

MT228 Universal Ex-Barrier

Power supply (MUS) for 4 - 20 mA Xmtr / HART / FOXCOM,
Power supply (MUS) for positioner with FOXCOM digital,
Isolating driver (TV) for 4 - 20 mA signals. Intrinsically safe is the Input.



The Universal Ex-Barrier MT228 separates intrinsically safe and non intrinsically safe circuits. It supplies galvanically isolated transmitters and positioners with FOXCOM communication or transmitters with HART communication. Connection to hand terminal or to personal computer can be made at every location in the signal loop. The bidirectional communication between a digital control system, a hand terminal or a PC and a transmitter or a positioner is possible.

FEATURES

- Bidirectional communication with intelligent transmitters
- Bidirectional communication with intelligent positioners
- No external communication resistor required
- Rail mounting and nest mounting versions
- 1 or 2 Channel version with nest mounting
- 2 Channel version transmitter power supply + isolating driver as signal multiplier
- Output 0 / 4 ... 20 mA
- Intrinsically safe ATEX II (1) G D [Ex ia]; FM
- Little natural energy consumption
- Concept of intrinsic safety includes linkage of operating device
- Galvanic isolation between all circuits
- Sockets for hand terminal or PC on the front
- EMC in accordance with the latest NAMUR-recommendations and international standards and laws
- Multidrop application with up to 5 intelligent transmitters
- Pluggable terminals with rail-mounted module
- Optional pluggable spring terminals

TECHNICAL DATA

Application	Transmitter power supply	Isolating driver
Input		
Signal range	4 ... 20 mA	0/4 ... 20 mA
Supply voltage (with 20 mA)	> 16.2 V	–
Voltage drop at input	–	approx. 1 V
Output		
Analog output I_O	4 ... 20 mA	0/4 ... 20 mA
Permissible load	0 ... 750 Ω	
Nominal load for HART	250 Ω	
Nominal load for FOXCOM	500 Ω (only with 4 ... 20 mA)	
Limitation of output current	< 27 mA	
Residual ripple	< 1 % (amplitude)	
LED in output circuit	indicator, operating if $I_a > 1$ mA	
Sockets for communication	\varnothing 2 mm, at front plate	
Transmission characteristic		
Output to input	1:1	
Extendet range	ca. 10 % (for 4 ... 20 mA)	
Load effect	< 0.1 %	
Characteristic	linear	
Deviation	< 0.05 %	
Step response	< 50 ms	
Bandwith for communication	500 Hz ... 15 kHz	
Temperature effect	0.1 %/10K	
Effect of power supply changes	< 0.1 %	
Power supply		
DC voltage	DC 24 V, +30 %, –25%	
Permissible residual ripple	< 15 % (within tolerance band)	
Power consumption	< 2.4 W / channel	
Start up current	< 15 x I_{nom}	
Application conditions:		
The device can be operated at a power supply class d. c. 4 according to IEC 654-2.		
Ambient conditions		
Ambient temperature	0 °C ... +60 °C	
Relative humidity	10 % ... 70 %	
	condensation not allowed	
Transport and storage temperature	–20 °C ... +70 °C	
Anwendungsklasse:		
The device can be operated at a classe B ₂ location in accordance with IEC 654-1.		
Versions		
Rail-mounted module	for snap attachment to carrier rail according to EN 50 022 (hat rail, 35 mm width)	
Housing color	RAL 7031	
Weight	approx. 0.15 kg	
Nest-mounted module	4 TE, 3 HE	
Color	RAL 7032	
Connector	DIN 41 612 type F, rows z, d	
Weight	approx. 0.25 kg	

SAFETY REQUIREMENTS

CE label	
Electromagnetic compatibility	89/336/EWG
Low-voltage regulation	73/23/EWG not applicable
Electromagnetic compatibility EMC	
Operating conditions	industrial environment
Immunity according to EN 50 082-2	fulfilled ¹⁾
Emission according to EN 55 011, Group 1, class A	fulfilled
EN 50 081-2	fulfilled
NAMUR recommendation Rev. May 1993.	fulfilled
Safety	
According to EN 61 010-1 (resp. IEC 1 010-1).	safety class III overvoltage category 1
Internal fuses	for fuses mounted in the device see MI EII0310 A-(en)

