

Bedienungsanleitung

Druckmessumformer Serie **HDA 4000**

Redundant

Eigensicher, Staubgeschütztes Gehäuse,
Nicht Funkend.

ATEX und **IECEX** 2-fach-Zulassung
(Original-Bedienungsanleitung)

Operating Manual

Pressure Transmitter Series **HDA 4000**

Redundant

Intrinsically Safe, Dustproof Enclosure
Non-sparking

ATEX and **IECEX**, dual approval
(Translation of the original operating instructions)



Schutzklassen und Einsatzbereiche/ Protection Types and Zones:

ATEX		
Zertifikat KEMA 05ATEX1016 X	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6,T5 Ga
	II 1/2 G	Ex ia IIC T6,T5 Ga/Gb
	II 2 G	EX ia IIC T6,T5 Gb
	II 1D	Ex ia IIIC T85/95 °C Da
	II 1D	Ex ta IIIC T85/95/105 °C T ₅₀₀ 120/130/140 °C Da
	II 2D	Ex tb IIIC T85/95/105 °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 T85/T95/T105 °C Dc
	II 3D	Ex ic IIIC T85/T95/T105 °C Dc
IECEX		
Zertifikat IECEX KEM 08.0014X	Ex ia I Ma	
	Ex ia IIC T6,T5 Ga	
	Ex ia IIC T6,T5 Ga/Gb	
	Ex ia IIC T6,T5 Gb	
	Ex ia IIIC T85/95 °C Da	
	Ex ta IIIC T85/95/105 °C Da T ₅₀₀ 120/130/140 °C Da	
	Ex tb IIIC T85/95/105 °C Db	
	Ex nA IIC T6, T5, T4 Gc	
	Ex ic IIC T6, T5 Gc	
	Ex tc IIIC T85/95/105 °C Dc	
	Ex ic IIIC T85/95/105 °C Dc	

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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 HDA 4000 werden einzeln auf einem rechnergesteuerten Prüfplatz 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**. Nicht vorschriftgemäße Montage oder Fremdeingriffe in das Gerät führen zum Erlöschen jeglicher Gewährleistungsansprüche sowie der ATEX und IECEx Zulassung.

2 Funktion

Das vom Sensor gemessene Drucksignal wird in zwei analoge Signale umgewandelt (1x 4 .. 20 mA, 1x 20 .. 4 mA). 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. Es ist 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 Minimes-Leitung zu entkoppeln.

Anzugsdrehmoment siehe Abmessungen.

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 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.

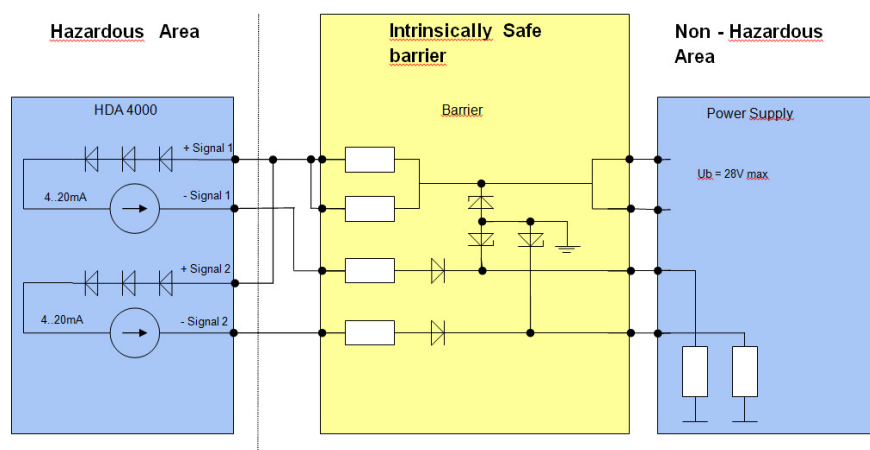
Bei der Serie HDA 4000 in der Ausführungsform H (Isolationsspannung ≤ 500 VAC) darf die Kabellänge zum Druckmessumformer maximal 30m betragen (Überspannungsschutz nach DIN EN 61000-6-2). Wenn die Kabellänge 30m überschreitet, muss der Überspannungsschutz kundenseitig sichergestellt werden.

Allgemeine Sicherheitshinweise (vgl. Kapitel 5) sind in jedem Fall zu beachten.

3.1 Sicherheitsbarrieren

Die folgende Sicherheitsbarriere ist geeignet:

2-kanalig, $R_{min} = 280 \text{ Ohm}$ (z.B. Pepperl & Fuchs Z789)

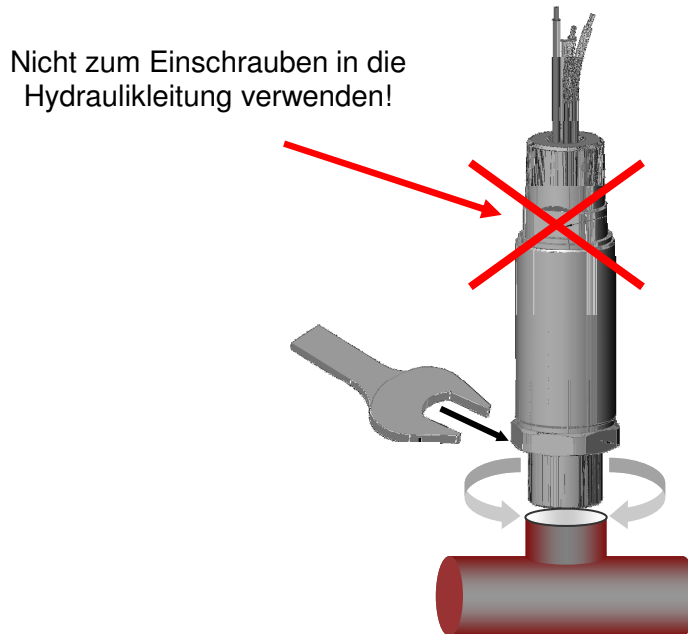


4 Wichtige Hinweise für die Installation

4.1 Installationshinweise für Geräte mit 1/2 NPT Conduit

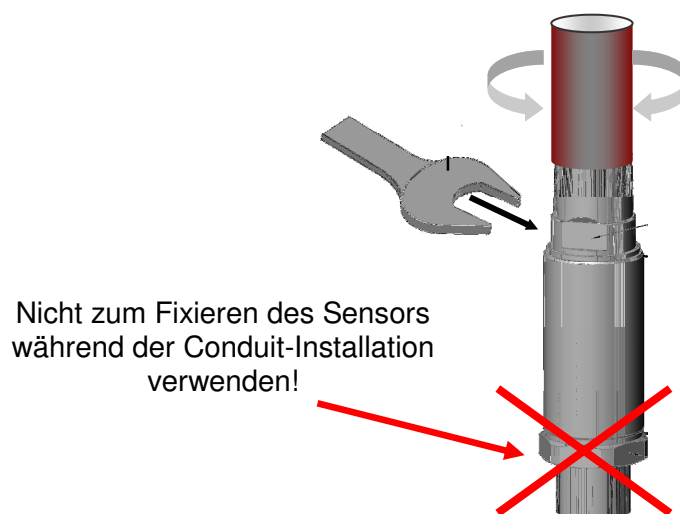
Mechanische Installation

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 T85/T95°C T₅₀₀ 120/130°C Da

II 2D Ex tb III C T85/T95°C Db

IECEx

Ex nA IIC T6,T5 Gc

Ex ta IIIC T85/T95°C Da T₅₀₀ 120/130°C Da

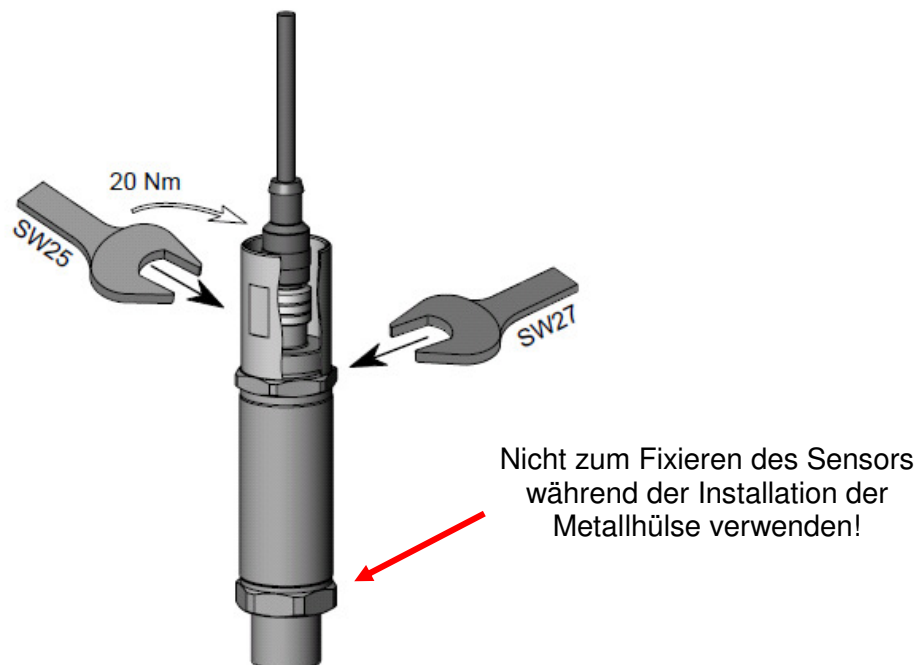
Ex tb III C T85/T95°C Db

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.

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

Das Anschlusskabel mit M12x1 Stecker muss im spannungslosen Zustand ordnungsgemäß angeschlossen und die mitgelieferte Schlagschutz-/Sicherungs-Metallhülse montiert werden. Auch die Trennung des M12x1 Steckers darf nur im Spannungslosen Zustand erfolgen.





5 Allgemeine Sicherheitshinweise

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

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.

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.

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 T85/95°C T₅₀₀120/130°C Da und II 2D Ex tb III C T85/95°C Db

IECEx:

Ex nA IIC T6, T5 Gc / Ex ta IIIC T85/95°C T₅₀₀120/130°C Da und Ex tb III C T85/95°C Db

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

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

6 Technische Daten

Eingangsgrößen

Messbereiche Signal 1	bar	40	60	100	160	250	400	600
Messbereiche Signal 2	bar	40/60	60/100	100/160	160/250	250/400	400/600	600/1000
Überlastbereiche	bar	80	120	200	320	500	800	1200
Berstdruck	bar	200	300	500	800	1250	2000	2000

Messbereiche Signal 1	psi	500	750	1000	1500	3000	5000	6000	9000
Messbereiche Signal 2	psi	500/750	750/1000	1000/1500	1500/3000	3000/5000	5000/6000	6000/9000	9000/10000
Überlastbereiche	psi	1160	1740	2900	2900	7250	11600	11600	17400
Berstdruck	psi	2900	4350	7250	7250	14500	29000	29000	29000

