) mm
Fastening	M12x1
Maximum tightening torque	10 Nm
Operating temperature range	(-25 ... 70) °C
Protection rating	IP67
Resistance to vibration and shock	IEC 60947-5-2 / 7.4

Electrical characteristics

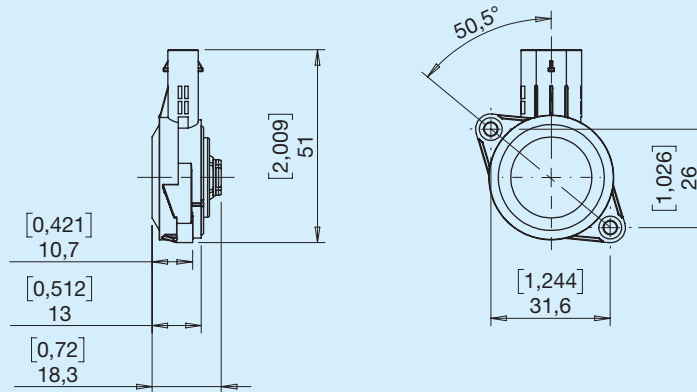
Power supply	(10 ... 36) V
Signal output	V_{batt}, PNP normally open
Connection	Free wires

Angle sensor

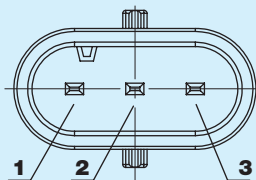


 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1 **Power supply +**

Pin 2 **Signal output**

Pin 3 **Power supply -**

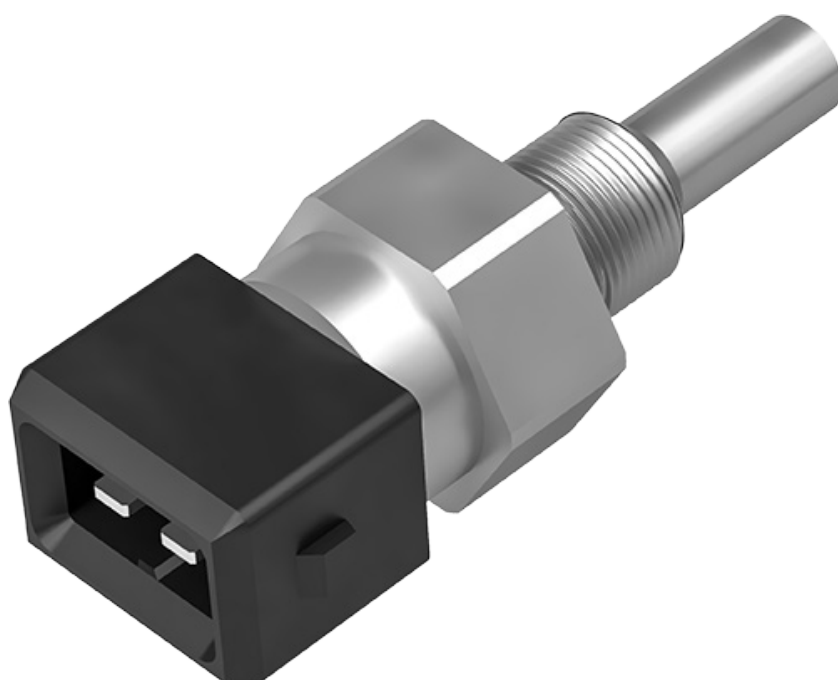
Mechanical and environmental

Measuring range	$\Delta\alpha = 60^\circ$
Fastening	Pivot pin
Maximum tightening torque	Screws: 2.5 Nm max
Operating temperature range	(-40 ... 125) °C
Protection rating	IP69K

Electrical characteristics

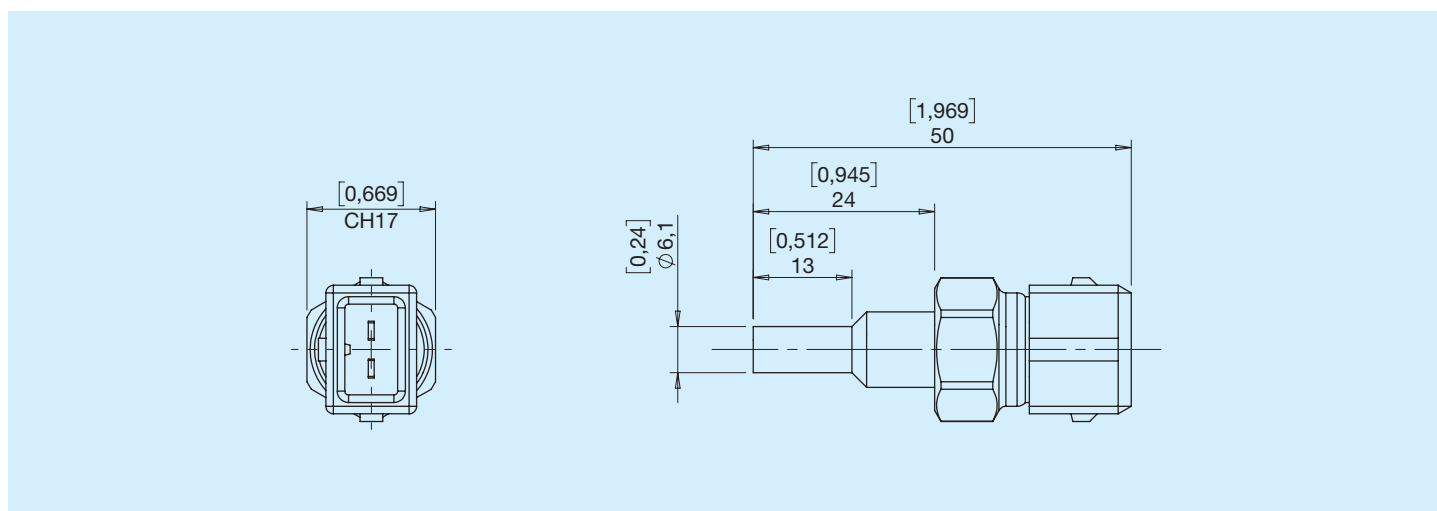
Power supply	(5.0 ± 0.5) V
Signal output	(0.5 ... 4.5) V
Error	± 0.15 V
Connection	TE MCON 1, 2, 3 poles

Temperature sensor

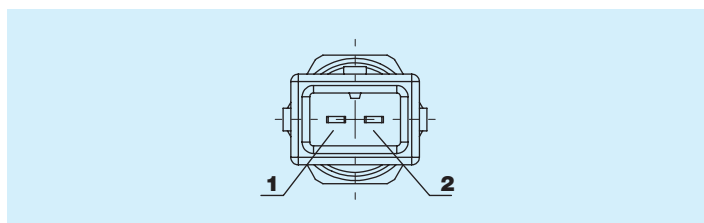


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Power supply
Pin 2	Signal output

