

Quick Installation Guide

IBP-202-SLC

IBP-202-SSC

IBP-202-SST

Industrial Optical Fiber Bypass Switch



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WARNING:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference in which case the user will be required to correct the interference at his own expense. NOTICE: (1) The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. (2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Introduction

IBP-202 is an industrial grade Optical Fiber Bypass Switch which is used for optical node failure in fiber optical network infrastructures. The IBP-202 Optical Fiber Bypass Switch prevents and saves communication from network failures during power loss. When power failure occurs, the Bypass switch will swiftly switch to bypass mode and isolate the main network from the local networking device. Bypass switches are commonly used in some major optical networks, such as in railway communication systems, factory automation, and power substation, where fiber link failures are not tolerated.

Housed in a rugged DIN rail or wall mountable enclosure, this product is designed for harsh environments, such as industrial networking, intelligent transportation systems (ITS) and is also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Package List

- IBP-202 Device
- DIN rail with screws
- Terminal Block

Features

- Supports SC, ST or LC single mode optical connectors
- Optical bypass switching time <10ms with low insertion loss
- Provides rotary switch to set boot-up delay time (0~180 seconds)
- Redundant dual DC input power 12/24/48VDC (9.6~60VDC)
- IP30 rugged metal housing and fanless design
- Wide operating temperature -20°C~70°C
- Heavy industrial grade EMS, EMI, EN61000-6-2, EN61000-6-4, CE, FCC certified, EN50121-4 certified

Specifications

Optical Interface

- Connector: LC, SC, ST (UPC)
- Operating Wavelength: 1260nm~1650nm
- Optical Fiber Cable: Single mode 8/125um, 9/125um
- Insertion Loss: <1.5dB
- Optical Switching Time: <10ms

Power

- Redundant dual input power
- Supports 12/24/48VDC (9.6~60VDC) input power range
- Supports Reverse polarity protection
- Supports overload current protection
- Supports terminal block
- Power Consumption: 0.4W (12VDC), 0.5W (24VDC), 0.8W (48VDC)

Mechanical

- Housing: IP30 Protection & fanless design
- Dimensions: 106 mm (D) x 62.5 mm (W) x 135 mm (H)
- Mounting: DIN-Rail, Wall Mount (Optional)
- Weight: 530g (IBP-202-SLC), 545g (IBP-202-SSC & IBP-202-SST)

Environmental

- Operating Temperature: -20°C~70°C
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (Non-condensing)

Certifications

- EMC: CE (EN55024, EN55032)
- EMI (Electromagnetic Interference): FCC Part 15 Subpart B Class A, CE
- Railway Traffic: EN50121-4
- Immunity for Heavy Industrial Environment: EN61000-6-2
- Emission for Heavy Industrial Environment: EN61000-6-4
- EMS (Electromagnetic Susceptibility) Protection Level:
 - EN61000-4-2 (ESD) Level 3, Criteria B
 - EN61000-4-3 (RS) Level 3, Criteria A
 - EN61000-4-4 (Burst) Level 3, Criteria A
 - EN61000-4-5 (Surge) Level 3, Criteria B
 - EN61000-4-6 (CS) Level 3, Criteria A
 - EN61000-4-8 (PFMF, Magnetic Field) Field Length: 300A/m, Criteria A
- Shock: IEC 60068-2-27
- Freefall: IEC 60068-2-32
- Vibration: IEC 60068-2-6

MTBF (MIL-HDBK-217)