Mechanischer Anschluss siehe Typenschlüssel / Abmessungen

Anzugsdrehmoment siehe Abmessungen

Medienberührende Teile Edelstahl 1.4542; 1.4571; 1.4435; 1.4404; 1.4301; 1.4548

Dichtung FPM

Gehäusewerkstoff 1.4404

Ausgangsdaten

HDA 4400

HDA 4700

Ausgangssignal: Signal 1		4...20 mA, 2-Leiter	
Signal 2		20...4 mA, 2-Leiter	
Zulässige Bürde, jeweils		$R_{Lmax.} = (U_B - 12 \text{ V}) / 20 \text{ mA} [\text{k}\Omega]$	
Genauigkeit nach DIN 16086, Grenzpunkteinstellung	Typ. Max.	$\leq \pm 0,5 \% \text{ FS}$ $\leq \pm 1,0 \% \text{ FS}$	$\leq \pm 0,25 \% \text{ FS}$ $\leq \pm 0,5 \% \text{ FS}$
Genauigkeit bei Kleinstwerteinstellung (B.F.S.L.)	Typ. Max.	$\leq \pm 0,25 \% \text{ FS}$ $\leq \pm 0,5 \% \text{ FS}$	$\leq \pm 0,15 \% \text{ FS}$ $\leq \pm 0,25 \% \text{ FS}$
Temperaturkompensation Nullpunkt	Typ. max.	$\leq \pm 0,015 \% \text{ FS} / ^\circ\text{C}$ [0,0085 % FS / °F] $\leq \pm 0,025 \% \text{ FS} / ^\circ\text{C}$ [0,014 % FS / °F]	$\leq \pm 0,008 \% \text{ FS} / ^\circ\text{C}$ [0,0045 % FS / °F] $\leq \pm 0,015 \% \text{ FS} / ^\circ\text{C}$ [0,0085 % FS / °F]
Temperaturkompensation Spanne	Typ. max.	$\leq \pm 0,015 \% \text{ FS} / ^\circ\text{C}$ [0,0085 % FS / °F] $\leq \pm 0,025 \% \text{ FS} / ^\circ\text{C}$ [0,014 % FS / °F]	$\leq \pm 0,008 \% / ^\circ\text{C}$ [0,0045 % FS / °F] $\leq \pm 0,015 \% / ^\circ\text{C}$ [0,0085 % FS / °F]
Nicht-Linearität bei Grenzpunkteinstellung nach DIN 16086	max.	$\leq \pm 0,3 \% \text{ FS}$	$\leq \pm 0,3 \% \text{ FS}$
Hysterese	max.	$\leq \pm 0,4 \% \text{ FS}$	$\leq \pm 0,1 \% \text{ FS}$
Wiederholbarkeit		$\leq \pm 0,1 \% \text{ FS}$	$\leq \pm 0,05 \% \text{ FS}$
Anstiegszeit		$\leq 2 \text{ ms}$	
Langzeitdrift	Typ.	$\leq \pm 0,3 \% \text{ FS} / \text{Jahr}$	$\leq \pm 0,1 \% \text{ FS} / \text{Jahr}$

Umgebungsbedingungen

Kompensierter Temperaturbereich	-25 .. 85°C [-13 .. 185°F]	
Betriebs-/ Umgebungs-temperaturbereich ¹⁾²⁾	T6, T85°C, T ₅₀₀ 120°C T5, T95°C, T ₅₀₀ 130°C T105°C, T ₅₀₀ 140°C T4	Ta=-20..60°C [-4..140°F] / -40..60°C [-40..140°F] Ta=-20..70°C [-4..158°F] / -40..70°C [-40..158°F] Ta=-20..80°C [-4..176°F] / -40..80°C [-40..176°F] Ta=-20..85°C [-4..185°F] / -40..85°C [-40..185°F]
Mediumstemperaturbereich ¹⁾²⁾	T6, T85°C, T ₅₀₀ 120°C T5, T95°C, T ₅₀₀ 130°C T105°C, T ₅₀₀ 140°C T4	Ta=-20..60°C [-4..140°F] / -40..60°C [-40..140°F] Ta=-20..70°C [-4..158°F] / -40..70°C [-40..158°F] Ta=-20..80°C [-4..176°F] / -40..80°C [-40..176°F] Ta=-20..85°C [-4..185°F] / -40..85°C [-40..185°F]
Lagertemperaturbereich	-40 .. 100 °C [-40 .. 212°F]	
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	$\leq 20 \text{ g}$ (Gerätestecker) $\leq 10 \text{ g}$ (mit 1/2 NPT Conduit)	
Schutzart nach IEC 60529 ³⁾	IP 67 (Gerätestecker)	
Schutzart nach ISO 20653	IP6K9K (1/2 NPT Conduit)	

Relevante Daten für die Ex- Anwendung		Ex ia, ic	Ex nA, ta, tb, tc
Versorgungsspannung		12 .. 28 V	12 .. 28V
Max. Eingangsstrom		li = 100 mA	
Maximale Speiseleistung		Pi = 0,7W	max. Leistungsaufnahme ≤ 1,4 W
Anschlusskapazität des Sensors		Ci = ≤ 22 nF	
Induktivität des Sensors		Li = 0 mH	
Sicherheitsbarriere		2-kanalig, Rmin. 280 Ohm, z.B.: Pepperl & Fuchs Z789	
Isolationsspannung ⁴⁾		50 V AC, mit integriertem Überspannungsschutz nach EN 61000-6-2 oder 500 VAC	
Sonstige Größen			
Restwelligkeit		≤ 5 %	
Versorgungsspannung			
Stromaufnahme		≤ 25 mA	
Lebensdauer		>10 Mio. Lastwechsel, 0 .. 100% FS	
Gewicht		ca. 300g	

Anmerkung:

Verpolungsschutz der Versorgungsspannung, Überspannung-, Übersteuerungsschutz, Lastkurzschlussfestigkeit sind vorhanden.

FS (Full Scale) = bezogen auf den vollen Messbereich

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

¹⁾ -20 °C [-4 °F] mit FPM Dichtung, -40 °C [-40 °F] auf Anfrage

²⁾ mit M12x1 Stecker nur bis -25 °C [-13 °F] möglich

³⁾ bei montierter Kupplungsdose entsprechender Schutzart

⁴⁾ Siehe Typenschlüssel „Isolationsspannung“

7 Typenschlüssel zur Identifikation des gelieferten Gerätes

7.1 Typenschlüssel HDA 4400 / HDA 4700

HDA 4 X X X - AA - XXXXX - XXXXX - E X X - 000 (XXX)

Genauigkeit

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

Anschlussart mechanisch

2 = G 1/2 A ISO 1179-2, Außengewinde
4 = G 1/4 A ISO 1179-2, Außengewinde
6 = 7/16-20 UNF 2A (SAE4), Außengewinde

Elektrischer Anschluss

6 = Gerätestecker, M 12 x 1, 4 pol.
9 = 1/2-14 NPT Conduit (Außengewinde), Einzelader
G = 1/2-14 NPT Conduit (Außengewinde), freies Kabelende

Signal

AA = Signal 1: 4 .. 20 mA, 2-Leiter
Signal 2: 20 .. 4 mA, 2- Leiter

Messbereich Signal 1

4 stellig für bar-Version
5 stellig für psi-Version

Messbereich Signal 2

4 stellig für bar-Version
5 stellig für psi-Version

Zulassung

E = ATEX + IECEx (genauere Angaben siehe Zertifikat)

Isolationsspannung

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

Schutzklassen und Einsatzgebiete (Kennzahl)

	ATEX	IECEx
1 =	I M1 Ex ia I Ma II 1G Ex ia IIC T6,T5 Ga II 1/2 G Ex ia IIC T6,T5 Ga/Gb II 2 G Ex ia IIC T6,T5 Gb II 1D Ex ia IIIC T85°C/T95°C Da	Ex ia I Ma Ex ia IIC T6,T5 Ga Ex ia IIC T6,T5 Ga/Gb Ex ia IIC T6,T5 Gb Ex ia IIIC T85°C/T95°C Da
9 =	II 3G Ex nA IIC T6, T5 Gc Nur in Verbindung mit elektrischem Anschluss „6“ und der Schlagschutz-Sicherungs-Metallhülse (siehe auch Geräteabmessungen)	Ex nA IIC T6, T5 Gc
A =	II 1D Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da II 2D Ex tb IIIC T85/T95°C Db Nur in Verbindung mit elektrischem Anschluss „6“ und der Schlagschutz-Sicherungs-Metallhülse (siehe auch Geräteabmessungen)	Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da Ex tb IIIC T85/T95°C Db
C =	II 3G Ex ic IIC T6, T5 Gc II 3D Ex ic IIIC T85/T95°C Dc	Ex ic IIC T6, T5 Gc Ex ic IIIC T85/T95°C Dc

Modifikationsnummer

000 = Standard

Kabellänge (z.B. für Conduit-Rohranschluss)

Angabe in m oder “ (inch)

7.2 Auswertetabelle: Zuordnung der Schutzklassen

Kennzahl - Typenschlüssel	1			9	A	C
ATEX KEMA 05ATEX1016 X	I M1 Ex ia I Ma	II 1G Ex ia IIC T6,T5 Ga II 1/2G Ex ia IIC T6,T5 Ga/Gb II 1D Ex ia IIC T85/T95°C Da	II 2G Ex ia IIC T6,T5 Gb	II 3G Ex nA IIC T6,T5 Gc	II 1D Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da II 2D Ex tb IIIC T85/T95°C Db	II 3G Ex ic IIC T6,T5 Gc II 3D Ex ic IIC T85/T95°C Dc
IECEx KEM 08.0014 X	Ex ia I Ma	Ex ia IIC T6,T5 Ga Ex ia IIC T6,T5 Ga/Gb Ex ia IIC T85/T95°C Da	Ex ia IIC T6,T5 Gb	Ex nA IIC T6,T5 Gc	Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da Ex tb IIIC T85/T95°C Db	Ex ic IIC T6,T5 Gc Ex ic IIC T85/T95°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

8 Seriennummer

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

Aufbau Seriennummer:

xxyykzzzzzz

X	Fertigungsjahr	z. B. : 7 → 2017
yy	Kalenderwoche	z. B.: 27 → KW27
k	Seriennummer-Index	z. B. : -,A,B
zzzzzz	fortlaufende Seriennummer	z. B.: 123456

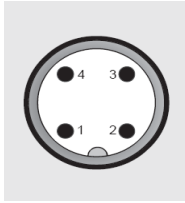
HDA 4746-AA-0400-0400-EN1-100
KEMA 05ATEX1016X

I M1 Exia I Ma
II 1G Exia IIC T6/T5 Ga
II 1/2G Exia IIC T6/T5 Ga/Gb
II 1D Exia IIIC T85/95°C Da
II 2G Exia IIC T6/T5 Gb


RangeP1/P2:400 bar
Signal I: 4..20mA
Signal II: 20..4mA
I Pin1:+ II Pin1:+
I Pin3:- II Pin3:-
S/N: 727A123456

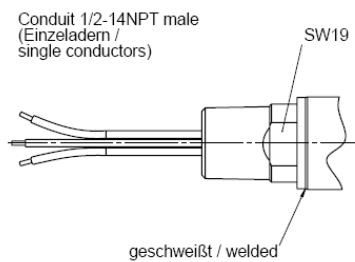
IECEx KEM 08.0014X
HYDAC ELECTRONIC
MADE IN GERMANY D-66128 SB Hauptstr.27 999999 IP67

9 Anschlussbelegung

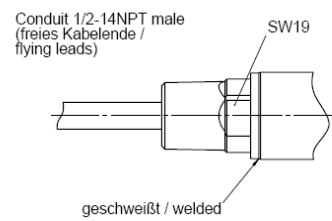


M12x1

Pin	HDA 4746-AA
1	+ Signal 1 (für Ausgangssignal 1)
2	- Signal 1 (für Ausgangssignal 1)
3	+ Signal 2 (für Ausgangssignal 2)
4	- Signal 2 (für Ausgangssignal 2)



