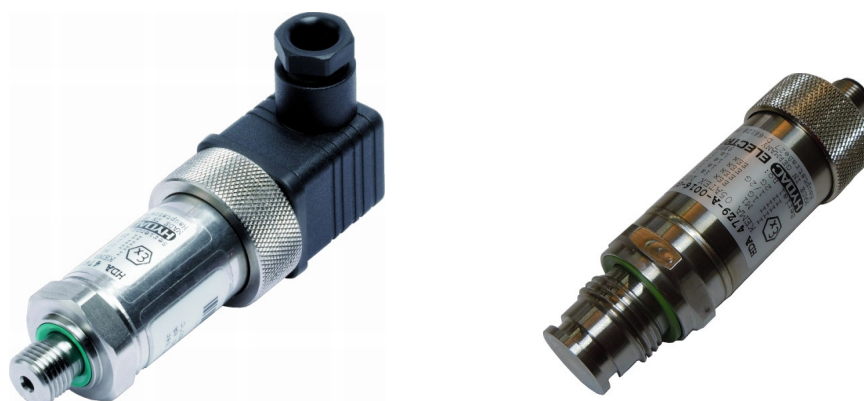


Bedienungsanleitung
Druckmessumformer Serie HDA 4000
Eigensicher, staubgeschütztes Gehäuse,
nicht funkend
mit ATEX-Zulassung (Original-Bedienungsanleitung)

Operating Instructions
Pressure Transmitter Series HDA 4000
Intrinsically safe, dustprotected enclosure,
non-sparking
with ATEX Approval (translation of the original instructions)



Schutzklassen und Einsatzbereiche / *Protection types and zones:*

ATEX		
KEMA 05ATEX1016X	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
	II 1/2 G	Ex ia IIC T6 Ga/Gb
	II 2 G	EX ia IIC T6 Gb
	II 1D	Ex ia IIIC T85°C Da
	II 1D	Ex ta IIIC T80/T90/T100°C T ₅₀₀ 90/100/110°C Da
	II 2D	Ex tb IIIC T80/T90/T100°C Db
	II 3G	Ex nA IIC T6, T5, T4 Gc
	II 3G	Ex ic IIC T6, T5, T4 Gc
	II 3D	Ex tc IIIC T80/T90/T100°C Dc
II 3D	Ex ic IIIC T80/T90/T100°C Dc	

Zertifikat/Certificate: KEMA 05ATEX1016 X

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1 Allgemeines

Falls Sie Fragen bezüglich der technischen Daten oder Eignung für Ihre Anwendungen haben, wenden Sie sich bitte an unseren **technischen Vertrieb**. Die Druckmessumformer der Serie HDA 4000 werden auf rechnergesteuerten Prüfplätzen abgeglichen und einem Endtest unterzogen. Sie sind wartungsfrei und sollten beim Einsatz innerhalb der Spezifikationen (siehe Technische Daten) einwandfrei arbeiten. Falls trotzdem Fehler auftreten, wenden Sie sich bitte an den **HYDAC-Service**. Fremdeingriffe in das Gerät führen zum Erlöschen jeglicher Gewährleistungsansprüche sowie der ATEX -Zulassung.

2 Funktion

Das vom Sensor gemessene Drucksignal wird in ein dem Druck proportionales, analoges 4..20 mA Signal umgewandelt. Der elektrische Anschluss erfolgt über einen Steckverbinder oder eine fest angeschlossene Leitung.

3 Montage und Inbetriebnahme

Die Druckmessumformer können auf Prozess-Seite direkt über den Gewindeanschluss montiert werden. Speziell bei Geräten mit frontbündiger (außenliegender) Membran ist bei der Montage darauf zu achten, dass die Membrane während der Montage nicht beschädigt wird.

Um in kritischen Anwendungsfällen (z.B. starke Vibrationen oder Schläge) einer mechanischen Zerstörung vorzubeugen, empfehlen wir das Gerät mittels einer Schelle mit Elastomereinsatz zu befestigen, sowie den Hydraulikanschluss über eine Minimesseleitung zu entkoppeln.

Anzugsdrehmoment siehe Abmessungen.

Druckmessumformer mit einem Nenndruck ≤ 100 bar (≤ 1500 psi) besitzen einen Druckausgleich zum Umgebungsdruck. Hierzu befindet sich unter der Steckerbefestigung eine kleine Bohrung. Diese ist von innen mit einer speziellen Membrane abgedeckt, die verhindert, dass Feuchtigkeit von außen in das Gerät eindringen kann. Um eine Verstopfung der Bohrung zu verhindern, sollte bei feuchter und staubhaltiger Umgebung die Montage daher waagrecht oder senkrecht mit dem Druckanschluss nach unten erfolgen.

Bei Druckmessumformern mit einem Nenndruck von ≤ 100 bar (≤ 1500 psi) und einem $\frac{1}{2}$ " Conduit elektrischen Anschluss ist der Druckausgleich bei Einzeladern mittels einer kurzen Entlüftungslitze realisiert, bei Mantelkabel mittels einem im Kabel integrierten Entlüftungsschlauch. Es ist sicherzustellen, dass die Entlüftung nur im Nicht-Ex-Bereich erfolgt.

Die Installation muss von einem Fachmann nach den jeweiligen Landesvorschriften zu potentiell explosionsgefährdeten Umgebungen durchgeführt werden (z.B. IEC / EN 60079-14).

Die Druckmessumformer der Serie HDA 4000 tragen das CE - Zeichen. Die Konformitätserklärung befindet sich im Anhang.

Die Forderungen der Normen (siehe techn. Daten) werden nur bei ordnungsgemäßer und fachmännischer Erdung des Druckmessumformergehäuses mittels des Prozessanschlusses oder dem $\frac{1}{2}$ NPT Conduit erreicht. Sofern eine grün/gelbe Ader vorhanden ist, darf diese zusätzlich, aber nicht zur alleinigen Erdung verwendet werden. Bei Schlauchmontage des Druckmessumformers muss das Gehäuse separat geerdet werden.

Die zugehörigen eigensicheren Geräte (z.B. Zenerbarrieren) sind ebenfalls zu erden. Ein Potentialausgleich entlang des eigensicheren Stromkreises ist in der Ausführungsvariante N (Isolationsspannung ≤ 50 VAC) erforderlich.

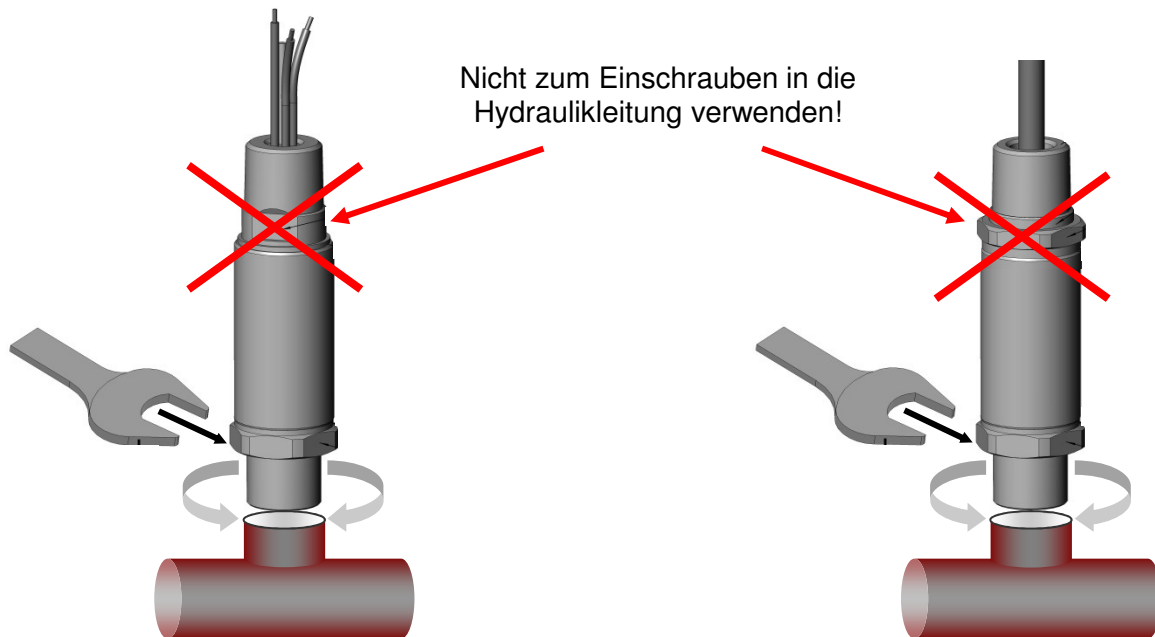
Bei der Serie HDA 4000 in der Ausführungsform H (Isolationsspannung ≤ 500 VAC) darf die Kabellänge zum Druckmessumformer maximal 30m betragen (Überspannungsschutz nach DIN EN 61000-6-2). Wenn die Kabellänge 30m überschreitet, muss der Überspannungsschutz kundenseitig sichergestellt werden.

4 Wichtige Hinweise für die Installation

4.1 Installationshinweise für Geräte mit 1/2 " NPT Conduit

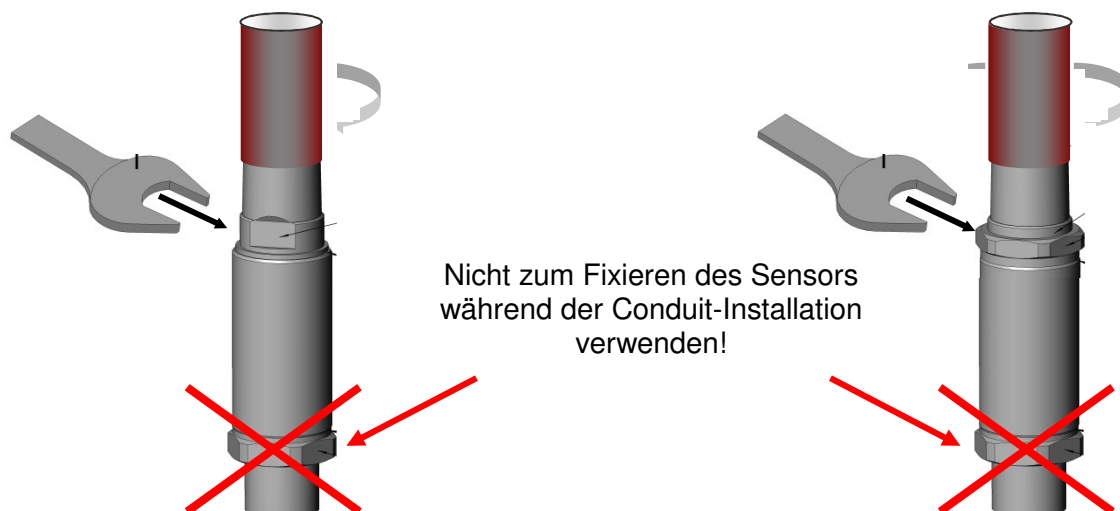
Mechanische Installation

Für die Montage des Prozessanschlusses darf nur die Schlüssel­fläche an der Prozessanschlus­seite des Druckmessumformers verwendet werden.



Elektrische Installation

Die Schlüssel­fläche an der Seite des elektrischen Anschlusses am 1/2 NPT Conduit dient nur zum Fixieren des Druckmessumformers bei der Conduit-Installation.



4.2 Installationshinweise für Geräte mit Schlagschutz

Installationshinweise für Geräte mit M12x1 Stecker mit Schlagschutz-/Sicherungs- Metallhülse für den Einsatz in:

ATEX

II 3G Ex nA IIC T6, T5 Gc

II 1D Ex ta IIIC T80/T90°C T₅₀₀90/100°C Da

II 2D Ex tb III C T80/T90°C Db

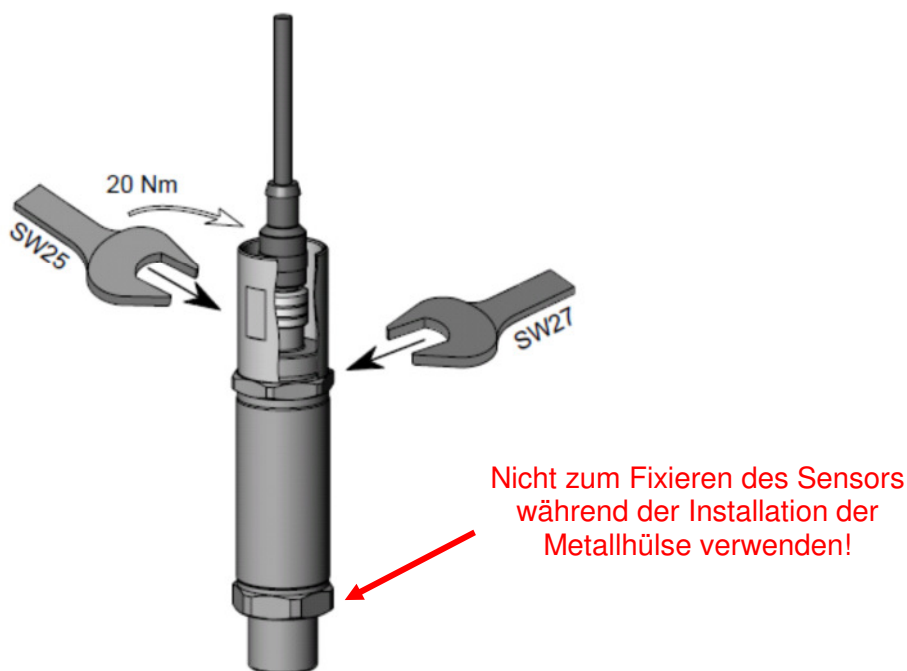
Zur Einhaltung der Sicherheitsrichtlinien ist, für diese Schutzklassen und Einsatzbereiche, die Verwendung der Schlagschutz-/ Sicherungs- Metallhülse zwingend erforderlich.

Die Schlüsselfläche 27mm an der Seite des elektrischen Anschlusses dient nur zum Fixieren des Druckmessumformers bei Installation der Schlagschutz-/Sicherungs-Metallhülse.

Das Anschlusskabel mit M12x1 Stecker muss im spannungslosen Zustand ordnungsgemäß angeschlossen werden, damit sich die Steckverbindung bei Vibrationen nicht lösen kann.

Die mitgelieferte Schlagschutz-/Sicherungs-Metallhülse muss ebenfalls ordnungsgemäß mit einem Anzugsdrehmoment von 20 Nm montiert werden.

Auch die Trennung des M12x1 Steckers darf nur im Spannungslosen Zustand erfolgen.





5 Sicherheitshinweise

Wenn das Etikett nicht mehr lesbar ist, muss der Druckmessumformer außer Betrieb gesetzt werden.

Die Druckmessumformer sind generell mit einer geeigneten, eigensicheren Barriere zu betreiben.

Die Dichtungen sind in regelmäßigen Abständen, in Abhängigkeit der klimatischen Bedingungen und dem Medieneinfluss, auf ihre Funktionstüchtigkeit zu kontrollieren, und wenn erforderlich auszutauschen. Ersatzdichtungen und –flachdichtungen können von der HYDAC ELECTRONIC GMBH bezogen werden. (Standarddichtungen siehe technische Daten). Diese Überprüfung muss mindestens alle drei Jahre durchgeführt werden.

Für HDA 41xx / 43xx mit keramischem Sensorelement:

Bei gleichzeitigem Einsatz in Zone 0 und 1 wirkt die Keramik-Messmembrane des Druckmessumformers als "Trennwand" zwischen Zone 0 und Zone 1. Die Dicke dieser "Trennwand" ist generell $\leq 1\text{mm}$ und bei Nenndruck unter 1 bar $\leq 0,2\text{ mm}$. Zur Sicherstellung dieser Trennfunktion ist unbedingt auf die Verträglichkeit der Messmedien mit den verwendeten Werkstoffen des Druckmessumformers zu achten, ebenso sind die Überlast- und Berstdrücke unbedingt einzuhalten (Angaben hierzu siehe "Technische Daten").

Für HDA 44xx / 47xx mit Edelstahl Sensorelement:

Bei gleichzeitigem Einsatz in Zone 0 und 1 wirkt die Metall-Messmembrane des Druckmessumformers als "Trennwand" zwischen Zone 0 und Zone 1. Die Dicke dieser "Trennwand" ist generell $\leq 1\text{mm}$ und bei Nenndruck unter 100 bar $\leq 0,2\text{ mm}$. Zur Sicherstellung dieser Trennfunktion ist unbedingt auf die Verträglichkeit der Messmedien mit den verwendeten Werkstoffen des Druckmessumformers zu achten, ebenso sind die Überlast- und Berstdrücke unbedingt einzuhalten (Angaben hierzu siehe "Technische Daten").

Es ist unbedingt auf die Verträglichkeit der Messmedien zu den Dichtungen und den verwendeten Werkstoffen des Druckmessumformers zu achten, ebenso sind die Überlast- und Berstdrücke unbedingt einzuhalten (Angaben hierzu siehe "Technische Daten" und "Sicherheitstechnische Daten" der EG Baumusterprüfbescheinigung).

Die interne Messmembrane des Druckmessumformers ist unbedingt vor mechanischer Beschädigung zu schützen. Dieses gilt insbesondere bei Geräten mit einer frontbündigen Membrane und bei gleichzeitigem Einsatz in Zone 0 und 1 sowie Zone 1 und 2.

Das Trennmittel zwischen der frontbündigen Membrane und der internen Membrane ist Paraffinöl (Weißöl, S933).

Ebenso ist auf eine ausreichende Dichtung zwischen den Zonen zu achten.

Die Daten hinsichtlich der Nutzung in explosionsgefährdeten Umgebungen sind in jedem Fall zu berücksichtigen.

