JUMO dTRANS p01 CAN

Pressure transmitter

B 40.4381

Operating Instructions

3.2000 / 00380102

Please read these Operating Instructions before starting up the instrument. Keep the operating instructions in a place which is accessible to all users at all times. Please assist us to improve these operating instructions. Your suggestions will be most welcome.

Phone	in Germany	(0661) 6003-715
	from abroad	(+49) 661 6003-0
Fax	in Germany	(0661) 6003-606
	from abroad	(+49) 661 6003-607

All the necessary settings and, where appropriate, alterations inside the instrument are described in these operating instructions. However, if any difficulties should still arise during start-up, please do not carry out any manipulations on the unit. This could endanger your rights under the instrument warranty! Please contact the nearest subsidiary or the main factory.

When returning chassis, assemblies or components, the rules of EN 100 015 “Protection of electrostatically sensitive components” must be observed. Use only the appropriate ESD packaging material for transport.

Please note that we can not accept any liability for damage caused by ESD (electrostatic discharge).

Contents

Page

1 Introduction

1.1 Typographical conventions

1.1.1 Warning signs

Danger

This sign is used when there may be **danger to personnel** if the instructions are disregarded or not followed accurately.

Warning

This sign is used when there may be **damage to equipment or data** if the instructions are disregarded or not followed accurately.

1.1.2 Note signs

Note

This sign is used when your attention is drawn to a **special remark**.

Reference

This sign refers to **further information** in other chapters or sections.

abc[1]

Footnote

Footnotes are notes which **refer to certain points** in the text. Footnotes consist of two parts:

Marking in the text and the footnote text.

The marking in the text is arrangend as continuous raised (superscript) numbers.

The footnote text (in smaller typeface) is placed at the bottom of the page and starts with superscript number.

✶

Action

This sign indicates that an **action to be performed** is described.

The individual steps are designated by this asterisk, for example:

✶ Connect plug

1.2 Description

Application

Pressure transmitters Type dTRANS p01 CAN are used to measure relative (gauge) and absolute pressures in liquids and gases. The measuring device for the pressure transmitter is a piezo-resistive or thin-film strain gauge. The measured value of pressure is digitised and made available for further processing via the “CANopen” serial bus protocol (CAN slave).

Functions of the pressure transmitter

- A/D conversion of the measured signal with 12 bit resolution and 0.5% accuracy
- Output of the measured value in 16 bit format (PDO) or in IEEE-float format (SDO)
- Adjustable scaling of the measured value e.g. in any unit or in %
- Filtering of the measured value, e.g. for damping, adjustable filter time constant
- Measurement output only on a change of pressure (trigger) – adjustable delta value
- Limit monitoring of the measured value against two freely adjustable limit values
- Out-of-limit condition initiates a high-priority alarm (emergency telegram)
- Defined response to error on sensor fault, electronics failure, or CAN bus failure
- Setting of the CAN-module ID and the CAN baud rate either by DIL switch or in software (parameters via CAN-bus)

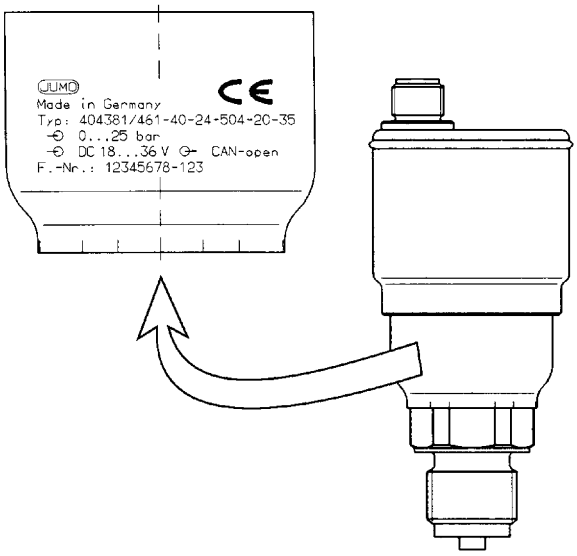
Setup program

All instrument parameters are accessible via the CANopen object dictionary (EDS file) and can be set using standard CANopen software tools. No JUMO setup program is required.

2 Identifying the instrument version

2.1 Label

Position



✶ Determine the instrument type by the label and the type designation.

2.2 Type designation

	(1)		(2)		(3)		(4)		(5)
404381 /	**...**	-	**...**	-	**...**	-	**..**	-	**..**

(1) Input	**Code**
0 — 0.25 bar gauge pressure	451
0 — 0.4 bar gauge pressure	452
0 — 0.6 bar gauge pressure	453
0 — 1.0 bar gauge pressure	454
0 — 1.6 bar gauge pressure	455
0 — 2.5 bar gauge pressure	456
0 — 4 bar gauge pressure	457
0 — 6 bar gauge pressure	458
0 — 10 bar gauge pressure	459
0 — 16 bar gauge pressure	460
0 — 25 bar gauge pressure	461
0 — 40 bar gauge pressure	462
0 — 60 bar gauge pressure	463
0 — 100 bar gauge pressure	464
0 — 160 bar gauge pressure	465
0 — 250 bar gauge pressure	466
0 — 400 bar gauge pressure	467
0 — 600 bar gauge pressure	468
0 — 0.6 bar absolute pressure	487
0 — 1.0 bar absolute pressure	488
0 — 1.6 bar absolute pressure	489
0 — 2.5 bar absolute pressure	490
0 — 4 bar absolute pressure	491
0 — 6 bar absolute pressure	492
0 — 10 bar absolute pressure	493
0 — 16 bar absolute pressure	494
0 — 25 bar absolute pressure	495
special range	999

