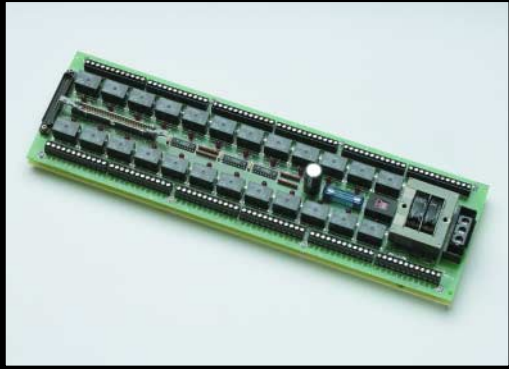


# ERB-24 ERA-01

# 8- or 24-Channel Relay Output Accessory Boards



Keithley's 24-Channel Relay Output Board, the ERB-24, consists of 24 electromechanical dual form C (Double-Pole, Double-Throw) relays for efficient switching of loads by programmed control. The ERA-01 provides 8 Form C relays, which can be driven by the PB port of a digital I/O board. Each relay contains two normally closed and two normally open contacts for controlling up to a 3 Amp load (resistive) at 120 or 125Vrms per contact. These relays feature zero-leakage output currents as compared to the higher leakage current of the solid-state relay alternative.

The relays are energized by applying a 5V signal level to the appropriate relay channel on either the 37-pin D connector or 50-pin header. Onboard relay drivers allow the ERB-24 and ERA-01 to be controlled by any LSTTL or NMOS/CMOS compatible digital output board.

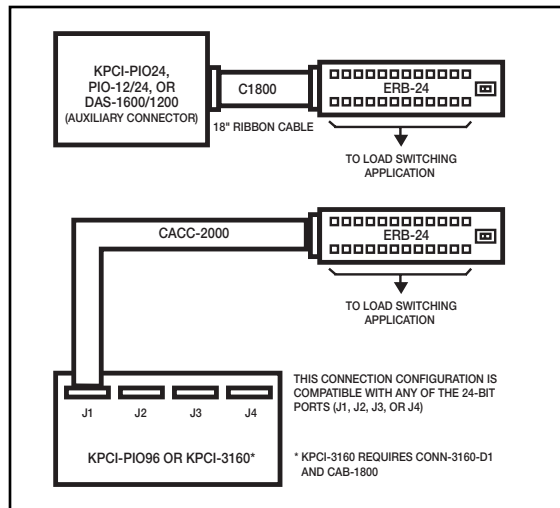
Annunciator LEDs, one for each relay, light when their associated relays are activated. This feature aids in troubleshooting and ease of use. Screw terminals on the board allow easy connection and accept wire sizes 12–22 AWG. The board can also be rack mounted.



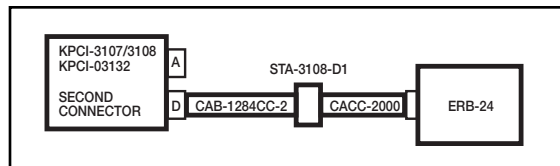
- 24 Dual Form C (DPDT) relays (ERB-24)
- 8 Form C relays (1 NC and 1 NO contact per relay)
- 3 Amp contact rating (120 or 125Vrms)
- Screw terminals accept 12–22 AWG wire
- Easy to use
- LEDs indicate status of relays

## APPLICATIONS

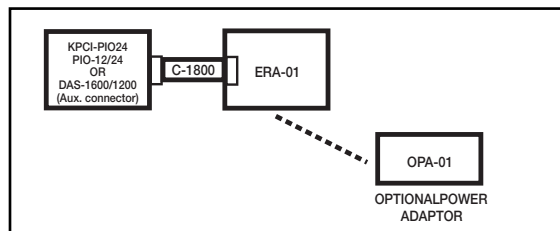
- Energy management
- Laboratory automation
- Product testing
- Process control
- Activate alarms
- Annunciator lights



ERB-24 Configuration Guide



ERB-24 Configuration Example



ERA-01 Configuration Example

Allows efficient load switching by programmed control

SIGNAL CONDITIONING

1.888.KEITHLEY (U.S. only)

[www.keithley.com](http://www.keithley.com)

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# ERB-24 ERA-01

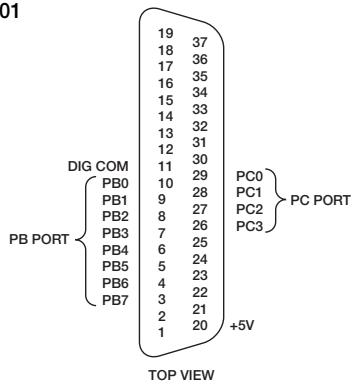
ERB-24  
TOP VIEW J14

N/C	19	37	RELAY 0
N/C	18	36	RELAY 1
N/C	17	35	RELAY 2
N/C	16	34	RELAY 3
N/C	15	33	RELAY 4
N/C	14	32	RELAY 5
N/C	13	31	RELAY 6
N/C	12	30	RELAY 7
DIG COM	11	29	RELAY 8
RELAY 16	10	28	RELAY 9
RELAY 17	9	27	RELAY 10
RELAY 18	8	26	RELAY 11
RELAY 19	7	25	RELAY 12
RELAY 20	6	24	RELAY 13
RELAY 21	5	23	RELAY 14
RELAY 22	4	22	RELAY 15
RELAY 23	3	21	DIG COM
N/C	2	20	N/C
N/C	1	19	N/C

