File E203960
Project 08CA23302

October 19, 2009

REPORT

on

PROGRAMMABLE CONTROLLERS, FOR USE IN HAZARDOUS LOCATIONS
(NRAG, NRAG7)

Hirschmann Automation & Control Gmbh
Neckartenzlinger, Germany

DESCRIPTION

PRODUCT COVERED:

        USL, CNL – Class I, Div. 2, Groups A, B, C and D, Hazardous Locations

        Accessory, Listed Programmable Controller, open type, Modular Ethernet
        Switch Media Module Cat. Nos. MM2 may be followed by –4TX1, 4FXM3,
        2FXM3/2TX1, 2FXM2, 2FXS2 or 2FXP4, may be followed by -EEC.

        Cat. Nos. MM3 may be followed by a dash and additional numbers,
        letters, dashes or slashes.

        Cat No. MM followed by 20, 21, 30 or 31, followed by a dash,
        followed by a T, M, S, F, L, G, O, P or Z followed by a number,
        followed by a T, M, S, F, L, G, O, P or Z followed by a number,
        followed by a T, M, S, F, L, G, O, P or Z followed by a number - or
        alternatively followed by 99,
        followed by a T, M, S, F, L, G, O, P or Z followed by a number - or
        alternatively followed by 99,
        followed by S or T or E,
        followed by additional suffixes.

GENERAL:

        These devices are open-type devices intended for installation in an
ultimate enclosure. These devices are for use in industrial automation
applications. These devices (Media Modules) are Industrial Control Ethernet
LAN components for mounting on modular Switches (MS family). They are
supplied by a Class 2 power supply over the MS Modular Switch backplane. They
communicate via interfaces through wire or fiber optics.

RATINGS:

Electrical:

    MM2, MM20, MM21 MM3, MM30 or MM31 Media Modules: Class 2

    Remark: No external Power Supply for MM2, MM3, MM20, MM21, MM30 or MM31
    media modules. Class 2 supplied via MS Modular Switches.

Environmental:

    Max. Surrounding Air Temperature:

MM2, MM3 Media Modules	60°C max.
with suffixes EEC	70°C max.

MM Media Modules	
type S:	60°C
types T or E:	70°C

    (Note: types see item VII of nomenclature breakdown for MM modules.)

    The Temperature Code is T4 (135°C)

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE'S USE):

    CNL – Indicates investigation to Canadian National Standard(s)
        CSA C22.2 No. 142-M1987, Process Control Equipment and CSA C22.2
        No. 213-M1987, Non-incendive Control Equipment for Use in Class
        I, Division 2 Hazardous Locations.

    USL – Indicates investigation to United States Standard
        UL 508, Industrial Control Equipment, Seventeenth Edition, with
        revisions through and including July 11, 2005 and ANSI/ISA
        12.12.01-2007, Nonincendive Electrical Equipment for Use in Class
        I and II, Division 2 and Class III, Division 1 and 2 Hazardous
        (Classified) Locations, Approved 12 April 2007.

    Note: CNL = Canadian National Standards – Listed.
        USL = United States Standards – Listed.

    The ordinary locations evaluation is covered under the Applicant's ICE
(NRAQ, NRAQ7) File E175531, Issue Date: 2006-06-21.

NOMENCLATURE BREAKDOWN for MM media modules

MM2	0-	M2	M2	T1	T1	S	A	H	H
I	II	III	IV	V	VI	VII	VIII	IX	X

I: Media type
        MM2   Fast Ethernet 10/100
        MM3   Gigabit Ethernet 10/100/1000
II: Technology
        0-   Standard
        1-   Realtime

III: Port type 1
        T1   twisted pair / RJ45 10/100/1000   (housing: small)
        T5   twisted pair / M12 10/100
        M2   multimode / SC (100 Mbit)
        M3   multimode / MTRJ (100 Mbit)   (housing: small)
        M4   multimode / ST (100 Mbit)
        S2   singlemode / SC (100 Mbit)
        S4   singlemode / ST (100 Mbit)
        F4   multimode / ST (10 Mbit)

