

M01 52031

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Automation, Connectivity and
Electrification of Mobile Machines



MEASUREMENT SYSTEMS AND SENSORS
Sensors

TECHNICAL DATA *digi* **SENS** -M01



www.sensor-technik.com

Pressure transmitter M01

The pressure transmitters of the M01 series by Sensor-Technik Wiedemann are designed to be used in harsh environments. Therefore they are especially suited for the measurement of pneumatic and hydraulic pressures in mobile working machines. The mechanic and electric features of the M01 series reflect the challenging requirements and the transmitters show a high resistivity against aggressive media. In addition the building block system of the M01 series allows a great number of combinations of pressure connection, pressure range, electrical output signal, and electrical connection so that for nearly every application the transmitter of choice can be found. Even more, Sensor-Technik Wiedemann offers the possibility to manufacture and deliver OEM versions.

For lower pressure ranges of 0.25 to 4.0 bar the pressure transmitters are based on silicon measuring elements. They can be used in media temperature of -40°C to -85°C . For pressure ranges from 10 to 2000 bar as often required for operation in mobile working machines welded stainless steel measuring elements are used. They withstand media temperatures of -40°C to $+150^{\circ}\text{C}$. Depending on the type of the measuring element and the wetted parts the M01 pressure transmitters are suitable against aggressive and non-aggressive gases or fluids or even hydrogen.

Besides CE and UL certificates each member of the M01 series has an E1 approval for use in motor vehicles without problems. Manufacturing takes place at Sensor-Technik Wiedemann an ISO/TS 16949 certified company. In combination with a high long-run stability of the measurement results the products fulfill highest quality requirements.

Technical Data

Pressure range	0 ... 0.25 bar to 0 ... 2000 bar, other ranges available															
Pressure reference	R/A	relative (gauge)/absolute						relative (gauge)								
Standard pressure range	bar	0.25	0.4	1	1.6	4	10	10	25	50	100	250	400	800	1200	2000*
Overload (per DIN EN 60770-1)	bar	0.63	1	2.5	2.5	10	20	40	40	100	200	500	800	1000	1600	2200
Bursting pressure (per DIN EN 60770-1)	bar	0.75	1.2	3	3	12	30	70	70	500	1000	2500	4000	> 4000	> 4000	> 4000
Overall accuracy at operating temperature	% FS	≤ 1.0 ($0 \dots +85^{\circ}\text{C}$) ($32 \dots +185^{\circ}\text{F}$) ≤ 2.5 ($-40 \dots 0^{\circ}\text{C}$) ($-40 \dots +32^{\circ}\text{F}$)						≤ 0.5 ($0 \dots +105^{\circ}\text{C}$) ($32 \dots +221^{\circ}\text{C}$) ≤ 1.5 ($-40 \dots 0^{\circ}\text{C}$ and $+105 \dots +125^{\circ}\text{C}$) ($-40 \dots +32^{\circ}\text{F}$ and $+221 \dots +257^{\circ}\text{C}$)								
Thereof linearity, pressure hysteresis and repeatability (Linearization with limit point setting)	% FS	< 0.25														
Long-run stability	% FS p.a.	< 0.2														
Media temperature	$^{\circ}\text{C}$	$-40 \dots +85$						$-40 \dots +150$								
Operating and storage temperature	$^{\circ}\text{C}$	$-40 \dots +85$						$-40 \dots +125$ ($-25 \dots +85$ at cable output)								
Voltage supply	U_{VCC} : 9 ... 36 V U_{VCC} : 14 ... 36 V (for sensors with 0 ... 10 V voltage output) U_{VCC} : 5 V \pm 10% (for sensors with ratiometric output) allowable ripple at 50 Hz: 10%															
CAN	Sampling Rate	1000 Samples/s (max.)														
	Digital Filter	averaging adjustable														
	Output protocol	STW-CAN, CANopen, SAE J1939														
	Electrical connection	M12 connector, DIN Bayonet (per DIN 72585), DT04 4 poles, cable output														
Analog	Output signal	4 ... 20 mA (2-wire-technique), 0/4 ... 20 mA (3-wire-technique), 0 ... 10 V, 0 ... 5 V, 1 ... 6 V, 10 ... 90 % VCC (ratiometric output), other output signals on request														
	Electrical connection	M12 connector, DIN bayonet (per DIN 72585); DT04 4 poles DT04 3 poles, AMP-SuperSeal 1.5; cable output, other connectors on request														
Electrical protection	Short circuit protected, signal on GND/VCC and inverse polarity protection (not at ratiometric output)															
Pressure connection	G 1/4, 1/4 NPT, G 1/4 with manometer pin, SAE04 (7/16-20UNF), SAE06 (9/16-18UNF), other pressure connectors on request, possible limitations of the pressure range															
Protection class	IP67 or IP69k (depends on the electrical connection)															
Installation torque	max. 35 Nm															
EMV	EN 61000-6-2 EN 61000-6-3 (Analog) EN 61000-6-4 (CAN)															
Shock	500 g per IEC 60068-2-27 (Shock mechanical)															
Vibration	20 g per IEC 60068-2-6															
Certifications	CE, UL E1: All vehicle types with a 12 V resp. 24 V - electrical wiring and battery (-) at the body															
Material with medium contact	Stainless Steel AISI 630 (DIN 1.4542) and Silicon (For applications with non-aggressive gases and fluids or substances which do not react with glass or silicon)							Stainless Steel AISI 630 (DIN 1.4542), AISI 316 L (DIN 1.4435) on request								
Material housing	AISI 304 (DIN 1.4301)															
Material connector	PBT-GF30 or AISI 304 (DIN 1.4301)															

