

Bedienungsanleitung (Original-Bedienungsanleitung) Temperaturmessumformer Serie ETS 4500 mit Explosion Proof / Flame Proof-Zulassung

Operating Instructions (Translation of the original instructions) Temperature Transmitter Series ETS 4500 with Explosion Proof / Flame Proof approval



CSA Explosion Proof (seal not required)
ATEX Flame Proof
IECEX Flame Proof

Certificate No.: CSA MC 224264
Certificate No.: KEMA 10ATEX0100 X
Certificate No.: IECEX KEM 10.0053X

Certification El. Connection	1/2 -14 NPT Conduit or M20x1,5 Conduit Single leads	1/2 -14 NPT Conduit or M20x1,5 Conduit Jacketed cable
<i>cCSA_{US}</i>	Class I Groups A, B, C, D, T6, T5 Class I Zone 1 AEx db IIC T6, T5 Gb [US] Ex db IIC T6, T5 Gb [C] Class II Groups E, F, G T110°C, T120°C, T130°C Zone 21 AEx tb IIIC T110°C, T120°C, T130°C Db [US] Ex tb IIIC T110°C, T120°C, T130°C Db [C] Class III Type 4	Class I Groups A, B, C, D, T6, T5 Class I Zone 1 AEx db IIC T6, T5 Gb [US] Ex db IIC T6, T5 Gb [C] Class II Groups E, F, G T110°C Zone 21 AEx tb IIIC T110°C Db [US] Ex tb IIIC T110°C Db [C] Class III Type 4
<i>ATEX</i>	I M2 Ex db I Mb II 2G Ex db IIC T6, T5 Gb II 2D Ex tb IIIC T110°C, T120°C, T130°C Db	I M2 Ex db I Mb II 2G Ex db IIC T6, T5 Gb II 2D Ex tb IIIC T110°C Db
<i>IECEX</i>	Ex db I Mb Ex db IIC T6, T5 Gb Ex tb IIIC T110°C, T120°C, T130°C Db	Ex db I Mb Ex db IIC T6, T5 Gb Ex tb IIIC T110°C Db

Certification El. Connection	Connection head Aluminum	Connection head Stainless steel
<i>cCSA_{US}</i>	Class I Groups A, B, C, D, T6, T5 Class I Zone 1 AEx db IIC T6, T5 Gb [US] Ex db IIC T6, T5 Gb [C] Class II Groups E, F, G T110°C, T120°C, T130°C Class III Type 4	Class I Groups B, C, D, T6, T5 Class II Groups E, F, G T110°C, T120°C, T130°C Class III Type 4
<i>ATEX</i>	II 2G Ex db IIC T6, T5 Gb II 2D Ex tb IIIC T110°C, T120°C, T130°C Db	II 2G Ex db IIC T6, T5 Gb II 2D Ex tb IIIC T110°C, T120°C, T130°C Db
<i>IECEX</i>	Ex db IIC T6, T5 Gb Ex tb IIIC T110°C, T120°C, T130°C Db	Ex db IIC T6, T5 Gb Ex tb IIIC T110°C, T120°C, T130°C Db

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1. Allgemeine Bemerkungen

Falls Sie Fragen bezüglich der technischen Daten oder Eignung für Ihre Anwendungen haben, wenden Sie sich bitte an unseren **technischen Vertrieb**.

Die Temperaturmessumformer der Serie ETS 4500 werden einzeln auf rechnergesteuerten Prüfständen abgeglichen und einem Endtest unterzogen. Sie sind wartungsfrei und sollten beim Einsatz innerhalb der Spezifikationen (siehe Technische Daten) einwandfrei arbeiten. Sollten 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, IECEx und CSA Zulassung.

2. Funktionsweise

Das vom Sensor gemessene Temperatursignal wird in ein der Temperatur proportionales, analoges Signal umgewandelt.

3. Installation und Inbetriebnahme

Die Temperaturmessumformer können über den Gewindeanschluss direkt an der Hydraulikanlage montiert werden.

Der Temperatursensor ist in dem vor dem Gewinde befindlichen Zapfen integriert. Um eine korrekte Temperaturmessung durchzuführen, muss sichergestellt werden, dass sich dieser Zapfen im Volumenstrom des Fluides befindet.

Anzugsdrehmoment: siehe Abmessungen

Wenn die Temperaturmessumformer gemäß der Nordamerikanischen Zulassungen eingesetzt werden, ist die Benutzung eines Conduit Systems am 1/2-14 NPT oder M20x1,5 Gewinde des elektrischen Anschlusses zwingende Voraussetzung, auch im Zonen-System.

Die Installation muss von einem Fachmann nach den jeweiligen Landesvorschriften zu potenziell explosiven Umgebungen durchgeführt werden, z.B.: IEC / EN 60079-14.

Die Temperaturmessumformer der Serie ETS 4500 tragen das **CE** - und **UKCA** - Zeichen. Die Konformitätserklärung befindet sich im Anhang.

Die Forderungen der Normen (siehe technische Daten) werden nur bei ordnungsgemäßer und fachmännischer Erdung des Temperaturmessumformergehäuses mittels des Prozessanschlusses, dem 1/2-14 NPT oder M20x1,5 Conduit oder der Erdungsklemme (außen an einem Anschlusskopfs), erreicht. Sofern eine grün/gelbe Ader vorhanden ist, darf diese zusätzlich, aber nicht zur alleinigen Erdung verwendet werden. Wenn der Hydraulikanschluss über einen Schlauch erfolgt, ist das Gehäuse separat zu erden.

Die Geräte müssen während der Installation geerdet sein.

Die Eignung der Erdung unterliegt der Abnahme der lokal zuständigen Prüfbehörden.

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

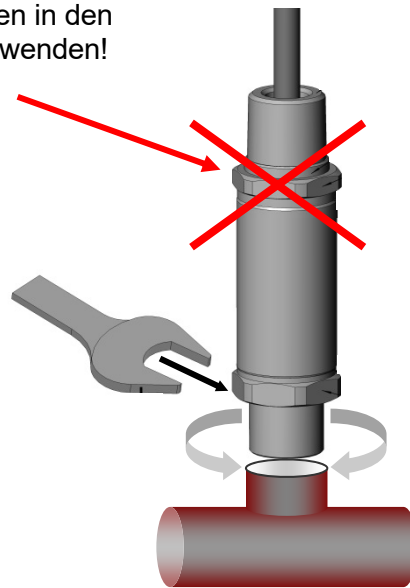
Einbau gemäß Kontrollzeichnungen Nr. 663928 (siehe Anhang A1).

4. Wichtige Hinweise für die Conduit-Installation

Mechanische Installation

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

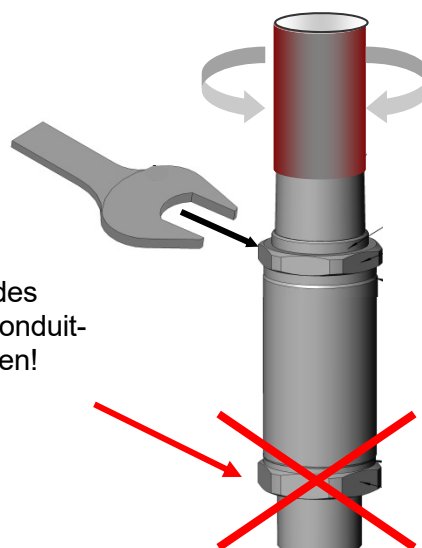
Nicht zum Einschrauben in den Prozessanschluss verwenden!



Elektrische Installation

Die Schlüssel­fläche an der Seite des elektrischen Anschlusses dient nur zum Fixieren des Temperaturmessumformers bei der Conduit-Installation.

Nicht zum Fixieren des Sensors während der Conduit-Installation verwenden!





5. Allgemeine Sicherheitshinweise

Wenn das Etikett nicht mehr lesbar ist, muss der Temperaturmessumformer außer Betrieb genommen 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.

Wenn das Gerät oder Anschlusskabel beschädigt ist, müssen diese Bauteile ersetzt werden.

Es ist unbedingt auf die Verträglichkeit der Messmedien mit den verwendeten Werkstoffen des Temperaturmessumformers zu achten. Die Druckfestigkeit unbedingt einzuhalten. Angaben hierzu siehe "Technische Daten". Die Druckfestigkeit ist auch auf dem Typenschild als **MWP = Maximum Working Pressure** angegeben. Ebenso sind die im Zertifikat angegebenen "Sicherheitstechnischen Daten" einzuhalten. Die Daten hinsichtlich der Nutzung in explosionsgefährdeten Umgebungen sind in jedem Fall zu berücksichtigen.

Der Temperaturmessumformer ist so zu installieren und zu verwenden, dass elektrostatische Aufladungen durch Betrieb, Wartung und Reinigung ausgeschlossen werden. Für den Einsatz in staubexplosionsgefährdeten Bereichen müssen prozessbedingte elektrostatische Aufladungen, z.B. durch vorbeiströmende Medien, ausgeschlossen werden.“

Die Geräte müssen während der Installation geerdet sein. Die Eignung der Erdung unterliegt der Abnahme der lokal zuständigen Prüfbehörden. Versorgungsspannung: "Limited Energy" - gemäß CAN/UL 61010 (Clause 9.4), Class 2 UL1310, LPS (CAN/UL 60950).

Hinweis zur Verwendung des elektrischen Anschlusses allgemein (außer Anschlusskopf Aluminium mit Typenschlüssel-Code J):

- Für Class I, II und III: Seal not required.

Hinweis zur Verwendung für elektrische Anschlüsse mit integriertem Kabel mit Typenschlüssel-Code 9, G, U und W:

- Die Installation muss von einem Fachmann nach den jeweiligen Landesvorschriften zu potenziell explosiven Umgebungen durchgeführt werden (z.B.: IEC / EN 60079-14).
- Fester Einbau ist notwendig.

Hinweis zur Verwendung des elektrischen Anschlusses bei Einsatz z. B. eines Anschlusskopfes oder eines Klemmenkastens.

Generell ist immer die "Schedule of Limitations" (Liste der Einschränkungen) beim Anschluss der Temperaturmessumformer an einen Klemmkasten oder einen Anschlusskopf zu berücksichtigen.

Die Zertifikate für die Geräte mit Anschlusskopf, welcher von HYDAC Electronic montiert wird (im Typenschlüssel Code J und Q), werden als Beilagedokument mitgeliefert.

Auszug aus den Zertifikaten der Hersteller Limatherm und Pushna als Beispiele für "Schedule of Limitations" (Liste der Einschränkungen).

- Aluminium Anschlusskopf (Code J im Typenschlüssel), Hersteller Limatherm, Serie XD-AD:
 - Auszug aus dem CSA Zertifikat:
"For Class I Group A and for Class I Zone 1 installation a conduit seal is required within 18 inches of enclosure"
("Für Class I Group A und für Class I Zone 1 Einbau ist ein Conduit Seal (Zündsperr) innerhalb eines Abstands von 18" vom Gehäuse gemessen anzubringen")
 - Auszug aus dem ATEX / IECEx Zertifikat:
"No. 2 from Schedule of limitations: For Information on the dimensions of the flameproof joints the manufacturer shall be contacted"

("Nr. 2 aus der Schedule of Limitations: Für Informationen über die Abmessungen der explosionssicheren Verbindungen ist der Hersteller zu kontaktieren.")

- Edelstahl Anschlusskopf (Code Q im Typenschlüssel), Hersteller Pushna, Serie 1016 PSEM
 - Auszug aus dem CSA Zertifikat:
"Open circuit before removing cover"
"Den Deckel nur im ausgeschalteten Zustand (unterbrochener Stromkreis) entfernen."
 - Auszug aus dem ATEX / IECEx Zertifikat:
"No. 8 from Schedule of limitations: Consult the manufacturer if dimensional information on the flameproof joints is necessary"
("Nr. 8 aus der Schedule of Limitations: Bitte konsultieren Sie den Hersteller, sofern Informationen über die Abmessungen der explosionssicheren Verbindungen benötigt werden.")



Wichtiger Hinweis für den Einsatz in Bergwerksanwendungen:

Die chemische Beständigkeit der Temperaturmessumformer mit elektrischem Anschluss mittels Conduit mit Einzeladern oder freiem Kabelende ist nicht für den Einsatz in Bergwerksapplikationen gemäß ATEX und IECEx Gerätegruppe I getestet.

Für den Einsatz in Bergwerksapplikationen muss ein Conduit-Schlauch oder -Rohr am elektrischen 1/2-14 NPT oder M20x1,5 Anschluss installiert werden und das Kabel oder die Adern müssen so weit durch den Conduit bzw. das Rohr geführt werden bis ein Bereich erreicht wird, der außerhalb der chemischen Kontamination liegt.