Der Betrieb ist nur zulässig, wenn anwendungs- und prozessbedingte intensive elektrostatische Aufladungsprozesse ausgeschlossen sind.

Bei Einsatz in Atmosphären von brennbaren Stäuben ist der Druckmessumformer geschützt vor Beschädigungen und Schlag anzubringen.

Aus Sicherheitsgründen sollten Stromversorgung / Ausgangstromkreis des Druckmessumformers geerdet werden.

Zur Einhaltung der Sicherheitsrichtlinien ist für die Schutzklassen und Einsatzbereiche:

ATEX:

II 3G Ex nA IIC T6, T5 Gc /II 1D Ex ta IIIC T80/T90°C T₅₀₀90/100°C Da und II 2D Ex tb III C T80/T90°C Db,

die Verwendung der Schlagschutz-/ Sicherungs- Metallhülse zwingend erforderlich.

Die Schlagschutz-/Sicherungs-Metallhülse ist mit einem Anzugsdrehmoment von 20 Nm anzuziehen.

6 Technische Daten

6.1 HDA 4100 / HDA 4300

Eingangskenngrößen	HDA 4100 (Absolutdruck)						HDA 4300 (Relativdruck)							
		absolut und relativ			relativ				absolut und relativ			relativ		
Messbereiche	bar	1	2,5	-1 .. 1	-1.. 9	4	6	10	16	25	40	60	100	
Überlastbereiche	bar	3	8	3	32	12	20	32	50	80	120	200	200	
Berstdruck	bar	5	12	5	48	18	30	48	75	120	180	300	300	
		absolut und relativ			relativ				absolut und relativ			relativ		
Messbereiche	psi	15	30	50	100	150	250	500	1000	1500				
Überlastbereiche	psi	45	100	150	290	450	725	1500	2900	2900				
Berstdruck	psi	70	150	250	400	650	1000	2500	4300	4300				
Mechanischer Anschluss		siehe Typenschlüssel / Abmessungen												
Anzugsdrehmoment, empfohlen		siehe Abmessungen												
Medienberührende Teile								Standard	Frontbündig					
		Sensor						Keramik	Keramik					
		Anschlussstück						1.4301	1.4435; 1.4301					
		Dichtung						FPM /EPDM	FPM					
	O-Ring							FPM						
Druckmittlerflüssigkeit											Silikon freies Öl			
Ausgangsgrößen														
Ausgangssignal, zulässige Bürde		4 .. 20 mA (2-Leiter), $R_{Lmax.} = (U_B - 12 V) / 20 \text{ mA}$ [kΩ]												
Genauigkeit nach DIN 16086, Grenzpunkteinstellung	Typ.	$\leq \pm 0,5 \% \text{ FS}$												
	Max.	$\leq \pm 1,0 \% \text{ FS}$												
Genauigkeit bei Kleinstwerteneinstellung (B.F.S.L)	Typ.	$\leq \pm 0,25 \% \text{ FS}$												
	Max.	$\leq \pm 0,5 \% \text{ FS}$												
Temperaturkompensation Nullpunkt	Typ.	$\leq \pm 0,02 \% \text{ FS} / ^\circ\text{C}$												
	Max.	$\leq \pm 0,03 \% \text{ FS} / ^\circ\text{C}$												
Temperaturkompensation Spanne	Typ.	$\leq \pm 0,02 \% \text{ FS} / ^\circ\text{C}$												
	Max.	$\leq \pm 0,03 \% \text{ FS} / ^\circ\text{C}$												
Nicht-Linearität bei Grenzpunkteinstellung nach DIN 16086	Max.	$\leq \pm 0,5 \% \text{ FS}$												
Hysterese	Max.	$\leq \pm 0,4 \% \text{ FS}$												
Wiederholbarkeit		$\leq \pm 0,1 \% \text{ FS}$												
Anstiegszeit		$\leq 1,5 \text{ ms}$												
Langzeitdrift	Typ.	$\leq \pm 0,3 \% \text{ FS} / \text{Jahr}$												
Umgebungsbedingungen														
Kompensierter Temperaturbereich		-20 .. +85 °C												
Betriebs- /Umgebungs-temperaturbereich ¹⁾		T6, T80/85 °C, T ₅₀₀ 90°C : Ta = -20 .. +60°C												
		T5, T90 °C, T ₅₀₀ 100°C: Ta = -20 .. +70°C												
		T100°C, T ₅₀₀ 110°C: Ta = -20 .. +80°C												
		T4: Ta = -20 .. +85°C												
Mediumstemperaturbereich ¹⁾		T6, T80/85 °C, T ₅₀₀ 90°C : Ta = -20 .. +60°C												
		T5, T90 °C, T ₅₀₀ 100°C : Ta = -20 .. +70°C												
		T100°C, T ₅₀₀ 110°C: Ta = -20 .. +80°C												
		T4: Ta = -20 .. +85°C												
Lagertemperaturbereich		-40°C .. +100°C												
CE - Zeichen		EN 61000-6-1/ 2/ 3/ 4 ; EN 60079-0/ 11/ 15/ 26/ 31; EN 50303												
Vibrationsbeständigkeit nach DIN EN 60068-2-6 bei 10 .. 500Hz		$\leq 20 \text{ g}$ $\leq 10 \text{ g}$ bei Geräten mit elektr. Anschluss ½ NPT Conduit												
Schutzart nach DIN EN 60529 ²⁾		IP 65 (Stecker Binder 714 M18) IP 67 (M12x1 Stecker, Stecker EN175301-803)												
Schutzart nach ISO 20653		IP 6K9K (Conduit geschweißt)												

Relevante Daten für die Ex-Anwendung	Ex ia, ic	Ex nA, ta, tb, tc
Versorgungsspannung	U _i = 12 .. 28 V	12 .. 28 V
Maximaler Speisestrom	I _i = 100 mA	
Maximale Speiseleistung	P _i = 1W	Max. Leistungsaufnahme ≤ 1W
Anschlusskapazität des Sensors	C _i = ≤ 22 nF	
Induktivität des Sensors	L _i = 0 mH	
Isolationsspannung ³⁾	50 V AC, mit integriertem Überspannungsschutz nach EN 61000-6-2 oder 500 V AC	
Sonstige Größen		
Verpolungsschutz der Versorgungsspannung, Überspannungs-, Übersteuerungsschutz, Lastkurzschlussfestigkeit	vorhanden	
Restwelligkeit Versorgungsspannung	≤ 5 %	
Stromaufnahme	≤ 25 mA	
Lebensdauer	> 10 Mio. Lastwechsel 0 .. 100% FS	
Gewicht	ca. 150 g (Standard) ca. 180 g (frontbündige Ausführung) ca. 300 g mit ½ Conduit	

Anmerkung: **FS (Full Scale)** = bezogen auf den vollen Messbereich
B.F.S.L. = Best Fit Straight Line

¹⁾ -20 °C mit FPM-Dichtung oder EPDM-Dichtung, -40 °C auf Anfrage

²⁾ bei montierter Kupplungsdose entsprechender Schutzart

³⁾ siehe Typenschlüssel „Isolationsspannung“

6.2 HDA 4400 / HDA 4700

Eingangskenngrößen	HDA 4400										HDA 4700							
	bar	1 .. 5	1..9	2,5	6	16	25	40	60	100	160	250	400	600	1000	1600	2000	
Messbereiche	bar	15	20	6	15	32	50	80	120	200	320	500	800	900 ¹⁾	1600	2400	3000	
Überlastbereiche	bar	100	100	100	100	200	125	200	300	500	800	1000	2000	2000	3000	3000	4000	
Berstdruck	bar	100	100	100	100	200	125	200	300	500	800	1000	2000	2000	3000	3000	4000	
Messbereich	psi	-15..50	-15..75	100	150	200	300	400	500	600								
	psi	1500	2000	3000	5000	6000	9000	10000	15000	20000	30000							
Überlastbereich	psi	210	210	290	290	460	1160	1160	1160	1160								
	psi	2900	4600	7250	11600	11600	13050 ¹⁾	13050 ¹⁾	23200	34800	43500							
Berstdruck	psi	1450	1450	1450	1450	2900	2900	2900	2900	2900								
	psi	7250	11600	14500	29000	29000	29000	29000	43500	43500	58000							
Mechanischer Anschluss	siehe Typenschlüssel / Abmessungen																	
Anzugsdrehmoment, empfohlen	siehe Abmessungen																	
Medienberührende Teile	Standard										Frontbündig							
	Edelstahl	1.4542; 1.4571; 1.4435; 1.4404; 1.4301; 1.4548										1.4435; 1.4301						
	Dichtung	FPM										FPM						
	O-Ring											FPM						
Druckmittlerflüssigkeit	Silikon freies Öl																	
Ausgangsgrößen																		
Ausgangssignal, zulässige Bürde	4 .. 20 mA (2-Leiter), R _{Lmax.} = (U _B - 12 V) / 20 mA [kΩ]																	
Genauigkeit nach DIN 16086, Grenzpunkteinstellung	Typ.	≤ ± 0,5 % FS										≤ ± 0,25 % FS						
	Max.	≤ ± 1,0 % FS										≤ ± 0,5 % FS						
Genauigkeit bei Kleinstwerteneinstellung (B.F.S.L.)	Typ.	≤ ± 0,25 % FS										≤ ± 0,15 % FS						
	Max.	≤ ± 0,5 % FS										≤ ± 0,25 % FS						
Temperaturkompensation Nullpunkt	Typ.	≤ ± 0,015 % FS/ °C										≤ ± 0,008 % FS/ °C						
	Max.	≤ ± 0,025 % FS/ °C										≤ ± 0,015 % FS/ °C						
Temperaturkompensation Spanne	Typ.	≤ ± 0,015 % FS/ °C										≤ ± 0,008 % FS/ °C						
	Max.	≤ ± 0,025 % FS/ °C										≤ ± 0,015 % FS/ °C						
Nicht-Linearität bei Grenzpunkteinstellung nach DIN 16086	Max.	≤ ± 0,3% FS										≤ ± 0,3 % FS						
Hysterese	Max.	≤ ± 0,4 % FS										≤ ± 0,1 % FS						
Wiederholbarkeit		≤ ± 0,1 % FS										≤ ± 0,05 % FS						
Anstiegszeit		≤ 1,5 ms										≤ 1,5 ms						
Langzeitdrift	Typ.	≤ ± 0,3 % FS / Jahr										≤ ± 0,1 % FS / Jahr						

Umgebungsbedingungen		
Kompensierter Temperaturbereich		-25 .. +85 °C
Betriebs-/ Umgebungs-temperaturbereich ²⁾		T6, T80/85 °C, T ₅₀₀ 90 °C : Ta = -20 .. +60 °C T5, T90 °C, T ₅₀₀ 100 °C : Ta = -20 .. +70 °C T100 °C, T ₅₀₀ 110 °C : Ta = -20 .. +80 °C T4: Ta = -20 .. +85 °C
Mediumtemperaturbereich ²⁾		T6, T80/85 °C, T ₅₀₀ 90 °C : Ta = -20 .. +60 °C T5, T90 °C, T ₅₀₀ 100 °C : Ta = -20 .. +70 °C T100 °C, T ₅₀₀ 110 °C : Ta = -20 .. +80 °C T4: Ta = -20 .. +85 °C
Lagertemperaturbereich		-40 .. +100 °C
CE - Zeichen		EN 61000-6-1/ 2/ 3/ 4 ; EN 60079-0/ 11/ 15/ 26/ 31 ; EN 50303
Vibrationsbeständigkeit nach DIN EN 60068-2-6 bei 10 ..500Hz		≤ 20 g ≤ 10 g bei Geräten mit elektr. Anschluss ½ NPT Conduit
Schutzart nach DIN EN 60529 ³⁾		IP 65 (Stecker Binder 714 M18) IP 67 (M12x1 Stecker, Stecker EN175301-803) IP6K9K (Conduit geschweißt)
Schutzart nach ISO 20653		
Relevante Daten für die Ex-Anwendung	Ex ia, ic	Ex nA, ta, tb, tc
Versorgungsspannung	Ui = 12 .. 28 V	12 .. 28 V
Maximaler Speisestrom	li = 100 mA	
Maximale Speiseleistung	Pi = 1W	Max. Leistungsaufnahme ≤ 1W
Anschlusskapazität des Sensors	Ci = ≤ 22 nF	
Induktivität des Sensors	Li = 0 mH	
Isolationsspannung ⁴⁾	50 V AC, mit integriertem Überspannungsschutz nach EN 61000-6-2 oder 500 VAC	
Sonstige Größen		
Verpolungsschutz der Versorgungsspannung, Überspannungs-, Übersteuerungsschutz, Lastkurzschlussfestigkeit	vorhanden	
Restwelligkeit	≤ 5 %	
Versorgungsspannung		
Stromaufnahme	≤ 25 mA	
Lebensdauer ⁵⁾	> 10 Mio. Lastwechsel 0 .. 100% FS	
Gewicht	ca. 150 g (Standard) ca. 180 g (Frontbündig) ca. 300 g mit 1/2 Conduit	

Anmerkung: **FS (Full Scale)** = bezogen auf den vollen Messbereich

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

¹⁾ in der Standardausführung Überlastbereich 1000 bar (14500 psi), in der Ausführung Frontbündig Überlastbereich 900 bar (13050 psi)

²⁾ -20 °C mit FPM-Dichtung oder EPDM-Dichtung, -40 °C auf Anfrage

³⁾ bei montierter Kupplungsdose entsprechender Schutzart

⁴⁾ siehe Typenschlüssel „Isolationsspannung“

⁵⁾ Messbereich ≥ 1000 bar: >1 Million Lastwechsel (0 .. 100 % FS)

7 Typenschlüssel zur Identifikation des gelieferten Gerätes

7.1 Standard

7.1.1 Typenschlüssel HDA 4100 / HDA 4300

HDA 4 X X X - A - XXXXX - A X X - XXX - F1 (psi) XX inch

Genauigkeit

- 1 = 1% FS max., Keramik absolut
- 3 = 1% FS max., Keramik relativ

Mechanischer Anschluss

- 4 = G 1/4 A ISO 1179-2, Außengewinde
- 5 = 7/16-20 UNF 2B (SAE 4), Innengewinde
- 6 = 7/16-20 UNF 2A (SAE 4), Außengewinde
- 7 = 9/16-18 UNF 2A (SAE 6), Außengewinde
- 8 = 1/4-18 NPT, Außengewinde
- C = SF250CX20, Autoclave (7/16-20 UNF 2B), Innengewinde
- F = 1/4-18 NPT, Innengewinde

Elektrischer Anschluss

- 1 = freies Kabelende
- 4 = Gerätestecker, Binder Serie 714 M18, 4 pol.
- 5 = Gerätestecker, EN 175301-803, 3 pol. + PE
- 6 = Gerätestecker, M 12 x 1, 4 pol.
- 9 = 1/2-14 NPT Conduit (Außengewinde) Einzeladern
- A = Gerätestecker EN 175301-803, 3 pol. + PE, 1/2" Conduit Innengewinde
- G = 1/2-14 NPT Conduit (Außengewinde) freies Kabelende

Signal

- A = 4 .. 20 mA

Messbereiche

Angabe in bar oder psi (bei psi zusätzliches Kennzeichen nach der Modifikationsnummer)

Zulassung

- A = ATEX (genauere Angaben siehe Zertifikat)

Isolationsspannung

- H = 500 V AC gegen Gehäuse
- N = 50 V AC gegen Gehäuse

Schutzklassen und Einsatzgebiete (siehe Tabelle, Kap.7.3)

ATEX

1 =	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
9 =	II 1D	Ex ia IIIC T85 °C Da
	II 3G	Ex nA IIC T6, T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90 °C T ₅₀₀ 90/100 °C Da
	II 2D	Ex tb IIIC T80/T90 °C Db ¹⁾
C =	II 3G	Ex ic IIC T6, T5 Gc
	II 3D	Ex ic IIIC T80/T90 °C Dc

Modifikationsnummer

000 = Standard (andere Nummer wird z.B. verwendet für: Versionen Düse, PIN-Belegung, Stecker am freien Kabelende)

Dichtungsmaterial (medienberührend)

- F = FPM-Dichtung (z.B. für Hydrauliköle)
- E = EPDM-Dichtung (z.B. für Kältemittel)

Anschlussmaterial (medienberührend)

- 1 = Edelstahl

(psi)

Zusätzliche Kennzeichnung für psi-Messbereiche (entfällt bei bar-Messbereichen)

Kabellänge (z.B. für Conduit-Rohranschluss oder freies Kabelende)

Angabe in m oder inch im Klartext

¹⁾ Bei elektrischem Anschluss "6" nur in Verbindung mit der Schlagschutz-Sicherungs-Metallhülse

7.1.2 Typenschlüssel HDA 4400 / HDA 4700

HDA 4 X X X - A - XXXXX - A X X - XXX (psi) XX inch

Genauigkeit

4 = 1% FS max.
7 = 0,5% FS max.

