



- Universal operator interface compatible with the TSL range of tunnel monitors
- Provides visual display of instrument readings, fault warning or alarm conditions
- Multi-heading capability; with option to control up to 8 separate instruments (via RS485)
- Choice of interface options with configurable relays and outputs
- Wall mounted unit suitable for local or remote connection
- Easy to read back lit LCD display

The TSCU (Tunnel Sensors Control Unit) is an operator interface which provides a direct link for the operator to visually see information directly from an instrument connected to it such as readings, fault warnings or alarm signals. The TSCU can also be used to set-up and control the connected instruments with similar functionality to the PC based Utility software supplied with each instrument.

The TSCU is a wall mounted unit which consists of a numeric / directional keypad, a two line LCD display and a terminal compartment. The TSCU is suitable for mounting locally to the instrument or remotely, such as in a control room.

The TSCU has multi-heading capabilities so it can be connected directly to a single instrument or to a network of instruments via a single umbilical cable which carries power and communications (RS485). The SCADA interface connections can be made directly to the TSCU and / or to the instrument. This versatility offers the flexibility to accommodate a wide range of wiring schemes.

When the TSCU is connected to a single instrument this cable can be used to power the head as well as provide the RS485 communication between the instrument and the head. However, when the TSCU is connected to multiple instruments these instruments must be powered locally and the umbilical cable to the TSCU only carries the RS485 communications.

The TSCU offers a variety of industry standard interface options. Scalable analogue outputs are available in the form of isolated 0 / 2 / 4 - 20 mA loops. Digital outputs are available in the form of relay contacts for service alarm (data valid) and / or programmable level alarms.

Serial communications channels are available in both the instruments and the TSCU; RS485 is available as standard.



**Specification:****Instrument Interface**

| No. | Parameter                    | Units | Min | Max | Comment                  |
|-----|------------------------------|-------|-----|-----|--------------------------|
| 1   | Serial Comms                 |       |     |     | Modbus RTU via RS485     |
| 2   | Number of Instruments on Bus |       |     | 8   |                          |
| 3   | Length of Serial Comms Cable | km    |     | 1   | Total to all instruments |

**Power**

|   |                              |     |     |     |                                   |
|---|------------------------------|-----|-----|-----|-----------------------------------|
| 4 | Voltage                      | Vdc | +24 |     | Optional 90-260 Vac PSU available |
| 5 | Voltage Tolerance            | %   | -10 | +10 |                                   |
| 6 | Nominal Current Consumption  | mA  |     | 600 | TSCU power requirements only      |
| 7 | Power Up Current Consumption | mA  |     | 600 | TSCU power requirements only      |

**User Interface Options**

|    |  |    |           |    |   |
|----|--|----|-----------|----|---|
| 8  | Serial Outputs                         |    |           |    | Modbus RTU via RS485<br>USB (inside terminal compartment) |
| 9  | Analogue Outputs (four or eight)       | mA | 0 / 2 / 4 | 20 | Isolated and scalable (user selected)                     |
| 10 | Digital Relay Contacts (four or eight) | A  | 0         | 3  | @30Vdc (signal levels and data valid)                     |

**Physical**

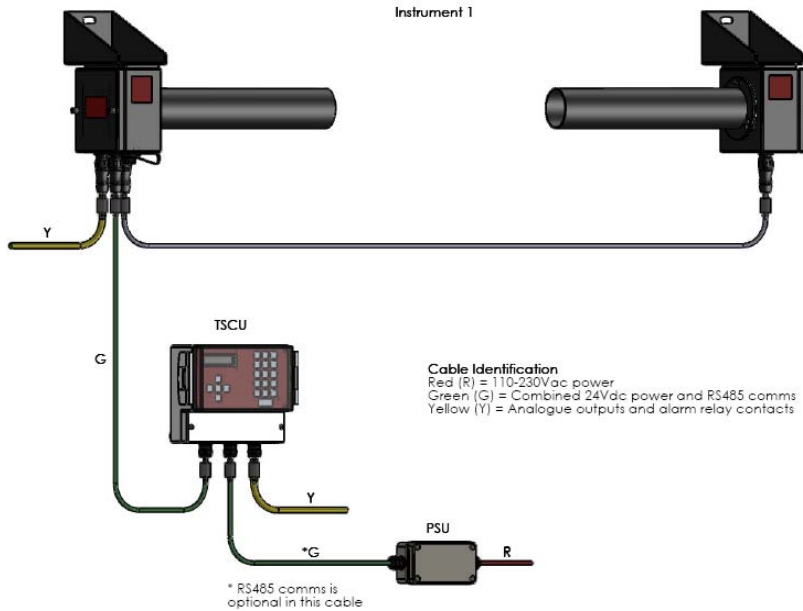
|    |                       |        |                 |     |  |
|----|-----------------------|--------|-----------------|-----|--|
| 11 | Ingress Protection    |        | IP65            |     | Hinged door and terminal compartment closed  |
| 12 | Operating Temperature | °C     | -20             | +55 |  |
| 13 | Operating Humidity    | %      |                 | 100 |  |
| 14 | Regulatory Compliance |        |                 |     | 89/336/EEC (Electromagnetic Radiation)<br>73/23/EEC (Low Voltage)                            |
| 15 | Materials             |        |                 |     | Aluminium front panel with PU laminate overlay,<br>and PC enclosure with nylon cable glands. |
| 16 | Dimensions            | mm     | 184 x 232 x 115 |     |  |
| 17 | Weight                | kg     |                 | 1.0 |  |
| 18 | Warranty              | Months | 24              |     | Return to base warranty. Extensions available.   |