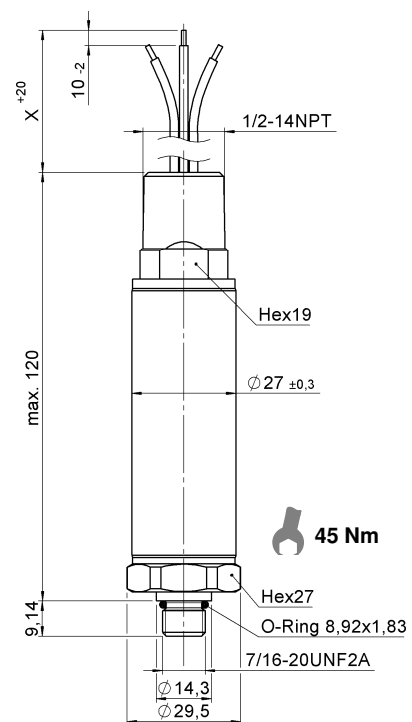
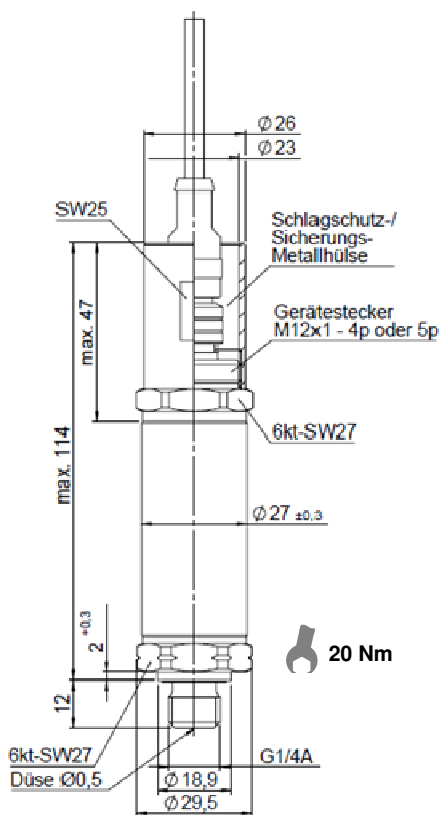
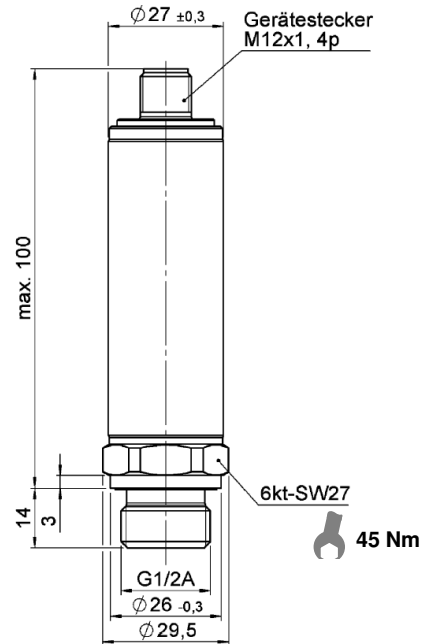
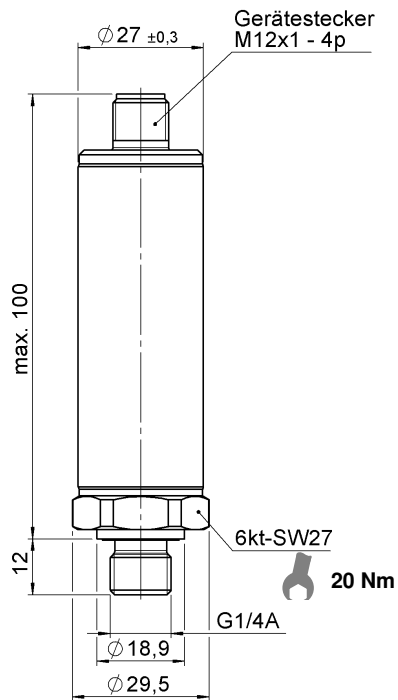
Conduit (Einzelader)



Conduit (freies Kabelende)

Die Anschlussbelegung für Geräte mit 1/2 -14 NPT elektrischem Anschluss ist auf dem Typenschild des Druckmessumformers dargestellt.

10 Abmessungen

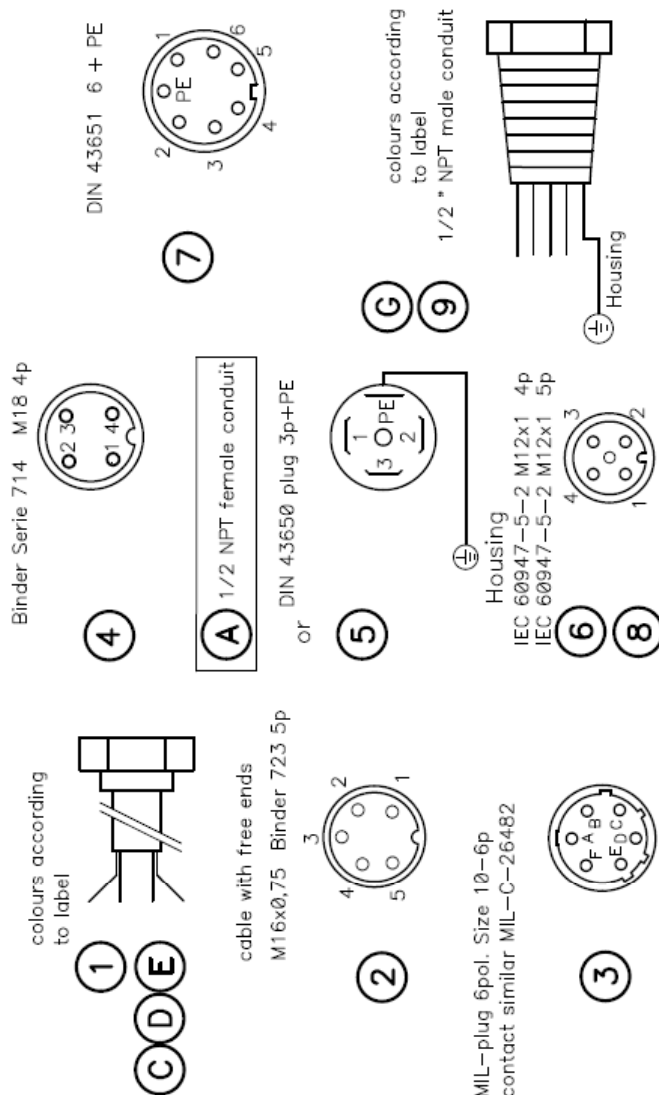


11 Kontrollzeichnung

Installation of the apparatus

$$\text{HDA}_{4 \times x} \text{O} - \text{AA} - \dots - \text{E}_{xx} - \text{ghh} \quad (\text{g} \neq 1)$$

Δ
type of connection ① .. ②
connection according to label



 For electric connection of intrinsically safe transmitters it is essential to use an approved zener barrier or power supply in order to provide full protection for installation in hazardous areas.

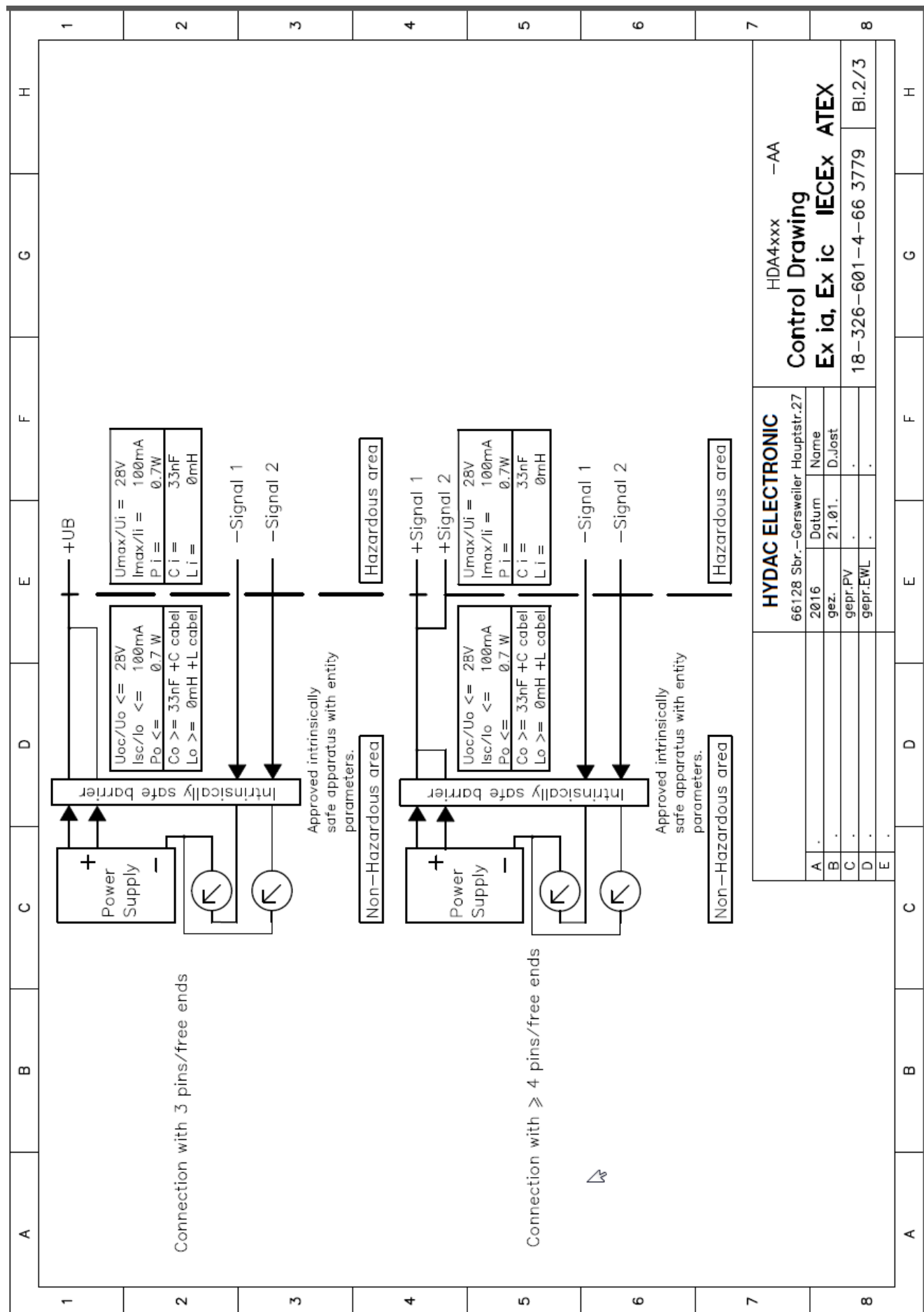
Generally, any installation, operation, maintenance, or service in hazardous areas is allowed only by authorised personnel and must follow today's directives and regulations.

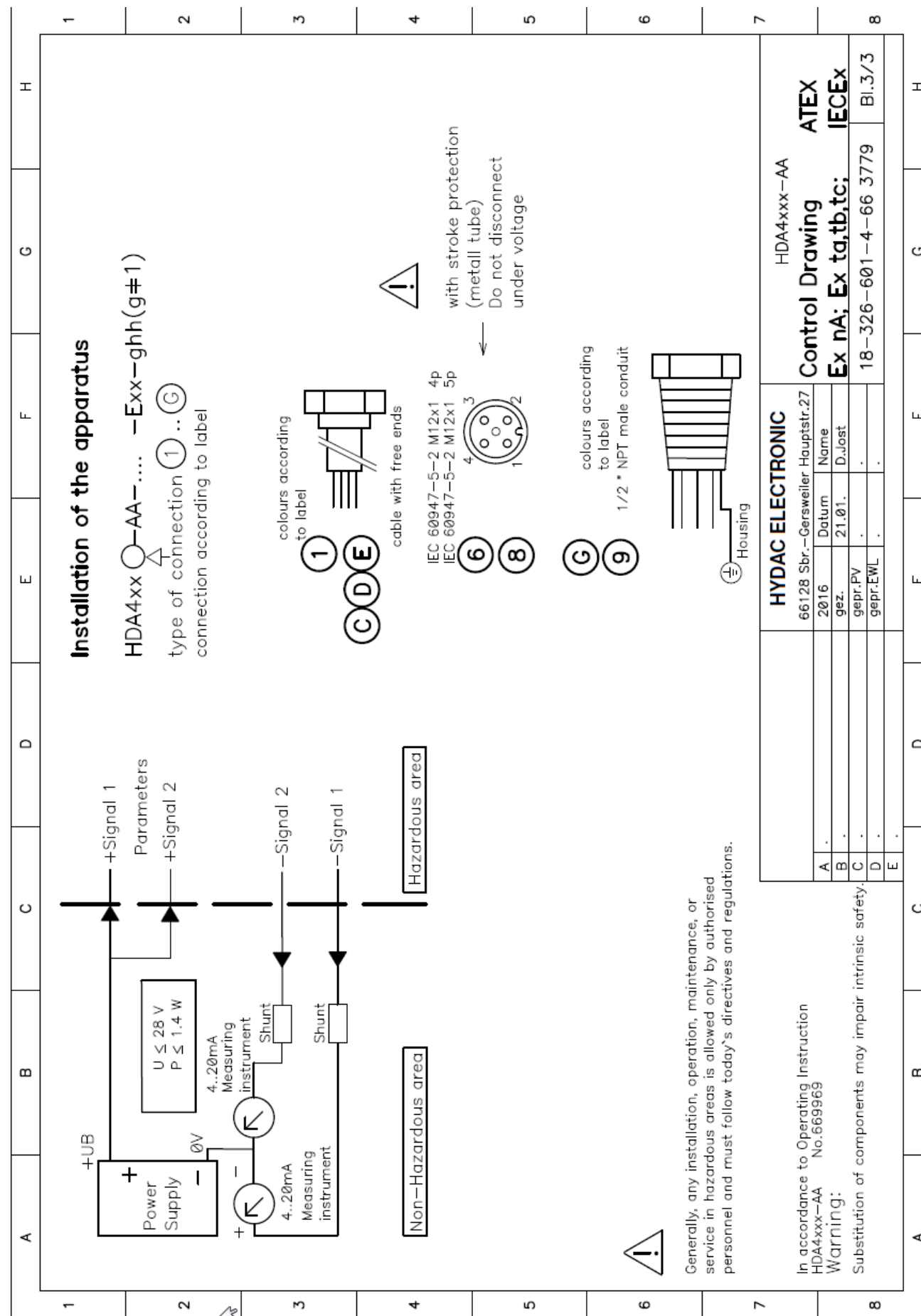
On installation, the enclosure of the equipment shall be connected to the ground of the associated IS apparatus.

