

HYDAC INTERNATIONAL

Accessories for measuring instruments, display and service units

Sensors with automatic sensor recognition

The pressure, temperature and flow rate transmitters with HSI sensor recognition have been specially developed for use in conjunction with HYDAC measuring instruments HMG 5x0, 2500 and 4000 as well as the Condition Monitoring Unit CMU 1000.

For data transmission, these sensors have an HSI interface (HYDAC Sensor Interface). This interface enables the above-mentioned HYDAC measuring instruments to automatically recognise the HSI sensor and then automatically apply all the necessary basic device settings.

To extend the number of sensors on the HMG 4000, the special HCSI sensors, based on the CAN protocol, were developed.

These HCSI sensors, easily identified with their red type label, are automatically recognised along with all their characteristics by the HMG 4000.

Up to 28 HCSI sensors can be connected to the HMG 4000 simultaneously via the Y-distributor (available as an accessory) to set up an HMG-internal bus system.

The data is transferred via a CAN-based bus protocol.

HYDAC INTERNATIONAL



Pressure Transmitter HDA 4700-H

Relative pressure Accuracy 0.25 %

With HSI sensor recognition

Description:

The pressure transmitter HDA 4700-H with HSI sensor recognition was specially developed for use in conjunction with the HYDAC measuring instruments HMG 5X0, HMG 2500, HMG 4000 and CMU 1000.

For data transmission, the HDA 4700-H has an HSI interface (HYDAC Sensor Interface).

The HSI sensors are automatically recognised via the HSI interface by the above-mentioned HYDAC measuring instruments and all necessary basic device settings are taken from each sensor.

Like all pressure transmitters of the HDA 4700 series, the HDA 4700-H also has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane. It combines excellent technical data with a very compact design.

Technical data:

Input data											
Measuring ranges ¹⁾	bar	-1 .. 9	16	60	100	250	400	600	1000	1600	2000
Overload pressures	bar	20	32	120	200	500	800	1000	1600	2400	3000
Burst pressure	bar	100	200	300	500	1000	2000	2000	3000	3000	4000
Mechanical connection					G1/4 A ISO 1179-2 G1/2 B DIN EN 837						
Tightening torque, recommended					20 Nm (G1/4); 40 Nm (G1/2)						
Parts in contact with fluid					Mech. connection: Stainless steel Seal: FKM						
Output data											
Output signal					HSI (HYDAC Sensor Interface) Automatic sensor recognition						
Accuracy acc. to DIN 16086, terminal based					≤ ± 0.25 % FS typ. ≤ ± 0.5 % FS max.						
Accuracy, B.F.S.L.					≤ ± 0.15 % FS typ. ≤ ± 0.25 % FS max.						
Temperature compensation					≤ ± 0.008 % FS / °C typ.						
Zero point					≤ ± 0.015 % FS / °C max.						
Temperature compensation					≤ ± 0.008 % FS / °C typ.						
Span					≤ ± 0.015 % FS / °C max.						
Non-linearity at max. setting acc. to DIN 16086 terminal based					≤ ± 0.3 % FS max.						
Hysteresis					≤ ± 0.1 % FS max.						
Repeatability					≤ ± 0.05 % FS						
Rise time					≤ 1 ms						
Long-term drift					≤ ± 0.1 % FS typ. / year						
Environmental conditions											
Compensated temperature range					-25 .. +85 °C						
Operating temperature range ¹⁾					-40 .. +85 °C / -25 .. +85 °C						
Storage temperature range					-40 .. +100 °C						
Fluid temperature range ¹⁾					-40 .. +100 °C / -25 .. +100 °C						
CE mark					EN 61000-6-1 / 2 / 3 / 4						
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz					≤ 20 g						
Shock resistance acc. to DIN EN 60068-2-27					≤ 100 g / 6 ms						
Protection class acc. to DIN EN 60529 ²⁾					IP 67						
Other data											
Voltage supply					Via HYDAC measuring instruments HMG 5X0, HMG 2500, HMG 4000 or CMU 1000						
Life expectancy					> 10 million cycles (0 .. 100 % FS)						
Weight					~ 150 g						

Note: Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection are provided.

