

# Passive Temperature Transducer (PTT)

Synaptec's range of Passive Temperature Transducers (PTT) utilises established, high-performance temperature measurement techniques which are fully compatible with our Distributed Electrical Sensing (DES) technology, enabling remote circuits to be instrumented passively without data networks, control power, or expensive civil works.

Up to 30 PTTs can be daisy-chained per fibre over a distance of up to 60 km from the substation and can be combined with Synaptec's current and voltage sensors to obtain high-fidelity, synchronised measurements of resistive heating and thermal capacity.

Measurements are available in real time within the substation firewall through Synaptec's Interrogator unit, and are published using the standardised IEC 61850 sampled value protocol.

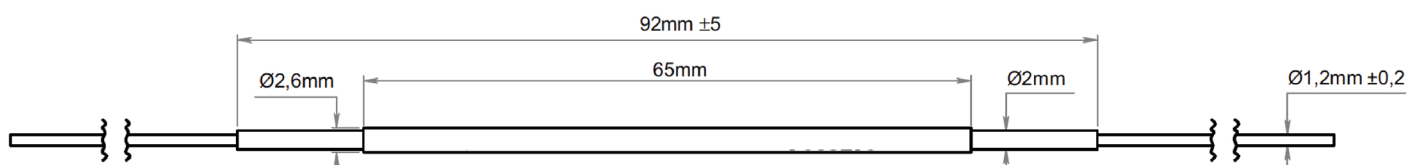
Synaptec's PTT is available in multiple form factors and constructions for different deployment environments and applications.

## PTT-A

The PTT-A is a small diameter sensor for applications where space is a limitation and incorporates a braided single-mode fibre cable for quick routing and installation. The PTT-A can be used as a sensor for accurate and reliable temperature measurements and is ideal for remote condition monitoring of joints and terminations in underground or subsea power cables, transformers and other critical HV assets.

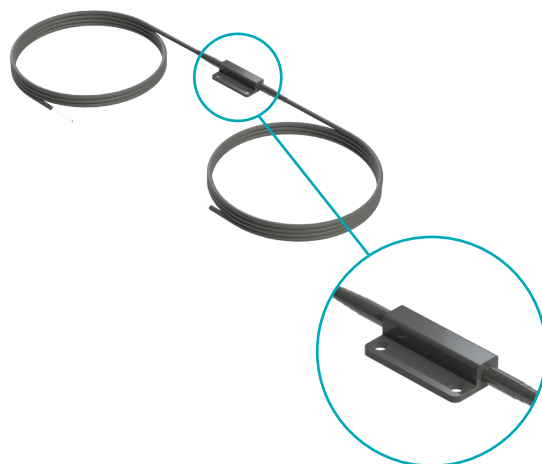


### PTT-A standard dimensions

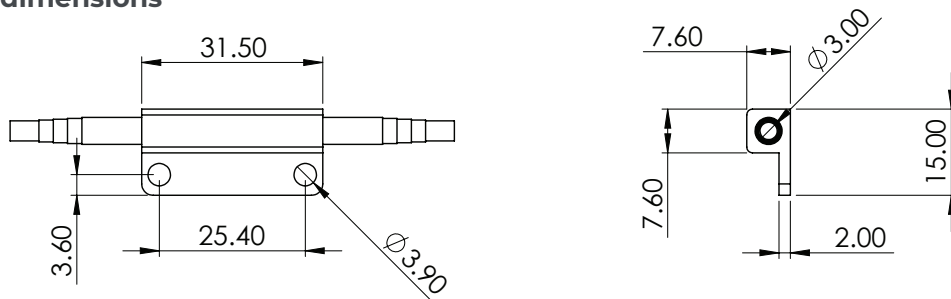


## PTT-B

The PTT-B is a ruggedised temperature sensor for use in harsh environments. The PTT-B is prepared for surface mounting on flat or curved surfaces by choice of external housing, and so is ideal for remote condition monitoring of cables, transformers or other critical HV assets.



### PTT-B standard dimensions



### Specifications

|                                | Unit | PTT-A                                | PTT-B                                |
|--------------------------------|------|--------------------------------------|--------------------------------------|
| Resolution <sup>1</sup>        | °C   | 0.02                                 | 0.05                                 |
| Measurement error              | °C   | ±0.5                                 | ±0.5                                 |
| Measurement range              | °C   | -40 to +100                          | -40 to +150                          |
| Storage temperature            | °C   | -20 to +80                           | 40 to +150                           |
| Operation and storage humidity | %    | ≤100, < 95                           | ≤100                                 |
| Attachment method              | n.a. | Epoxy or mechanical fixing/strapping | Epoxy or mechanical fixing/strapping |
| Weight <sup>2</sup>            | g    | 8                                    | 36                                   |
| Main materials                 | n.a. | Stainless steel, ormocer®            | Stainless steel                      |

### Inputs / Outputs

|                   |      |                      |                       |
|-------------------|------|----------------------|-----------------------|
| Cable type        | n.a. | Ø 1 mm braided cable | Ø 3 mm armoured cable |
| Cable bend radius | mm   | > 16                 | > 15                  |

<sup>1</sup>For 0.5 pm resolution in wavelength measurement, as found in Distributed Mechanical Sensing (DES) Interrogator.

<sup>2</sup>Weights assume short pigtailed on either side and no connectors.