(2) Output	**Code**
CANopen (digital)	450

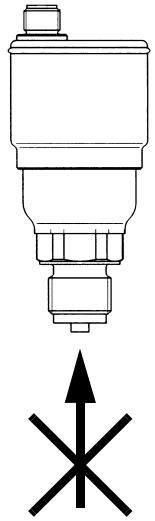
(3) Process connection	
Pressure connection ¼" pipe to EN 837	502
Pressure connection ½" pipe to EN 837	504
Pressure connection 1/4-18 NPT to EN 837	511
Pressure connection 1/2-14 NPT to EN 837	512
Pressure connection ¼" pipe to DIN 3852 T11	521
Pressure connection ¼" pipe to DIN 3852 T11	523
Pressure connection 7/16-20 NPT	562

(4) Material for process connection	**Code**
stainless steel	20

(5) Electrical connection	**Code**
with round connector M12 x 1 to IEC 60 947-5-2	36

3 Fitting

The diaphragm of the pressure transmitter must not be damaged! Do not insert any objects into the bore of the pressure connection or deform the flush front diaphragm!



3.1 Location

Basics

The location should be easily accessible, near the measurement point if possible, and largely vibration-free. The permitted ambient temperature must be observed (take account of possible thermal radiation).

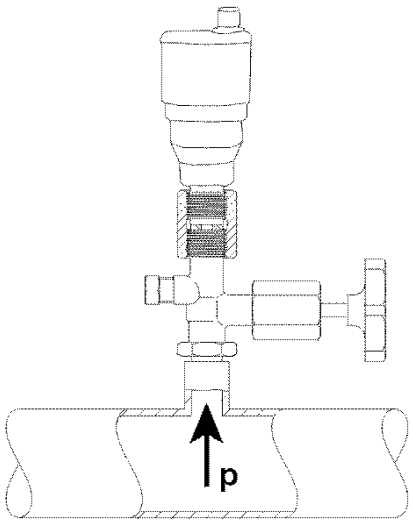
Mounting position

The JUMO dTRANS p01CAN pressure transmitter can be mounted above or below the pressure tapping point.

The nominal mounting position of the pressure transmitter is upright vertical. Depending on the conditions at the measurement point, the pressure transmitter can be mounted in an alternative position.

3.1.1 Installation at the pressure connection

Release all pressure from the system before installing the pressure transmitter!



Seals	With process connection 504 a seal to EN 837 or DIN 16 258 can be used.
Tightening torque	With process connection 504 maximum 200 Nm. The correct tightening torque depends on the size, material and form of the seal used, as well as on the pressure connection of the pressure transmitter.
Check for tightness	The pressure connection must be tested for tightness.

4 Installation

4.1 Electrical connection

Earth the instrument at the pressure connection!

The CAN bus and the electronics of the pressure transmitter are electrically isolated. The ends of the bus must be terminated via a 120 Ω resistor (121Ω, 1%, metal film, 0.25W)
⇨ Chapter 4 “Installation” / “Cable termination”, Page 8.

Bus cabling

- The bus specifications to ISO 11 898 must be observed
- Cable diameter 6 to 12 mm
- Cable cross section 1.5mm^2 max. per conductor
- Signal cables must be segregated from cables with voltages above 60 V
- Use twisted-pair type cable
- Avoid the vicinity of large electrical installations, or use screened cable

Electrical connection

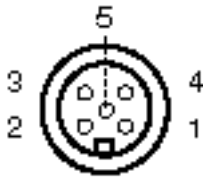
Connection		Terminals
Supply 18 — 36 V DC	L + L–	2 3
Output CANopen	CAN_GND CAN_H CAN_L	1 4 5

Round connector

M12 x1; 5-pole to IEC 60 947-5-2

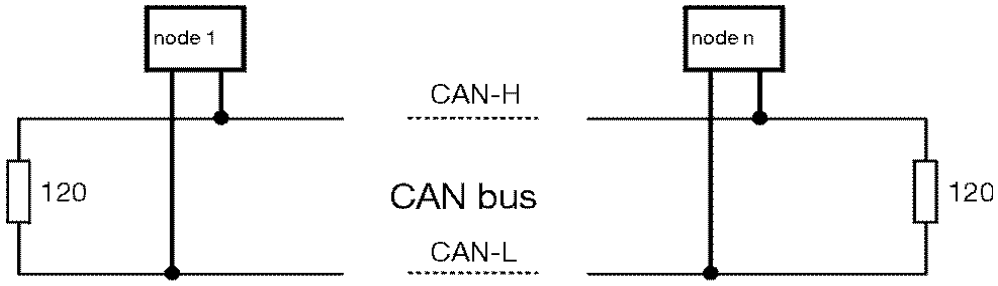
Plug

Socket



Cable termination

The CAN bus uses a linear topology. Both ends of the bus must be terminated via a 120 Ω resistor to avoid signal reflections and, as a result, transmission problems.