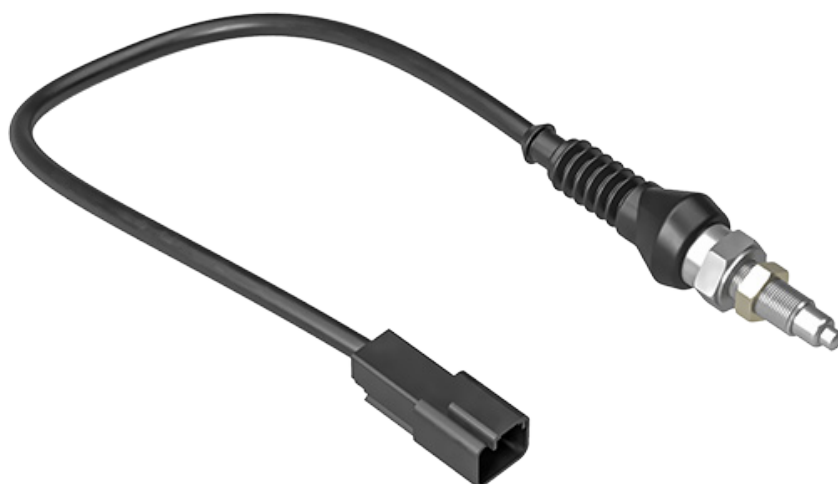
Mechanical and environmental

Measuring range	(-50 ... 150) °C
Operating pressure	Up to 500 bar
Overpressure limit	900 bar
Fastening	M10x1
Maximum tightening torque	17 Nm
Operating ambient temperature range	(-40 ... 125) °C
Protection rating	IP65
Resistance to vibration	15.3 g sine, (20 ... 2000) Hz, 8 h
Resistance to shock	50g / 6 ms

Electrical characteristics

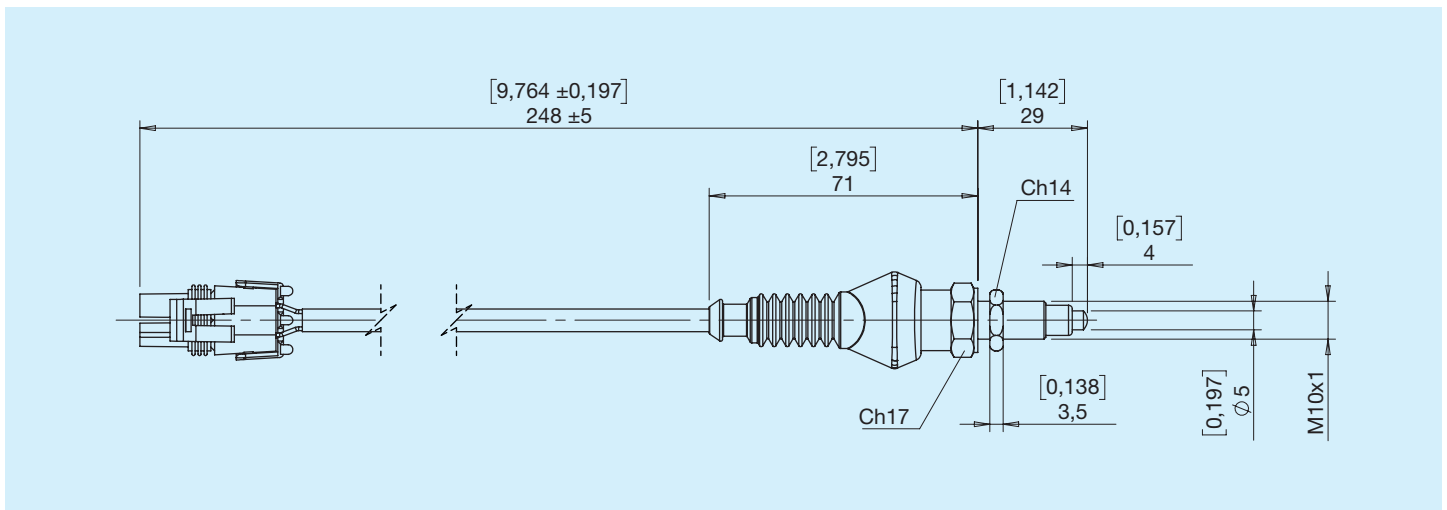
Signal output	(1000 ... 4400) Ω
Error	± 1% @25 °C
Connection	AMP Junior timer 2 pin

Operator presence switch

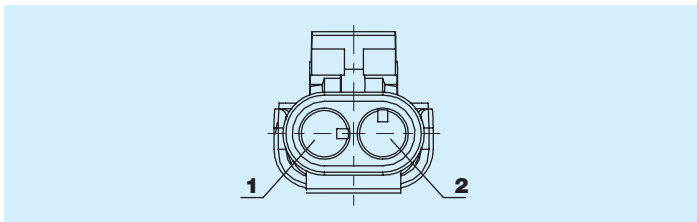


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Input
Pin 2	Signal output

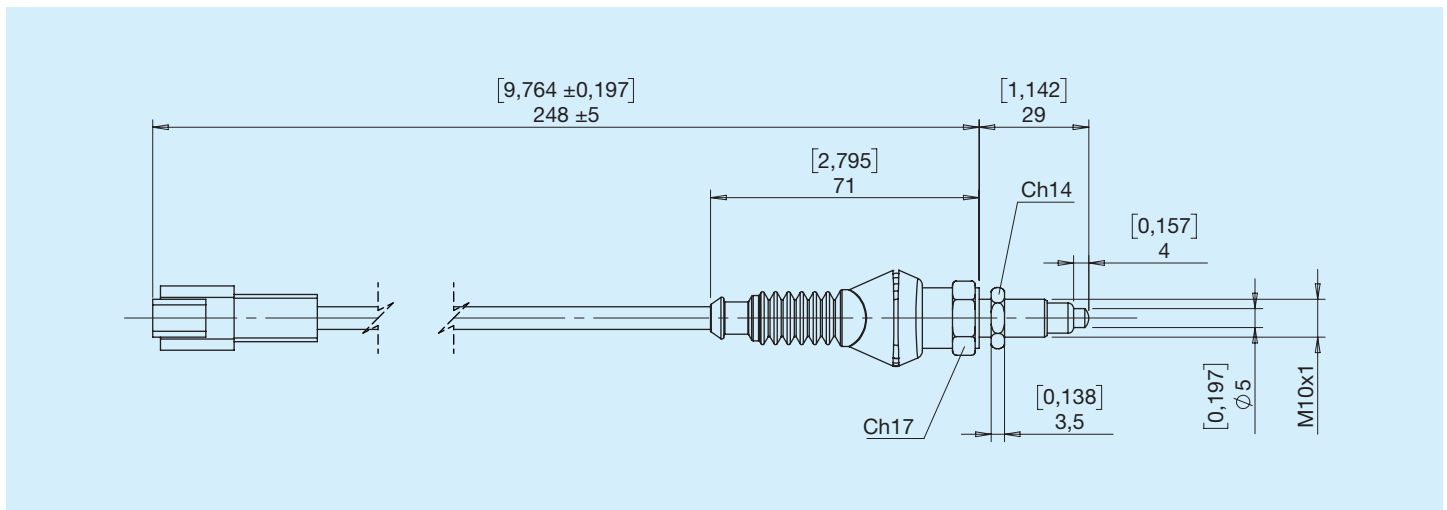
Mechanical and environmental

Measuring range	27 mm (open contact)
Fastening	M10x1
Maximum tightening torque	20 Nm
Operating temperature range	(-30 ... 110) °C
Protection rating	IP68
Resistance to vibration and shock	20 g max random, fall test 50 cm

