



**EC79** (Ex)



**Storage** 

**Fuel Cells** 

**Chemical Engineering** 

**Gas Engineering** 

**Automotive** 

Durable & rugged industrial pressure transmitter Up to 1000 bar Designed for used with Hydrogen gases Adapted piezo-resistive measuring cell prevents embrittlement





#### **DESCRIPTION**

The piezoresistive stainless steel measuring cell has especially been adapted to suit the chemical and physical properties of hydrogen. The entire sensing element is made from of a single piece without welds, which is designed to prevent embrittlement of the metal surface by ionised hydrogen. It is also completely vacuum tight and elastomer free.

Leaks caused by material fatigue on internal seals are thus eliminated from the outset. It has no disturbance due to pressure transfer fluid and no large pressurised surfaces.

The link into the connection pins are made by wedge wedge bonding and is therefore completely stable even at low temperatures, or when subject to shocks or vibrations. The measuring bridge evaluates the pressure via a mixed signal ASIC. The HT-H2 can also be used for other critical media.

# lydrogen

# **HYDROGEN PRESSURE TRANSMITTER**

Stainless steel single piece measuring cell

- Suitable for Hydrogen
- Measuring cell, free from welds & seams
- Elastomer seal free
- Long term durability & accuracy

# TECHNICAL PARAMETER OVERVIEW

- Vacuum and I bar to 1,000 bar
- relative pressure, sealed reference
- (0)4...20 mA, 0...(5)10 V, ratiometric and more
- MI2xI, Packard Metri-Pack, AMP and many more
- precision < 0,5 % FS (limit-point calibration)</li>
- medium-contacting parts of stainless steel 1.4404/316L
- response time < Ims</li>
- optionally with EX protection (ATEX, IECEx, CSA)







