

## MS-ICS

### Intelligent Controller

Installation and Specifications:

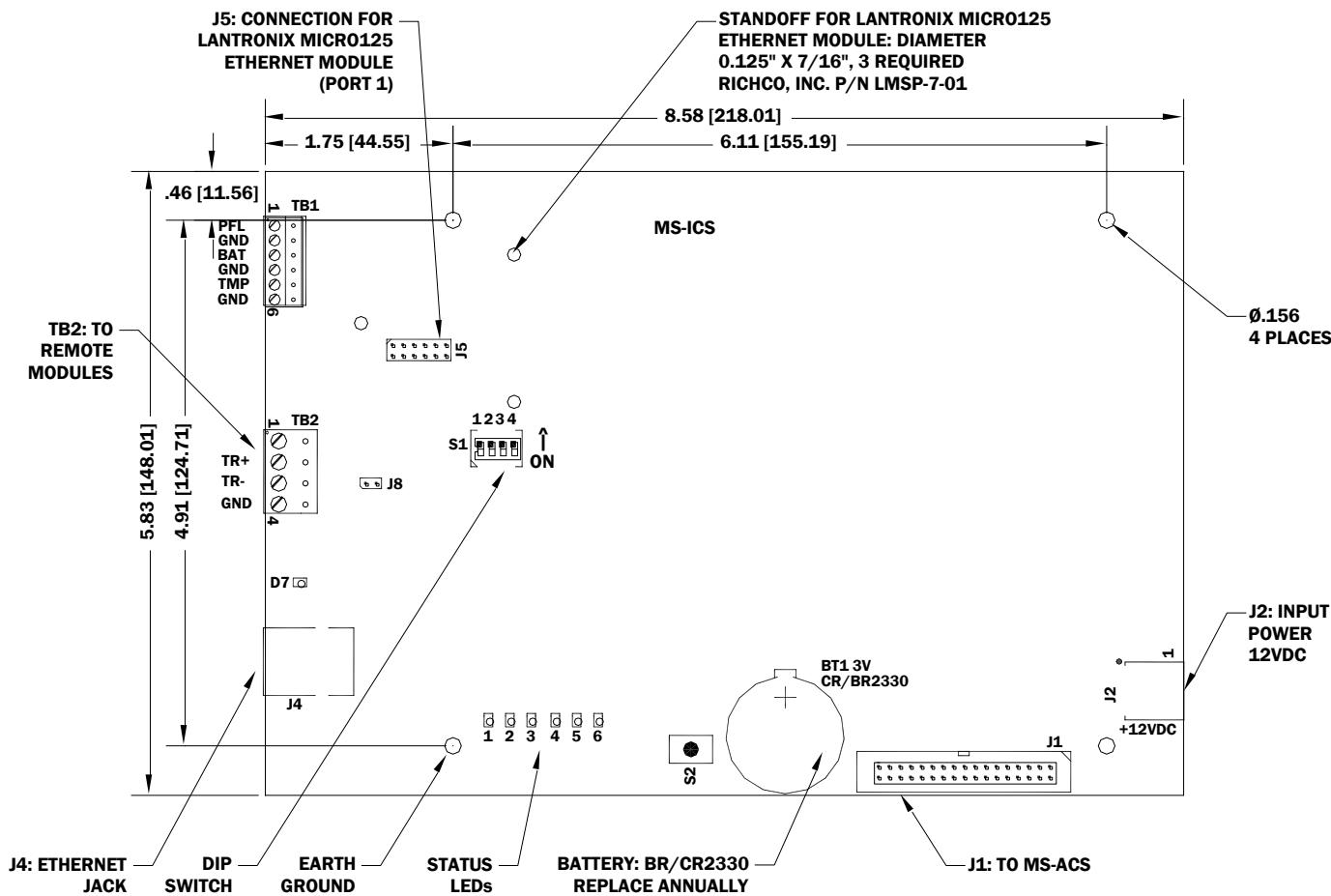
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

#### 1. General

The MS-ICS is part of Mercury Security's bridging hardware technology for replacing the Software House GCM module. The MS-ICS intelligent controller provides decision making, event reporting, and database storage for the Mercury hardware platform.

