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APPROVAL REPORT

FIELDGATE FXA 520 GATEWAYS/INTERFACES FOR USE IN HAZARDOUS (CLASSIFIED) LOCATIONS

Prepared for:

ENDRESS + HAUSER GmbH + Co. KG
HAUPTSTRASSE 1
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GERMANY

Project ID: 3015798
Class: 3610
Date of Approval: 21 April 2003
Authorized by:

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FM APPROVALS
Project I.D. 3015798

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FOR USE IN HAZARDOUS (CLASSIFIED) LOCATIONS

From

ENDRESS + HAUSER GmbH + Co. KG
HAUPTSTRASSE 1
D-79689 MAULBURG
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I INTRODUCTION

1.1 Standards:

Endress + Hauser GmbH + Co. KG requested Approval for the apparatus listed in Section 1.3 to be in compliance with the applicable requirements of the following standards:

Title	Class No.	Issue Date
Electrical Equipment for Use in Hazardous (Classified) Locations, General Requirements	3600	November 1998
Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III Division 1 Hazardous (Classified) Locations	3610	October 1999
Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III Division 1 and 2, Hazardous (Classified) Locations	3611	October 1999
Electrical and Electronic Test, Measuring, and Process Control Equipment	3810 (Including Supp. No.1)	March 1989 (1995)

1.2 This Report may be reproduced only in its entirety and without modification.

1.3 **Listings:**

The following apparatus was evaluated as associated intrinsically safe apparatus for connection to Class I, II, III, Division 1, applicable Groups A, B, C, D, E, F and G; Class I, Zone 0, Group IIC per "Entity" requirements in accordance with installation drawing 960 527-0070 Revision A; Nonincendive for installation in Class I, Division 2, Groups A, B, C and D, T3 at Ta = 60°C; Class I, Zone 2, Group IIC, T3 at Ta = 60°C hazardous (classified) indoor locations and will appear in the Approval Guide, a publication of FM Approvals, as follows:

Fieldgate FXA 520-Pabc. Gateways/Interfaces.
AIS/I,II,III/1/ABCDEFG – 960 527-0070; Entity; NI/I/2/ABCD/T3 Ta = 60°C
[I/0] AEx [ia] IIC – 960 527-0070; Entity; NI/I/2/IIC/T3 Ta = 60°C
Entity Parameters Each Channel:
Voc = 6.5V, Isc = 6.0mA, Po = 9.8mW, Ca = 25μF, La = 860mH
a = Power Supply: A or E.
b = Modem Interface: 1, 2 or 4
c = Data Management: A or B
Special Condition of Use:
1. The Fieldgate FXA 520 Gateways/Interfaces shall be installed in an enclosure having a tool removable cover, and in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

II DESCRIPTION

2.1 **General**

The Fieldgate FXA 520 Gateways/Interfaces enables remote monitoring, diagnostics and configuration of connected 4-20mA/HART devices such as transmitters/sensors or actuators. The Fieldgate FXA 520 is located in unclassified locations or Division 2/Zone 2 hazardous (classified) locations with connections to an analog telephone line, an Ethernet line or a GSM antenna, a RS-485 serial line, two 4-20mA current input loops and a SPST relay contact. The Fieldgate FXA 520 provides two intrinsically safe HART channels for connections to separate intrinsically safe field devices located in Division 1/Zone 0 hazardous (classified) locations. Power supply requirements for the Fieldgate FXA 520 are 85 to 253Vrms, 50/60Hz, or 20 to 30Vrms / 20 to 60Vdc at 2.5 to 8.0VA, depending on the selected version. The maximum operating temperature range of the instruments is 0°C to +60°C for individual mounting and 0°C to +50°C for row mounting.

2.2 **Intrinsically Safe Circuits**

The Fieldgate FXA 520 provides two identical 4-20mA/HART field connections. These connections consist of linear intrinsically safe two-wire channels, which are galvanically isolated from each other and from the non-hazardous location voltage of 250V by protective transformers.

2.3 **Construction**

The Fieldgate FXA 520 enclosure is designed for mounting on a "top hat rail" and is constructed of polycarbonate and polymide plastic materials and measures 11.2cm x 9.5cm x 4.5cm. The plastic materials have flammability ratings of ANSI/UL94 HB and are suitable for continuous temperatures of 115°C. The electronic components are a combination of surface mount and thru-hole technology components implemented on two or three printed circuit boards (two for Ethernet version and three for GSM and for Analog versions) within the enclosure. The circuit board material is epoxy-glass with a Comparative Tracking Index (CTI) of 175 or greater and a flammability rating of ANSI/UL94 V-0. The

circuit board tracks are covered with a solder mask or varnish type with CTI of 175 or greater. The final equipment enclosure was not part of this examination.