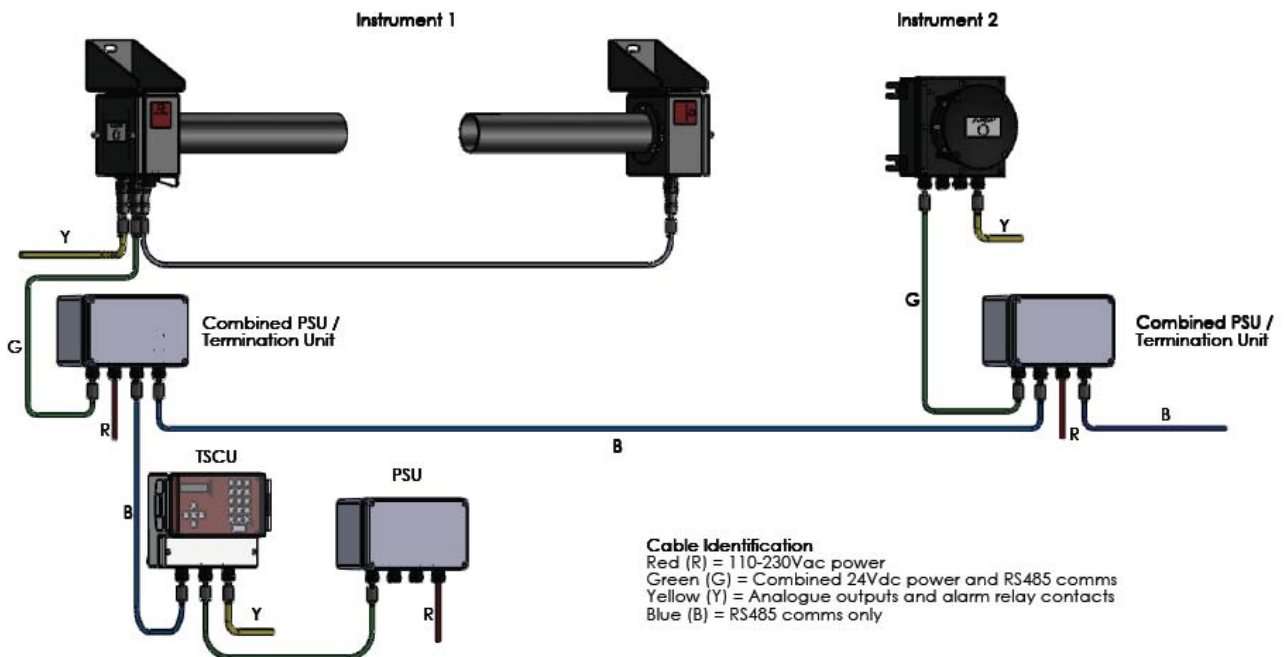


Configuration Options:

Single Instrument

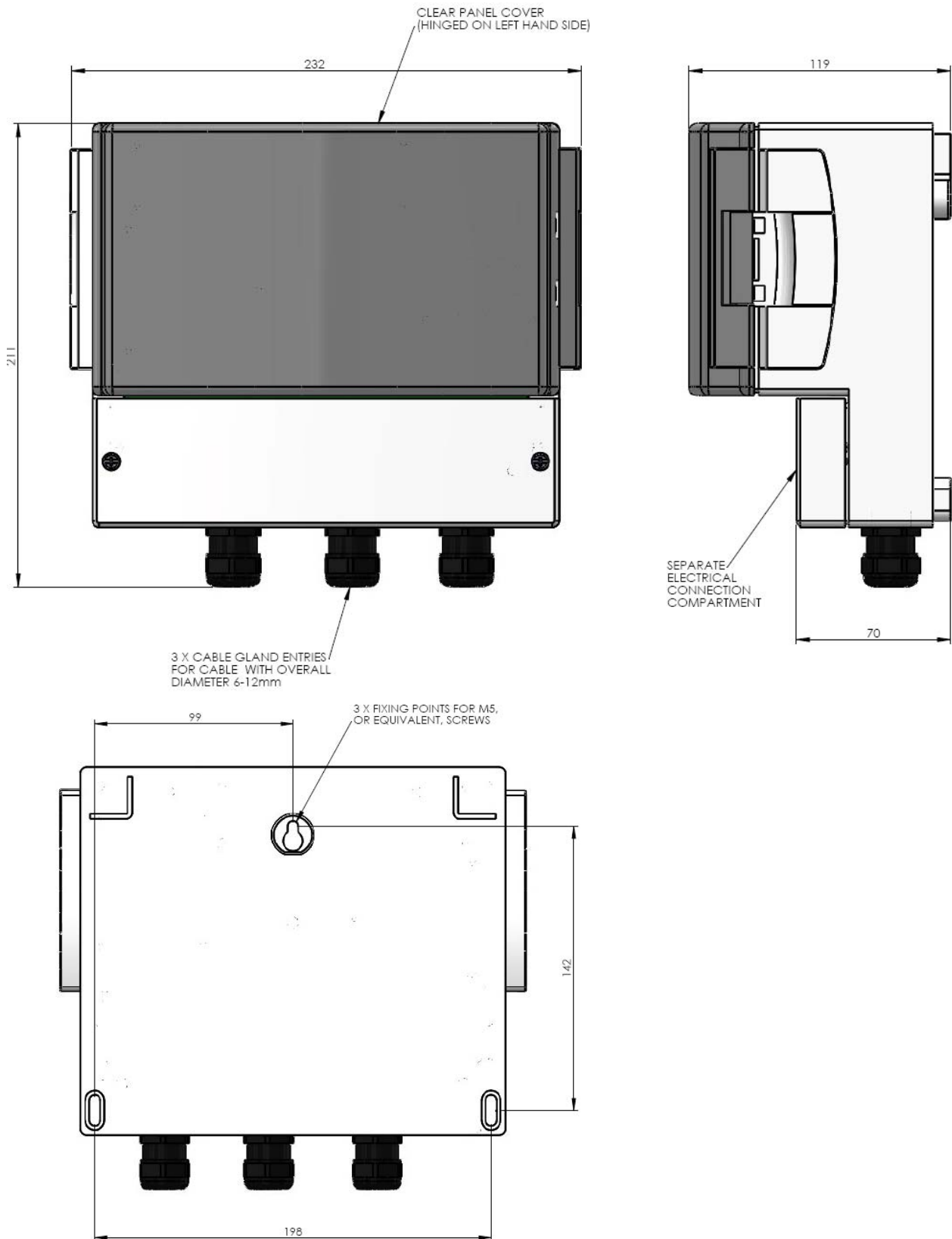


Multiple Instruments








Dimensions (mm):





Options & Accessories:

| Description  | Order Code                       | Notes   |
|--|----------------------------------|---|
| <p>TSCU</p>                               | <p>TSL-TSCU-4<br/>TSL-TSCU-8</p> | <p>4 analogue outputs and relays<br/>8 analogue outputs and relays</p>                        |
| <p>TSCU to Instrument Cable</p>  | <p>CBL-078</p>                   | <p>6-core, screened pair, 20AWG. Belden equivalent 9873. Max length 300m.</p>                 |
| <p>Boxed PSU</p>                         | <p>PSU-007</p>                   | <p>Multi AC input, 24Vdc output, 25W<br/>IP67 rated enclosure</p>                             |
| <p>Combined PSU / Termination Unit</p>  | <p>ASY-206</p>                   | <p>Multi AC input, 24Vdc output, 25W,<br/>Termination connectors<br/>IP67 rated enclosure</p> |

Note that the actual part may differ from the above representative pictures.