5 Starting up

5.1 Setting the CAN baud rate

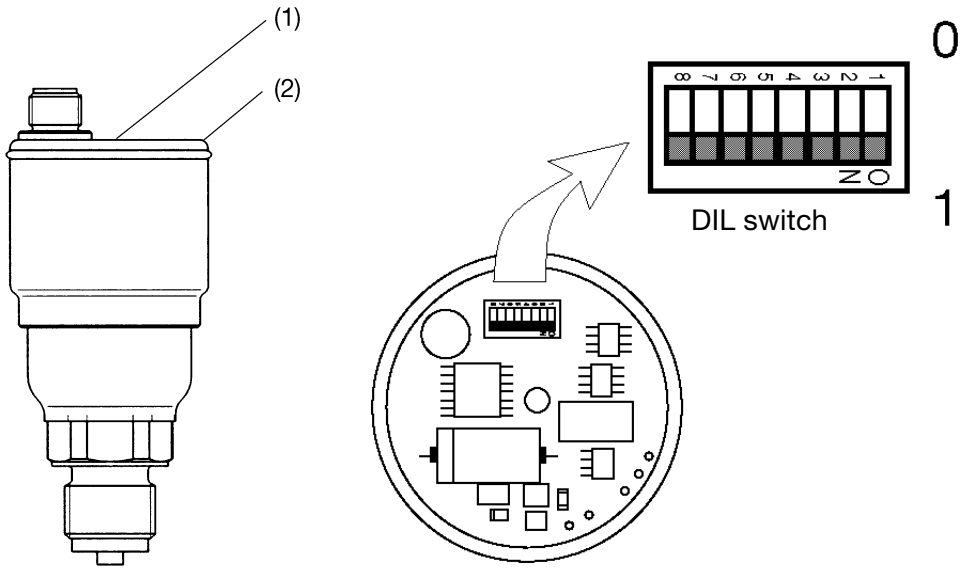
General

A baud rate of 500 kbaud is factory set.

The CAN baud rate can be set either by DIL switch or in software.

Setting by DIL switch

✶ unscrew screw (1) and remove cover (2).



✶ set switch 8 to ON.

✶ set the required CAN baud rate with DIL switches 3, 2 and 1 according to the table (switches 7, 6, 5 and 4 remain at OFF).

✶ perform a RESET – the new CAN baud rate is read into the EEPROM memory.

✶ set all DIL switches to OFF.

✶ perform a RESET – the new CAN baud rate is accepted from the EEPROM memory.

CAN baud rate (kbaud)	maximum bus length (m)	DIL switch setting (1=ON)			
		8	3	2	1
1 000	25	1	0	0	0
500	100	1	0	0	1
250	250	1	0	1	0
125	500	1	0	1	1
100	600	1	1	0	0
50	1000	1	1	0	1
20	2500	1	1	1	0
10	5000	1	1	1	1

Setting in software

The CAN baud rate can also be reprogrammed via the CANopen object dictionary, index 0x2001.
⇨ Chapter 7 “Appendix” / “Object dictionary (all parameters)”, Page 21.
This setting is accepted as the CAN baud rate after a reset of the pressure transmitter.

✶ set DIL switch 8 to OFF.
⇨ previous page.

✶ write the required baud rate (Code 0 — 7) to the object dictionary, index 0x2001.

✶ perform a RESET - the new baud rate is accepted.

CAN baud rate (kbaud)	maximum bus length (m)	DIL switch 8 setting (1=ON)	Entry in object dictionary index 0x2001
		8	
1 000	25	0	0
500	100	0	1
250	250	0	2
125	500	0	3
100	600	0	4
50	1000	0	5
20	2500	0	6
10	5000	0	7

5.2 Setting the module ID

General

The module ID is factory-set to 127.

The individual pressure transmitter is addressed on the bus using the module ID (range from 1 to 127).

The module ID can be set either by DIL switch or in software.

Each module ID must only occur once on the bus.

Setting by DIL switch

✶ open the pressure transmitter,
⇨ Chapter 5 “Starting up” / “Setting by DIL switch”, Page 9

✶ set the required module ID with DIL switches 1 to 7 according to the table (binary-coded).

Module ID object dictionary index 0x2000	DIL switch setting (1 = ON)							
	8	7	6	5	4	3	2	1
1	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	1	0
3	0	0	0	0	0	0	1	1
...								
127	0	1	1	1	1	1	1	1
The module ID is set in software	0	0	0	0	0	0	0	0

Setting in software

The module ID can also be reprogrammed via the CANopen object dictionary, index 0x2000. This allows, for example, all pressure transmitters in an installation to be programmed with new module IDs from a central CAN terminal.

✶ set all DIL switches to OFF.

✶ write the required module ID to the object dictionary, index 0x2000.

✶ perform a RESET – the new module ID is accepted.

6 Functions

6.1 Communication functions

Communication profile

The communication functions of the CAN interface are in accordance with the CANopen communication profile DS-301.

Objects

Data exchange with CANopen devices takes place in the form of objects.

The pressure transmitter supports the following objects:

- 1 transmit process data object (transmit PDO)
- 1 transmit service data object (transmit SDO)
- 1 receive service data object (receive SDO)
- 1 emergency object
- 1 network management object (NMT)
- 1 node guarding object

☞ no sync, no timestamp

Object / code assignment

Each object is assigned a function code, see table below.