Mechanischer Anschluss

1 = G1/2 DIN EN 837
2 = G1/2 A ISO 1179-2
4 = G 1/4 A ISO 1179-2, Außengewinde
5 = 7/16-20 UNF 2B (SAE 4), Innengewinde
6 = 7/16-20 UNF 2A (SAE 4), Außengewinde
7 = 9/16-18 UNF 2A (SAE 6), Außengewinde
8 = 1/4-18 NPT, Außengewinde
B = F250C Autoclave (9/16-18 UNF2B), Innengewinde
C = SF250CX20, Autoclave (7/16-20 UNF 2B), Innengewinde
F = 1/4-18 NPT, Innengewinde

Elektrischer Anschluss

1 = freies Kabelende
4 = Gerätestecker, Binder Serie 714 M18, 4 pol.
5 = Gerätestecker, EN 175301-803, 3 pol. + PE
6 = Gerätestecker, M 12 x 1, 4 pol.
9 = 1/2-14 NPT Conduit (Außengewinde) Einzeladern
A = Gerätestecker EN 175301-803, 3 pol. + PE, 1/2" Conduit Innengewinde
G = 1/2-14 NPT Conduit (Außengewinde) freies Kabelende

Signal

A = 4 .. 20 mA

Messbereiche

Angabe in bar oder psi (bei psi zusätzliches Kennzeichen nach der Modifikationsnummer)

Zulassung

A = ATEX (genauere Angaben siehe Zertifikat)

Isolationsspannung

H = 500 V AC gegen Gehäuse
N = 50 V AC gegen Gehäuse

Schutzklassen und Einsatzgebiete (siehe Tabelle, Kap.7.3)

ATEX

	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
1 =	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
	II 1D	Ex ia IIIC T85°C Da
9 =	II 3G	Ex nA IIC T6,T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6,T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modifikationsnummer

000 = Standard
(andere Nummer wird z.B. verwendet für: Versionen Düse, PIN-Belegung, Stecker am freien Kabelende)

(psi)

Zusätzliche Kennzeichnung für psi-Messbereiche (entfällt bei bar-Messbereichen)

Kabellänge (z.B. für Conduit-Rohranschluss oder freies Kabelende)

Angabe in m oder inch im Klartext

¹⁾ Bei elektrischem Anschluss "6" nur in Verbindung mit der Schlagschutz-Sicherungs-Metallhülse

7.2 Typenschlüssel mit frontbündiger Membran

7.2.1 Typenschlüssel HDA 4300 mit frontbündiger Membran

HDA 4 3 Z X - A - XXXX - XXX - ANX - XXX (psi) XX inch

Genauigkeit _____

3 = 1% FS max., Keramik relativ

Prozessanschluss _____

Z = Frontbündig

Anschlussart Elektrisch _____

1 = freies Kabelende

4 = Gerätestecker, Binder Serie 714 M18, 4 pol.

5 = Gerätestecker, EN 175301-803, 3 pol. + PE

6 = Gerätestecker, M 12 x 1, 4 pol.

9 = 1/2-14 NPT Conduit (Außengewinde) Einzeladern

A = Gerätestecker EN 175301-803, 3 pol. + PE, 1/2" Conduit Innengewinde

G = 1/2-14 NPT Conduit (Außengewinde) freies Kabelende

Signal _____

A = 4 .. 20 mA

Messbereiche _____

Angabe in bar oder psi (bei psi zusätzliches Kennzeichen nach der Modifikationsnummer)

Anschlussart mechanisch _____

G01 = G1/2 A, DIN 3852

G02 = G1/2 mit zusätzlicher frontseitiger O-Ring Dichtung

G04 = G1/4 mit zusätzlicher frontseitiger O-Ring-Dichtung

Zulassung _____

A = ATEX (genauere Angaben siehe Zertifikat)

Isolationsspannung _____

H = 500 V AC gegen Gehäuse

N = 50 V AC gegen Gehäuse

Schutzklassen und Einsatzgebiete (siehe Tabelle, Kap.7.3) _____

ATEX

	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
1 =	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
	II 1D	Ex ia IIIC T85°C Da
9 =	II 3G	Ex nA IIC T6, T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6, T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modifikationsnummer _____

000 = Standard

(andere Nummer wird z.B. verwendet für: Versionen Düse, PIN-Belegung, Stecker am freien Kabelende)

(psi) _____

Zusätzliche Kennzeichnung für psi-Messbereiche (entfällt bei bar-Messbereichen)

Kabellänge (z.B. für Conduit-Rohranschluss oder freies Kabelende) _____

Angabe in m oder inch im Klartext

¹⁾ Bei elektrischem Anschluss "6" nur in Verbindung mit der Schlagschutz-Sicherungs-Metallhülse

7.2.2 Typenschlüssel HDA 4400 / HDA 4700 mit frontbündiger Membran

HDA 4 X Z X - A - XXXXX - XXX - ANX - XXX (psi) XX inch

Genauigkeit

4 = 1% FS max
7 = 0,5 % FS max

Prozessanschluss

Z = Frontbündig

Anschlussart Elektrisch

1 = freies Kabelende
4 = Gerätestecker, Binder Serie 714 M18, 4 pol.
5 = Gerätestecker, EN 175301-803, 3 pol. + PE
6 = Gerätestecker, M 12 x 1, 4 pol.
9 = 1/2-14 NPT Conduit (Außengewinde) Einzeladern
A = Gerätestecker EN 175301-803, 3 pol. + PE, 1/2" Conduit Innengewinde
G = 1/2-14 NPT Conduit (Außengewinde) freies Kabelende

Signal

A = 4 .. 20 mA

Messbereiche

Angabe in bar oder psi (bei psi zusätzliches Kennzeichen nach der Modifikationsnummer)

Anschlussart mechanisch

G01 = G1/2 A, DIN 3852
G02 = G1/2 mit zusätzlicher frontseitiger O-Ring Dichtung
G04 = G1/4 mit zusätzlicher frontseitiger O-Ring-Dichtung

Zulassung

A = ATEX (genauere Angaben siehe Zertifikat)

Isolationsspannung

H = 500 V AC gegen Gehäuse
N = 50 V AC gegen Gehäuse

Schutzklassen und Einsatzgebiete (siehe Tabelle, Kap.7.3)

ATEX

1 =	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
	II 1D	Ex ia IIIC T85°C Da
9 =	II 3G	Ex nA IIC T6, T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6, T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modifikationsnummer

000 = Standard
(andere Nummer wird z.B. verwendet für: Versionen Düse, PIN-Belegung, Stecker am freien Kabelende)

(psi)

Zusätzliche Kennzeichnung für psi-Messbereiche (entfällt bei bar-Messbereichen)

Kabellänge (z.B. für Conduit-Rohranschluss oder freies Kabelende)

Angabe in m oder inch im Klartext

¹⁾ Bei elektrischem Anschluss "6" nur in Verbindung mit der Schlagschutz-Sicherungs-Metallhülse

7.3 Auswertetabelle (Protection concept): Zuordnung der Schutzklassen und Einsatzbereiche

Protection concept (Schutzklassen und Einsatzbereiche)						
Kennzahl - Typenschlüssel	1			9	A	C
ATEX KEMA 05 ATEX 1016X	I M1 Ex ia I Ma	II 1G Ex ia IIC T6 Ga II 1/2G Ex ia IIC T6 Ga/Gb II 1D Ex ia IIIC T85°C Da	II 2G Ex ia IIC T6 Gb	II 3G Ex nA IIC T6,T5 Gc	II 1D Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da II 2D Ex tb IIIC T80/T90°C Db	II 3G Ex ic IIC T6,T5 Gc II 3D Ex ic IIIC T80/T90°C Dc
Einsatzgebiete	Bergbau Schutzart: eigensicher ia mit Barriere	Gase/ leitender Staub Schutzart: eigensicher ia mit Barriere	Gase Schutzart: eigensicher ia mit Barriere	Gase Schutzart: nicht funkend nA	leitender Staub Schutzart: staubgeschütztes Gehäuse	Gase/ leitender Staub Schutzart: Eigensicher ic mit Barriere
Elektrischer Anschluss (siehe Typenschlüssel)	1, 4, 5, 6, 9, G			1, 6, 9, G	1, 6, 9, G	1, 4, 5, 6, 9, G

8 Seriennummer

In der Seriennummer ist neben der fortlaufenden Seriennummer die Kalenderwoche und das Jahr der Herstellung des Geräts enthalten.

Aufbau Seriennummer:

xyy kz zzzzzz

- X Fertigungsjahr z.B. : 7 → 2017
- yy Kalenderwoche z.B. : 12 → KW 12
- k Seriennummer-Index z.B. : -, A, B
- zzzzzz fortlaufende Seriennummer z.B. : 123456

HDA 4445-A-0250-AN1-000

KEMA 05ATEX 1016X

I M1 Ex ia I Ma

II 1G Ex ia IIC T6 Ga

II 1/2G Ex ia IIC T6 Ga/Gb


II 2G Ex ia IIC T6 Gb

II 1D Ex ia IIIC T85 °C Da


Seriennr.: **712A123456**

HYDAC ELECTRONIC

MADE IN GERMANY 921320




PN: 250bar
Signal: 4..20 mA
Ta: -20...+60 °C



1: +
2: -
PE

0158



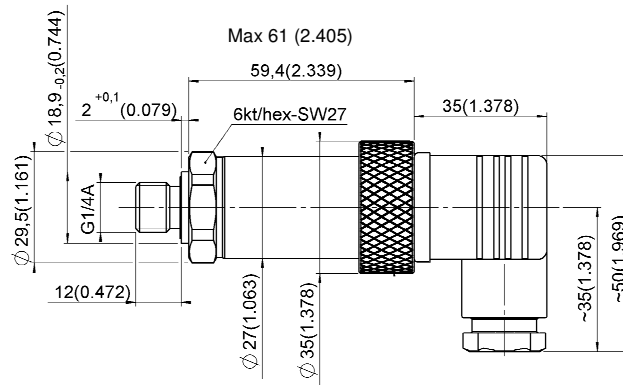
9 Anschlussbelegung

Die Anschlussbelegung für den elektrischen Anschluss ist auf dem Typenschild des Druckmessumformers dargestellt.

10 Geräteabmessungen

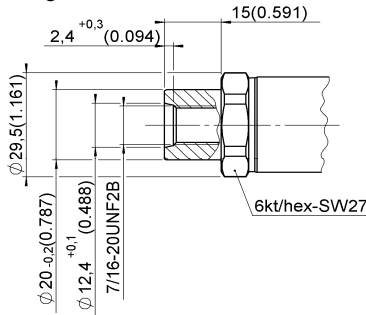
G 1/4 A ISO 1179-2,
 Außengewinde
 Anzugsdrehmoment: 20 Nnr

Gerätestecker
 EN 175301
 3 pol. + PE

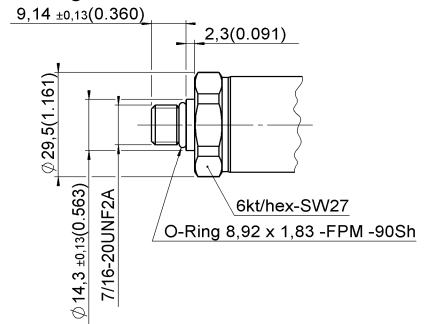


10.1 Mechanische Anschlussvarianten :

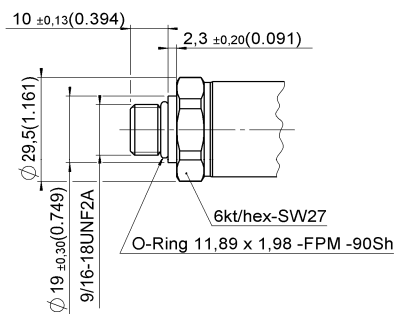
7/16-20 UNF 2B (SAE 4), 7/16-20 UNF 2A (SAE 4),
 Innengewinde
 Anzugsdrehmoment: 15 Nm



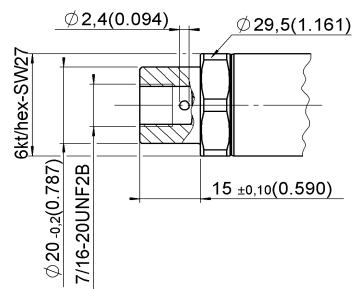
Außengewinde
 Anzugsdrehmoment: 15 Nm



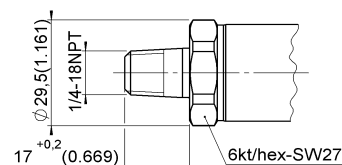
9/16-18 UNF 2A (SAE 6),
 Außengewinde
 Anzugsdrehmoment: 20 Nm



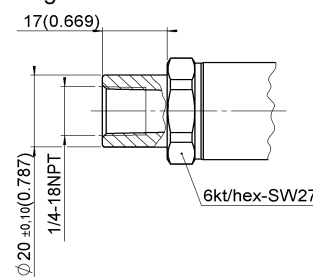
SF 250CX20, Autoclave
 (7/16-20 UNF 2B), Innengewinde
 Anzugsdrehmoment: 15 Nm



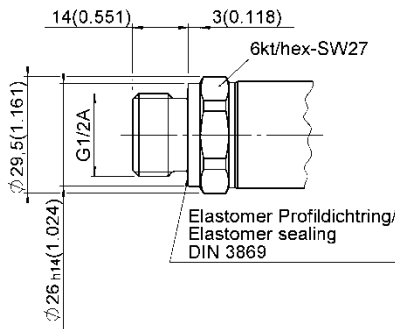
1/4-18 NPT,
 Außengewinde
 Anzugsdrehmoment: maximal 40 Nm



1/4-18 NPT,
 Innengewinde
 Anzugsdrehmoment: maximal 40 Nm

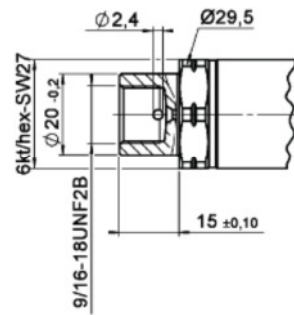


G 1/2 A ISO 1179-2
Anzugsdrehmoment: maximal 45 Nm



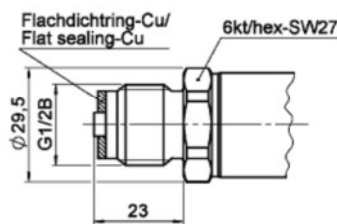
HDA 4X2X
Einschraubzapfen/
Screwed end
DIN 3852-E-G-1/2A

F250C Autoclave (9/16-18 UNF2B), Innengewinde
Anzugsdrehmoment: maximal 40 Nm



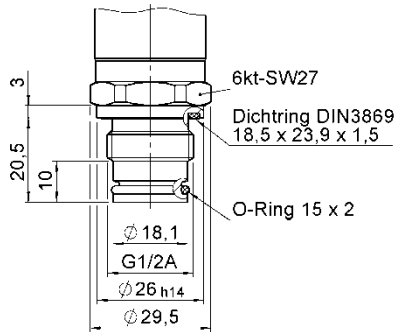
HDA 4XB
Einschraubloch/
Screw plug hole
9/16-18UNF2B
(F250C, Autoclave)

G1/2 DIN EN 837
Anzugsdrehmoment: maximal 45Nm

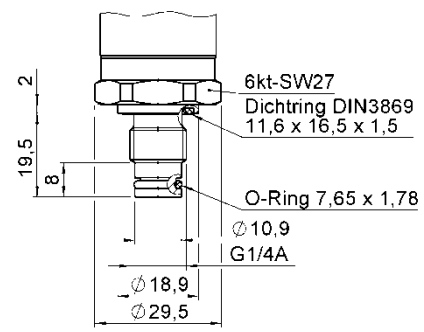


HDA 4X15
Einschraubzapfen/
Screwed end
DIN EN 837-G1/2B

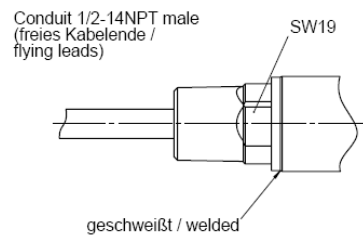
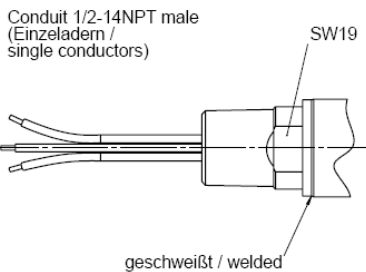
G 1/2 mit zusätzlicher frontseitiger O-Ring-Dichtung,
Anzugsdrehmoment: maximal 45 Nm



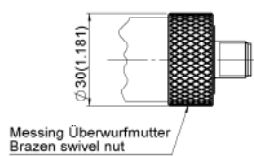
G 1/4 mit zusätzlicher frontseitiger O-Ring-Dichtung
Anzugsdrehmoment: maximal 20 Nm



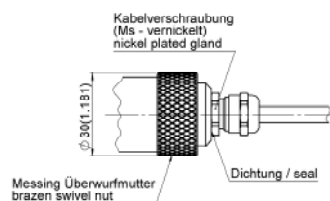
10.2 Elektrische Anschlussvarianten :



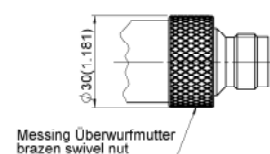
Gerätestecker, M12x1, 4 pol.



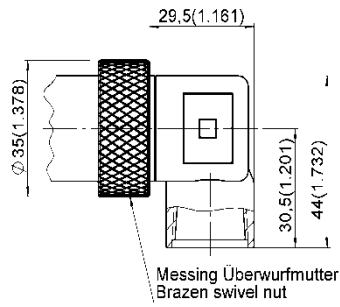
Freies Kabelende



Gerätestecker, Binder Serie 714 M18, 4 pol.



