Model HI-2602

Interlock Monitor

User Manual

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An ESCO Technologies Company

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Revision Record | HI-2602 Interlock Monitor, MANUAL | Part #H-600046, Rev. F

Revision	Description	Date
	Preliminary Release	September, 1991
A	Remote Reset	August, 1994
B	Output Connector Update	April, 2000
C	Remote Reset Information	October, 2000
D	Revised Specifications and Error Analysis tables. Updated branding: revised to meet Style Guide specifications; PIB included with release	June ,2009
E	Revise Specifications table	July, 2009
F	Revised specifications, formatting	May, 2016

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Notes, Cautions, and Warnings

Note: Denotes helpful information intended to provide tips for better use of the product.

Caution: Denotes a hazard. Failure to follow instructions could result in minor personal injury and/or property damage. Included text gives proper procedures.

Warning: Denotes a hazard. Failure to follow instructions could result in SEVERE personal injury and/or property damage. Included text gives proper procedures.

Note: See the ETS-Lindgren *Product Information Bulletin* for safety, regulatory, and other product marking information.

Safety Information

High Voltage: Indicates presence of hazardous voltage. Unsafe practice could result in severe personal injury or death.

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1.0 Introduction

The HI-2602 Interlock Monitor provides continuous surveillance of microwave fields for protection of personnel and equipment. The instrument accepts an input from a single, remotely mounted sensing probe using ETS-Lindgren's patented microwave field sensor. Useable in any critical area, the HI-2602 interlocks with any microwave source or alarm.

The HI-2602 may be set to trigger at any RF level up to 10.0 mW/cm² (model dependent). When the RF level sensed by the probe exceeds a preset RF level, the RF Fail indicator will light and the output interlock will latch

The instrument is calibrated for measurement in the 2450 or 915 MHz ISM bands only and is intended for area hazard monitoring. It is not intended for RF leakage compliance measurements.

The HI-2602 Interlock Monitor is designed to operate from standard 50/60 Hz 120 or 240 VAC power. The AC input power, is customer specified and set at the factory.

The diode detection array of eight hot carrier diodes is housed in the large end of the plastic probe. This antenna array has the unique ability to sum microwave electric fields of any polarization in a plane perpendicular to the axis of the probe. The probe is attached to the main unit by a BNC connector. The main unit and the probe are calibrated as an integral unit. Temporary over-exposure of up to 2.0 W/cm² will not cause probe burn-out or damage to the instrument or its calibration.

Standard Configuration

- HI-2602 main unit
- Probe cable assembly (including probe sensor cover)
- Amp plug and hood
- Amp pins, 9 pieces
- User manual

Available Models

- HI-2602: 2450 MHz, 0.2 to 2.0 mW/cm²
- HI-2602-01: 915 MHz, 0.4 to 4.0 mW/cm²
- HI-2602-02: 2450 MHz, 1 to 10 mW/cm²

ETS-Lindgren Product Information Bulletin

See the ETS-Lindgren *Product Information Bulletin* included with your shipment for the following:

- Warranty information
- Safety, regulatory, and other product marking information
- Steps to receive your shipment
- Steps to return a component for service
- ETS-Lindgren calibration service
- ETS-Lindgren contact information

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2.0 Maintenance

Before performing any maintenance, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

Maintenance of the HI-2602 is limited to external components such as cables or connectors.

To prevent electrical shock, do not remove cover.

Warranty may be void if the housing is opened.

If you have any questions concerning maintenance, contact ETS-Lindgren Customer Service.

Maintenance Recommendations

Maintenance of the HI-2602 is limited to external components such as cables or connectors.

Annual Calibration

It is recommended that the instrument be recalibrated every 12 months. See the *Product Information Bulletin* included with your shipment for information on ETS-Lindgren calibration services.

Service Procedures

For the steps to return a system or system component to ETS-Lindgren for service, see the *Product Information Bulletin* included with your shipment.

