CTC Union Technologies Co., Ltd.
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Quick Installation Guide

IMC-1000, IMC-1000S
IMC-1000-E, IMC-1000S-E
Industrial Grade Gigabit Ethernet Media Converters

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http://www.ctcu.com/Industrial/

ISO 9001
ISO 14001

EN50121-4   EN61000-6-2
EN61000-6-4

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Introduction

IMC-1000(-E) & IMC-1000S(-E) are Gigabit Ethernet media converters that support conversion between electrical 10/100/1000Base-TX and optical 100/1000Base-X Ethernet. Housed in rugged DIN rail or wall mountable enclosures, these converters are designed for harsh environments, such as industrial networking and intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

Features
- Redundant dual DC inputs 12/24/48VDC
- IP30 rugged metal housing
- Dual rate (100M/1G) optical support
- Wide temperature range -20°C~75°C (IMC-1000-E & IMC-1000S-E)
- Industrial grade EMS, EMI, UL60950-1, EN 50121-4, EN61000-6-2, EN61000-6-4

Specifications
Optical Interface
- 100/1000Base-X
- SC or ST connectors — IMC-1000(-E)
  SFP slot — IMC-1000S(-E)
- Multimode (500m) 50/125um, 62.5/125um
- Single mode (20km or 40km) 9/125um
- Wavelength: 1310nm (S/M or M/M)
- BiDi option (20km) for Single mode single fiber

Ethernet Interface
- Connector: RJ-45 (shielded)
- Auto MDI/MDI-X
- Speed: 10/100/1000Base-T (Auto)
- Duplex: Full/Half (Auto)
- Standards: IEEE802.3, 802.3u, 802.3x, 802.3ab, 802.3z
- 1024 MAC table
- MTU: 9600K
- Link Fault Pass Through (LFP) (enable/disable by DIP)

Specifications (cont.)
Power
- Absolute Range: 9.6VDC~60VDC
- Reverse Polarity Protection: Yes
- Dual Power Inputs: Yes
- Connector: Removable terminal block
- Consumption: 4.2W

Mechanical
- Water & Dust Proof: IP30 Protection
- Dimensions: 106 mm (D) x 39 mm (W) x 142 mm (H)
- Mounting: DIN-Rail, Wall Mount (Kits included)
- Weight: 630 g (1.4 lb)

Environmental
- Operating Temperature: -10°C~60°C (IMC-1000 & IMC-1000S)
  -20°C~75°C (IMC-1000-E & IMC-1000S-E)
- Storage Temperature: -40°C~85°C
- Humidity: 5%~95% (Non-condensing)

Certifications
- EMC: CE
- EMI (Electromagnetic Interference): FCC, FCC Part 15 Subpart B Class A, CE EN55022 Class A
- 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 Strength: 300A/m, Criteria A
- Safety: UL60950-1
- Shock: EN60068-2-27
- Freefall: EN60068-2-32
- Vibration: EN60068-2-6
- MTBF: 563,813 hours — IMC-1000(-E) (MIL-HDBK-217)
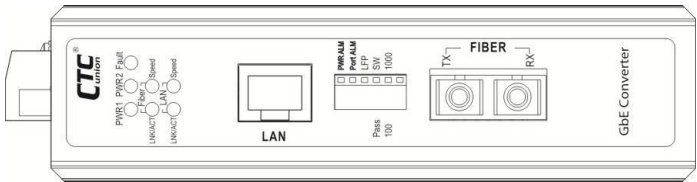 578,980 hours — IMC-1000S(-E) (MIL-HDBK-217)

Connectors

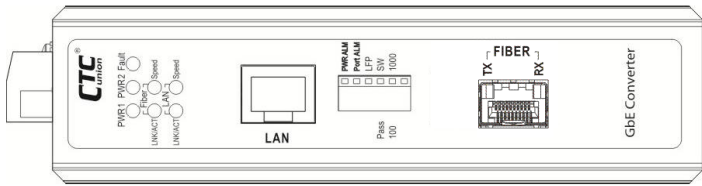**Figure 1. IMC-1000(-E) Front Panel**

Figure 2. IMC-1000S(-E) Front Panel

IMC-1000(-E) model has fixed optical transceiver options for connector types of ST or SC while the IMC-1000S(-E) model uses industry standard SFP modules. The LAN connection uses a shielded RJ-45 which supports Auto MDI/MDI-X. Configuration settings are accomplished via a 6-pole DIP switch. Please see page 5 for the settings of the operation mode switch.
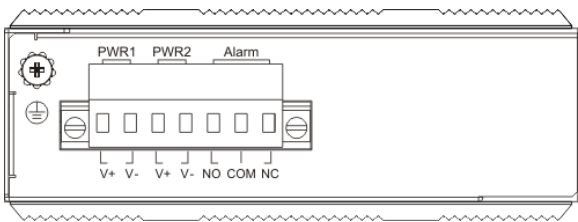
Power & Alarm

Figure 3. Terminal Block

A removable terminal block on the top panel provides both power and alarm connections. See below for explanations.

