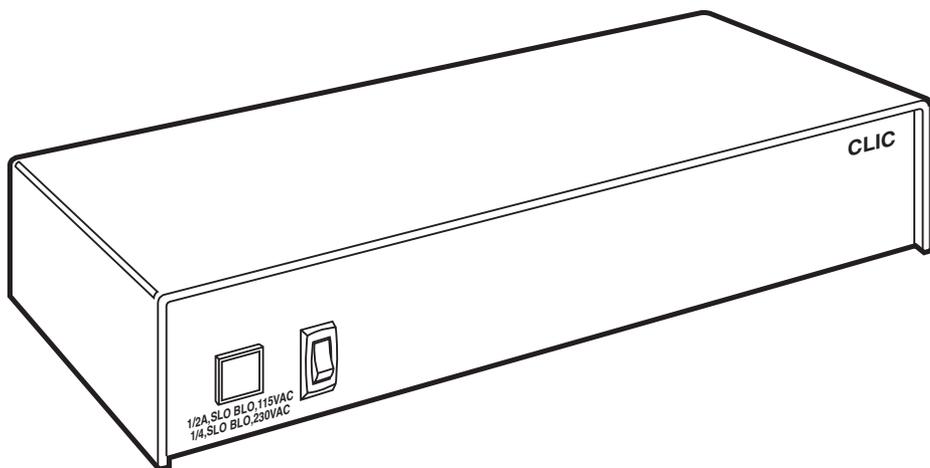




# Multi-Channel RS-232↔Current Loop Interface Converter (CLIC)



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# 1. Specifications

**Speed** — Up to 9600 bps

**Interface** — RS-232; 20-mA current loop, unipolar

**Connectors** — (4), (8), or (16) DB25 female DTE, (4), (8), or (16) 4-position terminal blocks (T+, T-, R+, R-) support Pins 2 and 3, with Pins 4 and 20 tied high

**Controls** — Power ON/OFF, 10-position DIP switches for options

**Enclosure** — Aluminum

**Current Loop** — Connector: 4-position terminal block

Transmitter (Passive)

<b>Open Circuit Voltage</b>	<b>Min.</b>	<b>Max.</b>
(of circuit being driven)	5V	40V
Voltage Drop, Marking	0.5V	2V
Spacing Current	0.4 mA	2 mA
Marking Current	20 mA	80 mA

Receiver (Passive)

	<b>Min.</b>	<b>Max.</b>
Voltage Drop, Marking	1.2V	2.7V
Spacing Current	0 mA	3 mA
Marking Current	15 mA	80 mA

Receiver/Transmitter (Active, Half Duplex)

	<b>Min.</b>	<b>Max.</b>
Voltage Source, Marking	11.3V	14.3V
Spacing Current	0 mA	3 mA
Marking Current	15 mA	80 mA

## MULTI-CHANNEL RS-232↔CURRENT LOOP INTERFACE CONVERTER

**Power** — 115/230 VAC, 60/50 Hz (switch-selectable),  
30 watts (60 watts for CL216A)

**Size** — CL204A, CL208A: 2.8"H x 12.8"W x 7.5"D (7.1 x 32.5 x 19.1 cm);  
CL216A: 5"H x 12.8"W x 7.5"D (12.7 x 32.5 x 19.1 cm)

**Weight**—CL204A: 4.1 lb. (1.9 kg);  
CL208A: 4.9 lb. (2.2 kg);  
CL216A: 8.2 lb. (3.7 kg)

## 2. Introduction

The Multi-Channel RS-232↔Current Loop Interface Converter (CLIC) is a bidirectional multi-channel interface designed to connect EIA/CCITT ports to current-loop circuits. Four models are available for interfacing 4, 8, 12, or 16 circuits. Each channel can be wired for either half- or full-duplex operation and can be configured as either an active or passive current-loop unit.