In accordance to Operating Instruction No.
HDA 4xxx-AA No. 669969

Warning:
Substitution of components may impair intrinsic safety.

		HYDAC ELECTRONIC		HDA4xxx-AA	
		66128 Sbr.-Gersweiler Hauptstr.27		Control Drawing	
A	.	2016	Datum		
B	.	gez.	21.01.		
C	.	gepr.PV	.	Ex ia, Ex ic IECEx ATEX	
D	.	gepr.EWL	.	18-326-601-4-66 3779	
E	.			Bl.1/3	





12 Zertifikate

12.1 ATEX



CERTIFICATE

EU-Type Examination

(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:

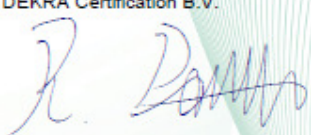


I M 1	Ex ia I Ma	II 1 D	Ex ia IIIC Txx °C Da
II 1 G	Ex ia IIC T6/T5 Ga,	II 3 D	Ex ic IIIC Txx °C Dc
II 1/2 G	Ex ia IIC T6/T5 Ga/Gb	II 1 D	Ex ta IIIC Txx °C T500yy °C Da
II 2 G	Ex ia IIC T6/T5 Gb;	II 2 D	Ex tb IIIC Txx °C Db
II 3 G	Ex ic IIC T6, T5, T4 Gc	II 3 D	Ex tc IIIC Txx Dc
II 3 G	Ex nA IIC T6, 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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(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 dataAmbient 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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Form 227A
Version 1 (2016-04)

(13) **SCHEDULE**

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

Issue No. 4

Nomenclature

Pressure Transmitter Type:
Approval:

HDA 4abc-A-d-(e)-Afg-h-i1 j k
A = 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 IIC 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 IIC 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 IIC 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 IIC T80 °C or T90 °C or T100 °C Db B = II 3 D Ex tc IIC 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 IIC 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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Form 227A
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-i1 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		

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Version 1 (2016-04)

(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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Version 1 (2016-04)

(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 IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

Pressure Transmitter Type HDA 4abc-A-d-(e)-fg-h-i1 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-i1 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 integrated in this certificate, identical products with types of protection Ex ic, Ex nA and Ex tc.

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Form 227A

12.2 IECEx

		IECEx Certificate of Conformity	
INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres for rules and details of the IECEx Scheme visit www.iecex.com			
Certificate No.:	IECEx KEM 08.0014X	Issue No: 4	Certificate history: Issue No. 4 (2016-06-01) Issue No. 3 (2014-09-16) Issue No. 2 (2013-01-25) Issue No. 1 (2009-07-08) Issue No. 0 (2008-04-28)
Status:	Current	Page 1 of 5	
Date of Issue:	2016-06-01		
Applicant:	Hydac Electronic GmbH Hauptstraße 27 66128 Saarbrücken Germany		
Electrical Apparatus:	Pressure Transmitter Type HDA 4...A...(-...)-H... Type HDA 4...A...(-...)-E... and Type HDA 4...AA...-E... (-...)		
Optional accessory:			
Type of Protection:	Ex ia, ic, nA, ia, ib, to		
Marking:	Ex ia I Ma Ex ia IIC T5/T5 Ga, Ex ia IIC T5/T5 Ga/Gb, Ex ia IIC T5/T5 Gb Ex ic IIC T5/T5/T4 Gc Ex nA IIC T5/T5/T4 Gc Ex ia IIIC 85/95 °C Da Ex ic IIIC T80/85/90/95/100/105 °C Dc Ex ia IIIC T80/85/90/95/100/105 °C T ₅₀₀ 90/100/110/120/130/140 °C Da Ex ib IIIC T80/85/90/95/100/105 °C Dc Ex to IIIC T80/85/90/95/100/105 °C Dc For details refer to nomenclature in Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4.		
Approved for issue on behalf of the IECEx Certification Body:	R.H.D. Pommé		
Position:	Certification Manager		
Signature: (for printed version)			
Date:	2016-06-01		
1. This certificate and schedule may only be reproduced in full. 2. This certificate is not transferable and remains the property of the issuing body. 3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website .			
Certificate issued by:			



IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of issue: 2016-06-01

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DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands





IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of Issue: 2016-06-01

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Manufacturer: **Hydac Electronic GmbH**
Hauptstraße 27
66128 Saarbrücken
Germany

Additional Manufacturing
location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition 5.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition 5.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-15 : 2010 Edition 4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-26 : 2014-10 Edition 3.0	Explosive atmospheres - Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31 : 2013 Edition 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[NUKEM/ExTR08.0003/04](#)

Quality Assessment Report

[DE/BVS/QAR05.0017/07](#)



IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of Issue: 2016-06-01

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Pressure Transmitter Type HDA 4...A...-(-)-L... 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...-(-)-L... and Type HDA 4...AA...-(-)-E... (-) (with g = 9, A, B or C) provides a degree of protection of at least IP64 in accordance with IEC 60529.

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

For thermal data, nomenclature and electrical data refer to Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4.

CONDITIONS OF CERTIFICATION: YES as shown below:

Pressure transmitters with an enclosure containing light metals, when used in a potentially explosive atmosphere requiring apparatus of equipment Equipment Protection Level Ga or Ma (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 Equipment Protection Level Ga or Da (Category 1) apparatus is required and areas where the use of Equipment Level Gb or Db (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.



IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of issue: 2016-06-01

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

The following product modifications have been assessed:

- added Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hj (k), which is the same type as previous evaluated as given in report NLKEM/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 Pi 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 integrated in this report. Identical products with types of protection Ex ic, Ex nA and Ex tc.

Annex

[219083200 - Annex 1 to CoC KEM 08.0014X-004.pdf](#)



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Description

Pressure Transmitter Type HDA 4...-A-...-(...)-I-... 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 IEC 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)-Ifg-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-hjj (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)-Ifg-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-hjj (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		



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Nomenclature

Pressure Transmitter Type: **HDA 4abc-A-d-(e)-lfg-h-i1 j k**
 Approval: **I = IECEx**

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 = Ex ia I Ma Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb 2 = Ex ia I Ma Ex ia IIC T6 Gb 3 = Ex ia IIC T6 Gb 4 = Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIC T85 °C Da 5 = Ex ia I Ma 9 = Ex nA IIC T6, T5, T4 Gc A = 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 Ex tb IIIC T80 °C or T90 °C or T100 °C Db B = Ex tc IIIC T80 °C or T90 °C or T100 °C Dc C = Ex ic IIC T6, T5, T4 Gc Ex ic IIIC T80 °C or T90 °C or T100 °C Dc D = Ex ia I Ma Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIIC T85 °C Da
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
l =	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		



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Nomenclature (continued)

Pressure Transmitter Type: HDA 4abc-A-d-(e)-Efg-h-i1 j k
 Approval: 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 = Ex ia I Ma Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIC T85 °C Da 2 = Ex ia I Ma Ex ia IIC T6 Gb 3 = Ex ia IIC T6 Gb 4 = Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIC T85 °C Da 5 = Ex ia I Ma 9 = Ex nA IIC T6, T5, T4 Gc A = Ex ta IIC T80 °C T ₅₀₀ 90 °C or T90 °C T ₅₀₀ 100 °C or T100 °C T ₅₀₀ 110 °C Da and Ex tb IIC T80 °C or T90 °C or T100 °C Db B = Ex tc IIC T80 °C or T90 °C or T100 °C Dc C = Ex ic IIC T6, T5, T4 Gc Ex ic IIC 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		



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, Issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Nomenclature (continued)

Double Pressure Transmitter Type: **HDA 4abc-AA-d-e-Efg-hjj (k)**
 Approval: **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 = Ex ia I Ma Ex ia IIC T6/T5 Ga and Ex ia IIC T6/T5 Ga/Gb and Ex ia IIC T6/T5 Gb Ex ia IIIC T85 °C or T95 °C Da 2 = Ex ia I Ma Ex ia IIC T6/T5 Gb 3 = Ex ia IIC T6/T5 Gb 4 = Ex ia IIC T6/T5 Ga and Ex ia IIC T6/T5 Ga/Gb and Ex ia IIC T6/T5 Gb Ex ia IIIC T85 °C or T95 °C Da 5 = Ex ia I Ma 9 = Ex nA IIC T5, T5, T4 Gc A = 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 Ex tb IIIC T85 °C or T95 °C or T105 °C Db B = Ex tc IIIC T85 °C or T95 °C or T105 °C Dc C = Ex ic IIC T6, T5, T4 Gc 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



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Electrical data

Intrinsically 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 IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

Pressure Transmitter Type HDA 4abc-A-d-(e)-.fg-h-i1 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-hjj (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-hjj (k), when connected to 1 intrinsically safe power supply:

Signale 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-i1 j k;

$P \leq 1.4 \text{ W}$ Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hjj (k)

Signal 1 $\leq 0.7 \text{ W}$ and signal 2 $\leq 0.7 \text{ W}$.

13 Konformitätserklärung

Datum
Ihr Zeichen
Ihre Nachricht
Unser Zeichen



Telefon direkt
Telefax direkt
E-Mail

HYDAC ELECTRONIC

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)

Betreff

EU-Konformitätserklärung / EC declaration of conformity 18 / 133a / 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 44 / 47 xxx-AA-xxxx-xxxx-Exx....
EMV Richtlinie / EMC Guideline	2014/ 30 EU
Normen	DIN EN 61000-6 -1 OK: 07/ -2-März08/ - 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 Certification B.V (No.0344) Meander 1051 ; NL 6812 AR Arnheim
Prüfstelle / notified body :	DEKRA EXAM Nr. : no: 0158

Schutzkennzeichen / Code for Type protection :

I M1 Ex ia I Ma II 1G Ex ia IIC T6,T5 Ga II 1/2G Ex ia IIC T6,T5 Ga/Gb
 II 2G Ex ia IIC T6,T5 Gb II 2D/Ex tb IIC T85...105°C Db
 II 1D Ex ia IIC T85...105°C Da II 3G Ex na IIC T6,T5,T4 Gc II 3G Ex ic IIC T6,T5,T4 Gc
 II 3D Ex tc IIC T85...105°C Dc II 3D Ex ic IIC T85...105°C Dc
 II 1D Ex ta IIC T85...105°C and T₅₀₀ 120...140°C Da;

28.07.2016

J. Morsch

601008

 Geschäftsführer:
Matthias Dieker
Dr. Franz Josef Eckle

 Stamm-/Gesellschaft:
66128 Saarbrücken

 Registergericht:
Saarbrücken, HRB 8707

USt-Identnummer: DE 138 277 443

Steuernummer: 040/110/50164

Geschäftsführer / Authorized person:

 Commerzbank Bank AG
Nr. 316388920, BLZ 500 500 00
BIC: COMDE33HAN
IBAN: DE44 5005 0000 0016 8888 00

 Hypo Vereinsbank
Nr. 353548264, BLZ 500 200 00
BIC: HYVDE33HAN
IBAN: DE44 5005 0000 0053 5882 64

Sparkasse

 Nr. 53500016, BLZ 500 500 00
BIC: SALA DE 33 XXXX
IBAN: DE51 5005 0000 0005 2920 00

 Deutsche Bank AG
Nr. 035580000, BLZ 500 700 00
BIC: DEUT DE 33 5555
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HYDAC Service

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

HYDAC SERVICE GMBH
Hauptstr. 27
D - 66 128 Saarbrücken
Deutschland

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

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

Technische Änderungen sind vorbehalten.