III EXAMINATIONS AND TESTS

Samples of Fieldgate FXA 520 Gateways/Interfaces were submitted to FM Approvals for examination and testing. The samples were considered to be representative of the product line and was examined, tested, and compared to the manufacture's drawings. The examination included circuit analysis, temperature evaluation, and a review of the manufacturer's documentation and the physical construction of the apparatus. Hazardous locations evaluation and testing were conducted at FM Approvals facilities in Norwood MA and protection against shock, fire and injury evaluation and testing were conducted at E+H GmbH + Co. KG facilities in Maulburg Germany under the FM Lab Qualification program JI 1B8A5.AE. All data is on file at FM Approvals along with other documents and correspondence applicable to this program. All were satisfactory and are summarized below.

3.2 Intrinsic Safety Evaluation - Entity

Under "Entity" requirements, the concept allows interconnection of intrinsically safe apparatus to associated apparatus, not specifically examined in such combination. The criteria for interconnection is that the voltage (Vmax or Ui) and current (Imax or Ii) and power (Pi) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater than the voltage (Voc ,Vt or Uo) and current (Isc, It or Io) and power (Po) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Ci) and inductance (Li, including interconnecting wiring if the L/R ratio is not used), of the intrinsically safe apparatus and the cable inductance over resistance ratio (Lc/Rc), must be equal or less than the capacitance (Ca or Co) and inductance (La or Lo) and inductance to resistance ratio (La/Ra or Lo/Ro) which can be safely connected to the associated apparatus. If these criteria are met then the combination may be connected.

3.3 Associated Apparatus Assessment - Entity Parameters

Each 4-20mA/HART channel of the Fieldgate FXA 520 requires separate wiring to different field devices. Each channel has linear characteristics and is galvanically isolated from each other and from all other non-hazardous locations connections. Each channel is identical. The output voltage (Voc or Uo) is clamped by redundant shunt zener diode and the short circuit current (Isc or Io) is limited by infallible series resistors. Each channel is individually fuse protected and isolated from the non-hazardous locations terminals and each other by separate protective transformers. Analysis verified each channel parameters are incapable of causing spark ignition for a Group A, B(IIC), Group C, E(IIB) and Group D, F, G (IIA) hazardous atmospheres. Entity parameters for each channel are listed below.

MODEL FXA 520 (each channel, separately wired to different field devices)		
Voc or Uo = 6.5V **Isc or Io** = 6.0mA **Po** = 9.8mW		
Ca	**La**	**GROUPS**
25µF	860mH	A, B (IIC)
570µF	1000mH	C, E (IIB)
1000µF	1000mH	D, F, G (IIA)

3.4 Intrinsic Safety Evaluation and Test Philosophy

The subject associated intrinsically safe apparatus was examined with a maximum 250 Vrms fault voltage criteria applied to the non-intrinsically safe terminations of the Fieldgate FXA 520 Gateways/Interfaces. Acceptance for Approval is based on the following criteria; sufficient creepage and clearance spacing between the intrinsically safe and non-intrinsically safe circuitry, the isolating protective circuit's ability to limit energy to the hazardous area apparatus, on isolation transformers as protective components, on current limiting resistors' required construction, protective components' power dissipation under normal and fault conditions, and the ability of isolating assembly to remain functional under fault conditions.

3.4.1 Protective Components and Component De-rating

The protective components critical to intrinsic safety and their ratings are listed below. All components are de-rated to 2/3 under both normal and fault conditions.