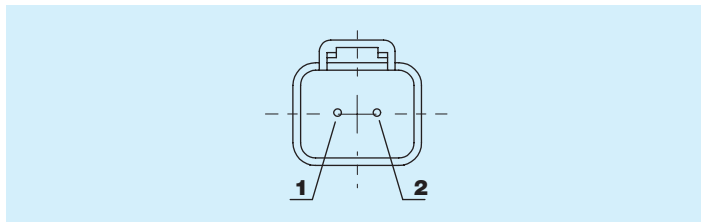
Electrical characteristics

Nominal power supply	12 / 24 V
Signal output	(0 ... V_{batt}) V
Connection	Delphi

Dimensions



Electrical connections



Pin 1	Input
Pin 2	Signal output

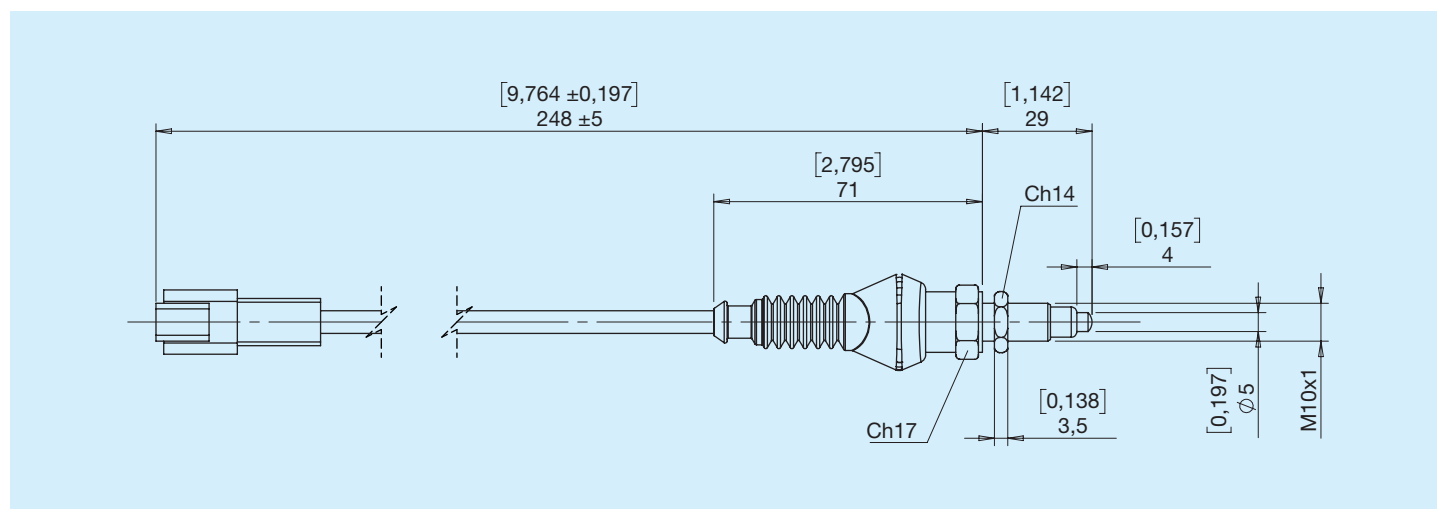
Mechanical and environmental

Measuring range	27 mm (open contact)
Fastening	M10x1
Maximum tightening torque	20 Nm
Operating temperature range	(-30 ... 110) °C
Protection rating	IP67
Resistance to vibration and shock	20 g max random, fall test 50 cm

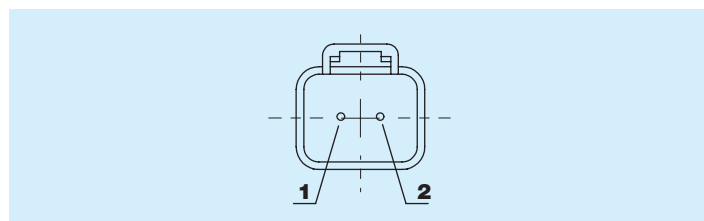
Electrical characteristics

Nominal power supply	12 / 24 V
Signal output	(0 ... V_{batt}) V
Connection	DT04-2P

Dimensions



Electrical connections



Pin 1	Input
Pin 2	Signal output

Mechanical and environmental

Measuring range	(0 ... 25) mm (closed contact)
Fastening	M10x1
Maximum tightening torque	20 Nm
Operating temperature range	(-30 ... 110) °C
Protection rating	IP67
Resistance to vibration and shock	20 g max random, fall test 50 cm

Electrical characteristics

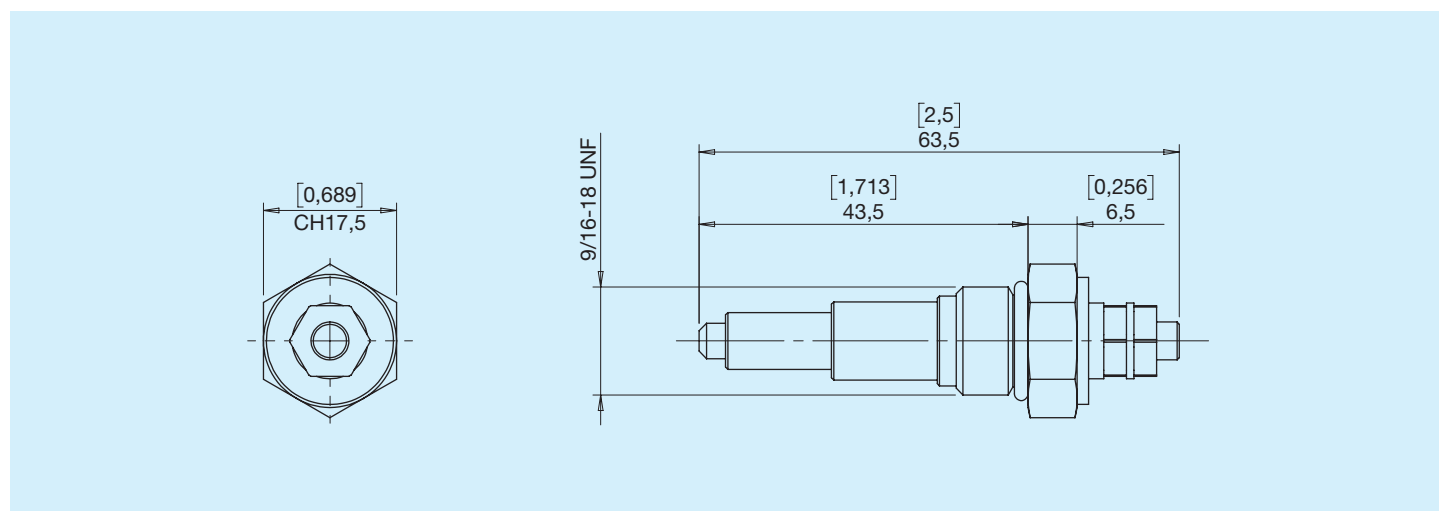
Nominal power supply	12 / 24 V
Signal output	(0 ... V_{batt}) V
Connection	DT04-2P

Anti-clogging filter



 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Mechanical and environmental

Measuring range	(0 ... 28.07) mm
Fastening	9/16-18UNF-2A - 10-32UNF-2A
Contact	Open

