F660A

Redundant fieldbus power supply

IOTA - Honeywell

Instruction Manual

Contents

Page

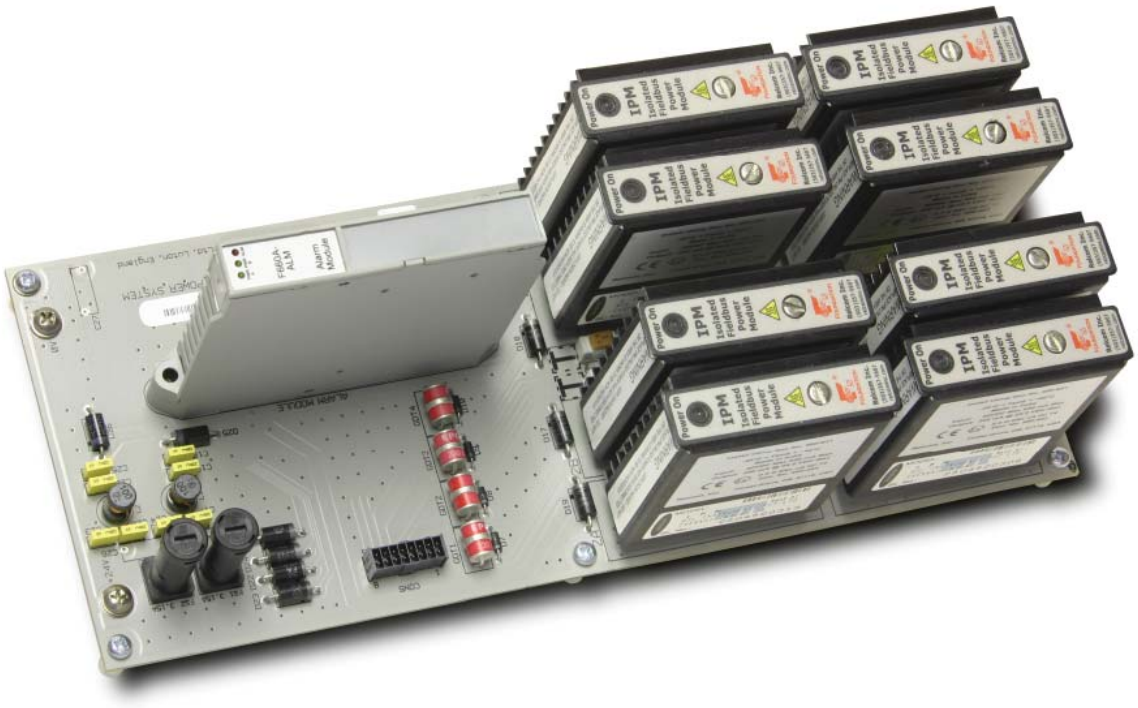

Figure 1: - Fully populated F660A IOTA

1 OVERVIEW

The MTL-Relcom redundant fieldbus power system (FPS-Series) provides redundant power conditioning for fieldbus network segments. The system is fully 'hot-swappable' meaning that individual power conditioning modules can be removed or replaced without interrupting power or communication on the fieldbus segment.

An alarm circuit provides warning in case of a power conditioning module failure or loss of the input power supply. The system is designed so that power for several fieldbus segments can be provided from a single cabinet with minimal wiring.

2 DESCRIPTION

The F660A is designed to provide redundant power for four H1 fieldbus links when used with Honeywell Experion PKS "Series C" Fieldbus Interface Modules (FIMs). It uses the proven MTL-Relcom FPS-IPM power modules, which are mounted on a Honeywell-format I/O Termination Assembly (IOTA) for direct integration into Series C cabinets.

The F660A is compatible with Honeywell CC–TFB401 (simplex) and CC–TFB411 (redundant) Fieldbus Interface Module (FIM) IOTAs.

The F660A is connected to the FIM IOTA by means of a multi-way cable, available from MTL. The cable carries the conditioned fieldbus power for four fieldbus segments. Different lengths are available to accommodate a variety of mounting locations of the F660A relative to the FIM IOTA. Field wiring connections are made at terminals on the FIM IOTA.

Power for the IOTA comes from the redundantly supplied 24V DC busbars that are embedded in the mounting channel. The connection to the 0V and 24V busbars is established via mounting screws. Two 24V DC power trains are then created on the IOTA, each protected by a replacable fuse, to provide reliable bulk power to the redundant conditioning modules.

