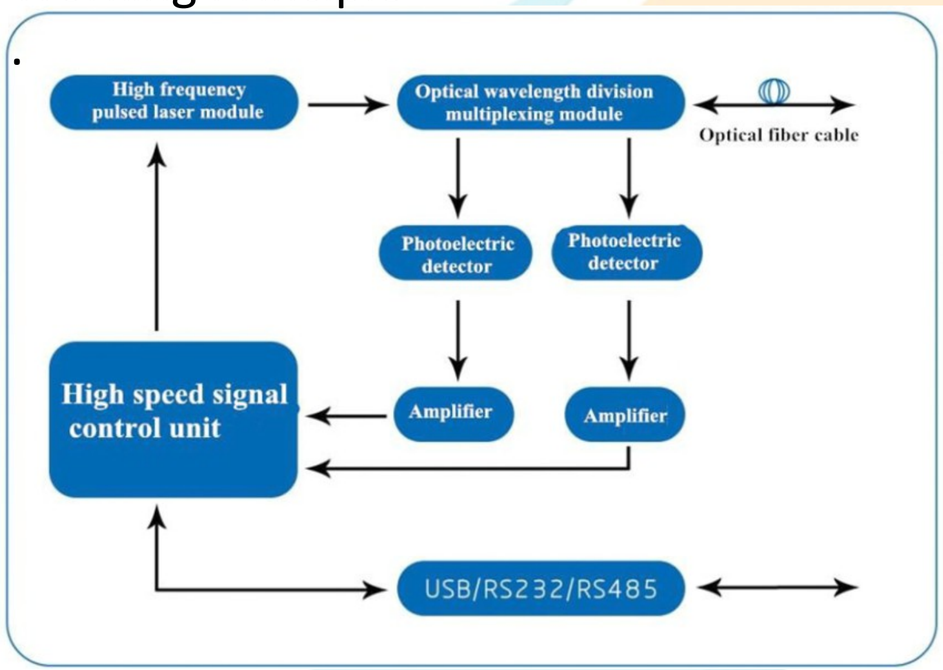
Distriuted Temp Sensing

PTSGL1 Distributed Temperature Sensing System

Working Principle



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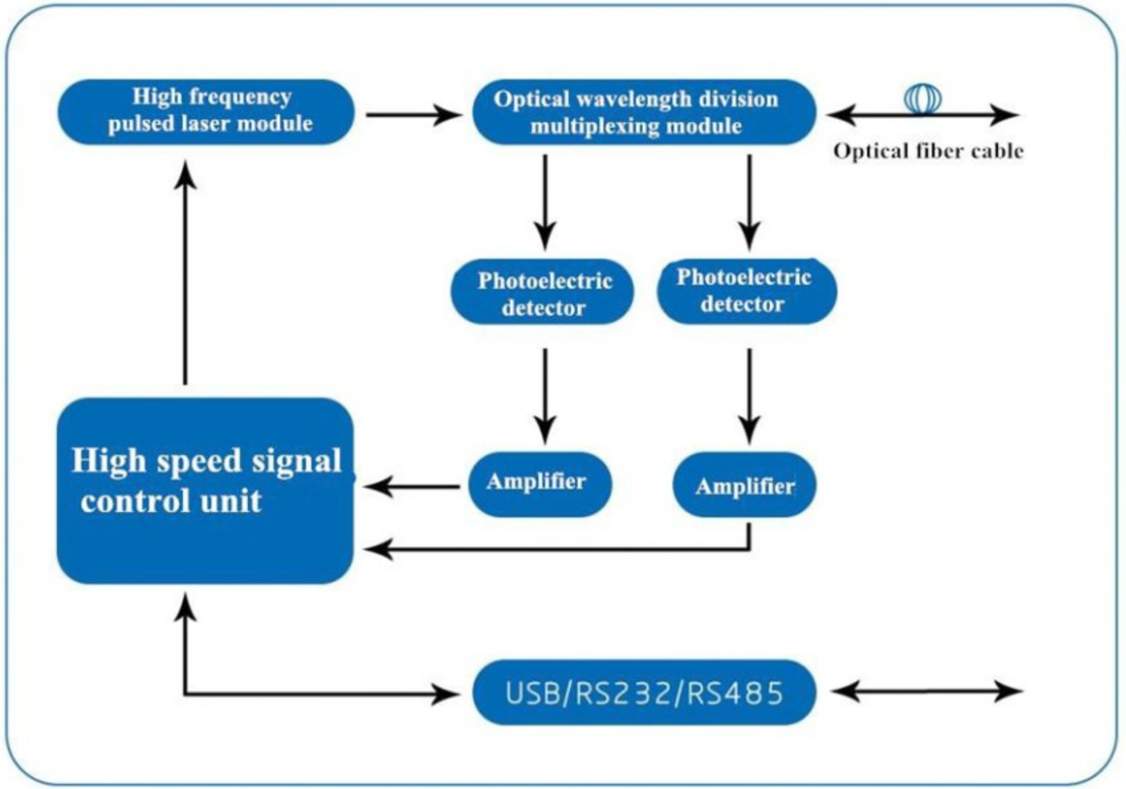
Working Principal