Component Identification	Type and Rating
F200, F201	Fuse, Wickman Type TR5 or ELU Type 166050, 40mA, 250V, 35A BCC
T200, T201	Transformer, Type 1(a), Insulation Class F, (960527-0010), EF 16 1400:1400
V209, V211, V213, V215, V216, V219	Rectifier Diode, BAS216, Vf = 1.4V, If = 250mA
V210, V212, V214, V216, V218, V220	Zener Diode, BZG05C5V6, 5.6V, 7%, 720mW @ 60°C
V201, V202, V203, V204, V205, V206, V207, V208	Zener Diode, BZV55V1, 5.1V, 7%, 400mW @ 60°C
R201, R202, R203, R204	Resistor, 2.2KΩ, 1%, 1W @ 70°C
R224, R225	Resistor, 33.2Ω, 1%, 250mW @ 70°C

3.4.2 Protective Transformers

Protective transformer T200 and T201 (Part No. 960527-0010) is Type 1(a) construction. The winding insulation material is rated Class F (155°C) and the insulation material between primary and secondary windings is Arnite TV4 264SN manufactured by Bruno Weisser. A test current was applied to the primary not exceeding 1.7 times the fuse ratings of F200 and F201 with the primary at its worst-case input fault voltage. The winding temperatures did not exceed the temperature class of the insulation material with 6 hours of continuous operation. Subsequently, the transformer was subjected to a voltage of 1500Vrms, 60 Hz between the primary and secondary windings with no leakage or breakdown. The tests satisfactorily verified the suitability of this construction for protective transformer.

3.4.3 Semiconductor Protection

Protective shunt circuits are either triple or dual-redundant, which is satisfactory for transformer isolated connections to apparatus in Class I, II, III, Division 1 or Zone 0/1 hazardous (classified) locations.

3.4.4 **Shunt Diode Protective barrier Assembly Analysis and Tests**
Transient testing of shunt diode circuits were waived since the protective assemblies are galvanically isolated from the non-hazardous location connections. Transients are not likely to occur due to the isolation circuitry.

3.4.5 **Component Ratings Assessment**
Analysis confirmed that all components affecting intrinsic safety are operated within 2/3 of their ratings under normal and fault conditions.

3.4.6 **Creepage and Clearance Assessment**
Distances, which affect intrinsic safety, meet the requirements in accordance with Table 6.1. of FM Approvals Standard 3610 at the applicable voltages.

3.4.7 **Infallible Connections**
Printed board tracks critical to intrinsic safety exceed the required 2mm width and 35µm thickness.

3.4.8 **Comparative Tracking Index**
The CTI for the printed circuit board material and the coating materials, and the transformer materials are satisfactorily specified to be a minimum of 175.

3.4.9 **Printed Circuit Board Coating**
The circuit board tracks are covered with a solder mask of Probimer film, Type 52 or Type 65, and a varnish type SL 1309 N, SL 1339 N or SL1369 N (Peters). This satisfactorily meets coating requirements of FM Approvals Standard 3610.

3.4.10 **Intrinsically Safe Ground Connections**
Intrinsically safe ground connection to the subject apparatus is not required.

3.5 **Nonincendive Examination**
Nonincendive equipment acceptability is based on the inability of the device to release sufficient electrical or thermal energy under normal operating conditions to cause ignition of the specific hazardous atmospheres. The following examination and tests verify the suitability of the Fieldgate FXA 520 assemblies for use in Class I, Division 2, Groups A, B, C and D; Class I, Zone 2, IIC hazardous (classified) locations.

3.5.1 **Make/break Contacts**
Analysis revealed that the only make/break contacts in the Fieldgate FXA 520 which are activated under normal operating conditions is mechanical relay K100. Tests described in Section 3.5.2 verified the suitability of the relay as a sealed device. All other make/break contacts are not operated under normal operating conditions and connectors internal to the assembly are mechanically prevented from separating.

3.5.2 **Sealed Device Tests**
Sealed device tests were conducted on samples of relays NAIS APE 30005 and SCHRACK/Tyco V23092-A1005-A301. The samples were subjected to oven aging and air leakage testing. At the end of preconditioning at 121°C for 132 hours, each sample at 25°C was immersed in water at a temperature

of 50°C to a depth of 25mm for 1 minute. No bubbles emerged from the samples during this test. These relays are considered to be satisfactorily sealed devices.

3.5.3 **Potentiometers**
Analysis verified that the assemblies contain no potentiometers.

3.5.4 **Field Terminal Connectors**
Pull tests conducted on the disconnectable field wire terminals verified a force greater than 15N is required to separate. All other field wire connections are prevented from separating either by mechanical lock or by screw.

3.5.5 **Fuses**
All fuses are not designed to clear under normal operating conditions.