        L2   singlemode LH / SC (100 Mbit)
        G2   singlemode LH / SC (100 Mbit)/ 200 km
        O6   SFP slot / SFP (1000 Mbit)
        O7   SFP slot + RJ45 (1000 Mbit)
        P4   POF Polymere Optical Fiber / ST (100 Mbit)
        Z6   SFP slot /SFP (100 Mbit)
IV: Port type 2
        same as under item III
V: Port type 3
        same as under item III, additional:
        99   port not mounted   (housing: small)

VI: Port type 4
        same as under item III, additional:
        99   port not mounted   (housing: small)
VII: Surrounding air temperature range & coating
        S   0°C up to +60°C
        T   -40°C up to +70°C
        E   -40°C up to +70°C inclusive conformal coating of PCB´s
VIII: Approvals / Qualification
        A   cUL508, Hazardous Locations Class 1 Div. 2
        H   same as under item A – additional German Lloyd, IEC61850
                Substations, Railway standard EN 50121-4 / IEEE 1613
        B   same as under item H – additional ATEX 95 (ATEX 100a) Zone 2
        C   same as under item H – additional Railway standard EN50155
IX   optional: OEM type
        H   Standard
        x   Customer specific (x – any suffix)
X: optional: OEM type
        H   Standard
        x   Customer specific (x – any suffix)

NOMENCLATURE BREAKDOWN (cond.)

for MM2 or MM3 media modules (alternative nomenclature designation):

MM2	–	2FXM3/2TX1
I	II	III

I: basic media module designation
            MM2: Media Module in small housing
            MM3: Media Module in large housing

II: dash

III: media module designation (port types)

Up to ten additional suffixes are provided.

MARKING:

The following information is provided on an adhesive backed label or ink stamped to the unit.

Marking Content

1   Listee name or trademark

2   Catalog or Model number

3   Electrical ratings: Voltage, frequency and either amperes, volt-amperes, or watts. Remark: No Marking of electrical ratings for media modules which have no external Power Supply other than the MSxxxx backplane.

4   Designation of hazardous locations indicated under "Product Covered", and Temperature Code indicated under "Ratings".

5   Wiring diagram and terminal identifications.

6   Date of manufacture, indicating month and year, or Serial number for controllers Listed for use in Canada. Bar coding, date coding, serial numbers, or equivalent means may be used.

7   "WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS."

8   "Class 2" or equivalent statement next to the voltage rating. This Marking shall be visible when the device is mounted singularly. The Marking may be provided on the side of the device, and is not required to be visible when the device is mounted next to other devices.

The following markings are also provided on the device or as part of the installation instructions:

"Use 60/75 or 75°C copper (CU) wire only"

"max. surrounding temperature xx°C" or equivalent - numerical values as noted under RATINGS.

"All media modules are intended for use with Listed Hirschmann MSxxxx-x Modular Switches."

Additional Warning Markings - See Section General for details.

INSTALLATION INSTRUCTIONS:

     Installation Instructions are provided with each device and shall
include the following, or equivalent wording.

1.   This equipment is suitable for use in Class I, Division 2, Groups
            A, B, C and D OR non-hazardous locations only.

2.   WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless
            power has been removed or the area is known to be non-hazardous.

3.   WARNING – EXPLOSION HAZARD - Substitution of any components may
            impair suitability for Class I, Division 2.

4.   Shall be provided and include a wiring diagram. It must include
            a statement "Only for connection with a Class 2 power supply" or
            equivalent.

5.   Installation instructions shall also contain a statement that
            peripheral equipment must be suitable for the location it is used
            in.