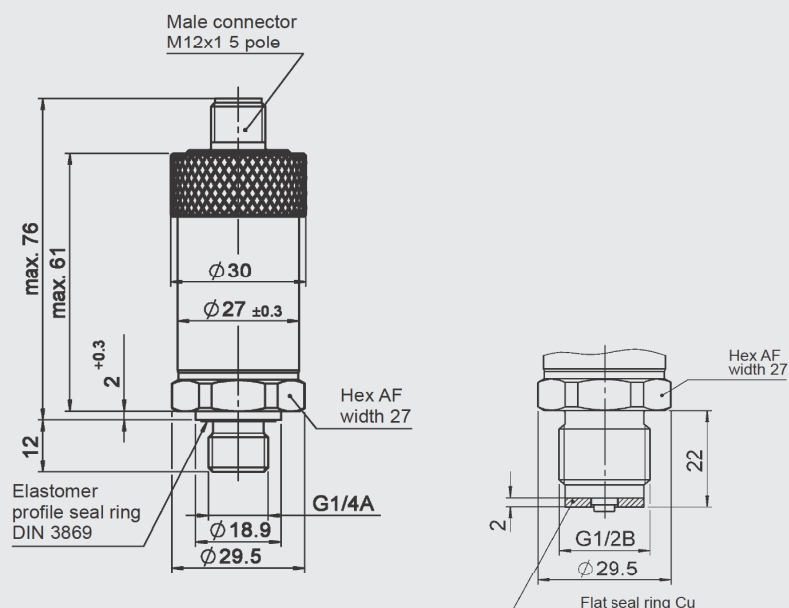
FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -25 °C with FKM seal, -40 °C on request

²⁾ With mounted mating connector in corresponding protection class

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

Model code:

HDA 4 7 X 8 - H - XXXX - 000

Mechanical connection

- 1 = G1/2 B DIN EN 837
(only for pressure ranges "1600; 2000 bar")
- 4 = G1/4 A ISO 1179-2

Electrical connection

- 8 = male M12x1, 5 pole
(mating connector not supplied)

Output signal

- H = HSI (automatic sensor recognition)

Measuring ranges in bar

- 0009; 0016; 0060; 0100; 0250; 0400; 0600; 1000
1600; 2000 (only in conjunction with mech. connection "1")

Modification number

- 000 = standard

Accessories:

Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

HYDAC INTERNATIONAL



Temperature Transmitter ETS 4100-H

Integrated temperature probe

Accuracy 0.4 %

With HSI sensor recognition

Description:

The electronic temperature transmitter ETS 4100-H with HSI sensor recognition has been specially developed for use in conjunction with HYDAC measuring instruments HMG 5X0, HMG 2500, HMG 4000 and CMU 1000.

For data transmission, the ETS 4100-H has an HSI interface (HYDAC Sensor Interface).

The HSI sensors are automatically recognised via the HSI interface by the above-mentioned HYDAC measuring instruments and all necessary basic device settings are taken from each sensor.

Like all temperature transmitters of the ETS 4000 series, the ETS 4100-H features a robust design and excellent EMC properties. Based on corresponding evaluation electronics, the temperature sensor is designed to measure temperatures in the range -25 °C .. +100 °C.

Technical data:

Input data	
Measuring range	-25 .. +100 °C
Probe length	6 mm
Probe diameter	4.5 mm
Pressure resistance	600 bar
Overload pressure	900 bar
Mechanical connection	G 1/4 A ISO 1179-2
Tightening torque, recommended	20 Nm
Parts in contact with fluid ¹⁾	Mech. connection: Stainless steel Seal: FKM
Output data	
Output signal	HSI (HYDAC Sensor Interface) Automatic sensor recognition
Accuracy (at room temperature)	≤ ± 0.4 % FS typ. ≤ ± 0.8 % FS max.
Temperature drift (environment)	≤ ± 0.01 % FS / °C
Response time acc. to DIN EN 60751	t ₅₀ : ~ 4 s t ₉₀ : ~ 8 s
Environmental conditions	
Operating temperature range ²⁾	-40 .. +85 °C / -25 .. +85 °C
Storage temperature range	-40 .. +100 °C
Fluid temperature range ²⁾	-40 .. +125 °C / -25 .. +125 °C
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz	≤ 20 g
Shock resistance acc. to DIN EN 60068-2-27	≤ 20 g
Protection class acc. to DIN EN 60529 ³⁾	IP 67
Other data	
Voltage supply	Via HYDAC measuring instruments HMG 5X0, HMG 2500, HMG 4000 or CMU 1000
Weight	~ 150 g

Note: Reverse polarity protection of the supply voltage, overvoltage, overcurrent and short circuit protection are provided.

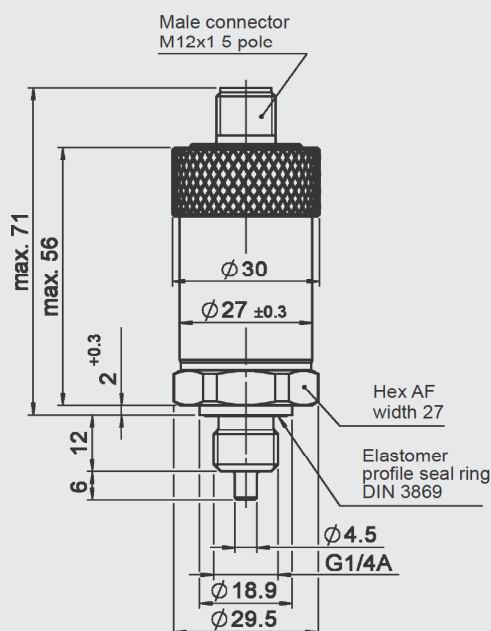
FS (Full Scale) = relative to complete measuring range

¹⁾ Other seal materials on request

²⁾ -25 °C with FKM seal, -40 °C on request

³⁾ With mounted mating connector in corresponding protection class

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

Model code:

ETS 4 1 4 8 - H - 006 - 000

Mechanical connection

4 = G1/4 A ISO 1179-2

Electrical connection

8 = male M12x1, 5 pole
(mating connector not supplied)

Output signal

H = HSI (automatic sensor recognition)

Probe length

$$006 = 6 \text{ mm}$$
Modification number

000 = standard

Accessories:

Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

HYDAC INTERNATIONAL



Flow Rate Transmitter EVS 3100-H / EVS 3110-H

Turbine

Accuracy 2 %

With HSI sensor recognition

Description:

The flow rate transmitters of the EVS 3100-H and EVS 3110-H series with HSI sensor recognition were specially developed for use in conjunction with the HYDAC measuring instruments HMG 5x0, HMG 2500, HMG 4000 and CMU 1000.

For data transmission, the EVS 31x0-H has an HSI interface (HYDAC Sensor Interface).

The HSI sensors are recognised automatically via the HSI interface by the above-mentioned HYDAC measuring instruments, and all the necessary basic settings are taken from each instrument.

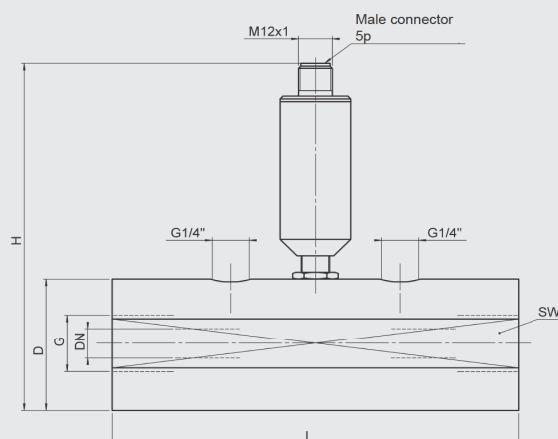
As is the case with all flow rate measurement transmitters of the EVS 3100 and EVS 3110 series, the EVS 31x0-H also operates in accordance with the turbine principle. The speed of an impeller turning in the fluid flow is measured and converted into an electronic signal.