6. Technische Daten

Eingangskenngrößen		ETS 4500	
Messbereich		- 25 .. +100 °C [-13 .. +212 °F]	
Fühlerlänge		10,4 (SAE6); 10,7 (G1/4); 100; 250; 350, 437 mm	
Druckfestigkeit (Siehe auch Typenschild: MWP = Maximum Working Pressure)		600 bar [8700 psi]	Fühlerlänge 10,4/ 10,7 mm [0,409/ 0,421 Inch]
		125 bar [1800 psi]	Fühlerlänge 100 mm [3,937 Inch]
		125 bar [1800 psi]	Fühlerlänge 250 mm [9,843 Inch]
		125 bar [1800 psi]	Fühlerlänge 350 mm [13,779 Inch]
		125 bar [1800 psi]	Fühlerlänge 437 mm [17,205 Inch]
Mechanischer Anschluss (Anzugsdrehmoment, empfohlen)		G1/4 A ISO 1179-2, male	(20 Nm)
		9/16-18 UNF 2A (SAE6), male	(20 Nm)
		1/4-18 NPT, male	(40 Nm)
Medienberührende Teile		1.4571; 1.4301 (316Ti; 304) Seal: FKM (SAE6 and G1/4)	
Conduit- / Gehäusewerkstoff		1.4435 (316LMHO); 1.4404 (316L)	
Ausgangsgrößen			
Ausgangssignal; zulässige Bürde		4 .. 20 mA, 2 Leiter; $R_{Lmax} = (U_B - 8 V) / 20 \text{ mA} [k\Omega]$	
Genauigkeit (bei Raumtemperatur)		$\leq \pm 1 \% \text{ FS typ.}$ $\leq \pm 2 \% \text{ FS max.}$	
Temperaturdrift (Umgebung)		$\leq \pm 0,02\% \text{ FS /}^\circ\text{C}$	
Anstiegszeit nach DIN EN 60751		$t_{50}: \sim 10 \text{ s}$ $t_{90}: \sim 15 \text{ s}$	
Umgebungsbedingungen			
Betriebs- / Umgebungstemperaturbereich ¹⁾²⁾		T6, T110°C Ta = -40 .. +60°C / -20 .. +60°C [-40 .. +140°F / -4 .. +140 °F] T120°C Ta = -40 .. +70°C / -20 .. +70°C [-40 .. +158 °F / -4 .. +158 °F] T5, T130°C Ta = -40 .. +80°C / -20 .. +80°C [-40 .. +176 °F / -4 .. +176 °F]	
Mediumtemperaturbereich ¹⁾²⁾		T6, T110°C Ta = -40 .. +60°C / -20 .. +60°C [-40 .. +140°F / -4 .. +140 °F] T120°C Ta = -40 .. +70°C / -20 .. +70°C [-40 .. +158 °F / -4 .. +158 °F] T5, T130°C Ta = -40 .. +80°C / -20 .. +80°C [-40 .. +176 °F / -4 .. +176 °F]	
Lagertemperaturbereich		-40 .. +100 °C [-40 .. +212 °F]	
CE - Zeichen, UKCA - Zeichen		EN 61000-6-1 / 2 / 3 / 4 EN 60079-0 / 1 / 31	
Vibrationsbeständigkeit nach DIN EN 60068-2-6 bei 10 .. 500 Hz		$\leq 10 \text{ g}$ $\leq 5 \text{ g mit Anschlusskopf}$	
Schutzart nach IEC 60529 ³⁾ ISO 20653		IP 68 (Version mit Anschlusskopf), IP 69 IP 6K9K	
Sonstige Größen			
Versorgungsspannung ⁴⁾		8 .. 30 V DC	
Restwelligkeit Versorgungsspannung		$\leq 5 \%$	
Stromaufnahme		$\leq 25 \text{ mA}$	
Gewicht		ca. 280 g Fühlerlänge 10,4/ 10,7 mm [0,409/ 0,421 Inch] ca. 315 g Fühlerlänge 100 mm [3,937 Inch] ca. 350 g Fühlerlänge 250 mm [9,843 Inch] ca. 385 g Fühlerlänge 350 mm [13,779 Inch] ca. 420 g Fühlerlänge 437 mm [17,205 Inch]	

Anm: Verpolungsschutz der Versorgungsspannung, Überspannung-Übersteuerungsschutz, Lastkurzschlussfestigkeit vorhanden.

FS (Full Scale) = bezogen auf den vollen Messbereich

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

²⁾ T130°C bei Ta= -40 .. 80°C / -20 .. 80°C nur mit elektrischem Anschluss Einzelader möglich, siehe 1. Seite

³⁾ Bei Verwendung einer IP 68 Kabelverschraubung. Das 1/2-14 NPT Gewinde der Kabelverschraubung muss mittels Gewindedichtungsmasse abgedichtet werden.

⁴⁾ "Limited Energy" - gemäß CAN/UL 61010 (Clause 9.4), Class 2 UL1310, LPS (CAN/UL 60950).

7. Typenschlüssel zur Identifikation des gelieferten Gerätes

ETS 4 5 X X - A - D - XXX - 000 (XXX)

Genauigkeit

5 = 1% typ.

Anschlussart mechanisch

4 = G1/4 A ISO 1179-2, Außengewinde

7 = 9/16-18 UNF 2A (SAE6), Außengewinde
(nur für Fühlerlänge "010")

8 = 1/4-18 NPT, Außengewinde
(nur für Fühlerlänge "100", "250", "350", "437")

Anschlussart elektrisch

9 = 1/2-14 NPT Conduit, Außengewinde, Einzelader

G = 1/2-14 NPT Conduit, Außengewinde, Freies Kabelende

J = Anschlusskopf (Aluminium)

Q = Anschlusskopf (Edelstahl)

U = M20x1,5 Conduit, freies Kabelende

W = M20x1,5 Conduit, Einzelladern

Ausgangssignal

A = 4 .. 20 mA, 2 Leiter

Zulassung

D = CSA Explosion Proof - Seal not required

ATEX - Flame Proof

IECEx - Flame Proof

Fühlerlänge

010 = 10,4 / 10,7 mm [0,409 / 0,421 Inch] (nur mit SAE6 oder G1/4)

100 = 100 mm [3,937 Inch] (nur mit G1/4 oder 1/4-18 NPT)

250 = 250 mm [9,843 Inch] (nur mit G1/4 oder 1/4-18 NPT)

350 = 350 mm [13,779 Inch] (nur mit G1/4 oder 1/4-18 NPT)

437 = 437 mm [17,205 Inch] (nur mit 1/4 -18 NPT)

Modifikationsnummer

000 = Standard

Bei Geräten mit anderer Modifikationsnummer ist das Typenschild bzw. die mitgelieferte technische Änderungsbeschreibung zu beachten.

Kabellänge

Angabe in m oder inch

8. Seriennummer

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

Konfiguration der Seriennummer (SN): xyy k zzzzzz

X	Fertigungsjahr	z. B. : 3 → 2023
yy	Kalenderwoche	z. B.: 11 → KW 11
k	Seriennummer-Index	z. B. : -, A, B
zzzzzz	fortlaufende Seriennummer	z. B.: 111111

ETS 454G-A-D-010-000 (2m)

Supply: 8..30 V
 Range: -25..100 °C
 Signal: 4..20 mA
 MWP: 600 bar

BN: +Signal
WH: -Signal

KEMA 10ATEX0100X
 I M2 Ex db I Mb
 II 2G Ex db IIC T6...T5 Gb
 II 2D Ex tb IIIC T110°C Db

IECEX KEM 10.0053X

CSA MC: 224264
 CSA 19.2032612X
 CL I Gp A,B,C,D T6...T5
 CL II Gp E,F,G T110°C
 CL III Type 4

CL I Zn 1 AEx db IIC T6...T5 Gb
 Ex db IIC T6...T5 Gb
 Zn 21 AEx tb IIIC T110°C Db
 Ex tb IIIC T110°C Db

922437
SN: 311A111111

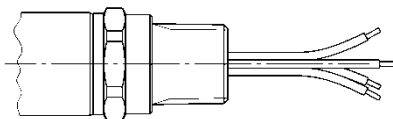
UK CA **CE** 0158

Protection concept
 Consigne de protection
 -> Operating Instruction
 -> 669836

MADE IN GERMANY
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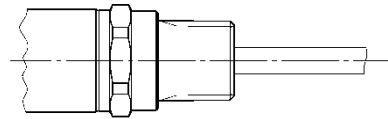
9. Anschlussbelegung

Conduit (Einzelader) /Anschlusskopf



Ader	ETS 45x9-A
rot	Signal +
schwarz	Signal -
grün-gelb	Gehäuse

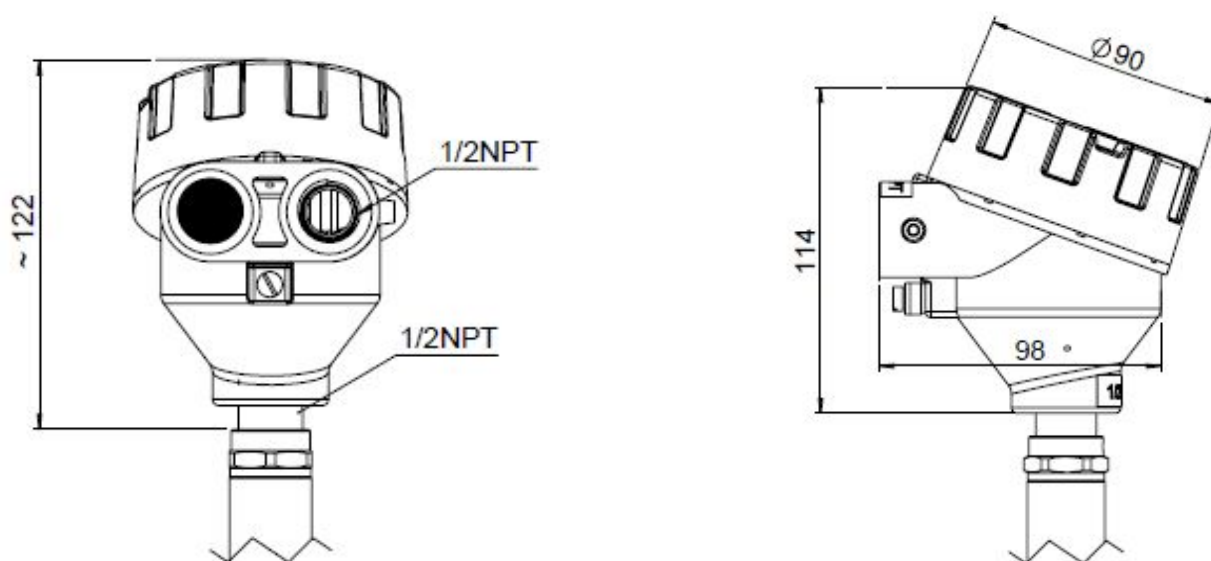
Conduit (Freies Kabelende)



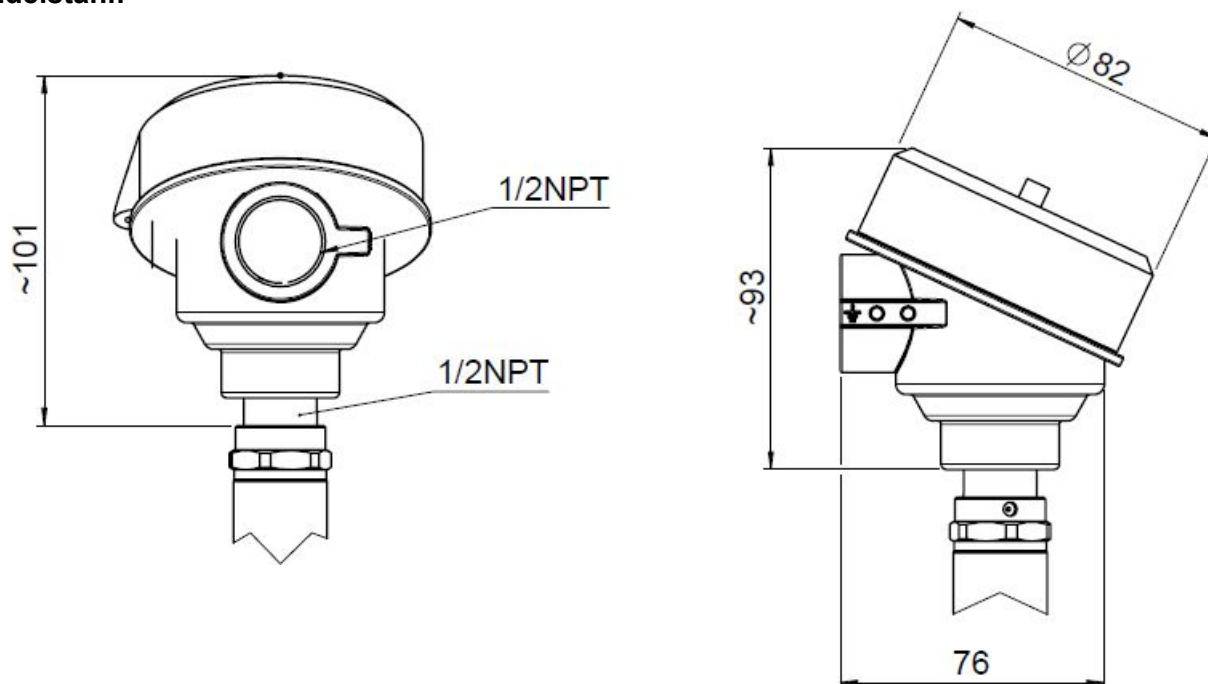
Ader	ETS 45xG-A
weiß	Signal -
braun	Signal +
grün	n.c.
gelb	n.c.