- 273,054 Hours

Panels

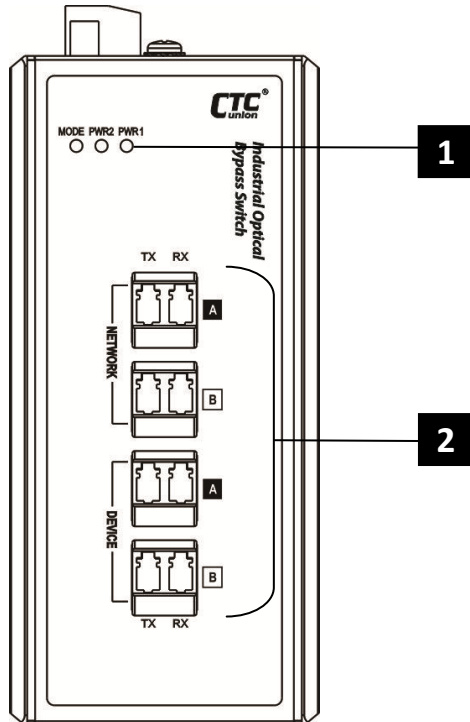


Figure 1. IBP-202-SLC
Front Panel

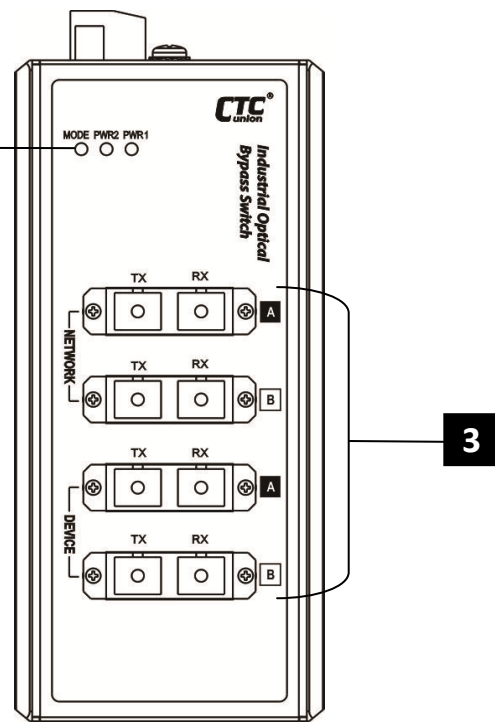
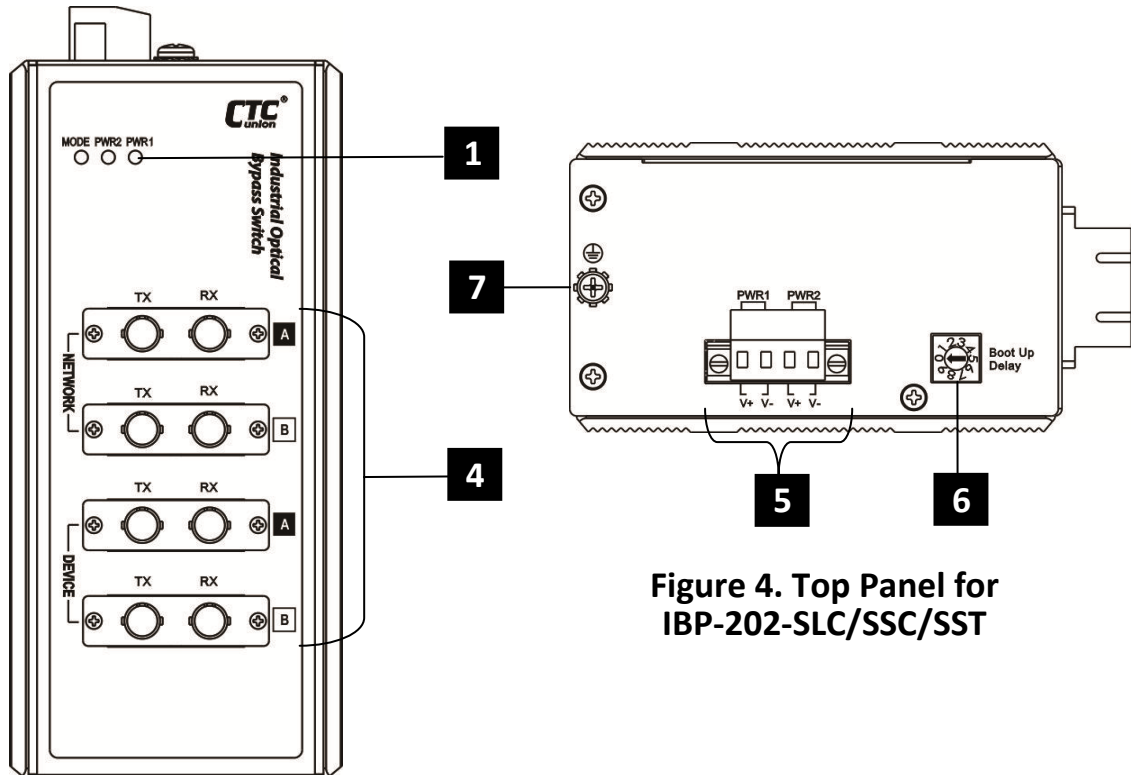


