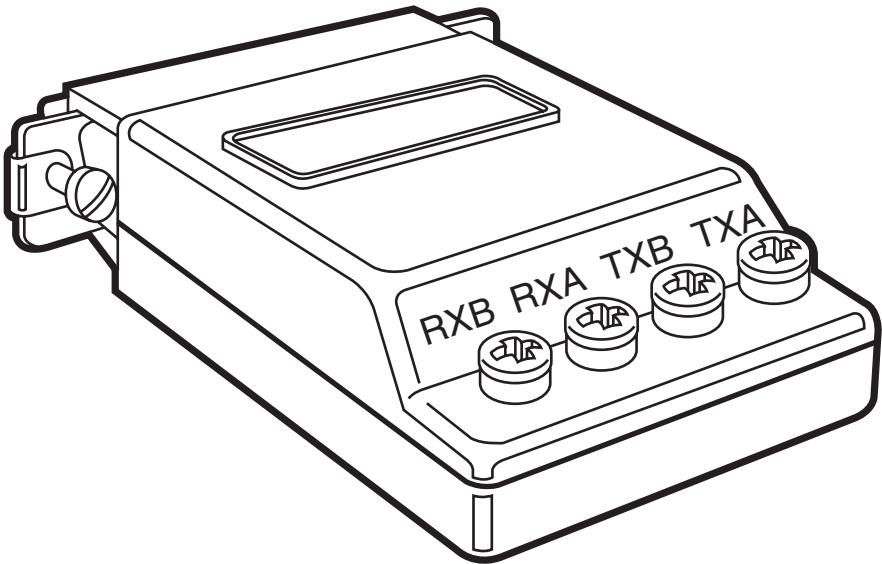




RS-232↔Current Loop Interface Converter (101-4Q)



**CUSTOMER
SUPPORT
INFORMATION**

Order toll-free in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

**FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

"This digital apparatus does not exceed the Class A limits for Radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications."

"Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada."

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

1.0 Specifications

Current Loop Power —	20 mA, 24 VDC maximum (externally provided)
Interface —	RS-232/V.24, DCE or DTE (switch-selectable); 4-wire, 20mA current loop
Connectors —	
CL412A-F:	DB25S (female); four-position screw terminal
CL412A-M:	DB25P (male); four-position screw terminal
Unit Power —	Provided by RS-232 device (+9VDC minimum). Connection to DCE: Pin 6 Connection to DTE: Pin 20
Size —	0.6"H x 1.6"W x 2.8"D (1.5 x. 4.1 x 7.1 cm)
Weight —	3 oz. (85 g)
Enclosure —	High-impact plastic

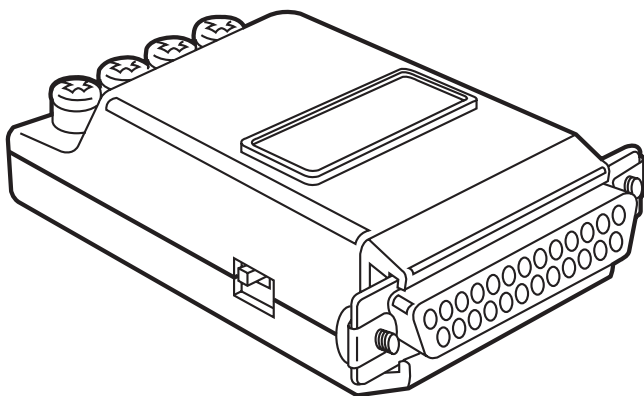


Figure 1. RS-232↔Current Loop Interface Converter (101-4Q).

2.0 Introduction

The RS-232↔Current Loop Interface Converter (101-4Q) is intended for interfacing RS-232 ports to unipolar, 4-wire current loops.

The 101-4Q allows data transmission by current flow, rather than by voltage level, as defined by EIA RS-232. Current flowing (a closed loop) represents a MARK signal. No current flowing represents a SPACE signal.

Operating power for the 101-4Q is derived from Pin 6 when the DCE/DTE switch is in the DCE position. Power is derived from Pin 20 when the switch is in the DTE position.