# **TECHNICAL DATA**

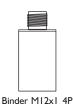
Pressure measuring ranges available between   Pressure   Press	Input payameters			
available between    Powerland   2x	Input parameters	B	1 1000 hav	
Pose of pressure   Pose		_		
Type of pressure  Measuring principle  Measuring principle  Medium contacting parts  Internal seals  None (single piece solid stainless steel measuring cell)  None (single piece solid stain		Poverload 2x	1.5x	
Measuring principle         Plezoresistive (semiconductor on stainless steel)           Medium contacting parts         Stainless steel 1.4404 (316L) (others on request)           Internal seals         None (single piece solid stainless steel measuring cell)           Process connections *         Internal seals         None (single piece solid stainless steel measuring cell)           Housing material         1.4301 / AISI 304         INF-2A with sealing cone, 9/16*-18 UNF-2A HF 4 G1/4*           BPS and G1/2* BSP acc. to EN 837 (manometer nipple) or to ISO 228-1         Electrical connections *         Plug connectors acc. to EN 175301-803 Form A and C, M12x1, Packard Metri-Pack, AMP Superseal, German, field housing, wire output port           Mass         Approx. 120g         420 mA, 2-wire RA ≤ (UB-10V) / 20mA (supply 1032VDC)         010V, 3-wire RL> 5kD (supply 122VDC)         05V 3 -wire RL> 5kD (supply 1032VDC)         0		P <sub>burst</sub> 3x	2x	
Stainless steel I.4404 (316L)     Internal seals   None (single piece solid stainless steel measuring cell)     Pressure-transmitting medium     1.4301 / AlSI 304     Process connections *		,		
(others on request) Internal seals Pressure-transmitting medium Housing material Process connections*    1.430   AIS   304   1.47 and   1/2* NPT. 916*-18 UNF.2A with sealing cone. 916*-18 UNF.2A HF 4 G1/4*   BSP and G1/2* BSP acc. to EN 837 (manometer nipple) or to ISO 228-1   Electrical connections *   Plug connectors acc. to EN 175301-803 Form A and C, M1 2x1, Packard Metri-Pack, APIP Superseal, German, field housing, wire output port   Aprox.   I20g   Output signal, supply voltage and load resistance *   Output signal, suppl	Measuring principle	,		
Internal seals Pressure-transmitting medium None (dry stainless-steel measuring cell) None (dry and	Medium contacting parts	· /		
Pressure-transmitting medium   None (dry stainless-steel measuring cell)				
Housing material   1.4301 / AISI 304     Process connections *   1/4" and 1/2" NPT, 9/16"-18 UNF-2A with sealing cone, 9/16"-18 UNF-2A HF 4 G1/4"     BSP and G1/2" BSP acc. to EN 837 (manometer nipple) or to ISO 228-1     Electrical connections *   Plug connectors acc. to EN 175301-803 Form A and C, M12x1, Packard Metri-Pack, AMPR Superseal, German, field housing, wire output port     Approx. 120g				
Process connections *   1/4" and 1/2" NPT. 916"-18 UNF.2A with sealing cone, 9/16"-18 UNF.2A HF 4 G1/4" BSP and G1/2" BSP acc. to EN 837 (manometer hipple) or to ISO 228-1	Pressure-transmitting medium	· •		
BSP and G1/2" BSP acc. to EN 837 (manometer nipple) or to ISO 228-1  Electrical connections *  Plug connectors acc. to EN 175301-803 Form A and C, M12x1, Packard Metri-Pack, AMP Superseal, German, field housing, wire output port  Approx. 120g  Output signal, supply voltage and load resistance *  O10 Y, 3-wire RL> 5kΩ (supply 122VDC)  O5 Y, 3-wire RL> 5kΩ (supply 122VDC)  O5 Y, 3-wire RL> 2.5kΩ (supply 122VDC)  O5 Y 4 - wire RL> 4.7kΩ (supply 5VDC +/-10%)  Response time (T90)  C I ms  S O.5%FS after limit-point calibration (≤ 0.35% FS BFSL) acc. to DIN EN 61298-2 (incl. non-linearity, zero offset, hysteresis and repeatability) in the compensated range  Non-repeatability  S O.19% FS  Hedium TK of the offset  S O.15% FS  Hedium TK of the range  S O.15% FS   10K  S O.15% FS per year in referential conditions  Permissible temperature  Temperature of the medium  Ambient temperature  Compensated Range  O+125°C  -40+125°C  -40+125°	Housing material	·		
Mass         AMP Superseal, German, field housing, wire output port           Mass         Approx. 120g           Output signal, supply voltage and load resistance *         420 mA, 2-wire RA ≤ (UB-10V) / 20mA (supply 1032VDC)           05 V, 3 - wire RL > 2.5kΩ (supply 72VDC)           05 V, 3 - wire RL > 2.5kΩ (supply 72VDC)           05 V, 3 - wire RL > 2.5kΩ (supply 72VDC)           05 V, 3 - wire RL > 2.5kΩ (supply 72VDC)           05 V, 3 - wire RL > 2.5kΩ (supply 5VDC +/-10%)           Response time (T90)         < 1 ms	Process connections *	1/4" and 1/2" NPT, 9/16"-18 UNF-2A with sealing cone, 9/16"-18 UNF-2A HF 4 G1/4" BSP and G1/2" BSP acc. to EN 837 (manometer nipple) or to ISO 228-1		
Output signal, supply voltage and load resistance *    420 mA, 2-wire RA ≤ (UB-10V) / 20mA (supply 1032VDC)   010V, 3-wire RA ≥ 5.5kΩ (supply 122VDC)   05 V, 3-wire RA ≥ 5.5kΩ (supply 172VDC)   05 V,	Electrical connections *			
supply voltage and load resistance *  010 / 3-wire RL > 5kΩ (supply 122VDC) 0.54.5V ratiometric, 3 Leiter RL > 4.7kΩ (supply 5VDC +/-10%)  Response time (T90)	Mass	· · · · · · · · · · · · · · · · · · ·		