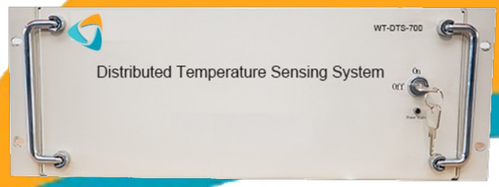
PTSGL1 Distributed Temperature Sensing System



PTSGL1 linear heat detector adopts the optic fiber distributed temperature sensing method and the spontaneous RAMAN scattering theory principles during the laser transmission in optical fibers and Optical Time Domain Reflectometry (the OTDR) techniques to obtain the spatial temperature distribution information. When a certain amount of energy and width of the laser pulse is injected into the fiber, it produces backward Raman scattered light while it is transmitting forward in the fiber. The intensity of these backward Raman scattered light changes according to the temperature of the optical fiber scattering point. After the backward Raman scattered back go through the optical filter, the optics and electrics conversion, amplification, analog - digital conversion, fed to the signal processor which can calculate the temperature information in real time and locate the place according to the light transmission speed in fiber and Echo Time

Rack Mount Installation

PTSGL1 Distributed Temperature Sensing System



Rack-mounted type

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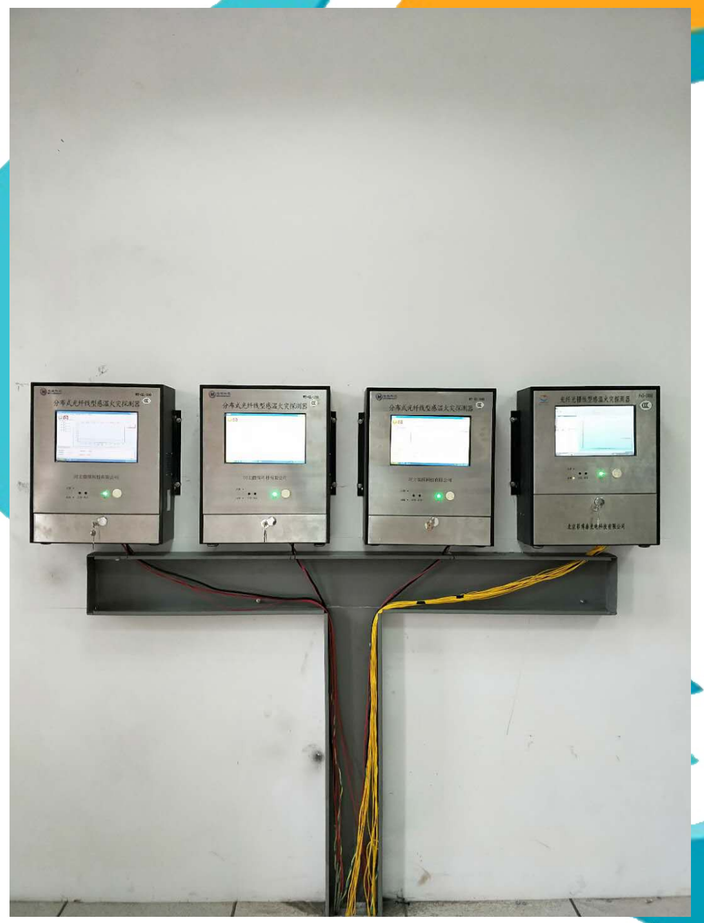
Wall Mount Installation

PTSGL1 Distributed Temperature Sensing System



Specifications PTSGL1

PTSGL1 Distributed Temperature Sensing System

- Max load length is 10km (with respond Speed 2 seconds)
- 4 Channel per Controller
- Per channel's max load length is ≤5km.

Example:

- Total max load length is 10km ， if connected with 4 channels, max load length for each channel is 2.5km.
- If connected with only 2 channels, then max load length for each channel is 5 km.