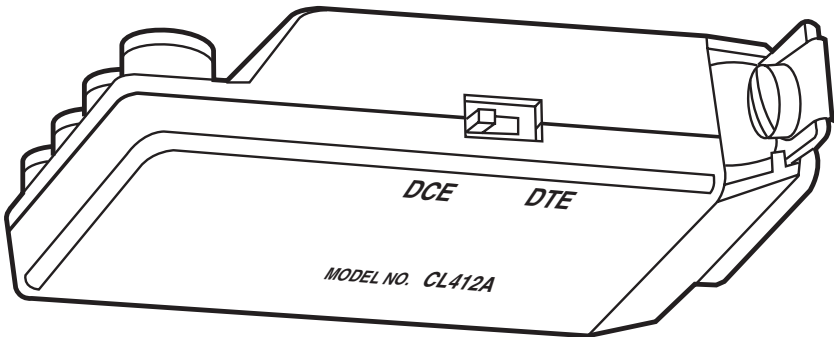


Figure 2. The DCE/DTE switch. Labels indicating the position of the switch are on the bottom of the 101-4Q.

3.0 Current-Loop Interface

Installation

The 101-4Q is easily installed by completing the current loop between the adapter and other devices in the loop. Each loop, transmit and receive, must be independently connected for full-duplex operation and connected in a complete circuit (see Figure 3). Observe polarity markings on the 101-4Q and on the active device.

Operation

The 101-4Q functions as a passive device in a current-loop environment. The current loop should have a maximum current of 20 mA. Maximum loop voltage should be 24 VDC. Minimum loop voltage should be 10 VDC.

Operation must be full-duplex.

Current-Loop Polarity Protection

TRANSMIT

A diode is incorporated across the transmit current-loop pair. If the wires are inadvertently reversed, current will flow in the circuit, but the transmit switch is protected.

RECEIVE

A diode is also incorporated across the receive current-loop pair. If the wires are inadvertently reversed, current will flow, but the receiver will not detect current. The receiver will indicate a continuous “spacing” condition to the attached RS-232 device.

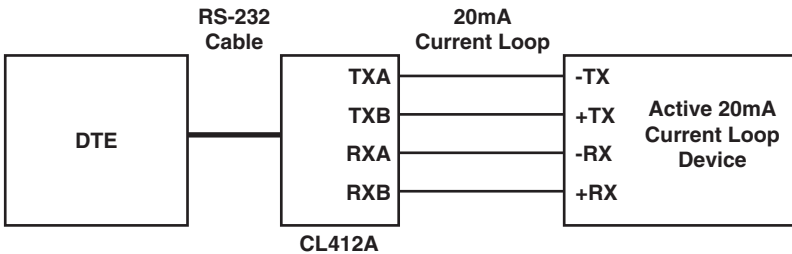


Figure 3. Wiring configuration for the 101-4Q.

4.0 The RS-232 Interface

Installation

The RS-232C connector on the 101-4Q is switch-configurable for attachment to either a DCE or DTE device. (See Figure 2 on page 4 for an illustration of the switch.)

Set the switch on the 101-4Q to DCE when the attached device is DCE (modem, multiplexor).

Set the switch to DTE when the attached device is DTE (computer, terminal, printer).

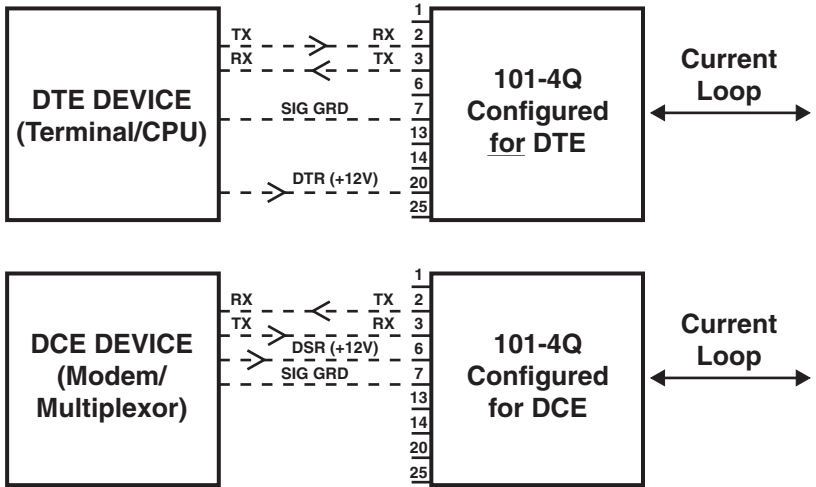


Figure 4. RS-232 Interface.

