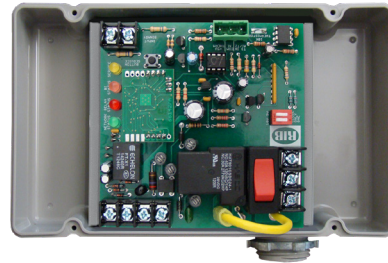
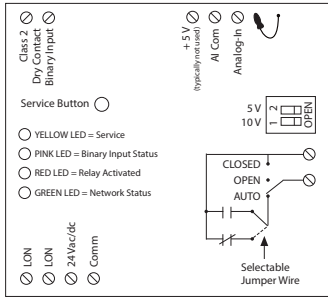


**NETWORK COMPATIBLE RELAY / CURRENT SENSOR COMBO**

**RIBTW245B-LNAI**

Enclosed LonWorks® Twisted-Pair FT-10 Network Enclosed Three I/O Device; One Binary Output (20 Amp Relay SPST + Override), One Binary Input (Dry Contact, Class 2); One Analog Input (0-5Vdc / 0-10 Vdc); 24 Vac/dc Power Input.



**SPECIFICATIONS**

- # Relays & Contact Type:** One (1) SPST Continuous Duty Coil
- Expected Relay Life:** 10 million cycles minimum mechanical
- Operating Temperature:** -30 to 140° F
- Humidity Range:** 5 to 95% (noncondensing)
- Operate Time:** 18ms
- Green LED:** Network Status
- Red LED:** Relay Status
- Yellow LED:** Service Status
- Pink LED:** Binary Input Status
- Dimensions:** 4.28" x 7.00" x 2.00" with .75" NPT Nipple
- Track Mount:** MT4-4 Mounting Track Provided
- Approvals:** FCC, LonMark®, CE, RoHS, UL Listed, UL916, C-UL
- Housing Rating:** UL Listed, NEMA 1, C-UL, CE Approved, UL Accepted for Use in Plenum, Also available NEMA 4 / 4X
- Gold Flash:** No
- Override Switch:** Yes

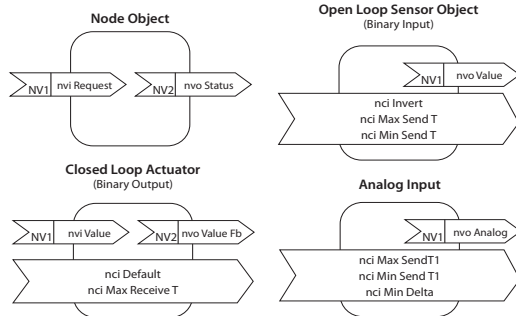
- Contact Ratings:**
  - 20 Amp Resistive @ 277 Vac
  - 20 Amp Ballast @ 120/277 Vac (N/O)
  - 10 Amp Ballast @ 120/277 Vac (N/C)
  - Not rated for Electronic Ballast
  - 10 Amp Tungsten @ 120 Vac (N/O)
  - 1110 VA Pilot Duty @ 277 Vac
  - 770 VA Pilot Duty @ 120 Vac
  - 2 HP @ 277 Vac
  - 1 HP @ 120 Vac

- Power Input Ratings:**
  - 111 mA @ 24 Vac
  - 81 mA @ 24 Vdc

- Power Input:** 24 Vac/dc ; 50-60 Hz \*

- Notes:**
  - Order with P1 option by adding "-P1" to end of model number. The P1 option is pre-programmed to allow dry contact binary input to command the relay. Contact closure on the BI will activate relay.
  - Normally Open or Normally Closed selected by yellow jumper wire.
  - Order NEMA 4 housing by adding "-N4" to end of model number. (RIBTW245B-LNAI-N4)
  - Close DIP switch 1 for 0-5 Vdc Analog Input. Close DIP switch 2 for 0-10 Vdc Analog Input.
  - When connecting 24 Vac to both the RIB(s) and a half-wave device, damage to device can occur. Option 1: Use separate transformers for each device. Option 2: Add diode between devices, see Option 2 note below. ^^
  - See page 71 for -LNT2 or -LNT3 models if using a thermistor. If using a thermistor on the Analog Input, set DIP switches to the 0-5 Vdc setting. A look-up table must also be made.

- Channel:** TP/FT-10
- Transceiver Type:** FT5000 Smart Transceiver
- Transceiver Compatibility:** FT3120 / FT3150, FTT-10 / FTT-10A, and LPT-10 / LPT-11 Transceivers
- Functional Blocks:**
  - 0000 Node Object
  - 0004 Closed Loop Actuator Object
  - 0001 Open Loop Sensor Object
  - 0520 Analog Input
- Downloadable Files:** PDF, XIF, APB, VSS and NXE available on website.

