# First Industrial Mini-size Fiber Converter and Smart 90W PoE Injector with Smart PoE Detection


## DP101

**Industrial 1-port 90W PoE Fiber Media Converter**

The DP101 is the first industrial grade fiber optic media converter featuring 90W PoE 802.3bt /PSE power feeding. The PoE is compliant with standard IEEE 802.3af / at / bt and non-standard PD with the innovative smart PoE detection algorithm. DP101 can automatically supply power through 2/4 pairs of wires or limit feeding power for non-standard PD, such as outdoor dome IP camera. The wide operation temperature from -40 ~75˚C with IP40 ingress protection and high level of Industrial EMC compliance enables DP101 to operate in any harsh industrial environments.

PoE++ -40~75˚C RoHS HF Halogen FREE CE EN50121-4 IEC61000-6-2 IEC61000-6-4

## Features & Benefit

### Ethernet Media Converter

- Converts Optical Signal and Ethernet Electrical Signal
- Supports IEEE 802.3 100Base-FX, 100Mbps Fast Ethernet Optical Fiber
- Supports IEEE 802.3 10/100Base-TX ,10/100Mbps Fast Ethernet

### Link Loss Forwarding

- Bi-Directional Link Loss Forwarding for Real Time Far-End Link Fault Alert
- Bi-Directional Auto Recovery for Ethernet Optical Fiber and Ethernet RJ-45 Communication

### Dual Forwarding Modes

**Pure Converter:**

- Low Packet Forwarding Latency – $1.6x10^{-6}$ Sec

**Ethernet Switch Store-and-Forward:**

- TX 10/100Mbps Auto-Negotiation, Auto MDI/MDI-X
- IEEE 802.3x Flow-Control & Back-Pressure
- CRC Error Packet Filtering

### Standard Compliance

- IEC 61000-6-2/ IEC 61000-6-4 Heavy Industrial EMC
- EN50121-4 Railway Track Side EMC
- High Level Electro Magnetic Susceptibility – Level 3

### Easy System Configuration

- DIP-Switch Configuration: Forwarding Mode / TX Speed / Link Loss Forwarding /PoE Setting
- TX Forced 100Mbps Full-Duplex
- Switch Store and Forwarding Mode support TX Speed Auto Negotiation and Auto MDI-X

### Smart PoE Capability

- Auto PD Type Recognize- Standard or Non-Standard
- Auto Apply Limited Power for Non-Standard PD
- Built-in Over-Current, Cable Short Protections for Non-Standard PD

### Hardened System Design

- Survive Under -40 ~75˚C Environment
- Wide Range Redundant Power Input
- Ingress Protection – IP40

### Compact Size Design

- Cigarette Box Size- Minimal Space Requirement
- Easy Cable Reorganization

### Special Vertical Market Application

- Factory Automation – Real Time Machine Communication
- Railway Track Side – PLC Communication
- Telecom Unattended Station – Ethernet / Fiber Conversion