3.0 Specifications

Calibration	Calibrated at 2450 or 915 MHz (model dependent) for use in the ISM band
Sensitivity min/max	0.2 mW/cm² min, 10.0 mW/cm² max (model dependent)
Response Characteristics	>1 second (0-90% of final value for step input)
Environmental	• Operating Temp. 15ºC to 30ºC (59º F to 86ºF) • Humidity 5% to 95%* *relative humidity, non-condensing
Overload Withstand	2.0 W/cm²
Power Input	120 or 240 VAC, 50/60 Hz (factory set)
Isolated Output Contacts	Form C (SPDT) 7.5 amps intermittent, 4 amps continuous/120VAC
Size	• Probe Length 30 cm (11.81 in) • Probe Cable Length 15m (50 ft) • Weight 1.5 kg (3.3 lbs)

Error Analysis

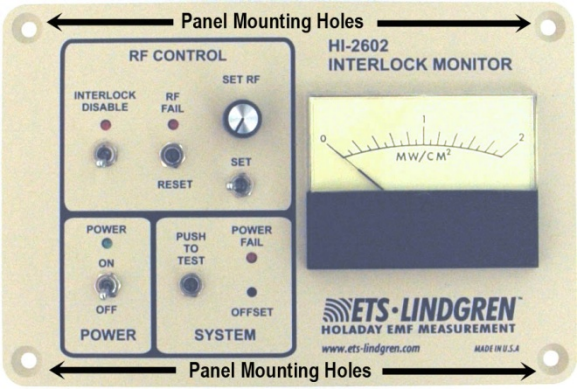
	1.0 mW/cm^2
Absolute Calibration	+0.30 dB
Precision	±0.13
Linearity and AM response	±0.15
Frequency Response*	±0.04
Near field response	±0.29
Polarization*	±0.21
Pattern	+0 / -0.11
Temperature	+1.568/ -1.118
Supply Voltage	±0.01
RFI*	±0.01
Overload	±0.01
Drift*	±0.04
	-1.068 / +1.568 dB

* Values are combined in an RMS manner.

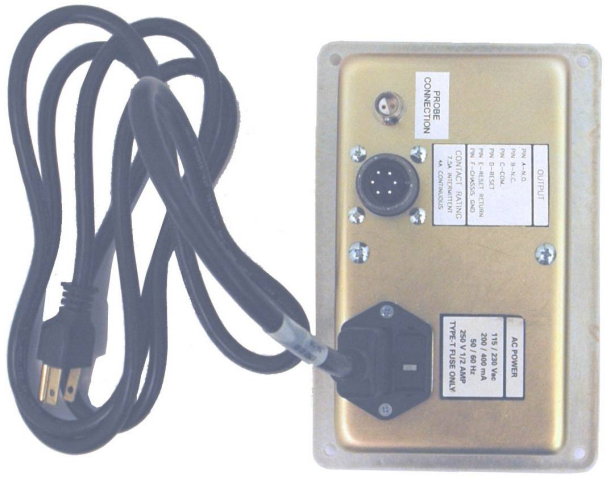
4.0 Assembly and Installation

Before operating any components, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

The HI-2602 is intended to be installed in a through hole panel mount, using four #10 flat head screws.



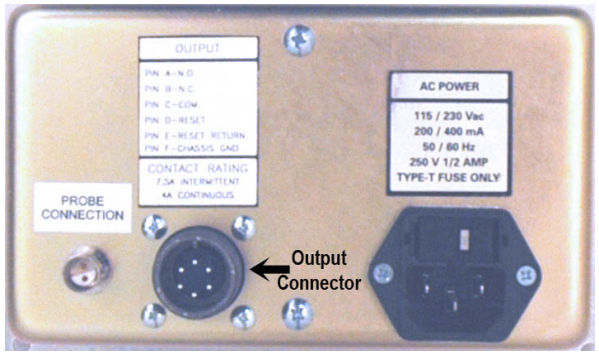
Connect the provided AC power source to the back of the unit.



Locate and mount the sensing probe to the Probe Connection port. Caution must be taken when using metal probe mounts as metal materials close to the sensing end of the probe may cause inaccurate readings. Direct air flow from heating and air conditioning vents may also cause erroneous readings.

Route the probe cable so that the probe may be adjusted without placing stress on the probe to cable connections.

Connect a suitable alarm indicator to the output connector. Check the label above the connector to ensure the output specifications are not exceeded. Also, check to ensure the pin numbers of your cable match the pin numbers of the output connector.



5.0 Operation

Before placing into operation, follow the safety information in the ETS-Lindgren *Product Information Bulletin* included with your shipment.

The HI-2602 monitor and probe are calibrated as an integral unit. Care must be taken not to interchange probes and monitors without recalibration. Operating the HI-2602 with different probes may cause erroneous readings.

Front Panel Controls

RF Control—contains a switch for disabling the interlock and a red LED to indicate when RF is over the preset RF fail level. A push button switch is used to reset the system when the LED illuminates. A momentary toggle switch in combination with a potentiometer is used to set the RF fail level.