Electrical characteristics

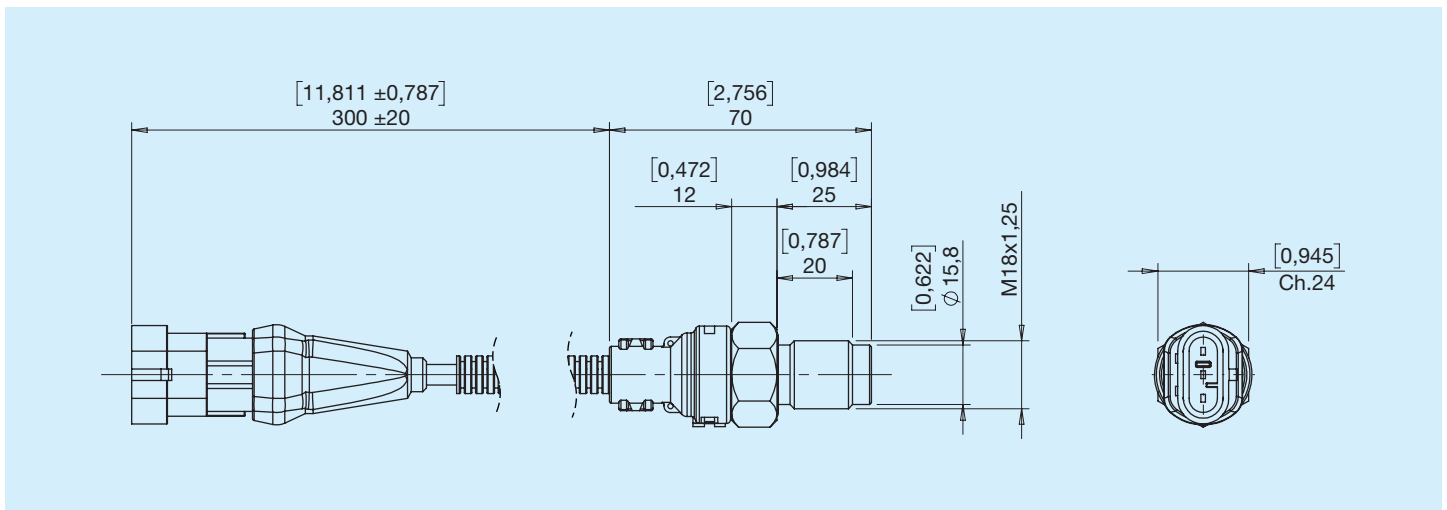
Power supply	(6 ... 30) Vdc
Signal output	Contact at 2.76 bar
Error	± 0.28 bar

Speed sensors

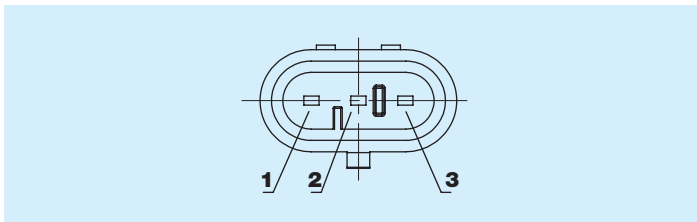


 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Signal output
Pin 2	Power supply -
Pin 3	Power supply +

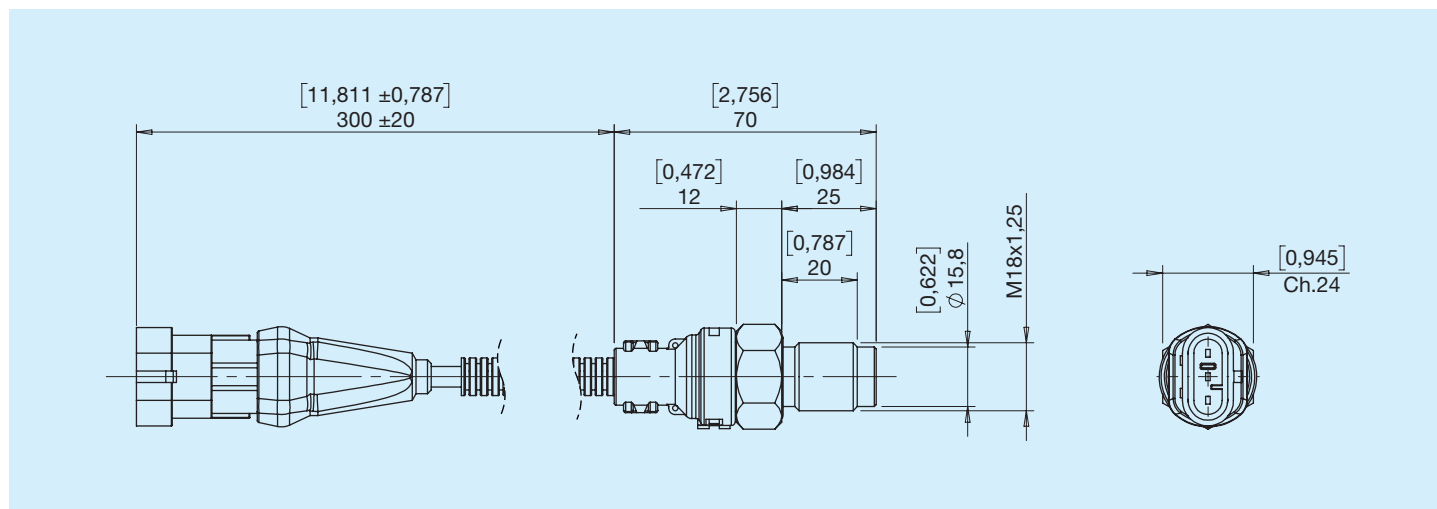
Mechanical and environmental

Maximum frequency	15 kHz
Fastening	M18x1.25
Maximum tightening torque	25 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67

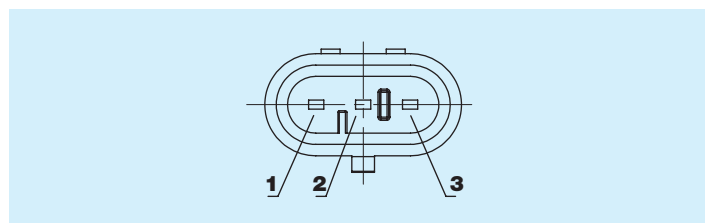
Electrical characteristics

Power supply	(4.5 ... 18) V
Signal output	Square wave, open collector
Connection	Tyco Superseal 1.5 mm, 3-way, male

