CesCom

N400
ACA Approved

CE0029DHV

RS-232 to RS-422/485 ISOLATED CONVERTER

FEATURES

- 3KV Optical isolation barrier
- 110VAC power switch-mode regulation
- RS422/485 lightning protection
- ATE - Automatic Transmit Enable
- Fast 1.5bit RS485 line turn-around
- Compact vertical DIN rail mounting
- RS232 DB9F (DCE) Connection
- LED indicators

OVERVIEW

Many PCs and controllers are equipped with RS-232 ports which are designed for short distance

point-to-point low-speed communications whereas RS-422/485 balanced networks are designed to run long distances and permit multi-drop operation and can run at megabit speeds. Typically a simple RS-485 converter may be used to interface the PC to the balanced network.

One side effect of such long line lengths can be harmful transients and ground-loop currents

which can introduce errors or disrupt communications or even damage the host. The CE-0029 isolates the RS-232 interface from the RS-422/485 side through an optical isolation barrier rated at over 3,000 volts. Not only does this prevent harmful voltages being coupled through to the RS-232 side but it also isolates the RS-232 ground from the RS-485 “grounds” which otherwise could affect the inherent common-mode voltage rejection, a problem on many balanced networks.

RS-485 networks are half-duplex and normally require a transmit enable signal, something akin to the “press to talk” on 2- way radios. Most systems rely on the RTS signal to control the transmit enable but this also requires that the RS-232 software be adapted if possible to do so. Cescom’s range of converters feature Automatic Transmit Enable (ATE) processing based upon precise timing related to each character sent so that the transmit enable automatically engages on the reception of a character from the RS-232 side. This transmit enable stays asserted for the length of the character and deasserts if no other characters have been detected within 1.5 bits after the stop bit. This makes the CE0029 the perfect candidate for RS-485 networks which require a fast line-turnaround without the need for special software.

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SPECIFICATIONS

Supply Voltage 110VAC/DC
Current 25ma @110VAC
Physical 75mm x 55mm x 110mm (HWD)
Weight 200 grams (approx)
Case Material PC(30%GV),RAL7032,UL94 V-1
RS-232 115.2K baud max
RS-485 115.2K baud max (limited by RS-232 speed)
Control ATE
ATE turnon 1us max
ATE turnoff 1.5 character bits or Blind Plug PC UL 94 V-2 1ms**
Environment -40'C to +85'C operating
Indicators RS-232 TxData, RS-232 RxData, Power
Standards AS/NZS 3260;AS/NZS CISPR 22:2006, C Tick compliant N400

OPERATION

RS-232 to RS-485

In the idle condition the RS-485 transmitter is disabled and ready to receive characters from the RS-485 side. When a character is received from the RS-232 side the RS-485 transmitter is turned on with the detection of the start-bit and stays enabled for the length of the character plus 2.5 stop bits. The ATE is able to time the character if the baud-rate is set accordingly via an internal factory jumper on the ATE processor. Once the RS-232 receive input falls idle and the ATE times out the unit will be able to receive data from the RS-485 bus again.

RS-485 to RS-232

As long as the RS-232 receive input is idle and the ATE is timed out then all RS-485 traffic will appear on the RS-232 transmit.

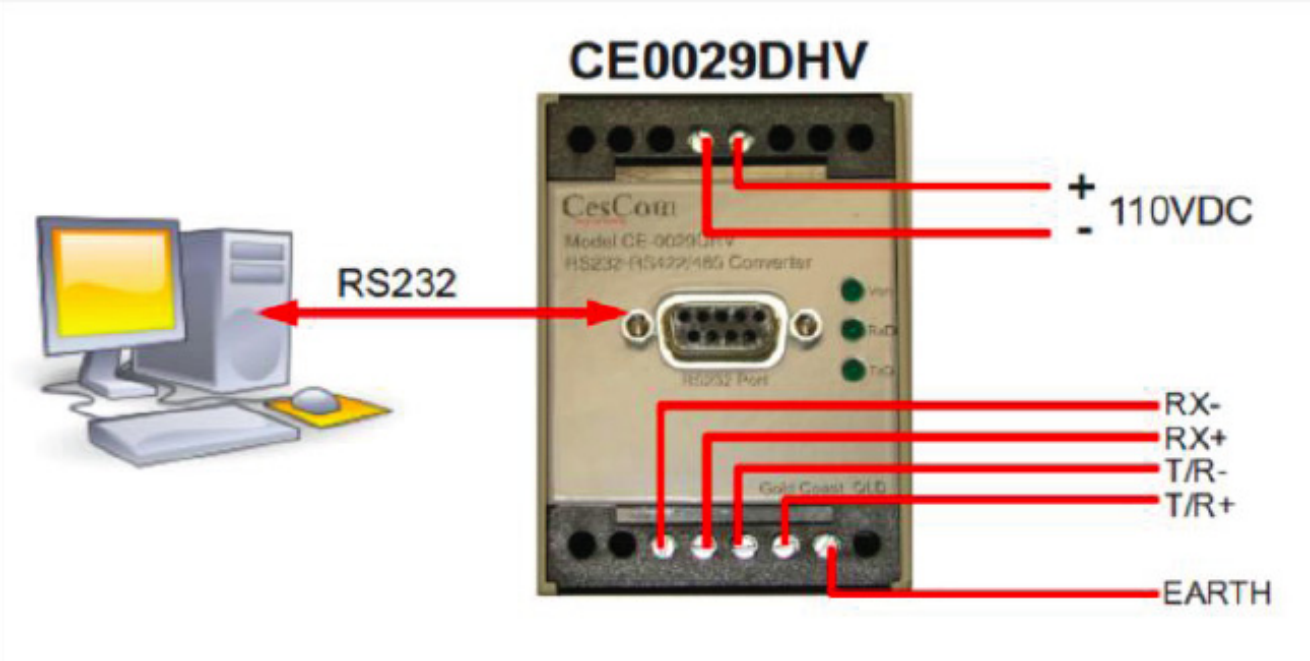
RS-232 to RS-422

This full-duplex mode works exactly like the RS-485 mode except the receive lines are dedicated and the internal ATE permits RS-422 multidrop operation.

CONNECTIONS

	RS232	DESC
2	RXD	RS232 Receive data (in)
3	TXD	RS232 Transmit data (out)
5	GND	RS232 common
	POWER	
J2.1	110VAC	
J2.1	110VAC	
	RS422	
J6.1	RX-	RS-422 Receive B (requires 120ohm termination to A)
J6.2	RX+	RS-422 Receive A
J6.3	T/R-	RS-422 Transmit B or RS-485 Transmit/Receive B *1
J6.4	T/R+	RS-422 Transmit A or RS-485 Transmit/Receive A *1
J6.5	EARTH	Protective ground only (do NOT connect signal ground)

Fig 1. CE0029DHV CONNECTION DIAGRAM



INSTALLATION NOTES

- Note: an installation drawing is supplied with each unit
- Connect the CE-0029DHV to the din rail
- Connect a 110VAC/DC power supply between terminals 1 and 2 of J2
- Connect pin 5 of terminal block J6 to an external earth. Do not connect this to signal ground.
- Connect the RS422/RS485 lines to and from the CE-0029DHV as per the above table
- Connect a 120 ohm termination resistor across pins 1 and 2 of J6 if the transmission line exceeds 100m for an RS422 system.
- Connect the RS232 input to the C-0029DHV as per the above table
- The unit is ready for operation