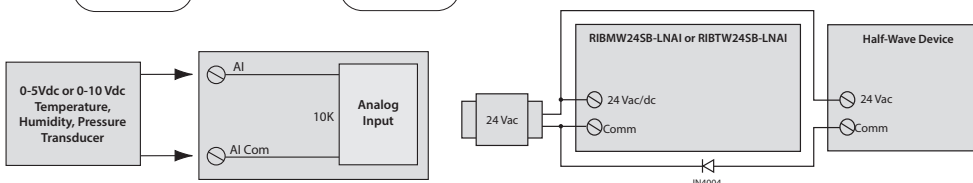


DESCRIPTION	SNVT NAME	SNVT TYPE
Command to open/close relay	nvi Value	SNVT_switch
Command status of relay	nvo Value Fb	SNVT_switch
Default state of relay on/off	nci Default	SNVT_switch
Communication timer	nci Max Receive T	SNVT_elapsed_tm
Status of Binary Input	nvo Value	SNVT_switch
Invert status of Binary Input	nci Invert	SNVT_lev_disc
Max time between updates	nci Max Send T	SNVT_elapsed_tm
Min time between updates	nci Min Send T	SNVT_elapsed_tm
Value of Analog-In	nvo Analog	SNVT_lev_percent
Max time between Analog updates	nci Max Send T1	SNVT_elapsed_tm
Min time between Analog updates	nci Min Send T1	SNVT_elapsed_tm
Min change in Analog before updates	nci Min Delta	SNVT_lev_percent

The relay will go to the default state when the communication timer times out. Setting the timer value to zero will cause the communication to never time out.

It is recommended to put a value in nci Max Send T to ensure the RIB re-synchronizes itself on the network after power loss. It is the responsibility of the user to ensure this value does not cause conflicts in network traffic. (No value = No "heartbeat" updates / no re-synchronization; Low Value = Many updates but may cause many traffic collisions; High value = Few updates but many less collisions.)

^^ Option 2: Add diode on 24 Vac power (Com) interconnection between devices. Band on diode faces towards RIB(s).



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**3. TERMS OF PAYMENT:** Buyer will pay the fees specified in each invoice provided by Seller in United States Dollars within thirty (30) calendar days after the invoice date unless otherwise agreed to in writing by an authorized representative of Seller. Any amount due under this Agreement that remains unpaid after its due date will bear interest from the date that such payment became delinquent until the date it is paid in full at the lower of 1.5% per month, which equals an annual percentage rate of 18%, or the maximum rate permitted by law. Seller reserves the right to establish, revoke or modify credit terms for Buyer at any time. No discounts are allowed unless otherwise agreed to in writing by an authorized representative of Seller. Buyer will pay any collection fees, legal fees, or court costs incurred by Seller to collect past due amounts. No offsets or setoffs of payments due to Seller hereunder are allowed with respect to any other agreement between the parties. Seller hereby retains a lien on the goods sold for unpaid purchase money as herein provided.

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### **5. DELIVERY, RISK OF LOSS, CLAIMS AND FORCE MAJEURE:**

A. All prices quoted for products are Ex-Works (Incoterms 2010) at a shipping facility determined by Seller, unless otherwise noted by Seller ("**Seller's Shipping Facility**"). Risk of loss or damage, and beneficial ownership, of the Products are transferred to Buyer when the Products are made available to Buyer at Seller's Shipping Facility. All delivery dates are approximate.

B. Buyer will only make written claims to Seller for damages, shortages or other delivery errors within seven (7) calendar days after receipt of shipment. All Products received by Buyer, or Buyer's clients, customers, or agents, that are not rejected within such time will be deemed accepted. Failure to provide such written notice constitutes a waiver of all such claims regarding such shipment by Buyer. Buyer will not revoke acceptance.

C. Seller is not liable for any damage as a result of any delay or failure to deliver due to any act of God, act of Buyer, embargo or other governmental act, regulation or request, fire, accident, power outage, strike, civil unrest, weather, slowdown or other labor difficulties, war, riot, act of terrorism, delay in transportation, defaults of common carriers, inability to obtain necessary labor, materials or manufacturing facilities or, without limiting the foregoing, any other delays beyond Seller's control. Buyer's sole and exclusive remedy for any delays or for Seller's inability to deliver Products for any reason, in each case, that persists for more than ninety (90) days, is to cancel the order pursuant to Seller's Order Policies and Guidelines available upon request.

**6. WARRANTY; DISCLAIMER.** Products are warranted to be free from manufacturing defects under normal use and conditions for five (5) years (the "**Warranty Period**").

The warranty does not apply to: (a) Damage caused by accident, abuse, mishandling, or dropping; (b) Products which have been subjected to unauthorized repair, opened, or taken apart; (c) Products not used in accordance with directions; (d) Damages exceeding the cost of such Product; and (e) Damages caused by lightning, water, or condensation. If warranty service is required during the Warranty Period, and if examination shall disclose to Seller's satisfaction

that such Product was originally defective, then Seller will at its option repair or replace the product without charge upon prepaid delivery of such Product to Seller's facility with proof of date of purchase. Corrections of such defects by repair to or supplying of replacements for defective parts shall constitute fulfillment of all obligations of Seller.