supply voltage and load resistance *       010 / 3-wire RL > 5 kΩ (supply 122VDC)         05 / 3 - wire RL > 2.5 kΩ (supply 72VDC)         0.54.5V ratiometric, 3 Leiter RL > 4.7kΩ (supply 5VDC +/-10%)         Response time (T90)       < 1 ms	Output signal,	010V, 3-wire RL> 5kΩ (supply 122VDC) 05 V, 3 -wire RL> 2.5kΩ (supply 72VDC)		
0.54.5V ratiometric, 3 Leiter RL > 4.7kΩ (supply 5VDC +/-10%)   Response time (T90)   < 1 ms     50.5%FS after limit-point calibration (≤ 0.35% FS BFSL)     acc.to DIN EN 61298-2 (incl. non-linearity, zero offset, hysteresis and repeatability) in the compensated range     Non-linearity   ≤ 0.2% FS after limit-point calibration (≤ 0.1% FS acc. to BFSL)     Non-repeatability   ≤ 0.10% FS     Hysteresis   ≤ 0.15% FS     Medium TK of the offset   ≤ 0.15% FS   10K     Medium TK of the range   ≤ 0.15% FS / 10K     Long-term durability   ≤ 0.15% FS / 10K     Long-term durability   ≤ 0.15% FS / 10K     Permissible temperature   ←0+125°C     Ambient temperature   ←40+125°C     Ambient temperature   ←40+125°C     Au+125°C   ←	supply voltage and			
Response time (T90) < 1 ms    Solution   So	load resistance *			
Total error **    ≤ 0.5%FS after limit-point calibration (≤ 0.35% FS BFSL) acc. to DIN EN 61298-2 (incl. non-linearity, zero offset, hysteresis and repeatability) in the compensated range   So.2% FS after limit-point calibration (≤ 0.1% FS acc. to BFSL)   Non-repeatability		0.54.5V ratiometric, 3 Leiter RL> 4.7k $\Omega$ (supply 5VDC +/-10%)		
acc.to DIN EN 61298-2 (incl. non-linearity, zero offset, hysteresis and repeatability) in the compensated range  South FS after limit-point calibration (≤ 0.1% FS acc. to BFSL)  Non-repeatability  South FS  Hysteresis  South FS  Medium TK of the offset  South FS FS  Medium TK of the range  South FS FS FS  Medium TK of the range  South FS FS FS  Medium TK of the range  South FS FS IOK  South FS FS IOK  South FS FS IOK  South FS FS IOK  South FS FS FS IOK  South FS FS IOK  South FS FS FS IOK  South FS FS IOK  South FS FS FS  South FS FS	Response time (T90)	< I ms		
the compensated range  Son-linearity Son-linearity Son-pereparability	Total error **	acc.to DIN EN 61298-2 (incl. non-linearity, zero offset, hysteresis and repeatability) in		
Non-repeatability Hysteresis  ✓ 0.15% FS  ✓ 0.15% FS / 10K  Medium TK of the offset  ✓ 0.15% FS / 10K  ✓ 0.15% FS / 10K  ✓ 0.15% FS / 10K  ✓ 0.15% FS per year in referential conditions  Permissible temperatures Temperature of the medium Ambient temperature Compensated Range  CE-conformity  ✓ 0+125°C —40+125°C —40+125°C —50+80°C  CE-conformity  ✓ EC Directive 89 / 336 / EEC 2014/  ✓ (IT T G b b b b b b b b b b b b b b b b b				
Hysteresis  Medium TK of the offset  Medium TK of the range  Long-term durability  Permissible temperatures Temperature of the medium Ambient temperature Storage Temperature Compensated Range  CE-conformity  ATEX option  Pressure devices EMC directive Shock resistance Weight  Pressivance  Weight  Fig. 10K  ≤ 0.15% FS / 10K  ≤ 0.15% FS per year in referential conditions  -40+125°C -40+1	Non-linearity	$\leq$ 0.2% FS after limit-point calibration ( $\leq$ 0.1% FS acc. to BFSL)		
Medium TK of the offset       ≤ 0.15% FS / 10K         Medium TK of the range       ≤ 0.15% FS / 10K         Long-term durability       ≤ 0.1% FS per year in referential conditions         Permissible temperatures       -40+125°C         Temperature of the medium Ambient temperature       -40+125°C         Compensated Range       -40+125°C         Compensated Range       0+80°C         CE-conformity       EC Directive 89 / 336 / EEC 2014/         ATEX option       Il 2G Ex ia IIC T4 Gb         Pressure devices       68/EU         EMC directive       2004 / 108 / EC acc. To EN 61326g         Shock resistance       1000 acc. to IEC 60068-2-32 g 20         Vibration resistance       Acc. to IEC 60068-2-32 g 20         Weight       ~ 50g         Electrical protection       350VDC         Dielectric strength       350VDC         Short circuit resistance       Out+ / UB- (for 1s)         Reverse polarity protection       UB+ / UB in place         IP ratings *       plug connections acc. to EN 175301-803 IP65, M12 x 1, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K.         The IP types specified in the data sheets generally apply to a mating plug connected. An	Non-repeatability	· · · · · · · · · · · · · · · · · · ·		
Medium TK of the range       ≤ 0.15% FS / 10K         Long-term durability       ≤ 0.1% FS per year in referential conditions         Permissible temperatures       -40+125°C         Temperature of the medium Ambient temperature       -40+125°C         Atom-+125°C       -40+125°C         Storage Temperature       -40+125°C         Compensated Range       0+80°C         CE-conformity       EC Directive 89 / 336 / EEC 2014/         ATEX option       II 2G Ex ia IIC T4 Gb         Pressure devices       68/EU         EMC directive       2004 / 108 / EC acc. To EN 61326g         Shock resistance       1000 acc. to IEC 60068-2-32 g 20         Vibration resistance       Acc. to IEC 60068-2-6         Weight       ~ 50g         Electrical protection       350VDC         Out+ / UB- (for Is)         UB+ / UB in place         IP ratings *       DIQ connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K.         The IP types specified in the data sheets generally apply to a mating plug connected. An	Hysteresis	≤ 0.15% FS		
