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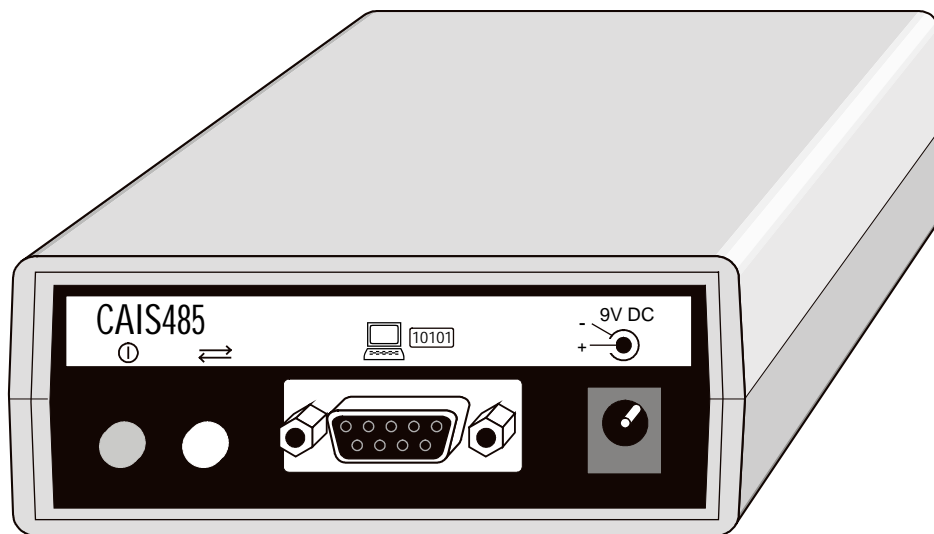
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# CA-Link Interface Module CAIS485 User Manual

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## **1. Introduction**

The Pennywise CAIS485 is an interface module for the Pennywise CA-Link central control system. It has been designed as an interface between any personal computer with a serial port running CA-Link and an RS485 network with cinema automation units.

It converts data from a serial port of a PC (which is RS232) to RS485. The CAIS485 also provides optical isolation of signals between the PC and the RS485 network.

### **1.1 Features**

The CAIS485 interface module has the following features:

- Simple 9 pin serial port cable connection to PC. (supplied)
- Optical isolation of signals between PC and the RS485 network.
- On board Micro-controller precisely controls RS485 transmit enable.
- Precision response back to PC.
- Multiple style connectors to RS485 network.
- Separate power supply. (supplied for Australian customers only)
- Power and traffic indicator LEDs.

## **2. Setting up the RS485 Network**

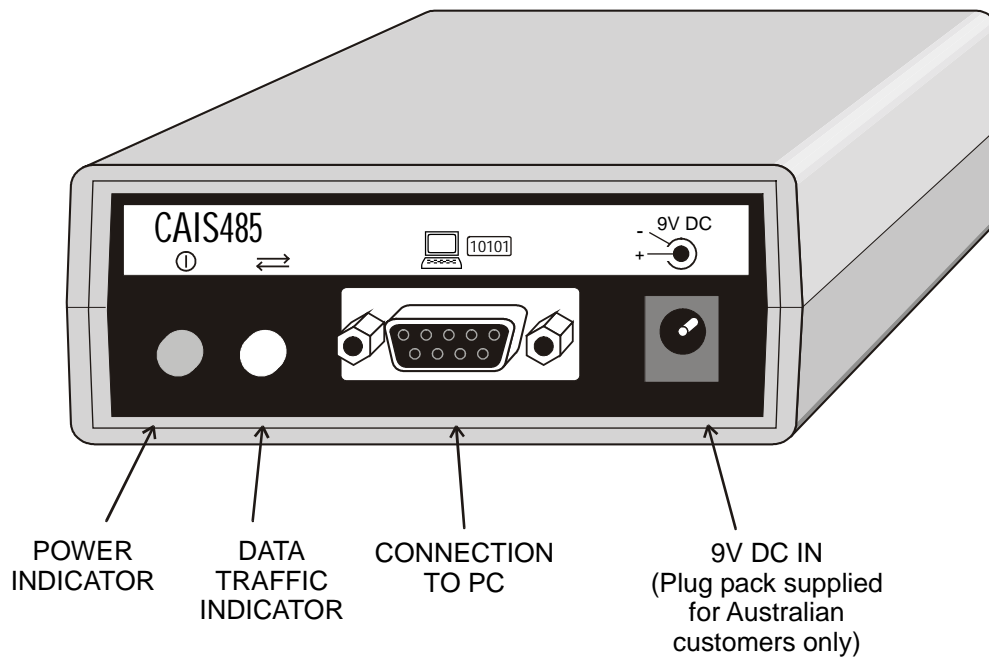
Below is a brief description on setting up the RS485 network for CA-Link. A more detailed discussion on this topic is available in the document titled: “*Cinema Automation Network Connections Using RS-485 Technical Manual*”