Operating Manual
Pressure Transmitter Series HDA 4000
Redundant
Intrinsically Safe, Dustproof Enclosure
Non-sparking
ATEX and IECEx, dual approval
(Translation of the original operating instructions)

**Protection Types and Zones:**

ATEX		
Certificate KEMA 05ATEX1016 X	I M1	Ex ia I Ma
	II 1G	Ex ia IIC T6,T5 Ga
	II 1/2 G	Ex ia IIC T6,T5 Ga/Gb
	II 2 G	EX ia IIC T6,T5 Gb
	II 1D	Ex ia IIIC T85/95°C Da
	II 1D	Ex ta IIIC T85/95/105 °C T ₅₀₀ 120/130/140 °C Da
	II 2D	Ex tb IIIC T85/95/105 °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 T85/T95/T105 °C Dc
	II 3D	Ex ic IIIC T85/T95/T105 °C Dc
IECEx		
Certificate IECEx KEM 08.0014X	Ex ia I Ma	
	Ex ia IIC T6,T5 Ga	
	Ex ia IIC T6,T5 Ga/Gb	
	Ex ia IIC T6,T5 Gb	
	Ex ia IIIC T85/95 °C Da	
	Ex ta IIIC T85/95/105 °C Da T ₅₀₀ 120/130/140 °C Da	
	Ex tb IIIC T85/95/105 °C Db	
	Ex nA IIC T6, T5, T4 Gc	
	Ex ic IIC T6, T5 Gc	
	Ex tc IIIC T85/95/105 °C Dc	
	Ex ic IIIC T85/95/105 °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 Data). However, if there is a cause for complaint, please contact **HYDAC Service**. Incorrect use or interference by anyone other than HYDAC personnel will cause all warranty claims and ATEX and IECEx approvals to become null and void.

2 Function

The pressure signal measured by the sensor is converted into two analog signals (1x 4 .. 20 mA, 1x 20 .. 4 mA). Connection to the power supply is realised by using 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 during installation.

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 Minimesse hose.

Tightening torque see dimensions.

Connection must be carried out by a properly qualified specialist in accordance with the pertinent regulations pertaining to potentially explosive environments (e.g. EN 60079-14). The pressure transmitters of the HDA 4000 series carry the **CE** - mark. The declaration 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 ½ 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.

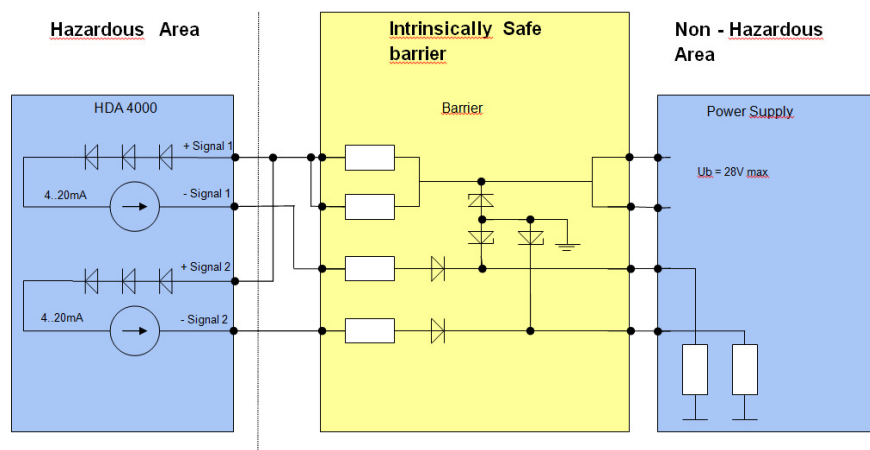
The related intrinsically safe devices (e.g. zener barriers) must also be grounded. A potential equalisation is required along the intrinsically safe electrical circuit in the N type model (insulation voltage ≤ 50 VAC).

On the HDA 4000 series, type H (insulation voltage ≤ 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.

The General Safety Precautions (cf. section 5) must be adhered to in any event.

3.1 Intrinsic safety barriers

The following intrinsic safety barrier is suitable:
double channel, $R_{min} = 280$ Ohm (i.e. Pepperl & Fuchs Z789)

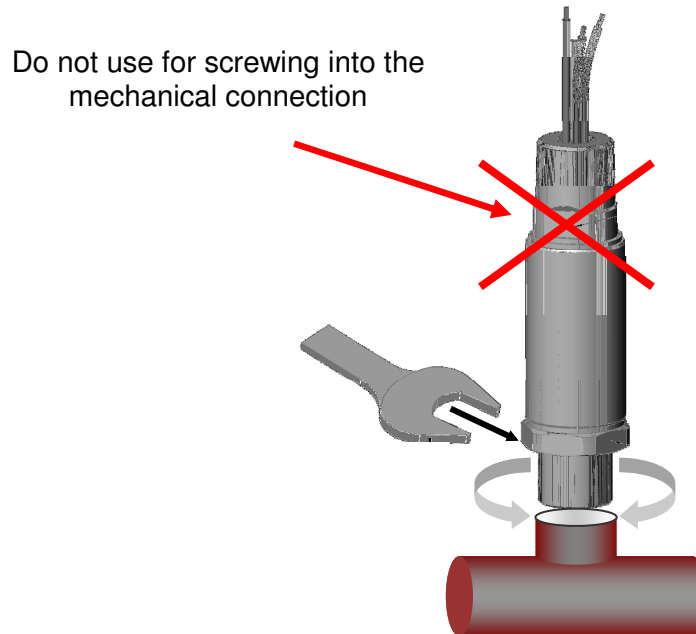


4 Important Mounting Instructions

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

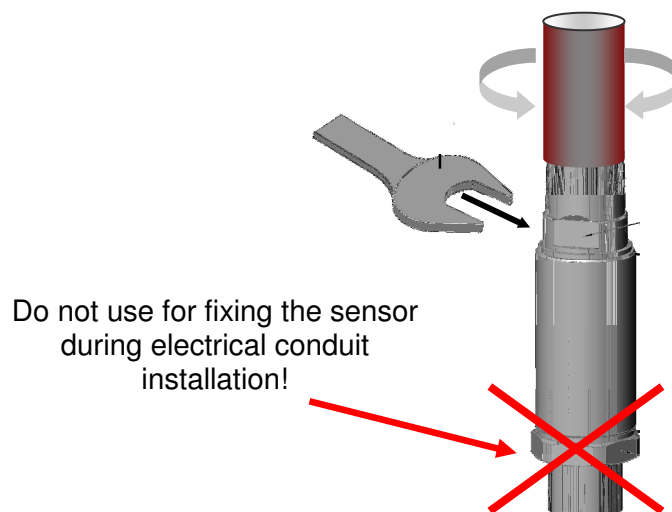
Mechanical Installation

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



Electrical Installation

The flat at the electrical connection side next to the 1/2 NPT Conduit only serves to fix the flow rate transmitter transmitter during conduit installation.



4.2 Installation Instructions for units with impact protection

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

ATEX

II 3G Ex nA IIC T6,T5 Gc

II 1D Ex ta IIIC T85/T95°C T₅₀₀ 120/130°C Da

II 2D Ex tb III C T85/T95°C Db

IECEx

Ex nA IIC T6,T5 Gc

Ex ta IIIC T85/T95°C Da T₅₀₀ 120/130°C Da

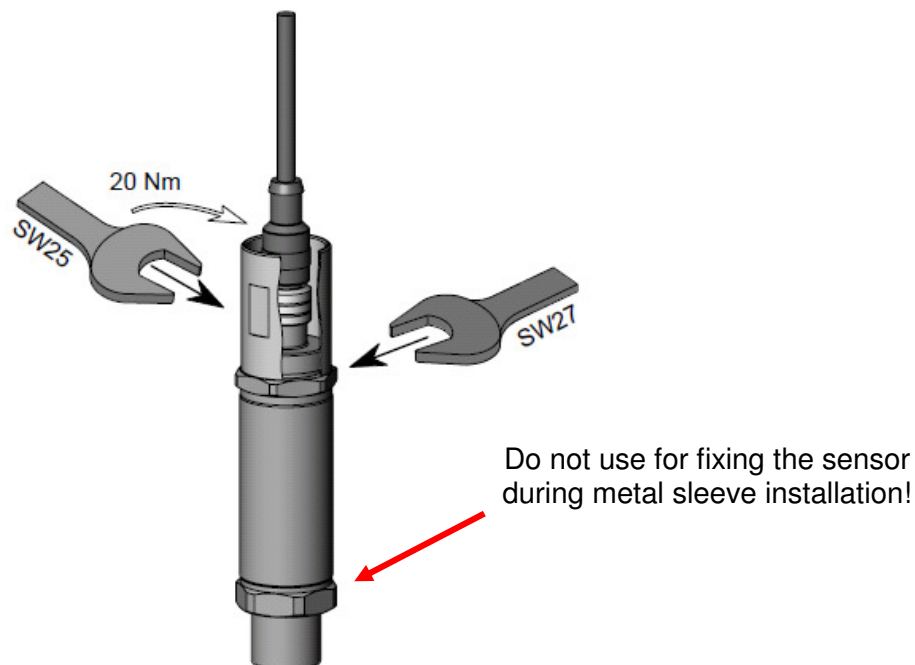
Ex tb III C T85/T95°C Db

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

The hex. 27 mm flats on the electrical connection side exclusively serves for fixing of the pressure transmitter during the installation of the the impact protected metal safety sleeve.

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

The connection of the cable with M12x1 plug may only be carried out in de-energized state and in combination with the impact protected metal safety sleeve. Also the separation of the M12x1 connector may only be carried out if the system is switched off.





5 General safety instructions

The pressure transmitter may no longer be used when the label becomes illegible.

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.

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 $100\text{ bar} \leq 0.2\text{ mm}$. 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 Data" and "Safety Information" of the EC type examination certificate).

The internal measurement membrane of the pressure transmitter is to be protected against mechanical damage.

The data pertaining to use in a hazardous location is to be heeded in any event.

Operation is only permitted if operational and process-related intensive electrostatic charges have been 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 types and applications:

ATEX:

II 3G Ex nA IIC T6, T5 Gc / II 1D Ex ta IIIC T85/95°C T₅₀₀120/130°C Da and II 2D Ex tb III C T85/95°C Db

IECEx:

Ex nA IIC T6, T5 Gc / Ex ta IIIC T85/95°C T₅₀₀120/130°C Da and Ex tb III C T85/95°C Db

The usage of the impact protected metal safety sleeve is stringently required.