FIGURES AND ILLUSTRATIONS:

Fig. No.	Ill No.	Manufacturer's Drawing No.	Rev date	Description
1	–	–	–	Example of Full height Media Module
2	–	–	–	Example of Half height Media Module
	1	0476COMBO-204	2006-04-06	0476 Combo-Modul (MM30-O7O7O7O7)
	2	435 ICC-Medienmodul_4TX	2001-05-31	0435 ICC Medienmodul: 4-Port 100BASE-TX (MM20-T1T1T1T1)
	3	MM3_4TX5-100	2006-01-27	MICE Medienmodul: 4-Port 100BASE-TX M12 (MM20-T5T5T5T5)
	4	MM2-2FXM3&2TX1_310	2006-04-11	MICE Medienmodul: 2FxM3_2Tx1 (MM20-M3M3T1T1)
	5	MM2-4FXM3_310	2006-04-12	MICE Medienmodul 4FxM3 (MM20-M3M3M3M3)
	6	435ICC_Medienmodul_4FX-Sub_202	2001-12-12	0435 ICC Medienmodul: 4-Port 100BASE-FX MM SUB Platine (MM20-M3M3M3M3)
	7	MM20-Z6Z6Z6Z6XX_201	2007-11-27	MICE Medienmodul: 4 x SFP Fast (MM20-Z6Z6Z6Z6)
	8	MM2-2FXM2_310	2006-04-11	MICE Medienmodul: 2FxM2 (MM20-xyxy9999)
	9	MM3-4FXM2_211	2006-04-26	MICE Medienmodul: 4FxM2 (MM20-xyxyxyxy)
	10	475RS2_FO	2003-02-21	Rail Switch RS2-xx TX/MM/SM/LH: Aufsteckplatine (MM20-xyxyxyxy)
	11	MM3-2FXM2&2TX1_211	2006-04-11	MICE Medienmodul: 2FxM2_2Tx1 (MM20-xyxyT1T1)
	12	MM3-2FXM2&2TX1_211	2006-04-11	MICE Medienmodul: 2FxM2_2Tx1 (MM20-xyxyT1T1)
	13	490_Combo_vv	2005-08-18	0490 2 Port Combo-Modul (MM30-O7O79999)

CONSTRUCTION DETAILS:

    General - The details of construction are covered in the following
photographs and accompanying descriptive pages and illustrations.

    Corrosion Protection - All parts of corrosion resistant materials are
painted or plated as corrosion protection.

    Class 2 circuit - The investigation has been conducted under
consideration of the Class 2 requirements. This allows for the investigation
of spacings and components on the secondary to be waived.

    These devices may contain the following make-break component:

    Fuse Fxxx, SMD Type – R/C (JDYX2). The fuse is not operator accessible
and soldered to the board.

     There are no make/break components other than connectors. These
connectors are considered to be normally nonarcing due to the fact that
disconnection is not required during operational maintenance and the fact
that they are mechanically prevented from separating or secured so that a
separating force of at least 15N is required for loosening. All connectors
are described in this report.

    Plug-In Components – There are no plug-in components such as jumpers or
plug-in ICs in these models unless otherwise described.

                    MM21-M2M2T1T1SAHH - FIG. 1
                    M20-M3M3M3M3SHHH - FIG. 2

General – The Fig. 1 shows a large housing (full height) Media Module, model
MM21-M2M2T1T1SAHH, which represents all large housing Media Modules. The FIG.
2 shows a small housing (half height) Media Module, model M20-M3M3M3M3SHHH,
which represents all small housing Media Modules. There are no user
accessible make and break components within these devices unless specified in
the description below. All connectors are described in this report. See Ills.
1 – 13 for schematic drawings.

1.   Housing – Consisting of plastic material, overall dimensions 38 mm by
       110 mm by 79 mm (small) or 119 mm (large).

2.   PWB – R/C (ZPMV2/8) rated V0 Flame Class, 130°C or better.

3.   RJ45 sockets, up to four provided. A 90° mechanically latching
       connector.

4.   Any kind of (NWGQ2, NWGQ8 or DUXR2, DUXR8) fiberoptic module (ports
       with SFP slot). The connectors for these modules are manufactured by
       Samtec, model SFPC-SL cage with model MECT-110-01-MM-D-RA1 connector.