3.5.6 **Temperature Evaluation**
Temperature tests were conducted on representative samples of the Fieldgate FXA 520 assemblies with maximum specified input supply voltage and load conditions. The surface temperature of components in the assemblies did not exceed 160°C at ambient temperature of 60°C. As a result, the temperature class on the instrument's label is T3 Ta = 60°C.

3.5.7 **Division 2/Zone 2 Wiring Method**
Fieldgate FXA 520 field wiring requires installation in accordance with the National Electrical Code (ANSI/NFPA 70) for Division 2/ Zone 2 hazardous (classified) locations.

3.6 **Protection From Shock, Fire, and Injury**
Protection against shock, fire and injury is based upon the ability of the equipment to minimize the risk of electrical shock, fire and injury. The Fieldgate FXA 520 apparatus was examined to verify the required degree of protection is provided. Evaluation and tests were conducted at E+H GmbH + Co. KG in Maulburg Germany under the FM Lab Qualification program JI 1B8A5.AE. All were found satisfactory for apparatus with pollution degree II and installation category 2 and are documented in Endress + Hauser Test Report 61010-3-1 IEC:1997 (E). The apparatus does not contain motors, heating or cooling devices, interlocks, batteries, liquids or gases nor does it come in contact with liquids and it contains no source of radiation, sonic or ultrasonic energy. The test report is included in the FM Approvals Project Data Record PDR3015798 and is summarized below.

3.6.1 **Accessibility**
Protection is afforded by the final enclosure requiring the use of a tool to gain access to internal energized parts.

3.6.2 **Grounding and Bonding**
None required, protection is afforded by the final enclosure requiring the suitable grounding of equipment enclosure.

3.6.3 **Spacings**
Spacing between conductors and terminal parts of opposite polarity exceed the required 3.3mm creepage and clearance distances for circuits up to 300Vrms. In addition spacing between conductors meet the required 3.3mm creepage and clearance distances for components and printed circuit boards up to 300Vrms. Inter-layers spacings for multilayer printed circuit boards are void-free, which is satisfactory.

3.6.4 **Dielectric Withstand Testing**

Dielectric testing was conducted on representative assemblies. Tests were conducted at 2.3KVrms, 48 - 60 Hz for double insulation between the instruments' power supply input terminals and relay contact terminals and between power supply input terminals and Analog, GSM, Ethernet and RS485 terminals, and at 1.44KVrms, 48 - 60 Hz for double insulation between the power transformer's secondary and Analog, GSM, Ethernet and RS485 terminals. The results were satisfactory since no breakdowns were observed when the test voltage was raised to the specified level within 2 Seconds and maintained for at least 2 seconds.

3.6.5 **Temperature Testing**

The temperature rises of external surfaces of the assemblies were measured under normal conditions and maximum supply voltage and load until temperatures stabilized. The surface temperature of the apparatus does not exceed 20°C above the operating ambient temperature, which is satisfactory.

3.6.6 **Flammability**

The enclosure materials carry a flammability rating of ANSI 94 HB and all other insulation materials and printed wiring board laminates carry a flammability rating of ANSI 94 V-0, which is satisfactory.

3.6.7 **Over-current Protection**

Internal fuse F100 (500mA) in the primary circuit provides satisfactory over-current protection for the apparatus.

3.6.8 **Short Circuit Testing**

Short circuit testing of mains transformer T100 verified fuse F100 satisfactorily provides protection for the mains transformer. In addition, short circuit testing of output signals field connections satisfactorily verified that no damage resulted to the circuits. This is satisfactory.

3.6.9 **Comparative Tracking Index**

The CTI of printed circuit boards used in the apparatus is satisfactorily specified to be a minimum of 175.

3.6.10 **Fuses**

The apparatus contains no operator accessible fuses.

IV MARKING

The following information appears on the apparatus listed in Section 1.3 and meets Standard requirements. Marking is placed on the plastic enclosure with a laser engraving process:

-Manufacturer's name and manufacturing location.
-Type number and serial number.
-Maximum input and output ratings
-Maximum ambient temperature.
-Hazardous location ratings and Control Drawing Reference
-The FM Approvals mark of Approval

V REMARKS

5.1 Installations shall comply with the relevant requirements of the latest edition of the National Electrical Code (ANSI/NFPA 70).

5.2 Installations shall comply with the latest edition the manufacturer's instruction manual.

5.3 Control room equipment connected to intrinsically safe associated apparatus should not use or generate more than 250 Vrms or Vdc.