### **2.1 Overview of setting up RS485**

- RS485 has three (3) connections, designated RT+, RT- and SHIELD.
- To connect these, use a shielded twisted pair cable with a characteristic impedance of 120 OHMS. (e.g. Belden 9841, Hartland HCY366)
- Do not exceed a total length of 1200 metres (4000ft)
- Run the cable in a single continuous path or “daisy-chain” configuration. Do not create stubs or T’s.
- Connect the shield of the cable to “SHIELD” of the connector. The reliability of the network will be greatly reduced without this connection.
- The shield of the cable IS NOT GROUND. Do NOT connect this to 0 volts or chassis ground.
- The cable must be terminated by enabling termination resistors (TE) on the devices<sup>1</sup> at each end. There should ONLY be 2 terminating resistors enabled on the network.
- Bias the cable by enabling BOTH Bias resistors at ONE end of the cable. There should ONLY be ONE pair of bias enable jumpers enabled on ONE device<sup>1</sup> on the line. The device with the bias resistors enabled, MUST be powered on.
- The device<sup>1</sup> with the bias enable resistors enabled must be powered ON at all times.

<sup>1</sup> A device can be a CAIS485, CA21, CA100, EMK1, Ezymation, CS30 or SPD1.

## 2.2 The Front of the CAIS485 Interface Module



*Fig 2.1 Front view of CAIS485.*

- **POWER INDICATOR:** When power is supplied to the unit, this LED will be illuminated.
- **DATA TRAFFIC INDICATOR:** When CAIS485 is receiving data, this LED will blink green. When CAIS485 is transmitting data, this LED will blink red.
- **CONNECTION TO PC:** Connect the female end of the 9 pin data cable supplied to this connector. Connect the other end to the desired COM port of the PC.
- **9V DC IN:** Connect the 2.1mm DC power plug to this socket.

## 2.3 The Back of the CAIS485 Interface Module

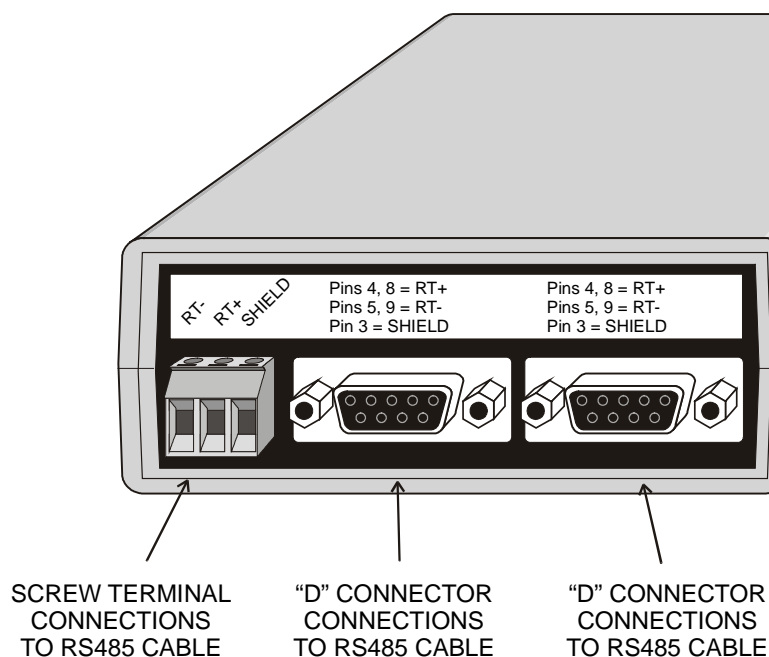


Fig 2.2: Rear view of CAIS485.