Dimensions



Electrical connections



Pin 1	Signal output
Pin 2	Power supply -
Pin 3	Power supply +

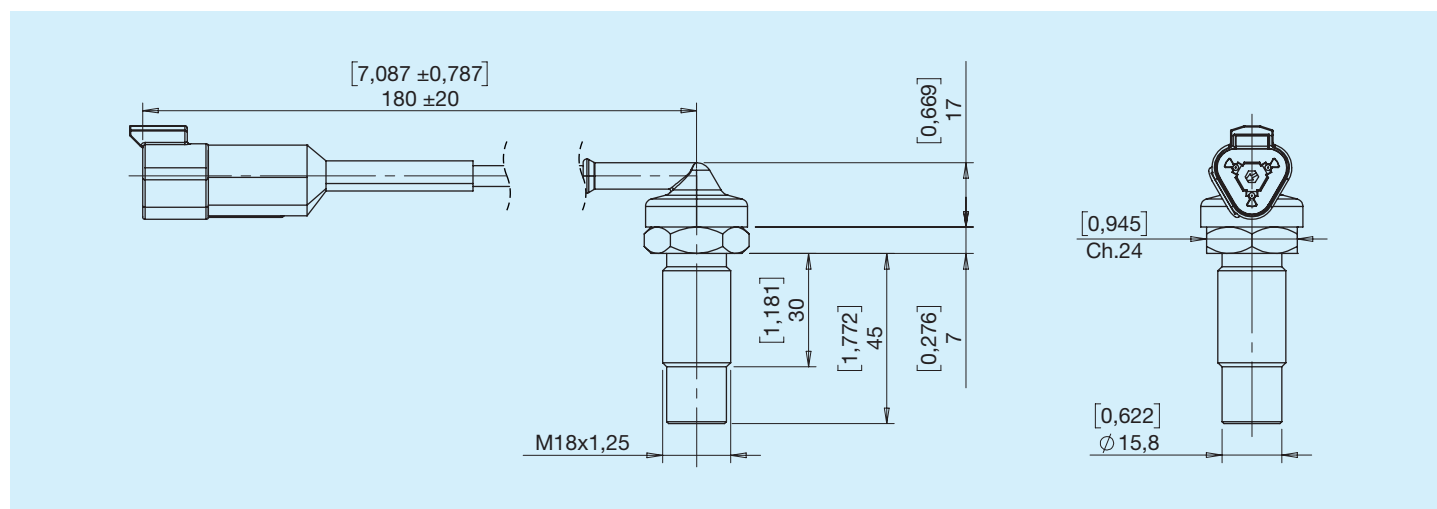
Mechanical and environmental

Maximum frequency	15 kHz
Fastening	M18x1.25
Maximum tightening torque	25 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67

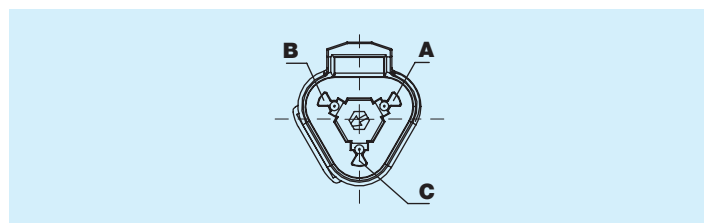
Electrical characteristics

Power supply	(12 ... 32) V
Signal output	Square wave, open collector
Connection	Tyco Superseal 1.5 mm, 3-way, male

Dimensions



Electrical connections



A	Power supply +
B	Power supply -
C	Signal output

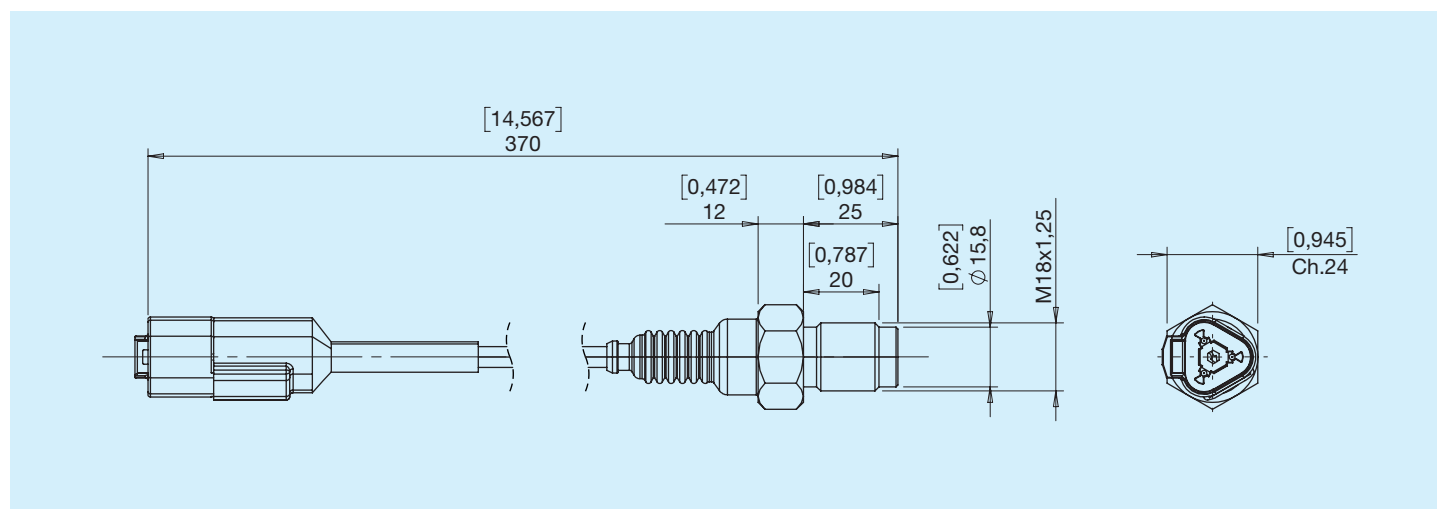
Mechanical and environmental

Fastening	M18x1.25
Maximum tightening torque	25 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67

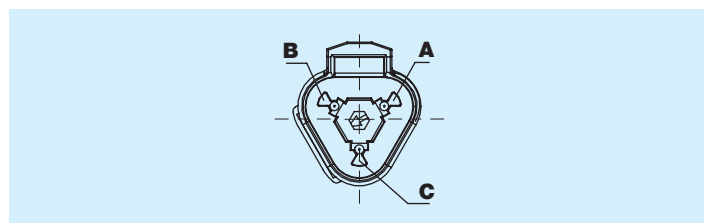
Electrical characteristics

Power supply	(4.5 ... 18) V
Signal output	Square wave, open collector
Electronic connection	DT04-3P

Dimensions



Electrical connections



A	Power supply +
B	Power supply -
C	Signal output

Mechanical and environmental

Fastening	M18x1.25
Maximum tightening torque	25 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67

Electrical characteristics

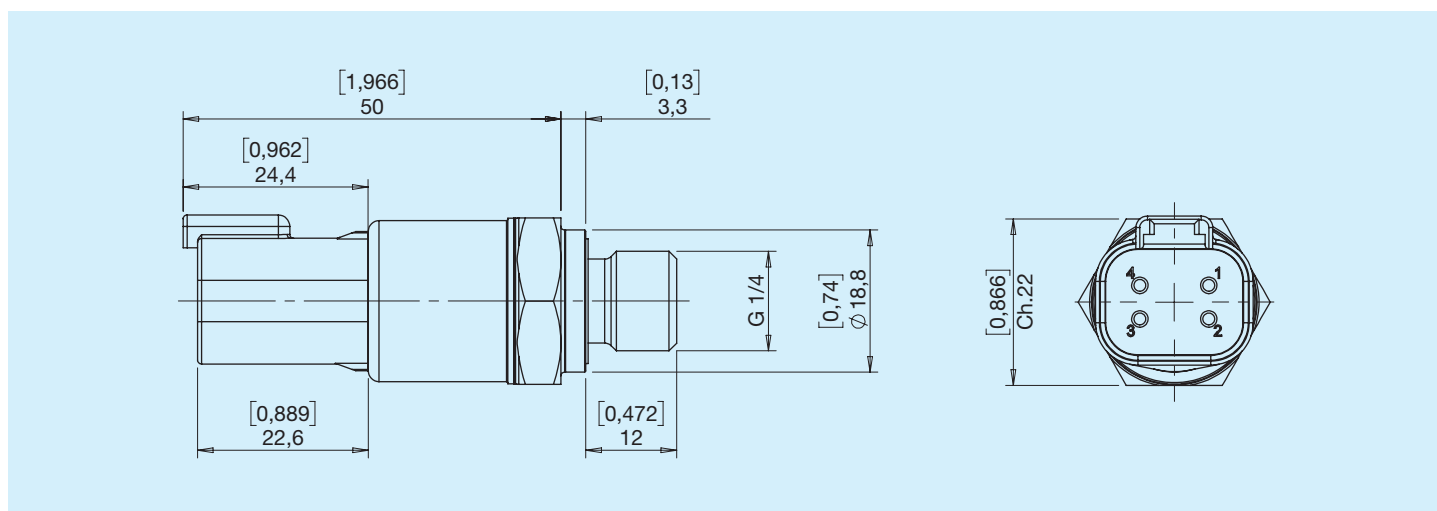
Power supply	(12 ... 32) V
Signal output	Square wave, open collector
Connector	DT04-3P