## Interfaces

**System LED**
- 1x Power
- 1x Mode
- 1x LLF
- 2x FX
  - 1x LNK
  - 1x FDX
- 1x PoE

**100M FX SC**
**(ST Connector by request)**


**DIN Clip**

**DIP Switch**
- 1x Forwarding Mode
- 1x RJ45 mode
- 1x LLF
- 1x PoE On/Off
- 2x PoE Budget

**10/100M-TX**

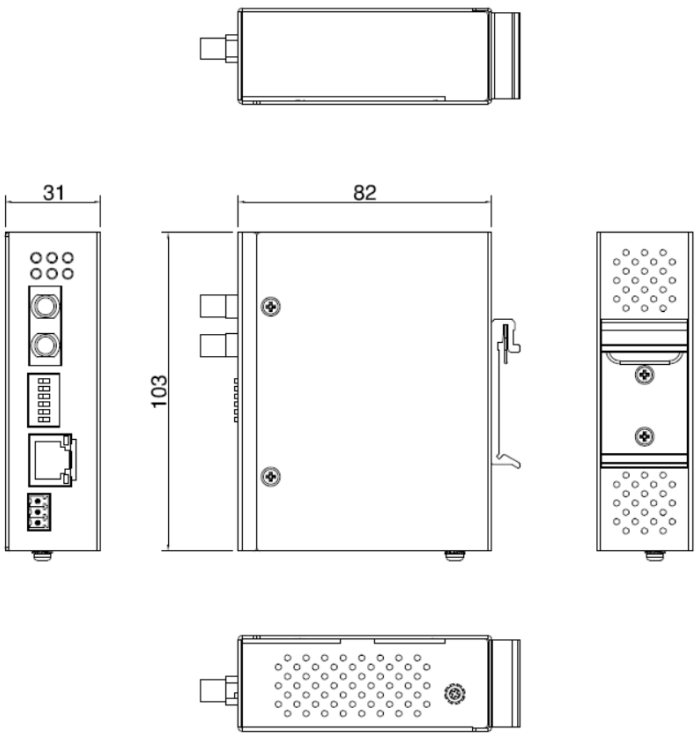
**Grounding Screw**

**Power Connector**
- 1 x 3 pin terminal block

| DIP NO. | ON | OFF（Default） |
|---|---|---|
| 1 | Set to Converter Mode | Set to Store and Forwarding Mode |
| 2 | Set RJ45 in 100Mbps Full Duplex Mode | Set RJ45 in 100Mbps Auto Negotiation Mode |
| 3 | Enable Link Loss Forwarding function | Disable Link Loss Forwarding function |
| 4 | PoE Enable | PoE Disable |

| DIP5 | DIP6 | Power Budget For No-standard PD | Power Budget For Standard PD |
|---|---|---|---|
| OFF | OFF | Class 5: 45W | Auto Mode Class 0~Class 8 Max：90W |
| OFF | ON | Class 6: 60W | |
| ON | OFF | Class 7: 75W | |
| ON | ON | Class 8: 90W | |

## Dimensions



## Specifications

### Technology

| | |
|---|---|
| **Standard** | IEEE 802.3 10Base-T Ethernet |
| | IEEE 802.3u 100Base-TX/ 100Base-FX Fast Ethernet |
| | IEEE 802.3x Flow Control and back-pressure |
| | IEEE 802.3af/at/bt Power Over Ethernet |

### Performance

| | |
|---|---|
| **Forwarding Mode** | Store and Forward with CRC Error Packet Check, and Pure Converter with low forwarding latency |
| **Packet Buffer Memory** | 128K bits |
| **Transfer performance** | 10Base-T: 14,880pps, 100Base-TX/FX: 148,800pps |

### Interface

| | |
|---|---|
| **Ethernet Port** | **DP101-M-SC/DP101-S-SC:**<br>1 x 10/100Base-TX RJ45, Auto Negotiation,Auto MDI/MDI-X<br>1 x 100BaseFX (Duplex SC Connector, Multi/Single Mode)<br>**DP101-M-ST/DP101-S-ST:**<br>1 x 10/100Base-TX RJ45, Auto Negotiation,Auto MDI/MDI-X<br>1 x 100BaseFX (Duplex ST Connector, Multi/Single Mode)<br>**DP101-WDM13-SC / DP101-WDM15-SC**<br>1 x 10/100Base-TX RJ45, Auto Negotiation,Auto MDI/MDI-X<br>1 x 100BaseFX (Simplex SC Connector, Single Mode) |
| **System LED** | 1 x Power: Green On<br>1 x Mode:Converter mode (Green On), Store and Forward mode (Green Off)<br>1 x LLF: LLF Happens (Red On)<br>1 x PoE: Green On (PoE Active) |
| **Ethernet Port LED** | Link (Green On), Activity (Green Blinking),<br>Full Duplex (Amber on), Half Duplex & Collision (Amber Blinking), Half Duplex (Amber Off) |
| **Fiber Port LED** | LNK: Link (Green On), Activity (Green Blinking)<br>FDX: Full Duplex (Amber on) |
| **DIP Switch** | See tables below |
| **Power input** | 3-Pin Removable Terminal Connector with Power Redundancy, Polarity Reverse Protection<br>• V1+ , V2+ : Redundant Power Input ( V+ )<br>• V- (COM): Common Power-GND (V-) for V1 and V2 |

| DIP No.# | Status | Description |
|---|---|---|
| DIP 1 | On<br>Off | Converter Mode<br>Store & Forward Switch Mode (Default) |
| DIP 2 | On<br>Off | RJ45 100Mbps Full Duplex Mode<br>RJ45 Auto-Negotiation(Default) |
| DIP 3 | On<br>Off | Enable Link Loss Forwarding function<br>Disable Link Loss Forwarding function (Default) |
| DIP 4 | On<br>Off | PoE Enable<br>PoE Disable(Default) |

| DIP 5 | DIP 6 | Forced Power Feeding Level Only for Non-standard PD | Power Feeding For Standard PoE PD |
|---|---|---|---|
| Off | Off | Class 5: 45W | Auto Detection by PoE Standard<br>Class 0~Class 8<br>Max：90W |
| Off | On | Class 6: 60W | |
| On | Off | Class 7: 75W | |
| On | On | Class 8: 90W | |