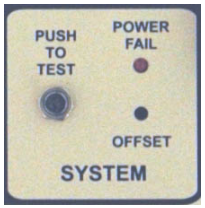
Power—contains the main power switch and a green LED indicator for indicating power on.

System—contains a potentiometer for adjusting the needle zero, a red LED indicating power failure and a push button switch for testing the desired RF fail level.

Analog Meter—indicates RF readings from 0.2 -10 mW/cm² (model dependent).

Turn the main power switch on; the green LED illuminates. If not, check the power cord connections at both ends. Also, check the 2 amp fuse located at the power connector. If the POWER FAIL indicator lights and stays lit, discontinue use immediately and contact ETS-Lindgren. If the INTERLOCK DISABLE or the RF FAIL indicators are lit, use the corresponding switch to turn them off.

Allow the system to warm up and stabilize for 5 minutes. With all sources of RF at the probes turned off, view the analog meter and, if necessary, adjust the offset potentiometer for a zero reading.



Check the operation of the HI-2602 in active use by operating the PUSH TO TEST switch.

The RF FAIL indicator will light and the analog meter will read approximately full scale. Before proceeding push the RESET button.

Adjust the RF Fail level by pressing and holding the SET switch and then adjusting the SET RF potentiometer until the meter needle indicates the desired level.

After the RF FAIL point has been adjusted the reading may be checked by pressing the SET switch and observing the meter reading.

The range of the HI-2602 is from approximately 0.2 - 10.0 mW/cm² model dependent.

The HI-2602 is now operational and will sense RF fields at the probe location. When the RF level sensed by the probe exceeds the preset RF level, the RF Fail indicator will light and the output interlock will latch. After detecting excessive RF leakage, the HI-2602 must be manually reset. The system is reset by operating the RESET switch.

The HI-2602 can also be reset remotely by applying12 volts DC across pin D(+) and pin E(-) of the output connector located in the rear panel. The HI-2602 output operates as a form C contact where pin C is common. During normal operation pin B is active. During a failure situation it switches latching pin A active.

The RF level at the probe must be below the preset RF level before the RF Fail can be reset.

For area sensing of maximum RF leakage operate the INTERLOCK DISABLE switch illuminating the disable indicator. When the RF fields at the probe exceed the preset RF level, the RF Fail indicator will light and stay lit until the RF field is reduced below the preset RF level. By moving the probe and observing the analog meter the maximum leakage area can be located.

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Appendix A: Warranty

See the *Product Information Bulletin* included with your shipment for the complete ETS-Lindgren warranty for your HI-2602 Interlock Monitor.

DURATION OF WARRANTIES FOR HI-2602 INTERLOCK MONITOR

All product warranties, except the warranty of title, and all remedies for warranty failures are limited to one year.

Product Warranted	Duration of Warranty Period
HI-2602 Interlock Monitor	1 Year

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Appendix B: EC Declaration of Conformity

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Declaration of Conformity

We, ETS-Lindgren, L.P., 1301 Arrow Point Drive, Cedar Park, TX, 78613, USA, declare under sole responsibility that the:

Model/Part Number: HI-2602

Model/Part Name: Interlock Monitor

Date of Declaration: 01 July, 1996

Affirmation Date: 16 July, 2009

to which this declaration relates, meets the requirements and is in conformity with the relevant EC Directives listed below using the relevant section(s) of the following EC harmonized standards and other normative documents;

Applicable Directive(s):

Electomagnetic Compatibility Directive (EMC), 89/336/EEC and its amending directives

Applicable harmonized standard(s) and/or normative document(s):

EN 55011:1991- Group 1 Class B, Limits and methods of measurement of radio disturbance characteristics of industrial, scientific, a frequency equipment

Authorized Signatories:

ETS-Lindgren L.P.
Bryan Sayler, General Manager

ETS-Lindgren L.P.
James C. Psencik, Vice President of Engineering

The authorizing signatures on this Declaration of Conformity document authorizes ETS-Lindgren, L.P. to affix the CE mark to the indicated product. CE marks placed on these products will be distinct and visible. Other marks or inscriptions liable to be mistaken with the CE mark will not be affixed to these products.

ETS-Lindgren, L.P. has ensured that technical documentation shall remain available on premises for inspection and validation purposes for a period ending at least 10 years after the last product has been manufactured.

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