Each power module provides galvanic isolation of 250V AC between the fieldbus segment and the input power supplies. Each segment is supplied with 350mA at 25V DC. This output is maintained, even if only one power module is installed per segment. This level of output power allows for construction of very long fieldbus segments with a large number of bus-powered transmitters.

A separate alarm module monitors the state of each of the eight power conditionning modules and the 24V DC power input. In the event of a conditioning module failure, the FIM receives a signal indicating which segment is affected and a red LED on the alarm module illuminates.

Failure of either one of the power supply fuses initiates an alarm across all four fieldbus segments. Green LEDs on each power module, and two input power supply LEDs on the alarm module, give clear visual indication of the health of each system component.

Individual, switchable terminators are provided for each fieldbus segment.

3 COMPONENTS AND ACCESSORIES

Part No	Description
FPS-IPM	Power module
F660A-ALM	Alarm module
F660A-C	F660A IOTA, unpopulated
FPS-BLK10	Blanking module type FPS-BLK, pack of 10
FCAB-05	IOTA power cable, 30cm
FCAB-06	IOTA power cable, 1m
FCAB-07	IOTA power cable, 2m
FCAB-08	IOTA power cable, 4m

4 MECHANICAL

The F660A IOTA complies with the mechanical and electrical requirements of 11.6 inch I/O Termination Panels (IOTAs) for direct mounting onto Honeywell Series 'C', wide mounting channel. See the dimensional drawing - Figure 2.

The IOTA is fixed to the channel with 6 x M3 mounting screws (A), together with the two screws used to connect to the 24V DC and 0V busbars (B and C). Fully assembled the total weight is approximately 1570grams (or 3.46lbs).

5 INSTALLATION

IMPORTANT

This equipment may be mounted in a hazardous area, in which case it must be installed, operated and maintained by competent personnel. Such personnel shall have undergone training, which included instruction on the various types of protection and installation practices, the relevant rules and regulations and on the general principles of area classification. It is recommended that appropriate refresher training be given at regular intervals.

For all aspects of the F660A specification refer to its datasheet **EPS F660A.**

5.1 Location

The F660A IOTA may be mounted in a safe area, or a Class I, Division 2, GPs A-D T4 hazardous area. Consult MTL for availability of other approvals.

5.2 Mounting

It is assumed for the purposes of these installation instructions that the mounting channel is already fitted in a cabinet or enclosure that provides a suitable environment for the FIMs and their associated equipment. Such an environment will be suitable for the F660A IOTA.

These mounting instructions may be followed regardless of whether the IOTA has modules fitted or not.

It is important to ensure however, that the mounting channel is positioned in a vertical orientation on a vertical surface. This is regarded as the optimum mounting orientation for the F660A-C IOTA and ensures that it will perform to specification within its operating temperature range of –40°C to +65°C. Note that the maximum ambient temperature is limited to 60°C when installed in a Class 1, Division 2 hazardous area.

5.2.1 Mounting the carrier

Mount the IOTA to the channel in the orientation shown in Figure 2. Only when it is in this orientation will it be able to pick up the power bus connections.

Position the IOTA, then secure it using the six fixing screws - marked **A** in Figure 2.

5.3 Input power connections

Busbars located at the rear of the mounting channel provide access to the incoming 24V DC supply.

Locate and tighten the screws - marked **B** (24V) and **C** (0V) in Figure 2 - to make the connections to the busbars.

5.4 Output power connections

The most suitable length of cable to make the connection from the F660A IOTA to the associated FIM can be chosen with reference to the parts list in Section 3 of this manual. Lengths of 30cm (~1ft), 1metre (~3ft 3in), 2metres (~6ft 6in) and 3m (~9ft 9in) are available.

With the chosen cable, connect one end to CON5 - marked **D** on Figure 2. The polarity/orientation is controlled with a keyway to prevent an incorrect connection. The other end of the cable should