Technical data:

Input data		
Measuring ranges ¹⁾ and operating pressure		
EVS 3108-H-0020	1.2 .. 20.0 l/min	400 bar
EVS 3118-H-0020		
EVS 3108-H-0060	6.0 .. 60.0 l/min	400 bar
EVS 3118-H-0060		
EVS 3108-H-0300	15.0 .. 300.0 l/min	400 bar
EVS 3118-H-0300		
EVS 3108-H-0600	40.0 .. 600.0 l/min	315 bar
EVS 3118-H-0600	40.0 .. 600.0 l/min	400 bar
Additional connection options	2 x G1/4 female threads for pressure and/or temperature sensors	
Housing material	EVS 3100-H: aluminium EVS 3110-H: stainless steel	
Output data		
Output signal	HSI (HYDAC Sensor Interface) Automatic sensor recognition	
Accuracy	≤ 2 % of the actual value	
Environmental conditions		
Compensated temperature range	-20 .. +70 °C	
Operating temperature range	-20 .. +70 °C	
Storage temperature range	-40 .. +100 °C	
Fluid temperature range	-20 .. +90 °C	
CE mark	EN 61000-6-1 / 2 / 3 / 4	
Protection class acc. to DIN EN 60529 ²⁾	IP 67	
Other data		
Measuring medium ³⁾	EVS 3100-H: hydraulic oils EVS 3110-H: water-based media	
Viscosity range	1 .. 100 cSt	
Calibration viscosity	EVS 3100-H: 30 cSt EVS 3110-H: 5 cSt	
Supply voltage	Via HYDAC measuring instruments HMG 5x0, HMG 2500, HMG 4000 or CMU 1000	

Note: ¹⁾ Other measuring ranges on request
²⁾ With mounted mating connector in corresponding protection class
³⁾ Other measuring media on request

Dimensions:



Model	Meas. range [l/min]	L [mm]	H [mm]	D / SW [mm]	G [mm]	Torque value recommended [Nm]	DN [mm]
EVS 3108-H-0020	1.2 .. 20	117	135	47 / 46	G1/4"	60	7
EVS 3108-H-0060	6 .. 60	144	135	48.5 / 46	G1/2"	130	11
EVS 3108-H-0300	15 .. 300	155	150	63.5 / 60	G1 1/4"	500	22
EVS 3108-H-0600	40 .. 600	181	150	63.5 / 60	G1 1/2"	600	30
EVS 3118-H-0020	1.2 .. 20	117	135	47 / 46	G1/4"	60	7
EVS 3118-H-0060	6 .. 60	144	135	48.5 / 46	G1/2"	130	11
EVS 3118-H-0300	15 .. 300	155	150	63.5 / 60	G1 1/4"	500	22
EVS 3118-H-0600	40 .. 600	181	150	63.5 / 60	G1 1/2"	600	30

Note:

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For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

Model code:

EVS 3 1 X 8 - H - XXXX - 000

Housing material

- 0 = aluminium
- 1 = stainless steel

Electrical connection

- 8 = male M12x1, 5 pole
(mating connector not supplied)

Output signal

- H = HSI (automatic sensor recognition)

Measuring range

- 0020 = 1.2 .. 20 l/min
- 0060 = 6.0 .. 60 l/min
- 0300 = 15.0 .. 300 l/min
- 0600 = 40.0 .. 600 l/min

Modification number

- 000 = standard

Accessories:

Appropriate accessories, such as mating connectors, can be found in the Accessories brochure.

HYDAC INTERNATIONAL



Pressure Transmitter HDA 4700-HC (for HMG 4000)

Relative pressure Accuracy 0.25 %



With HCSI sensor recognition

Description:

To extend the number of sensors on the HMG 4000, the special CAN-based HCSI sensors were developed.