Pressure sensors

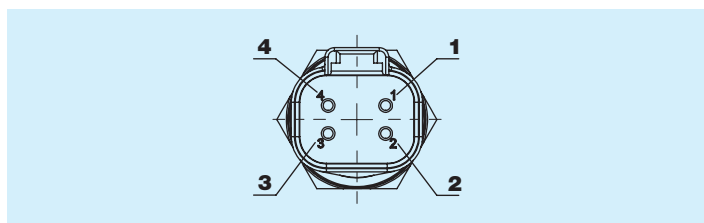


Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	CAN_L
Pin 2	Power supply +
Pin 3	Power supply -
Pin 4	CAN_H

Mechanical and environmental

Measuring range	40 bar
Overpressure limit	100 bar
Burst pressure	500 bar
Connection port	G 1/4"
Maximum tightening torque	22 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67
Resistance to vibration and shock	20g EN 60068-2-6 500g EN 60068-2-27

Electrical characteristics

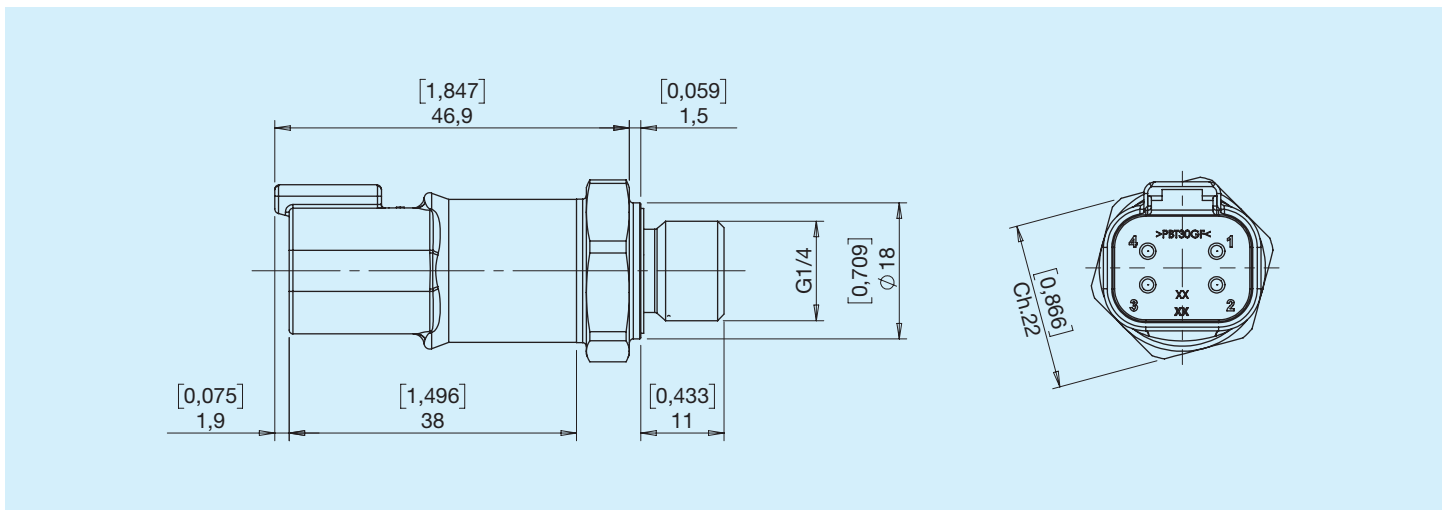
Power supply	(9 ... 36) V
Signal output	(CAN message, SAE J1939 protocol)
Error	< ± 0.5% FS between (0 ... 105) °C
Connection	DT04-4P

Pressure sensors

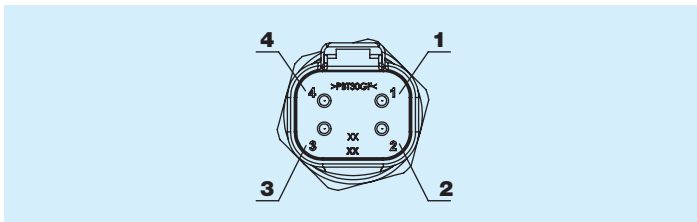


 Prior to use, carefully read the GENERAL INSTRUCTIONS FOR USE OF ELECTRONIC CONTROL UNITS

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

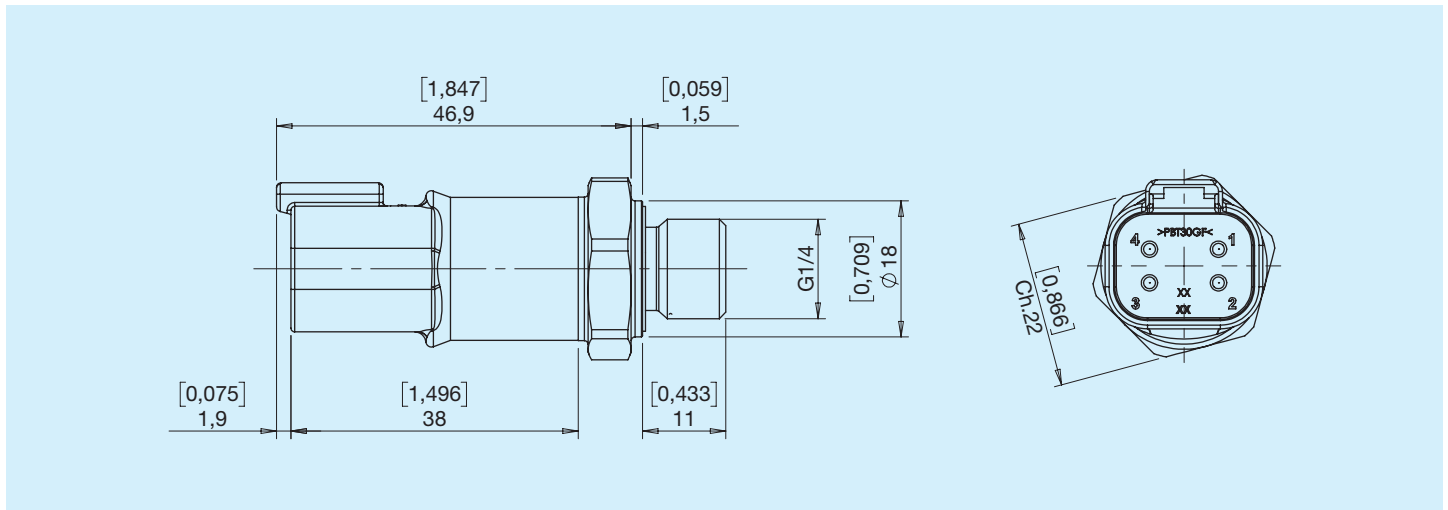
Mechanical and environmental

Measuring range	400 bar
Overpressure limit	1200 bar
Burst pressure	4000 bar
Connection port	G 1/4"
Maximum tightening torque	35 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67
Resistance to vibration and shock	20g at 10...2000 Hz sinus. according to IEC 60068-2-6 100g according to IEC 60068-2-27

