



1 UNITED KINGDOM CONFORMITY ASSESSMENT

## UK TYPE EXAMINATION CERTIFICATE

2 Product or Protective System Intended for use in Potentially Explosive Atmospheres

UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 Type Examination Certificate No.: TÜV 21 UKEX 7056 Issue: 00

4 Product: Analog Input Module AI401Ex

5 Manufacturer: Hans Turck GmbH & Co KG

6 Address: Witzlebenstraße 7  
45472 Mülheim an der Ruhr, Germany

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

8 TÜV Rheinland UK Ltd, Approved Body number 2571, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.

The examination and test results are recorded in the confidential report 557 / UKEx 7056.00 / 21.

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

**EN IEC 60079-0:2018**

**EN 60079-11:2012**


Except in respect of those requirements listed at section 18 of the schedule to this certificate.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to specific conditions of use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of this product shall include the following:

 II 2 (1) G Ex ib [ia Ga] IIC T4 Gb

 II (1) D [Ex ia Da] IIIC

This certificate and its schedules may only be reproduced in its entirety and without change.

TÜV Rheinland UK Ltd

Solihull, 2022-04-11

  
Dipl.-Ing. Klauspeter Graffi

This Type Examination Certificate without signature shall not be valid. Alterations are subject to approval by  
TÜV Rheinland UK Ltd, 1011 Stratford Road, Shirley, Solihull, B90 4BN, Tel. +44 (0) 121 7969400  
A UKAS accredited certification body, No. 8400

**13 SCHEDULE TO UK TYPE EXAMINATION CERTIFICATE****14 CERTIFICATE NUMBER TÜV 21 UKEX 7056****15 Description of Product**

Analog Input Module AI401Ex

The Excom module, type AI401 Ex is an analog input module which converts analog signals from sensors in intrinsically safe field circuits into binary signals for further processing in field bus systems. It provides inputs for active sensors and inputs for passive sensors.

It is designed in type of protection Intrinsic Safety "i" and it is intended to be used within the I/O Fieldbus system type excom® with the module subrack, type MT.

The excom module, type AI401 Ex ensures the electrical isolation for the various circuits. These isolate the external field circuits from the internal data buses and the internal supply voltage. The operation of the excom module, type AI401 Ex inside of an enclosure with a degree protection of at least IP54 is ensured by the application within the I/O Fieldbus system type excom® in potentially explosive atmospheres.

**Technical Data****I.) AC-supply circuit**

type of protection Intrinsic Safety Ex ib IIC;  
only for connection to the module subrack type MT  
P = 2.2 W (power consumption)

The intrinsically safe AC-supply circuit is safely electrically isolated from ground and up to a peak value of the nominal voltage of 60V from all other intrinsically safe circuits.

**II.) Signal circuit (CAN-BUS)**

type of protection Intrinsic Safety Ex ib IIC;  
only for connection to the module subrack type MT

**III.) Address encoding**

type of protection Intrinsic Safety Ex ib IIC;  
only for connection to the module subrack type MT

#### IV.) Field circuits

##### Inputs for active sensors

Channel 1: 13+, 14-  
 Channel 2: 23+, 24-  
 Channel 3: 33+, 34-  
 Channel 4: 43+, 44-

type of protection Intrinsic Safety

[Ex ia Ga] IIC/IIB or [Ex ia Da] IIIC

maximum values per channel:

$$U_o = 6 \text{ V}$$

$$I_o = 2.5 \text{ mA}$$

$$P_o = 4 \text{ mW}$$

linear characteristic

Ci negligibly low

Li negligibly low

maximum values for common external reactances:

(the values below correspond to the ISpark program 6.2)

Lo (mH)	IIC	11B
	Co (µF)	Co (µF)
5	2	10
2	2.3	12
1	2.6	14
0.5	3	17
0.2	3.7	22

or

for interconnection of the field  
 circuits with active sensors

type of protection Intrinsic Safety Ex ia IIC/IIB  
 or Ex ia IIIC according to separate certificate

maximum values per channel:

$$U_i = 30 \text{ V}$$

$$I_i = 107 \text{ mA}$$

$$P_i = 644 \text{ mW}$$

## V.) Field circuits

### Inputs for passive sensors

Channel 1: 11+, 12-  
 Channel 2: 21+, 22-  
 Channel 3: 31+, 32-  
 Channel 4: 41+, 42-

type of protection Intrinsic Safety  
 [Ex ia Ga] IIC/IIB or [Ex ia Da] IIIC

maximum values per channel:

$U_o = 19 \text{ V}$   
 $I_o = 90 \text{ mA}$   
 $P_a = 615 \text{ mW}$   
 $C_i$  negligibly low  
 $L_i$  negligibly low

maximum values for common external reactances:

(the values below correspond to the Spark program 6.2)

Lo (mH)	IIC	IIB
	Co (μF)	Co (μF)
2	---	0.97
1	---	0.97
0.5	0.12	0.97
0.2	0.17	1.1
0.1	0.20	1.3

All four channels may also be connected to the inputs to **IV) field circuits** with active intrinsically safe circuits whose intrinsically safe values do not exceed the aforementioned parameters. Only passive intrinsically safe circuits may be connected to the inputs to **V) field circuits**.

Either one passive sensor or one active sensor shall be assigned to each channel.

The intrinsically safe channels of the field circuits are safely electrically isolated from ground and from each other and - up to a peak value of the nominal voltage of 60V - from all other intrinsically safe circuits. In each channel, the inputs for passive and active sensors are electrically interconnected.

Environmental data:

The range of the ambient temperature  $T_a$  is: -20 °C up to +70 °C.

**16 Test report No. (associated with this certificate issue): 557 / UKEx 7056.00 / 21**

**17 Specific Conditions of Use**

None

**18 Essential Health and Safety Requirements (Regulations Schedule 1)**

In addition to the Essential Health and Safety Requirements covered by the standards listed at item 9, all other requirements are demonstrated in the relevant reports.

**19 Drawings and Documents**

Reg. no.	Document title:	Document no.:	Rev.:	Date:
	Approval documentation AI401Ex (147 p.)		01	06.01.2022