The MS-ICS communicates with the host via on-board 10-BaseT/100Base-TX Ethernet port. An alternate host 10-Baset/100Base-TX communication connection is available by use of the optional Lantronix Micro125 interface daughter board.

The MS-ICS connects to the MS-ACS processor via a 34-pin ribbon cable, up to two MS-ACS are supported. Standard Mercury remote serial I/O panels may be connected to the external 2-wire RS-485 multi-drop communication bus.



**MS-ICS**

## 2. Setting Up the MS-ICS Hardware:

### DIP Switches:

The four switches on S1 DIP switch are used to configure the operating mode of the MS-ICS controller. DIP switches are read on power-up except where noted. Pressing switch S2 causes the MS-ICS to reboot.

1	2	3	4	Definitions
OFF	OFF	OFF	OFF	Normal operating mode.
ON	X	X	X	After initialization, enable default User Name (admin) and Password (password). The switch is read on the fly, no need to reboot. See IT security section for additional information
OFF	ON	X	OFF	Use factory default communication parameters.
ON	ON	X	OFF	Use OEM default communication parameters. Contact system manufacturer for details. See Bulk Erase below.
X	X	ON	X	Disable TLS secure link. Switch is read only when logging on.
ON	ON	OFF	OFF	Bulk Erase prompt mode at power up. See Bulk Erase below.

All other switch settings are unassigned and reserved for future use. X = don't care.



In the factory or OEM default modes, downloaded configuration/database is not saved to flash memory.

### Factory Default Communication Parameters:

Network: static IP address: 192.168.0.251

Subnet Mask: 255.255.0.0

Default Gateway: 192.168.0.1

DNS Server: 192.168.0.1

Primary Host port: IP server, no encryption, port 3001, communication address: 0

Alternate Host Port 1: RS-232, 38,400 baud, no encryption, no flow control.

## 3. Input Power Wiring:

The MS-ACS requires 12 Vdc for input power and is connected to J2. Pins 1 and 2 are connected to ground and pin 3 is connected to +12 Vdc.



### Observe POLARITY on 12 Vdc input!

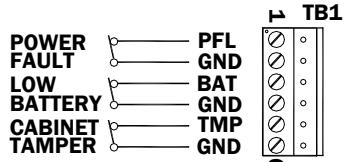
J2 mates with the following housing and uses two crimp contacts:

Housing: Molex 39-01-4030

Crimp contact: Molex 39-00-0047 (22-28 gauge), 39-00-0039 (18-24 gauge)

## 4. Cabinet Tamper, Low UPS Battery and UPS Fault Input Wiring:

There are three dedicated inputs for cabinet tamper, low UPS battery and UPS fault monitoring. Normal (safe) condition is a closed contact. If these inputs are not used, suggest installing a jumper wire.