Figure 2. IBP-202-SSC
Front Panel



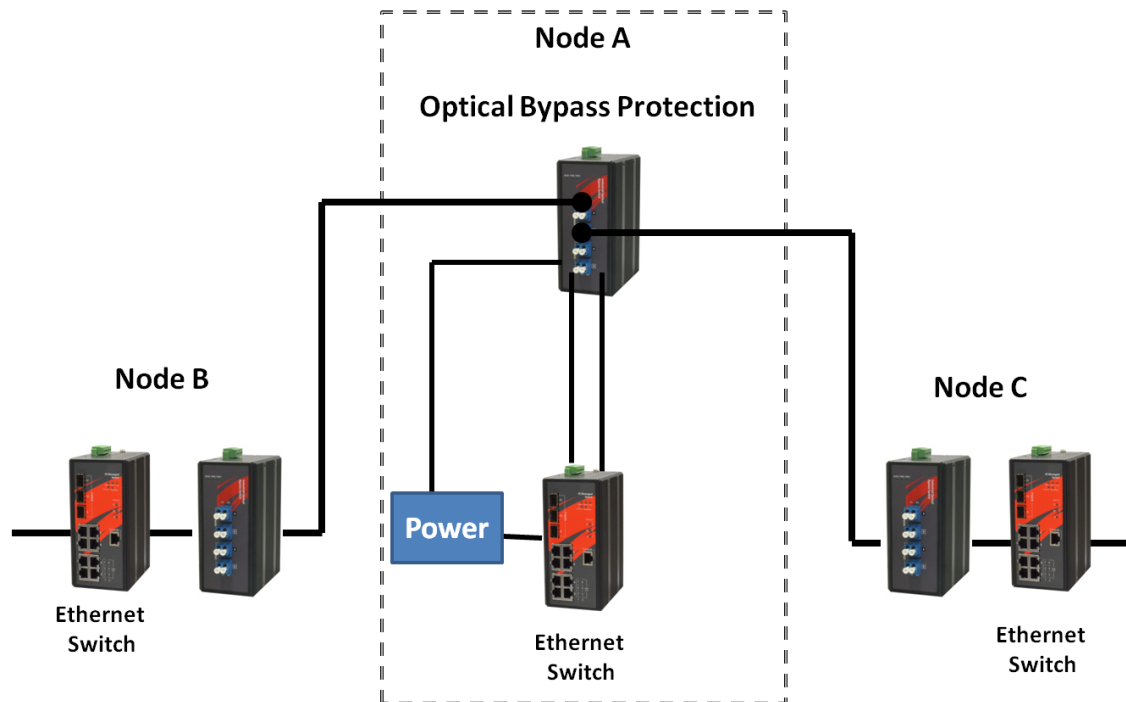
**Figure 4. Top Panel for
IBP-202-SLC/SSC/SST**

**Figure 3. IBP-202-SST
Front Panel**

No.	Description
1	Power 1, Power 2, Mode LED indicators
2	LC fixed fiber connectors for "NETWORK" and "DEVICE" switches.
3	SC fixed fiber connectors for "NETWORK" and "DEVICE" switches.
4	ST fixed fiber connectors for "NETWORK" and "DEVICE" switches.
5	Terminal block for power
6	"Boot Up Delay" switch
7	Earth grounding screw