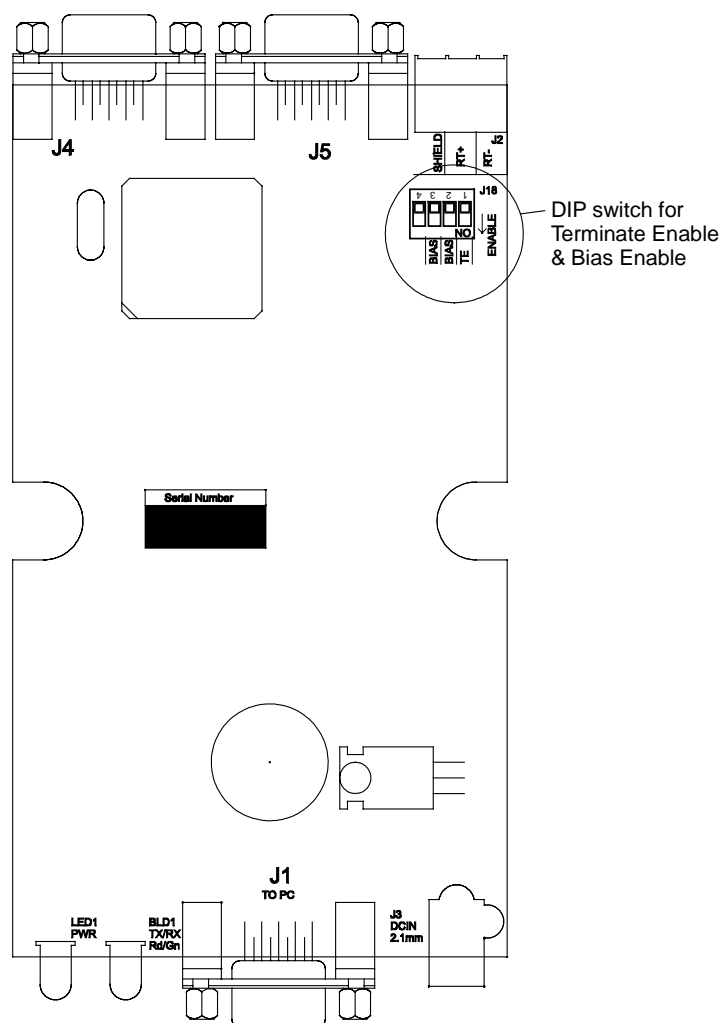
- The RS485 network cable can be connected to any of the three (3) connectors on the back of the unit. (*discussed later*)

## 2.4 Terminate Enable and Bias Enable on CAIS485

Depending on the topography of the RS485 network, it may be necessary to enable termination and/or bias at the CAIS485 interface unit.

If this is the case, then remove the two screws at the bottom of the unit and carefully remove the top cover.

Locate the 4 pole DIP switch designated J18. (circled below)



*Fig. 2.3 Printed circuit board of CAIS485 with DIP switch circled.*

- To enable termination on the CAI485, slide DIP switch pole 1 “ON”. (in the direction of the arrow)
- To enable both bias resistors, slide poles 2 & 3 of the DIP switch to the “ON” position. (in the direction of the arrow)

### 3. Connecting to CAIS485

#### 3.1 Data Cable

The CAIS485 interface module connects via a 9 pin data cable (supplied) to a serial port (COM1 to COM4) on a PC. (see fig 3.1)

This 9 pin data cable plugs into the **front** of the unit. (the same side as the 2 indicator LEDs)

