

## T100

# Pulse Amplifiers for Mechanical Flow Meter Control drawing for hazardous areas

## Manual-Version

T100\_D\_EN\_230130\_E002



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## 1. Hazardous Area Installation Instructions

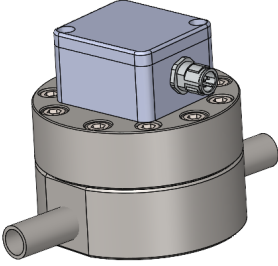
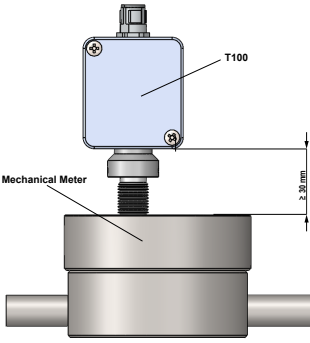
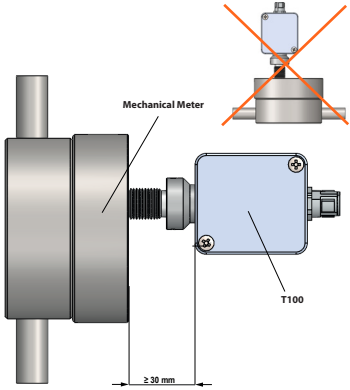
1. The equipment may be used in a hazardous area with flammable gases and vapors, groups and temperature classes as specified in the equipment specification.
2. The equipment is certified for use in Ambient Temperature ( $T_{amb}$ ) and Process Temperature ( $T_{proc}$ ) as specified in the equipment specification and is not allowed to be used outside of the specified temperature range.
3. Installation shall be carried out in accordance with the applicable code of practice by suitably trained personnel.
4. The equipment is not intended to be repaired by the user. If repair is required, please contact service.
5. If the equipment come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the Type of protection is not compromised.
  - Aggressive Substances - e.g. acidic liquids or gases that may attack metals or solvents that may affect polymeric materials.
  - Suitable Precautions - e.g. regular checks as part of routine inspections or establishing from the material's datasheet that it is resistant to specific chemicals.

### 1. 1. Special Conditions of Use and Acceptability

1. The Modular Pulse Amplifier is supplied by three Diode Safety Barriers (one for the Power Circuit, one for Frequency Output Circuit 1 and one for Frequency Output Circuit 2). These circuits must be kept separate in the field wiring by grounded metal shields. The terminations in the cable connector (not supplied with the apparatus) must maintain 2 mm separation. The cable shall provide an insulation min. 0.25 mm thickness.
2. Ambient and Process Temperature Limitation (see table page 5)
3. In order to avoid a possible ignition hazard, the versions with an aluminum enclosure must not be subjected to impact or friction.

#### **Additional Conditions of Acceptability for North American Certification:**

4. Only the modular pulse amplifier with product code T\*10 and a stainless steel M12 connector, supplied by KEM, can be used as Type 3 for outdoor use. All other configurations have to be used indoors.

Mounting Requirement	Ambient Temperature (Tamb)	Process Temperature (Tproc)
	Without mounting requirement	$-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +60^{\circ}\text{C}$
	Minimum distance of <b>30mm</b> between the T100 housing and the mechanical meter.	$-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$
	Minimum distance of <b>30mm</b> between the T100 housing and the mechanical meter. A <b>top mounted T100 is prohibited!</b>	$-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +50^{\circ}\text{C}$

## 1. 2. Standards

CAN/CSA C22.2 No. 61010-1-12:18, CAN/CSA-C22.2 No.60079-0:19, CAN/CSA-C22.2 No. 60079-11:14

ANSI/UL-61010-1 (2018), ANSI/UL-60079-0 (2019), ANSI/UL-60079-11 (2013)

IEC/EN 60079-0:2019, IEC/EN 60079-11:2012

# Hazardous Area Installation Instructions

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**NOTE:**

The apparatus complies with the Dielectric Strength Requirements of IEC 60079-11, Clause 6.3.13 (500 Vrms applied between the circuits and the housing).

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**WARNING!****Explosion Hazard – Can cause death or serious injury**

Danger of explosion in hazardous areas.

The equipment shall not be opened when energized.