The respective CAN identifiers are calculated from the function code and the module ID

Object	Function code (4 bit)	CAN identifier	Function
NMT	0000	0	network management
EMERGENCY	0001	0x80 + module ID	alarm reporting
PDO 2 (tx)	0101	0x280 + module ID	measured pressure value
SDO (tx)	1011	0x580 + module ID	configuration data
SDO (rx)	1100	0x600 + module ID	configuration data
Node Guarding	1110	0x700 + module ID	module monitoring

☞ The exact structure and data content of all objects is described in detail in the “CiA Communication Profile DS-301 Version 3.0”.

PDO

One transmit PDO is available for the measured pressure value (16 bit value). CAN identifier PDO: 0x280 + module ID

Transmission mode is set and fixed to asynchronous in the object dictionary (0x1801), event controlled (= 0xFF).

Mapping (0x1A01) is set and fixed to 0x6404 (measured pressure value 16 bit).

The output of the PDO is controlled by adjustable trigger conditions,
⇨ Chapter 6 “Functions” / “Trigger”, Page 17.

Example:

In the as delivered state (module ID = 127) the measured value is output to the bus with the CAN identifier 0x2FF.

SDO

The service data object (SDO) is used to access the object dictionary (transmitter parameters). With the SDO, access is available for writing to or reading from the object dictionary.

CAN identifier transmit SDO: 0x580 + module ID

CAN identifier receive SDO: 0x600 + module ID

Example:

The CANopen master requests data from the CANopen slave with module ID = 4. In this case, the master first sends a request telegram with CAN identifier 0x604. The slave then sends a reply telegram with CAN identifier 0x584.

Emergency object

The pressure transmitter utilises the emergency object for high priority communication with other users of the CANopen bus, to report instrument or process errors.

CAN identifier emergency object: 0x080 + module ID.

Conditions for sending an emergency telegram:

- If an error condition occurs, an emergency telegram is sent with error code = 0x1000 (“Generic Error”), error register = 0x81 (“Generic Error”) and with additional error information (see table).
- If the error condition persists, the emergency telegram is cyclically repeated (approx. 1 × per sec).
- At the end of the error condition, an emergency telegram is sent with error code = 0x0000 (“No Error”), error register = 0x00 (“No Error”) and with additional error information (= 0x00).

Cause of error	byte 0 — 1 error code	byte 2 error register	byte 3 error info.	byte 4 — 7 not used
No error	0x0000	0x00	0x00	0
Underrange / measured value invalid (pressure count value < 100)	0x1000	0x81	0x10	0
Overrange / measured value invalid (pressure count value > 4000)	0x1000	0x81	0x20	0
Limit comparator: value above upper limit	0x1000	0x81	0x40	0
Limit comparator: value below lower limit	0x1000	0x81	0x80	0

Node guarding

The pressure transmitter supports the node guarding function as defined in CANopen, in order to safeguard the monitoring of devices on the bus.

CAN identifier node guarding: 0x700 + module ID.

Guarding operation of the module starts after receipt of the first guarding request object (RTR) from the master.

If no guarding request object is received from the master within the "Guard Time" (object dictionary 0x100C), the module assumes that the master is no

longer operating correctly. After a time which is set by the product of “Guard Time” and “Life Time Factor” (object dictionary 0x100D), the module automatically enters the "Pre-Operational" state.

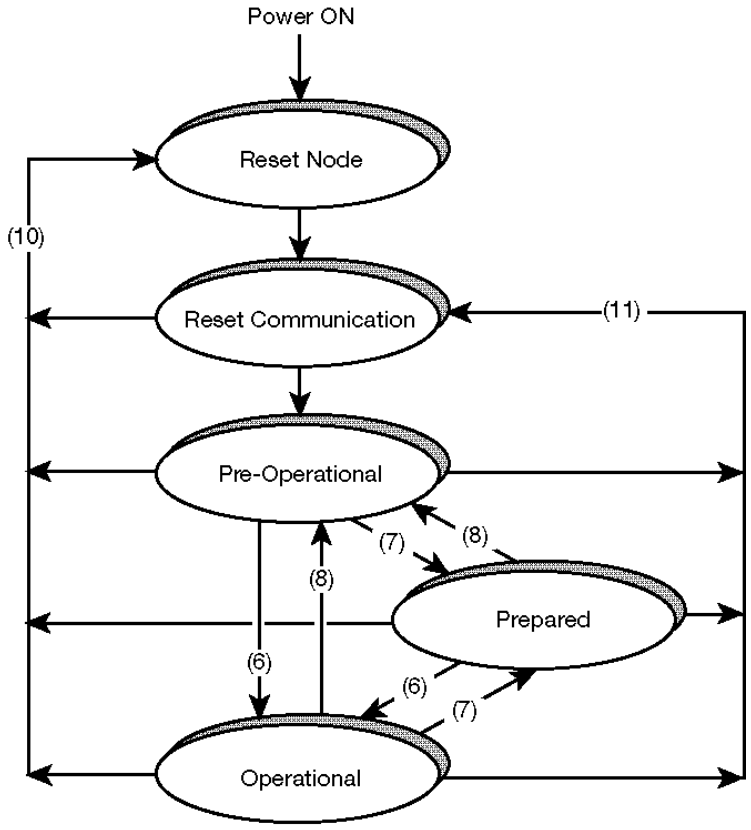
If either the “Guard Time” or the “Life Time Factor” is set to zero, no check on the expiry of the guarding time takes place, and the module stays in the current state.