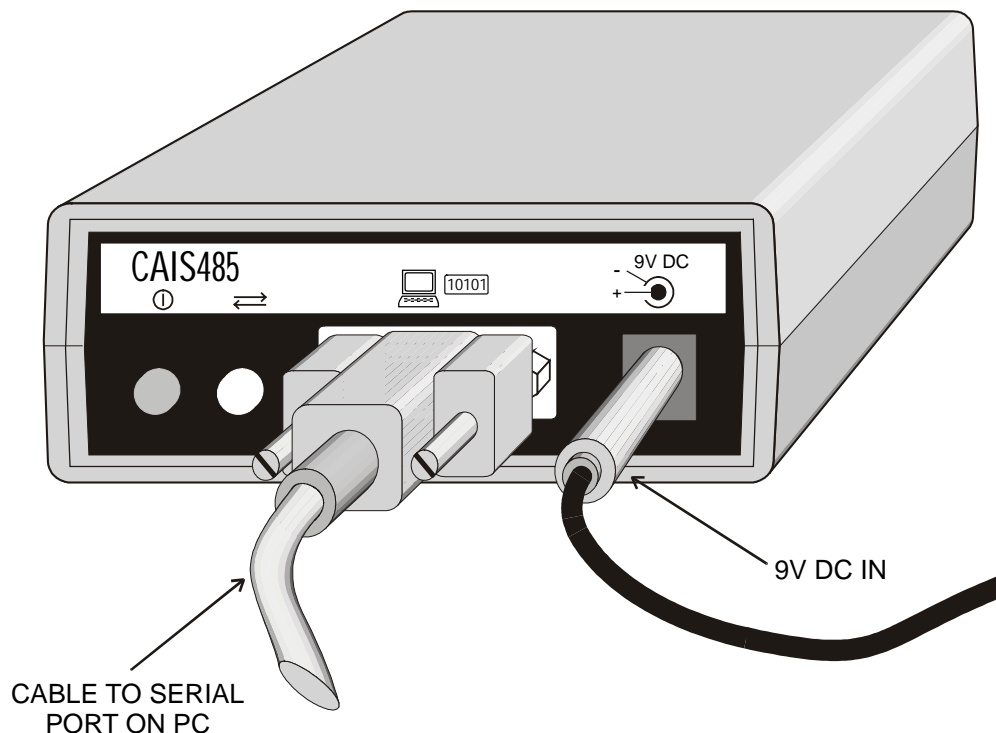
#### 3.2 Power pack

The CAIS485 interface module requires a 500mA 9VDC supply. (Supplied to Australian customers only)

*For non-Australian customers:*

*The CAIS485 unit requires a double insulated (NOT connected to ground) power supply capable of supplying 500mA at 9 VDC with a 2.1mm DC plug.*

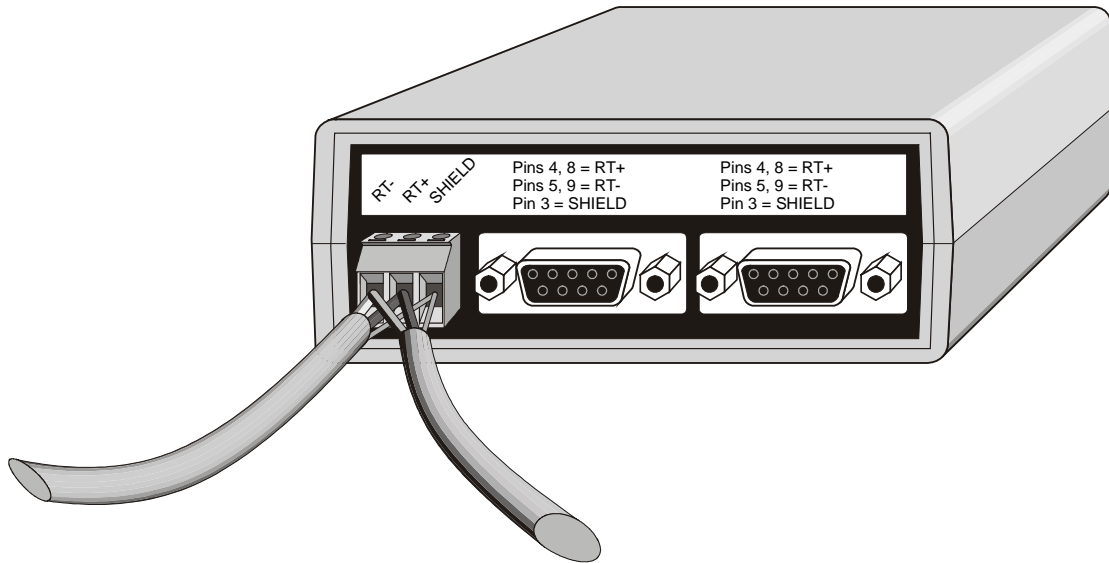
Connect the DC power connector as shown in figure 3.1.