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

6 Technical Data

Input data									
Measuring ranges signal 1	bar	40	60	100	160	250	400	600	
Measuring ranges signal 2	bar	40/60	60/100	100/160	160/250	250/400	400/600	600/1000	
Overload pressures	bar	80	120	200	320	500	800	1200	
Burst pressure	bar	200	300	500	800	1250	2000	2000	
Measuring ranges signal 1	psi	500	750	1000	1500	3000	5000	6000	9000
Measuring ranges signal 2	psi	500/750	750/1000	1000/1500	1500/3000	3000/5000	5000/6000	6000/9000	9000/10000
Overload pressures	psi	1160	1740	2900	2900	7250	11600	11600	17400
Burst pressure	psi	2900	4350	7250	7250	14500	29000	29000	29000
Mechanical connection	see model code / dimensions								
Tightening torque	see dimensions								
Parts in contact with fluid	Stainless steel	1.4542; 1.4571; 1.4435; 1.4404; 1.4301; 1.4548							
	Seal	FPM							
Housing material	1.4404								
Output data		HDA 4400				HDA 4700			
Output signal, Signal 1		4...20 mA, 2 conductor							
Signal 2		20...4 mA, 2 conductor							
Permitted load resistance, each		$R_{Lmax.}=(U_B - 12 \text{ V}) / 20 \text{ mA} \text{ [k}\Omega\text{]}$							
Accuracy to DIN 16086, limit setting	Typ.	$\leq \pm 0.5 \text{ \% FS}$				$\leq \pm 0.25 \text{ \% FS}$			
	Max.	$\leq \pm 1.0 \text{ \% FS}$				$\leq \pm 0.5 \text{ \% FS}$			
Accuracy at Min. setting (B.F.S.L)	Typ.	$\leq \pm 0.25 \text{ \% FS}$				$\leq \pm 0.15 \text{ \% FS}$			
	Max.	$\leq \pm 0.5 \text{ \% FS}$				$\leq \pm 0.25 \text{ \% FS}$			
Temperature compensation zero point	Typ.	$\leq \pm 0.015 \text{ \% FS/}^\circ\text{C}$ [0.0085 % FS/°F]				$\leq \pm 0.008 \text{ \% FS/}^\circ\text{C}$ [0.0045 % FS/°F]			
	max.	$\leq \pm 0.025 \text{ \% FS/}^\circ\text{C}$ [0.014 % FS/°F]				$\leq \pm 0.015 \text{ \% FS/}^\circ\text{C}$ [0.0085 % FS/°F]			
Temperature compensation Span	Typ.	$\leq \pm 0.015 \text{ \% FS/}^\circ\text{C}$ [0.0085 % FS/°F]				$\leq \pm 0.008 \text{ \% / }^\circ\text{C}$ [0.0045 % FS /°F]			
	max.	$\leq \pm 0.025 \text{ \% FS/}^\circ\text{C}$ [0.014 % FS/°F]				$\leq \pm 0.015 \text{ \% / }^\circ\text{C}$ [0.0085 % FS /°F]			
Non-linearity at max. setting to DIN 16086	max.	$\leq \pm 0.3\% \text{ FS}$				$\leq \pm 0.3 \text{ \% FS}$			
Hysteresis	max.	$\leq \pm 0.4 \text{ \% FS}$				$\leq \pm 0.1 \text{ \% FS}$			
Repeatability		$\leq \pm 0.1 \text{ \% FS}$				$\leq \pm 0.05 \text{ \% FS}$			
Rise time		$\leq 2 \text{ ms}$							
Long-term drift	Typ.	$\leq \pm 0.3 \text{ \% FS / year}$				$\leq \pm 0.1 \text{ \% FS / year}$			
Ambient conditions									
Compensated temperature range		$-25 \dots 85^\circ\text{C}$ [-13 ... 185°F]							
Operation / ambient temperature range ¹⁾²⁾		T6, T85°C, T ₅₀₀ 120°C				Ta=-20 ... 60°C [-4..140°F] / -40 ... 60°C [-40..140°F]			
		T5, T95°C, T ₅₀₀ 130°C				Ta=-20 ... 70°C [-4..158°F] / -40 ... 70°C [-40..158°F]			
		T105°C, T ₅₀₀ 140°C				Ta=-20 ... 80°C [-4..176°F] / -40 ... 80°C [-40..176°F]			
		T4				Ta=-20 ... 85°C [-4..185°F] / -40 ... 85°C [-40..185°F]			
Fluid temperature range ¹⁾²⁾		T6, T85°C, T ₅₀₀ 120°C				Ta=-20 ... 60°C [-4..140°F] / -40 ... 60°C [-40..140°F]			
		T5, T95°C, T ₅₀₀ 130°C				Ta=-20 ... 70°C [-4..158°F] / -40 ... 70°C [-40..158°F]			
		T105°C, T ₅₀₀ 140°C				Ta=-20 ... 80°C [-4..176°F] / -40 ... 80°C [-40..176°F]			
		T4				Ta=-20 ... 85°C [-4..185°F] / -40 ... 85°C [-40..185°F]			
Storage temperature range		$-40 \dots 100^\circ\text{C}$ [-40 ... 212°F]							
CE- Mark		EN 61000-6-1/ 2/ 3/ 4 ; EN 60079-0/ 11/ 15 / 26/ 31 ; EN 50303							
Vibration resistance acc. DIN EN 60068-2-6 at 10 ... 500 Hz		$\leq 20 \text{ g}$ (male connector) $\leq 10 \text{ g}$ (with1/2 NPT Conduit)							
Protection class to IEC 60529 ³⁾		IP 67 (male connector)							
Protection class to ISO 20653		IP6K9K (1/2 NPT Conduit)							

Relevant data for Ex applications		Ex ia, ic	Ex nA, ta, tb, tc
Supply voltage		12 .. 28 V	12 .. 28 V
Max. input current		li = 100 mA	
Maximum input power		Pi = 0.7W	Max. power consumption ≤ 1.4W
Connection capacitance of the sensor		Ci = ≤ 22 nF	
Inductance of the sensor		Li = 0 mH	
Intrinsic safety barrier		Double channel Rmin 280 Ohm, (i.e. Pepperl & Fuchs Z789)	
Insulation voltage ⁴⁾		50 V AC, with integrated overvoltage protection to EN 61000-6-2 or 500 V AC	
Other data			
Residual ripple of supply voltage		≤ 5 %	
Current consumption		≤ 25 mA	
Life expectancy		> 10 million cycles, 0 .. 100 %FS	
Weight		ca. 300g	

Note:

Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.

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

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

1) $-20 \text{ }^{\circ}\text{C}$ [-4°F] with FPM seal, $-40 \text{ }^{\circ}\text{C}$ [-40°F] on request

2) with M12x1 male connector only possible up to -25°C [-13°F]

3) with mounted female connector having the corresponding protection class

4) see model code for "insulation voltage"

7 Model code to identify the delivered part

7.1 Model Code HDA 4400 / HDA 4700

HDA 4 X X X - AA - XXXXX - XXXXX - E X X - 000 (XXX)

Accuracy

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

Mechanical connection

2 = G 1/2 A ISO 1179-2, male thread
4 = G 1/4 A ISO 1179-2, male thread
6 = 7/16-20 UNF 2A (SAE 4), male thread

Electrical connection

6 = Male connector M 12 x 1, 4 pol.
9 = 1/2-14 NPT Conduit (male thread), single lead
G = 1/2-14 NPT Conduit (male thread), jacketed cable

Signal

AA = Signal 1: 4 .. 20 mA, 2 conductor
Signal 2: 20 .. 4 mA, 2 conductor

Measuring range signal 1

4 digit for bar version
5 digit for psi version

Measuring range signal 2

4 digit for bar version
5 digit for psi version

Approval

E = ATEX + IECEx (further details, see certificates)

Insulation voltage

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

Protection types and applications: (code)

	ATEX	IECEx
1 =	I M1 Ex ia I Ma II 1G Ex ia IIC T6,T5 Ga II 1/2 G Ex ia IIC T6,T5 Ga/Gb II 2 G Ex ia IIC T6,T5 Gb II 1D Ex ia IIIC T85°C/T95°C Da	Ex ia I Ma Ex ia IIC T6,T5 Ga Ex ia IIC T6,T5 Ga/Gb Ex ia IIC T6,T5 Gb Ex ia IIIC T85°C/T95°C Da
9 =	II 3G Ex nA IIC T6, T5 Gc Only in conjunction with electrical connection "6" and the the the impact protected metal safety sleeve (see device dimensions)	Ex nA IIC T6, T5 Gc Only in conjunction with electrical connection "6" and the the the impact protected metal safety sleeve (see device dimensions)
A =	II 1D Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da II 2D Ex tb IIIC T85/T95°C Db Only in conjunction with electrical connection "6" and the the the impact protected metal safety sleeve (see device dimensions)	Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da Ex tb IIIC T85/T95°C Db Only in conjunction with electrical connection "6" and the the the impact protected metal safety sleeve (see device dimensions)
C =	II 3G Ex ic IIC T6, T5 Gc II 3D Ex ic IIIC T85/T95°C Dc	Ex ic IIC T6, T5 Gc Ex ic IIIC T85/T95°C Dc

Modification number

000 = standard

Cable length (e.g. for Conduit connection)

Indications in m or " (inch)

7.2 Evaluation table: Classification of the protection type

Code no. for use in model code	1			9	a	C
ATEX KEMA 05ATEX1016 X	I M1 Ex ia I Ma	II 1G Ex ia IIC T6,T5 Ga II 1/2G Ex ia IIC T6,T5 Ga/Gb II 1D Ex ia IIC T85/T95°C Da	II 2G Ex ia IIC T6,T5 Gb	II 3G Ex nA IIC T6,T5 Gc	II 1D Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da II 2D Ex tb IIIC T85/T95°C Db	II 3G Ex ic IIC T6,T5 Gc II 3D Ex ic IIC T85/T95°C Dc
IECEx KEM 08.0014 X	Ex ia I Ma	Ex ia IIC T6,T5 Ga Ex ia IIC T6,T5 Ga/Gb Ex ia IIC T85/T95°C Da	Ex ia IIC T6,T5 Gb	Ex nA IIC T6,T5 Gc	Ex ta IIIC T85/T95°C T ₅₀₀ 120 /130°C Da Ex tb IIIC T85/T95°C Db	Ex ic IIC T6,T5 Gc Ex ic IIC T85/T95°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

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): xxxykzzzzzz

X	Manufacturing year	e.g. : 7 → 2017
yy	Calendar week	e.g. : 27 → KW27
k	Change control status	e.g. : -,A,B
zzzzzz	Sequential serial number	e.g. : 123456

HDA 4746-AA-0400-0400-EN1-100
KEMA 05ATEX1016X

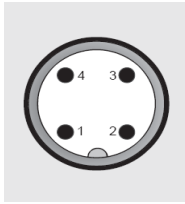
I M1 Exia I Ma II 1G Exia IIC T6/T5 Ga II 1/2G Exia IIC T6/T5 Ga/Gb II 1D Exia IIIC T85/95°C Da II 2G Exia IIC T6/T5 Gb	  0158 RangeP1/P2:400 bar Signal I: 4..20mA Signal II: 20..4mA I Pin1:+ II Pin1:+ I Pin3:- II Pin3:- S/N: 727A123456
---	--

IECEx KEM 08.0014X

HYDAC ELECTRONIC

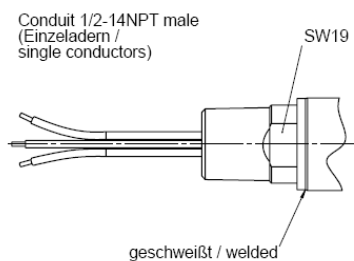
MADE IN GERMANY D-66128 SB Hauptstr.27 999999 IP67

9 PIN connection

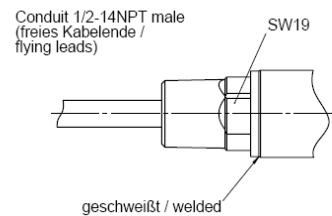


M12x1

Pin	HDA 4746-AA
1	+ Signal 1 (for output signal 1)
2	- Signal 1 (for output signal 1)
3	+ Signal 2 (for output signal 2)
4	- Signal 2 (for output signal 2)



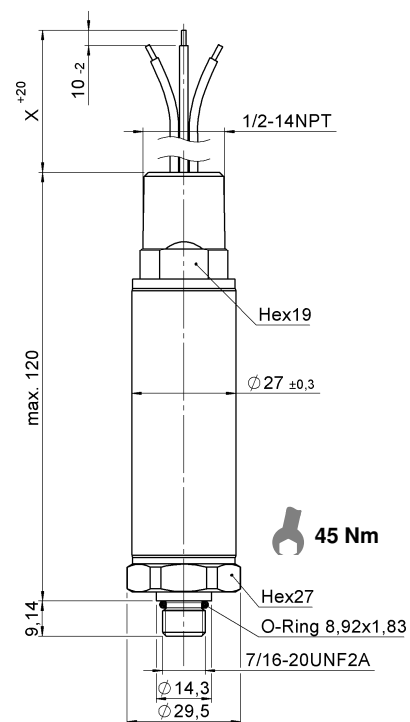
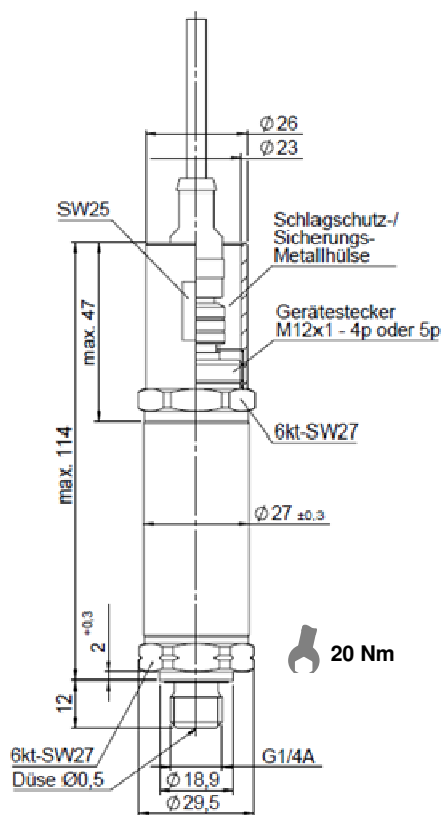
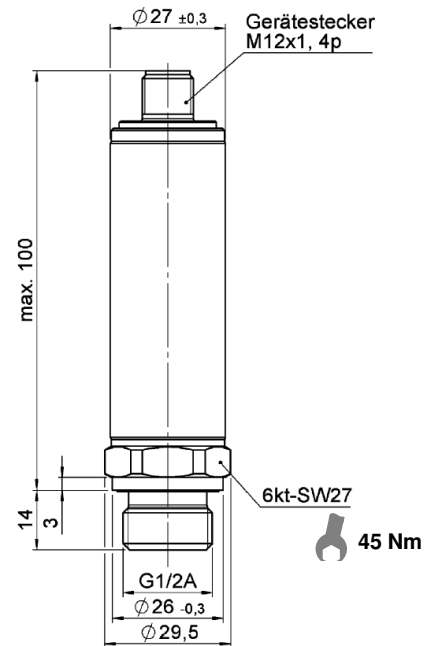
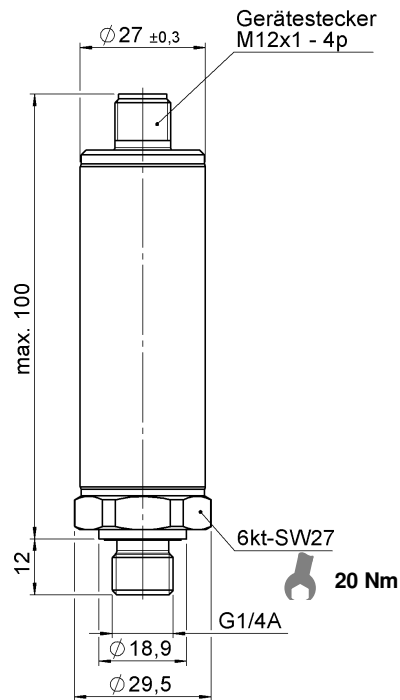
Conduit (single leads)