5.4 For guidance on the installation of intrinsically safe apparatus see ANSI/ISA RP12.06.01, Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations.

VI FACILITIES AND PROCEDURES AUDIT

The manufacturing sites in Maulburg, Germany and Greenwood, Indiana are examined on a periodic basis with regard to facilities and quality control procedures. Results are satisfactory in that the level of performance assures continued product quality as originally Approved herein.

VII MANUFACTURERS RESPONSIBILITIES

7.1 The documentation listed in Section VIII is applicable to this Approval and is on file at FM Approvals. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained form FM Approvals. The Approved Product - Revision Report, FM Approvals 797 shall be forwarded to FM Approvals as notice of proposed changes.

7.2 The manufacturer shall inform the end user concerning the equipment enclosure requirements. Further enclosure details may be found in ANSI/ISA S82.02.01 Standards.

7.3 The manufacturer shall make available FM Installation Drawing 960 527-0070 to all users and installers of the subject equipment. The manufacturer shall make additional copies available upon request.

VIII DOCUMENTATION

The following drawings describe the Fieldgate FXA 520 Gateways/Interfaces and are filed under I.D. 3015798.

Drawing No.	Issue	Description
960527-0000 A	A	Fieldgate (General Drawing) FXA 520, HART-Channel 1 & 2
960527-0010 A	A	HART-Transformer EF 16 1400:1400
960527-0020 A	A	Schematic, Power Supply, Relais-control
960527-0021 A	A	Schematic, HART- Multiplexer, Ex Separation
960527-0022 A	A	Conductive Pattern cs, Main Board FXA520

Drawing No.	Issue	Description
960527-0023 A	A	Conductive Pattern ss, Main Board FXA520
960527-0024 A	A	Conductive Pattern inner layer 1 cs, Main Board FXA520
960527-0025 A	A	Conductive Pattern inner layer 1 ss, Main Board FXA520
960527-0026 A	A	Assembly Plan cs, Main Board FXA520
960527-0027 A	A	Assembly Plan ss, Main Board FXA520
960527-0030 A	A	Schematic, CPU, Memory, RS232 + Dat-Interface
960527-0031 A	A	Schematic, Network Interface circuitry
960527-0032 A	A	Schematic, RS485, 4-20mA interface, Voltage Regulation
960527-0033 A	A	Conductive Pattern cs, FXA520 sub-board
960527-0034 A	A	Conductive Pattern ss, FXA520 sub-board
960527-0035 A	A	Conductive Pattern inner layer 1 cs, FXA520 sub-board
960527-0036 A	A	Conductive Pattern inner layer 1 ss, FXA520 sub-board
960527-0037 A	A	Conductive Pattern inner layer 2 cs, FXA520 sub-board
960527-0038 A	A	Conductive Pattern inner layer 2 ss, FXA520 sub-board
960527-0039 A	A	Assembly Plan cs, FXA520 sub-board
960527-0040 A	A	Assembly Plan ss, FXA520 sub-board
960527-0052 A	A	Nameplate FM (AC-, DC-Version)
960527-0070 A	A	FM Control Drawing FXA 520

IX CONCLUSION

The apparatus described in 1.3 meets FM Approvals requirements. Since a duly signed Master Agreement is on file for Endress + Hauser GmbH + Co. KG, Approval is effective the date of this report.

EXAMINATION AND TESTING BY: Robert Menot (FM Approvals)
Mr. P Renk, Mr. A. Steffan (E+H GmbH)

PROJECT DATA RECORD: PDR3015798

ATTACHMENTS: Installation Drawing: 960527-0070 Revision A

Nameplate: 960527-0052 Revision A

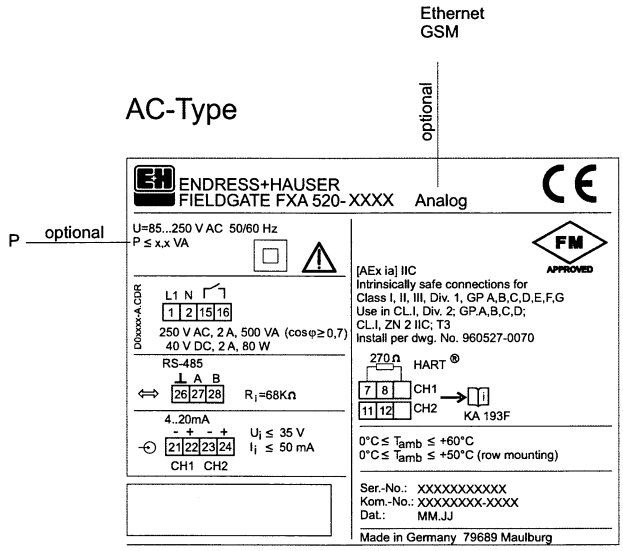
REPORT BY:

Robert Menot
Senior Engineer
Hazardous Locations

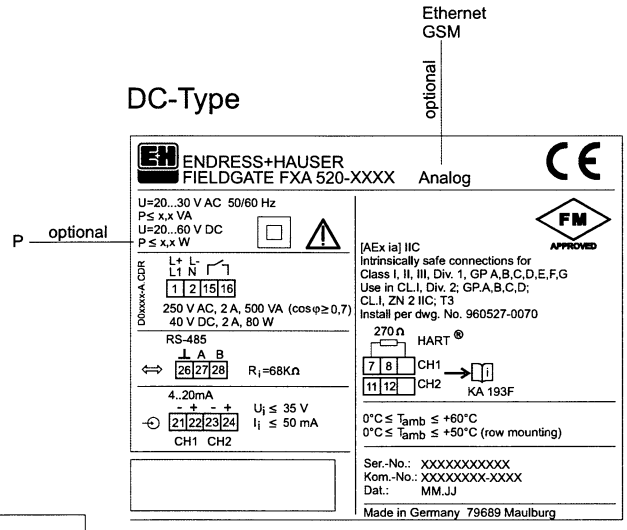
REPORT REVIEWED BY:

David Styrcula
Technical Team Manager
Hazardous Locations

AC-Type



DC-Type



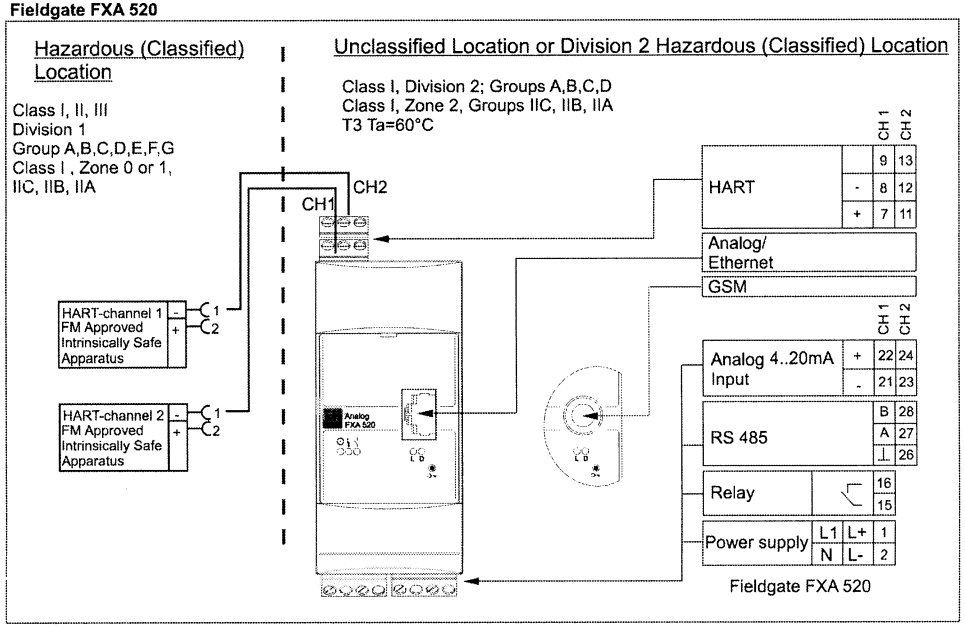
P		
	AC-Analog	6 VA
	AC-Ethernet	4,9 VA
	AC-GSM	8,0 VA
	DC-Analog	2,1 W/ 3,3 VA
	DC-Ethernet	1,5 W/ 2,5 VA
	DC-GSM	3,2 W/ 5 VA