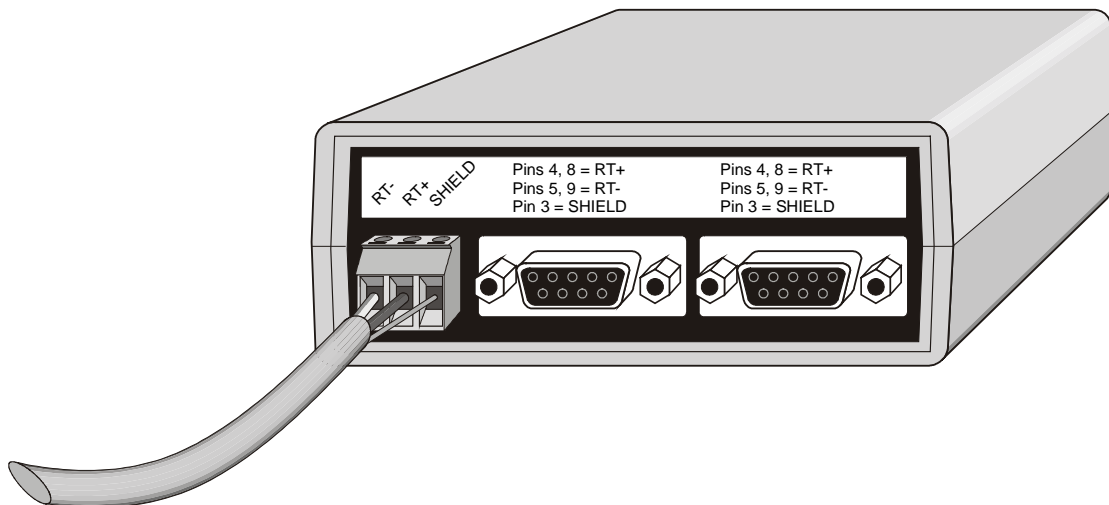
*Fig 3.1: Connections to front of CAIS485*



