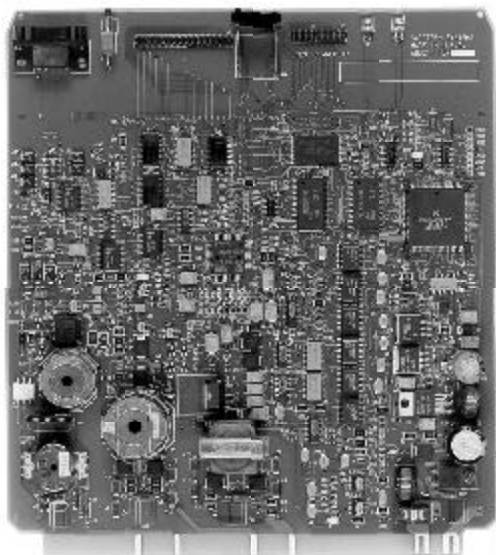


INTELLIGENT PROCESSOR ISLAND (IPI)

MODEL 80211



IPI Module, 80211

The Intelligent Processor Island (IPI) Module provides enhanced operation in areas experiencing problems associated with marginal shunting. Outstanding features of the IPI Module include:

- MICROPROCESSOR BASED
- PROVIDES ENHANCED OPERATION IN MARGINAL SHUNTING SITUATIONS
- OPERATING FREQUENCY IS FIELD PROGRAMMABLE
- PROVIDES AUTOMATED CALIBRATION PROCESS
- OPERATIONALLY PIN-FOR-PIN COMPATIBLE WITH EXISTING ISLAND CIRCUITS
- PROVIDES ADDITIONAL ISLAND FREQUENCIES
- AVAILABLE AS A STAND-ALONE SYSTEM

The IPI Module is currently available in two configurations, providing full compatibility with most Safetran manufactured motion sensors and grade crossing predictors, as well as Safetran's Short Modulated Track Circuit (SMTC) and Phase Shift Overlay (PSO II) Crossing System. Each IPI module is a complete microprocessor-controlled island system mounted on a single plug-in printed circuit board which produces a limited range, high definition, audio frequency track circuit. The microprocessor greatly enhances track occupancy operation in poor shunting environments such as those encountered in areas where contaminated rail or car wheels are prevalent, or where long/light axle-load cars are encountered. A unique feature of the system is its ability to detect when poor island shunting occurs and to initiate corrective action.

The IPI Module is easily programmed by the user to produce any of 14 operating frequencies ranging from 2.14 kHz to 20.2 kHz. Frequencies are the same as those used in Safetran's motion sensors, grade crossing predictors, SMTC, and PSO II Crossing System. In addition, three lower frequencies are also produced by the IPI Module. The specific operating frequency is determined by a selector block located on a frequency selection header. The frequency is shown on a four-character alphanumeric display mounted on the edge of the module. In addition a calibration select push button is provided for automatically adjusting the island circuit shunting threshold level. A pair of LEDs indicate module operating status. The STATUS LED indicator is normally lighted when island relay drive is present and extinguished when the signal is removed, indicating the presence of a train in the island circuit. The STATUS indicator is also flashed when the microprocessor detects an on-board circuit malfunction. The ACTIVITY LED indicator is lighted steady when the system is initialized and during system calibration and switches to a flashing condition to indicate normal microprocessor operation.

In addition to the microprocessor, on-board circuits include a transmitter, receiver, digital memory, analog-to-digital converter, relay drive circuit, plus a power supply. The island circuits interface with the rails via existing AAR terminals on the front panels of the motion sensors, grade crossing predictors, SMTC, and PSO II Crossing Systems. An RS232 serial port is also provided for system diagnostics and future upgrading of on-board firmware.

SPECIFICATIONS

| | |
|------------------------------------|--|
| Input Power: | |
| Voltage | 9-16.5 VDC (supplied from host equipment) |
| Current | 0.55 ampere (maximum) |
| Transmitter Output Current: | 0.1 ampere (maximum) |
| Selectable Frequencies: | 2.14, 2.63, 3.24, 4.00, 4.90, 5.90, 7.10, 8.30, 10.0, 11.5, 13.2, 15.2, 17.5, and 20.2 kHz |
| Microprocessor: | Motorola 68332 |
| Relay Drive Output: | 400 to 1,000-ohm load |
| Island Circuit Length: | Determined by island track wire connections (120-350 feet) |
| Surge Protection: | Built-in secondary surge protection. Primary surge protection required. |
| Environmental: | |
| Temperature | -40 degrees F to +160 degrees F (-40 degrees C to +71 degrees C) |
| Humidity | 95%, noncondensing |
| Weight: | 1 pound (0.45 kilogram) (approximate) |