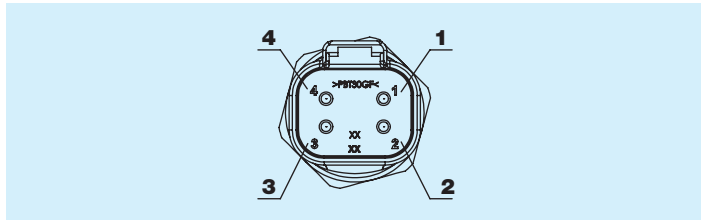
Electrical characteristics

Power supply	(5 ± 0.5) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

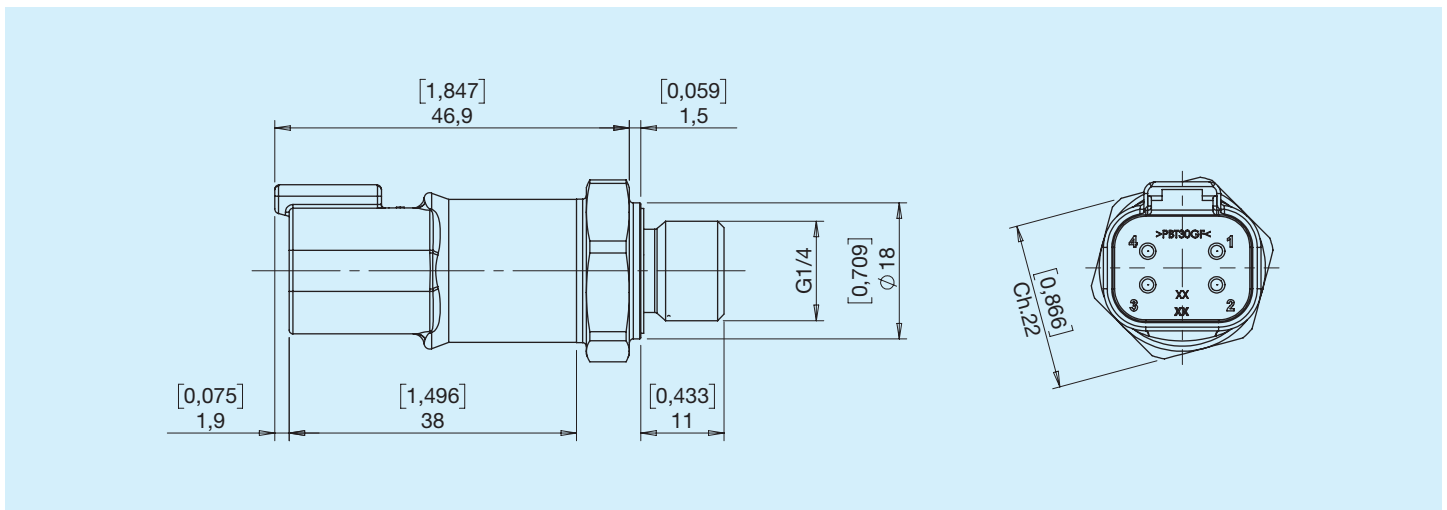
Mechanical and environmental

Measuring range	600 bar
Overpressure limit	1500 bar
Burst pressure	4000 bar
Connection port	G 1/4"
Maximum tightening torque	35 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67
Resistance to vibration and shock	20g at 10...2000 Hz sinus. according to IEC 60068-2-6 100g according to IEC 60068-2-27

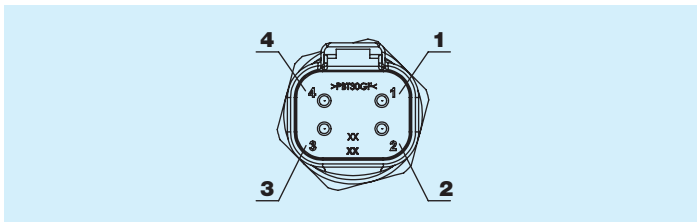
Electrical characteristics

Power supply	(5 ± 0.5) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Signal output

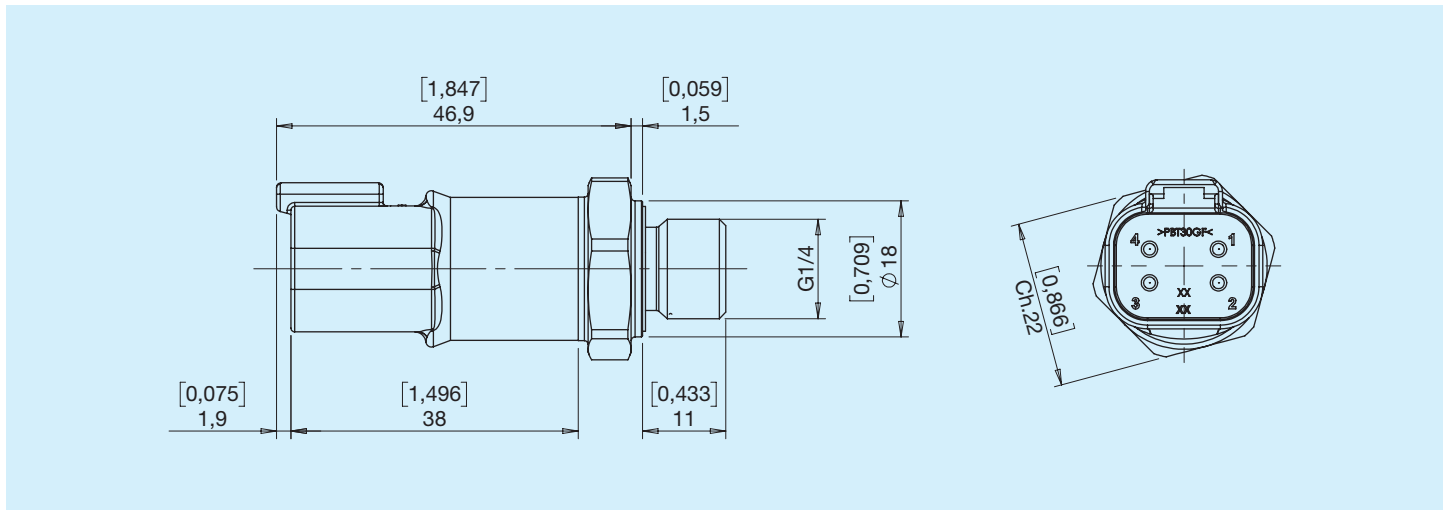
Mechanical and environmental

Measuring range	40 bar
Overpressure limit	120 bar
Burst pressure	800 bar
Connection port	G 1/4"
Maximum tightening torque	35 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67
Resistance to vibration and shock	20g at 10...2000 Hz sinus. according to IEC 60068-2-6 100g according to IEC 60068-2-27