* For common-rail applications

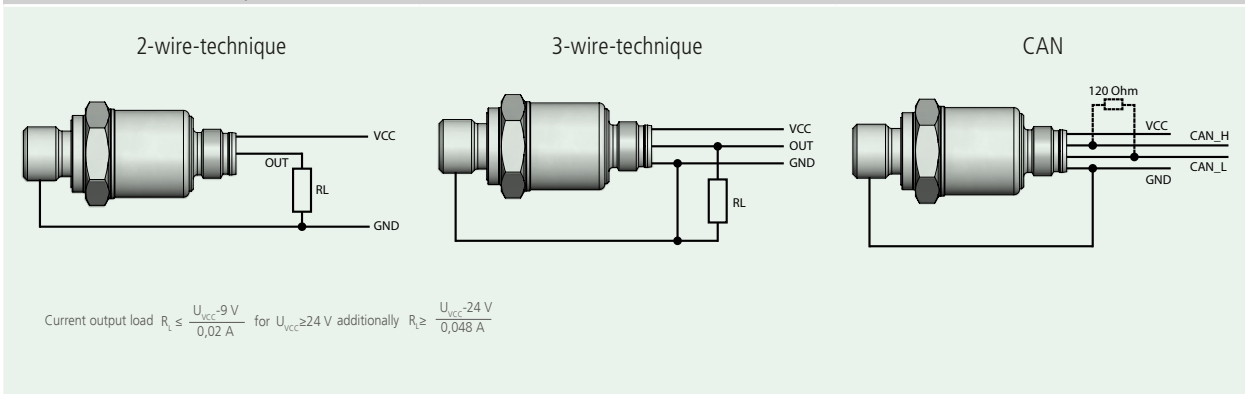
Pressure connection

<p>G 1/4, DIN 3852 T 11 (Form E)</p>	
<p>1/4 NPT per „Nominal width for US-standard bevelled pipe thread NPT“</p>	
<p>G 1/4 according to EN837-1 (formerly DIN 16288)</p>	
<p>SAE 4 - O-Ring</p>	
<p>SAE 4 - Cone</p>	
<p>SAE 6 - O-Ring</p>	