**Note: To protect normal devices, the DIP5/DIP6 Forced Power feeding level setting is ONLY valid when DIP 4 PoE is switched ON and non-standard PD device is connected.**

### Optical Fiber

| | Distance | FP Laser Wavelength | TX Range | RX (Max) | Link budget |
|---|---|---|---|---|---|
| **Single-Mode** | 30KM | 1310nm | -8 ~ -3 dBm | -32 ~ -3dBm | 24dB |
| **Multi-Mode** | 2KM | 1310nm | -20 ~ -12dBm | -30 ~ -3dBm | 10dB |
| **Single-Mode WDM13-SC-20** | 20KM | TX:1310nm<br>RX:1550nm | -15~ -3dBm | -32 ~ -3dBm | 17dB |
| **Single-Mode WDM15-SC-20** | 20KM | TX:1550nm<br>RX:1310nm | -15~ -3dBm | -32 ~ -3dBm | 17dB |

| Power Requirement | |
|---|---|
| **Input Voltage** | 54VDC (46~57VDC : IEEE 802.3af, 50~57VDC : IEEE 802.3at, 53~57VDC : IEEE 802.3bt) |
| **Reverse Polarity Protect** | Yes |
| **Input Current** | 0.04A @54V full traffic without PD loading |
| **Power Consumption** | Max. 2.18W@54VDC full traffic without PD loading, suggest to reserve 15% tolerance |
| **PoE** | |
| **Power forwarding mode** | IEEE 802.3af/at Alternative A<br>IEEE 802.3bt draft: 4 pairs cable |
| **PoE Power Budget** | System: Max.90W@75˚C<br>Per Port: Max. 90W |
| **Powered Device Type** | IEEE 802.3af/at/bt<br>Non-standard PD device, forced power supply |
| **Mechanical** | |
| **Installation** | DIN Rail |
| **Enclosure Material** | Steel Metal |
| **Dimension** | 103mm (H) x 31mm (W) x 82mm (D)  / without DIN Rail Clip |
| **Ingress Protection** | IP40 |
| **Weight** | 315g without package |
| **Environmental** | |
| **Operating Temperature & Humidity** | -40˚C~75˚C, 0%~95% Non-Condensing (I-Grade) |
| **Storage Temperature** | -40˚C~80˚C |
| **MTBF** | >200,000 hours |
| **Hi-Pot Insulation** | AC1.0KV for Power/Ethernet port to Chassis Ground |
| **Warranty** | 5 years |
| **Standard** | |
| **EMC** | IEC/ EN61000-6-2, IEC/EN61000-6-4 |
| **EMI** | CISPR 22, FCC part 15B Class A |
| **EMS** | IEC61000-4-2 ESD<br>EN61000-4-3 RS<br>EN61000-4-4 EFT<br>EN61000-4-5 Surge<br>EN61000-4-6 CS<br>EN61000-4-8 Magnetic Field |
| **Railway** | EN50121-4 |

## Ordering Information

| Model Name | Description |
|---|---|
| **DP101-M-SC-2** | Industrial 1-port Fast Ethernet PoE to Fiber Media Converter, multi-mode, 2km/ SC, PSE/ 802.3bt |
| **DP101-M-ST-2*** | Industrial 1-port Fast Ethernet PoE to Fiber Media Converter, multi-mode, 2km/ ST, PSE/ 802.3bt |
| **DP101-S-SC-30** | Industrial 1-port Fast Ethernet PoE to Fiber Media Converter, single-mode, 30km/ SC, PSE/ 802.3bt |
| **DP101-S-ST-30*** | Industrial 1-port Fast Ethernet PoE to Fiber Media Converter, single-mode, 30km/ ST, PSE/ 802.3bt |
| **DP101-WDM13-SC-20*** | Industrial 1-port Fast Ethernet PoE to Fiber Media Converter, single-mode, 20km/TX1310nm,WDM/SC, PSE/802.3bt |
| **DP101-WDM15-SC-20*** | Industrial 1-port Fast Ethernet PoE to Fiber Media Converter, single-mode, 20km/TX1550nm, WDM/SC, PSE/802.3bt |
| | **Package List** |
| | 1 x Product Unit |
| | 1 x 3-pin Removable Terminal Connector |
| | 1 x Attached Din Clip |
| | 1 x Quick Installation Guide |

*Customized Order