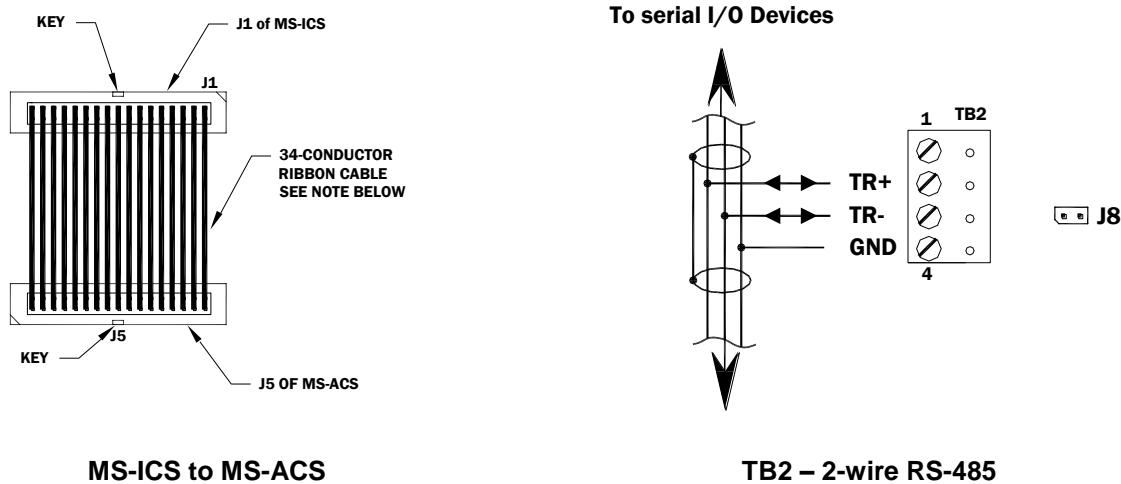


## 5. Communication Wiring:

The MS-ICS controller communicates to the host via the on-board Ethernet 10-BaseT/100Base-TX port.

An alternate Ethernet 10-BaseT/100Base-TX host communication port connection is supported by using the optional Lantronix Micro125 Ethernet interface daughter board. This alternate host connection has not been evaluated by UL.

J1 connects to the first MS-ACS board. TB2 is used to connect to remote serial I/O panels. This 2-wire RS-485 interface allows multi-drop communication on a single bus of up to 4,000 feet (1,219 m). Use twisted pair (minimum 24 AWG) with a drain wire and shield for communication. Install termination jumpers only on the units at each end of the communication line.



**MS-ICS to MS-ACS**

**TB2 - 2-wire RS-485**

- ⚠ The 34-conductor ribbon cable is non-standard. Do use a floppy disk drive cable.
- ⚠ **IMPORTANT NOTE!** Install the termination jumper (MS-ICS jumper J8), ONLY on the panel at each end of the RS-485 bus. Failure to do so will compromise the proper operation of the communication channel!

## 6. Memory and Real Time Clock Backup Battery:

The static RAM and the real time clock are backed up by a lithium battery when input power is removed. This battery should be replaced annually. If data in the static RAM is determined to be corrupt after power up, all data, including flash memory, is considered invalid and is erased. All configuration data must be re-downloaded. Remove the insulator from the battery holder after installation. Battery type: BR2325, BR2330, or CR2330.

## 7. Status LEDs:

**Power-up:** All LED's OFF.

**Initialization:** LED's 1 through 6 are sequenced during initialization. LED's 1, 3, and 5 are turned ON for approximately 1.5 seconds after the hardware initialization has completed, then the application code is initialized. The amount of time the application takes to initialize depends on the size of the database, about 3 seconds without a card database. Each 10,000 cards will add about 3 seconds to the application initialization. When LED's 1 through 4 flash at the same time, data is being read from or written to flash memory, do not cycle power when in this state. If the sequence stops or repeats, perform the bulk erase procedure, see section 8.

**Running:**

LED	DESCRIPTION
1	Off-Line / On-Line and Battery Status Off-Line = 20% ON, On-Line = 80% ON Double Flash if Battery is Low
2	Host Communication Activity (Ethernet or Serial Port 1)
3	Port 2 Communication Activity
4	Port 3 Communication Activity
5	Reserved for future use
6	Reserved for future use
D7	Host Communication (Ethernet Port 0)
YEL	On-board Ethernet Speed: OFF = 10Mb/S, ON = 100Mb/S (Yellow LED)
GRN	OFF = No Link, ON = Good Link (Green LED), Flashing = Ethernet Activity

## 8. Bulk Erase Configuration Memory:

The bulk erase function can be used for the following purposes:

- Erase all configuration and cardholder database (sanitize board).
- Update OEM default parameters after OEM code has been changed.
- Recover from database corruption causing MS-ICS board to continuously reboot.

If clearing the memory does not correct the initialization problem, contact technical support.