Conduit (jacketed cable)

The pin connection for the devices with 1/2 -14 NPT electrical connection is indicated on the type label of the pressure transmitter.

10 Dimension

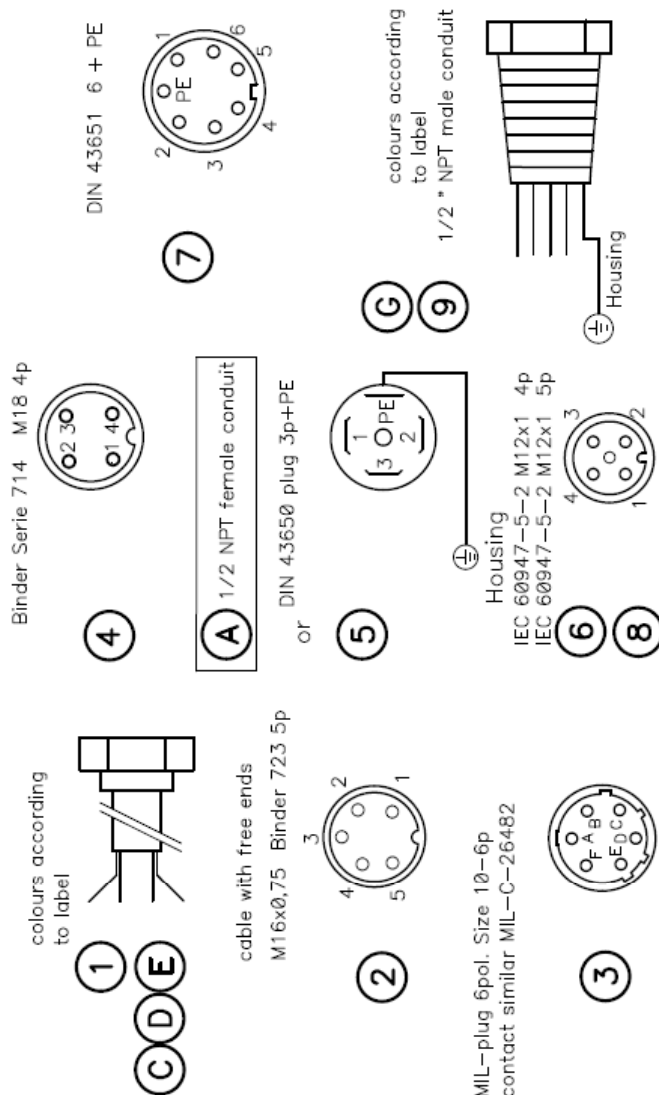


11 Control Drawing

Installation of the apparatus

$$\text{HDA}_{4 \times x} \text{O} - \text{AA} - \dots - \text{E}_{xx} - \text{ghh} \quad (\text{g} \neq 1)$$

Δ
type of connection 1 .. N
connection according to label



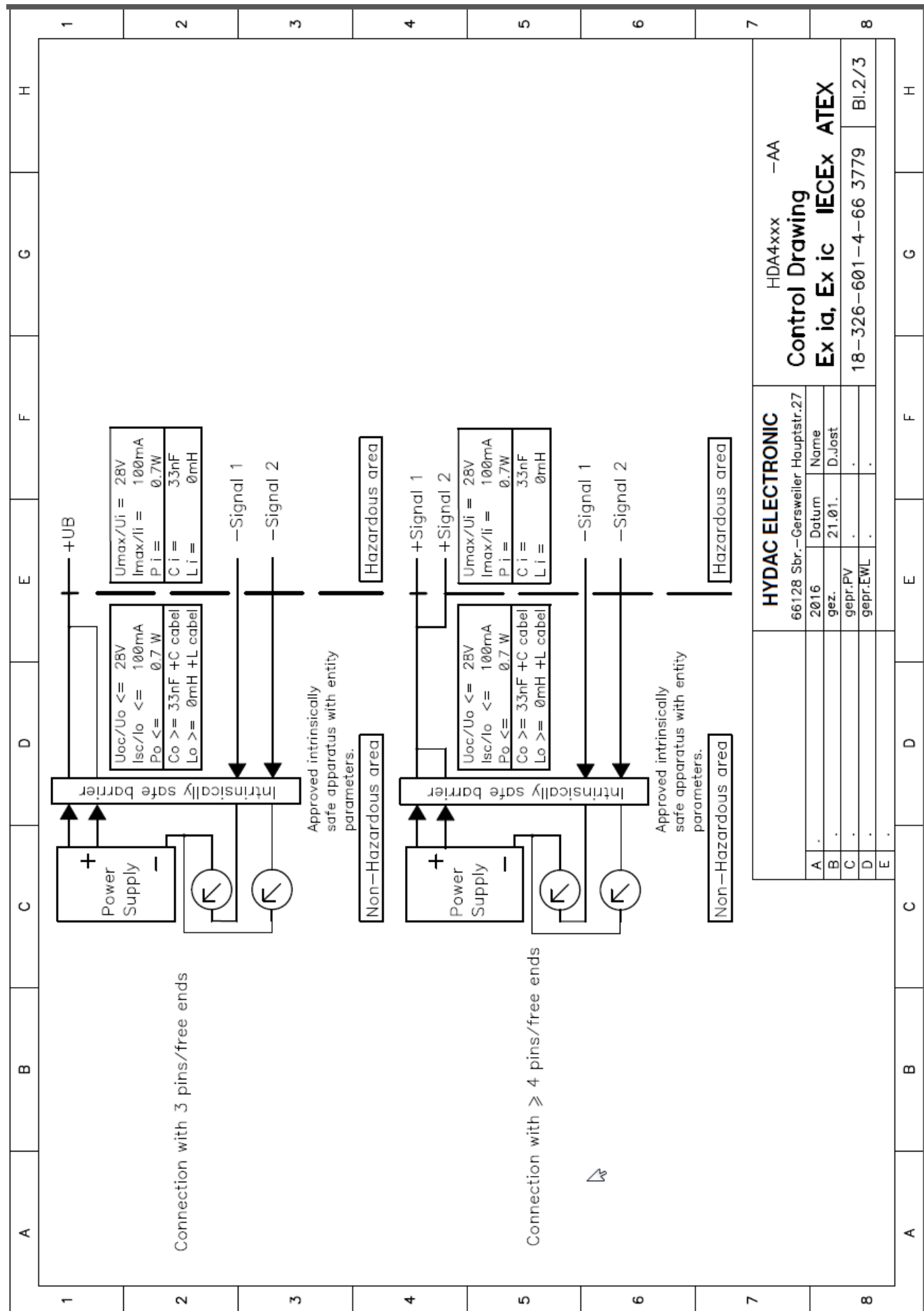
For electric connection of intrinsically safe transmitters it is essential to use an approved zener barrier or power supply in order to provide full protection for installation in hazardous areas.

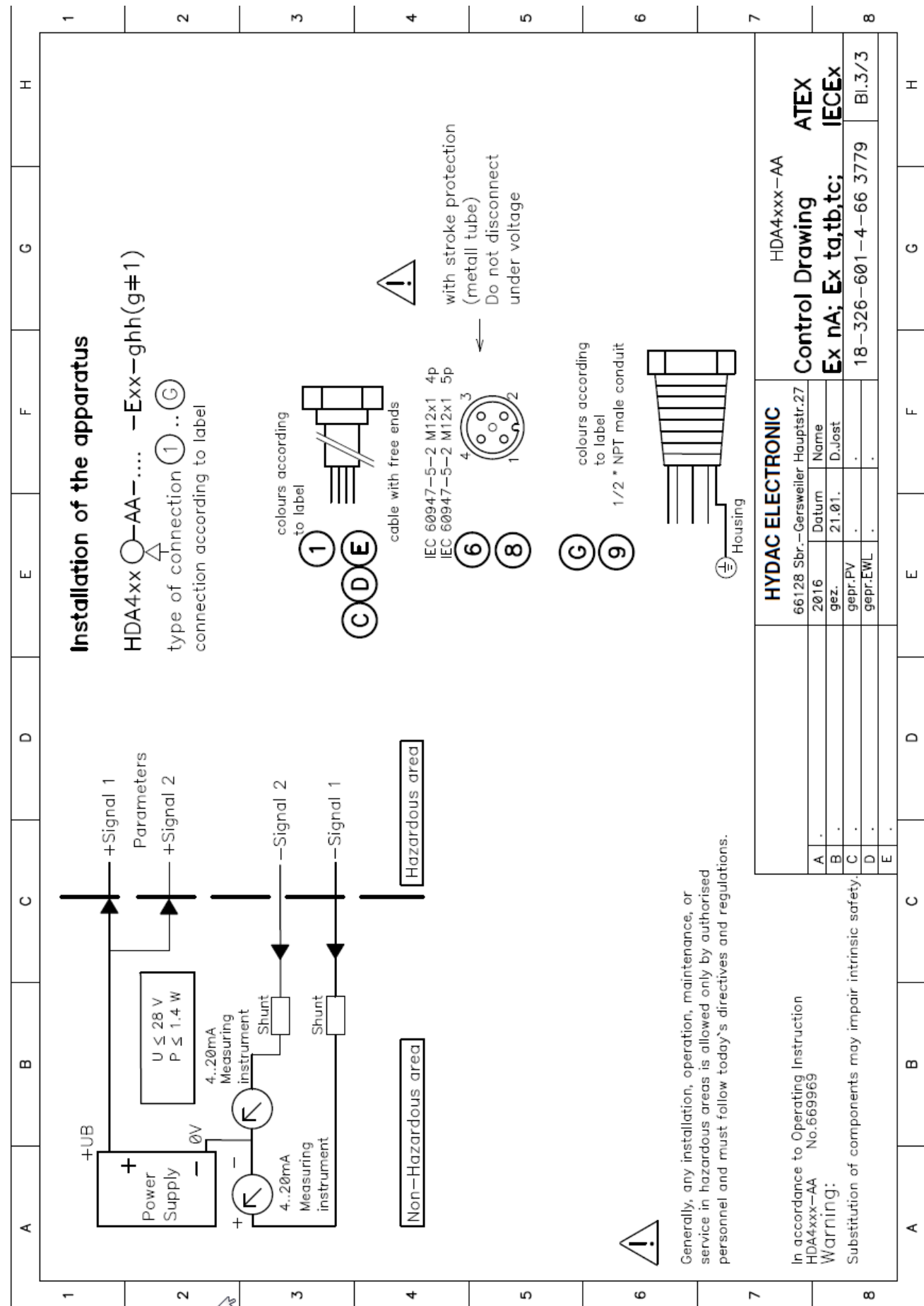
Generally, any installation, operation, maintenance, or service in hazardous areas is allowed only by authorised personnel and must follow today's directives and regulations. On installation, the enclosure of the equipment shall be connected to the ground of the associated IS apparatus.