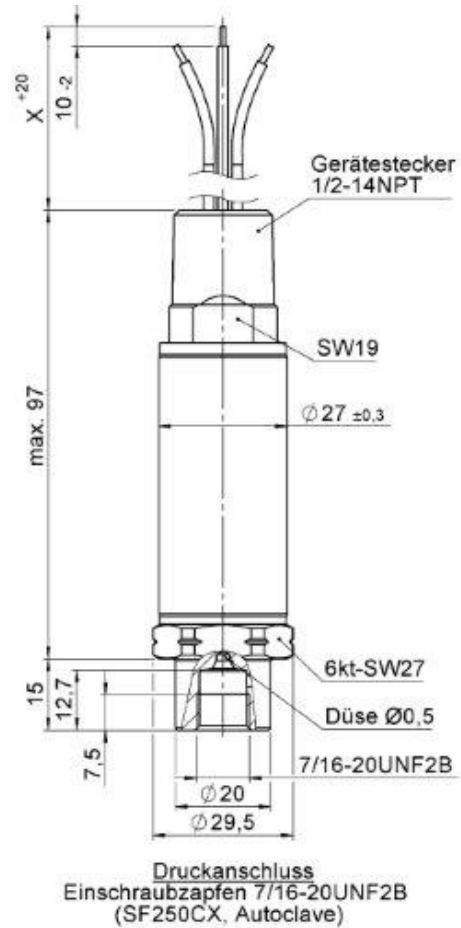
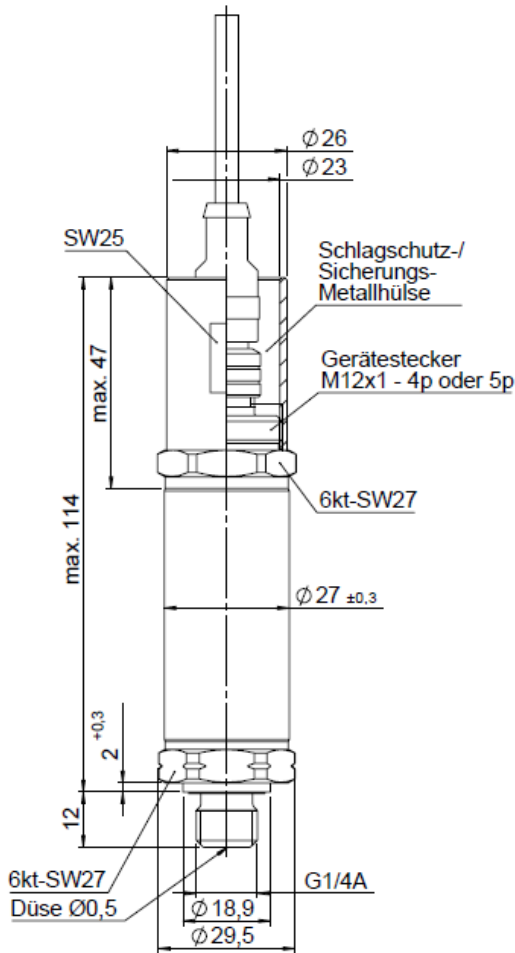
Gerätestecker EN 175301-803 (DIN 43650) , 3 pol. + PE,
1/2" Conduit Innengewinde



Geräteabmessungen


Mit Schlagschutz-Sicherungs-Metallhülse

Mit elektrischen Anschluss 1/2-14 NPT Conduit



11 Zertifikate

11.1 ATEX



CERTIFICATE

(1) EU-Type Examination

(2) Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU

(3) EU-Type Examination Certificate Number: **KEMA 05ATEX1016 X** Issue Number: **4**

(4) Product: **Pressure Transmitter Type HDA 4...-A-...-(-)-A-...
Type HDA 4...-A-...-(-)-E-... and
Type HDA 4...-AA-...-(-)-E-... (-)**

(5) Manufacturer: **Hydac Electronic GmbH**

(6) Address: **Hauptstraße 27, 66128 Saarbrücken, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/KEM/ExTR08.0003/04.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2012 + A11	EN 60079-11 : 2012	EN 60079-15 : 2010
EN 60079-26 : 2015	EN 60079-31 : 2014	EN 50303 : 2000

 except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.


(12) The marking of the product shall include the following:

I M 1 Ex ia I Ma	II 1 D Ex ia IIIC Txx °C Da
II 1 G Ex ia IIC T6/T5 Ga,	II 3 D Ex ic IIIC Txx °C Dc
II 1/2 G Ex ia IIC T6/T5 Ga/Gb	II 1 D Ex ta IIIC Txx °C T500yy °C Da
II 2 G Ex ia IIC T6/T5 Gb;	II 2 D Ex tb IIIC Txx °C Db
II 3 G Ex ic IIC T6, T5, T4 Gc	II 3 D Ex tc IIIC Txx Dc
II 3 G Ex nA IIC T6, T5, T4 Gc	

For details refer to nomenclature in the schedule to this certificate.


Date of certification: 1 June 2016

DEKRA Certification B.V.



R.H.D. Pomme
Certification Manager

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T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered Arnhem 09085396



(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate KEMA 05ATEX1016 X**

Issue No. 4

(15) **Description**

Pressure Transmitter Type HDA 4...-A-...-(...)-A-... and Type HDA 4...-A-...-(...)-E-... is a two wire transmitter used to convert a pressure signal into a 4 – 20 mA output signal. Double Pressure Transmitter Type HDA 4...-AA-...-...-E-... (..) is the same type, but fully redundant. Two pressure sensor cells each separated and both are designed as a two-wire (4...20 mA) system.

The electrical components of the transmitter are completely encapsulated within a metal enclosure; the electrical connections are done by a connector or via a permanently connected cable. The enclosure of Pressure Transmitter Type HDA 4...-A-...-(...)-g-... and Type HAD 4...-AA-...-...-g-... (..) (with g = 9, A, B or C) provides a degree of protection of at least IP64 in accordance with EN 60529.

All variations of electrical connections are allowed for the intrinsically safe versions.

Thermal data

Ambient temperature range:

For Pressure Transmitter Type HDA 4abc-A-d-(e)-Afg-h-i1 j k and Type HDA 4abc-A-d-(e)-Efg-h-i1 j k (versions with a single pressure sensor cell):

- apparatus in types of protection Ex ia I, Ex ia IIC and Ex ia IIIC: -40 °C to +60 °C;
- apparatus in types of protection Ex ic IIIC, Ex ta IIIC, Ex tb IIIC and Ex tc IIIC: -40 °C to +80 °C;
- apparatus in types of protection Ex nA IIC, and Ex ic IIC: -40 °C to +85 °C.

For Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k) (version with two pressure sensor cells):

- apparatus in types of protection Ex ia I, Ex ia IIC and Ex ia IIIC: -40 °C to +70 °C;
- apparatus in types of protection Ex ic IIIC, Ex ta IIIC, Ex tb IIIC and Ex tc IIIC: -40 °C to +80 °C;
- apparatus in types of protection Ex nA IIC, and Ex ic IIC: -40 °C to +85 °C.

Temperature class and the maximum surface temperature:

The temperature class and the maximum surface temperature T and T₅₀₀ are depending on the maximum ambient temperature:

For Pressure Transmitter Type HDA 4abc-A-d-(e)-Afg-h-i1 j k and Type HDA 4abc-A-d-(e)-Efg-h-i1 j k (versions with a single pressure sensor cell):

Maximum ambient temperature	Temperature class	Max surface temperature T	Max surface temperature T ₅₀₀
60 °C	T6	80 °C / 85 °C	90 °C
70 °C	T5	90 °C	100 °C
80 °C		100 °C	110 °C
85 °C	T4		

For Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k) (version with two pressure sensor cells):

Maximum ambient temperature	Temperature class	Max surface temperature T	Max surface temperature T ₅₀₀
60 °C	T6	85 °C	120 °C
70 °C	T5	95 °C	130 °C
80 °C		105 °C	140 °C
85 °C	T4		

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Version 1 (2016-04)

(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Nomenclature

Pressure Transmitter Type:

HDA 4abc-A-d-(e)-Afg-h-1 j k

Approval:

A = ATEX

a =	measurement accuracy	1 digit
b =	mechanical connection process	alphanumerical code (1 digit)
c =	electrical connection	alphanumerical code (1 digit)
d =	measuring range	4 digits in bar / 5 digits in psi
(e) =	mechanical connection, only for flush mount version, b = Z	alphanumerical code (3 digits)
f =	isolation variants	H = 500 VAC isolation from enclosure N = 50 VAC isolation from enclosure (functional only)
g =	approval variants	1 = I M 1 Ex ia I Ma and II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 2 = I M 1 Ex ia I Ma and II 2 G Ex ia IIC T6 Gb 3 = II 2 G Ex ia IIC T6 Gb 4 = II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 5 = I M 1 Ex ia I Ma 9 = II 3 G Ex nA IIC T6, T5, T4 Gc A = II 1 D Ex ta IIIC T80 °C T ₅₀₀ 90 °C or T90 °C T ₅₀₀ 100 °C or T100 °C T ₅₀₀ 110 °C Da and II 2 D Ex tb IIIC T80 °C or T90 °C or T100 °C Db B = II 3 D Ex tc IIIC T80 °C or T90 °C or T100 °C Dc C = II 3 G Ex ic IIC T6, T5, T4 Gc II 3 D Ex ic IIIC T80 °C or T90 °C or T100 °C Dc
h =	3 digit indication for modifications	000 = for standard version
i =	sealing material *)	E = EPDM sealing F = FPM sealing H = HNBR sealing N = NBR sealing P = PU sealing
1 =	stainless steel medium connection *)	
j =	unit of measurement	psi = imperial unit psi none bar
(k) =	length of cable (if applicable)	in cm or m or inch as indicated
k =	no paranthesis in case, j = psi	
NOTE *) only applicable for models with a = 1 or 3		

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Version 1 (2016-04)



(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Nomenclature (continued)

Pressure Transmitter Type:
Approval:

HDA 4abc-A-d-(e)-Efg-h-i j k
E = IECEX + ATEX

a =	measurement accuracy	1 digit
b =	mechanical connection process	alphanumeric code (1 digit)
c =	electrical connection	alphanumeric code (1 digit)
d =	measuring range	4 digits in bar / 5 digits in psi
(e) =	mechanical connection, only for flush mount version, b = Z	alphanumeric code (3 digits)
f =	isolation variants	H = 500 VAC isolation from enclosure N = 50 VAC isolation from enclosure (functional only)
g =	approval variants	1 = I M 1 Ex ia I Ma and II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 2 = I M 1 Ex ia I Ma and II 2 G Ex ia IIC T6 Gb 3 = II 2 G Ex ia IIC T6 Gb 4 = II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 5 = I M 1 Ex ia I Ma 9 = II 3 G Ex nA IIC T6, T5, T4 Gc A = II 1 D Ex ta IIIC T80 °C T ₅₀₀ 90 °C or T90 °C T ₅₀₀ 100 °C or T100 °C T ₅₀₀ 110 °C Da and II 2 D Ex tb IIIC T80 °C or T90 °C or T100 °C Db B = II 3 D Ex tc IIIC T80 °C or T90 °C or T100 °C Dc C = II 3 G Ex ic IIC T6, T5, T4 Gc II 3 D Ex ic IIIC T80 °C or T90 °C or T100 °C Dc
h =	3 digit indication for modifications	000 = for standard version
i =	sealing material *)	E = EPDM sealing F = FPM sealing H = HNBR sealing N = NBR sealing P = PU sealing
1 =	stainless steel medium connection *)	
j =	unit of measurement	psi = imperial unit psi none bar
(k) =	length of cable (if applicable)	in cm or m or inch as indicated
k =	no paranthesis in case, j = psi	
NOTE *) only applicable for models with a = 1 or 3		



(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Nomenclature (continued)

Double Pressure Transmitter Type:
Approval:

HDA 4abc-AA-d-e-Efg-hjj (k)
E = IECEx + ATEX

a =	measurement accuracy	1 digit
b =	mechanical connection process	alphanumeric code (1 digit)
c =	electrical connection	alphanumeric code (1 digit)
d =	measuring range channel 1	4 digits in bar / 5 digits in psi
e =	measuring range channel 2	4 digits in bar / 5 digits in psi
f =	isolation variants	H = 500 VAC isolation from enclosure N = 50 VAC isolation from enclosure (functional only)
g =	approval variants	1 = I M 1 Ex ia I Ma II 1 G Ex ia IIC T6/T5 Ga and II 1/2 G Ex ia IIC T6/T5 Ga/Gb and II 2 G Ex ia IIC T6/T5 Gb II 1 D Ex ia IIIC T85 °C or T95 °C Da 2 = I M 1 Ex ia I Ma II 2 G Ex ia IIC T6/T5 Gb 3 = II 2 G Ex ia IIC T6/T5 Gb 4 = II 1 G Ex ia IIC T6/T5 Ga and II 1/2 G Ex ia IIC T6/T5 Ga/Gb and II 2 G Ex ia IIC T6/T5 Gb II 1 D Ex ia IIIC T85 °C or T95 °C Da 5 = I M 1 Ex ia I Ma 9 = II 3 G Ex nA IIC T6, T5, T4 Gc A = II 1 D Ex ta IIIC T85 °C T ₅₀₀ 120 °C or T95 °C T ₅₀₀ 130 °C or T105 °C T ₅₀₀ 140 °C Da and II 2 D Ex tb IIIC T85 °C or T95 °C or T105 °C Db B = II 3 D Ex tc IIIC T85 °C or T95 °C or T105 °C Dc C = II 3 G Ex ic IIC T6, T5, T4 Gc II 3 D Ex ic IIIC T85 °C or T95 °C or T105 °C Dc
hjj =	3 digit indication for modifications	000 = for standard version (tube diameter 27) 1xx = Modification (tube diameter 35 and 2 x M12x1)
(k) =	length of cable (if applicable)	in cm or m or inch as indicated

(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Electrical dataIntrinsically safe versions:

Supply/output circuit (connections + and -):
in type of protection intrinsic safety Ex ia I, Ex ia IIC, Ex ic IIC and Ex ia IIIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

Pressure Transmitter Type HDA 4abc-A-d-(e)-fg-h-i j k:

$U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 1 \text{ W}$; $C_i = 22 \text{ nF}$; $L_i = 0 \text{ mH}$.

Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k), when connected to 2 intrinsically safe power supplies:

Signal 1: $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 0,7 \text{ W}$; $C_i = 22 \text{ nF}$; $L_i = 0 \text{ mH}$;

Signal 2: $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 0,7 \text{ W}$; $C_i = 22 \text{ nF}$; $L_i = 0 \text{ mH}$.

Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k), when connected to 1 intrinsically safe power supply:

Signals 1 + 2: $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 0,7 \text{ W}$; $C_i = 33 \text{ nF}$; $L_i = 0 \text{ mH}$.

From a safety point of view, the supply/output circuit of Pressure Transmitter Type HDA 4...-A-...-(...)-N-... and Type HDA 4...-AA-...-...-N-... (...) shall be considered to be connected to earth.

Other versions:

Supply/output circuit (connections + and -):

$U \leq 28 \text{ V}$ All models;

$P \leq 1 \text{ W}$ Pressure Transmitter Type HDA 4abc-A-d-(e)-fg-h-i j k;

$P \leq 1,4 \text{ W}$ Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k)

Signal 1 $\leq 0,7 \text{ W}$ and signal 2 $\leq 0,7 \text{ W}$.

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/KEM/ExTR08.0003/04.

(13) **SCHEDULE**(14) **to EU-Type Examination Certificate KEMA 05ATEX1016 X**

Issue No. 4

(17) **Specific conditions of use**

Pressure transmitters with an enclosure containing light metals, when used in a potentially explosive atmosphere requiring apparatus of equipment Category 1 G or M1, shall be installed such, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

For installation of the pressure transmitter between areas where the use of Category 1 apparatus is required and areas where the use of Category 2 apparatus is required, the following applies: The internal separation element shall be protected against environmental stress, which might adversely affect the separation element. The material of the separation element shall be obtained from the data supplied by the manufacturer.

The pressure transmitter may alternatively be used with separately supplied certified cable entries or conduit entries that are rated for the intended application.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9)

(19) **Test documentation**

As listed in Report No. NL/KEM/ExTR08.0003/04.

(20) **Certificate history**

Issue 1 Project no. 207380100:

- initial assessment.

Issue 2 Project no. 212870200:

- assessment to latest editions of the standards;
- added models in types of protection Ex nA IIC and Ex ic IIC;
- added versions with new electrical and mechanical connections;
- added models in types of protection Ex ta, Ex tb and Ex tc.

Issue 3 Project no. 217430700:

- added models E Series
- assessment of minor changes that do not affect the type of protection.


Issue 4 Project no. 219063200:

- added Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hjj (k), which is the same type as previous evaluated as given in report NL/KEM/ExTR08.0003/03, but conducted completely redundant. Two pressure sensor cells each separated and both are designed as a two-wire (4 ... 20 mA) system;
- the maximum value of P_i is changed from 1 W to 1,4 W (2 x 0,7 W) for the redundant version;
- assessment in accordance with latest edition of EN 60079-26 and EN 60079-31
- KEMA 05ATEX1021 Iss 2 intergrated in this certificate, Identical products with types of protection Ex ic, Ex nA and Ex tc.

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12 Konformitätserklärung



HYDAC ELECTRONIC GMBH, Hauptstraße 27, 66128 Saarbrücken
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 Hauptstraße 27
 66128 Saarbrücken, Deutschland
 Telefon Zentrale 06897 509-01
 Fax Einkauf 06897 509-1745
 Fax Verkauf 06897 509-1735
 Internet: www.hydac.com
 siehe dort auch: Allgemeine Geschäftsbedingungen (AGB)

Datum
 Ihr Zeichen
 Ihre Nachricht
 Unser Zeichen
 Telefon direkt
 Telefax direkt
 E-Mail

CE 0158

Betreff EU-Konformitätserklärung / EC declaration of conformity 18 / 115d / 16

Hiermit erklären wir, dass das nachfolgend bezeichnete Produkt auf Grund seiner Konzeption und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheits- und Gesundheitsanforderungen der unten aufgeführten Normen entspricht.
 Bei einer nicht mit uns schriftlich abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit.
 We herewith declare that, with regard to its design and construction and to the model brought onto the market by us, the product designated below conforms with the fundamental safety and health requirements of the standards listed below.
 This declaration ceases to be valid if the product is modified without our written consent.