11. Anschlusskopf

Aluminium:



Edelstahl:



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Achtung!

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

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

Technische Änderungen sind vorbehalten.

1. General Remarks

If you have any questions concerning to the technical specifications or suitability for particular applications, please contact **Product Management Dept.** The series ETS 4500 temperature transmitters are factory-calibrated and subjected to final testing on test stands employing proprietary software. They are maintenance-free and operate perfectly when used according to the data (see Technical Specifications). However, if there is a cause for complaint, please contact **HYDAC Service**.

Incorrect use or interference by anyone other than HYDAC personnel will cause all warranty claims and ATEX, IECEx und CSA approvals to become null and void.

2. Function

The temperature signal measured by the transmitter is converted into a proportional standardized analog signal.

3. Installation and Commissioning

The temperature transmitters can be installed directly to the hydraulic system via the thread connection. The temperature sensor is built into the stem before the thread. To obtain an accurate temperature reading this stem must be immersed in the flow of the fluid.

Tightening torque see dimensions.

When the transmitters are used according to North American approvals, the use of a conduit system at the 1/2-14 NPT or M20x1,5 thread at the electrical connection is mandatory, also in the zone system.

The installation is to be carried out by a properly qualified specialist in accordance with the pertinent regulations pertaining to potentially explosive environments (e.g. IEC / EN 60079-14).

The temperature transmitter of the series ETS 4500 carry the **CE** - and **UK** - mark. The certificate of conformity is to be found in the annex.

The requirements of the standards (see technical data) cannot be satisfied unless the temperature transmitter housing is properly grounded via the mechanical connection, the 1/2-14 NPT or M20x1.5 conduit or the ground terminal which is located at the outside of the connection head. 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.

The devices must be grounded during installation. The suitability of the grounding shall be subject to the acceptance of the local inspection authority having jurisdiction.

The General Safety Precautions (cf. section 5) are to be heeded in any event.

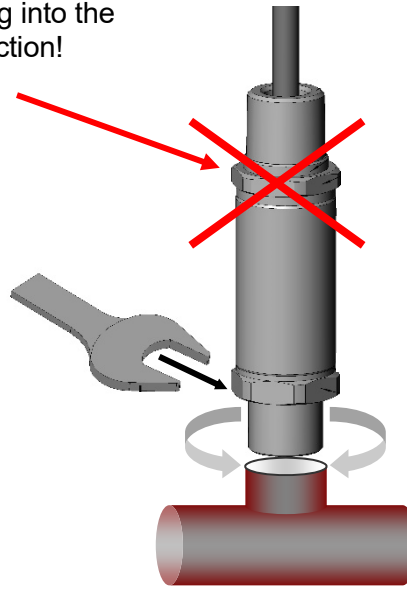
Installation per Control Drawings No. 663928 (see appendix A1)

4. Important mounting instructions for Conduit connection

Mechanical installation

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

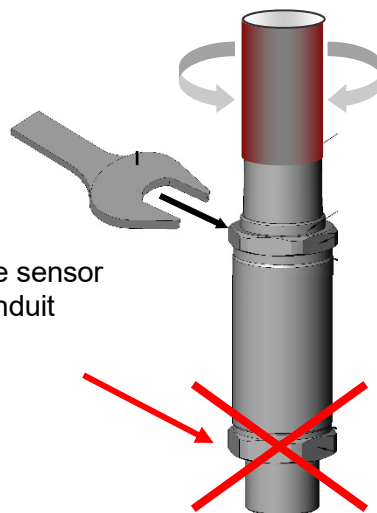
Do not use for screwing into the mechanical connection!



Electrical installation

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

Do not use for fixing the sensor during electrical conduit installation!





5. General safety precautions

The temperature transmitters may no longer be used when the label becomes illegible.

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

If there is damage to the unit or connecting lead, these components are to be replaced

It is imperative that the measurement fluid is compatible with the materials used in the transmitter. Similarly, the Maximum Working Pressure must be adhered to without fail. For these specifications, see the "Technical data". The **Maximum Working Pressure** is also shown at the transmitter label as **MWP**. The "Safety relevant Information" in the certificates must also be met.

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

The temperature transmitter has to be installed and operated in a way that electrostatic charges, caused by operation, maintenance and cleaning, can be excluded.

For the application in potentially dust-explosive areas, process-related electrostatic charge, i.e. due to fluids flowing past, has to be excluded.

The devices must be grounded during installation. The suitability of the grounding shall be subject to the acceptance of the local inspection authority having jurisdiction. Limited energy powered according to CAN/UL 61010 (Clause 9.4), Class 2 UL1310, LPS (CAN/UL 60950).

Note for use for electrical connection in general (except connection head aluminum, model code character J):

- For Class I, II and III: Seal not required.

Note for use for electrical connection" integrated cable" with model code character 9, G, U and W:

- The installation is to be carried out by a properly qualified specialist in accordance with the pertinent regulations pertaining to potentially explosive environments (e.g. IEC / EN 60079-14).
- A fixed installation is required.

Note for use for electrical connection by using e.g. a connection head or junction box.

In general, when transmitters are connected to a junction box or connection head always respect the schedule of limitations.

The certificates for devices with connection head assembled from HYDAC Electronic (model code character J and Q) are supplied as an appendix.

Excerpt of the certificates from the manufacturers Limatherm and Pushna as example for schedule of limitations:

- Aluminum connection head (model code character J), manufacturer Limatherm, series XD-AD:
 - Excerpt CSA certificate:
"For Class I Group A and for Class I Zone 1 installation a conduit seal is required within 18 inches of enclosure"
 - Excerpt ATEX / IECEx certificate:
"No. 2 from Schedule of limitations: For Information on the dimensions of the flameproof joints the manufacturer shall be contacted"
- Stainless steel connection head (model code character Q), manufacturer Pushna, series 1016 PSEM
 - Excerpt CSA certificate:
"Open circuit before removing cover"

- Excerpt ATEX / IECEx certificate:
"No. 8 from Schedule of limitations: Consult the manufacturer if dimensional information on the flameproof joints is necessary"



Important note for the use in mining applications:

The chemical resistance for transmitters with electrical conduit connection with single leads or jacketed cable is not tested for the use in mining applications according to ATEX and IECEx equipment group I.

When used in mining applications a conduit hose or pipe is to be installed at the ½-14 NPT or M20x1.5 electrical connection and the cable or leads are to run inside the conduit until an area is reached which is not contaminated with chemicals.

6. Technical Data

Input data	ETS 4500
Measuring range	-25 .. +100 °C [-13 .. +212 °F]
Probe length	10.4 (SAE6); 10.7 (G1/4); 100; 250; 350, 437 mm
Maximum Working Pressure (MWP)	600 bar [8700 psi] probe length 10.4/ 10.7 mm [0.409/ 0.421 Inch] 125 bar [1800 psi] probe length 100 mm [3.937 Inch] 125 bar [1800 psi] probe length 250 mm [9.843 Inch] 125 bar [1800 psi] probe length 350 mm [13.779 Inch] 125 bar [1800 psi] probe length 437 mm [17.205 Inch]
Mechanical connection (Tightening torque, recommended)	G1/4 A ISO 1179-2, male (20 Nm) 9/16-18 UNF 2A (SAE6), male (20 Nm) 1/4-18 NPT, male (40 Nm)
Parts in contact with fluid	1.4571; 1.4301 (316Ti; 304) Seal: FKM (SAE6 and G1/4)
Conduit / housing material	1.4435 (316LMHO); 1.4404 (316L)
Output data	
Output signal	4 .. 20 mA, 2 conductor;
permitted load resistance	$R_{Lmax} = (U_B - 8 \text{ V}) / 20 \text{ mA [k}\Omega\text{]}$
Accuracy (at room temperature)	$\leq \pm 1 \%$ FS typ $\leq \pm 2 \%$ FS max.
Temperature drift (environment)	$\leq \pm 0,02\%$ FS / °C
Response time to DIN EN 60751	$t_{50}: \sim 10 \text{ s}$ $t_{90}: \sim 15 \text{ s}$
Environmental conditions	
Operating / Ambient temperature range ¹⁾²⁾	T6, T110°C Ta = -40 .. +60°C / -20 .. +60°C [-40 .. +140°F / -4 .. +140°F] T120°C Ta = -40 .. +70°C / -20 .. +70°C [-40 .. +158°F / -4 .. +158°F] T5, T130°C Ta = -40 .. +80°C / -20 .. +80°C [-40 .. +176°F / -4 .. +176°F]
Fluid temperature range ¹⁾²⁾	T6, T110°C Ta = -40 .. +60°C / -20 .. +60°C [-40 .. +140°F / -4 .. +140°F] T120°C Ta = -40 .. +70°C / -20 .. +70°C [-40 .. +158°F / -4 .. +158°F] T5, T130°C Ta = -40 .. +80°C / -20 .. +80°C [-40 .. +176°F / -4 .. +176°F]
Storage temperature range	-40 .. +100 °C [-40 .. +212 °F]
CE - mark, UKCA - mark	EN 61000-6-1 / 2 / 3 / 4 EN 60079-0 / 1 / 31
Vibration resistance to DIN EN 60068-2-6 at 10 ..500 Hz	$\leq 10 \text{ g}$ $\leq 5 \text{ g}$ with connection head
Protection class to IEC 60529 ³⁾ ISO 20653	IP 68 (versions with connection head), IP 69 IP 6K9K
Other data	
Supply voltage ⁴⁾	8 .. 30 V DC
Residual ripple supply voltage	$\leq 5 \%$
Current consumption	$\leq 25 \text{ mA}$
Weight	approx. 280 g probe length 0.409/ 0.421 inch [10.4 / 10.7 mm] approx. 315 g probe length 3.937 inch [100 mm] approx. 350 g probe length 9.843 inch [250 mm] approx. 385 g probe length 13.779 inch [350 mm] approx. 420 g probe length 17.205 inch [437 mm]

Notes:

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

¹⁾ -4 °F [-20 °C] with FKM- seal, sealing material up to -40 °F [-40 °C] on request

²⁾ T130° at Ta = -40 .. 80°C / -20 .. 80°C only with electrical connection: "single leads" see 1st page

³⁾ Cable gland must cover IP 68 and the 1/2-14 NPT thread must be sealed by thread sealant

⁴⁾ Limited energy powered according to CAN/UL 61010 (Clause 9.4), Class 2 UL1310, LPS (CAN/UL 60950)

7. Model code to identify the delivered part

ETS 4 5 X X - A - D - XXX - 000 (XXX)

Accuracy

5 = 1% typ

Mechanical connection

4 = G1/4 A ISO 1179-2, male

7 = 9/16-18 UNF 2A (SAE6), male
(only for probe length "010")

8 = 1/4-18 NPT, male
(only for probe length "100", "250", "350", "437")

Electrical connection

9 = 1/2-14 NPT Conduit (male), single leads

G = 1/2-14 NPT Conduit (male), open ended cable

J = Connection head (aluminum)

Q = Connection head (stainless steel)

U = M20x1.5 conduit (male), jacketed cable

W = M20x1.5 conduit (male), single leads

Output signal

A = 4 .. 20 mA, 2 conductor

Approval

D = CSA Explosion Proof - Seal not required

ATEX Flame Proof

IECEX Flame Proof

Probe length

010 = 10,4 / 10,7 mm [0,409/ 0,421 Inch] (only with SAE6 or G1/4)

100 = 100 mm [3,937 Inch] (only with G1/4 or 1/4-18 NPT)

250 = 250 mm [9,843 Inch] (only with G1/4 or 1/4-18 NPT)

350 = 350 mm [13,779 Inch] (only with G1/4 or 1/4-18 NPT)

437 = 437 mm [17,205 Inch] (only with 1/4 -18 NPT)

Modification number

000 = Standard

On units with a different modification number, please read the label or the technical amendment details supplied with the unit.