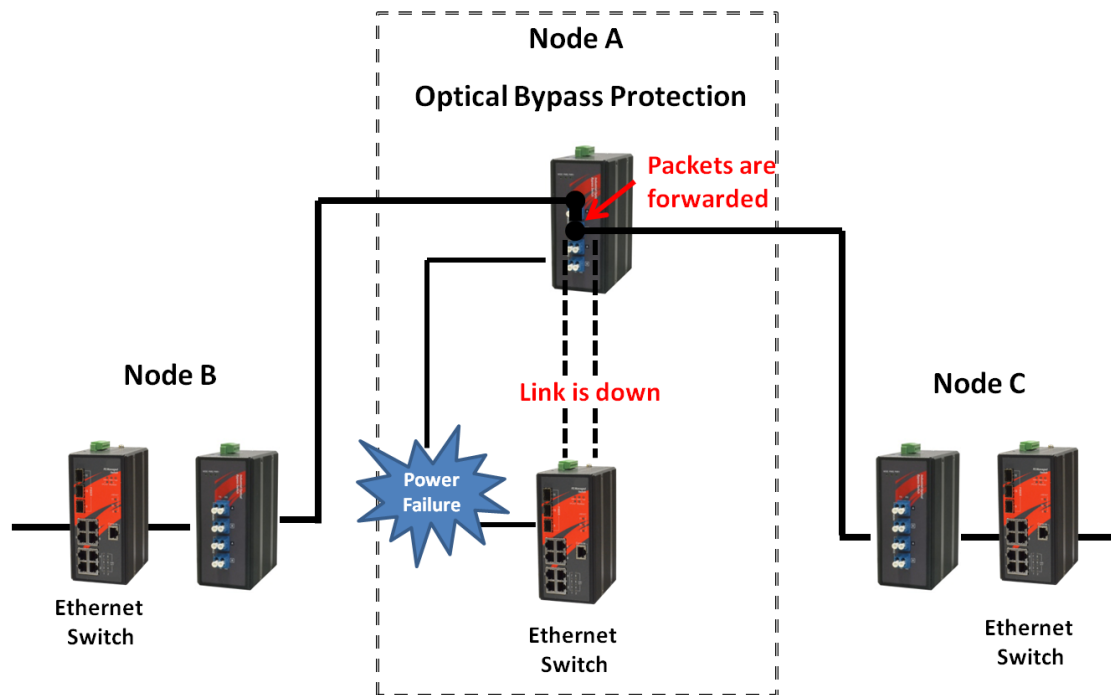
Normal vs. Bypass Mode for Optical Path

Normal Mode



In Normal mode, packets are forwarded between the local "DEVICE" and "NETWORK" switches in Node B and C.

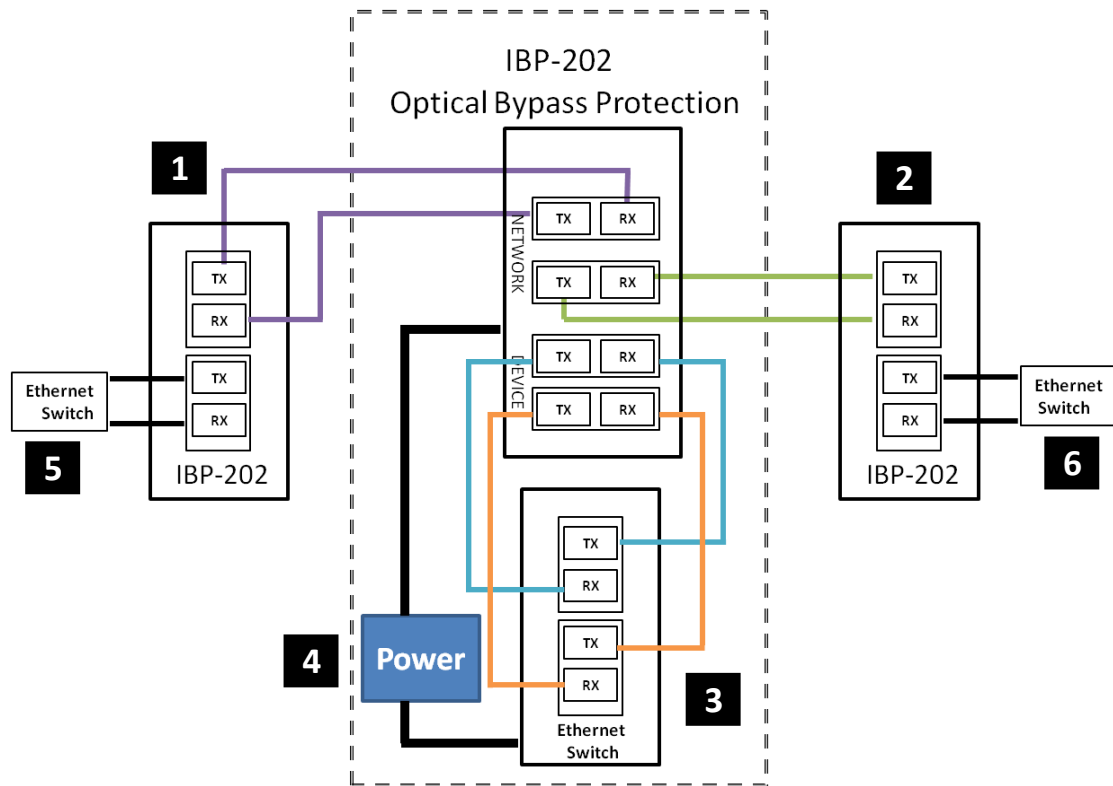
Bypass Mode



When power failure occurs, IBP-202 works in Bypass mode. In this mode, IBP-202 bypasses the "DEVICE" switch and forwards packets between the "NETWORK" switches in Node B and C.