Bezeichnung / Designation	Druckmessumformer / Pressure Transducer
Typ	HDA 41/ 3 / 4 / 7 xxx-A-xxxx-A/Ex....
EMV Richtlinie / EMC Guideline	2014/30 EU
Normen	DIN EN 61000-6-1 Okt07/ -2-März06/ - 3/4 Sept11
Geräte für explosionsgefährdete Bereiche / Equipment for use in potentially explosive atmospheres	2014/34 EU
Normen	EN 60079-0: 2012+ A11 ; -11: 2012 ; -15: 2010 -26: 2015, -31: 2014 ; EN 50303 : 2000
EG Baumusterprüfbescheinigung / EC -Type Examination Certificate :	KEMA 05 ATEX 1016X Issue: 4 DEKRA Zertifikation B.V. (No. 0344) Meander 1051 ; NL 6825 MJ Arnhem
Prüfstelle / notified body :	DEKRA EXAM Nr. : no: 0158
Schutzartkennzeichen / Code for Type protection :	I M1 Exia I Ma II 1G Ex ia IIC T6 Ga II 2D Ex tb IIIC T80...100°C Db II 1D Ex ia IIIC T85°C Da II 3D Ex ic IIIC T80...100°C Dc II 1/2G Ex ia IIC T6 Ga/Gb II 3G Ex na IIC T6,T5,T4 Gc II 1D Ex ta IIIC T80...100°C and T ₅₀₀ 90...110°C Da; II 3D Ex tc IIIC T80...100°C Dc II 2G Ex ia IIC T6 Gb II 3G Ex ic IIC T6,T5,T4 Gc

19.12.2016
 Unterschrift
 Dr. Franz-Josef Eckle

ppp J. Morsch
 Geschäftsführer
 Saarbrücken, HRB 0707
 USt-Id.Nr.: DE 138 277 443
 Steuernummer: 040/110/50584

Bankverbindung in Saarbrücken
 (CE-Prüfung durch autorized person)
 Nr. 31688800, BLZ 590 800 00
 BIC: 2483 DE 330
 IBAN: DE77 5008 0090 0316 8888 00
 Hypo Weinstadtbank
 Nr. 353560264, BLZ 590 200 90
 BIC: HYVE DE 330
 IBAN: DE58 5002 0090 0363 5682 64

Bank für
 Nr. 5250006, BLZ 590 500 00
 BIC: SALA DE 330
 IBAN: DE51 5905 0000 0005 2500 00
 Deutsche Bank AG
 Nr. 03540000, BLZ 590 700 00
 BIC: DEUT DE 330
 IBAN: DE54 5907 0000 0035 5800 00

HYDAC ELECTRONIC GMBH

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HYDAC Service

Für Fragen zu Reparaturen steht Ihnen der HYDAC Service zur Verfügung:

HYDAC SYSTEMS & SERVICES GMBH

Hauptstr. 27
D-66128 Saarbrücken
Germany

Tel.: +49-(0)6897-509-1936
Fax: +49-(0)6897-509-1933

Anmerkung

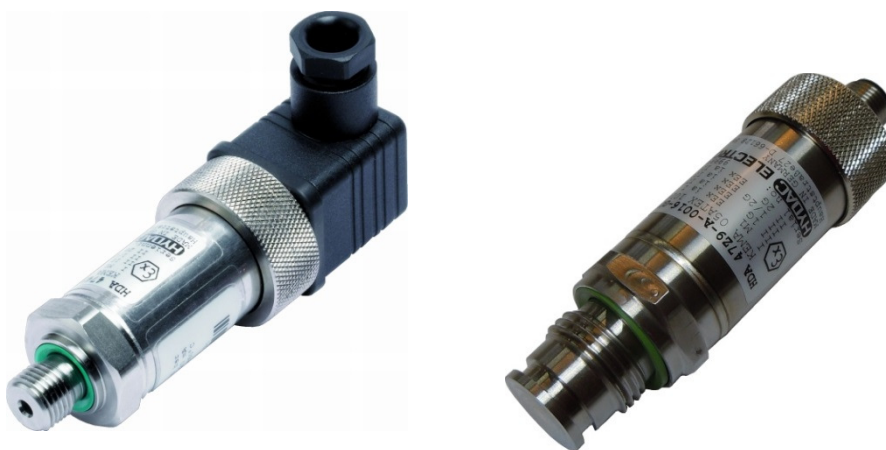
Die Angaben in diesem Handbuch beziehen sich auf die beschriebenen Betriebsbedingungen und Einsatzfälle. Bei abweichenden Einsatzfällen und/oder Betriebsbedingungen wenden Sie sich bitte an die entsprechende Fachabteilung.

Bei technischen Fragen, Hinweisen oder Störungen nehmen Sie bitte Kontakt mit Ihrer HYDAC- Vertretung auf.

Technische Änderungen sind vorbehalten.

Operating Instructions Pressure Transmitter Series HDA 4000 Intrinsically safe, dustprotected enclosure, non-sparking. ATEX approval

(Translation of the original operating instructions)



Protection Types and Zones:

ATEX		
KEMA 05ATEX1016X	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
	II 1/2 G	Ex ia IIC T6 Ga/Gb
	II 2 G	EX ia IIC T6 Gb
	II 1D	Ex ia IIIC T85 °C Da
	II 1D	Ex ta IIIC T80/T90/T100 °C T ₅₀₀ 90/100/110 °C Da
	II 2D	Ex tb IIIC T80/T90/T100 °C Db
	II 3G	Ex nA IIC T6, T5, T4 Gc
	II 3G	Ex ic IIC T6, T5, T4 Gc
	II 3D	Ex tc IIIC T80/T90/T100 °C Dc
II 3D	Ex ic IIIC T80/T90/T100 °C Dc	

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1 General

If you have any queries regarding technical details or the suitability of the unit for your application, please contact our **Technical Sales Department**. The series HDA 4000 pressure transmitters are individually tested and calibrated at a computer operated test station. They are maintenance-free and operate perfectly when used according to the data (see Technical Specifications). However, if there is a cause for complaint, please contact **HYDAC Service**. Interference by anyone other than HYDAC personnel will invalidate all warranty claims as well as the ATEX approval.

2 Function

The pressure signal measured by the sensor is converted into a proportional analog 4..20 mA signal. Connection to the power supply is done via a plug connector or a permanently attached line.

3 Installation and Commissioning Information

The pressure transmitters can be installed directly on the process side via the threaded connection. It is important to ensure that the membrane is protected from mechanical damage. This is particularly relevant for instruments with a flush membrane.

In order to prevent mechanical damage when dealing with critical applications involving heavy vibrations or blows, for example, we recommend securing the unit with an elastomer clamp and decoupling the hydraulic ports via a Minimesh hose.

Tightening torque see dimensions.

Pressure transmitters with a rated pressure of < 100 bar (\leq 1500 psi) provide for pressure equalization with the ambient pressure. This is enabled by a small hole underneath the plug connector. The connector is covered on the inside by a special membrane which prevents moisture from seeping into the unit from the outside. In order to prevent the hole from becoming clogged, mounting should be done in a horizontal position in moist or dusty environments, or vertically with the pressure port pointing downwards.

On units with a rated pressure of \leq 100 bar (\leq 1500 psi) and a 1/2" Conduit electrical connection, the pressure equalization with single conductor is realized by means of a short vent line, using insulated cables, it is realized by means of a cable with an integrated venting hose. It must be ensured that the venting only takes place outside the hazardous area.

Connection is to be done by a properly qualified specialist in accordance with the pertinent regulations pertaining to potentially explosive environments (e.g. EN 60079-14).

The series 4000 pressure transmitters carry the **CE** -mark. The certificate of conformity can be found in the annex.

The requirements of the standards (see technical data) cannot be satisfied unless the pressure transmitter housing is properly grounded via the mechanical connection or the 1/2 NPT Conduit. If a green-yellow wire is available, it can be used additionally for grounding, but may not be used on its own as the grounding connection. When using hose mounting the housing has to be grounded separately.

The related intrinsically safe devices (e.g. zener barriers) must also be grounded. A potential equalisation is required along the intrinsically safe electrical circuit in the N type model (dielectric strength \leq 50 VAC).

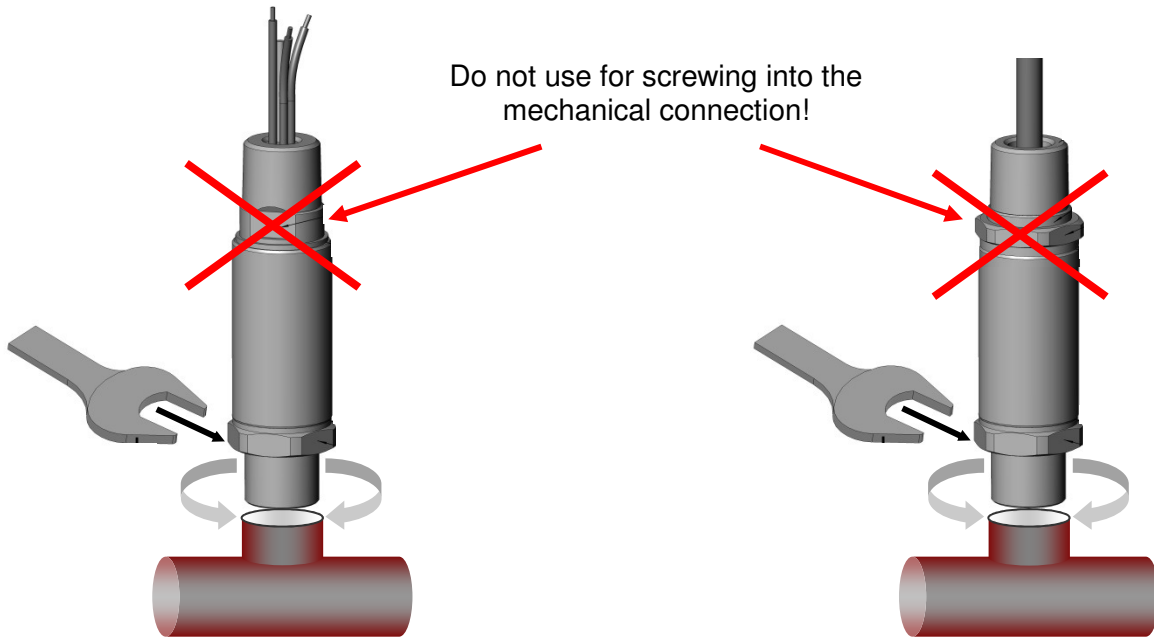
On the HDA 4000 series, type H (isolation voltage \leq 500 VAC), the cable length to the pressure transmitter must be max. 30 m (overvoltage protection to DIN EN 61000-6-2). If the cable length exceeds 30 m, overvoltage protection must be provided by the customer.

4 Important Mounting Instructions

4.1 Installation Instructions for Units with 1/2 " NPT Conduit

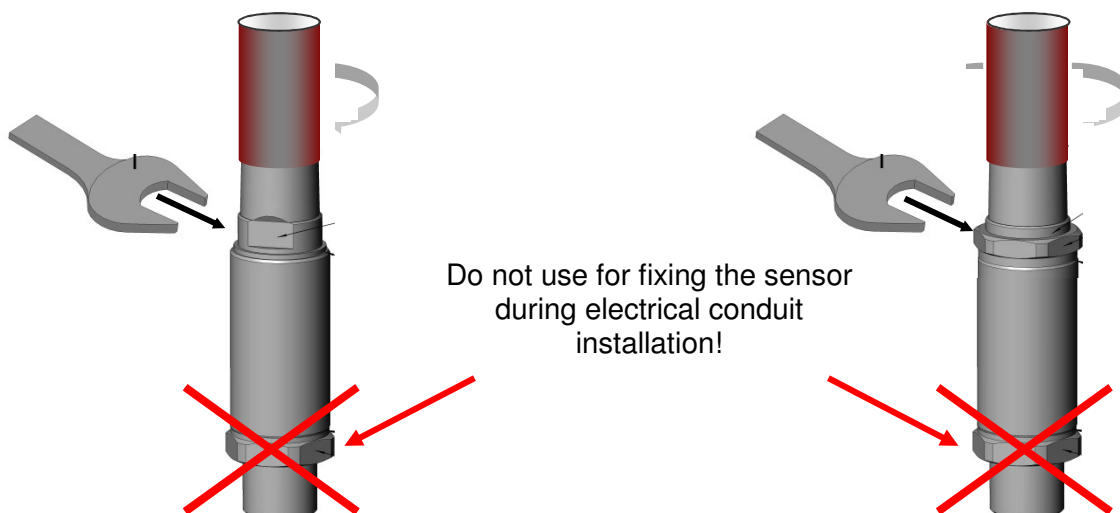
Mechanical Installation

The process installation of the transmitters may only be carried out utilizing the flats on the process connection side.



Electrical Installation

The electrical installation of the transmitter may only be carried out utilizing the flats on the 1/2 NPT Conduit (cable outlet)



4.2 Installation Instructions for Units with Impact Protection

Installation instructions for units with M12x1 connector with an impact protection metal safety sleeve for the use in zones:

ATEX

II 3G Ex nA IIC T6, T5 Gc

II 1D Ex ta IIIC T80/T90°C T₅₀₀90/100°C Da

II 2D Ex tb III C T80/T90°C Db

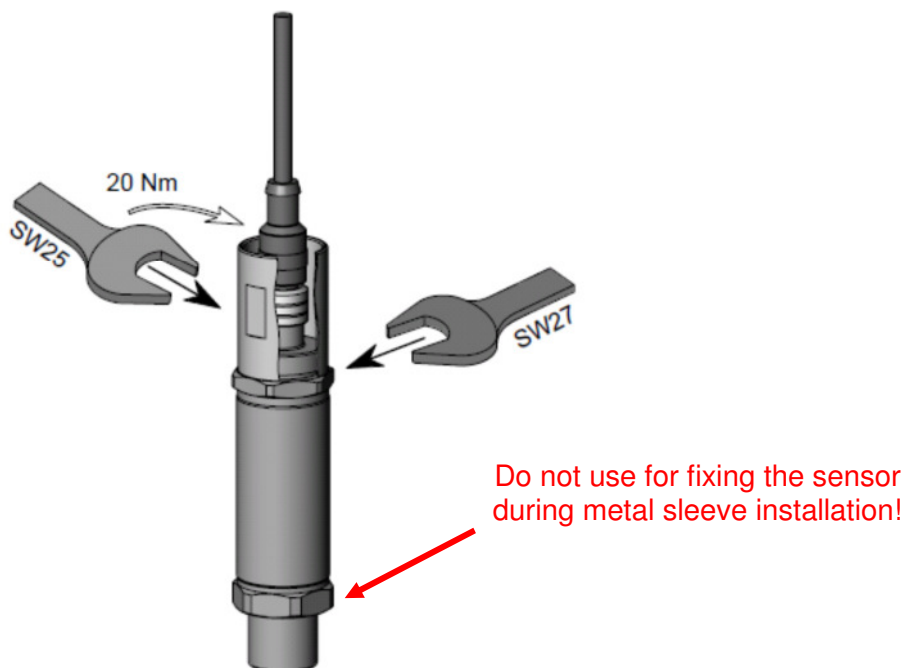
By adherence to safety guidelines in the protection rating and applications: the usage of the impact protection metal safety sleeve is stringently required.

The electrical installation of the transmitter may only be carried out utilizing the hex.27mm flats on the installation of the impact protection metal safety sleeve.

The connection of the cable with M12x1 plug may only be carried out properly in order to prevent the connection from loosing due to vibrations and it must be carried out in voltage-free condition.

The impact protection metal safety sleeve must be properly tightened with a torque of 20 Nm.

Also the separation of the M12x1 connector may only be carried out if the system is in dead state.





5 Safety Information

The pressure transmitter may no longer be used when the label becomes illegible.
The pressure transmitters are to be used in general with a suitable intrinsically safe barrier.

The seals and gaskets are to be checked to see that they function properly prior to mounting and at regular intervals in keeping with the climatic conditions and the influence of the media, and to be changed as needed. Replacement seals and gaskets can be obtained from HYDAC ELECTRONIC GMBH. (Standard seal see technical data) This check is to be conducted at least every three years.

HDA 41xx / 43xx with ceramic measurement cell:

If used simultaneously in zones 0 and 1, the ceramics membrane of the pressure transmitter serves as a partition wall between zones 0 and 1. The thickness of this partition wall is generally $\leq 1\text{mm}$, and with a nominal pressure ranging below 1 bar, $\leq 0.2\text{ mm}$. In order to ensure this partition function, the compatibility of the measuring fluids with the used materials is compulsory, as well as the overload and bursting pressures must absolutely be complied with (further details, please see "Technical Data").

HDA 44xx / 47xx with stainless steel membrane:

If used simultaneously in zones 0 and 1, the metal membrane of the pressure transmitter serves as a partition wall between zones 0 and 1. The thickness of this partition wall is generally $\leq 1\text{mm}$, and with a nominal pressure ranging below 100 bar, $\leq 0.2\text{ mm}$. In order to ensure this partition function, the compatibility of the measuring fluids with the used materials is compulsory, as well as the overload and bursting pressures must absolutely be complied with (further details, please see "Technical Data").