NMT

The pressure transmitter supports the CANopen minimum bootup.

NMT objects have the CAN identifier 0x000. An additive module ID is not required here. The data is always 2 bytes in length. The first data byte contains the NMT command specifier, the second contains the module ID or 0x00 for all modules.

CANopen minimum bootup



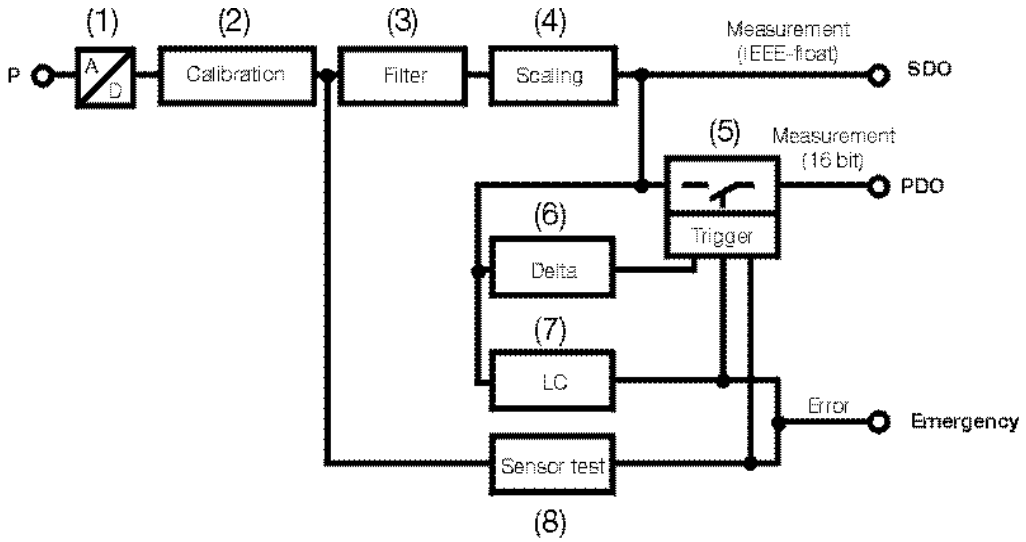
Network Management Command	Network Management Object Data	
	byte 1 command specifier	byte 2 module ID
Node Start (6)	0x01	0 — 127
Node Stop (7)	0x02	
Enter Pre-Operational State (8)	0x80	
Reset Node (10)	0x81	
Reset Communication (11)	0x82	

6.2 Instrument functions

Device profile

The pressure transmitter implements the CANopen device profile DS-401 “I/O modules”. Furthermore, it provides several additional functions.

Block diagram



The analogue signal from the pressure transmitter is digitised with a resolution of 12 bit (1). The pressure signal is digitally calibrated in the factory (2). Undesirable signal fluctuations can be suppressed by the adjustable filter time constant (3). The output signal of the pressure transmitter can be set to any measurement unit (or % of range) (4). An event controlled signal output is possible via the trigger (5). The trigger reacts to the following adjustable criteria:

- Delta: on an adjustable change of pressure
- LC (Limit comparator): on infringement of an adjustable upper or lower limit
- Sensor test: on a pressure cell fault

The limit comparator (7) and sensor test (8) functions trigger the high-priority emergency telegram under certain error conditions.

The measured value is available in two formats:

- as 16 bit PDO
- as IEEE-float value in the object dictionary (0x6403)

6 Functions

Device parameters

Function	Parameter	OD index	Range of values	Default	Remarks
Calibration	C_Offset	0x342E, 0x01	Float	0.0	calibrated by JUMO
	C_Slope	0x342F, 0x01	Float	1.0	calibrated by JUMO
Filter	Filter time constant	0x4403, 0x01	Float, ≥ 0	0.0	corresponds to “filter off”, value in seconds
Scaling	Offset	0x642E, 0x01	Float	0.0	corresponds to “scaling off”
	Slope	0x642F, 0x01	Float	1.0	
Delta	Delta	0x6426, 0x01	0 1 — 65535	1	0 = “delta function off” ≥ 1 = “delta function on”
Limit comparator	Low limit	0x6425, 0x01	0 — 65535	410	corresponds to 0% pressure
	High limit	0x6424, 0x01	0 — 65535	3 685	corresponds to 100% pressure
Sensor test	– –	– –	– –	– –	no parameter
Trigger	Interrupt Enable	0x6423	0 — 1	1	for settings, see table “Trigger” on Page 17
	Interrupt Trigger	0x6421, 0x01	0 — 7	4	

Calibration

The pressure count value of the analogue to digital converter has a resolution of 12 bit and is calibrated in the factory as follows:

Input pressure	Count value
0%	410
100%	3685

Between these values the pressure count value changes in linear proportion to the input pressure. The pressure count value can be displayed in any other range of values using the ***Scaling*** function (see below) .

The calibrated pressure count value is available in the object dictionary (0x6401).