Cable length

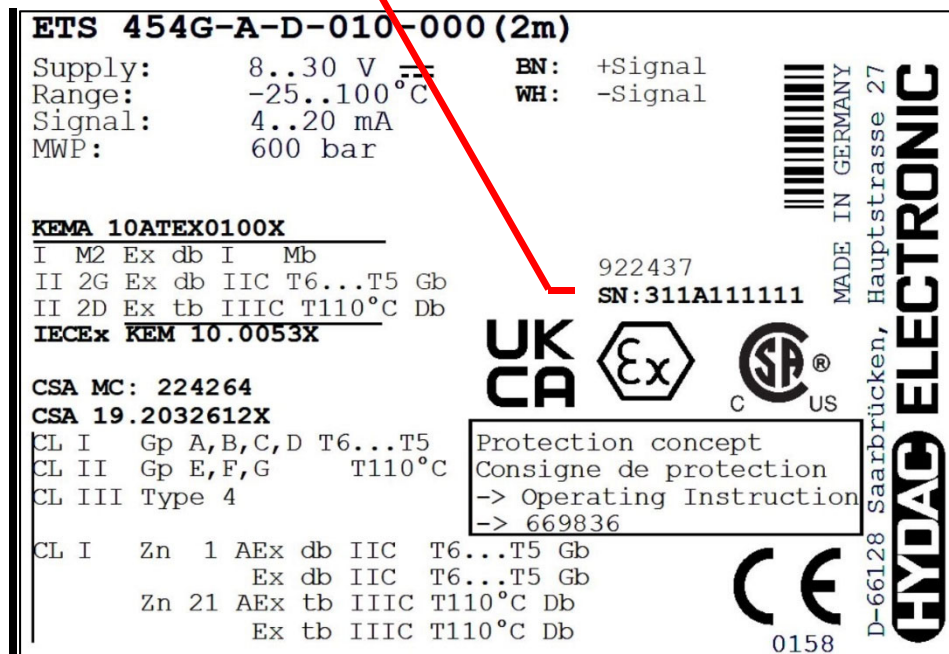
Shown in m or inch

8. Serial number

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

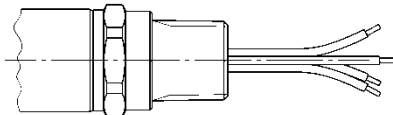
Configuration of serial number (SN): xyykdzzzzzz

x	Manufacturing date	e.g. : 3 → 2023
yy	Calendar week	e.g. : 11 → CW 11
k	Change control status	e.g. : -, A, B
zzzzzz	Sequential serial number	e.g. : 111111



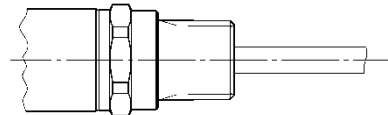
9. Pin connection

Conduit (single leads)/ Connection head



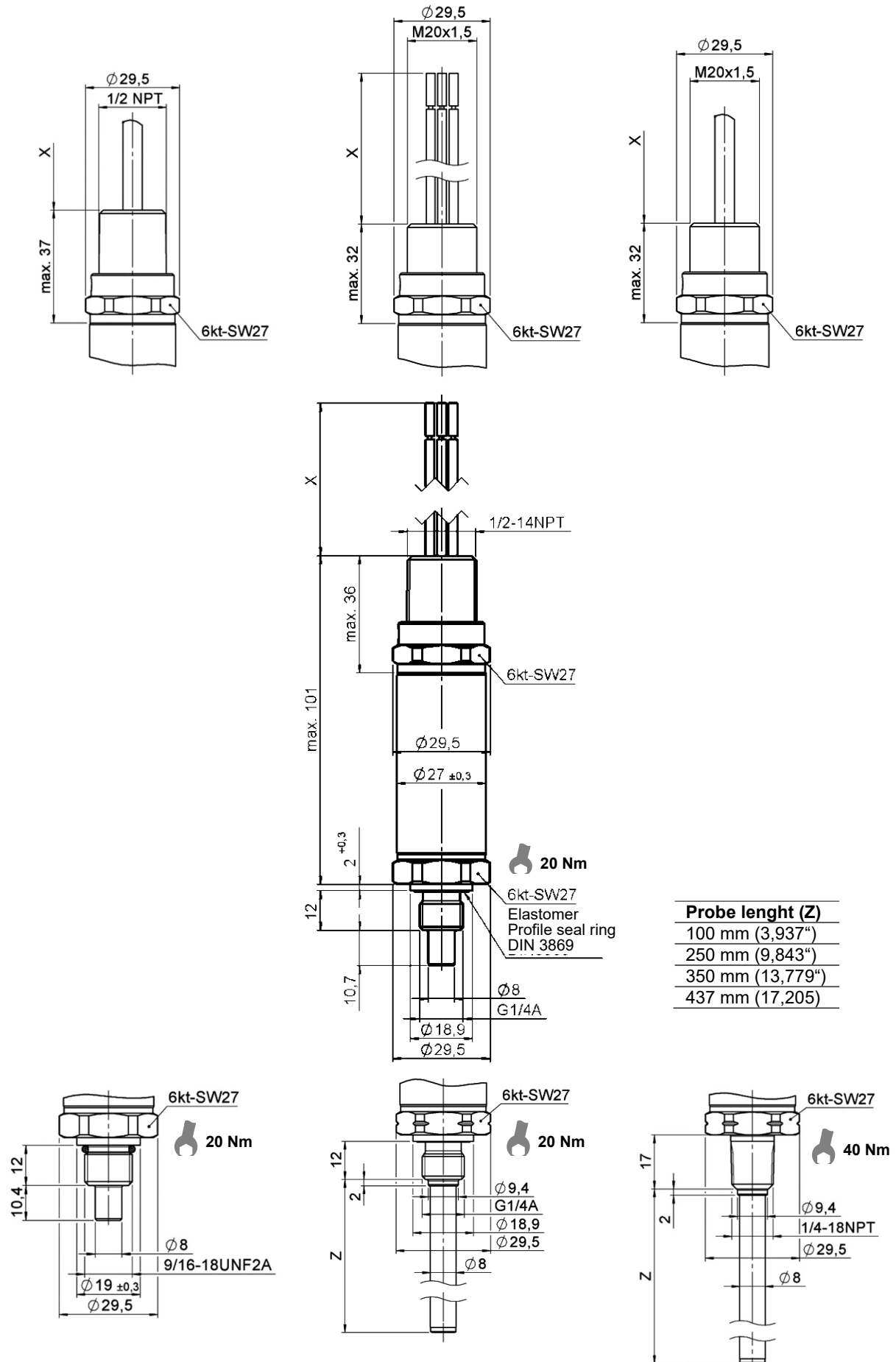
Wire	ETS 45x9-A
red	Signal +
black	Signal -
green-yellow	Housing

Conduit (open ended cable)



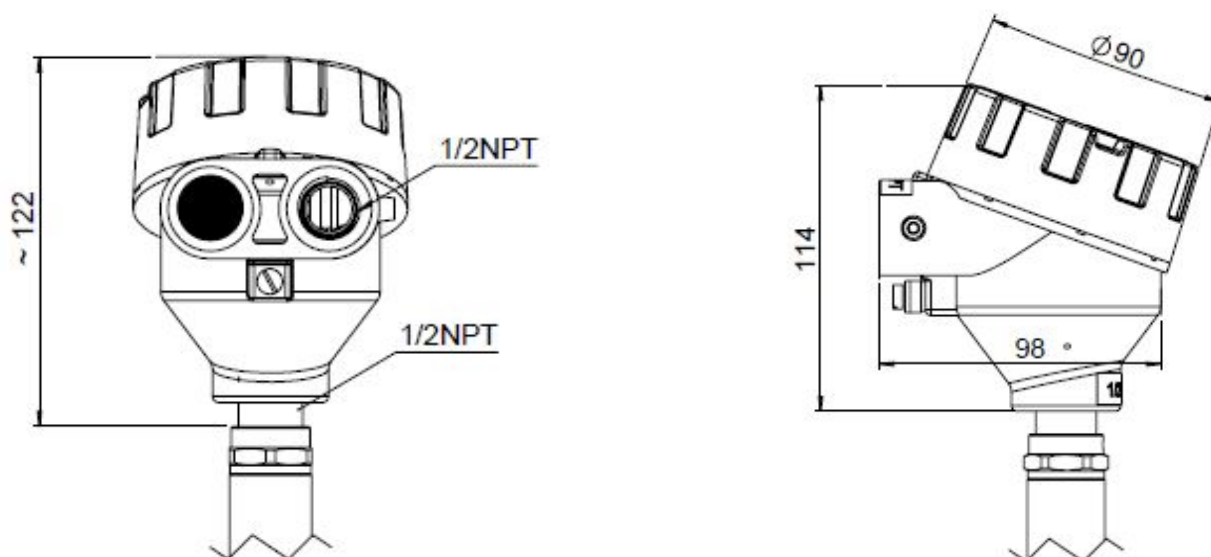
Wire	ETS 45xG-A
white	Signal -
brown	Signal +
green	n.c.
yellow	n.c.

10. Dimensions

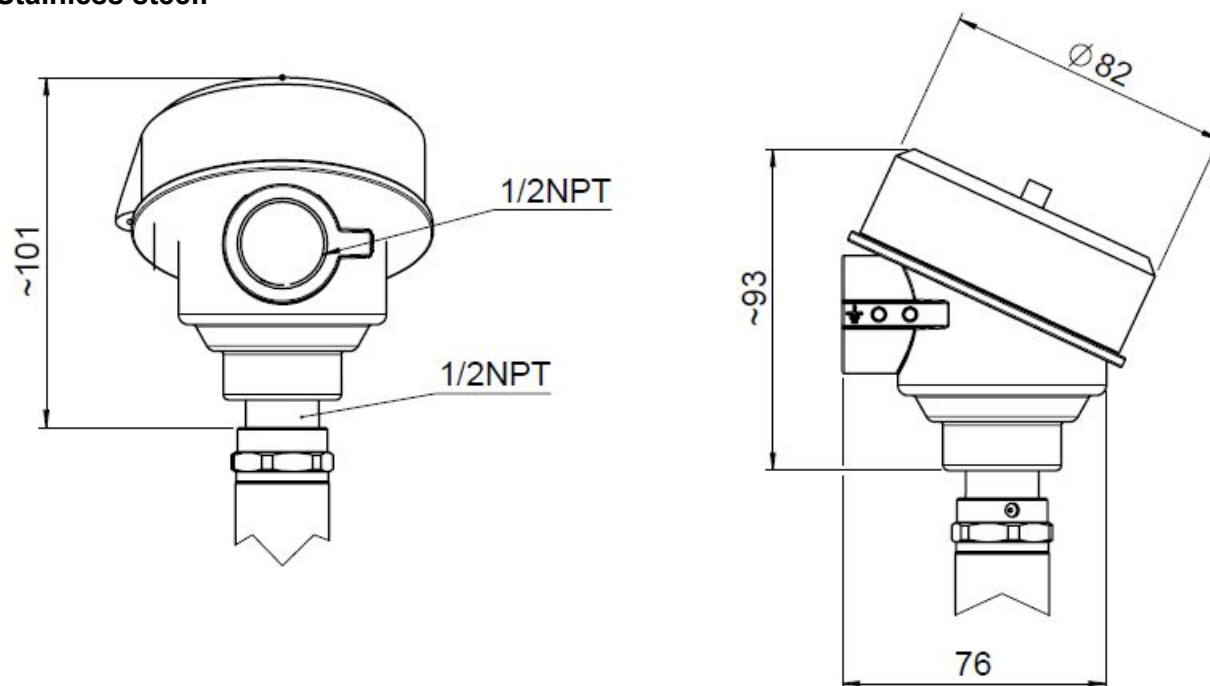


11. Connection head

Aluminum:



Stainless steel:



HYDAC ELECTRONIC GMBH

Hauptstraße 27
D-66128 Saarbrücken
Germany

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

HYDAC SERVICE

If you have any questions concerning repair work, please don't hesitate to contact
HYDAC SERVICE:

HYDAC SERVICE GMBH

Hauptstr. 27
D-66128 Saarbrücken
Germany

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

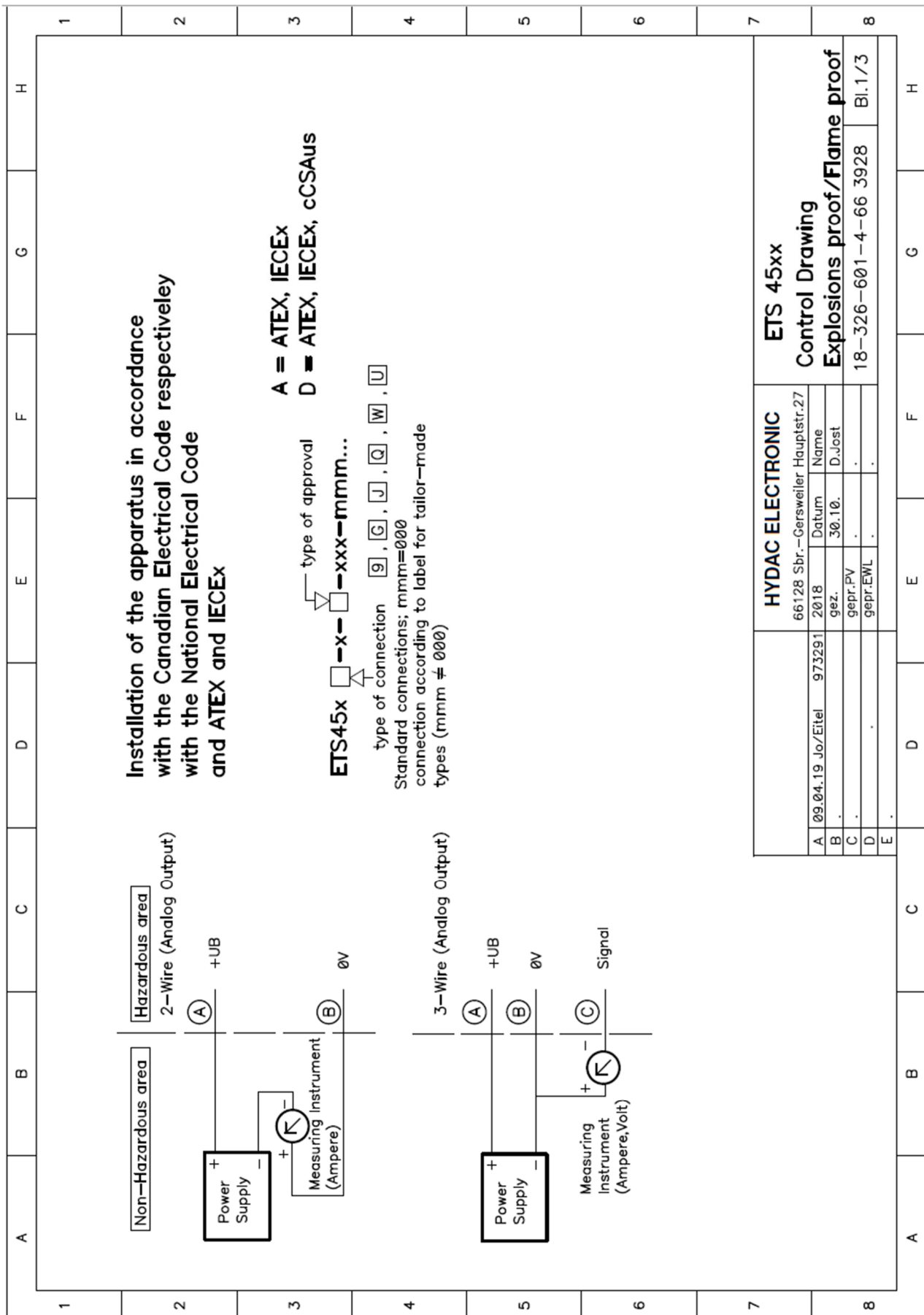
Notice

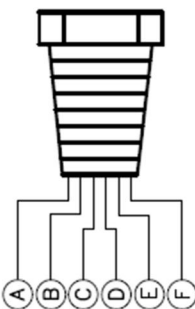
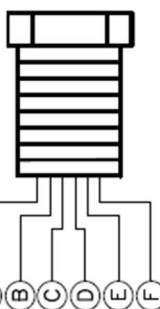
The information and particulars provided in this manual apply to the operating conditions and applications described herein. In the event of deviating applications and/or operating conditions, please contact the respective HYDAC department concerned.

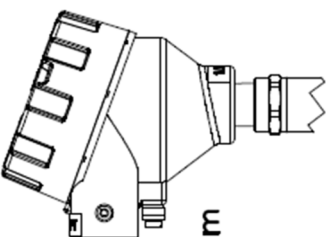
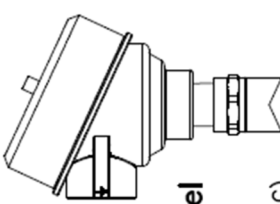
If you have any questions, suggestions, or encounter any problems of a technical nature, please contact your HYDAC representative.

All technical details are subject to change without notice.

A1 Kontrollzeichnung / Control drawing



A	B	C	D	E	F	G	H																																			
1	Mise à la terre: Les exigences liées aux normes (voir spécification techniques) ne seront respectées, que si le boîtier du capteur est correctement relié à la terre. La compensation de potentiel, doit nécessairement être réalisée. Si des prises MiniMess sont utilisées, le boîtier de chacune d'elles doit être mis à la terre séparément. – L'appareil (capteur) doit être mis à la terre pendant l'installation. – La conformité de la mise à la terre, doit être approuvée par l'organisme local d'inspection, ayant juridiction. – Si un fil vert est disponible, celui-ci peut être utilisé pour une mise à la terre supplémentaire de l'appareil, par contre ce fil ne peut pas être utilisé seul en tant que connexion à la terre.	Grounding: The requirements of the standards (see technical specifications) cannot be satisfied unless the unit's housing is properly grounded. Potential equalization has to be provided. When using hose mounting, the housing has to be grounded separately. –The devices must be grounded during installation. –The suitability of the grounding shall be subject to the acceptance of the local inspection authority having jurisdiction. –If a green wire is available, it can be used additionally for grounding, but may not be used on its own as the grounding connection	9, G 1/2" NPT male conduit 9 = single leads G = jacketed cable  W = single leads U = jacketed cable 	For detailed wiring information see product label	HYDAC ELECTRONIC 66128 Sbr.-Gersweiler Hauptstr.27 <table> <tr> <td>A</td><td>09.04.19</td><td>Jo/Eitel</td><td>973291</td><td>2018</td><td>Datum</td><td>Name</td></tr> <tr> <td>B</td><td>.</td><td>.</td><td>.</td><td>30.10.</td><td>gez.</td><td>D.Jost</td></tr> <tr> <td>C</td><td>.</td><td>.</td><td>.</td><td>.</td><td>gepr.PV</td><td>.</td></tr> <tr> <td>D</td><td>.</td><td>.</td><td>.</td><td>.</td><td>gepr.EWL</td><td>.</td></tr> <tr> <td>E</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> </table> ETS45xx Control Drawing Explosion proof/Flame proof 18-326-601-4-66 3928 Bl.2/3	A	09.04.19	Jo/Eitel	973291	2018	Datum	Name	B	.	.	.	30.10.	gez.	D.Jost	C	.	.	.	.	gepr.PV	.	D	.	.	.	.	gepr.EWL	.	E	.	.	.	.	.	.	T6,T5, T110°C... T130°C if noted on label si indiqué sur l'étiquette Ambient Temperature max. +60°C (T6,T110°C) Ambient Temperature max. +70°C (T120°C) Ambient Temperature max. +80°C (T5,T130°C)	7
A	09.04.19	Jo/Eitel	973291	2018	Datum	Name																																				
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1	A	B	C	D	E	F	G	H																																								
2	Explosion Proof cCSAus; Enclosures for use in Class I Div. 1 Groups A,B,C,D, T6, T5 Class II Div. 1 Groups E,F,G, T110°C...130°C Class III Type 4 Class I Zone1 AEx db IIC T6,T5 Gb Ex db IIC T6,T5 Gb ATEX II 2G Ex db IIC T6,T5 Gb II 2D Ex tb IIC T110°C...130°C Db IECEx Ex db IIC T6,T5 Gb Ex tb IIC T110°C...130°C Db			For Class I Group A installation and for Zone Conduit seal is required within 18 inches of enclosure Pour une installation de Classe I Groupe A et pour Zone A partir d'une distance de 18 pouces du boîtier, un joint d'étanchéité doit être installé			Junction Box  J: Aluminium																																									
3																																																
4	Explosion Proof cCSAus; Enclosures for use in Class I Div. 1 Groups B,C,D, T6, T5 Class II Div. 1 Groups E,F,G, T110°C...130°C Class III Type 4 ATEX II 2G Ex db IIC T6,T5 Gb II 2D Ex tb IIC T110°C...130°C Db IECEx Ex db IIC T6,T5 Gb Ex tb IIC T110°C...130°C Db			Open circuit before removing cover Ouvrir le Circuit avant d'enlever couvercle			 Q: Stainless steel Ambient Temperature max. +60°C (T6;T110°C) max. +70°C (T120°C) max. +80°C (T5;T130°C)																																									
5																																																
6																																																
7	T6,T5, T110°C... T130°C if noted on label si indiqué sur l'étiquette			HYDAC ELECTRONIC 66128 Sbr.-Gersweiler Hauptstr.27 <table border="1"> <tr> <td>A</td> <td>09.04.19</td> <td>Jo/Eitel</td> <td>973291</td> <td>2018</td> <td>gez.</td> <td>Datum</td> <td>Name</td> </tr> <tr> <td>B</td> <td>.</td> <td>.</td> <td>.</td> <td>30.10.</td> <td>.</td> <td>D.Jost</td> <td>.</td> </tr> <tr> <td>C</td> <td>.</td> <td>.</td> <td>.</td> <td>gepr.PV</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>D</td> <td>.</td> <td>.</td> <td>.</td> <td>gepr.EWL</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>E</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> <td>.</td> </tr> </table>			A	09.04.19	Jo/Eitel	973291	2018	gez.	Datum	Name	B	.	.	.	30.10.	.	D.Jost	.	C	.	.	.	gepr.PV	.	.	.	D	.	.	.	gepr.EWL	.	.	.	E	.	.	.	.	.	.	.	ETS 45xx Control Drawing Explosions proof/Flame proof 18-326-601-4-66 3928 Bl.3/3	
A	09.04.19	Jo/Eitel	973291	2018	gez.	Datum	Name																																									
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A2 Zertifikat ATEX / Certificate 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 10ATEX0100 X** Issue Number: **6**
- (4) Product: **Pressure Transducers, Pressure Switches, Temperature Transducers, Flow Rate Transmitters, Bladder Integrity Sensors and Connection heads**
- (5) Manufacturer: **HYDAC Electronic GmbH**
- (6) Address: **Hauptstraße 27, 66128 Saarbrücken-Gersweiler, 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/ExTR10.0022/06.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0 : 2018
EN 60079-1 : 2014
EN 60079-31 : 2014

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 2	Ex db I Mb
II 2 G	Ex db IIC T6...T4 Gb
II 2 D	Ex tb IIIC T110 °C...T130 °C Db

Date of certification: 17 august 2022

DEKRA Certification B.V.



L.G. van Schie
Certification Manager

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

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



(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 10ATEX0100 X Issue No. 6

(15) **Description**

HDA 4xxx

Electronic Pressure Transducer with analogue output.

Depending on the applied pressure on the sensor cell a proportional output signal is generated.

One version has an additional temperature sensor.

It provides an analogue signal or analogue signal combined with a HART digital protocol.

EDS 4xxx

Electronic Pressure switch.

Depending on the applied pressure on the sensor cell a proportional internal signal is generated.

Depending on the factory set fixed value or programmable set point an electronic switch changes its status.

ETS 4xxx

Temperature Transducer

Depending on the applied temperature on the sensor a proportional output signal is generated.

One version has an additional pressure sensor.

It provides an analogue signal or analogue signal combined with a HART digital protocol.

HFT 31xx

Flow Rate Transmitter

An impeller driven by the speed of the flow of the liquid or gas through a turbine generates a signal pick up by a proximity switch, converted to a linear analogue current signal and is available via a HART interface.

BIS 1xxx

Bladder Integrity Sensor

The bladder status signal is provided as a switching signal. Depending on the version, the temperature or pressure signal measured by the sensor is converted into a proportional analogue current signal and is available via a HART interface.

HPT 5xx

Electronic differential pressure transmitter with analogue output.

Depending on the applied differential pressure a piston with integrated magnet is shifted linearly.

A Hall sensor is detecting the position and passes on the position to the evaluation electronics which calculates the output signal.

HPS 5xx

Same as HPT 5xx but with an output with an electronic switch.

Optional Connection Heads

Limatherm Type XD-AD and Pushna Type 1016 PSEM Ex d and Ex t certified enclosures.

