Application Manual

Prepackaging Your Control Needs Since 1969

Relays • Current Sensors • Power Supplies • Transformers • Power Control
Enclosures • Accessories • Wireless Devices • Energy Saving Devices
Relay and Current Sensor in One
Directly start/stop load and current sensing all in one package (no external ring is needed.) Wire colors to “Load” and “60 Hz ac” differ depending on the model being used. Configurations are either YELLOW & ORANGE, BLUE & YELLOW, or ORANGE & ORANGE.

Motor Starter
Allows relay to control a motor starter while sensing current flowing to the motor.

Sensor only for 1.25 Amp to 150 Amp Load
Use sensor only devices without relay where start/stop is not required.
Panel Mounted Relay and Internal Sensor
Start/Stop Relays with Internal Current Sensors measure current flow through the relay contacts, no external ring is needed. Senses current as low as .50 Amp.

Interlocking Loads
Some RIBX current sensor relays can be used to sense 1 or more loads to turn on another.

Interlocking Loads (No Transformer)
Self-powered Current Sensors of the RIBX Series and relays of the Dry Contact Input RIB® Series may be applied to interlock Load 2 to Load 1.
Damper Motor Control with True-HOA
The damper motor can be stopped in mid position for debugging. When auto/manual selector is in auto, relay controls the load. When in manual, use the manual switch to control the load.

RIBU1S vs. RIBU1SC
Stock model RIBU1SC for relay control applications that require true-HOA on either N/O or N/C. No jumpers and no wrong orders.

Manual Analog Override Switch
Initial installation or trouble shooting can be smoother and much less costly by adding the RIBMNA1D0. It allows you to manually control an analog output without accessing complicated algorithms in a controller. An indicator is provided for visual confirmation of percentage output. When you are finished, you can switch back to auto to put the controller back in control.
Limit Extra Transformers with Dry Contact Input Relays
Eliminate the expense of extra transformer(s) and associated wiring.

Detect Water Levels with Dry Contact Input Relays
If the water touches the wires, the relay will turn on (closes COMMON to N/O and opens COMMON to N/C.)
Uses UL Approved low-voltage to sense water and activate relay.

Monitoring Switch Position with a Controller
Digital In 1 and 2 of the controller can be used to monitor the position of the HOA switch. The controller can be programmed to log the status of the HOA and provide a warning if the switch is in an override position.
High Voltage Optoisolated Relays
Optoisolated relays help isolate noisy loads from the controller. Good for controlling power relays from analog outputs.

Controller
Digital Out (or Analog Out)
60 Hz ac
Power Supply
Relay
Opto Input
Opto RIB®
Load

Enclosed Relays
- RIBTE01B
- RIBTE02B
- RIBTE01SB
- RIBTE02SB
- RIBTE01P
- RIBTE02P

Track Relays
- RIBME2401B
- RIBME2402B
- RIBME2401SB
- RIBME2402SB
- RIBME2401P
- RIBME2402P

Low Voltage Optoisolated Relays
Optoisolated relays help isolate noisy loads from the controller. Good for controlling power relays from low power digital or analog outputs.

Controller
Analog or Digital Out
24 Vac/dc
Relay
Opto Input
Power Supply
60 Hz ac
Load

Enclosed Relays
- RIBTELC
- RIBTELS
- RIBTE24B
- RIBTE24SB
- RIBTE24P

Track Relays
- RIBME2401B
- RIBME2402B
- RIBME2401SB
- RIBME2402SB
- RIBME2401P
- RIBME2402P

Polarized Relays
Relays are polarized to work in a supervised system and may be turned on and off by reversing polarity. For fire alarm systems, smoke control systems, etc.

Controller
End of Line Resistor
Resistor
Coil
Coil
Load
Load

Enclosed Relays
- RIB12C-FA
- RIB24C-FA
- RIB12S-FA
- RIB24S-FA
- RIBT24B-FA
- RIB24P-FA

Track Relays
- RIBMN12C-FA
- RIBMN24C-FA
- RIBMN12S-FA
- RIBMN24S-FA
Condense Work Space and Wiring (Power Control)

Power Control Centers allow you to save large amounts of time, space, and wiring throughout your panel.

Before
There is a lot of extra wiring in this enclosure which not only takes up space but also increases the difficulty and time associated with installation.