GEOMETRICAL TOLERANCING DIN ISO 1101
SURFACE TEXTURE DIN ISO 1302
EDGES OF WORKING PARTS DIN 6784

							DATE	NAME		
	H									
	G						DESIGN	10.10.02	STF	
	F						DRAWN	10.10.02	HN	DOCUMENT PROTECTED BY DIN 34
	E						APPROVED	10.10.02	STF	
	D						SCALE 1:1	TITLE Nameplate FM (AC-, DC-version)		DRAWING NO. 960527-0052 A
	C									
	B									
X	A			X	X	X	TOLERANCE	MATERIAL	REPL. FOR	C SHEET SIZE A4
QTY.		NO.	DRAWN	APP'D	DATE				REPL. BY	

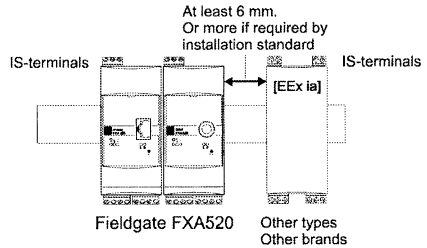
Endress+Hauser
Maulburg, Germany

Fieldgate FXA 520



Notes :

1. WARNING : Substitution of components may impair intrinsic safety !
2. FM approved apparatus must be installed in accordance with manufacturer instructions
3. Maximum safe area voltage 250 Vrms
4. The installation must be in accordance with the National Electrical Code (ANSI / NFPA 70) and ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe systems for Hazardous (Classified) location"
5. The Fieldgate FXA shall be installed in compliance with the enclosure, mounting, spacing and segregation requierments of the ultimate application. Further enclosure details may be found in ANSI/ISA S82.02.01 Standards.
6. Use additional precautions such as wiring tie downs or special wiring methods to provide adequate separation, especially when terminals are arranged one above the other.
7. Terminals of intrinsically safe circuits must be separated from terminals of non-intrinsically safe circuits by creepage and clearance distance of at least 50 mm (2 in.).
8. Installation on the top hat rail :
9. The following must be followed when connecting to intrinsically safe apparatus:
   Voc ≤ Vmax, Isc ≤ Imax, Po ≤ Pi, Ca ≥ Ccable + Ci, La ≥ Lcable + Li
10. Fieldgate FXA 520 may be installed in Class I, Division 2/Zone 2 hazardous (classified) locations in accordance with National Electrical Code (ANSI/NFPA 70) Division 2/Zone 2 wiring methods.



	AC-Version :	DC-Version :
Supply voltage 1, 2	U = 85 ... 250 V AC 50/60 Hz P ≤ 6,0 VA (Analog-Version) P ≤ 4,9 VA (Ethernet-Version) P ≤ 8 ,0 VA (GSM-Version)	U = 20 ... 60 V DC U = 20...30 V AC 50/60 Hz P ≤ 2,1 W/ 3,3 VA (Analog-Version) P ≤ 1,5 W/ 2,5 VA (Ethernet-Version) P ≤ 3,2W/ 5 VA (GSM-Version)
All relays rating 15, 16	U ≤ 250 V AC, I ≤ 2 A, P ≤ 500 VA bei cos φ ≥ 0,7 U ≤ 40 V DC, I ≤ 2 A, P ≤ 80 W	

Entity Parameters

Fieldgate FXA 520		GROUP	La	Ca	Use Voc and Isc parameters when channels 1 and 2 are separatly wired, using cables not subject to short circuiting, using wiring methods in accordance with NEC.
Channel 1 (CH1) : Terminal 7,8 or Channel 2 (CH2) : Terminal 11,12	Voc ≤ 6.5 V Isc ≤ 6.0 mA Po ≤ 9.8 mA	A,B (IIC)	860 mH	25µF	
		C, E (IIB)	1000 mH	570 µF	
		D, F, G (IIA)	1000 mH	1000µF	

GEOMETRICAL TOLERANCING DIN ISO 1101
SURFACE TEXTURE DIN ISO 1302
EDGES OF WORKING PARTS DIN 6784

		DATE	NAME
DESIGN		07.10.02	STF
DRAWN		07.10.02	HN
APPROVED		07.10.02	STF

DOCUMENT PROTECTED BY DIN 34

Endress+Hauser
Maulburg, Germany

SCALE

TITLE: FM Control Drawing Fieldgate FXA 520

DRAWING NO.: 960 527 -0070 A

TOLERANCE | MATERIAL | REPL. FOR | REPL. BY | C | SHEET SIZE A3

QTY.	NO.	DRAWN	APP'D	DATE
H				
G				
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