Parameter: none (only adjustable in the factory).

Filter

The filter function is used to suppress undesirable short term signal fluctuations.

Parameter: Filter time constant.

Scaling

The scaling function allows the measured value to be displayed in any range of values (e.g. various measurement units or %).

Parameter: Slope, offset

Example:

a) factory setting	measurement start = 410 measurement end = 3685 slope = 1.0 offset = 0.0
b) measured value in 0.1%:	measurement start = 0 (= 0.0%) measurement end = 1000 (= 100.0%) slope = 0.30534 offset = -125.19
c) measured value in mbar: (with 4 bar range)	measurement start = 0 measurement end = 4000 slope = 1.22137 offset = -500.76

Delta

This function initiates a PDO telegram when the trigger reacts to an adjustable change in measured value.

Parameter: Delta

Limit comparator

This function monitors the measured value against adjustable limits. If the limits are infringed, a PDO telegram and an emergency telegram are initiated.

Parameter: Low limit, high limit

Sensor test

The count value input is continuously checked for valid values. On a sensor fault, a PDO telegram and a corresponding emergency telegram are initiated.

Parameter: none

Trigger

The trigger is responsible for the event-controlled output of the PDO telegrams.

Parameter: Interrupt Trigger, Interrupt Enable

Abbreviation	Text	Meaning
OoR	Out of Range	sensor fault
LL	Lower Limit	lower limit infringed
UL	Upper Limit	upper limit infringed
Delta	Delta	delta value exceeded

Interrupt Enable (0x6423)	Interrupt Trigger (0x6421)	PDO output on
0	x	no output
1	0	OoR
	1	OoR, UL
	2	OoR, LL
	3	OoR, UL, LL
	4	OoR, Delta
	5	OoR, Delta, UL
	6	OoR, Delta, LL
	7	OoR, Delta, UL, LL

7 Appendix

7.1 Technical data

Pressure transmitter

Reference conditions	to DIN 16 086 and IEC 770/5.3
Measurement ranges	see ordering details
Overload limits	Ranges: 0 — 25 bar, 3 × full scale (but 70 bar max.) Ranges: 0 — 40 to 0 — 250 bar, 2 × full scale Ranges: 0 — 400 to 0 — 600 bar, 1.5 × full scale
Bursting pressure	Ranges: 0 — 25 bar, ≥ 4 × full scale (but 100 bar max.) Ranges: 0 — 40 to 0 — 100 bar, 8 × full scale Ranges: 0 — 160 to 0 — 400 bar, 5 × full scale Ranges: 0 — 600 bar, 3 × full scale
Parts in contact with pressure medium	standard: stainless steel, Mat. Ref. 1.4571 / 1.4435 for ranges above 60 bar: Mat. Ref. 1.4571 / 1.4542
Output	CANopen protocol, 12 bit resolution of measured value
Zero offset (adjustment accuracy)	≤ 0.3% of full scale
Thermal hysteresis	≤ ± 0.5% of full scale (compensated temperature range) ≤ ± 1% for measurement ranges 0 — 250 mbar 0 — 400 mbar 0 — 600 mbar
Ambient temperature error	in range 0 to +100°C (compensated temperature range) for ranges 250 and 400 mbar zero: ≤ 0.02%/°C typical, ≤ 0.04%/°C max. span: ≤ 0.02%/°C typical, ≤ 0.04%/°C max. for ranges from 600 mbar zero: ≤ 0.01%/°C typical, ≤ 0.03%/°C max. span: ≤ 0.01%/°C typical, ≤ 0.03%/°C max.
Deviation from characteristic	≤ 0.5% of full scale (limit point adjustment)
Hysteresis	≤ 0.1% of full scale
Repeatability	≤ 0.1% of full scale
Response time	≤ 20 msec
Stability per year	≤ 0.5% of full scale (for nominal range under reference conditions)

Supply	18 — 36 V DC, max. current drawn approx. 45 mA CAN bus and electronics of the pressure transmitter are electrically isolated.
Cabling	Screened 5-core cable. In bus systems with more than two instruments, all instruments are connected in parallel. The bus cable must be run in a continuous loop.
Cable termination	A 120 Ω termination resistor is required at the end of the cable.
Permitted ambient temperature	-20 to +85°C
Storage temperature	-40 to +85°C
Permitted temperature of medium	-40 to +120°C
Electromagnetic compatibility 1	Electrostatic discharge: IEC 1000-4-2 / EN 61 000-4-2 ±4 kV contact; ±8 kV air discharge; ±6 kV contact discharge to NAMUR Electromagnetic fields: IEC 1000-4-3 / EN 61 000-4-3 Frequency range 80 — 10000 MHz, test field strength 10 V/m, 80% AM (1 kHz) ENV 50 204) 900 MHz ±5 MHz, 10 V/m, 50% PM (200 Hz) (The output signal of the pressure transmitter remains within the error limit of ±0.5% when subject to disturbance) Transient disturbance (burst): IEC 1000-4-4 / EN 61 000-4-4 ±2 kV, 1 minute to NAMUR; 2 minutes via capacitive coupling (The output signal of the pressure transmitter may exceed the error limit by up to ±1.0% when subject to disturbance) Immunity to voltage pulses (surge): IEC 1000-4-5 / EN 61 000-4-5 ±500 V symmetrical (The output signal of the pressure transmitter may exceed the error limit when subject to disturbance. The instrument is not permanently damaged or destroyed, and does not lose its measuring characteristics).

