

TEST REPORT

Project No: 0003048394 – Reissue 1
Class: 3610, 3611
Product Name: ProToF Remote Display FHX50 option and component modules: Transmitter Board TRC [18] and Receiver Board TRC [19]
Product Type: Sub-assembly Module
Name of Report Holder: Endress+Hauser GmbH+Co KG
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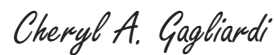
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May 17, 2013

Date of Issue

May 28, 2013

Date of Reissue

1 INTRODUCTION

- 1.1 Endress+Hauser GmbH+Co KG requested an examination of the ProToF Remote Display FHX50 option with component modules TRC [18] Transmitter Board and TRC [19] Receiver Board and associated enclosures [TRC05], GF27 and TRC[06], GF28. Also requested is an examination of the TRC[02], GT19 plastic housing used as an enclosure option for the final ProToF measuring device assembly (e.g. Levelflex). These components are listed in Section 1.4 for compliance with the FM Approvals standards listed in Section 1.3.

The Remote Display FHX50 and TRC[02], GT19 component modules are assessed for assignment of the following hazardous (classified) locations protection ratings when they are installed in the Endress+Hauser ProToF final assembly:

Enclosure TRC[02], GT19

- IP68 / 66 Type 4X / 6P

Enclosure TRC[05], GF27 and TRC[06], GF28

- IP68 / 66 Type 4X / 6P

Module TRC[18], Transmitter Board

- Intrinsically Safe for Class I, Division 1, Gps A – D, T6-T4
- Intrinsically Safe for Class I, Zone 0, 1 Gp IIC, T6-T4
- Nonincendive for Class I, Division 2, Gps A – D, T6-T4, with Nonincendive Field Wiring Parameters

Module TRC[19], Receiver Board

- Intrinsically Safe for Class I, Division 1, Gps A – D, T6-T4
- Intrinsically Safe for Class I, Zone 0, 1 Gp IIC, T6-T4
- Nonincendive for Class I, Division 2, Gps A – D, T6-T4, with Nonincendive Field Wiring Parameters

- 1.2 This report may be freely reproduced only in its entirety and without modification.

1.3 Standards

1.3.1 United States Standards

Title	Number	Issue Date
Electrical Equipment for Use in Hazardous (Classified) Locations – General Requirements	FM Class 3600	2011
Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II & III, Division I, Hazardous (Classified) Locations	FM Class 3610	2010
Nonincendive Electrical Equipment for Use in Class I & II, Division 2, and Class III, Divisions 1 & 2, Hazardous (Classified) Locations	FM Class 3611	2004
Electrical Equipment for Measurement, Control and Laboratory Use	FM Class 3810	2005
Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements	ANSI/ISA 61010-1 (82.02.01)	2004

Title	Number	Issue Date
Explosive atmospheres - Part 0: Equipments-General Requirements	ANSI/ISA 60079-0	2009
Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	ANSI/ISA 60079-11	2009
Degrees of Protection Provided by Enclosures (IP Code)	ANSI/ISA 60529	2004
Enclosure for Electrical Equipment	ANSI/NEMA 250	1991

1.4 Listing

These products will not appear in the Approval Guide, an on-line resource of FM Approvals, as they are component modules to be used in a complete assembly. The modules are assessed for assignment of the following protection ratings when they are installed in the Endress+Hauser ProToF final assembly.

Module TRC[18], Transmitter Board

IS / I / A, B, C, D / T6-T4; -40°C ≤ Ta ≤ 80°C; Entity per Addendum drawing XA01096F-A.

I / 0 / AEx ia / IIC / T6-T4; -40°C ≤ Ta ≤ 80°C; Entity per Addendum drawing XA01096F-A.

NI / I / 2 / A, B, C, D / T6-T4; -40°C ≤ Ta ≤ 80°C; Nonincendive Field Wiring per Addendum drawing XA01096F-A.

Entity and Nonincendive Field Wiring Parameters in accordance with drawing XA01096F-A.

Special Condition of Use:

1) Shall be installed in an FM Approved Endress+Hauser ProToF enclosure meeting compliance with the enclosure, spacing and segregation requirements of the ultimate application.

2) T* - Temperature classification to be assigned according to the requirements for ratings of the final assembly.

Module TRC[19], Receiver Board

IS / I / A, B, C, D / T6-T4; -40°C ≤ Ta ≤ 80°C; Entity per Addendum drawing XA01096F-A.

I / 0 / AEx ia / IIC / T6-T4; -40°C ≤ Ta ≤ 80°C; Entity per Addendum drawing XA01096F-A.

NI / I / 2 / A, B, C, D / T6-T4; -40°C ≤ Ta ≤ 80°C; Nonincendive Field Wiring per Addendum drawing XA01096F-A.

Entity, and Nonincendive Field Wiring Parameters in accordance with drawing 960015385.

The complete FHX50 option order code will be:

FHX50-aabcd + **# Remote Display

IS / I / A, B, C, D / T6-T4; $-40^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$; Entity per Addendum drawing XA01096F-A.

I / O / AEx ia / IIC / T6-T4; $-40^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$; Entity per Addendum drawing XA01096F-A.