In accordance to Operating Instruction No.
HDA 4xxx-AA No. 669969

Warning:
Substitution of components may impair intrinsic safety.

		HYDAC ELECTRONIC		HDA4xxx-AA	
		66128 Sbr.-Gersweiler Hauptstr.27		Control Drawing	
A .		2016	Datum		
B .		gez.	21.01.		
C .		gepr.PV	.		
D .		gepr.EWL	.		
E .					
				Ex ia, Ex ic IECEx ATEX	
				18-326-601-4-66 3779	
				Bl.1/3	





12 Certificates

12.1 ATEX



CERTIFICATE

EU-Type Examination

(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:

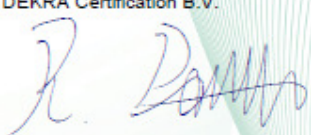


I M 1	Ex ia I Ma	II 1 D	Ex ia IIIC Txx °C Da
II 1 G	Ex ia IIC T6/T5 Ga,	II 3 D	Ex ic IIIC Txx °C Dc
II 1/2 G	Ex ia IIC T6/T5 Ga/Gb	II 1 D	Ex ta IIIC Txx °C T500yy °C Da
II 2 G	Ex ia IIC T6/T5 Gb;	II 2 D	Ex tb IIIC Txx °C Db
II 3 G	Ex ic IIC T6, T5, T4 Gc	II 3 D	Ex tc IIIC Txx Dc
II 3 G	Ex nA IIC T6,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



* Integral publication of this certificate and adjoining reports is allowed. This Certificate may only be reproduced in its entirety and without any change.

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(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 dataAmbient 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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Form 227A
Version 1 (2016-04)

(13) **SCHEDULE**

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

Issue No. 4

Nomenclature

Pressure Transmitter Type:
Approval:

HDA 4abc-A-d(e)-Afg-h-i1 j k
A = 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 IIC 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 IIC 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 IIC 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 IIC T80 °C or T90 °C or T100 °C Db B = II 3 D Ex tc IIC 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 IIC 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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Form 227A
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-i1 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		

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Form 227A
Version 1 (2016-04)

(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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Form 227A
Version 1 (2016-04)

(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 IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

Pressure Transmitter Type HDA 4abc-A-d-(e)-fg-h-i1 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-i1 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.

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Form 227A



(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 integrated in this certificate, identical products with types of protection Ex ic, Ex nA and Ex tc.

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Form 227A

12.2 IECEx

		IECEx Certificate of Conformity	
INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres for rules and details of the IECEx Scheme visit www.iecex.com			
Certificate No.:	IECEx KEM 08.0014X	Issue No: 4	Certificate history: Issue No. 4 (2016-06-01) Issue No. 3 (2014-09-16) Issue No. 2 (2013-01-25) Issue No. 1 (2009-07-08) Issue No. 0 (2008-04-28)
Status:	Current	Page 1 of 5	
Date of Issue:	2016-06-01		
Applicant:	Hydac Electronic GmbH Hauptstraße 27 66128 Saarbrücken Germany		
Electrical Apparatus:	Pressure Transmitter Type HDA 4...A...(-...)-H... Type HDA 4...A...(-...)-E... and Type HDA 4...AA...-E... (-...)		
Optional accessory:			
Type of Protection:	Ex ia, ic, nA, ia, ib, to		
Marking:	Ex ia I Ma Ex ia IIC T6/T5 Ga, Ex ia IIC T6/T5 Ga/Gb, Ex ia IIC T6/T5 Gb Ex ic IIC T6/T5/T4 Gc Ex nA IIC T6/T5/T4 Gc Ex ia IIIC 85/95 °C Da Ex ic IIIC T80/85/90/95/100/105 °C Dc Ex ta IIIC T80/85/90/95/100/105 °C T ₅₀₀ 90/100/110/120/130/140 °C Da Ex tb IIIC T80/85/90/95/100/105 °C Db Ex to IIIC T80/85/90/95/100/105 °C Dc For details refer to nomenclature in Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4.		
Approved for issue on behalf of the IECEx Certification Body:	R.H.D. Pommé		
Position:	Certification Manager		
Signature: (for printed version)			
Date:	2016-06-01		
1. This certificate and schedule may only be reproduced in full. 2. This certificate is not transferable and remains the property of the issuing body. 3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website .			
Certificate issued by:			



IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of issue: 2016-06-01

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DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
The Netherlands





IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X Issue No: 4
 Date of Issue: 2016-06-01 Page 3 of 5
 Manufacturer: Hydac Electronic GmbH
 Hauptstraße 27
 66128 Saarbrücken
 Germany

Additional Manufacturing
 location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:5.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:5.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"
IEC 60079-15 : 2010 Edition:4	Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
IEC 60079-26 : 2014-10 Edition:3.0	Explosive atmospheres - Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "T"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[NUKEM/ExTR08.0003/04](#)

Quality Assessment Report

[DE/BVS/QAR05.0017/07](#)



IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of Issue: 2016-06-01

Page 4 of 5

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Pressure Transmitter Type HDA 4...A...-(-)-L... 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...-(-)-L... and Type HDA 4...AA...-(-)-E... (-) (with g = 9, A, B or C) provides a degree of protection of at least IP64 in accordance with IEC 60529.

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

For thermal data, nomenclature and electrical data refer to Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4.

CONDITIONS OF CERTIFICATION: YES as shown below:

Pressure transmitters with an enclosure containing light metals, when used in a potentially explosive atmosphere requiring apparatus of equipment Equipment Protection Level Ga or Ma (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 Equipment Protection Level Ga or Da (Category 1) apparatus is required and areas where the use of Equipment Level Gb or Db (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.



IECEx Certificate of Conformity

Certificate No: IECEx KEM 08.0014X

Issue No: 4

Date of issue: 2016-06-01

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

The following product modifications have been assessed:

- added Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hj (k), which is the same type as previous evaluated as given in report NLKEM/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 integrated in this report. Identical products with types of protection Ex ic, Ex nA and Ex tc.

Annex

[219083200 - Annex 1 to CoC KEM 08.0014X-004.pdf](#)



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Description

Pressure Transmitter Type HDA 4...-A-...-(...)-I-... 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 IEC 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)-Ifg-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-hjj (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)-Ifg-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-hjj (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		



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Nomenclature

Pressure Transmitter Type: **HDA 4abc-A-d-(e)-lfg-h-i1 j k**
 Approval: **I = IECEx**

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 = Ex ia I Ma Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb 2 = Ex ia I Ma Ex ia IIC T6 Gb 3 = Ex ia IIC T6 Gb 4 = Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIC T85 °C Da 5 = Ex ia I Ma 9 = Ex nA IIC T6, T5, T4 Gc A = 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 Ex tb IIIC T80 °C or T90 °C or T100 °C Db B = Ex tc IIIC T80 °C or T90 °C or T100 °C Dc C = Ex ic IIC T6, T5, T4 Gc Ex ic IIIC T80 °C or T90 °C or T100 °C Dc D = Ex ia I Ma Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIIC T85 °C Da
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
l =	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		



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Nomenclature (continued)

Pressure Transmitter Type: HDA 4abc-A-d-(e)-Efg-h-i1 j k
 Approval: 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 = Ex ia I Ma Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIC T85 °C Da 2 = Ex ia I Ma Ex ia IIC T6 Gb 3 = Ex ia IIC T6 Gb 4 = Ex ia IIC T6 Ga and Ex ia IIC T6 Ga/Gb and Ex ia IIC T6 Gb Ex ia IIC T85 °C Da 5 = Ex ia I Ma 9 = Ex nA IIC T6, T5, T4 Gc A = Ex ta IIC T80 °C T ₅₀₀ 90 °C or T90 °C T ₅₀₀ 100 °C or T100 °C T ₅₀₀ 110 °C Da and Ex tb IIC T80 °C or T90 °C or T100 °C Db B = Ex tc IIC T80 °C or T90 °C or T100 °C Dc C = Ex ic IIC T6, T5, T4 Gc Ex ic IIC 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		



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, Issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Nomenclature (continued)

Double Pressure Transmitter Type: **HDA 4abc-AA-d-e-Efg-hjj (k)**
 Approval: **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 = Ex ia I Ma Ex ia IIC T6/T5 Ga and Ex ia IIC T6/T5 Ga/Gb and Ex ia IIC T6/T5 Gb Ex ia IIIC T85 °C or T95 °C Da 2 = Ex ia I Ma Ex ia IIC T6/T5 Gb 3 = Ex ia IIC T6/T5 Gb 4 = Ex ia IIC T6/T5 Ga and Ex ia IIC T6/T5 Ga/Gb and Ex ia IIC T6/T5 Gb Ex ia IIIC T85 °C or T95 °C Da 5 = Ex ia I Ma 9 = Ex nA IIC T5, T5, T4 Gc A = Ex ta IIIC T85 °C T ₀₀₀ 120 °C or T95 °C T ₅₀₀ 130 °C or T105 °C T ₅₀₀ 140 °C Da and Ex tb IIIC T85 °C or T95 °C or T105 °C Db B = Ex tc IIIC T85 °C or T95 °C or T105 °C Dc C = Ex ic IIC T6, T5, T4 Gc 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



Annex 1 to Certificate of Conformity IECEx KEM 08.0014X, issue 4
Annex 1 to IECEx test report NL/KEM/ExTR08.0003/04

Electrical data

Intrinsically 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 IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

Pressure Transmitter Type HDA 4abc-A-d-(e)-.fg-h-i1 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-hjj (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-hjj (k), when connected to 1 intrinsically safe power supply:

Signale 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-i1 j k;

$P \leq 1.4 \text{ W}$ Double Pressure Transmitter Type HDA 4abc-AA-d-e-Efg-hjj (k)

Signal 1 $\leq 0.7 \text{ W}$ and signal 2 $\leq 0.7 \text{ W}$.

13 Declaration 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
	
EU-Konformitätserklärung / EC declaration of conformity 18 / 133a / 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 Typ EMV Richtlinie / EMC Guideline Normen Geräte für explosionsgefährdete Bereiche / Equipment for use in potentially explosive atmospheres Normen EG Baumusterprüfbescheinigung / EC -Type Examination Certificate : Prüfstelle / notified body : Schutzkennzeichen / Code for Type protection :	Druckmessumformer / Pressure Transducer HDA 44 / 47 xxx-AA-xxxx-xxxx-Exx... 2014/ 30 EU DIN EN 61000-6 -1 OK: 07/ -2-März08/ -3 /4 Sept 11 2014/34 EU EN 60079 -0: 2012+A11 ; -11: 2012 ; -15: 2010 ; -26: 2015 ; -31: 2014 EN 50303 : 2000 KEMA 05 ATEX 1016X Issue: 4 DEKRA Certification B.V (No.0344) Meander 1051 ; NL 6812 AR Arnheim DEKRA EXAM Nr. : no: 0158 I M1 Ex ia I Ma II 1G Ex ia IIC T6,T5 Ga II 1/2G Ex ia IIC T6,T5 Ga/Gb II 2G Ex ia IIC T6,T5 Gb II 2D/Ex tb IIC T85...105°C Db II 1D Ex ia IIC T85...105°C Da II 3G Ex na IIC T6,T5,T4 Gc II 3E Ex ic IIC T6,T5,T4 Gc II 3D Ex tc IIC T85...105°C Dc II 3D Ex ic IIC T85...105°C Dc II 1D Ex ta IIC T85...105°C and T ₅₀₀ 120...140°C Da;
28.07.2016 J. Morsch Geschäftsführer: Matthias Dierker Dr. Franz Josef Eckle	Geschäftsführer: Matthias Dierker Dr. Franz Josef Eckle Registergericht: Saarbrücken, HRB 8707 USt-Identnummer: DE 138 277 443 Steuernummer: 040/110/50164
Geschäftsführer: Matthias Dierker Dr. Franz Josef Eckle	Geschäftsführer: Matthias Dierker Dr. Franz Josef Eckle Registergericht: Saarbrücken, HRB 8707 USt-Identnummer: DE 138 277 443 Steuernummer: 040/110/50164
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NOTE

The information and particulars provided in this manual apply to the operating conditions and applications described herein. For applications or 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.

All technical details are subject to change.