7 Appendix

Electromagnetic compatibility 2	Immunity to conductor-borne interference induced by high-frequency fields: IEC 1000-4-6 / ENV 50 141 frequency range 150 kHz — 80 MHz, test voltage 10 V, 80% AM (1 kHz) frequency range 9 kHz — 80 MHz to NAMUR (The output signal of the pressure transmitter remains within the error limit of ±1.0% when subject to disturbance). The pressure transmitter fulfills all requirements of EN 50 082-2 (CE mark) for use in industrial areas.
Interference emission	EN 55 011, Class B, measurement distance10 m, frequency range: 30 — 230 MHz, 30 dBµV/m 230 — 1000 MHz, 40 dBµV/m quasi-peak value
Mechanical shock	100 g/1 msec
Mechanical vibration	10 g max. at 15 — 2000 Hz
Nominal position	upright vertical (pressure connection below) operating position unrestricted
Protection	IP65 to EN 60 529
Housing	stainless steel Mat. Ref. 1.4301, polycarbonate GF
Insulation resistance	100 MΩ; 50 V DC
Breakdown strength	(electrical connection to housing) ≥ 500 V_{rms}
Pressure connection	see ordering details; other connections to special order
Weight	200 g

CAN bus

Protocol	CANopen slave (to CiA DS 301)
Profile	Analogue input module (to CiA DSP 401)
Baud rate	10 kbaud to 1 Mbaud
Module ID	1 — 127
PDO	0 Rx, 1 Tx
SDO	1 Rx, 1 Tx
Emergency	yes
Node Guarding	yes
Operation and project planning	All parameters are accessible via the CANopen object dictionary (EDS) and can be set using standard CANopen software tools. Baud rate and module ID can also be set via DIL switches.

7.2 Object dictionary (all parameters)

The following object dictionary is also available as an EDS file. Consequently, all CANopen configuration programs can be used for installation and parameter setting.
In view of this, JUMO does not supply a setup program for this instrument.

Index	Sub-index	Memory type[1]	Access	Default values	Name	Remarks
0x0020	0x0	ROM	RO	0x05	PDO Communication Parameter	
	0x1			0x07		
	0x2			0x05		
0x0021	0x0	ROM	RO	0x05	PDO Mapping Parameter	
	0x2			0x07		
0x0040	0x00	ROM	RO	0x05	Error Field Type	
	0x01			0x07		
0x0042	0x00	ROM	RO	0x05	PDO 16 bit Type	
	0x01			0x06		
0x0043	0x00	ROM	RO	0x05	PDO Float Type	
	0x01			0x08		
0x0044	0x00	ROM	RO	0x05	Interrupt Type	
	0x01			0x07		
0x1000	–	ROM	RO	0x00040191	Device Type	⇨ Chapter 6 “Functions” / “Device profile”, Page 15
0x1001	–	RAM	RO	0x00	Error Register	⇨ Chapter 6 “Functions” / “Emergency object”, Page 13
0x1003	0x00	RAM	RO	0x00	Error Field	⇨ Chapter 6 “Functions” / “Emergency object”, Page 13
	0x01			0x00000000		
0x1004	0x00	ROM	RO	0x00000001	Number of PDOs	⇨ Chapter 6 “Functions” / “PDO”, Page 12
	0x01			0x00000000		
	0x02			0x00000001		
0x1008	–	ROM	RO	"LPI1"	Device Name	
0x1009	–	ROM	RO	"1.10"	Hardware Version	
0x100A	–	ROM	RO	"1.10"	Software Version	
0x100B	–	RAM	RO	see 0x2000	Module ID	current module ID. Setting via 0x2000
0x100C		RAM	R / W	0x0000	Guard Time	⇨ Chapter 6 “Functions” / “Node guarding”, Page 13

7 Appendix

Index	Sub-index	Memory type[1]	Access	Default values	Name	Remarks
0x100D		RAM	R / W	0x00	Life Time Factor	⇨ Chapter 6 “Functions” / “Node guarding”, Page 13
0x100E		RAM	RO	0x00000700	Node Guard Identifier	⇨ Chapter 6 “Functions” / “Node guarding”, Page 13
0x1014		RAM	RO	0x00000080	Emergency Identifier	⇨ Chapter 6 “Functions” / “Emergency object”, Page 13
0x1801	0x00	ROM	RO	0x02	Transmit PDO Parameter	⇨ Chapter 6 “Functions” / “PDO”, Page 12
	0x01			0x00000280		
	0x02			0xFF		
0x1A01	0x01	ROM	RO	0x01	Transmit PDO Mapping	⇨ Chapter 6 “Functions” / “PDO”, Page 12
	0x02			0x64040110		
0x2000	–	EEPROM	R / W	0x7F	Module ID	⇨ Chapter 5 “Starting up” / “Setting in software”, Page 11
0x2001	–	EEPROM	R / W	0x01	CAN baud rate	⇨ Chapter 5 “Starting up” / “Setting in software”, Page 10
0x3000	–	–	WO	0x00	Set default values	only adjustable in factory[2]
0x342E	0x00	EEPROM	R / W	0x01	Calibration offset	set by JUMO
	0x01			0.0		
0x342F	0x00	EEPROM	R / W	0x01	Calibration slope	set by JUMO
	0x01			1.0		
0x4403	0x00	EEPROM	R / W	0x01	Filter time constant	⇨ Chapter 6 “Functions” / “Filter”, Page 16
	0x01			0.0		
0x6401	0x00	RAM	RO	0x01	Pressure count value (16 bit)	⇨ Chapter 6 “Functions” / “Block diagram”, Page 15
	0x01			0x0000		
0x6403	0x00	RAM	RO	0x01	Measured value (float)	⇨ Chapter 6 “Functions” / “Block diagram”, Page 15
	0x01			0.0		