It is imperative that the measurement fluid is compatible with the materials used in the pressure transmitter; similarly, the overload pressures and bursting pressures must be adhered to without fail (for these specifications, see the "Technical Specifications" and "Safety Information" of the EC type examination certificate).

The internal measurement membrane of the pressure transmitter is to be protected against mechanical damage. This applies especially for transmitters with flush membrane if the unit is used simultaneously in zones 0 and 1 equally zones 1 and 2.

The transfer media between the flush membrane and the internal measurement membrane is paraffin oil (white oil, S933).

Please ensure sufficient sealing between the zones as well.

The data pertaining to use in Hazardous Location is to be heeded in any event.

Operation is only permitted when operational and process related intensive electrostatic changes are eliminated.

When used in atmospheres containing combustible dusts, the pressure transmitter must be installed in such a way that it is protected from damage and knocks.

From a safety point of view, the supply / output circuit of pressure transmitter shall be considered to be connected to earth.

By adherence to safety guidelines in the protection rating and applications:

ATEX:

II 3G Ex nA IIC T6, T5 Gc /II 1D Ex ta III C T80/T90°C T₅₀₀90/100°C Da und II 2D Ex tb III C T80/T90°C Db,

The impact protection metal safety sleeve must be tightened with a torque of 20 Nm.

6 Technical Data

6.1 HDA 4100 / HDA 4300

Input data		HDA 4100 (Absolute pressure)						HDA 4300 (Relative pressure)					
		absolute and relative			relative								
Measuring Ranges	bar	1	2.5	-1 .. 1	-1.. 9	4	6	10	16	25	40	60	100
Overload ranges	bar	3	8	3	32	12	20	32	50	80	120	200	200
Burst pressure	bar	5	12	5	48	18	30	48	75	120	180	300	300
		absolute and relative			relative								
Measuring Ranges	psi	15	30	50	100	150	250	500	1000	1500			
Overload ranges	psi	45	100	150	290	450	725	1500	2900	2900			
Burst pressure	psi	70	150	250	400	650	1000	2500	4300	4300			
Mechanical connection		see model code / dimensions											
Tightening torque, recommended		See dimensions											
Parts in contact with fluid								Standard	Flush membrane				
	Sensor							Ceramic	Ceramic				
	Flange connection							1.4301	1.4435; 1.4301				
	seals							FPM /EPDM	FPM				
								O-ring	FPM				
Pressure transfer fluid												Silicon-free oil	
Output data													
Output signal, permitted resistance		4 .. 20 mA (2-conductor), $R_{Lmax.} = (U_B - 12 V) / 20 \text{ mA} [\text{k}\Omega]$											
Accuracy to DIN 16086, terminal based	Typ. Max.	$\leq \pm 0.5 \% \text{ FS}$ $\leq \pm 1.0 \% \text{ FS}$											
Accuracy, B.F.S.L.	Typ. Max.	$\leq \pm 0.25 \% \text{ FS}$ $\leq \pm 0.5 \% \text{ FS}$											
Temperature compensation	Type	$\leq \pm 0.02 \% \text{ FS} / ^\circ\text{C}$											
Zero point	Max.	$\leq \pm 0.03 \% \text{ FS} / ^\circ\text{C}$											
Temperature compensation	Typ.	$\leq \pm 0.02 \% \text{ FS} / ^\circ\text{C}$											
Span	Max.	$\leq \pm 0.03 \% \text{ FS} / ^\circ\text{C}$											
Non-linearity at max. setting to DIN 16086	Max.	$\leq \pm 0.5 \% \text{ FS}$											
Hysteresis	Max.	$\leq \pm 0.4 \% \text{ FS}$											
Repeatability		$\leq \pm 0.1 \% \text{ FS}$											
Rise time		$\leq 1.5 \text{ ms}$											
Long term drift	Typ.	$\leq \pm 0.3 \% \text{ FS} / \text{year}$											
Ambient conditions													
Compensated temperature range		-20 .. +85°C											
Operation / ambient temperature range ¹⁾		T6, T80/85 °C, T ₅₀₀ 90°C : Ta = -20 .. +60°C T5, T90°C, T ₅₀₀ 100°C: Ta = -20 .. +70°C T100°C, T ₅₀₀ 110°C: Ta = -20 .. +80°C T4: Ta = -20 .. +85°C											
Fluid temperature range ¹⁾		T6, T80/85 °C, T ₅₀₀ 90°C : Ta = -20 .. +60°C T5, T90°C, T ₅₀₀ 100°C : Ta = -20 .. +70°C T100°C, T ₅₀₀ 110°C: Ta = -20 .. +80°C T4: Ta = -20 .. +85°C											
Storage temperature range		-40°C .. +100°C											
CE - mark		EN 61000-6-1/ 2/ 3/ 4 ; EN 60079-0/ 11/ 15/ 26/ 31; EN 50303											
Vibration resistance to DIN EN 60068-2-6 at 10.. 500 Hz		$\leq 20 \text{ g}$ $\leq 10 \text{ g}$ in devices with electrical connection 1/2 NPT Conduit											
Protection class to DIN EN 60529	²⁾	IP 65 (connector Binder 714 M18)											
Protection class to ISO 20653		IP 67 (M12x1 male connector, connector EN175301-803) IP 6K9K (Conduit welded)											

Relevant data for Ex applications	Ex ia, ic	Ex nA, ta, tb, tc
Supply voltage	U _i = 12 .. 28 V	12 .. 28 V
Max. input current	I _i = 100 mA	
Maximum input power	P _i = 1W	Max. power consumption ≤ 1W
Connection capacitance of the sensor	C _i = ≤ 22 nF	
Inductance of the sensor	L _i = 0 mH	
Insulation voltage ³⁾	50 V AC, with integrated overvoltage protection to EN 61000-6-2 or 500 V AC	
Other data		
Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection	Standard	
Residual ripple supply voltage	≤ 5%	
Current consumption	≤ 25 mA	
Life expectancy	> 10 million load cycles 0 .. 100 %FS	
Weight	approx. 150 g (Standard) approx. 180 g (flush mount version) approx. 300 g with ½ Conduit	

Note: **FS** (Full Scale) = relative to the full measuring range

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

¹⁾ -20 °C with FPM or EPDM seal, -40 °C on request

²⁾ With mounted mating connector in corresponding protection class.

³⁾ see model code for "insulation voltage"

6.2 HDA 4400 / HDA 4700

Input data	HDA 4400							HDA 4700									
Measuring Ranges	bar	-1 .. 5	-1..9	2.5	6	16	25	40	60	100	160	250	400	600	1000	1600	2000
Overload ranges	bar	15	20	6	15	32	50	80	120	200	320	500	800	900 ¹⁾	1600	2400	3000
Burst pressure	bar	100	100	100	100	200	125	200	300	500	800	1000	2000	2000	3000	3000	4000
Measuring range	psi	-15.50	-15..75		100	150		200	300	400	500	600					
	psi	1500	2000		3000	5000		6000	9000	10000	15000	20000	30000				
Overload pressure	psi	210	210		290	290		460	1160	1160	1160	1160					
	psi	2900	4600		7250	11600		11600	13050 ¹⁾	13050 ¹⁾	23200	34800	43500				
Burst pressure	psi	1450	1450		1450	1450		2900	2900	2900	2900	2900					
	psi	7250	11600		14500	29000		29000	29000	29000	43500	43500	58000				
Mechanical connection	see model code / dimensions																
Tightening torque, recommended	See dimensions																
Parts in contact with fluid			Standard										Flush membrane				
	Stainless steel		1.4542; 1.4571; 1.4435; 1.4404; 1.4301; 1.4548										1.4435; 1.4301				
	seals		FPM										FPM				
	O-ring												FPM				
Pressure transfer fluid	Silicon-free oil																
Output data																	
Output signal, permitted resistance	4 .. 20 mA (2-conductor), R _{Lmax.} = (U _B - 12 V) / 20 mA [kΩ]																
Accuracy to DIN 16086, terminal based	Typ.	≤ ± 0.5 % FS							≤ ± 0.25 % FS								
	Max.	≤ ± 1.0 % FS							≤ ± 0.5 % FS								
Accuracy, B.F.S.L.	Typ.	≤ ± 0.25 % FS							≤ ± 0.15 % FS								
	Max.	≤ ± 0.5 % FS							≤ ± 0.25 % FS								
Temperature compensation zero point	Typ.	≤ ± 0.015 % FS / °C							≤ ± 0.008 % FS / °C								
	Max.	≤ ± 0.025 % FS / °C							≤ ± 0.015 % FS / °C								
Temperature compensation Span	Typ.	≤ ± 0.015 % FS / °C							≤ ± 0.008 % FS / °C								
	Max.	≤ ± 0.025 % FS / °C							≤ ± 0.015 % FS / °C								
Non-linearity at max. setting to DIN 16086	Max.	≤ ± 0.3% FS							≤ ± 0.3 % FS								
Hysteresis	Max.	≤ ± 0.4 % FS							≤ ± 0.1 % FS								
Repeatability		≤ ± 0.1 % FS							≤ ± 0.05 % FS								
Rise time		≤ 1.5 ms							≤ 1.5 ms								
Long-term drift	Typ.	≤ ± 0.3 % FS / year							≤ ± 0.1 % FS / year								

Ambient conditions		
Compensated temperature range		-25 .. +85 °C
Operation / ambient temperature range ²⁾		T6, T80/85 °C, T ₅₀₀ 90 °C : Ta = -20 .. +60 °C T5, T90 °C, T ₅₀₀ 100 °C: Ta = -20 .. +70 °C T100 °C, T ₅₀₀ 110 °C: Ta = -20 .. +80 °C T4: Ta = -20 .. +85 °C
Fluid temperature range ²⁾		T6, T80/85 °C, T ₅₀₀ 90 °C : Ta = -20 .. +60 °C T5, T90 °C, T ₅₀₀ 100 °C : Ta = -20 .. +70 °C T100 °C, T ₅₀₀ 110 °C: Ta = -20 .. +80 °C T4: Ta = -20 .. +85 °C
Storage temperature range		-40 .. +100 °C
CE mark		EN 61000-6-1/ 2/ 3/ 4 ; EN 60079-0/ 11/ 15/ 26/ 31 ; EN 50303
Vibration resistance acc. to DIN EN 60068-2-6 at 10 ..500Hz		≤ 20 g ≤ 10 g in devices with electrical connection 1/2 NPT Conduit
Protection class to DIN EN 60529 Protection class to ISO 20653	³⁾	IP 65 (connector Binder 714 M18) IP 67 (M12x1 male connector, connector EN175301-803) IP 6K9K (conduit welded)
Relevant data for Ex Application		
	Ex ia, ic	Ex nA, ta, tb, tc
Supply voltage	U _i = 12 .. 28 V	12 .. 28 V
Max. input current	I _i = 100 mA	
Maximum input power	P _i =1 W	Max. power consumption ≤ 1W
Connection capacitance of the sensor	C _i = ≤ 22 nF	
Inductance of the sensor	L _i = 0 mH	
Insulation voltage ⁴⁾	50 V AC, with integrated overvoltage protection to EN 61000-6-2 or 500 V AC	
Other data		
Reverse polarity protection of the supply voltage, overvoltage, override and short circuit protection	Standard	
Residual ripple supply voltage	≤ 5%	
Current consumption	≤ 25 mA	
Life expectancy ⁵⁾	> 10 million load cycles 0 .. 100 %FS	
Weight	approx. 150 g (Standard) approx. 180 g (flush mount version) approx. 300 g with 1/2 conduit	

Note: **FS** (Full Scale) = relative to the full measuring range

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

¹⁾ Standard: overload range 1000bar (14500 psi), Flush mount version overload range 900 bar (13050 psi)

²⁾ -20 °C with FPM or EPDM seal, -40 °C on request

³⁾ With mounted mating connector in corresponding protection class

⁴⁾ see model code for "insulation voltage"

⁵⁾ Measuring range ≥ 1000 bar: >1 million load cycles (0 .. 100 % FS)

7 Model Code to identify the delivered part

7.1 Standard

7.1.1 Model code HDA 4100 / HDA 4300

HDA 4 X X X - A - XXXXX - A X X - XXX - F1 (psi) XX inch

Accuracy

- 1 = 1% FS max., ceramic absolute
- 3 = 1% FS max., ceramic relative

Mechanical Connection

- 4 = G 1/4 A ISO 1179-2, male
- 5 = 7/16-20 UNF 2B (SAE 4), female
- 6 = 7/16-20 UNF 2A (SAE 4), male
- 7 = 9/16-18 UNF 2A (SAE 6), male
- 8 = 1/4-18 NPT, male
- C = SF250CX, Autoclave (7/16-20 UNF 2B), female
- F = 1/4-18 NPT, female

Electrical Connection

- 1 = Jacketed cable
- 4 = Male connector, Binder series 714 M18, 4 pole
- 5 = Male connector, EN 175301-803, 3 pol. + PE
- 6 = Male connector M 12 x 1, 4 pol.
- 9 = 1/2-14 NPT Conduit (male) single leads
- A = Male connector EN 175301-803, 3 pole + PE, 1/2" Conduit female
- G = 1/2-14 NPT Conduit (male) jacketed cable

Signal

- A = 4 .. 20 mA

Measuring Ranges

Measuring ranges are shown in bar or psi (in case of psi see additional psi declaration in model code)

Approval

- A = ATEX (further details, see certificate)

Insulation voltage

- H = 500 V AC to housing
- N = 50 V AC to housing

Protection types and applications: (see Tab.,chap.7.3)

ATEX

I	M1	Ex ia I Ma
1 =	II 1G	Ex ia IIC T6 Ga
	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
9 =	II 1D	Ex ia IIIC T85°C Da
	II 3G	Ex nA IIC T6, T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6, T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modification number

000 = Standard (other numbers are used for e.g.:version, orifice, pin connection,plug at the end of the jacketed cable)

Seal material (parts in contact with the fluid)

- F = FPM-Dichtung (e.g. for hydraulic oils)
- E = EPDM-seal (e.g. for coolant)

Material of connection (parts in contact with the fluid)

- 1 = stainless steel

(psi)

Additional declaration for psi version (escaped for bar version)

Cable length (e.g. for conduit connection or jacketed cable)

Shown in cm or inch

¹⁾ With electrical connection "6" only in conjunction with the impact protection metal safety sleeve

7.1.2 Model Code HDA 4400 / HDA 4700

HDA 4 X X X - A - XXXXX - A X X - XXX (psi) XX inch

Accuracy

4 = 1% FS max.
7 = 0.5% FS max.

Mechanical Connection

1 = G1/2 DIN EN 837
2 = G1/2 A ISO 1179-2
4 = G 1/4 A ISO 1179-2, male
5 = 7/16-20 UNF 2B (SAE 4), female
6 = 7/16-20 UNF 2A (SAE 4), male
7 = 9/16-18 UNF 2A (SAE 6), male
8 = 1/4-18 NPT, male
B = F250C Autoclave (9/16-18 UNF 2B), female
C = SF250CX, Autoclave (7/16-20 UNF 2B), female
F = 1/4-18 NPT, female

Electrical Connection

1 = jacketed cable
4 = Male connector, Binder series 714 M18, 4 pole
5 = Male connector, EN 175301-803, 3 pol. + PE
9 = 1/2-14 NPT Conduit (male) single leads
A = Male connector EN 175301-803, 3 pole + PE, 1/2" Conduit female
G = 1/2-14 NPT Conduit (male) jacketed cable

Signal

A = 4 .. 20 mA

Measuring ranges

Measuring ranges are shown in bar or psi (in case of psi see additional psi declaration in model code)

Approval

A = ATEX (further details, see certificate)

Insulation voltage

H = 500 V AC to housing
N = 50 V AC to housing

Protection types and applications: (see Tab.,chap.7.3)

ATEX

1 =	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
9 =	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
A =	II 1D	Ex ia IIIC T85°C Da
	II 3G	Ex nA IIC T6,T5 Gc ¹⁾
C =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6,T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modification Number

000 = Standard
(other numbers are used for e.g.:version, orifice, pin connection,plug at the end of the free cable)

(psi)

Additional declaration for psi version (escaped for bar version)

Cable length (e.g. for Conduit connection or jacketed cable)

Shown in cm or inch

¹⁾ With electrical connection "6" only in conjunction with the impact protection metal safety sleeve

7.2 Model Code with Flush Membrane

7.2.1 Model Code HDA 4300 with flush membrane

HDA 4 3 Z X - A - XXXX - XXX - ANX - XXX (psi) XX inch

Accuracy

3 = 1% FS max., ceramic relative

Mechanical Process Connection

Z = flush membrane

Electrical connection

- 1 = jacketed cable
- 4 = Male connector, Binder series 714 M18, 4 pole
- 5 = Male connector, EN 175301-803, 3 pol. + PE
- 6 = Male connector M 12 x 1, 4 pol.
- 9 = 1/2-14 NPT Conduit (male) single leads
- A = Male connector EN 175301-803, 3 pole + PE, 1/2" Conduit female
- G = 1/2-14 NPT Conduit (male) jacketed cable

Signal

A = 4 .. 20 mA

Measuring ranges

are shown in bar or psi (in case of psi, see additional psi declaration in model code)

Mechanical Connection

- G01 = G1/2 A, DIN 3852
- G02 = G1/2 with additional front O-ring seal
- G04 = G1/4 with additional front O-ring seal

Approval

A = ATEX (further details, see certificate)

Insulation voltage

- H = 500 V AC to housing
- N = 50 V AC to housing

Protection types and applications: (see Tab.,chap.7.3)

ATEX

1 =	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
9 =	II 1D	Ex ia IIIC T85°C Da
	II 3G	Ex nA IIC T6,T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6,T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modification number