The HCSI sensors, easily identified by their red type label, are automatically recognised along with all their characteristics by the HMG 4000.

Up to 28 HCSI sensors can be connected to the HMG 4000 via the Y-distributor (available as an accessory) to set up an HMG-internal bus system. The data are transmitted using CAN-based bus protocol.

Like all pressure transmitters of the HDA 4700 series, the HDA 4700-HC also has a very accurate and robust sensor cell with a thin-film strain gauge on a stainless steel membrane.

Due to their outstanding temperature and EMC characteristics, together with their compact dimensions, these instruments can be used in a wide field of applications in the mobile and industrial sectors.

Technical data:

Input data											
Measuring ranges ¹⁾	bar	-1 .. 9	16	60	100	250	400	600	1000	1600	2000
Overload pressures	bar	20	32	120	200	500	800	1000	1600	2400	3000
Burst pressure	bar	100	200	300	500	1000	2000	2000	3000	3000	4000
Mechanical connection					G1/4 A ISO 1179-2 G1/2 B DIN EN 837						
Tightening torque, recommended					20 Nm (G1/4); 40 Nm (G1/2)						
Parts in contact with fluid					Mech. connection: Stainless steel Seal: FKM						
Output data											
Output signal					HCSI (HYDAC CAN Sensor Interface) Automatic sensor recognition						
Accuracy acc. to DIN 16086, terminal based					≤ ± 0.25 % FS typ. ≤ ± 0.5 % FS max.						
Accuracy, B.F.S.L.					≤ ± 0.15 % FS typ. ≤ ± 0.25 % FS max.						
Temperature compensation					≤ ± 0.008 % FS / °C typ.						
Zero point					≤ ± 0.015 % FS / °C max.						
Temperature compensation					≤ ± 0.008 % FS / °C typ.						
Span					≤ ± 0.015 % FS / °C max.						
Non-linearity at max. setting acc. to DIN 16086 terminal based					≤ ± 0.3 % FS max.						
Hysteresis					≤ ± 0.1 % FS max.						
Repeatability					≤ ± 0.08 % FS						
Rise time					≤ 1 ms						
Long-term drift					≤ ± 0.1 % FS typ. / year						
Environmental conditions											
Compensated temperature range					-25 .. +85 °C						
Operating temperature range ¹⁾					-40 .. +85 °C / -25 .. +85 °C						
Storage temperature range					-40 .. +100 °C						
Fluid temperature range ¹⁾					-40 .. +100 °C / -25 .. +100 °C						
CE mark					EN 61000-6-1 / 2 / 3 / 4						
Vibration resistance acc. to DIN EN 60068-2-6 at 10 .. 500 Hz					≤ 20 g						
Shock resistance acc. to DIN EN 60068-2-27					≤ 100 g / 6 ms						
Protection class acc. to DIN EN 60529 ²⁾					IP 67						
Other data											
Voltage supply					Via HYDAC measuring instrument HMG 4000						
Life expectancy					> 10 million cycles (0 .. 100 % FS)						
Weight					~ 150 g						

Note: Reverse polarity protection of the supply voltage, overvoltage, overdrive and short circuit protection are provided.

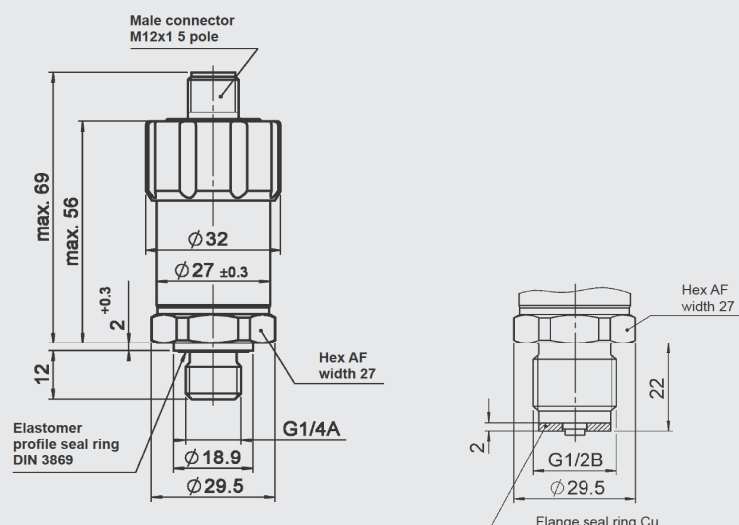
FS (Full Scale) = relative to complete measuring range

