CAN 8 + 8 Controller for Tieline Codec Products
8 TTL Compatible Inputs and 8 CMOS Relay Outputs

Utilising the **Tieline** Control Area Network (CAN) system up to eight (8) CMOS relays and eight (8) input controls could be added to a system.

CAN is a Multi-Node serial buss to which several **Tieline** products can be connected simultaneously each with their own unique ID address. A master device can provide power or an external plug pack can be utilised where there are long cable runs. This should be 9 volts DC, 500mA

Shielded dual twisted pair cables are recommended. Where cable runs are long and master power source is being used, heavier conductors will be required.

Screw terminal plugs are provided to allow for easy on site wiring. These can be hot plugged without any impact upon the units' performance.

Inputs
The input signal is referenced to chassis ground. All eight ground terminals are connected together and to the chassis. The input device is an optocoupler with a 680 ohm resistor in series with 5 volts. DO NOT feed voltages into the inputs.

Operation is as simple as jointing the input pin to the ground terminal. This can be via a remote relay contact or the open circuit collector of a transistor or FET.

Outputs
CMOS field effect transistors switch a low impendence path between the two pins when activated. These are opto-isolated and floating above ground. It is important to current limit the source as damage will result where the current exceeds 100mA. No more than 48 volts should be used as a safety precaution. The resistance of the CMOS element is approximately 25 ohms in the ON state.

Setup
A clear understanding of the units being connected to the CAN system is essential. If there are conflicts on the buss (units with the same node ID and/or operational capabilities) it is possible that the system will fail.
All products must be set within the strict Tieline set-up protocols.

Internal DIP switches set the units node ID and operational features. These must be selected to the correct positions for operation to be possible. The unit is shipped with a default selection. If changes are required, disconnect power, remove the rear screws and grounding screw on the bottom of the box. Slide the PCB card out and make changes as needed. Ensure the grounding screw is secure when reassembling.

DIP Settings

Function (Sw 2,1)	Setting
OFF, OFF	First CAN 8+8 unit
OFF, ON	Second CAN 8+8 unit (future software feature)
ON, OFF	Third CAN 8+8 unit (future software feature)
ON, ON	Fourth CAN 8+8 unit (future software feature)
Function (Sw 4,3)	**Setting**
Switch 3 Off	Pulse Relay Mode
Switch 3 On	Contineous On Relay Mode
Switch 4 Off	Piezo Alarm Off
Switch 4 On	Piezo Alarm On

It may be necessary to set a particular mode of operation for the desired control system when used with Tieline CoDec products. This should be done once the control system is determined in consultation with the CoDec operators manual.

Normally, one CAN 8+8 will communicate with another one at the end of a link between two CoDec's. There are special modes of operation that can be utilised in conjunction with specific optional software sold by Tieline Technology.

CMOS Relay Operational Mode
The CMOS relays can be set to work in two ways. They can pulse ON for one second or they can stay ON until another command is sent to turn them OFF. The default mode is for a one second pulse.

To change the relay operational mode:
Make changes to DIP Switch 3 as per the table provided.

Front Panel LED Indicators
The LED's on the front panel of the unit indicate the state of the relays and inputs. They also indicate a connection problem on the CAN buss by scanning back and forth.

Piezo Alarm
An internal piezo alarm is fitted to act as an audible indicator when either an input or an output function occurs. The default for this is off. It can be activated by changing DIP switch 4 settings per the table provided.

Operation Distances
Cable types, thickness and length will all determine any limitations in the units performance. In addition, depending on the unit in use, current consumption will limit some products being powered from the buss. In this case a local power supply should be connected to the CAN 8+8.