NI / I / 2 / A, B, C, D / T6-T4; $-40^{\circ}\text{C} \leq T_a \leq 80^{\circ}\text{C}$; Entity Parameters in accordance with drawing XA01096F-A.

aa = Approval

FB = FM Class I, Div. 1, Gr. A-D

b = Display / Operation

A = without display

C = SD02; 4-line push buttons

E = SD03; 4-line, illum.; touch control

Y = special option

c = Housing material

B = single compartment; 316L

D = single compartment; Plastics

Y = special option

d = Cable

A = 5m + M12 plug

B = 10m + M12 plug

D = 20m + M12 plug

E = 30m + M12 plug

1 = provided by customer (length max. 60 m)

Y = special option

**** = Options (one or more set of alphanumeric pairs)**

any combination of digits or letters (e.g. used to indicate additional approvals)

= indicates additional options which are not relevant for safety

Special Condition of Use:

1) Shall be installed in an FM Approved Endress+Hauser ProToF enclosure meeting compliance with the enclosure, spacing and segregation requirements of the ultimate application.

2) T^* - Temperature classification to be assigned according to the requirements for ratings of the final assembly.

2 DESCRIPTION

The Remote Display FHX 50 is a display which is intended for use within the ProToF platform. The Remote Display FHX50 is comprised of the following components:

Enclosures TRC[05], GF27 and TRC[06], GF28

Display Modules TRC[AA] / TRC[AC], A02 / SD02 and TRC[AB], A03 / SD03

Module TRC[18], Transmitter Board

Module TRC[19], Receiver Board

The GF27 or GF28 enclosure of the Remote Display FHX 50 is constructed with one internal compartment which contains two electronic modules. These are the display unit

(optionally) and the receiver board TRC [19] which contains the receiver electronics. The display unit is separately covered under Project Number 3035148. Its internal construction is therefore not evaluated.

The transmitter board TRC [18] located within the ProToF-ES measuring device housing (e.g. GT18, GT19, GT20) and is needed to transmit power and data from the device to the external display FHX 50. The transmitter electronics TRC [18] of the FHX 50 limits the outgoing circuit power to fulfill I.S.

Operation Temperature Ranges:

The ambient operating temperature range of the TRC [18] and TRC [19] is -40°C to 80°C.

Electrical data:

Refer to attached Addendum drawing XA01096F-A.

The TRC[02], GT19 is a 2-chambered plastic enclosure used in platform project ProtoF; the enclosure is only distributed within the E+H group and their labeller. The enclosure is designed with 2 chambers, a terminal compartment and an electronic compartment. Different covers are used (e.g. a blind cover or a transparent cover for electronic compartment and blind covers for terminal compartment with different heights). Two cable entries allow the electrical connections of the assembled equipment into the terminal compartment as well as an additional cable entry at the electronic compartment which is intended for interconnection of a remote display. This enclosure has previously been evaluated as part of the Levelflex Approval in Project Number 3041625.

3 EXAMINATIONS AND TESTS

Samples were submitted for examination and testing to DEKRA Certification B.V., an FM Approvals Inter-laboratory partner. Examination is based on a review of test reports issued by DEKRA Certification B.V., and testing conducted by Endress + Hauser under the Laboratory Qualification program (initial Endress + Hauser Laboratory Qualification Project ID 1B8A5.AE, re-issued with Project ID 3047657) and the manufacturer's documentation. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

All testing and analysis considered appropriate was conducted and verified to be in compliance with the Standards defined in Section 1.3.

4 MARKING

No certification marking is applied to the module. Marking is applied to the final assembly.

Note: Although Endress + Hauser supplied a label drawing for the FHX50, they are not allowed to and do not intend to apply this label until the FHX50 is approved as part of the ProToF platform.

5 REMARKS

5.1 Installation shall be in accordance with the requirements of the final assembly Approval.

5.2 The products(s) discussed in this report were certified by FM Approvals under a Type 3 Certification System as identified in ISO Guide 67.

6 SURVEILLANCE AUDIT

The design and manufacturing facilities at the following location is visited on a routine basis. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that tested and Approved. A Form 797 shall be submitted to FM Approvals for requesting any additional manufacturing facilities which are not listed below.

Design

Endress+Hauser GmbH+Co KG
 Hauptstrasse 1
 Postfach 1261
 Maulburg, D79689
 Germany

Manufacturing

Endress+Hauser GmbH+Co KG
 Hauptstrasse 1
 Postfach 1261
 Maulburg, D79689
 Germany

7 MANUFACTURER’S RESPONSIBILITIES

Documentation that is applicable to this approval is on file at FM Approvals and listed in the Documentation File, Section 8, of this report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The Approved Product - Revision Report, FM Approvals Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

8 DOCUMENTATION

See attached blueprint report 3048394.

9 CONCLUSION

The apparatus described in section 1.4 meets FM Approvals requirements.

PROJECT DATA RECORD: 0003048394

ATTACHMENTS: Addendum Drawing XA01096F-A
 Blueprint Report

Rev	Change Description	Date	Originator	Approver
1	Clarification of which previous project IDs covered the GT19 enclosure and display module. Addendum Drawing XA01096F-A (draft), replaced with XA01096FEN at Revision A	05/28/13	Richard Boucher	Cheryl Gagliardi