Electrical connection, protection class IP per IEC 60 529

<p>CAN + Analog</p>	<p>Circular plug-in connector M12x1, 5-pole, IP67</p>		<table border="1"> <thead> <tr> <th>Pin</th> <th>2-wire-technique</th> <th>3-wire-technique</th> <th>CAN</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>VCC</td> <td>VCC</td> <td>PE, housing</td> </tr> <tr> <td>2</td> <td>-</td> <td>-</td> <td>VCC</td> </tr> <tr> <td>3</td> <td>Signal</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>4</td> <td>-</td> <td>Signal</td> <td>CAN_H</td> </tr> <tr> <td>5</td> <td>-</td> <td>-</td> <td>CAN_L</td> </tr> </tbody> </table> <p>Do not connect the pins marked with „-“!</p>	Pin	2-wire-technique	3-wire-technique	CAN	1	VCC	VCC	PE, housing	2	-	-	VCC	3	Signal	GND	GND	4	-	Signal	CAN_H	5	-	-	CAN_L
	Pin	2-wire-technique	3-wire-technique	CAN																							
	1	VCC	VCC	PE, housing																							
	2	-	-	VCC																							
	3	Signal	GND	GND																							
	4	-	Signal	CAN_H																							
5	-	-	CAN_L																								
<p>Bayonet connector DIN 72 585, 4-pole, IP67</p>		<table border="1"> <thead> <tr> <th>Pin</th> <th>2-wire-technique</th> <th>3-wire-technique</th> <th>CAN</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>VCC</td> <td>VCC</td> <td>VCC</td> </tr> <tr> <td>2</td> <td>Signal</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>3</td> <td>-</td> <td>Signal</td> <td>CAN_H</td> </tr> <tr> <td>4</td> <td>-</td> <td>-</td> <td>CAN_L</td> </tr> </tbody> </table> <p>Do not connect the pins marked with „-“!</p>	Pin	2-wire-technique	3-wire-technique	CAN	1	VCC	VCC	VCC	2	Signal	GND	GND	3	-	Signal	CAN_H	4	-	-	CAN_L					
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1	VCC	VCC	VCC																								
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<p>Connector DT04-4P, 4-pole, IP67</p>		<table border="1"> <thead> <tr> <th>Pin</th> <th>2-wire-technique</th> <th>3-wire-technique</th> <th>CAN</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>VCC</td> <td>VCC</td> <td>CAN_L</td> </tr> <tr> <td>2</td> <td>Signal</td> <td>GND</td> <td>VCC</td> </tr> <tr> <td>3</td> <td>-</td> <td>Signal</td> <td>GND</td> </tr> <tr> <td>4</td> <td>-</td> <td>-</td> <td>CAN_H</td> </tr> </tbody> </table> <p>Do not connect the pins marked with „-“!</p>	Pin	2-wire-technique	3-wire-technique	CAN	1	VCC	VCC	CAN_L	2	Signal	GND	VCC	3	-	Signal	GND	4	-	-	CAN_H					
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<p>Cable output IP69k (Oil-resistant cable on request)</p>		<table border="1"> <thead> <tr> <th>Litz wire</th> <th>2-wire-technique</th> <th>3-wire-technique</th> <th>CAN</th> </tr> </thead> <tbody> <tr> <td>brown</td> <td>VCC</td> <td>VCC</td> <td>PE, housing</td> </tr> <tr> <td>blue</td> <td>Signal</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>black</td> <td>-</td> <td>Signal</td> <td>CAN_H</td> </tr> <tr> <td>grey</td> <td>-</td> <td>-</td> <td>CAN_L</td> </tr> <tr> <td>white</td> <td>-</td> <td>-</td> <td>VCC</td> </tr> </tbody> </table> <p>Do not connect the litz wires marked with „-“!</p>	Litz wire	2-wire-technique	3-wire-technique	CAN	brown	VCC	VCC	PE, housing	blue	Signal	GND	GND	black	-	Signal	CAN_H	grey	-	-	CAN_L	white	-	-	VCC	
Litz wire	2-wire-technique	3-wire-technique	CAN																								
brown	VCC	VCC	PE, housing																								
blue	Signal	GND	GND																								
black	-	Signal	CAN_H																								
grey	-	-	CAN_L																								
white	-	-	VCC																								
<p>Analog</p>	<p>Connector for AMP Superseal 1,5 3-pole, IP67</p>		<table border="1"> <thead> <tr> <th>Pin</th> <th>2-wire-technique</th> <th>3-wire-technique</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Signal</td> <td>GND</td> </tr> <tr> <td>2</td> <td>-</td> <td>Signal</td> </tr> <tr> <td>3</td> <td>VCC</td> <td>VCC</td> </tr> </tbody> </table> <p>Do not connect the pins marked with „-“!</p>	Pin	2-wire-technique	3-wire-technique	1	Signal	GND	2	-	Signal	3	VCC	VCC												
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Pin	2-wire-technique	3-wire-technique																									
A	VCC	VCC																									
B	-	Signal																									
C	Signal	GND																									

Recommended terminal layout



Order codes

model		pressure range			unit		reference	output		pressure connection		electrical connection	
M	0	1	-				-			-			
													b a r
													p s i
													R
													A
													absolute (≤ 4 bar)
													gauge
													0 1
													4–20 mA (2-wire-technique)
													0 1
													G ¼"
													0 1
													M12 (plastic)
													0 2
													0–20 mA (3-wire-technique)
													0 4
													¼" NPT
													1 1
													4–20 mA (3-wire-technique)
													0 8
													G ¼" with manometer
													0 4
													bayonet mount (DIN 72585)
													0 3
													0... 10 V
													0 9
													SAE04 (7/16-20 UNF with cone)
													0 5
													AMP Superseal 1.5
													0 4
													0... 5 V
													1 0
													SAE04 (7/16-20 UNF with o-ring)
													0 6
													cable (2m)
													0 5
													1... 6 V
													1 1
													SAE06 (9/16-18 UNF with o-ring)
													0 7
													cable (5m)
													0 6
													10... 90% VCC
													...
													0 8
													custom specific
													0 8
													cable (custom specific length)
													0 9
													CANopen
													0 9
													DT04 4-pole
													0 9
													SAE J1939
													1 0
													DT04 3-pole
													...
													1 0
													STW-CAN
													...
													9 9
													custom specific
													9 9
													custom specific

Minimum order quantity: 500 pieces (delivery lot min 100 pieces)

Software package (optional) for configuration of the M01-CAN: Art. 36670

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