Bulk Erase Steps: **Do not remove power during steps 1-8.**

1. Set S1 DIP switches to: 1 & 2 "ON", 3 & 4 "OFF".
2. Apply power to the MS-ICS board.
3. Watch for LEDs 1 & 2 and 3 & 4 to alternately flash at a 0.5 second rate.
4. Within 10 seconds of powering up, change switches 1 or 2 to "OFF". If these switches are not changed, the MS-ICS board will power up using the OEM default communication parameters.
5. LED 2 will flash indicating that the configuration memory is being erased.
6. Full memory erase takes up to 60 seconds.
7. When complete, only LEDs 1 & 4 will flash for 8 seconds.
8. The MS-ICS board will reboot 8 seconds after LEDs 1 & 4 stop flashing (no LEDs are on during this time).

## 9. IT Security

When installing the MS-ICS, it is important to ensure that it done in a secure manner.

Upon installation, the user accounts to the web configuration page should be created with secure passwords, and that all DIP switches are in the off position for the normal operating mode. The MS-ICS is shipped from the factory with a default login account, which is enabled when DIP 1 is moved from OFF to ON. The default login user name and password will be available for five minutes once enabled. Therefore, it is important that at least one user account is defined, and the DIP switches are set to OFF before the MS-ICS is commissioned. It is also highly recommended not to configure the MS-ICS with an IP address that is accessible from the public Internet.

To further enhance network security, options are available to disable SNMP, Zeroconf discovery, as well as the web configuration module itself. Additionally, data encryption can also be enabled over the host communication port.

## 10. Specifications:

\*\* The interface is for use in low voltage, Class 2 Circuits only.

The installation of this device must comply with all local fire and electronic codes.

Primary power: 12 Vdc  $\pm$  10%, 275 mA maximum

Memory and  
Clock Backup: 3 Volt Lithium, type BR2325, BR2330, or CR2330

Ports:

TB2 2-wire RS-485: 9,600 to 115,200 bps, asynchronous

Inputs: 3 non-supervised, dedicated for cabinet tamper, low UPS battery and UPS power fault monitoring

Cable requirements:

Power: 1 twisted pair, 18 AWG

Ethernet: Cat 5 minimum

RS-485: 1 twisted pair with drain wire and shield, 120 ohm impedance, 24 AWG, 4,000 ft.  
(1,219 m) maximum

Environmental:

Temperature: -55 to +85 °C, storage  
0 to +50 °C, operating

Humidity: 5 to 95 % RHNC

Mechanical:

Dimension: 5.8 in. (148 mm) W x 8.6 in. (218 mm) L x 1 in. (25 mm) H

Weight: 5.7 oz. (162 g) nominal, w/o terminal blocks

Lantronix MICRO125 support:

Lantronix part number: MO11AA003-01R or equivalent

Standoff size: diameter .125 inch x 7/16 inch long. Richco, Inc. part number LMSP-7-01, 3 pieces  
(not supplied)

These specifications are subject to change without notice.

### Warranty

Mercury Security warrants the product is free from defects in material and workmanship under normal use and service with proper maintenance for one year from the date of factory shipment. Mercury Security assumes no responsibility for products damaged by improper handling or installation. This warranty is limited to the repair or replacement of the defective unit.

There are no expressed warranties other than set forth herein. Mercury Security does not make, nor intends, nor does it authorize any agent or representative to make any other warranties, or implied warranties, and expressly excludes and disclaims all implied warranties of merchantability or fitness for a particular purpose.

Returns must be accompanied by a Return Material Authorization (RMA) number obtained from customer service, and prepaid postage and insurance.

### Liability

The Interface should only be used to control exits from areas where an alternative method for exit is available. This product is not intended for, nor is rated for operation in life-critical control applications. Mercury Security is not liable under any circumstances for loss or damage caused by or partially caused by the misapplication or malfunction of the product. Mercury Security's liability does not extend beyond the purchase price of the product.