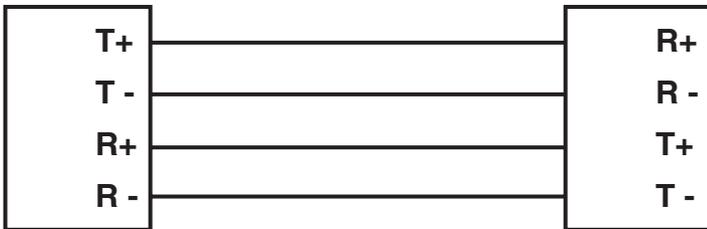
**Table 2-1. Models Available.**

<b>Unit</b>	<b>Product Code</b>
CLIC 4-Channel	CL204A
CLIC 8-Channel	CL208A
CLIC 12-Channel	CL212A
CLIC 16-Channel	CL216A

### 3. Current Loop Interface Description

The standard interface is a full-duplex, passive, 20 mA current loop, functionally similar to the active, full-duplex, TTY interface shown in **Figure 3-1**.

A passive, 20 mA current-loop device (in this case the Teletype) requires an active interface unit. The Teletype is said to be passive, since it receives current from the interface unit. The interface unit is then acting as an active device, since it is the current source.



**Figure 3-1. Typical Active, Full-Duplex, TTY Current-Loop Interface.**

# 4. Configuration

## 4.1 Switch Settings

The CLIC unit is capable of operating in six different configurations determined by the settings on the DIP switches. Each channel has ten DIP switches mounted inside the unit on the printed circuit board directly behind each current loop terminal block. Each channel of the unit is configured at the factory for full-duplex, passive operation. If an alternate configuration is desired, set the DIP switches according to **Table 4-1**.

**Table 4-1. DIP Switch Settings.**

Configuration	Switch										Remarks
	1	2	3	4	5	6	7	8	9	10	
Full Duplex, Passive	0	X	0	X	0	0	X	0	X	0	Standard Config.
Full Duplex, Active	X	0	X	0	X	X	0	X	0	X	
Half Duplex, Passive	0	X	0	X	0	0	X	0	X	0	Add jumper +T to -R -T = -Loop and +R = +Loop
Half Duplex, Active	X	X	0	X	0	0	X	0	0	X	+T = -Loop and -R = +Loop
Act. Xmit, Pass. Rec.	0	X	0	X	0	X	0	X	0	X	
Pass. Xmit, Act. Rec.	X	0	X	0	X	0	X	0	X	0	

X=On or Closed and 0=Off or Open

### 4.2 Half-Duplex Operation

Figures 4-1 and 4-2 show the unit configured in the half-duplex mode, as a passive and an active device. In the half-duplex mode, transmission can take place in only one direction at a time between two devices. No keyboard lockout is provided.

### WARNING

The active connection defeats the isolation of signal line and local circuits. Install high-potential breakdown grounds (lightning arrestors, etc.) on the signal line. Also, make sure that a protective ground is connected to the frame.

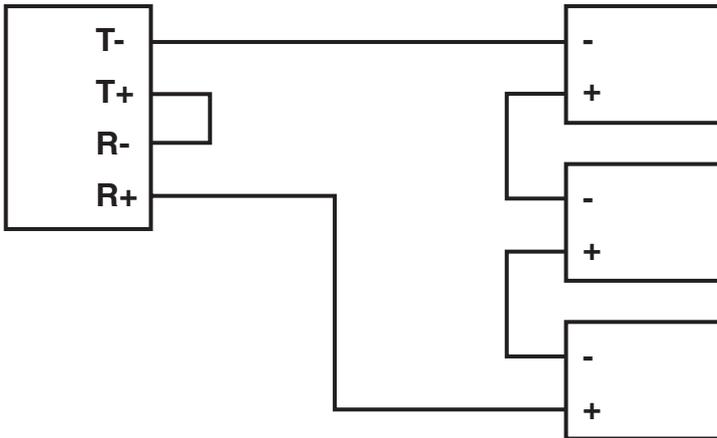


Figure 4-1. Passive Configuration.

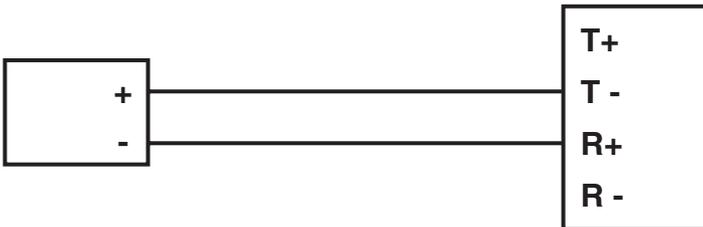


Figure 4-2. Active Configuration.