To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

Substitution of components may impair Intrinsic Safety. May lead to danger for the equipment and to danger for health and life of the user.

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## 1. 3. Approval Information

Approval		Certificate Number
CSA-c	Ex ia IIC T4 Class I, Division 1, Groups A, B, C & D Ex ia	CSA 23CA80090651X
CSA-us	Class I, Zone 0 AEx ia IIC T4	CSA 23CA80090651X
IECEX	Ex ia IIC T4 Ga	IECEX CSA 23.0019X
ATEX	II 1G Ex ia IIC T4 Ga	CSACa 23ATEX1003X
UKCA	II 1G Ex ia IIC T4 Ga	CSAE 23UKEX1069X

## 1. 4. Entity Parameters

Description	Connection <sup>1)</sup>	U <sub>i</sub> (V)	I <sub>i</sub> (mA)	P <sub>i</sub> (mW)	C <sub>i</sub> (nF)	L <sub>i</sub> (μH)
Power Supply	+24V / Loop+	28V	93	650	74.75	470
Digital Output 1	Dig. Out 1	28V	93	650	74.75	470
Digital Output 2	Dig. Out 2	28V	93	650	74.75	470

<sup>1)</sup>to common ground [GND / Loop-]

## 1. 5. Installation Diagram

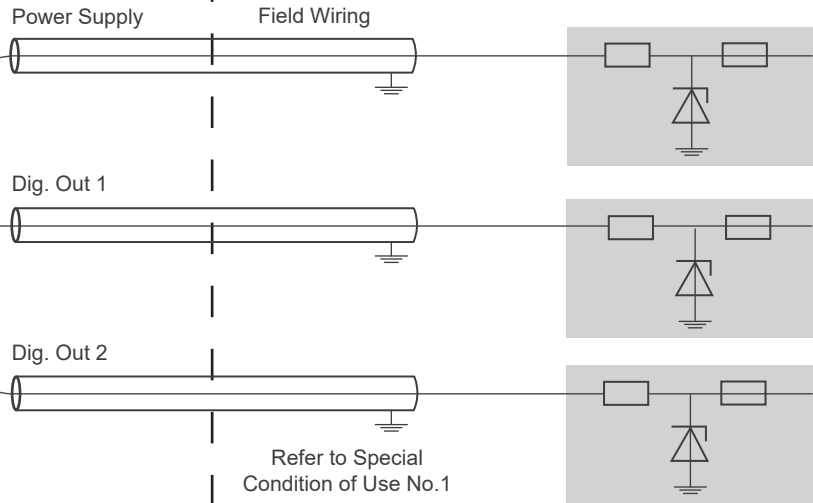
### Explosive Atmospheres (Hazardous Locations)

Class I, Division 1, Groups A, B, C & D Ex ia (Canada & US)  
 Class I, Zone 0 (Canada & US)  
 Group II, Zone 0 (IEC/ATEX/UKCA)



**Normal Electrical Ratings**  
 Loop Power: 4-20mA, 12-28Vdc  
 Frequency Outputs (max): 28Vdc, 2.4mA (each)

### Safe Area (Non-Hazardous Locations)



#### Ambient / Process Temperature

-40°C ≤ Tamb ≤ +60°C -40°C ≤ Tproc ≤ +60°C	Without distance requirement
-40°C ≤ Tamb ≤ +50°C -40°C ≤ Tproc ≤ +80°C	Minimum distance of 30mm between the T100 housing and the mechanical meter top mounted.
-40°C ≤ Tamb ≤ +50°C -40°C ≤ Tproc ≤ +95°C	Minimum distance of 30mm between the T100 housing and the mechanical meter. A top mounted T100 is prohibited!

Refer to Special Condition of Use No.2

Use certified barriers that meet the following conditions:

$$\begin{aligned}
 U_i &\geq U_o \\
 I_i &\geq I_o \\
 P_i &\geq P_o \\
 C_i + C_{\text{cable}} &\leq C_o \\
 L_i + L_{\text{cable}} &\leq L_o
 \end{aligned}$$

Barrier  $U_m = 250V$



# KEM Flow Measurement GmbH



+49 9941 9423-0



Wetzeller Straße 22  
93444 Bad Kötzing  
Germany



[info@kemflow.com](mailto:info@kemflow.com)



[www.kemflow.com](http://www.kemflow.com)