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Specifications PTSGL1

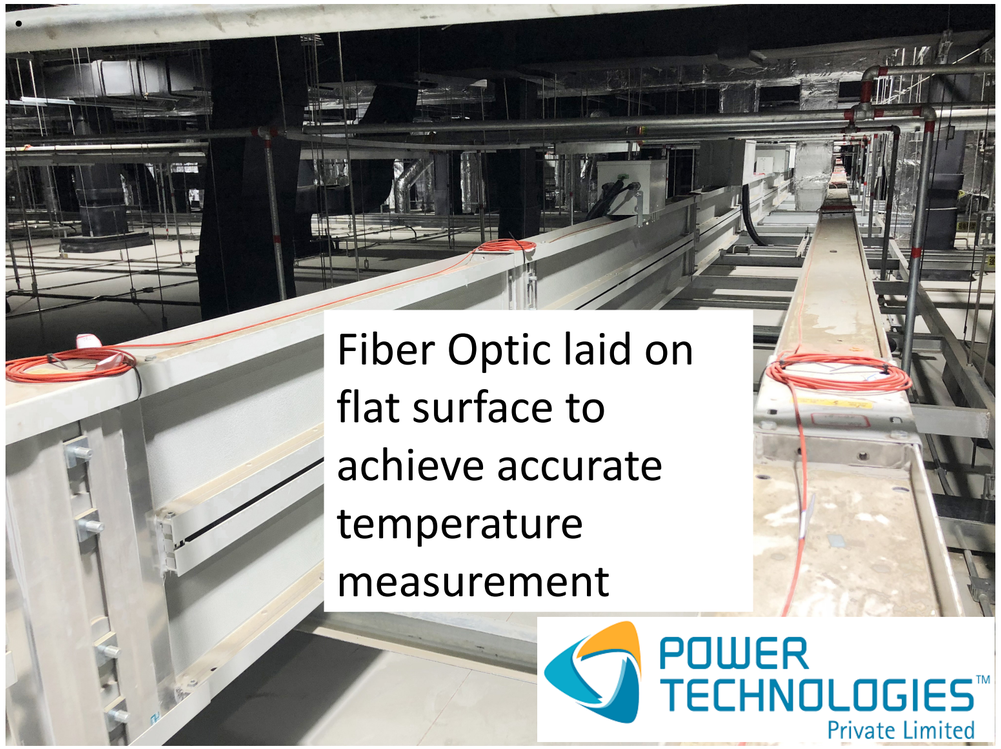
PTSGL1 Distributed Temperature Sensing System

Technical Parameters	Technical Data
Model	PTS GL1
Number of channels	4
Operating temperature setting	-40~ +120℃
Temperature accuracy	±1℃
Temperature resolution	±0.1℃
Test frequency	2s/Channel
Measuring distance	0~10km
Number of relays	24
Type of ports	USB/RS232/RS485
Working temperature	-10℃~ +50℃
Storage temperature	-20℃~ +60℃
Working power supply	DC 24V
Working humidity	≤96% non-condensing
Maximum using length of each single channel	5km
Oversize (WxHxD)	432mm*528mm*180mm