B.F.S.L. = Best Fit Straight Line

¹⁾ -25 °C with FKM seal, -40 °C on request

²⁾ With mounted mating connector in corresponding protection class

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

Model code:

HDA 4 7 X 8 - HC - XXXX - 000

Mechanical connection

- 1 = G1/2 B DIN EN 837
(only for pressure ranges "1600, 2000 bar")
- 4 = G1/4 A ISO 1179-2

Electrical connection

- 8 = male M12x1, 5 pole
(mating connector not supplied)

Output signal

HC = HCSI (HYDAC CAN Sensor Interface)

Measuring ranges in bar

0009 (-1 ... +9); 0016; 0060; 0100; 0250; 0400; 0600; 1000
1600, 2000 (only in conjunction with mech. connection "1")

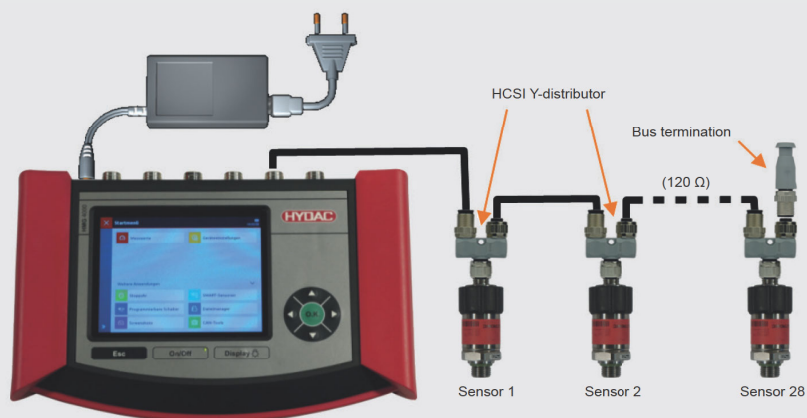
Modification number

000 = Standard

Accessories:

HCSI Y-distributor
HCSI bus termination

Part no.: 6178196
Part no.: 6178198



HYDAC INTERNATIONAL



Temperature Transmitter ETS 4100-HC (for HMG 4000)

Integrated temperature probe

Accuracy 0.4 %



With HCSI sensor recognition

Description:

To extend the number of sensors on the HMG 4000, the special CAN-based HCSI sensors were developed.

The HCSI sensors, easily identified by their red type label, are automatically recognised along with all their characteristics by the HMG 4000.

Up to 28 HCSI sensors can be connected to the HMG 4000 via the Y-distributor (available as an accessory) to set up an HMG-internal bus system. The data are transmitted using CAN-based bus protocol.

Like all temperature transmitters of the ETS 4000 series, the ETS 4100-HC features a robust design and excellent EMC properties. The temperature sensor is designed to measure temperatures in the range -25 °C ... +100 °C.

Due to their compact dimensions, these instruments can be used in a wide field of applications in the mobile and industrial sectors.