000 = Standard
(other numbers are used for e.g.: version, orifice, pin connection, plug at the end of the free cable)

(psi)

Additional declaration for psi version (escaped for bar version)

Cable length (e.g. for Conduit connection or jacketed cable)

Shown in cm or inch

¹⁾ With electrical connection "6" only in conjunction with the impact protection metal safety sleeve

7.2.2 Model Code HDA 4400 / HDA 4700 with flush membrane

HDA 4 X Z X - A - XXXXX - XXX - ANX - XXX (psi) XX inch

Accuracy

4 = 1% FS max
7 = 0.5 % FS max

Mechanical Process Connection

Z = flush membrane

Electrical Connection

1 = jacketed cable
4 = Male connector, Binder series 714 M18, 4 pole
5 = Male connector, EN 175301-803, 3 pol. + PE
9 = 1/2-14 NPT Conduit (male) single leads
A = Male connector EN 175301-803, 3 pole + PE, 1/2" Conduit female
G = 1/2-14 NPT Conduit (male) jacketed cable

Signal

A = 4 .. 20 mA

Measuring ranges

Shown in bar or psi (in case of psi, see additional psi declaration in model code)

Mechanical Connection

G01 = G1/2 A, DIN 3852
G02 = G1/2 with additional front O-ring seal
G04 = G1/4 with additional front O-ring seal

Approval

A = ATEX (further details, see certificate)

Insulation voltage

H = 500 V AC to housing
N = 50 V AC to housing

Protection types and applications: (see Tab.,chap.7.3)

ATEX

1 =	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6 Ga
	II 1/2G	Ex ia IIC T6 Ga/Gb
	II 2G	Ex ia IIC T6 Gb
	II 1D	Ex ia IIIC T85°C Da
9 =	II 3G	Ex nA IIC T6, T5 Gc ¹⁾
A =	II 1D	Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da
	II 2D	Ex tb IIIC T80/T90°C Db ¹⁾
C =	II 3G	Ex ic IIC T6, T5 Gc
	II 3D	Ex ic IIIC T80/T90°C Dc

Modification number

000 = Standard
(other numbers are used for e.g.: version, orifice, pin connection, plug at the end of the free cable)

(psi)

Additional declaration for psi version (escaped for bar version)

Cable length (e.g. for Conduit connection or jacketed cable)

Shown in cm or inch

¹⁾ With electrical connection "6" only in conjunction with the impact protection metal safety sleeve

7.3 Evaluation table (Protection concept): Assignment of the protection types and application areas

	Protection concept					
Code for use in model code	1		9	A	C	
ATEX KEMA 05 ATEX 1016X	I M1 Ex ia I Ma	II 1G Ex ia IIC T6 Ga II 1/2G Ex ia IIC T6 Ga/Gb II 1D Ex ia IIIC T85°C Da	II 2G Ex ia IIC T5, T6 Gb	II 3G Ex nA IIC T6, T5 Gc	II 1D Ex ta IIIC T80/T90°C T ₅₀₀ 90/100°C Da II 2D Ex tb IIIC T80/T0°C Db	II 3G Ex ic IIC T6, T5 Gc II 3D Ex ic IIIC T80/T90°C Dc
Application areas	Mining Protection class: Intrinsically safe ia with barrier	Gases/ conductive dust Protection class: Intrinsically safe ia with barrier	Gases Protection class: Intrinsically safe ia with barrier	Gases Protection class: Non-sparking nA	Conductive dust Protection class: Dustproof enclosure	Gases/ conductive dust Protection class: Intrinsically safe ic with barrier
Electrical connection (See model code)	1, 4, 5, 6, 9, G		1, 6, 9, G	1, 6, 9, G	1, 4, 5, 6, 9, G	

8 Serial Number

The serial number includes the calendar week and year of manufacture of the unit, adjacent to the sequential serial number.

Configuration of serial number (SN): xyykzzzzzz

- XX Manufacturing date e.g. : 7 → 2017
- yy Calendar week e.g. : 12 → KW 12
- k Change control status e.g. : -, A, B
- zzzzzz Sequential serial number e.g. : 123456

HDA 4445-A-0250-AN1-000

KEMA 05ATEX 1016X

I M1 Ex ia I Ma

II 1G Ex ia IIC T6 Ga

II 1/2G Ex ia IIC T6 Ga/Gb



II 2G Ex ia IIC T6 Gb

II 1D Ex ia IIIC T85 °C Da

Seriennr. : ▼ 712A123456

HYDAC ELECTRONIC

MADE IN GERMANY 921320

PN: 250bar

Signal: 4..20 mA


Ta: -20...+60 °C

1: +

2: -

PE

0158



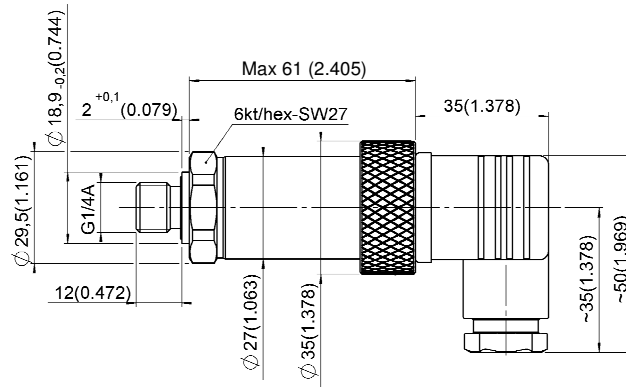
9 Pin assignment

The pin assignment for the electrical connection is mentioned at the label of the pressure transmitter.

10 Dimensions

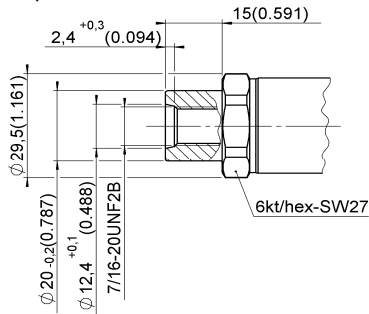
G 1/4 A ISO 1179-2, male
Torque value: 20 Nm

connector
EN 175301
3 pol. + PE

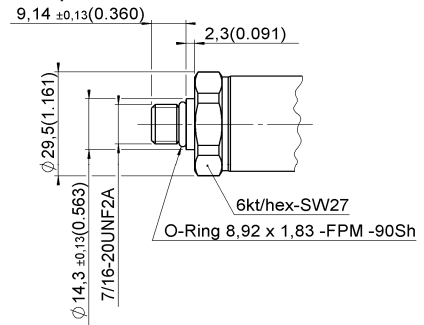


10.1 Mechanical Connection Variants

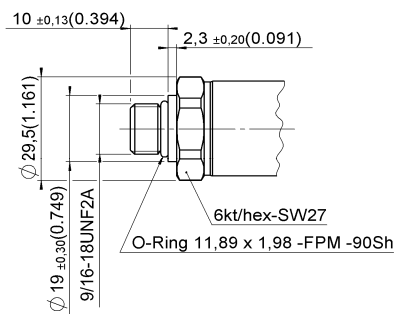
7/16-20 UNF 2B (SAE 4),
female
Torque value: 15 Nm



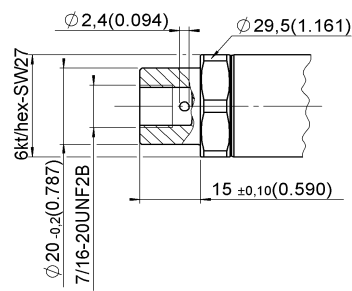
7/16-20 UNF 2A (SAE 4),
male
Torque value: 15 Nm



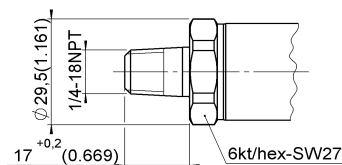
9/16-18 UNF 2A (SAE 6),
Male
Torque value: 20 Nm



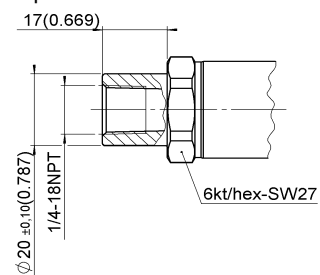
SF 250CX20, Autoclave
(7/16-20 UNF 2B), female
Torque value: 15 Nm



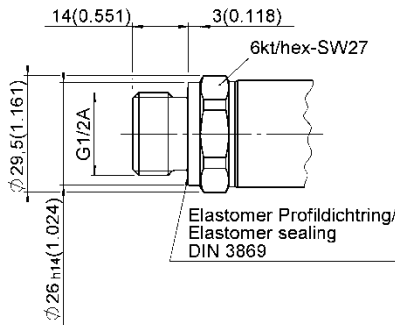
1/4-18 NPT,
Male
Torque value max. 40 Nm



1/4-18 NPT,
female
Torque value: max. 40 Nm



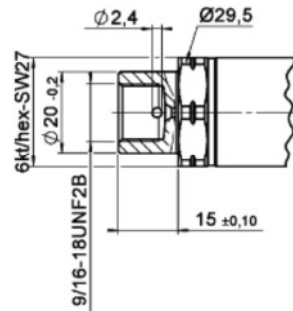
G 1/2 A ISO 1179-2, male
Torque value max. 45 Nm



HDA 4X2X
Einschraubzapfen/
Screwed end
DIN 3852-E-G1/2A

Elastomer Profildichtung/
Elastomer sealing
DIN 3869

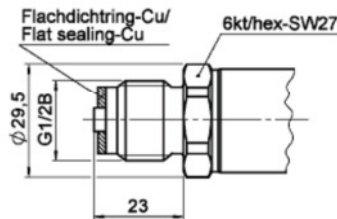
F250C Autoclave (9/16-18 UNF2B), female
Torque value max. 40 Nm



HDA 4XB
Einschraubloch/
Screw plug hole
9/16-18UNF2B
(F250C, Autoclave)

G1/2 DIN EN 837

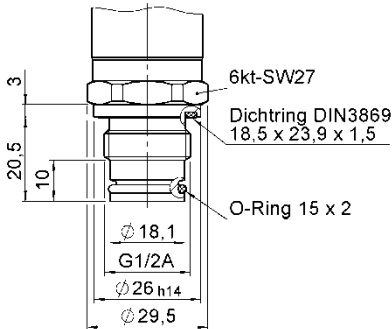
Anzugsdrehmoment: maximal 45Nm



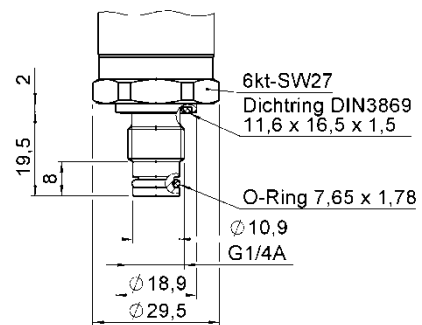
HDA 4X15
Einschraubzapfen/
Screwed end
DIN EN 837-G1/2B

Flachdichtung-Cu/
Flat sealing-Cu

G 1/2 with additional front O-ring-seal,
Torque value: max. 45 Nm

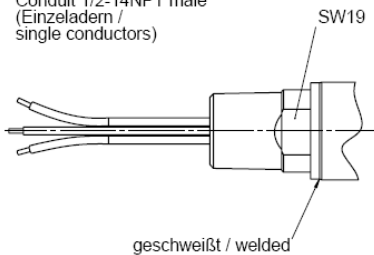


G 1/4 with additional front O-ring-seal
Torque value: max. 20 Nm

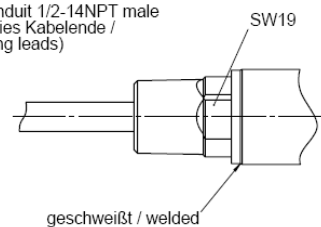


10.2 Electrical Connection Variants

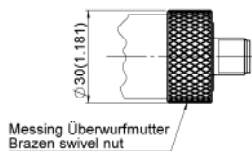
Conduit 1/2-14NPT male
(Einzeladern /
single conductors)



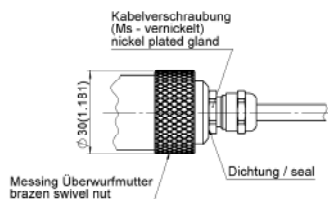
Conduit 1/2-14NPT male
(freies Kabelende /
flying leads)



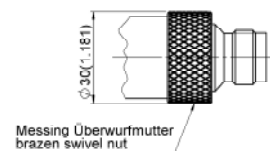
Device plug M12x1, 4 pole, male



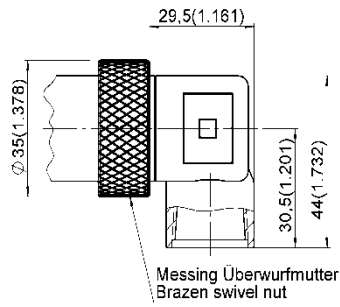
Jacketed cable



Male connector, Binder series 714 M18 4 pole



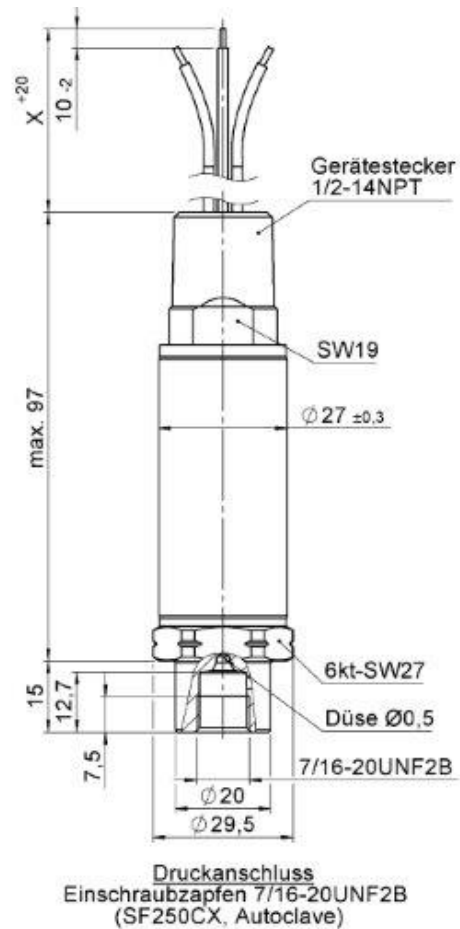
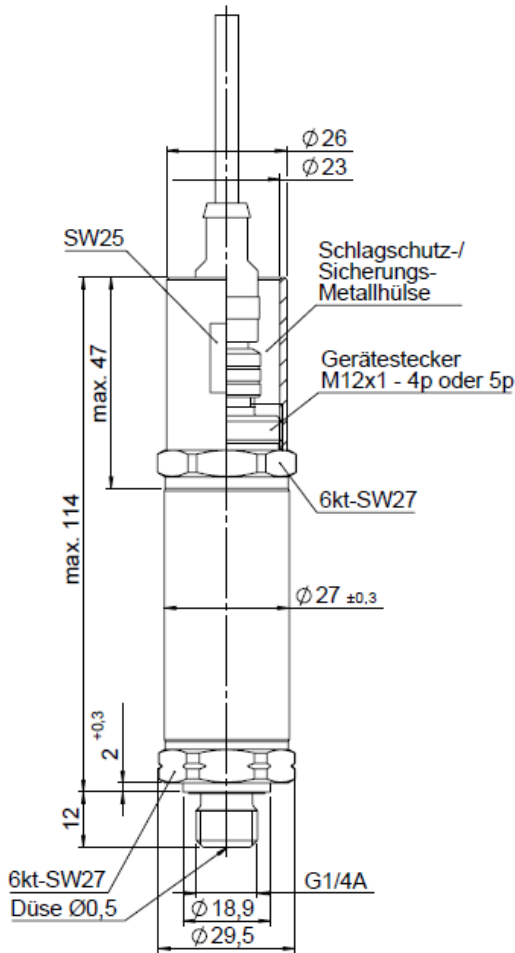
Male connection EN 175301-803 (DIN 43650) , 3 pol. + PE,
1/2" Conduit mating



Dimensions

With impact protection metal safety sleeve

With electrical connection 1/2-14 NPT Conduit



11 Certificates

11.1 ATEX



CERTIFICATE

(1) EU-Type Examination

(2) Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU

(3) EU-Type Examination Certificate Number: **KEMA 05ATEX1016 X** Issue Number: **4**

(4) Product: **Pressure Transmitter Type HDA 4...-A-...-(-...)-A-...
Type HDA 4...-A-...-(-...)-E-... and
Type HDA 4...-AA-...-...-E-... (-.)**

(5) Manufacturer: **Hydac Electronic GmbH**

(6) Address: **Hauptstraße 27, 66128 Saarbrücken, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex I to the Directive.

The examination and test results are recorded in confidential test report number **NL/KEM/ExTR08.0003/04**.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2012 + A11	EN 60079-11 : 2012	EN 60079-15 : 2010
EN 60079-26 : 2015	EN 60079-31 : 2014	EN 50303 : 2000

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



IM 1 Ex ia I Ma	II 1 D Ex ia IIIC Txx °C Da
II 1 G Ex ia IIC T6/T5 Ga,	II 3 D Ex ic IIIC Txx °C Dc
II 1/2 G Ex ia IIC T6/T5 Ga/Gb	II 1 D Ex ta IIIC Txx °C T500yy °C Da
II 2 G Ex ia IIC T6/T5 Gb;	II 2 D Ex tb IIIC Txx °C Db
II 3 G Ex ic IIC T6, T5, T4 Gc	II 3 D Ex tc IIIC Txx °C Dc
II 3 G Ex nA IIC T6, T5, T4 Gc	

For details refer to nomenclature in the schedule to this certificate.