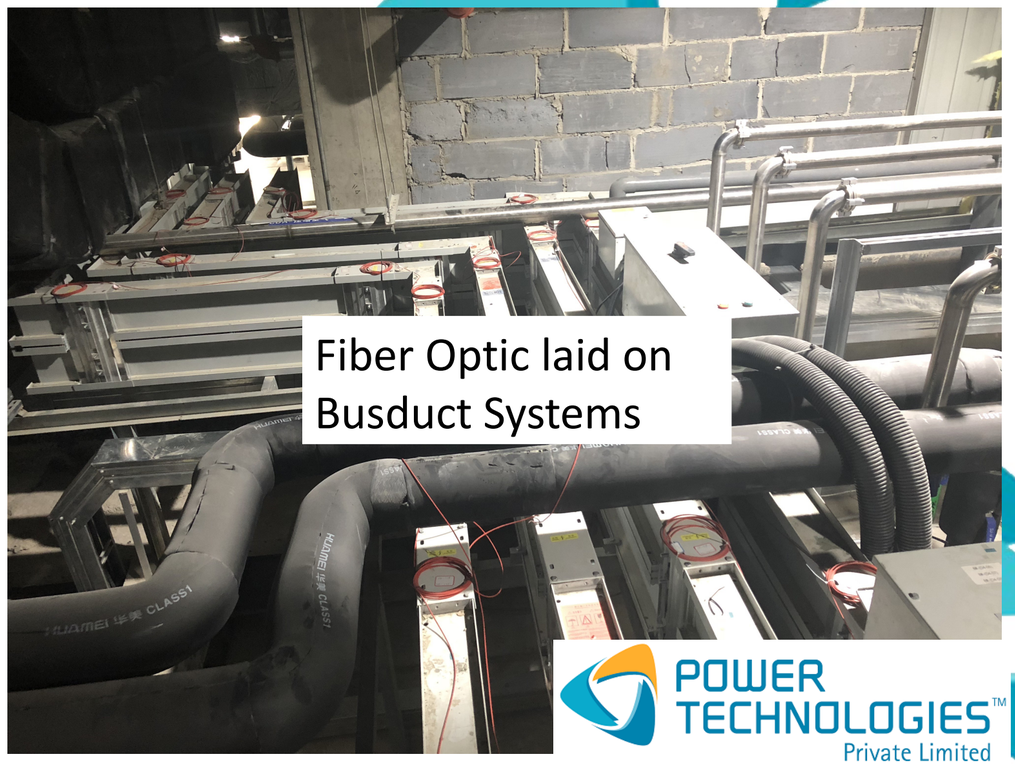
Fiber Optic Cable

PTSGL1 Distributed Temperature Sensing System

- Single core multi mode Deploy,emt.
- Wide Temperature Range at -40~90℃,
- Capable with withstanding short term high temperature at 120℃(2 hours).



Fiber Optic laid on flat surface to achieve accurate temperature measurement



Fiber Optic laid on Busduct Systems

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Fiber Optic Cable

PTSGL1 Distributed Temperature Sensing System

Technical Parameters	Technical Data
Optical fiber core diameter	62.5μm
Cladding diameter of the core	125μm
Insulation sheath diameter	0.6mm
Outer jacket material	Low-smoke halogen-free flame retardant material, anti-static
Outer diameter	Φ3.0mm
Minimum bending radius	60mm
Sheath material	Metal armored spiral sheath
Tensile strength	500N during installation300N during application
Compressive strength	5000N/10cm during installation3000N/10cm during application
Deformation stress	300N/cm causes 0-0.3mm deformation

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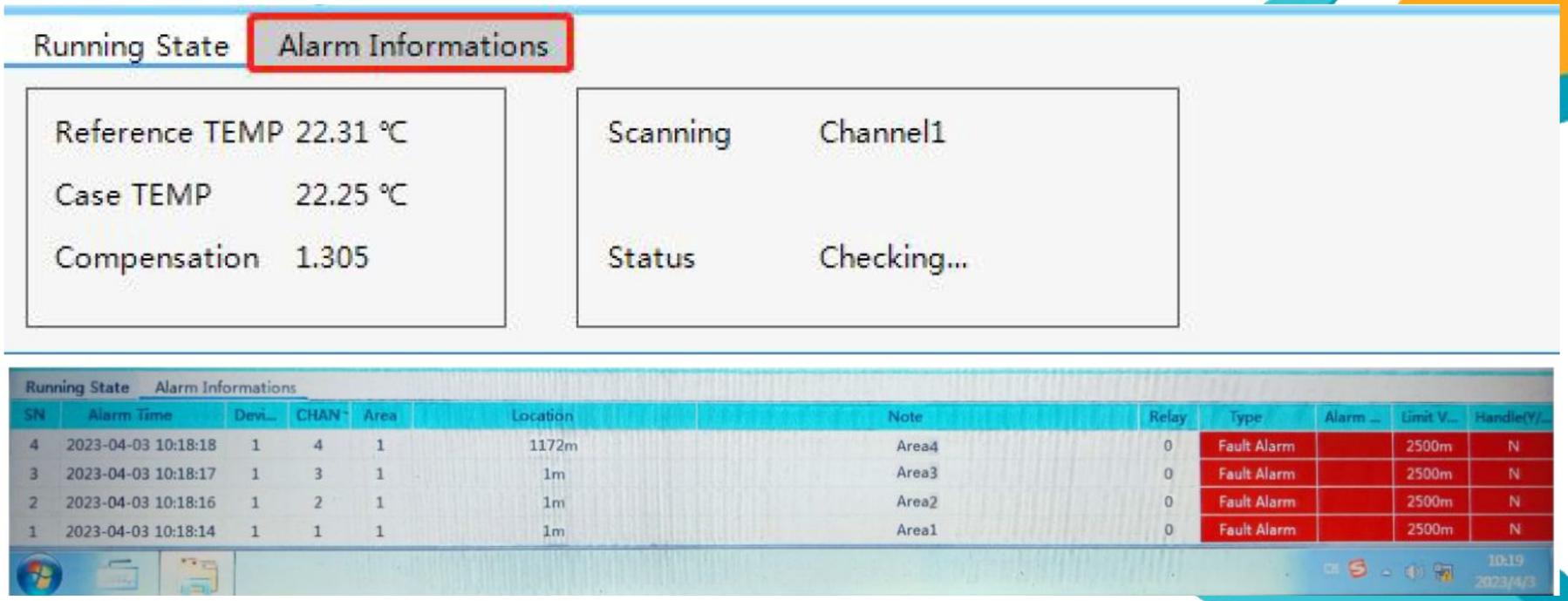
Display