Technical data:

Input data	
Measuring range	-25 ... +100 °C
Probe length	6 mm
Probe diameter	4.5 mm
Pressure resistance	600 bar
Mechanical connection	G 1/4 A ISO 1179-2
Tightening torque, recommended	20 Nm
Parts in contact with fluid ¹⁾	Mech. connection: Stainless steel Seal: FKM
Output data	
Output signal	HCSI (HYDAC CAN Sensor Interface) Automatic sensor recognition
Accuracy (at room temperature)	≤ ± 0.4 % FS typ. ≤ ± 0.8 % FS max.
Temperature drift (environment)	≤ ± 0.01 % FS / °C
Response time acc. to DIN EN 60751	t ₉₀ : ~ 4 s t ₉₅ : ~ 8 s
Environmental conditions	
Operating temperature range ²⁾	-40 ... +85 °C / -25 ... +85 °C
Storage temperature range	-40 ... +100 °C
Fluid temperature range ²⁾	-40 ... +125 °C / -25 ... +125 °C
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance acc. to DIN EN 60068-2-6 at 10 ... 500 Hz	≤ 20 g
Shock resistance acc. to DIN EN 60068-2-27	≤ 20 g
Protection class acc. to DIN EN 60529 ³⁾	IP 67
Other data	
Voltage supply	Via HYDAC measuring instrument HMG 4000
Weight	~ 150 g

Note: Reverse polarity protection of the supply voltage, overvoltage, overvoltage and short circuit protection are provided.

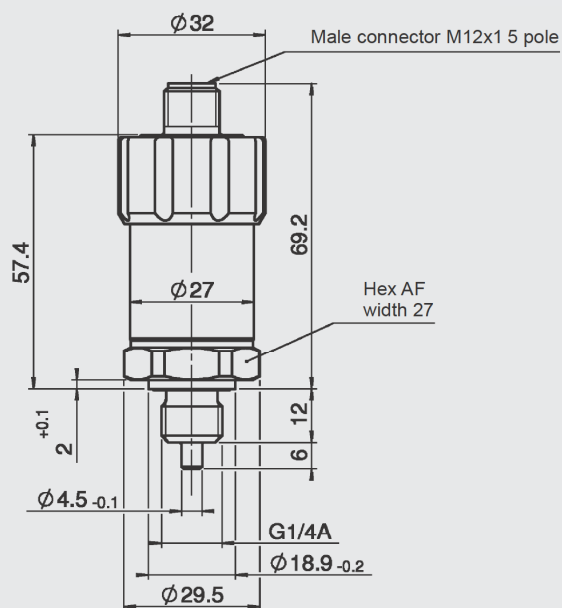
FS (Full Scale) = relative to complete measuring range

¹⁾ Other seal materials on request

²⁾ -25 °C with FKM seal, -40 °C on request

³⁾ With mounted mating connector in corresponding protection class

Dimensions:



Note:

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

Model code:

ETS 4 1 4 8 - HC - 006 - 000

Mechanical connection

4 = G1/4 A ISO 1179-2

Electrical connection

8 = male M12x1, 5 pole
(mating connector not supplied)

Output signal

HC = HCSI (HYDAC CAN Sensor Interface)

Probe length

006 = 6 mm

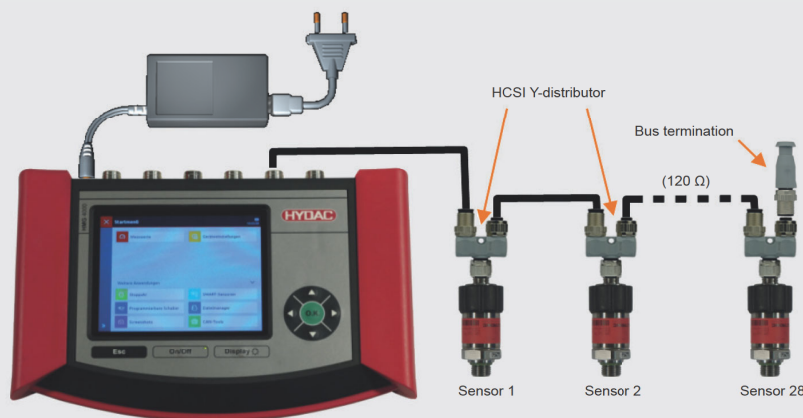
Modification number

000 = Standard

Accessories:

HCSI Y-distributor Part no.: 6178196

HCSI bus termination (120 Ω) Part no.: 6178198



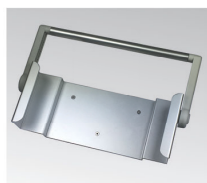
Further accessories for HMG 500 / 510 / 2500 and 4000