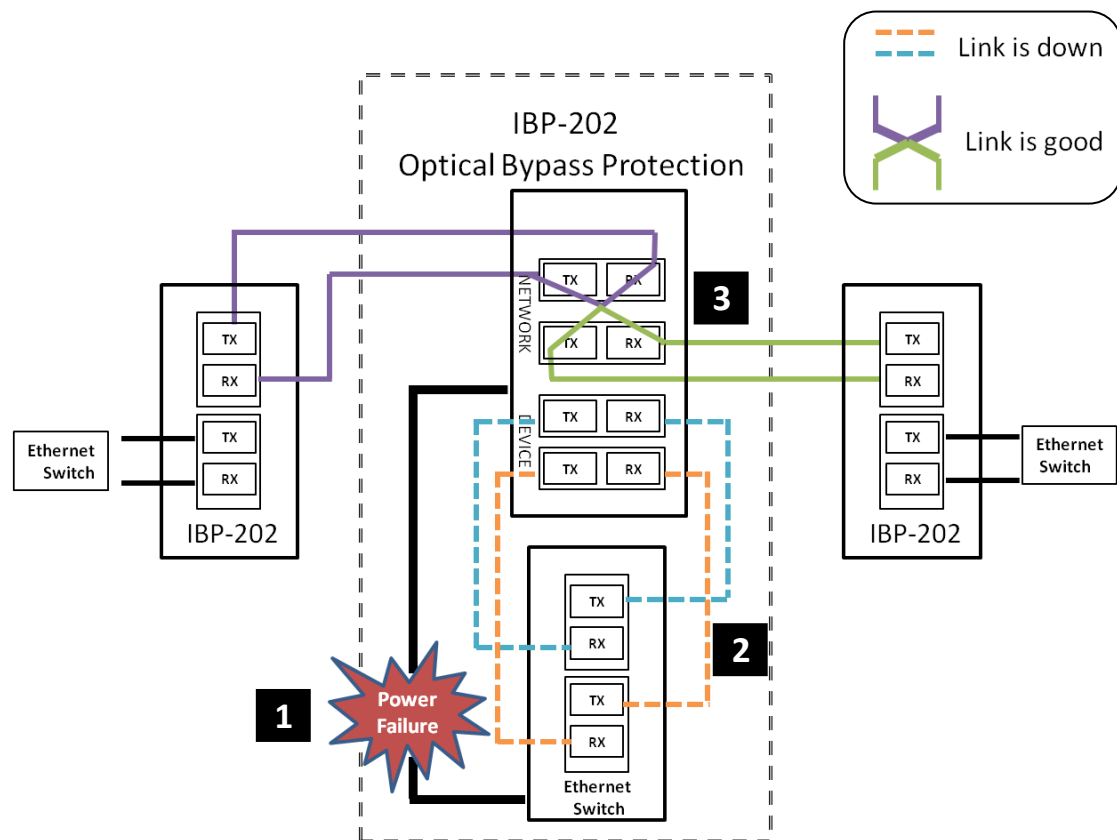
Cable Connections for Bypass Protection

Normal Mode



No.	Descriptions
1	The remote Ethernet switch connects to "NETWORK" optical fiber ports.
2	The remote Ethernet switch connects to "NETWORK" optical fiber ports.
3	The local Ethernet switch connects to "DEVICE" optical fiber ports.
4	Both Bypass switch and the local Ethernet switch must use the same power source.
5	The remote Ethernet switch connects to other Ethernet devices.
6	The remote Ethernet switch connects to other Ethernet devices.

Bypass Mode



No.	Descriptions
1	Bypassing mechanism is activated automatically when the system power failure occurs.
2	When power failure occurs, the links between IBP-202 and the Ethernet switch (DEVICE side) are down.
3	IBP-202 bypasses the local Ethernet switch and forwards packets between two "NETWORK" devices.

Boot Up Delay Switch



Figure 5. Boot Up Delay Switch

This Bypass switch is able to activate bypass mode when power source is lost. However, when power is restored to both the Bypass Switch and Ethernet switch, there is a possibility for the Bypass switch to suffer from network failure. This is because the boot up time of the Ethernet switch generally takes longer than the Bypass switch does. When the Bypass switch is standby and ready to send traffic, the Ethernet switch probably still runs boot up process.

To switch the bypass mode to normal mode successfully, the Bypass switch is able to delay boot up time using the "Boot Up Delay Switch" on the top panel. The "Boot Up Delay" is a rotary switch with 10 steps, numbered 0~9. The factory default setting is at position 0 which means no (0 second) boot up delay. Each step denotes a 20-second delay; therefore, the user can set a delay of 20 (number 1) to 180 (number 9) seconds by selecting the appropriate value depending on the boot up time of the Ethernet switch.

LED Indicators

LED	Color	Descriptions
PWR1	Green	Lit if power 1 is connected and active.
	Off	Power is not connected.
PWR2	Green	Lit if power 2 is connected and active.
	Off	Power is not connected.
Mode	Green	Traffic is forwarded normally via the "DEVICE" Ethernet switch.
	Off	Bypass the "DEVICE" Ethernet switch. (Power loss or in boot up delay status)