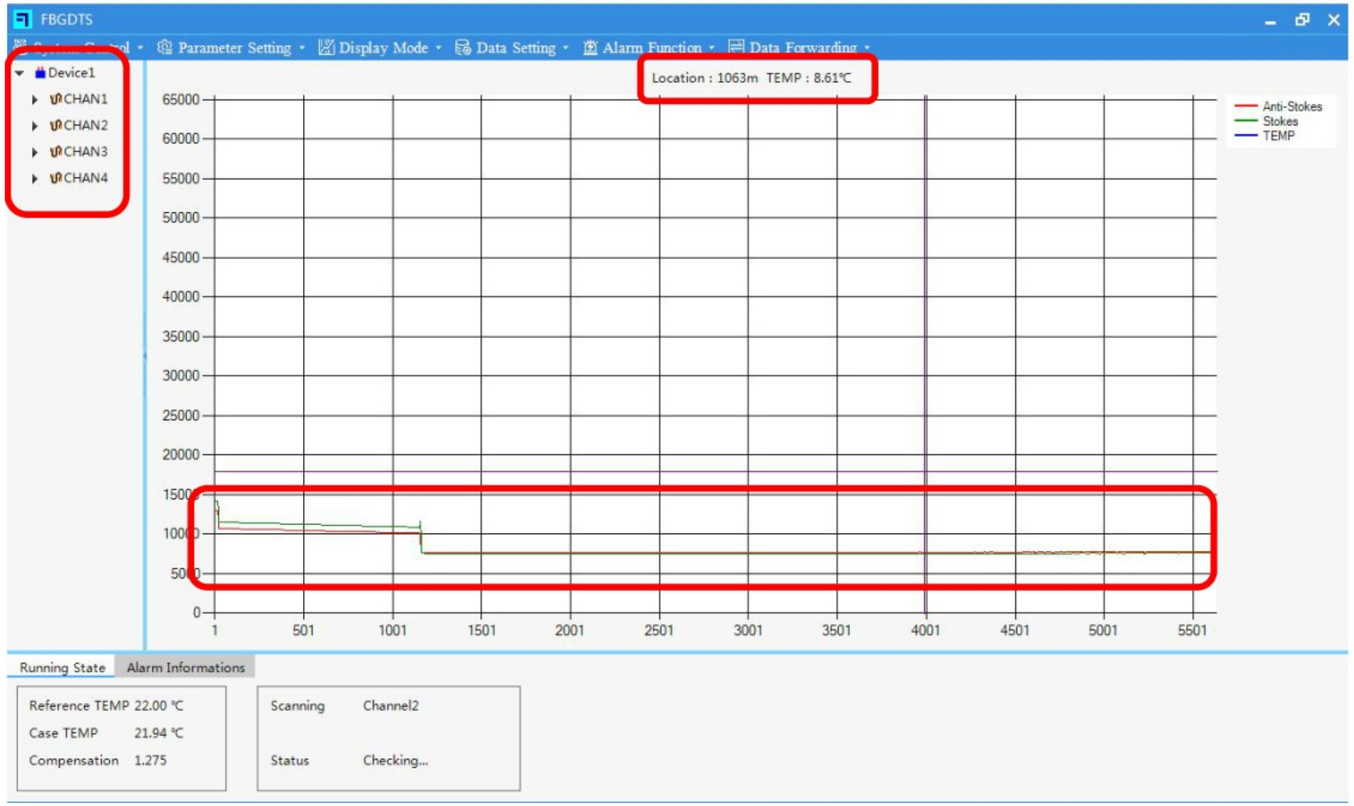


Records and Display on

1) Alarm Date and Time
2) Channels
3) Location (Base on Length)
4) Relay Contact

Display

PTSGL1 Distributed Temperature Sensing System



- X-axis represents position(meter)
- Y-axis is the temperature

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Wall Mounted Patch Box

- Equiped one patchbox for each channel.
- To be Installed near the control unit.
- Patch box function is to protect the patching between “tail fiber” and “field optical fiber” cable.