Date of certification: 1 June 2016

DEKRA Certification B.V.

R.H.D. Pomme
Certification Manager

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DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands
T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Registered Arnhem 09085396



(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate KEMA 05ATEX1016 X**

Issue No. 4

(15) **Description**

Pressure Transmitter Type HDA 4...-A-...-(...)-A-... and Type HDA 4...-A-...-(...)-E-... is a two wire transmitter used to convert a pressure signal into a 4 – 20 mA output signal. Double Pressure Transmitter Type HDA 4...-AA-...-...-E-... (..) is the same type, but fully redundant. Two pressure sensor cells each separated and both are designed as a two-wire (4...20 mA) system.

The electrical components of the transmitter are completely encapsulated within a metal enclosure; the electrical connections are done by a connector or via a permanently connected cable. The enclosure of Pressure Transmitter Type HDA 4...-A-...-(...)-g-... and Type HAD 4...-AA-...-...-g-... (..) (with g = 9, A, B or C) provides a degree of protection of at least IP64 in accordance with EN 60529.

All variations of electrical connections are allowed for the intrinsically safe versions.

Thermal data

Ambient temperature range:

For Pressure Transmitter Type HDA 4abc-A-d-(e)-Afg-h-i1 j k and Type HDA 4abc-A-d-(e)-Efg-h-i1 j k (versions with a single pressure sensor cell):

- apparatus in types of protection Ex ia I, Ex ia IIC and Ex ia IIIC: -40 °C to +60 °C;
- apparatus in types of protection Ex ic IIIC, Ex ta IIIC, Ex tb IIIC and Ex tc IIIC: -40 °C to +80 °C;
- apparatus in types of protection Ex nA IIC, and Ex ic IIC: -40 °C to +85 °C.

For Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k) (version with two pressure sensor cells):

- apparatus in types of protection Ex ia I, Ex ia IIC and Ex ia IIIC: -40 °C to +70 °C;
- apparatus in types of protection Ex ic IIIC, Ex ta IIIC, Ex tb IIIC and Ex tc IIIC: -40 °C to +80 °C;
- apparatus in types of protection Ex nA IIC, and Ex ic IIC: -40 °C to +85 °C.

Temperature class and the maximum surface temperature:

The temperature class and the maximum surface temperature T and T₅₀₀ are depending on the maximum ambient temperature:

For Pressure Transmitter Type HDA 4abc-A-d-(e)-Afg-h-i1 j k and Type HDA 4abc-A-d-(e)-Efg-h-i1 j k (versions with a single pressure sensor cell):

Maximum ambient temperature	Temperature class	Max surface temperature T	Max surface temperature T ₅₀₀
60 °C	T6	80 °C / 85 °C	90 °C
70 °C	T5	90 °C	100 °C
80 °C		100 °C	110 °C
85 °C	T4		

For Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k) (version with two pressure sensor cells):

Maximum ambient temperature	Temperature class	Max surface temperature T	Max surface temperature T ₅₀₀
60 °C	T6	85 °C	120 °C
70 °C	T5	95 °C	130 °C
80 °C		105 °C	140 °C
85 °C	T4		

(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Nomenclature

Pressure Transmitter Type:

HDA 4abc-A-d-(e)-Afg-h-1 j k

Approval:

A = ATEX

a =	measurement accuracy	1 digit
b =	mechanical connection process	alphanumerical code (1 digit)
c =	electrical connection	alphanumerical code (1 digit)
d =	measuring range	4 digits in bar / 5 digits in psi
(e) =	mechanical connection, only for flush mount version, b = Z	alphanumerical code (3 digits)
f =	isolation variants	H = 500 VAC isolation from enclosure N = 50 VAC isolation from enclosure (functional only)
g =	approval variants	1 = I M 1 Ex ia I Ma and II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 2 = I M 1 Ex ia I Ma and II 2 G Ex ia IIC T6 Gb 3 = II 2 G Ex ia IIC T6 Gb 4 = II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 5 = I M 1 Ex ia I Ma 9 = II 3 G Ex nA IIC T6, T5, T4 Gc A = II 1 D Ex ta IIIC T80 °C T ₅₀₀ 90 °C or T90 °C T ₅₀₀ 100 °C or T100 °C T ₅₀₀ 110 °C Da and II 2 D Ex tb IIIC T80 °C or T90 °C or T100 °C Db B = II 3 D Ex tc IIIC T80 °C or T90 °C or T100 °C Dc C = II 3 G Ex ic IIC T6, T5, T4 Gc II 3 D Ex ic IIIC T80 °C or T90 °C or T100 °C Dc
h =	3 digit indication for modifications	000 = for standard version
i =	sealing material *)	E = EPDM sealing F = FPM sealing H = HNBR sealing N = NBR sealing P = PU sealing
1 =	stainless steel medium connection *)	
j =	unit of measurement	psi = imperial unit psi none bar
(k) =	length of cable (if applicable)	in cm or m or inch as indicated
k =	no paranthesis in case, j = psi	
NOTE *) only applicable for models with a = 1 or 3		

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(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Nomenclature (continued)

Pressure Transmitter Type:
Approval:

HDA 4abc-A-d-(e)-Efg-h-i j k
E = IECEX + ATEX

a =	measurement accuracy	1 digit
b =	mechanical connection process	alphanumeric code (1 digit)
c =	electrical connection	alphanumeric code (1 digit)
d =	measuring range	4 digits in bar / 5 digits in psi
(e) =	mechanical connection, only for flush mount version, b = Z	alphanumeric code (3 digits)
f =	isolation variants	H = 500 VAC isolation from enclosure N = 50 VAC isolation from enclosure (functional only)
g =	approval variants	1 = I M 1 Ex ia I Ma and II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 2 = I M 1 Ex ia I Ma and II 2 G Ex ia IIC T6 Gb 3 = II 2 G Ex ia IIC T6 Gb 4 = II 1 G Ex ia IIC T6 Ga and II 1/2 G Ex ia IIC T6 Ga/Gb and II 2 G Ex ia IIC T6 Gb II 1 D Ex ia IIIC T85 °C Da 5 = I M 1 Ex ia I Ma 9 = II 3 G Ex nA IIC T6, T5, T4 Gc A = II 1 D Ex ta IIIC T80 °C T ₅₀₀ 90 °C or T90 °C T ₅₀₀ 100 °C or T100 °C T ₅₀₀ 110 °C Da and II 2 D Ex tb IIIC T80 °C or T90 °C or T100 °C Db B = II 3 D Ex tc IIIC T80 °C or T90 °C or T100 °C Dc C = II 3 G Ex ic IIC T6, T5, T4 Gc II 3 D Ex ic IIIC T80 °C or T90 °C or T100 °C Dc
h =	3 digit indication for modifications	000 = for standard version
i =	sealing material *)	E = EPDM sealing F = FPM sealing H = HNBR sealing N = NBR sealing P = PU sealing
1 =	stainless steel medium connection *)	
j =	unit of measurement	psi = imperial unit psi none bar
(k) =	length of cable (if applicable)	in cm or m or inch as indicated
k =	no paranthesis in case, j = psi	
NOTE *) only applicable for models with a = 1 or 3		

(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Nomenclature (continued)

Double Pressure Transmitter Type:
Approval:HDA 4abc-AA-d-e-Efg-hjj (k)
E = IECEx + ATEX

a =	measurement accuracy	1 digit
b =	mechanical connection process	alphanumeric code (1 digit)
c =	electrical connection	alphanumeric code (1 digit)
d =	measuring range channel 1	4 digits in bar / 5 digits in psi
e =	measuring range channel 2	4 digits in bar / 5 digits in psi
f =	isolation variants	H = 500 VAC isolation from enclosure N = 50 VAC isolation from enclosure (functional only)
g =	approval variants	1 = I M 1 Ex ia I Ma II 1 G Ex ia IIC T6/T5 Ga and II 1/2 G Ex ia IIC T6/T5 Ga/Gb and II 2 G Ex ia IIC T6/T5 Gb II 1 D Ex ia IIIC T85 °C or T95 °C Da 2 = I M 1 Ex ia I Ma II 2 G Ex ia IIC T6/T5 Gb 3 = II 2 G Ex ia IIC T6/T5 Gb 4 = II 1 G Ex ia IIC T6/T5 Ga and II 1/2 G Ex ia IIC T6/T5 Ga/Gb and II 2 G Ex ia IIC T6/T5 Gb II 1 D Ex ia IIIC T85 °C or T95 °C Da 5 = I M 1 Ex ia I Ma 9 = II 3 G Ex nA IIC T6, T5, T4 Gc A = II 1 D Ex ta IIIC T85 °C T ₅₀₀ 120 °C or T95 °C T ₅₀₀ 130 °C or T105 °C T ₅₀₀ 140 °C Da and II 2 D Ex tb IIIC T85 °C or T95 °C or T105 °C Db B = II 3 D Ex tc IIIC T85 °C or T95 °C or T105 °C Dc C = II 3 G Ex ic IIC T6, T5, T4 Gc II 3 D Ex ic IIIC T85 °C or T95 °C or T105 °C Dc
hjj =	3 digit indication for modifications	000 = for standard version (tube diameter 27) 1xx = Modification (tube diameter 35 and 2 x M12x1)
(k) =	length of cable (if applicable)	in cm or m or inch as indicated

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(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 05ATEX1016 X

Issue No. 4

Electrical dataIntrinsically safe versions:

Supply/output circuit (connections + and -):
in type of protection intrinsic safety Ex ia I, Ex ia IIC, Ex ic IIC and Ex ia IIIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

Pressure Transmitter Type HDA 4abc-A-d-(e)-fg-h-i j k:
 $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 1 \text{ W}$; $C_i = 22 \text{ nF}$; $L_i = 0 \text{ mH}$.

Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k), when connected to 2 intrinsically safe power supplies:

Signal 1: $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 0,7 \text{ W}$; $C_i = 22 \text{ nF}$; $L_i = 0 \text{ mH}$;
Signal 2: $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 0,7 \text{ W}$; $C_i = 22 \text{ nF}$; $L_i = 0 \text{ mH}$.

Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k), when connected to 1 intrinsically safe power supply:

Signals 1 + 2: $U_i = 28 \text{ V}$; $I_i = 100 \text{ mA}$; $P_i = 0,7 \text{ W}$; $C_i = 33 \text{ nF}$; $L_i = 0 \text{ mH}$.

From a safety point of view, the supply/output circuit of Pressure Transmitter Type HDA 4...-A-...-(...)-N-... and Type HDA 4...-AA-...-...-N-... (..) shall be considered to be connected to earth.

Other versions:

Supply/output circuit (connections + and -):

$U \leq 28 \text{ V}$ All models;

$P \leq 1 \text{ W}$ Pressure Transmitter Type HDA 4abc-A-d-(e)-fg-h-i j k;

$P \leq 1,4 \text{ W}$ Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hij (k)
Signal 1 $\leq 0,7 \text{ W}$ and signal 2 $\leq 0,7 \text{ W}$.

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/KEM/ExTR08.0003/04.

(13) **SCHEDULE**(14) **to EU-Type Examination Certificate KEMA 05ATEX1016 X**

Issue No. 4

(17) **Specific conditions of use**

Pressure transmitters with an enclosure containing light metals, when used in a potentially explosive atmosphere requiring apparatus of equipment Category 1 G or M1, shall be installed such, that even in the event of rare incidents, an ignition source due to impact or friction between the enclosure and iron/steel is excluded.

For installation of the pressure transmitter between areas where the use of Category 1 apparatus is required and areas where the use of Category 2 apparatus is required, the following applies: The internal separation element shall be protected against environmental stress, which might adversely affect the separation element. The material of the separation element shall be obtained from the data supplied by the manufacturer.

The pressure transmitter may alternatively be used with separately supplied certified cable entries or conduit entries that are rated for the intended application.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9)

(19) **Test documentation**

As listed in Report No. NL/KEM/ExTR08.0003/04.

(20) **Certificate history**

Issue 1 Project no. 207380100:

- initial assessment.

Issue 2 Project no. 212870200:

- assessment to latest editions of the standards;
- added models in types of protection Ex nA IIC and Ex ic IIC;
- added versions with new electrical and mechanical connections;
- added models in types of protection Ex ta, Ex tb and Ex tc.

Issue 3 Project no. 217430700:

- added models E Series
- assessment of minor changes that do not affect the type of protection.


Issue 4 Project no. 219063200:

- added Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hjj (k), which is the same type as previous evaluated as given in report NL/KEM/ExTR08.0003/03, but conducted completely redundant. Two pressure sensor cells each separated and both are designed as a two-wire (4 ... 20 mA) system;
- the maximum value of P_i is changed from 1 W to 1,4 W (2 x 0,7 W) for the redundant version;
- assessment in accordance with latest edition of EN 60079-26 and EN 60079-31
- KEMA 05ATEX1021 Iss 2 intergrated in this certificate, Identical products with types of protection Ex ic, Ex nA and Ex tc.

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Version 1 (2016-04)

12 Certificate of Conformity



HYDAC ELECTRONIC GMBH, Hauptstraße 27, 66128 Saarbrücken
HYDAC ELECTRONIC GMBH
 Hauptstraße 27
 66128 Saarbrücken, Deutschland
 Telefon Zentrale 06897 509-01
 Fax Einkauf 06897 509-1745
 Fax Verkauf 06897 509-1735
 Internet: www.hydac.com
 siehe dort auch: Allgemeine Geschäftsbedingungen (AGB)

Datum _____
 Ihr Zeichen _____
 Ihre Nachricht _____
 Unser Zeichen _____
 Telefon direkt _____
 Telefax direkt _____
 E-Mail _____

CE 0158

Betreff EU-Konformitätserklärung / EC declaration of conformity 18 / 115d / 16

Hiermit erklären wir, dass das nachfolgend bezeichnete Produkt auf Grund seiner Konzeption und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheits- und Gesundheitsanforderungen der unten aufgeführten Normen entspricht.
 Bei einer nicht mit uns schriftlich abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit.

We herewith declare that, with regard to its design and construction and to the model brought onto the market by us, the product designated below conforms with the fundamental safety and health requirements of the standards listed below.
 This declaration ceases to be valid if the product is modified without our written consent.

Bezeichnung / Designation	Druckmessumformer / Pressure Transducer
Typ	HDA 41/ 3 / 4 / 7 xxx-A-xxxx-A/EX,...
EMV Richtlinie / EMC Guideline	2014/30 EU
Normen	DIN EN 61000-6-1 Okt 07/ -2-März06/ - 3 / 4 Sept 11
Geräte für explosionsgefährdete Bereiche / Equipment for use in potentially explosive atmospheres	2014/34 EU
Normen	EN 60079-0: 2012+ A11 ; -11: 2012 ; -15: 2010 -26: 2015, -31: 2014 ; EN 50303 : 2000
EG Baumusterprüfbescheinigung / EC -Type Examination Certificate :	KEMA 05 ATEX 1016X Issue: 4 DEKRA Zertifikation B.V. (No. 0344) Meander 1051 ; NL 6825 MJ Arnhem
Prüfstelle / notified body :	DEKRA EXAM Nr. : no: 0158

Schutzartkennzeichen / Code for Type protection :

I M1 Exia I Ma II 1G Ex ia IIC T6 Ga II 2D Ex tb IIIC T80...100°C Db II 1D Ex ia IIIC T85°C Da II 3D Ex ic IIIC T80...100°C Dc	II 1/2G Ex ia IIC T6 Ga/Gb II 3G Ex nA IIC T6,T5,T4 Gc II 1D Ex ta IIIC T80...100°C and T ₅₀₀ 90...110°C Da; II 3D Ex tc IIIC T80...100°C Dc	II 2G Ex ia IIC T6 Gb II 3G Ex ic IIC T6,T5,T4 Gc
--	--	--

19.12.2016
 Unterschrift
 Dr. Franz-Josef Eckle

PPA J. Mersch
 Notar Saarbrücken
 Registergericht
 Saarbrücken, HRB 8707
 USt-Identifikationsnummer: DE 136 277 443
 Steuernummer: 040/110/50584

Bankverbindung in Saarbrücken:
 CE-Prüfstelle (authorized person)
 Nr. 31688800, BLZ 590 800 00
 BIC: DPES DE 33 00
 IBAN: DE77 5508 0090 0316 8888 00
 Hydac Verwaltungsbank
 Nr. 353508264, BLZ 590 200 90
 BIC: HYTE DE 33 00
 IBAN: DE38 5002 0090 0353 5682 64

Sept 11
 Nr. 5250006, BLZ 590 500 00
 BIC: SALA DE 33 0000
 IBAN: DE51 5905 0000 0005 2500 00
 Deutsche Bank AG
 Nr. 035500000, BLZ 590 700 00
 BIC: DEUT DE 33 00
 IBAN: DE54 5907 0000 0005 5800 00

HYDAC ELECTRONIC GMBH

Hauptstraße 27
D-66128 Saarbrücken
Germany

Web: www.hydac.com
E-Mail: electronic@hydac.com
Tel.: +49-(0)6897-509-01
Fax: +49-(0)6897-509-1726

HYDAC Service

If you have any questions concerning repair work, please do not hesitate to contact HYDAC Service:

HYDAC SYSTEMS & SERVICES GMBH

Hauptstr. 27
D-66128 Saarbruecken
Germany

Tel.: +49-(0)6897-509-1936
Fax: +49-(0)6897-509-1933

Note

The information and particulars provided in this manual apply to the operating conditions and applications described herein. For applications and operating conditions not described, please contact the relevant technical department.

If you have any questions, suggestions, or encounter any problems of a technical nature, please contact your Hydac representative.

Subject to technical modifications.