Page 2/4

Form 227A
Version 2 (2019-06)

(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 10ATEX0100 X

Issue No. 6

Type Codes**Pressure Transducer**

HDA 4abc-d-eeee(e)-fg-hhh(psi)iiij
 HDA 4aZc-d-eeee(e)-kkk-fg-hhh(psi)iiij
 HDA 4abc-F21-eeee(e)-fg-hhh(iii)
 HDA 4abc-F21-eeee(e)-T-III-fg-hhh(iii)
 HDA 4aZc-F21-eeee(e)-kkk-fg-hhh(iii)

Standard
 With temperature
 measurement
 With front flush
 membrane

**Pressure Switch
Temperature Transducer**

EDS 4abc-dddd(d)-ef-gh-iiii(psi)kkkl
 ETS 45ab-c-d-eee-fff-gggh
 ETS 4abc-F21-kkk-f-hhh(iii)
 ETS 4abc-F21-kkk-P-eeee(e)-fg-hhh(iii)

Standard
 With pressure
 measurement

**Flow Rate Transmitter
Bladder Integrity Sensor
Difference Pressure Transmitter**

HFT 31bc-F21-eeee-S-X-f-hhh(iii)
 BIS 1abc-F21-eeee(e)-fg-hhh(iii)
 HPT 50c-d-eeee-S-f-hhh(psi)iiij
 HPS 50c-pppp-ef-S-g-hhh(psi)iiij

Rated ambient temperature range

xxx-xxxx-F21-xxx

-40 °C to +60 °C for T6 and T110 °C

-40 °C to +70 °C for T5 and T120 °C

EDS with max. 2 x 1,2 A output signal

-40 °C to +80 °C for T4

-40 °C to +60 °C for T110 °C

-40 °C to +70 °C for T120 °C

-40 °C to +80 °C for T130 °C

Other

-40 °C to +60 °C for T6 and T110 °C

-40 °C to +70 °C for T120 °C

-40 °C to +80 °C for T5 and T130 °C

For details of the variables refer to Annex 1.

Electrical data

Supply Voltage: 30 Vdc / 6 Vdc for 10%..90% ratiometric

Input Current: 25 mA or 1,3 A

For details refer to Annex 1.

Installation instructions

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

(16) **Report Number**

No. NL/KEM/ExTR10.0022/06.

Page 3/4

Form 227A
Version 2 (2019-06)



(13) **SCHEDULE**

(14) to EU-Type Examination Certificate KEMA 10ATEX0100 X Issue No. 6

(17) **Specific conditions of use**

The ambient temperature range of the equipment is as indicated at 'Rated ambient temperature range' above.

When used in mining applications a conduit hose or pipe is to be installed at the ½ 14 NPT or M20x1,5 electrical connection and the cable or leads are to run inside the conduit until an area is reached which is not contaminated with chemicals.

Electrostatic charging on non-metallic parts shall be avoided. See installation instructions for details.

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

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/KEM/ExTR10.0022/06.

(20) **Certificate history**

Issue 1 - 212423500	Initial certificate.
Issue 2 - 215511300	Minor constructional changes and addition of Ex tb
Issue 3 - 216122900	Minor constructional changes, model Type BIS 1000-F added and Name change of the Pressure Transmitter.
Issue 4 - 218185700	Update to the latest standards, changed ambient temperature range and Addition of new type of Temperature Transducer.
Issue 5 - 222806200	Addition of: transmitter HPT500 and HPS500, electrical connection M20x1,5 and optional connection heads;
Issue 6 - 226247500	Adjustment of type/model codes Assessment per EN IEC 60079-0: 2018 Minor constructional changes

A3 Zertifikat CSA / Certificate CSA

Certificate of Compliance

Certificate: 2032612

Master Contract: 224264

Project: 70194250

Date Issued: July 18, 2019

Issued to: Hydac Electronic GmbH
 Dept. ETW
 Hauptstrasse 27
 66128
 Saarbrücken
 Germany

Attention: Alwin Eitel

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.



Issued by:

Jens Ensminger

PRODUCTS

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

CLASS 2258 82 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations - Certified to US Standards

Class I, Groups A, B, C and D T6 resp. T5 resp. T4A; Class II, Groups E, F and G T110°C resp. T120 °C resp. T130 °C; Class III; Type 4

Class I, Zone 1 AEx db IIC T6 resp. T5 resp. T4A Gb;

Zone 21 AEx tb IIIC T110°C resp. T120 °C resp. T130 °C Db

Ex db IIC T6 resp. T5 resp. T4A Gb; Ex tb IIIC T110°C resp. T120 °C resp. T130 °C Db



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- **Pressure Transducer - Standard**
 - a** = accuracy
 - b** = mechanical connection (pressure port)
 - c** = electrical connection
 - d** = signal
 - e** = pressure range
 - f** = approval
 - g** = gauge type
 - h** = modification number
 - (psi)**
 - i** = length of cable
 - j** = cable length definition
 - bar-version

HDA 4abc-d-eeee(e)-fg-hhh(psi)iiij
 4 or 7 or 8
 any alphanumeric character (not critical to certification)
 9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 any alphabetic character
 4 digits for range in bar or psi
 5 digits for range in psi > 9999
 D or E (not approved for db and tb)
 any alphabetic character (not for f = E)
 alphanumeric value
 (psi) for psi-version or "" for bar-version
 numeric value
 Inch or " or cm or m
 iiij in brackets

Technical data:

Rated Supply Voltage	30 Vdc
Output Signal	0..10 V or 0..20 mA or 4..20 mA
or	
Rated Supply voltage	6 Vdc
Output Signal	10-90% ratiometric
Rated Input Current	25 mA
Maximum working pressure	37 to 30000 psi (0.26 MPa to 206.8 MPa)
Temperature	temperature code T6, T110°C: -40°C...+60°C
	T120°C: -40°C...+70°C
	temperature code T5, T130°C: -40°C...+80°C

- **Pressure Transducer – with front flash membrane** **HDA 4aZc-d-eeee(e)-kkk-fg-hhh(psi)iiij**
 - a** = accuracy
 - Z** = pressure port
 - c** = electrical connection
 - d** = signal
 - e** = pressure range
 - f** = approval
 - g** = gauge type
 - h** = modification number
 - (psi)**
 - i** = length of cable
 - j** = cable length definition
 - k** = front flash
 - bar-version

HDA 4aZc-d-eeee(e)-kkk-fg-hhh(psi)iiij
 4 or 7 or 8
 front flush membrane
 9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 any alphabetic character
 4 digits for range in bar or psi
 5 digits for range in psi > 9999
 D or E (not approved for db and tb)
 any alphabetic character (not for f = E)
 alphanumeric value
 (psi) for psi-version or "" for bar-version
 numeric value
 inch or " or cm or m
 alphanumeric value
 iiij in brackets

Technical data:

Rated Supply Voltage	30 Vdc
Output Signal	0..10 V or 0..20 mA or 4..20 mA
or	
Rated Supply voltage	6 Vdc
Output Signal	10-90% ratiometric
Rated Input Current	25 mA
Maximum working pressure	37 to 15000 psi (0.26 MPa to 103.4 MPa)



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Temperature	temperature code T6, T110°C:	-40°C...+60°C
	T120°C :	-40°C...+70°C
	temperature code T5, T130°C:	-40°C...+80°C

• **Pressure Transducer – HART**

HDA 4abc-F21-eeee(e)-fg-hhh(iij)
HDA 4abc-F21-eeee(e)-T-III-fg-hhh(iij)
HDA 4aZc-F21-eeee(e)-kkk-fg-hhh(iij) **Standard with Temp. Measur.**
with front flush membr.

a = accuracy	4 or 7 or 8
b = mechanical connection (pressure port)	any alphanumeric character (not critical to certification)
c = electrical connection	9 or G or J (not approved for tb) or Q (not approved for Group A, db and tb) or W or U
F21 = signal	4..20 mA (with HART Interface)
e = pressure range	4 digits for range in bar or 5 digits for range in psi
f = approval	D
g = gauge type	any alphabetic character
h = modification number	alphanumeric value
i = length of cable	numeric value
j = cable length definition	inch or " or cm or m
Z = pressure port	front flush membrane
k = pressure port	3 digits alphanumeric
T = Temperature measurement	digital with HART Interface
III = probe length	in mm, standard = 007

Technical data:

Rated Supply Voltage	30 Vdc
Output Signal	4..20 mA
Rated Input Current	25 mA
Maximum working pressure	HDA 4abc-F21-eeee(e)-fg... 30000 psi (206.8 MPa)
	HDA 4aZc-F21-eeee(e)-kkk-fg... 30000 psi (206.8 MPa)
	HDA 4abc-F21-eeee(e)-T-III-fg... 10007.6 psi (69.0 MPa)
Temperature	temperature code T6, T110°C: -40°C...+60°C
	temperature code T5, T120°C: -40°C...+70°C

• **Pressure Switch – Standard “approval E - CSA” EDS 410-aaaa-b-f-ccc(psi)ddde**

a = pressure range	numeric value
b = number of switching outputs	1
f = approval	E (not approved for db and tb)
c = modification number	alphanumeric value
(psi)	(psi) for psi-version or "" for bar-version
d = length of cable	numeric value
e = cable length definition	inch or " or cm or m
bar-version	ddde in brackets

Technical data:

Rated Supply Voltage	30 Vdc
Output Signal	e = 1: 1.2A max
Rated Input Current	1.3 A
Maximum working pressure	100 to 30000 psi (0.69 MPa to 206.8 MPa)
Temperature	temperature code T6: -40°C...+60°C
	temperature code T5: -40°C...+80°C



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• **Pressure Switch – Standard**

a = accuracy
b = mechanical connection (pressure port)
c = electrical connection

d = pressure range

e = number of switching outputs
f = output type
g = approval
h = gauge type
i = modification number
(psi)
k = length of cable
l = cable length definition
bar-version

EDS 4abc-dddd(d)-ef-gh-iiii(psi)kkkl

4 or 7
any alphanumeric character (not critical to certification)
9 or G or J (not approved for tb) or
Q (not approved for Group A, db and tb) or W or U
4 digits for range in bar or psi
5 digits for range in psi > 9999
1 or 2
F or P
D
any alphabetic character
alphanumeric value
(psi) for psi-version or "" for bar-version
numeric value
inch or " or cm or m
kkkl in brackets

Technical data:

Rated Supply Voltage
Output Signal

30 Vdc
e = 1: 1,2A max
e = 2: 0,6A max per output

Rated Input Current
Maximum working pressure
Temperature

1.3 A
37 to 30000 psi (0.26 MPa to 206.8 MPa)
temperature code T6, T110°C: -40°C...+60°C
T120°C: -40°C...+70°C
temperature code T5, T130°C: -40°C...+80°C

or

Rated Supply Voltage
Output Signal
Rated Input Current
Maximum working pressure
Temperature

30 Vdc
2: 1.2A max per Output
2.5 A
37 to 30000 psi (0.26 MPa to 206.8 MPa)
temperature code T110°C: -40°C...+60°C
T120°C: -40°C...+70°C
temperature code T4A, T130°C: -40°C...+80°C

• **Temperature Transducer – Standard**

a = mechanical connection
b = electrical connection

c = signal
d = approval
e = probe length
f = modification number
g = length of cable
h = cable length definition

ETS 45ab-c-d-eee-fff(gggh)

any alphanumeric character (not critical to certification)
9 or G or J (not approved for tb) or
Q (not approved for Group A, db and tb) or W or U
any alphabetic character
D
numeric value in mm [max 500]
alphanumeric value
numeric value
inch or " or cm or m

Technical data:

Rated Supply Voltage
Output Signal
Rated Input Current
Maximum working pressure

30 Vdc
0..10 V, 4..20 mA
25 mA
short probe sensor 8702 psi (60.0 MPa)
long probe sensor 1813 psi (12.5 MPa)



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Temperature	temperature code T6, T110°C:	-40°C...+60°C
	T120°C :	-40°C...+70°C
	temperature code T5, T130°C:	-40°C...+80°C

• **Temperature Transducer – HART**

a = accuracy
b = mechanical connection
c = electrical connection
F21
e = pressure range
k = probe length
f = approval
g = gauge type
h = modification number
i = length of cable
j = cable length definition
P = Pressure measurement option

ETS 4abc-F21-kkk-f-hhh(iij)
ETS 4abc-F21-kkk-P-eeee(e)-fg-hhh(iij) **Standard with Press. Measur.**
 1 or 5
 any alphanumeric character (not critical to certification)
 9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 4..20 mA Signal (with HART Interface)
 4 digits for range in bar and 5 digits for range in psi
 in mm [max 500]
 D
 any alphabetic character
 alphanumeric value
 numeric value
 inch or " or cm or m
 digital with HART Interface

