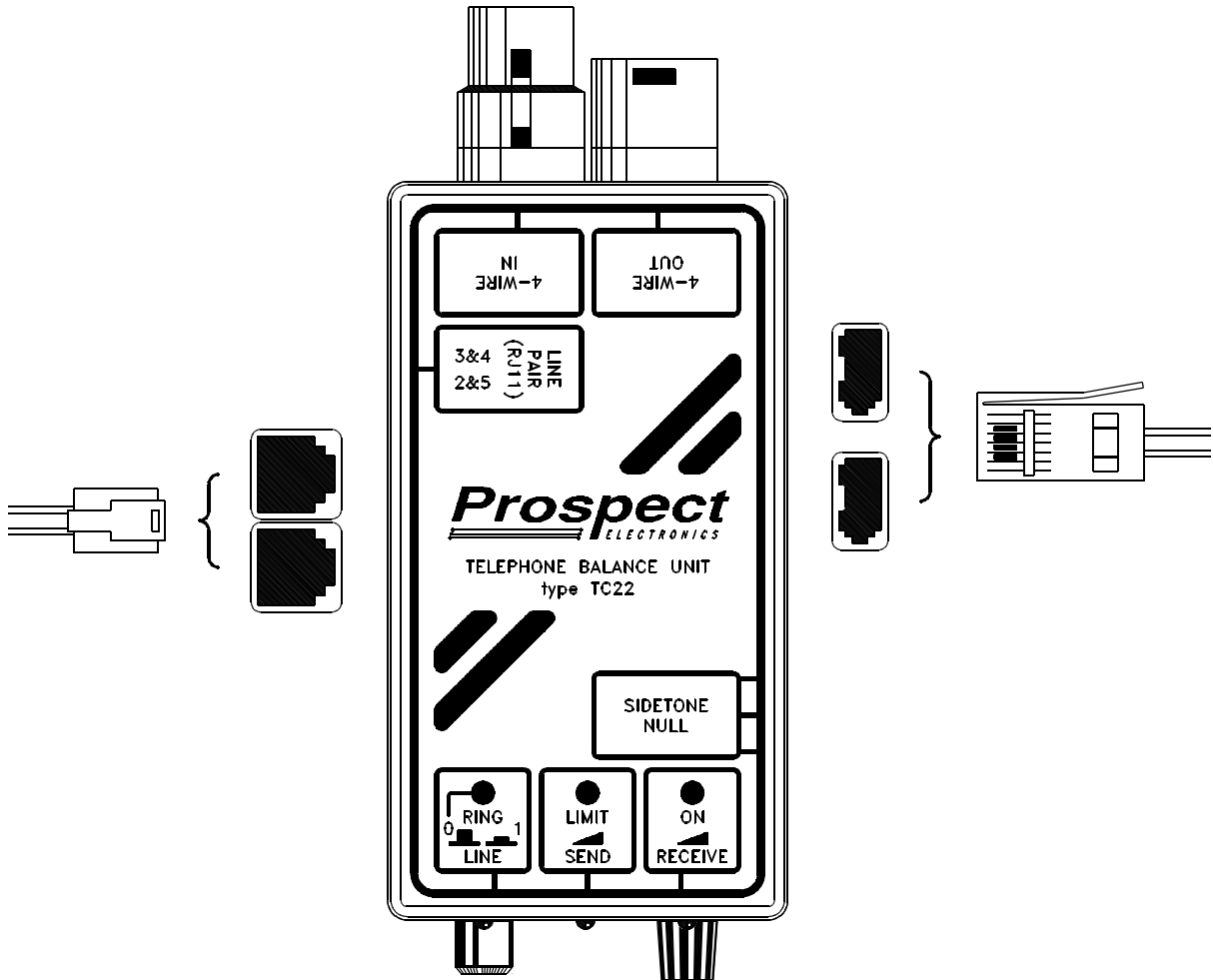


## TELEPHONE BALANCE UNIT type TC22

The TC22 line-powered telephone balance unit provides a high degree of separation between send and receive signals, enabling 4-wire communications systems to interface with the telephone network. In telephone IFB applications, the high drive capacity at the 4-wire output enables a presenter's earpiece to be connected directly to the unit without an external amplifier.