ERB-24  
TOP VIEW J15

RELAY 7	1	2	GND
RELAY 6	3	4	GND
RELAY 5	5	6	GND
RELAY 4	7	8	GND
RELAY 3	9	10	GND
RELAY 2	11	12	GND
RELAY 1	13	14	GND
RELAY 0	15	16	GND
RELAY 15	17	18	GND
RELAY 14	19	20	GND
RELAY 13	21	22	GND
RELAY 12	23	24	GND
RELAY 11	25	26	GND
RELAY 10	27	28	GND
RELAY 9	29	30	GND
RELAY 8	31	32	GND
RELAY 23	33	34	GND
RELAY 22	35	36	GND
RELAY 21	37	38	GND
RELAY 20	39	40	GND
RELAY 19	41	42	GND
RELAY 18	43	44	GND
RELAY 17	45	46	GND
RELAY 16	47	48	GND
N/C	49	50	GND

ERA-01



## Ordering Information

ERB-24 24-Channel Relay  
Output Accessory Board

ERA-01 8-Channel Form C Relay  
Output Accessory Board

1.888.KEITHLEY (U.S. only)

www.keithley.com

# 8- or 24-Channel Relay Output Accessory Boards

## Connector Pin Assignments (ERB-24)

All digital inputs to the ERB-24 are through either a 37-pin D-type male connector or a 50-pin header, both which reside on the printed circuit board. For soldered connections, a standard 37-pin D-female connector is the correct mating part and can be ordered from Keithley as part number SFC-37.

## Connector Pin Assignments (ERA-01)

All signals from the digital controller board connect via an optional ribbon cable (C1800) to the ERA-01.

For soldered connections, a standard 37-pin D female (ITT/Cannon DC-37S or equivalent) is the correct mating part and can be ordered from Keithley as part number SFC-37.

## SPECIFICATIONS (ERB-24)

### RELAYS

QUANTITY AND TYPE: 24 dual form C (DPDT).

CONTACT RATING: 3A at 28VDC, resistive  
3A at 120VAC, resistive  
1.6A at 220VAC.

OPERATE TIME: 20ms max at rated voltage.

RELEASE TIME: 10ms max.

MECHANICAL LIFE: 10 million operations min.

ELECTRICAL LIFE: 100 thousand operations min at rated load.

### POWER REQUIREMENTS

INPUT POWER: 115/230VAC ±15%, 50/60Hz, 14.5VA max.

### ENVIRONMENTAL

OPERATING TEMPERATURE RANGE: 0° to 60°C.

STORAGE TEMPERATURE RANGE: -40° to +100°C.

HUMIDITY: 0 to 90% non-condensing.

EMC: Conforms to European Union Directive 89/336/EEC.

SAFETY: IEC Installation Category I. (Voltage source must be isolated from the mains by a transformer.)

DIMENSIONS: 16in L × 4.75in W × 2in H (40.6cm × 12.1cm × 5.1cm).

WEIGHT: 2.2lb (1kg).

SCREW TERMINAL WIRE SPACING: 0.197in (5mm).

SCREW TERMINAL WIRE SIZES: 12-22 AWG.

MOUNTING SCREW SIZE: 4-40.

## ACCESSORIES AVAILABLE (ERB-24)

C1800	ERB-24 to PIO-12/24 cable (18 in), KPCI-PIO24
CACC-2000	ERB-24 to PIO-96 cable (24 in), KPCI-PIO96
RMT-02	Rack Mountable Enclosure
MS-ERB-24	Additional Hardware Manual

## ACCESSORIES AVAILABLE (ERA-01)

C1800	ERA-01 to Digital I/O Board Cable (18 in)
OPA-01	110VAC to 10VAC Power Adapter
SFC-37	Mating 37-pin D Connector

## SPECIFICATIONS (ERA-01)

### HARDWARE

NUMBER OF RELAYS: 8.

RELAY TYPE: Form C (SPDT).

CONTACTS: Dry.

CONTACT RATING: 3A at 125V rms (resistive), Installation category II.

CONTACT LIFE: Mechanical: 10 million operations.  
Electrical: 100,000 operations at full load.

OPERATE TIME: 20ms max.

RELEASE TIME: 10ms max.

BREADBOARD AREA: 0.7in × 1.2in (1.78cm × 3.05cm); (8 × 13 solder terminals).

NUMBER OF LEDs: 8 red (one per relay).

### POWER REQUIREMENTS

+5V: 760mA typ, 800mA max (all relays energized).

LOGIC LEVEL TO ENERGIZE RELAY (MAKE): "1" logic high.

SWITCHING LOAD CURRENT FOR "OFF" RELAY BREAK: 0.018mA.

### ENVIRONMENTAL

OPERATING TEMPERATURE RANGE: 0° to 60°C.

STORAGE TEMPERATURE RANGE: -40° to +100°C.

HUMIDITY: 0 to 90% non-condensing.

SAFETY: IEC Installation Category I. (Voltage source must be isolated from the mains by a transformer.)

DIMENSIONS (with enclosure): 6.687in L × 5.125in W × 2.375in H (17cm L × 13.0cm W × 6cm H).

(without enclosure): 6.187in L × 4.687in W × 1.3in H (15.7cm L × 11.9cm W × 3.3cm H).

WEIGHT (with enclosure): 17oz (0.482kg).  
(without enclosure): 9oz (0.285kg).

SCREW TERMINAL WIRE SIZES: 12-22 AWG.

SCREW TERMINAL WIRE SPACING: 0.197in (5mm).

MOUNTING HOLES (without enclosure): 0.125in (3.17mm).

**KEITHLEY**