*External Current Loop Cable Connections for Half-Duplex Operation***2-Wire Half-Duplex Passive:**

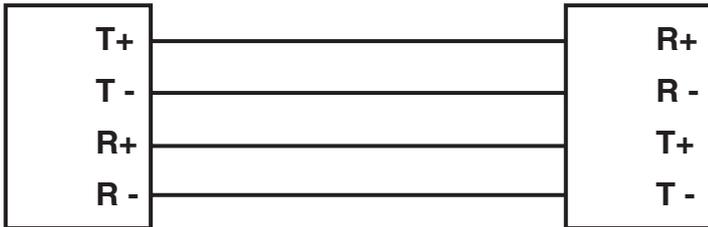
1. Jumper Terminal 1 (+T) to Terminal 4 (-R)
2. Terminal 2 (-T) is the - Loop.
3. Terminal 3 (+R) is the + Loop.

**2-Wire Half-Duplex Active:**

1. Terminal 1 (+T) is not connected.
2. Terminal 2 (-T) is the + Loop.
3. Terminal 3 (+R) is the - Loop.
4. Terminal 4 (-R) is not connected.

**4.3 Full-Duplex Operation**

**Figure 4-3** shows the unit configured in the full-duplex mode. In this mode, transmission can take place in both directions simultaneously between two devices.



**Figure 4-3. Full-Duplex Operation.**

*External Current-Loop Cable Connections for Full-Duplex Operation*

1. Terminal 1 (+T) connects to the +Rec of your device.
2. Terminal 2 (-T) connects to the -Rec of your device.
3. Terminal 3 (+R) connects to the +Trans of your device.
4. Terminal 4 (-R) connects to the -Trans of your device.

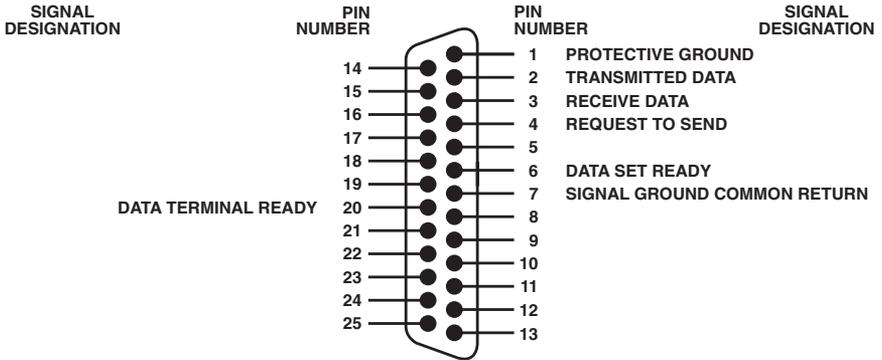
## 5. EIA/CCITT Interface Connector Pins

The unit is made with female DB25 connectors wired as a DTE, as shown in Table 5-1.

**Table 5-1. DTE Pinning.**

<b>Pin No.</b>	<b>EIA Circuit</b>	<b>Circuit Description</b>
1	AA	Protective Ground (electrically connected to the chassis)
7	AB	Signal Ground (common return)
2	BA	Transmitted Data (Output from Interface Unit)
3	BB	Received Data (Input to Interface Unit)
4	CA	Request to Send (always asserted)
20	CD	Data Terminal Ready (always asserted)
6	CC	Data Set Ready (always asserted)

**RS-232 Interface**



**Figure 5-1. RS-232 Interface.**

## 6. AC Power

The third wire of the AC power cord (green wire) is tied to the metal chassis and to pin 1 of the EIA connectors. Frame ground (pin 1) is not tied to the DC return (pin 7). Unless specified, the units are internally configured for 115 VAC.

To convert the unit to 230 VAC operation:

1. Remove the cover and move the voltage selector switch to the 230 VAC position. The switch is located on the left side of the printed circuit board behind the ON/OFF power switch.
2. Replace the 1/2 amp fuse with a 1/4 amp type.
3. Replace the cover.

### **WARNING**

**This unit operates with voltages that can be harmful. Do not remove the cover or change switch positions with the AC power cord plugged into an outlet.**



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