Technical data:

Rated Supply Voltage	30 Vdc
Output Signal	4..20 mA
Rated Input Current	25 mA
Maximum working pressure	
	ETS 4abc-F21-kkk-f-hhh(iij) short probe sensor 8702 psi (60.0 MPa)
	ETS 4abc-F21-kkk-f-hhh(iij) long probe sensor 1813 psi (12.5 MPa)
	ETS 4abc-F21-kkk-P-eeee(e)-fg-hhh(iij) 8702 psi (60.0 MPa)
Temperature	temperature code T6, T110°C: -40°C...+60°C
	temperature code T5, T120°C: -40°C...+70°C

• **Flow Rate Transmitter - HART**

b = process connection
c = electrical connection
F21
e = measuring range
S = housing material
X = housing version
f = approval
h = modification number
i = length of cable
j = cable length definition

HFT 31bc-F21-eeee-S-X-f-hhh(iij)
 any alphanumeric character (not critical to certification)
 9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 4..20 mA Signal (with HART Interface)
 4 digits for range l/min
 Stainless Steel
 D
 alphanumeric value
 numeric value
 inch or " or cm or m

Technical data:

Rated Supply Voltage	30 Vdc
Output Signal	4..20 mA
Rated Input Current	25 mA
Maximum working pressure	6090 psi (42.0 MPa)
Temperature	temperature code T6, T110°C: -40°C...+60°C
	temperature code T5, T120°C: -40°C...+70°C



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• **Bladder Integrity Sensor - HART**

a = signal / bladder status
b = mechanical connection
c = electrical connection

F21

e = measuring range
f = approval
g = gauge type
h = modification number
i = length of cable
j = cable length definition

Technical data:

Output Signal
 Rated Supply Voltage
 Rated Input Current
 Maximum working pressure
 Temperature

BIS 1abc-F21-eeee(e)-fg-hhh(iiij)

alphanumeric value (not critical for certification)
 2 = G1/2 DIN 3852 male
 9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 4..20 mA Signal (with HART Interface)
 4 digits for range in bar and 5 digits for range in psi
 D or A
 any alphabetic character
 alphanumeric value
 numeric value
 inch or " or cm or m

4..20 mA output
 30 Vdc
 25 mA
 10007.6 psi (69.0 MPa)
 temperature code T6, T110°C: -40°C...+60°C
 temperature code T5, T120°C: -40°C...+70°C

• **Difference Pressure Transmitter - Standard**

c = electrical connection

d = signal
e = measuring range
S = housing material
f = approval
h = modification number
(psi)
i = length of cable
j = cable length definition
 bar-version

Technical data:

Rated Supply Voltage
 Output Signal
 or
 Rated Supply voltage
 Output Signal
 Rated Input Current
 Maximum working pressure
 Temperature

HPT 50c-d-eeee-S-f-hhh(psi)iii

9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 any alphabetic character
 numeric value
 Stainless Steel
 D
 alphanumeric value
 (psi) for psi-version or "" for bar-version
 numeric value
 inch or " or cm or m
 iiij in brackets

30 Vdc
 0..10 V or 0..20 mA
 6 Vdc
 10-90% ratiometric
 25 mA
 6090 psi (42.0 MPa)
 temperature code T6, T110°C: -40°C...+60°C
 T120°C: -40°C...+70°C
 temperature code T5, T130°C: -40°C...+80°C

• **Difference Pressure Switch - Standard**

c = electrical connection

p = measuring range
e = number of switching outputs
f = set point type
S = housing material

HPS 50c-pppp-ef-S-g-hhh(psi)iii

9 or G or J (not approved for tb) or
 Q (not approved for Group A, db and tb) or W or U
 numeric value
 1 or 2
 F= Fix or P= programmable
 Stainless Steel



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g = approval
h = modification number
(psi)
i = length of cable
j = cable length definition
 bar-version

D
 alphanumeric value
 (psi) for psi-version or "" for bar-version
 numeric value
 inch or " or cm or m
 iij in brackets

Technical data:

Rated Supply Voltage 30 Vdc
 Output Signal e = 1: 1.2A max
 e = 2: 0.6A max per output
 Rated Input Current 1.3 A
 Maximum working pressure 6090 psi (42.0 MPa)
 Temperature temperature code T6, T110°C: -40°C...+60°C
 T120°C: -40°C...+70°C
 temperature code T5, T130°C: -40°C...+80°C

Additional explanation to the type code of all models:

Electrical connection

9 = 1/2-14 NPT Conduit (male), Single leads
 G = 1/2-14 NPT Conduit (male), jacketed cable
 J = Connection head, Aluminium
 Q = Connection head, stainless Steel
 W = M20x1.5 Conduit (male) [Draw.no: 4261296; long version], Single Leads
 U = M20x1.5 Conduit (male) [Draw.no: 4261296; long version], jacketed cable
 0 = Special type of connection (not part of CSA Certification):
 M20x1.5 Conduit (male) [Drawing no.: 3654343; short version]

Mechanical connection

1 = G1/2 B DIN EN 837, male
 2 = G1/2 DIN 3852, male
 3 = M14x1,5 DIN 3852, male
 4 = G1/4 A DIN 3852, male
 5 = 7/16-20 UNF 2B (SAE4), female
 6 = 7/16-20 UNF 2A (SAE4), male
 7 = 9/16-18 UNF 2A (SAE6), male
 8 = 1/4-18 NPT, male
 9 = G1/4 DIN 3852 female
 A = 9/16-18 UNF 2B (SAE6), female
 B = F250C, Autoclave(9/16-18 UNF2B, female)
 C = SF250CX20, Autoclave (7/16-20 UNF 2B female)
 D = 1/8-27 NPT male
 E = M10x1 DIN 3852, male
 F = 1/4-18 NPT, female
 G = G1/4 B DIN EN 837, male
 H = 3/4-16 UNF 2A (SAE8), male
 J = G3/4 A DIN 3852 male
 K = 1/4-18 NPTF, male
 L = 1/4-18 NPTF, female
 M = M12x1.5 DIN 3852 male
 N = M20x1 without seal
 P = AM12S38 DIN 3852 male



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R	=	M14x1.5 - ISO6149-2 male
S	=	M18x1.5 male
T	=	G1/8 DIN 3852, male
U	=	G3/8 DIN 3852, male
V	=	SF375CX20, Autoclave (9/16-18 UNF 2B female)
W	=	1/2-14 NPT male
Y	=	G1/2 HN 28-22 male
Z	=	flush mount process connection

I, O and Q are open for different common threads
 Other threads as modification.

Standard signals

A	=	4...20mA	(2-wire)
B	=	max. range 0...10V	(3-wire)
C	=	4...20 mA	(3-wire , current source)
E	=	0...20mA	(3-wire , current source)
G	=	max. range 0...6V	(3-wire)
R	=	10%...90% Ub	(3-wire)
F21	=	4...20mA with HART Interface	

Conditions of Acceptability:

The products are required to be supplied only by certified power supply providing reinforced or double insulation for protection against electric shock with output voltages below the limits of 6.3.1 of 61010-1 or 30 V r.m.s. and 42.4 V peak or 60 V d.c and limited energy circuit according to 9.4 (LPS or Class2).

The equipment was not evaluated to flammable/explosive fluids or liquids.

Equipment is only to be installed by trained personal in accordance to the installation, set-up, operation and maintenance of comparable devices and certified as being capable of such work.

The equipment which is not direct installed to a junction box shall be connected to a conduit installation.

For BIS model: The BIS labc-F21-eeee(e)-fg-hhh(iij) must not be energized when the bladder sensor is located in explosive atmosphere. The sensor can be located only in safe non-hazardous area. The bladder is not covered by this certification. The BIS model is certified as a component only and its final installation must be subjected to acceptance of local authority having jurisdiction.

Notes:

1. Basic model designation is followed by alpha/numeric suffixes denoting type code.
2. The devices must be grounded during installation.
3. The suitability of the grounding shall be subject to the acceptance of the Local Authority Having Jurisdiction.



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APPLICABLE REQUIREMENTS

CAN/CSA Standard C22.2 No. 0-M91 (Reaffirmed 2006)	General Requirements - Canadian Electrical Code, Part II
CSA Standard C22.2 No. 25-1966 (Reaffirmed 2000)	Enclosures for Use in Class II Groups E, F, and G Hazardous Locations
CSA Standard C22.2 No. 30-M1986 (Reaffirmed 2003)	Explosion-Proof Enclosures for Use in Class I Hazardous Locations
CAN/CSA-C22.2 No. 60079-0:15	Explosive atmospheres — Part 0: Equipment — General requirements
CAN/CSA-C22.2 No. 60079-1:16	Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d"
CAN/CSA-C22.2 No. 60079-31:15	Explosive atmospheres — Part 31: Equipment dust ignition protection by enclosure "t"
CSA Standard C22.2 No. 94.1-07 (First Edition - September 2007)	Enclosures for Electrical Equipment, Non-Environmental Considerations
CSA Standard C22.2 No. 94.2-07 (First Edition - September 2007)	Enclosures for Electrical Equipment, Environmental Considerations
CAN/CSA-C22.2 No. 61010-1-12	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements
ANSI/UL Standard 50 (Twelfth Edition, September 2007)	Enclosures for Electrical Equipment, Non-Environmental Considerations
ANSI/UL Standard 50E (First Edition, September 2007)	Enclosures for Electrical Equipment, Environmental Considerations
UL 61010-1 (Third Edition)	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements
ANSI/UL Standard 1203 (Fourth Edition, September 2006)	Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
UL 60079-0 Sixth Edition	Explosive atmospheres – Part 0: Equipment – General requirements
UL 60079-1 Seventh Edition	Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures "d"
UL 60079-31 Second Edition	Explosive Atmospheres – Part 31: Equipment Dust Ignition Protection by Enclosure "t"



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MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

The following markings are provided on thermally printed silver polyester adhesive nameplates that are manufactured by qMik Industrie-Kennzeichnungen, GmbH, Type qM 442. The nameplates are applied to the outside of the devices' stainless steel enclosures.

The Markings may alternatively be laser engraved onto the stainless steel enclosures.

All products

- Manufacturer name: "Hydac Electronic, GmbH", "Hydac Electronic", "Hydac" or equivalent or CSA Master Contract Number "224264", adjacent to the CSA Mark in lieu of manufacturer name (Note: May be omitted on small labels);
- Certificate Number CSA 19.2032612X;
- Model number: as specified in the PRODUCTS section, above;
- Electrical ratings: as specified in the PRODUCTS section, above;
- Ambient temperature rating: as specified in the PRODUCTS section, above;
- Manufacturing date in MMY format, or serial number, traceable to month of manufacture;
- Enclosure type: "Type 4 Enclosure", "Type 4" or equivalent;
- The CSA Mark with or without "C" and "US" indicators, as shown on the Certificate of Conformity;
- Hazardous Location designation: as specified in the PRODUCTS section, above (may be abbreviated);
- Temperature code: as specified in the PRODUCTS section, above;
- Maximum Working Pressure (MWP): as specified in the PRODUCTS section, above;
- Wiring connections: denotes wiring function by wire color or numbers, as appropriate.

HDA-4000 and EDS-410 Approval E products:

- Reference to Installation Instructions: "Install per 663203".

HDA-4xxx and EDS-4xxx Approval D products with vents

- Reference to Installation Instructions: "Install per 663931"; or
- HDA4xxx: Reference to Operating Instructions (includes Control Drawing: 663931): "Protection concept → Operating Instruction 669835".
 EDS 4xxx: Reference to Operating Instructions (includes Control Drawing: 663931): "Protection concept → Operating Instruction 669837".



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ETS-45xx products:

- Reference to Installation Instructions: "Install per 663928"; or
- Reference to Operating Instructions (includes Control Drawing: 663928): "Protection concept → Operating Instruction 669836".

HDA4 ETS4 HFT3 F2I/ HART models:

- Reference to Installation Instructions: "Install per 663929"; or
- HDA 4 : Reference to Operating Instructions (includes Control Drawing: 663929): "Protection concept → Operating Instruction 669905".
ETS 4: Reference to Operating Instructions (includes Control Drawing: 663929): "Protection concept → Operating Instruction 669907".
HFT 4: Reference to Operating Instructions (includes Control Drawing: 663929): "Protection concept → Operating Instruction 669908".

BIS F21 model:

- Reference to Installation Instructions: "Install per 663930"; or
- Reference to Operating Instructions (includes Control Drawing: 663930): "Protection concept → Operating Instruction 669906".

HPT HPS model:

- Reference to Installation Instructions: "Install per 663932"; or
- Reference to Operating Instructions (includes Control Drawing: 663932): "Protection concept → Operating Instruction 669994".