ORDERING INFORMATION

To order, specify Intelligent Processor Island Module, plus the applicable part number from the following chart.

| Safetran Equipment Where IPI Module To Be Used | IPI Module Part Number | | |
|--|------------------------|-------------------|-------------------|
| | 62609 (62509)* | 62810 (62710)* | 80211 (80011)* |
| Model 500 Motion Sensor | X | | |
| Model 525 Motion Sensor | X | | |
| Model 550 Motion Sensor | X | | |
| Model 585 Motion Sensor | X | | |
| Model 590 Motion Sensor | X | | |
| Model 600 Motion Sensor/Grade Crossing Predictor | X | | |
| Model 660 Motion Sensor/Grade Crossing Predictor | | X | |
| Model 2000 Motion Sensor | | | X |
| Model 3000 Grade Crossing Predictor | | | X |
| Short Modulated Track Circuit, 71010 | X | | |
| PSO II Crossing System, 7A408 | X | | |
| IPI Track Circuit, 71150 ** | X | | |

Notes: (*) Part numbers in parenthesis indicate existing modules replaced by the IPI Module.

(**) The IPI Track Circuit uses the 62609 Module. To order the IPITC as a complete unit, specify part number 71150.

INTELLIGENT PROCESSOR ISLAND TRACK CIRCUIT (IPITC)

71150

- **PROVIDES STAND-ALONE ISLAND CIRCUIT AT HIGHWAY CROSSINGS**
- **DIRECT REPLACEMENT FOR SAFETRAN'S 71010 SMTC**
- **MICROPROCESSOR-BASED**
- **DESIGNED TO OPERATE UNDER POOR SHUNTING CONDITIONS**
- **USES SIMPLE AUTOMATED PROCESS FOR TRACK CIRCUIT CALIBRATION**
- **FREQUENCY PROGRAMMABLE VIA AN ON-BOARD JUMPER**

Safetran's Intelligent Processor Island Track Circuit (IPITC), part number 71150, is a stand-alone system intended for use as the island circuit at highway crossings. The IPITC also satisfies any application requiring a short (120'-350'), high-definition, audio frequency track circuit and is a direct replacement for Safetran's 71010 SMTC. This micro-processor-based, multi-frequency, modulated, short-range, audio-frequency track circuit is designed to operate under poor shunting conditions and provides a simple automated process for track circuit calibration.

The IPITC system consists of a single plug-in module (62609) housed in a metal case with standard AAR terminals providing external connections. The unit is frequency programmable via an on-board jumper. A four-character alphanumeric display indicates the selected operating frequency plus calibration process status and diagnostic troubleshooting codes.

The IPITC operating program is contained in a flash memory device on the 62609 module. If factory upgrades to the program become available, the software can be easily downloaded from a personal computer to the flash device via an RS232 port on the module.



SPECIFICATIONS

Input Power:

| | |
|---------|------------------|
| Voltage | 9-16.5 VDC |
| Current | 550 mA (nominal) |

Transmitter Output Current: 0.1 ampere (maximum)

Field Selectable Frequencies: 2.14, 2.63, 3.24, 4.00, 4.90, 5.90, 7.10, 8.30, 10.0, 11.5, 13.2, 15.2, 17.5, and 20.2 kHz

Microprocessor: Motorola 68332

Relay Drive Output: 400 to 1,000-ohm load

Island Circuit Length: Determined by island track wire connections (120-350 feet)

Surge Protection: Built-in secondary surge protection.
Primary surge protection required.

Environmental:

| | |
|-------------|---|
| Temperature | -40 degrees F to +160 degrees F (-40 degrees C to +71 degrees C) |
| Humidity | 95%, noncondensing |

Dimensions: 8.75 inches high (22.23 centimeters)
8.25 inches wide (20.96 centimeters)
9.50 inches deep (24.13 centimeters)

Weight: 5 pounds (2.25 kilogram) (approximate)

ORDERING INFORMATION

To order, specify Intelligent Processor Island Track Circuit (IPITC) and the part number 7000-71150-0001.