### 3.3 Connecting a stripped RS485 cable



*Fig 3.2: CAIS485 connected between two nodes of an RS485 network.*



*Fig 3.3: CAIS485 connected at one end of the RS485 network cable.*

### 3.4 Connecting an RS485 cable with D-Connectors

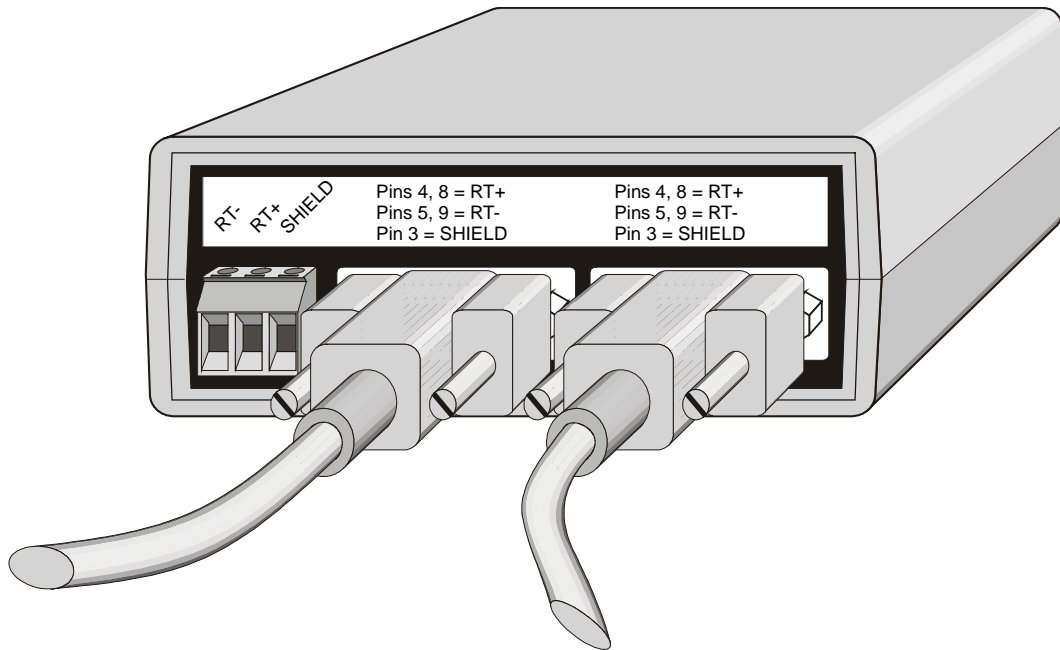


Fig 3.5: CAIS485 connected between two nodes of an RS485 network.

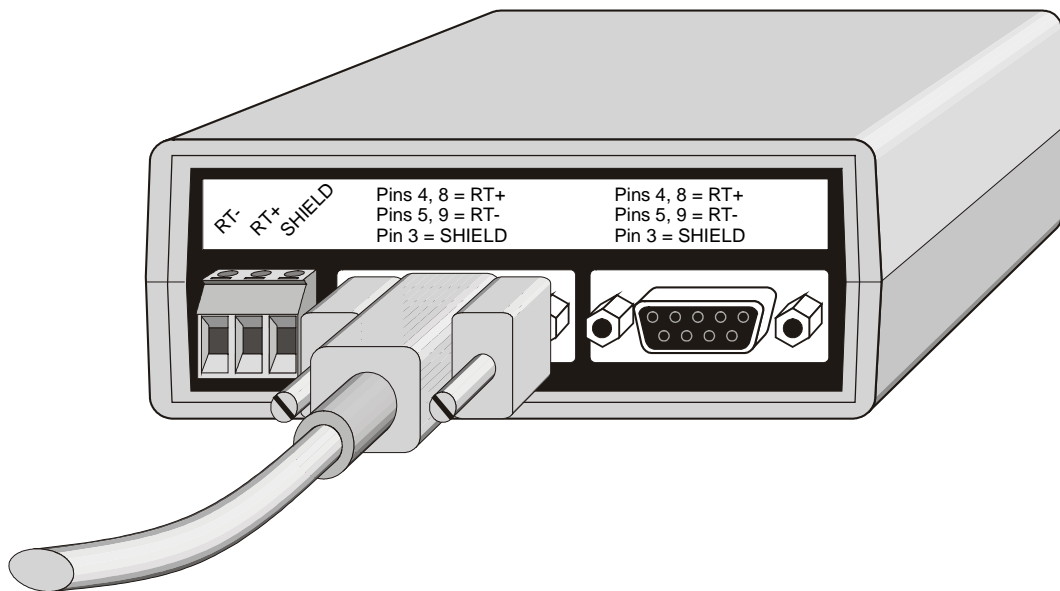


Fig 3.3: CAIS485 connected at one end of the RS485 network cable.

## **4. Configuring CA-Link to use CAIS485**

Using CAIS485 with V1.x of CA-Link is very simple.

From the “Setup” menu in CA-Link, click on “Select COM Port” and select the desired COM port. (COM1 to COM4)

Note: If the “Select COM Port” menu item is not visible, contact Pennywise Peripherals for an upgrade.

If CA-Link is successfully communicating with the CAIS485 interface module, then status should appear normal.

If the status bars on the status screen are shaded, CA-Link cannot communicate with any device on the RS485 network. Check the following:

- The power pack should be connected to CAIS485 and the red power indicator should be illuminated.
- The 9 pin serial data cable should be plugged into the relevant COM port on the PC and the other end into the front of the CAIS485 unit. (the front has the LEDs and ONLY one 9 pin female connector)
- If the data traffic indicator LED only blinks green randomly, then CA-Link cannot communicate with CAIS485. Check the connection to the PC and make sure the COM port setting is correct.
- If the data traffic indicator LED only blinks red approximately every half second, then CAIS485 cannot communicate with any devices on the RS485 network.
  - Check that at least one device is switched on and connected to the RS485 network.
  - Check termination and bias as described in section 2.1.
  - Check cabling to the BACK of the CAIS485 unit. (the back has two 9 pin “D” connectors and one 3 pole screw terminal)

If problems persist, contact your distributor.

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