ELECTRICAL CLASSIFICATION ^{2) 3)}**Type of protection “intrinsic safety”, ATEX**

Type AS 423 ATEX II (1) G D [EEx ia] IIC/IIB
 Certificate of Conformity PTB 01 ATEX 2002
 Maximum values see Document EX EII0310 A

Type of protection “intrinsic safety”, FM

Associated Intrinsically Safe Apparatus
 Class I, II, III
 Groups A, B, C, D, E, F, G
 Entity

1) Acceptance criterium A: < 0.5 %

2) With appropriate order only

3) National requirements have to be observed

Hand terminal

Linkage of operating device for the intelligent transmitter / positioner takes place via sockets at amplifier in the non-intrinsically safe circuit.

When linking hand terminal or PC to intrinsically safe circuit, consider the submitted maximum values as well as permissible connectable maximum values of these devices (see respective operating device).

Coding of intrinsically safe devices

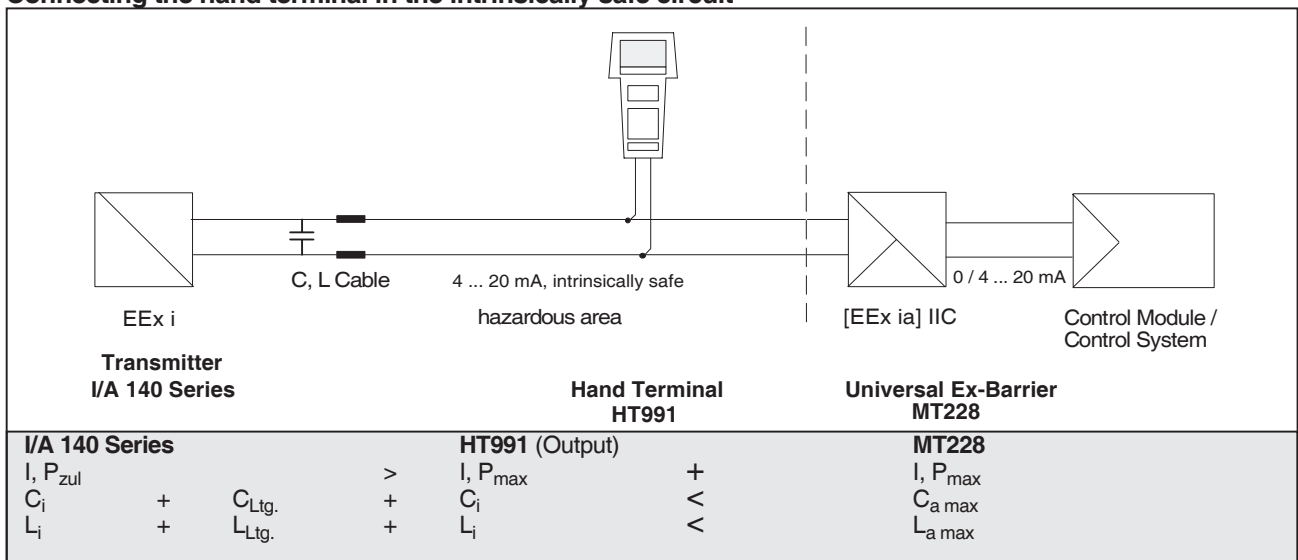
For devices with intrinsically safe circuits the slots within a rack resp. the plugable terminals of rail-mounted modules must be protected by coding pins, in order to avoid errors in mixed assemblies.

Coding for Nest-mounted modules:

Nest-mounted module	Type	Coding position
MT228-N	AS 423	5, 9, 15, 18
MT228-M		2, 9, 18
MT228-O		9, 18
MT228-P		6, 9, 18
MT228-R		2, 9, 18

Example:

Connecting the hand terminal in the intrinsically safe circuit



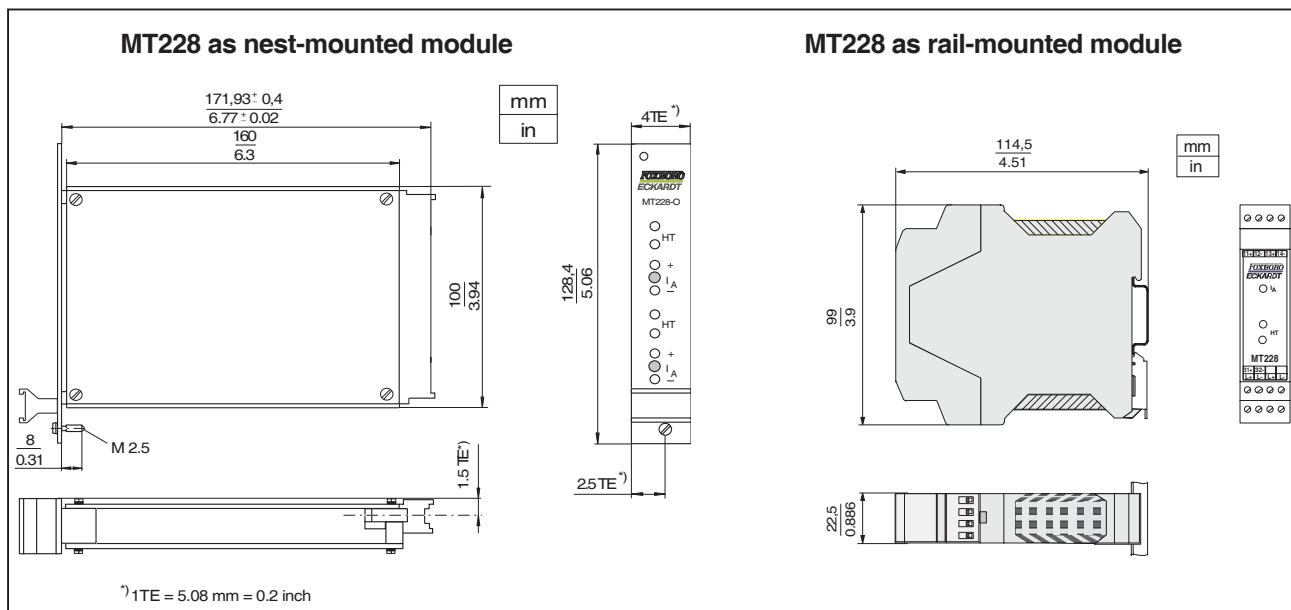
CONNECTIONS

Rail-mounted module		Nest-mounted module						
MT228-S		MT228-N		MT228-M	MT228-O	MT228-P	MT228-R	
11	Transmitter power supply	z2	Transmitter power supply	-	Transmitter power supply 1	-	Input isolating driver 1	
12	-	d2	-	Input isolating driver	-	Transmitter power supply 1	-	
13	-	z8			-	Input isolating driver 2	-	
14	Input isolating driver	d8			-	Transmitter power supply 2	-	
31	-	z16			-	Output 2	-	
32	Output	d16			-	Output 2	-	
L+	Power supply DC 24V	z22	Output	-	Output 1	-	Output 1	
L-		d22	-	Output	-	Output 1	-	
L+		z26	Power supply DC 24V	-	Power supply DC 24V	-	Power supply DC 24V	-
L-		d26	-	Power supply DC 24V	-	Power supply DC 24V	-	Power supply DC 24V

MODEL CODES

Universal Ex-Barrier		MT228		1.04.06	
Power supply (MUS) for 4 - 20 mA Xmtr / HART / FOXCOM, Power supply (MUS) for positioner with FOXCOM digital, Isolating driver (TV) for 4 - 20 mA signals					
Version					
Rail-mounted module, 1 Channel		-S			
Nest-mounted module, 1 Channel, (MUS)		-N			
Nest-mounted module, 1 Channel, (TV)		-M			
Nest-mounted module, 2 Channel, (MUS + MUS)		-O			
Nest-mounted module, 2 Channel, (MUS + TV)		-P			
Nest-mounted module, 2 Channel, (TV + TV)		-R			
Electrical Classification					
ATEX [EEx ia] IIC / FM intrinsically safe			EGX		
for general purpose areas			ZZZ		
Options					
Spring terminals (only version -S).				-K	
Example:		MT228	-S	ZZZ	-K

DIMENSIONS



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