After
By using one of Functional Devices’ Power Control Centers you will greatly reduce installation time, as well as save space in your enclosure.

Condense Work Space and Wiring (Power Supplies)

The PSC, PSH, and PSB Series Power Supplies allow you to save large amounts of time, space, and wiring throughout your panel.

Before
There is a lot of extra wiring in this enclosure which not only takes up space but also increases the difficulty and time associated with installation.

After
By using one of Functional Devices’ Power Supplies you will greatly reduce installation time, as well as save space in your enclosure.

Switch in a Box Enclosed Controls

Pre-labeled 20 Amp enclosed switches are great for new installations or last minute corrections to controls jobs. Switch labels may be custom selected when ordering.
Electronic Air Cleaner
Models RIBXGHF, RIBXGHTF, RIBXGHA, or RIBXGHTA can be used to control an electronic air cleaner based on whether or not the blower motor is turned on.

![Diagram of Electronic Air Cleaner]

Humidifier Control
Solid and split core current sensors can be used along with a humidistat for control of a humidifier based on whether or not the blower motor is turned on.

![Diagram of Humidifier Control]

Occupancy Sensor on Open Protocol Network
A LonMark® certified or a BACnet® compatible relay with a digital input can be used with an occupancy sensor in a room and turn on and off loads based on that status. This saves the cost of buying a LonMark® compatible or BACnet® compatible occupancy sensor by utilizing the digital input on our device.

![Diagram of Occupancy Sensor on Open Protocol Network]
Loop-Powered RIBXK420 Series and RIBXG420 Series (High-Accuracy)

Enclosed Mini Current Sensors
- RIBXK420-20
- RIBXK420-50
- RIBXK420-100
- RIBXG420-20
- RIBXG420-50
- RIBXG420-100

Control Optoisolated Relay with 4-20mA Loop

Add 250Ω across Optoisolated Relay 5-25 Vdc control input. Relay turns on at approximately 10mA and off at 8mA.

Self-Calibrating Current Sensors
The self-calibrating current sensor begins its 30 second self calibration process the first time current is applied within the operating range. This procedure uses the user selected differential to set the trip threshold at a 15% or 25% level. Selection is completed prior to install using the appropriate DIP switch setting, keeping the installer’s hands away from possible shock hazard, as well as saving installation time.

Danger!!!
Hands and tools exposed to high voltage while adjusting potentiometer of current sensor

New RIBXGA-SCAL
Hands safely away from high voltage because SCAL adjusts itself

Safe
**Echelon® Thermistor-In Application**

A thermistor is used to read the temperature of a room or area. That data is fed back to the LonWorks® system. When the temperature is out of range, the relay is commanded by the network, activating the exhaust fan, heater, or other device. A current sensor is used to feed back load status to the network. If there is a command and status mismatch, the network can issue an alarm to the operator’s console.

![Diagram of Thermistor-In Application](image)

- **Enclosed Relay**: RIBTW245B-LNT2, RIBTW245B-LNT3
- **Track Relay**: RIBMW245B-LNT2, RIBMW245B-LNT3
- **Enclosed Mini Current Sensors**: RIBXKF, RIBXGF, RIBXKTF, RIBXGTF, RIBXKA, RIBXGA, RIBXKTA, RIBXGTA, RIBXGFL, RIBXGTFL

**Echelon® Relay / Current Sensor Application**

Save time, money, and messy wiring. LonMark® certified relay contains an internal current sensor for load status. Relay control and load status are easily accessible from the FT-10 Network.

![Diagram of Relay / Current Sensor Application](image)

- **Enclosed Model**: RIBTW2401SB-LN, RIBTW2402SB-LN
- **Track Model**: RIBMNWX2401SB-LN, RIBMNWX2402SB-LN
Delay on Break (DOB) Time Delay
Load 2 stays on selected amount of time after load 1 goes off.

In this example, voltage can be any voltage from 120-277 Vac.

Echelon® Analog-In Application
Simple and easy load control and status along with analog input provide everything needed to control and interface to your HVAC application. Save the expense of a controller for smaller remote jobs or complete larger jobs, as well.

Activate Load for Pre-Determined Time Using Dry Contact Input / Time Delay Relay and Normally Closed Switch

• Activate (open) switch until load comes on.
• Release switch.
• Load will be powered until time delay expires.