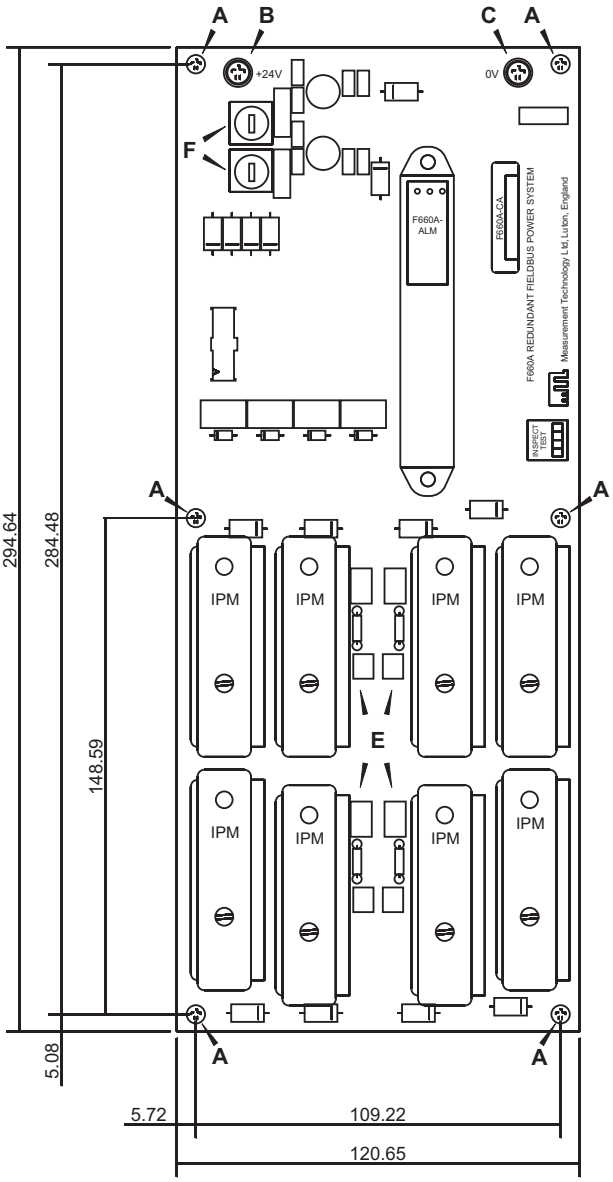

Figure 2: Dimensional drawing of the F660A IOTA

be routed carefully to the FIM IOTA and the connector inserted there; again with due care for its orientation.

5.5 IPM power modules

If not already fitted, the IPM power modules can now be fitted to the IOTA. Locate them one at a time on the circuit board connectors, press firmly onto the IOTA and then tighten the single fixing screw. Repeat this for the rest of the IPM modules.

Removal of the power modules is the reverse of fitting, i.e. loosen the fixing screw until the module may be removed from the IOTA.

5.6 Alarm module

If not already fitted, the F660A–ALM module fits onto the 16–way multipin connector (CON6) located towards the top of the IOTA and is secured by two captive screws in the module body. To remove the module, first fully release the securing screws and pull the module away from the board.

5.6.1 Integrated alarm-signal operation

The F660A–ALM alarm module monitors the state of each of the eight power conditioning modules and the 24V DC power input. Failures are signalled to the Honeywell Fieldbus Interface Module (FIM) via conductors in the FCAB-0x multi-way cable. In the event of a failed conditioning module, the FIM receives a signal indicating which

segment is affected, and a red LED on the alarm module illuminates. Failure of either of the power supply fuses initiates an alarm across all four fieldbus segments. Green LEDs on each power module, and two input power supply LEDs on the alarm module give clear visual indication of the health of each system component.

Removal of the F660A-ALM module triggers an alarm across all four segments. Removal of the module does not otherwise affect the operation of the power supply system; the output to all segments is maintained in the absence of the F660A-ALM module.

5.7 Terminators

Four switchable fieldbus terminators are supplied on the IOTA, one for each of the segments (marked **E** in Figure 2).

The terminators are grouped in pairs and located in the lower-middle of the IOTA, between the two banks of IPM power modules. The terminators are associated with the IPM power modules that are located closest to them.

The terminator may be switched in or out for each segment. Push the switch to the ON position (towards the 'T' symbol) to enable the terminator - see Figure 3.

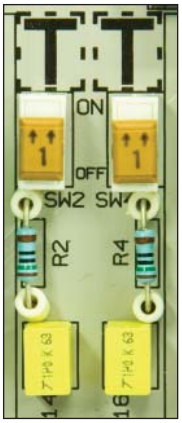

Figure 3

5.8 Testing

The following tests may be carried out to establish that the complete F660A assembly is operating correctly.

Remove each power module (and replace in turn) and check that the alarm LED illuminates and that the alarm chain is broken. Unscrewing either the 24V or the 0V busbar connection screws at the power input should also cause the alarm condition, and extinguish the associated alarm green power LED. Check all power module green LEDs are lit.