Seller shall not be liable for loss, damage, or expense directly or indirectly caused from the failure of Products to perform as expected.

EXCEPT AS SET FORTH HEREIN, SELLER DISCLAIMS ALL REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, FITNESS FOR A PARTICULAR PURPOSE OR ANY WARRANTY ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE. NO PERSON (INCLUDING ANY AGENT, DEALER OR REPRESENTATIVE OF SELLER) IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY CONCERNING PRODUCTS EXCEPT TO REFER BUYER TO THIS AGREEMENT. BUYER WARRANTS THAT BUYER HAS NOT RELIED ON ANY OTHER WARRANTIES OR REPRESENTATIONS CONCERNING THE PRODUCTS OR THIS AGREEMENT.

For warranty service, call factory for RA number and send such Product prepared with sales receipt to: FUNCTIONAL DEVICES, INC., 101 COMMERCE DRIVE, SHARPSVILLE, IN 46068.

**7. LIMITATION OF LIABILITY: SELLER WILL NOT BE LIABLE FOR ANY LOSS OF PROFIT, INTERRUPTION OF BUSINESS OR ANY OTHER SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES SUFFERED OR SUSTAINED BY BUYER FOR ANY REASON. EXCEPT FOR CLAIMS OF DEATH OR PERSONAL INJURY, IN NO EVENT WILL SELLER'S AGGREGATE LIABILITY TO BUYER ARISING UNDER OR IN ANY WAY RELATED TO THIS AGREEMENT FOR ANY REASON (INCLUDING, BUT NOT LIMITED TO, LIABILITY ARISING FROM NEGLIGENCE OR ON THE BASIS OF STRICT LIABILITY, OR OTHERWISE) EXCEED THE TOTAL AMOUNT PAID BY BUYER TO SELLER HEREUNDER FOR ANY PRODUCT GIVING RISE TO A CLAIM UNDER THIS AGREEMENT.**

**8. RETURNS:** Unless otherwise approved by Seller in writing in its sole discretion, except in the case of a non-conforming shipment or a warranty issue, Buyer may not return Products. If Seller approves the return of Products pursuant to the preceding sentence, such returned Products must be returned within ninety (90) days from date of invoice and will be subject to a 25% restocking fee. In the event of a non-conforming shipment or a warranty issue, Buyer may return Products, but only if Buyer first: (a) provides notice to Seller as required in this Agreement, (b) obtains prior authorization from Seller, and (c) all Products or containers for which return is properly authorized have been marked with a return authorization number supplied by Seller. Buyer will make all returns via a traceable form such as Federal Express, UPS or insured mail and in resalable condition. Buyer will pay all return shipping charges and any other charges associated therewith.

**9. CANCELLATIONS:** Cancellation or deferment of all or part of an order is subject to acceptance by the Seller. If accepted, any reduction in quantity of any item to less than 85% of the original item quantity is subject to a 15% cancellation charge. If an order cancellation is accepted, the Buyer will make delivery and pay for all material manufactured and in stock or in process at time of notice for such order, and for any special materials on orders for which the Seller must take delivery.

**10. EXPORTS.** Buyer agrees that it will comply with any and all U.S. Export Controls and will not pay for, resell, transfer or knowingly sell Products in violation of U.S. Export Controls. If Buyer resells Products within or exports Products to a country or region which imposes upon Seller and/or Buyer an obligation to fund or undertake reuse, recycling, composting, recovery of Products, or any similar obligation (e.g., the European Union's Waste Electrical and Electronic Equipment Directive, EC 2002/96/EC) (the "**Obligations**"), Buyer shall wholly undertake the Obligations or duties and shall be entirely responsible for all associated costs therewith. Seller shall have no obligation to reimburse Buyer for execution of the Obligations. In the event that Seller is named in a proceeding based upon the Obligations, Buyer shall indemnify, defend and hold Seller harmless from all actions related thereto, including all civil and governmental actions.

**11. MISCELLANEOUS.** This Agreement is governed by the laws of the State of Indiana, without giving effect to its conflict of laws principles. Buyer hereby irrevocably consents and submits to the exclusive jurisdiction and venue of the state and federal courts in Marion County, Indiana. The United Nations Convention for Contracts for the International Sale of Goods is explicitly excluded. Each provision contained in this Agreement constitutes a separate and distinct provision severable from all other provisions. If any provision (or any part thereof) is unenforceable under or prohibited by any present or future law, then such provision (or part thereof) will be amended, and is hereby amended, so as to be in compliance with such law, while preserving to the maximum extent possible the intent of the original provision. Any provision (or part thereof) that cannot be so amended will be severed from this Agreement; and, all the remaining provisions of this Agreement will remain unimpaired. No modification, addition or deletion, or waiver of any rights under this Agreement is binding on a party unless made in a non-preprinted agreement clearly understood by the parties to be a modification or waiver, and signed by a duly authorized representative of each party.