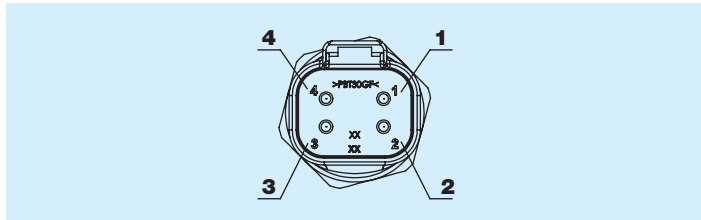
Electrical characteristics

Power supply	(5 ± 0.5) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Not used

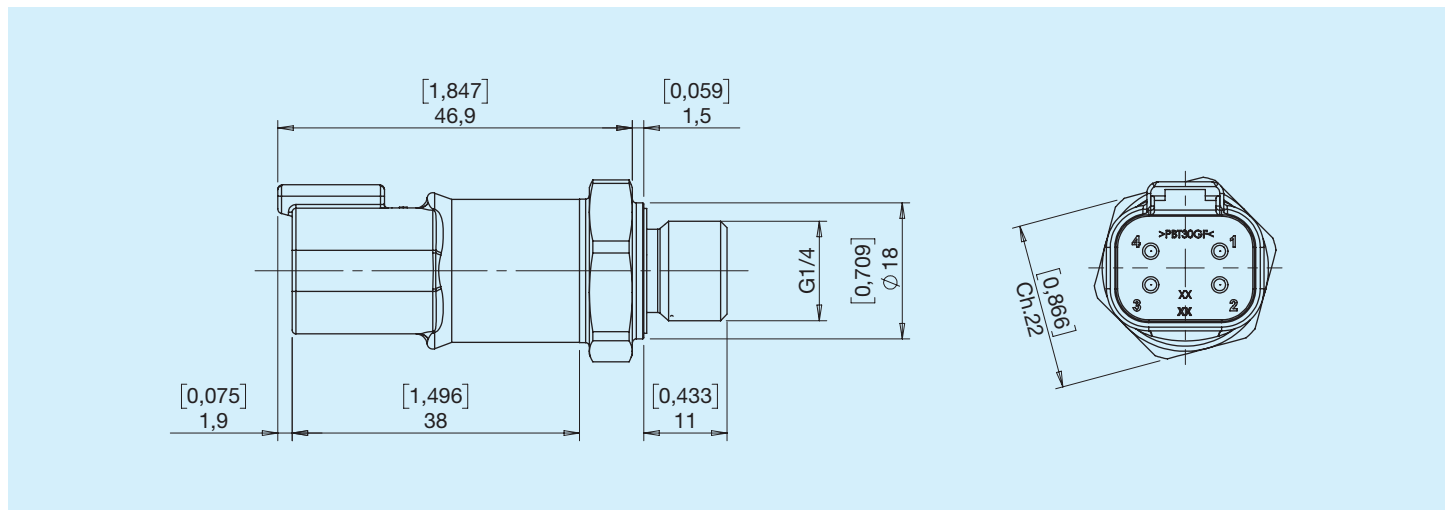
Mechanical and environmental

Measuring range	600 bar
Overpressure limit	1500 bar
Burst pressure	4000 bar
Connection port	G 1/4"
Maximum tightening torque	35 Nm
Operating temperature range	(-40 ... 100) °C
Protection rating	IP67
Resistance to vibration and shock	20g at 10...2000 Hz sinus. according to IEC 60068-2-6 100g according to IEC 60068-2-27

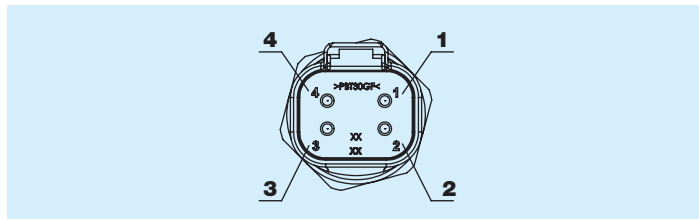
Electrical characteristics

Power supply	(8 ... 30) Vdc
Signal output	(4 ... 20) mA
Error	< ± 0.5% FS
Connection	DT04-4P

Dimensions



Electrical connections



Pin 1	Power supply -
Pin 2	Power supply +
Pin 3	Not used
Pin 4	Not used

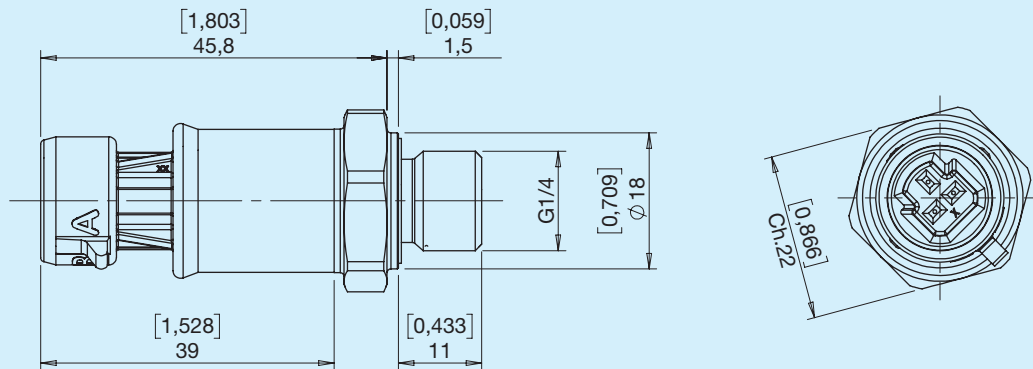
Mechanical and environmental

Measuring range	40 bar
Overpressure limit	12 bar
Burst pressure	800 bar
Connection port	G 1/4"
Maximum tightening torque	35 Nm
Operating temperature range	(-40 ... 100) °C
Protection rating	IP67
Resistance to vibration and shock	20g at 10...2000 Hz sinus. according to IEC 60068-2-6 100g according to IEC 60068-2-27

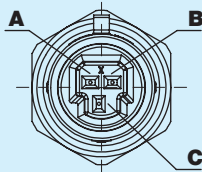
Electrical characteristics

Power supply	(8 ... 30) Vdc
Signal output	(4 ... 20) mA
Error	< ± 0.5% FS
Connection	DT04-4P

Dimensions



Electrical connections



A	Power supply -
B	Power supply +
C	Signal output

Mechanical and environmental

Measuring range	400 bar
Overpressure limit	1200 bar
Burst pressure	4000 bar
Connection port	G 1/4"
Maximum tightening torque	35 Nm
Operating temperature range	(-40 ... 125) °C
Protection rating	IP67
Resistance to vibration and shock	20g at 10...2000 Hz sinus. according to IEC 60068-2-6 100g according to IEC 60068-2-27

Electrical characteristics

Power supply	(5 ± 0.5) V
Signal output	(0.5 ... 4.5) V
Error	< ± 0.5% FS
Connection	Packard Metri-Pack, round