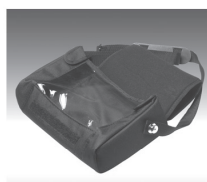
Case
 for HMG 2500/4000 and
 accessories
Part no.: 6179836



Plastic case
 for HMG 500/510 and accessories
Part no.: 6043006



Magnetic holder
 for HMG 4000
 Handle can be rotated 360°, three
 magnets on back with approx. 80 N
 holding force
Part no.: 4227226



Bag with carrying strap
 for HMG 2500/30X0
Part no.: 909795



Power supply unit
 for HMG 2500/30X0/4000
Part no.: 6054296



Power supply unit
 for HMG 500/510
Part no.: 6043562



ZBE 31
 Car charger for
 HMG 2500/30X0/4000
Part no.: 909739



UVM 3000
 Connection adapter for
 HMG 30X0/4000 for connecting
 third-party sensors
Part no.: 909752



ZBE 11-000
 Current measurement adapter
 for galvanically isolated
 current measurement up
 to ±4 A for connection to
 HMG 5x0/2500/30x0/4000.
Part no.: 926543



ZBE 26
 Y-adapter (blue) for connecting a
 HYDACLAB® HLB 1400
Part no.: 3304374



ZBE 38
 Y-adapter (black) for HMG 4000 for
 the digital input socket
Part no.: 3224436



ZBE 41
 Y-adapter (yellow) for
 HMG 2500/30X0/4000 for
 connecting a ContaminationSensor
 CS 1000
Part no.: 910000



ZBE 46
 Pin adapter for
 HMG 2500/30X0/4000 for
 3-conductor signals and
 AquaSensor AS 1000
Part no.: 925725



ZBE 100
 Connection adapter for HMG 4000
 for temperature probe TFP 100
Part no.: 925726



HCSI Y-distributor
 Adapter for HMG 4000 for
 connecting HCSI sensors
Part no.: 6178196



HCSI bus termination
 Termination resistor for HCSI bus
 line (120 Ω)
Part no.: 6178198



ZBE 30-02 (5 pole)
 Connection cable, 2 m length, male/
 female M12x1, screw connection
Part no.: 6040851



ZBE 30-05 (5 pole)
 Connection cable, 5 m length, male/
 female M12x1, screw connection
Part no.: 6040852



ZBE 40-02 (5 pole)
 Connection cable, 2 m length, male/
 female M12x1,
 push-pull connection on male side,
 screw connection on female side
Part no.: 6177158



ZBE 40-05 (5 pole)
 Connection cable, 5 m length, male/
 female M12x1,
 push-pull connection on male side,
 screw connection on female side
Part no.: 6177159



ZBE 40-10 (5 pole)
 Connection cable, 10 m length,
 male/female M12x1,
 push-pull connection on male side,
 screw connection on female side
Part no.: 6177160



HDS 1000 RPM probe
 for HMG 2500/30X0/4000 including
 reflective foil set
Part no.: 909436

HDS 1000 reflective foil set
 Spare Part, Quantity: 25
Part no.: 904812



SSH 1000
 Sensor simulator for
 HMG 2500/30X0/4000 to simulate
 2 HSI sensors, ideal for training
 purposes
Part no.: 909414



USB cable (HMG 2X/3X/4X)
 (1x plug A - 1x plug B)
Part no.: 6040585



USB cable (HMG 500)
 (1x plug A - Mini USB)
Part no.: 6049553



Carrying strap for HMG 4000
Part no.: 4070365



**Rechargeable battery pack for
 HMG 4000**
Part no.: 3956715



Hydraulic adapter kit
 for HMG, 2 pcs. each of
 - Adapter hose DN 2-1620/1620
 (400 mm and 1000 mm)
 - Pressure gauge connection 1620/
 G1/4
 - Bulkhead coupling 1620/1620
Part no.: 903083

Note:

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 department.
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