Long-term durability  Permissible temperatures Temperature of the medium Ambient temperature Compensated Range  CE-conformity ATEX option  Pressure devices EMC directive Shock resistance Vibration resistance Weight  Short circuit resistance Reverse polarity protection  IP ratings *  Long-term durability  ≤ 0.1% FS per year in referential conditions  -40+125°C -40	Medium TK of the offset	≤ 0.15% FS / 10K		
Permissible temperatures Temperature of the medium Ambient temperature Storage Temperature CC-compensated Range CE-conformity ATEX option  Pressure devices EMC directive Shock resistance Vibration resistance Veight  Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Permissible temperature -40+125°C -40+105°C -40+125°C -40+125°C -40+125°C -40+125°C -40+125°C -40+125°C -40+125°C -40+125°C -40+105°C -40+125°C -40+105°C -40	Medium TK of the range	·		
Temperature of the medium Ambient temperature Storage Temperature Compensated Range CE-conformity ATEX option Pressure devices EMC directive Shock resistance Vibration resistance Veight  Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Temperature -40+125°C -40+1	Long-term durability	≤ 0.1% FS per year in referential conditions		
Ambient temperature Storage Temperature Compensated Range CE-conformity EC Directive 89 / 336 / EEC 2014/  ATEX option II 2G Ex ia IIC T4 Gb  Pressure devices EMC directive EMC directive Shock resistance Vibration resistance Vibration resistance Veight Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection IP ratings *  Acument 105°C -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 + 105° -40 +		40		
Storage Temperature Compensated Range -40+125°C 0+80°C  EC Directive 89 / 336 / EEC 2014/  ATEX option  Il 2G Ex ia IIC T4 Gb  Pressure devices EMC directive 2004 / 108 / EC acc. To EN 61326g  Shock resistance  Vibration resistance  Veight  Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Storage Temperature -40+125°C 0+80°C  EC Directive 89 / 336 / EEC 2014/  Il 2G Ex ia IIC T4 Gb  68/EU 2004 / 108 / EC acc. To EN 61326g  1000 acc. to IEC 60068-2-32 g 20  Acc. to IEC 60068-2-32 g 20  Acc. to IEC 60068-2-6  Veight  350VDC Out+ / UB- (for Is) UB+ / UB in place  Plug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An				
Compensated Range  CE-conformity  EC Directive 89 / 336 / EEC 2014/  ATEX option  II 2G Ex ia IIC T4 Gb  Pressure devices EMC directive  Shock resistance  Vibration resistance  Veight  Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  DIAMORTH APP AND APP AN				
ATEX option    Il 2G Ex ia IIC T4 Gb				
Pressure devices EMC directive  2004 / 108 / EC acc. To EN 61326g  Shock resistance  1000 acc. to IEC 60068-2-32 g 20  Vibration resistance  Weight  250g  Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Diug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An	CE-conformity	EC Directive 89 / 336 / EEC 2014/		
EMC directive  2004 /108 / EC acc. To EN 61326g  Shock resistance  1000 acc. to IEC 60068-2-32 g 20  Vibration resistance  Veight  ~ 50g  Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Diug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An	ATEX option	II 2G Ex ia IIC T4 Gb		
Vibration resistance  Acc. to IEC 60068-2-6  Weight  Flectrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Diug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An				
Weight ~ 50g  Electrical protection Dielectric strength 350VDC Short circuit resistance Reverse polarity protection  IP ratings *  Diug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An	Shock resistance			
Electrical protection Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Diug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An	Vibration resistance			
Dielectric strength Short circuit resistance Reverse polarity protection  IP ratings *  Dielectric strength Short circuit resistance Reverse polarity protection  UB + / UB in place  plug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An	Weight	~ 50g		
Short circuit resistance Reverse polarity protection  IP ratings *  UB+ / UB- (for 1s) UB+ / UB in place  plug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K. The IP types specified in the data sheets generally apply to a mating plug connected. An		250/00		
Reverse polarity protection  IP ratings *  plug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K.  The IP types specified in the data sheets generally apply to a mating plug connected. An				
IP ratings * plug connections acc. to EN 175301-803 IP65, M12 x I, Packard Metri-Pack, AMP, Deutsch DT04-3P and 4P IP67/IP6K9K.  The IP types specified in the data sheets generally apply to a mating plug connected. An				
	, , ,	plug connections acc. to EN 175301-803 IP65, M12 x 1, Packard Metri-Pack, AMP, Dec		
atmospheric pressure balance. From a pressure range of 60 bar, no ventilated mating		aerated counter plug and / or wire atmospheric pressure balance. From	aerated counter plug and / or wire is usually required for relative transmitters to enable	
* Others on request;	* Others on request:	connector and / or cable is necessar	·· <sub>/</sub> ·	