Splice Box

- Provide Secure and protection to the Fiber optic splices (where 2 fiber are joined together)
- Recommended to have not more than 3 splice per fiber optic lenght.
- Protection against ingress of Water and Dust
- Help to organize the fiber optics and splices in a neat arranged fashion

Splice Box

PTSGL1 Distributed Temperature Sensing System

- Equipped Oner Terminal Box Per Channel
- Terminal Box used to protect and reserve the remaining length of the Fiber Optic Cable at the end of the Lenght

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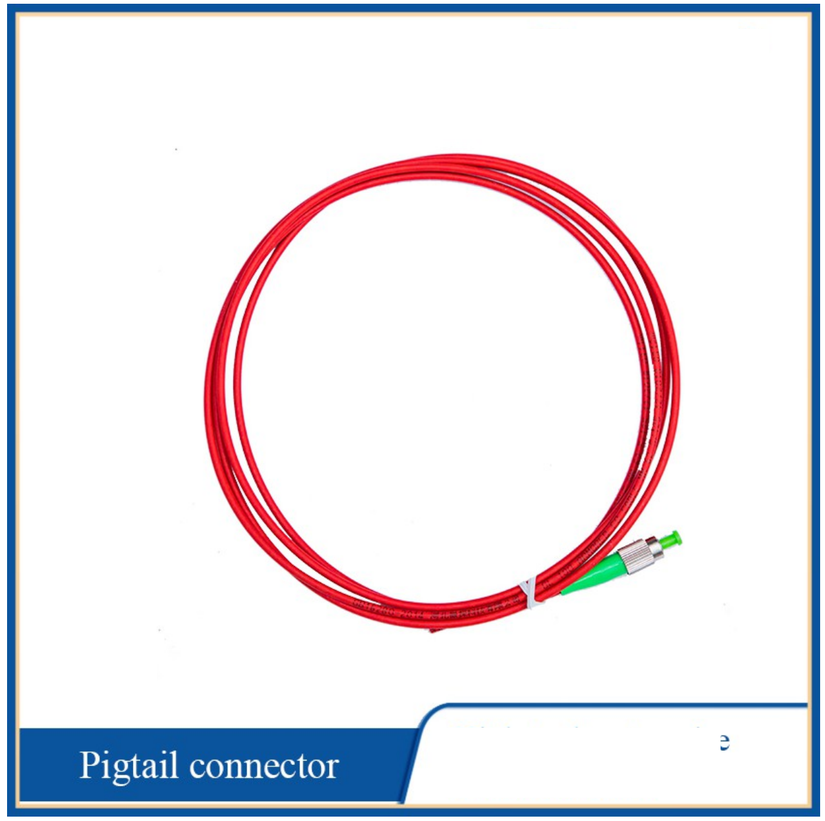
Pigtail Connector



- Pigtail used for Connection the Controller
- Length per pigtail is 2 meters
- 1 Pigtail per Channel

Rack Mount Patch Box

PTSGL1 Distributed Temperature Sensing System

- Rack Mount Patch Box equipped 1 per Controller
- Rack Mount Patch box function is to protect the patching between “tail fiber” and “field optical fiber” cable.

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Best Practice for Fiber installation

- .There should be reserved at least 10 meters of optical fiber cable at both side of cable joint (or break point) to ensure the optical fiber’s fusion successfully.
- Both ends of cable joint (or break point) need to reserved at least 5meters to ensure the optical fiber’s fusion successfully.
- The reserved optical fiber cable should be fixed in circles and the minimum bending radium is 60mm.
- Do not tie it too tight when using cable ties.
- Do not paint on the optical fiber cables.

Best Practice for Fiber installation

- . Please check the length of the optical fiber cable before installation. Optical fiber cable or fiber joints avoid traffic arteries and other obstacles.
- Optical fiber cable should be checked both before and after installation. All the fiber should be in good condition
- Optical Fiber Splice Box has to be fixed.
- During unloading, avoid stacking or horizontal laying of the fiber cables. In case of severe impact of the fiber which may cause damages, avoid rolling down the fiber cable directly.
- Avoid 90º bending of optical fiber cable during installation and laying of the cable. The minimum bending radium is 60mm. Avoid taut knot by sharp bending