### FEATURES

- \* Isolated, full-duplex 4-wire interface to non-digital telephone direct exchange lines.
- \* The unit is line powered, requiring no battery or external power.
- \* Simple optimization of sidetone rejection with any country's telephone system.
- \* LED's indicate "ring" and "off hook" conditions.
- \* Input level control with line-sensing limiter and limit indicator.
- \* High drive output with level control for direct feed to presenter's earpiece, etc.
- \* Loop-through British & American line sockets provide universal connection to line and telephone set.
- \* Connection to the telephone set is maintained while the unit is in use.
- \* Small, rugged metal case with XLR3 male & female 4-wire connectors.

## TELEPHONE BALANCE UNIT type TC22

### DESCRIPTION

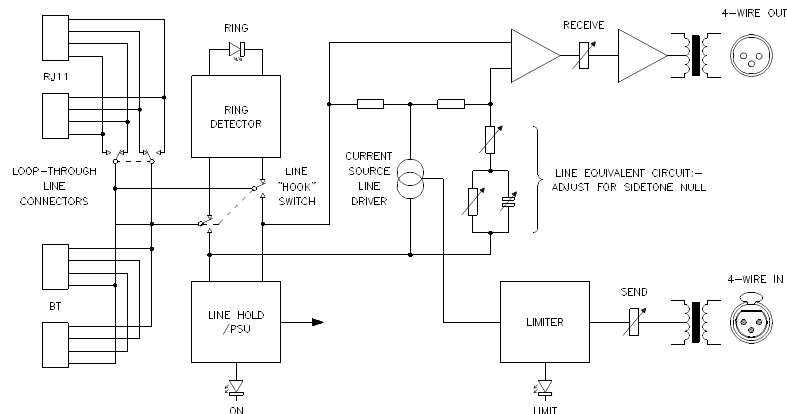
This extremely compact unit is powered from the telephone line and provides an interface to a 4-wire circuit with separate level control of send and receive signals. Optimum rejection of the input signal on the 4-wire output is achieved in a bridge circuit by adjusting three elements which simulate the complex line impedance. This can be used to compensate for local line variations or to adapt to the telephone systems of other countries, where line characteristics may differ. Optimization of the sidetone rejection does not involve the use of any test equipment and can be easily carried out while the system is in use. Although the signal level being sent to the line can be manually adjusted over a wide range, the level control is followed by a limiter which senses the available DC line voltage to ensure that the line signal is not distorted. The limiter drives an LED to indicate the onset of limiting.

Although the output stage can drive a presenter's earpiece in a telephone IFB application, the level control may not be accessible to the presenter, who will normally be situated some distance from the unit. The presenter may then require to have local control of the earpiece signal level, which can be provided by the EPC20 belt-pack unit. The EPC20 enables the signal level in a 2000 ohm earpiece to be controlled by a passive potentiometer and provides a connection between either an A or B-gauge 6.35mm (1/4") earpiece jack plug and an XLR3 cable plug.

To enable communication between the 4-wire circuit and the telephone network, the 4-wire and line connections are made to the unit and the "hook" switch is pressed to power the unit from the line. This will be indicated by the ON LED, and can either be done after an outgoing call has been dialled on a telephone set connected to the unit, or to answer an incoming call after the RING LED is seen to flash, (a telephone set is not required for incoming calls unless an audible ring is required). If the sidetone level at the 4-wire output is found to be excessive, the outgoing signal level should be reduced or the balance controls adjusted to minimise it.

In addition to the line connectors used by British Telecom, RJ11 sockets have been included to enable connection, via an adaptor if necessary, to the telephone network of any other country. To ensure compatibility with all systems, a switch is provided to select either the inner or outer pair of conductors on the RJ11 connector.

### BLOCK DIAGRAM



### SPECIFICATIONS

#### 4-WIRE INPUT

INPUT IMPEDANCE  
INPUT LEVEL RANGE

10k ohm, transformer coupled on XLR3F connector  
-12dBu to +8dBu before limiting, with average line

#### 4-WIRE OUTPUT

OUTPUT IMPEDANCE  
OUTPUT LEVEL RANGE  
SIDETONE REJECTION

150 ohms, transformer coupled on XLR3M connector  
-12dBu to +8dBu, for average line level  
30 to 40dB average, depending on line characteristics

#### 2-WIRE

OFF-HOOK VOLTAGE  
2-WIRE CONNECTORS

3V minimum  
2 x RJ11 (American), 2 x BT 603A (British)

#### PHYSICAL

DIMENSIONS  
WEIGHT  
CASE

H34mm W60mm L165mm  
350g  
Diecast metal with light grey finish