A4 Zertifikat IECEx / Certificate IECEx

	IECEx Certificate of Conformity		
INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres for rules and details of the IECEx Scheme visit www.iecex.com			
Certificate No.:	IECEx KEM 10.0053X	Page 1 of 5	<u>Certificate history:</u>
Status:	Current	Issue No: 6	Issue 5 (2019-05-27)
Date of Issue:	2022-08-17		Issue 4 (2015-09-04)
Applicant:	HYDAC Electronic GmbH Hauptstraße 27 66128 Saarbrücken-Gersweiler Germany		Issue 3 (2014-02-08)
Equipment:	Pressure Transducers, Pressure Switches, Temperature Transducers, Flow Rate Transmitters, Bladder Integrity Sensors and Connection heads		
Optional accessory:			
Type of Protection:	Ex db, Ex tb		
Marking:	Ex db I Mb Ex db IIC T6...T4 Gb Ex tb IIIC T110 °C...T130 °C Db		
Approved for issue on behalf of the IECEx Certification Body:		L.G. van Schie	
Position:		Certification Manager	
Signature: (for printed version)			
Date: (for printed version)		2022-08-17	
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 www.iecex.com or use of this QR Code.			
Certificate issued by:			
DEKRA Certification B.V. Meander 1051 6825 MJ Arnhem Netherlands			



IECEx Certificate of Conformity

Certificate No.: IECEx KEM 10.0053X

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Date of issue: 2022-08-17

Issue No: 6

Manufacturer: HYDAC Electronic GmbH
Hauptstraße 27
66128 Saarbrücken-Gersweiler
Germany

Manufacturing locations: HYDAC Electronic GmbH
Hauptstraße 27
66128 Saarbrücken-Gersweiler
Germany

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 equipment 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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

This Certificate does not indicate compliance with 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:

NL/KEM/ExTR10.0022/06

Quality Assessment Report:

DE/BVS/QAR06.0017/13



IECEx Certificate of Conformity

Certificate No.: IECEx KEM 10.0053X

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Date of issue: 2022-08-17

Issue No: 6

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

HDA 4xxx

Electronic Pressure Transducer with analogue output.

Depending on the applied pressure on the sensor cell a proportional output signal is generated.

One version has an additional temperature sensor.

It provides an analogue signal or analogue signal combined with a HART digital protocol.

EDS 4xxx

Electronic Pressure switch.

Depending on the applied pressure on the sensor cell a proportional internal signal is generated.

Depending on the factory set fixed value or programmable set point an electronic switch changes its status.

ETS 4xxx

Temperature Transducer.

Depending on the applied temperature on the sensor a proportional output signal is generated.

One version has an additional pressure sensor.

It provides an analogue signal or analogue signal combined with a HART digital protocol.

HFT 31xx

Flow Rate Transmitter.

An impeller driven by the speed of the flow of the liquid or gas through a turbine generates a signal pick up by a proximity switch, converted to a linear analogue current signal and is available via a HART interface.

BIS 1xxx

Bladder Integrity Sensor.

The bladder status signal is provided as a switching signal. Depending on the version, the temperature or pressure signal measured by the sensor is converted into a proportional analogue current signal and is available via a HART interface.

HPT 5xx

Electronic differential pressure transmitter with analogue output.

Depending on the applied differential pressure a piston with integrated magnet is shifted linearly. A Hall sensor is detecting the position and passes on the position to the evaluation electronics which calculates the output signal.

HPS 5xx

Same as HPT 5xx but with an output with an electronic switch.

Optional Connection Heads

Limatherm Type XD-AD and Pushna Type 1016 PSEM Ex d and Ex t certified enclosures.

SPECIFIC CONDITIONS OF USE: YES as shown below:

The ambient temperature range of the equipment is as indicated at 'Rated ambient temperature range' below.

When used in mining applications a conduit hose or pipe is to be installed at the 1/4-14 NPT or M20x1.5 electrical connection and the cable or leads are to run inside the conduit until an area is reached which is not contaminated with chemicals.

Electrostatic charging on non-metallic parts shall be avoided. See installation instructions for details.



IECEx Certificate of Conformity

Certificate No.: IECEx KEM 10.0053X

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Date of issue: 2022-08-17

Issue No: 6

Equipment (continued):

Type Codes

Pressure Transducer

HDA4abc-d-eeee(e)-fg-hhh(psi)iii
HDA 4aZc-d-eeee(e)-kkk-fg-hhh(psi)iii
HDA 4abc-F21-eeee(e)-fg-hhh(iii) Standard
HDA 4abc-F21-eeee(e)-T-III-fg-hhh(iii) With temperature measurement
HDA 4aZc-F21-eeee(e)-kkk-fg-hhh(iii) With front flush membrane

Pressure Switch

EDS 4abc-dddd(d)-ef-gh-iii(psi)kkkl

Temperature Transducer

ETS 45ab-c-d-eee-fff-gggh
ETS 4abc-F21-kkk-f-hhh(iii) Standard
ETS 4abc-F21-kkk-P-eeee(e)-fg-hhh(iii) With pressure measurement

Flow Rate Transmitter

HFT 31bc-F21-eeee-S-X-f-hhh(iii)

Bladder Integrity Sensor

BIS 1abc-F21-eeee(e)-fg-hhh(iii)

Difference Pressure Transmitter

HPT 50c-d-eeee-S-f-hhh(psi)iii
HPS 50c-pppp-ef-S-g-hhh(psi)iii

Rated ambient temperature range

xxx-xxxx-F21-xxx
-40 °C to +60 °C for T8 and T110 °C
-40 °C to +70 °C for T5 and T120 °C

EDS with max. 2 x 1.2 A output signal

-40 °C to +80 °C for T4
-40 °C to +80 °C for T110 °C
-40 °C to +70 °C for T120 °C
-40 °C to +80 °C for T130 °C

Other

-40 °C to +60 °C for T8 and T110 °C
-40 °C to +70 °C for T120 °C
-40 °C to +80 °C for T5 and T130 °C

For details of the variables refer to Annex 1.



IECEx Certificate of Conformity

Certificate No.: **IECEx KEM 10.0053X**

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Date of issue: **2022-08-17**

Issue No: **6**

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Assessment per IEC 60079-0 : 2017 Ed. 7.0

Minor constructional changes

Annex:

[226247500-ExTR10.0022.06 Annex1_1.pdf](#)

A5 EU-Konformitätserklärung / EU declaration of conformity

HYDAC Electronic GmbH, Hauptstraße 27, 66128 Saarbrücken



HYDAC ELECTRONIC GMBH

Hauptstraße 27
66128 Saarbrücken, Germany

Phone exchange: (0049) 6897 509-01
 Fax purchasing dept.: (0049) 6897 509-1745
 Fax sales dept.: (0049) 6897 509-1735
 E-Mail: support.electronic@hydac.com
 website: www.hydac.com
 see also: General Terms of Use (AGB)

EU-Konformitätserklärung / EU declaration of conformity 18 / 218a / 2023

Hiermit erklären wir in alleiniger Verantwortung, 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 Richtlinien/Verordnungen entspricht.

We herewith declare under our sole responsibility 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 directive/regulation listed below.

Bezeichnung / Designation	Temperaturmessumformer für explosionsgefährdete Umgebungen (Druckfeste Kapselung) / Temperature transmitter for Hazardous Environments (Flameproof Enclosure)
Typ / Type	ETS 4xxx ... Dx ...
EMV Richtlinie / EMV Guideline	2014/30/EU
Normen / Standards	EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2012 EN 61000-6-4:2011
Baumusterprüfbescheinigung / Type Examination Certificate	KEMA 10ATEX0100X DEKRA Certification B.V.

Geschäftsführer:
Dr. Peter Josef Göke, Matthias Dierck
Dr. Carlos Javier Mota-VeghiesSitz der Gesellschaft: Saarbrücken
Registriergericht:
Saarbrücken, HRG 6707USt-Identnummer: DE 136 277 403
Steuernummer: CHE775/03694

Bankverbindung in Saarbrücken:

Commerzbank AG
Nr. 3160000 BLZ 560 600 60
BIC COMDE33HAN
IBAN DE77 5606 0060 0060 0000 00Deutsche Bank AG
Nr. 0255000 BLZ 560 700 00
BIC DEUTDE33HAN
IBAN DE54 5607 0000 0000 5600 00Landesbank Saar
Nr. 5250000 BLZ 560 500 00
BIC SALADE33HAN
IBAN DE51 5605 0000 0000 5200 00HypoRealbank
Nr. 302000000 BLZ 560 200 00
BIC HYVODE33HAN
IBAN DE54 5602 0000 0000 5600 00Deutsche Postbank
Nr. 3000000 BLZ 560 100 00
BIC PDBKDE33HAN
IBAN DE87 5601 0000 0000 3000 00

A6 UKCA-Konformitätserklärung / UKCA declaration of conformity

													
HYDAC Electronic GmbH, Hauptstraße 27, 66128 Saarbrücken													
HYDAC ELECTRONIC GMBH Hauptstraße 27 66128 Saarbrücken, Germany													
Phone exchange: (0049) 6897 509-01 Fax purchasing dept.: (0049) 6897 509-1745 Fax sales dept.: (0049) 6897 509-1735 E-Mail: support.electronic@hydac.com website: www.hydac.com see also: General Terms of Use (AGB)													
Authorised to compile the technical documentation: HYDAC TECHNOLOGY LIMITED De Havilland Way, Windrush Park Witney, Oxfordshire, GB-OX29 0YG Phone exchange: (0044) 1993 / 86 83 86 Fax: (0044) 1993 / 86 83 85 E-Mail: info@hydac.co.uk website: www.hydac.com													
													
UKCA – Declaration of Conformity 18 / 17a / 2023													
We herewith declare under our sole responsibility 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.													
Designation	Temperature transmitter for Hazardous Environments (Flameproof Enclosure)												
Type	ETS 4xxx ... Dx ...												
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Designated standards	EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2012 EN 61000-6-4:2011												
Type Examination Certificate	KEMA 10ATEX0100X DEKRA Certification B.V.												
<table border="0"> <tr> <td> Managing Directors: Dr. Franz Josef Eble, Matthias Oetel, Dr. Carlos-Javier Morán-Iglesias </td> <td> Bank account in Saarbrücken: Commerzbank AG No. 31050000 BIC COMDE333 BIC COMDE333 BLAN 3307 0000 0000 0000 0000 00 </td> <td> Deutsche Bank AG No. 25120510 BIC DEUTDE33 BIC DEUTDE33 BLAN 2512 0510 0000 0000 0000 00 </td> <td> HypoVereinsbank No. 30300004 BIC HYVEDE33 BIC HYVEDE33 BLAN 3030 0000 0000 0000 0000 00 </td> </tr> <tr> <td> Corporate seat: Saarbrücken Registration court: Saarbrücken, HRB 8707 </td> <td> Ländebank Saar No. 30300004 BIC HYVEDE33 BIC HYVEDE33 BLAN 3030 0000 0000 0000 0000 00 </td> <td> Deutsche Postbank No. 25120510 BIC DEUTDE33 BIC DEUTDE33 BLAN 2512 0510 0000 0000 0000 00 </td> <td></td> </tr> <tr> <td> Tax ID (VAT ID): DE 138 277 433 Tax number: 24071350084 </td> <td></td> <td></td> <td></td> </tr> </table>		Managing Directors: Dr. Franz Josef Eble, Matthias Oetel, Dr. Carlos-Javier Morán-Iglesias	Bank account in Saarbrücken: Commerzbank AG No. 31050000 BIC COMDE333 BIC COMDE333 BLAN 3307 0000 0000 0000 0000 00	Deutsche Bank AG No. 25120510 BIC DEUTDE33 BIC DEUTDE33 BLAN 2512 0510 0000 0000 0000 00	HypoVereinsbank No. 30300004 BIC HYVEDE33 BIC HYVEDE33 BLAN 3030 0000 0000 0000 0000 00	Corporate seat: Saarbrücken Registration court: Saarbrücken, HRB 8707	Ländebank Saar No. 30300004 BIC HYVEDE33 BIC HYVEDE33 BLAN 3030 0000 0000 0000 0000 00	Deutsche Postbank No. 25120510 BIC DEUTDE33 BIC DEUTDE33 BLAN 2512 0510 0000 0000 0000 00		Tax ID (VAT ID): DE 138 277 433 Tax number: 24071350084			
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Tax ID (VAT ID): DE 138 277 433 Tax number: 24071350084													

Notizen / Notes

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HYDAC SERVICE

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Notice

The information and particulars provided in this manual apply to the operating conditions and applications described herein. In the event of deviating applications and/or operating conditions, please contact the respective HYDAC department concerned.

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 without notice.