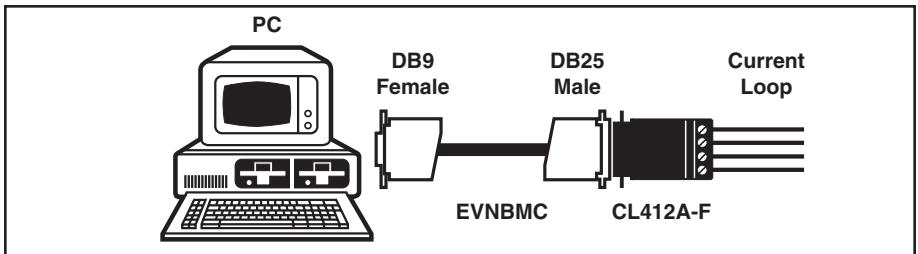


Figure 5. Use DB9-to-DB25 cable (EVNBMC) to attach a CL412A-F to a PC that has a DB9 connector.

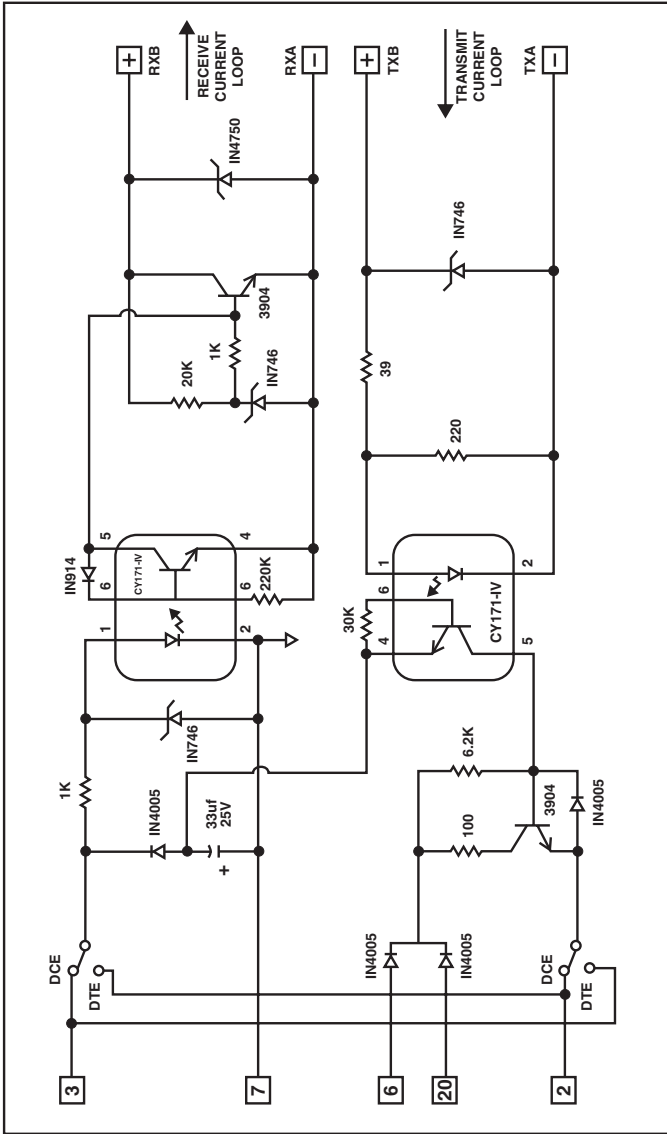


Figure 6. Schematic of RS-232↔Current Loop Interface Converter (101-4Q).



© Copyright 1994. Black Box Corporation. All rights reserved.

1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746