Index	Sub-index	Memory type[1]	Access	Default values	Name	Remarks
0x6404	0x00	RAM	RO	0x01	Measured value (16 bit)	⇨ Chapter 6 “Functions” / “Block diagram”, Page 15
	0x01			0x0000		
0x6421	0x00	EEPROM	R / W	0x01	Interrupt Trigger	⇨ Chapter 6 “Functions” / “Trigger”, Page 17
	0x01			0x04		
0x6423	–	EEPROM	R / W	0x01	Interrupt Enable	⇨ Chapter 6 “Functions” / “Trigger”, Page 17
0x6424	0x00	EEPROM	R / W	0x01	High limit	⇨ Chapter 6 “Functions” / “Limit comparator”, Page 17
	0x01			0x00000E65		
0x6425	0x00	EEPROM	R / W	0x01	Low limit	⇨ Chapter 6 “Functions” / “Limit comparator”, Page 17
	0x01			0x0000019A		
0x6426	0x00	EEPROM	R / W	0x01	Delta	⇨ Chapter 6 “Functions” / “Delta”, Page 17
	0x01			0x00000001		
0x642E	0x00	EEPROM	R / W	0x01	Offset	⇨ Chapter 6 “Functions” / “Scaling”, Page 16
	0x01			0.0		
0x642F	0x00	EEPROM	R / W	0x01	Slope	⇨ Chapter “Scaling”
	0x01			1.0		

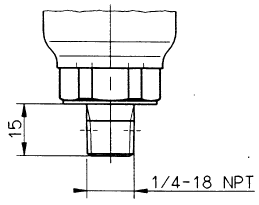
[1] All objects with “EEPROM” memory type are permanently stored in the EEPROM.

[2] Writing object index 0x3000 to a device erases all stored values after restoration of power to the module, and writes the the factory settings to the EEPROM (apart from module ID 0x2000 and CAN baud rate 0x2001, for which the last settings remain stored).

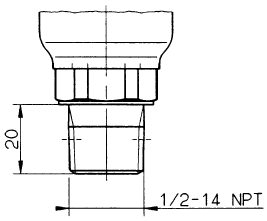
7 Appendix

7.3 Dimensions

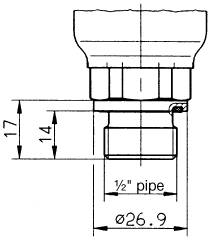
NTS 511



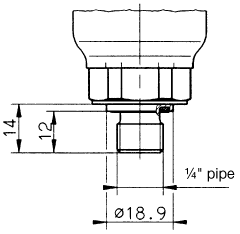
NTS 512



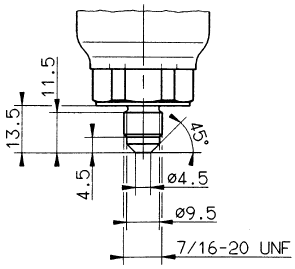
NTS 523



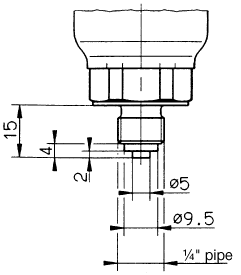
NTS 521



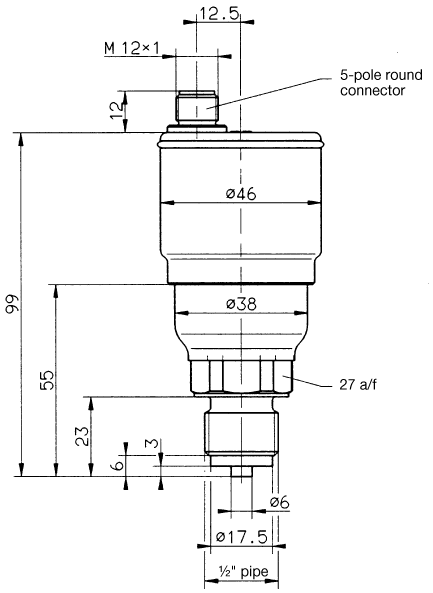
NTS 562



NTS 502



404381/...-...-504-20-35



M. K. JUCHHEIM GmbH & Co

Hausadresse:
Moltkestraße 13 - 31, 36039 Fulda, Germany
Lieferadresse:
Mackenrodtstraße 14, 36039 Fulda, Germany
Postadresse:
36035 Fulda, Germany
Telefon: (06 61) 60 03-0
Telefax: (06 61) 60 03-5 00
E-Mail: mail@jumo.net
Internet: www.jumo.de