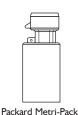


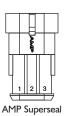
\*\* Special custom made solutions with optionally higher precision on request.



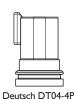
# ELECTRICAL CONNECTIONS EXAMPLES





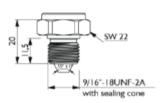


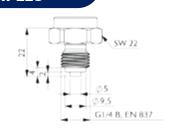


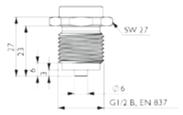


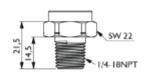
#### PROCESS CONNECTIONS EXAMPLES

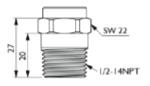












# **ORDERING CODE**



Replace A with the code for the approval required

0 = No approvals

= EC 79/2009 (4 up to 600 bar) Н

= ATEX (4...20mA only)

Replace **BB** with the code for output signals required

UR = 0.5...4.5V (ratiometric)

UI = 0...10V

12 = 4...20mA (2 wire)

U5 = 1...5V

Replace CCCC with the required pressure range(bar OR PSI) Examples below for illustration

0001 = 0...1

0130 = 0...130

0600 = 0...600

1000 = 0...1000See DD to specify bar or psi

Other configurations available on request.

Replace **FF** with the process connections required

= 9/16-18 UNF-HF4

02 = 9/16-18 UNF-2A

= GI/4 B, EN 837 03

= GI/2 B, EN 837

05 = 1/4-18 NPT

06 = 1/2-14 NPT

Other connections available on request

Replace **EE** with the code for electrical connections required

01 = Binder MI2xI 4P

= Packard Metri-Pack 02

03 = AMP Superseal

= Deutsch DT04-3P 04 = Deutsch DT04-4P

Other connections available on request

Replace **DD** with the code for unit required

= bar

16 = psi

Other units available on request

#### **ORDERING EXAMPLE**

#### HT-H2-H-UR-0600-01-05-01

HT-H2 with EC 79/2009 approval, 0.5...4.5V (ratiometric) output signal, 0...600 bar pressure range, Binder M12x1 (plastic); 4P electrical connections and G1/4"A form E.