6 MAINTENANCE

6.1 Routine maintenance

Check the general condition of the installation occasionally to make sure that no deterioration has occurred. At least every two years (and more frequently for particularly harsh environments) check:

- *the condition of wire connection/terminations/screens.*
- *the dc output voltage on each of the four fieldbus segments is >25V. This can be performed using a multimeter, a Relcom FBT-6 or FBT-3 fieldbus tester.*
- *that the Power A and Power B LEDs on the F660A-ALM module are functioning.*
- *that the LEDs on all 8 IPM modules are lit.*
- *that all of the retaining screws are tight.*
- *that there are no signs of damage or corrosion*

6.2 Fuse replacement

Two fuses, FS1 & FS2, rated at 3.15A each, are incorporated on the IOTA to protect the system from short-circuit fault conditions. One fuse (FSx) supplies the 'A' modules and the other (FSy) supplies the 'B' modules.

Should it be necessary to check or replace the cartridge fuse in either of the fuse holders, insert a flat-bladed screwdriver in the slot on top of the fuse holder and rotate it counter-clockwise as far as the stop (approx. 45°). The fuse cartridge holder will pop out and may then be extracted.

If a fuse is found to have blown, it is important to clear the fault before replacing it with a new one.

MTL Instruments Pty Limited
1/30 Canvale Road
Canning Vale
Perth, WA 6155
Australia
Tel: +61 (0)8 9455 2994 Fax: +61 (0)8 9455 2805
E-mail: enquiries@mtlaus.com.au

MTL Canada Safety Instrumentation
#102, 4249 97 Street
Edmonton, Alberta
Canada T6E 5Y7
Tel: +1 780 485 3132 Fax: +1 780 485 3122
E-mail: cinfo@mtlnh.com

MTL Instruments Pte
Room 1002A, The Gateway
No 10 Yabao Road, Chaoyang District
Beijing 100020
China
Tel: +86 010 8562 5718/5720/5721 Fax: +86 010 8562 5725
E-mail: bjsales@mtl-inst.cn

MTL Instruments sarl
Les Carrés du Parc
10 rue des Rosiéristes
69410 Champagne au Mont d'Or
France
Tel: +33 (0)4 78 64 98 32 Fax: +33 (0)4 78 35 79 41
E-mail: info@mtl-inst.fr

MTL Instruments GmbH
An der Gümpgesbrücke 17
D-41564 Kaarst
Germany
Tel: +49 (0)2131 718930 Fax: +49 (0)2131 7189333
E-mail: info@mtl.de

MTL India Pvt. Limited
No. 36, Nehru Street
Off Old Mahabalipuram Road
Sholinganallur
Chennai - 600 119
India
Tel: + 91 (0)44 24501660/24501857 Fax: + 91 (0)44 24501463
E-mail: sales@mtlindia.com

MTL Italia srl
Via Cantù 11
I - 20092 Cinisello Balsamo MI
Italy
Tel: +39 (0)2 61802011 Fax: +39 (0)2 61294560
E-mail: info@mtl-inst.it

MTL Instruments KK
3rd Floor, Gotanda Masujima Building
1-8-13 Higashi-Gotanda, Shinagawa-Ku
Tokyo 141-0022
Japan
Tel: +81 (0)3 5420 1281 Fax: +81 (0)3 5420 2405
E-mail: sales@mtlkk.co.jp

MTL Instruments BV
PO Box 55, 6680 AB Bemmel
de Houtakker 36, 6681 CW Bemmel
The Netherlands
Tel: +31 (0)481 450250 Fax: +31 (0)481 450260
E-mail: info@mtlbenelux.com

MTL Instruments Pte Limited
31 Ubi Road 1
#04-01 Aztech Building
Singapore 408694
Tel: +65 6 487 7887 Fax: +65 6 487 7997
E-mail: sales@mtlsing.com.sg

MTL Instruments
Villa No. 4, Sector 2-17,
Street 6
PO Box 53234,
Abu Dhabi, UAE
Tel: +971 2 446 6840 Fax: +971 2 446 6841
E-mail: mtlgulf@mtl-inst.com

Measurement Technology Limited
Power Court, Luton, Bedfordshire
England LU1 3JJ
Tel: +44 (0)1582 723633 Fax: +44 (0)1582 422283
E-mail: enquiry@mtl-inst.com

MTL Incorporated
4001 W. Sam Houston Parkway N. Suite 150, Houston TX 77043
USA
Tel: +1 281 571 8065 Fax: +1 281 571 8069
E-mail: info@mtl-inst.com

Group Internet home page http://www.mtl-inst.com/

Members of The MTL Instruments Group