Power

There are input connectors for two power sources on the removable terminal block. Only one power source is required for normal operation. The second power source input may be provided for redundancy.

Alarm Relay Contact

The Alarm is one electrical relay that can be wired into an alarm circuit and is triggered in the event of port link loss (optical or electrical) or loss of either one power source. From the common pin (COM), the relay can be connected as Normally Open (NO) or Normally Closed (NC). When an alarm occurs NO-to-COM circuit closes and the COM-to-NC circuit opens. See Figure 4 and 5 for normal and fault illustration in each alarm relay type. Please note that the alarm relay contact can only support 1A current at 24VDC. Do not apply voltage and current that exceed these specifications.
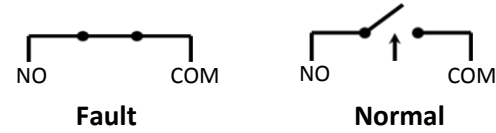

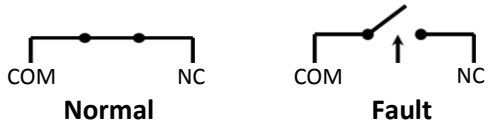**Figure 4. Alarm Relay for NO (Normally Open) Type**

Figure 5. Alarm Relay for NC (Normally Closed) Type

LED Indicators

LED	Color	Definition
PWR1/ PWR2	Green	Power is connected and active at the PWR1/PWR2 input terminal connection.
	Off	Power is not connected.
Fault	Amber	Fiber link loss, TP link loss or either one power loss
	Off	Normal operation with no power, fiber or TP faults.
Fiber LINK/ACT	Green	Fiber port has optical link.
	Blinking	Blinking when there is data traffic.
	Off	No optical link.
Fiber Speed	Green	The fiber connected speed is 100M.
	Yellow	The fiber connected speed is 1000M.
LAN LINK/ACT	Green	LAN port has a link.
	Blinking	Blinking when there is Ethernet traffic.
	Off	No Ethernet link.
LAN Speed	Green	The UTP (LAN) speed is 100M.
	Yellow	The UTP (LAN) speed is 1000M.
	Off	The UTP (LAN) speed is 10M.

Operation Mode Switch

IMC-1000(-E) & IMC-1000S(-E) use a 6-pole DIP switch for configuration. Each pole of the switch has the following functions:
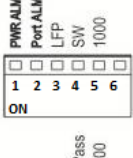

Figure 6. DIP Switch

DIP No.	Status	Function	Description
1	OFF *	Enable Power Alarm	Provide an alarm indication when either power input loses power.
	ON	Disable Power Alarm	No alarm when either power input loses power.
2	OFF *	Enable Port Alarm	Provide an alarm indication when either copper or fiber port loses link.
	ON	Disable Port Alarm	No alarm when either copper or fiber port loses link.
3	OFF *	Disable LFP	Disable LFP (Link Fault Pass through).
	ON	Enable LFP	LFP (Link Fault Pass through) allows a link condition to be passed from fiber to TP or from TP to fiber. **NOTE:** *LFP is available when the converter is set to 'Switch' mode (DIP No. 4 is OFF).*
4	OFF *	Switch Mode	The device acts as a store & forward device supporting MAC learning and filtering.
	ON	Pass Through Mode	The device acts as pure 'converter' that the internal switch is bypassed, enabling low latency and jumbo (unlimited) frame support. Do not enable LFP in this mode or fiber may not link. **NOTE:** *LAN and Fiber speed must match when configured in converter mode. If fiber speed is 1000M, UTP speed must be 1000M.*
5	OFF *	1000M	Force the FX port speed to 1000M.
	ON	100M	Force the FX port speed to 100M. **NOTE:** *Please ensure that the SFP modules used in the IMC-1000S(-E) are capable of operating in the dual rate.*
6		Reserved	Reserved for future use.

NOTE 1: By default, all DIP switches are set to OFF (marked with *).

NOTE 2: After changing the DIP switch setting, you must restart the device to activate the setting.

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Installation

The converter comes with both wall mount and DIN rail hardware brackets. When installing the DIN rail bracket, be sure to correctly align the orientation pin.
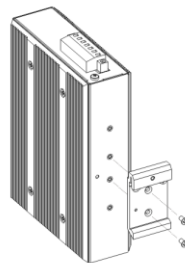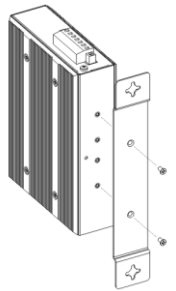

Figure 7. DIN Rail

Figure 8. Wall Mount

The converter with DIN Rail bracket has a steel spring in the upper rail of the bracket. This spring is compressed for mounting and un-mounting by applying downward force.
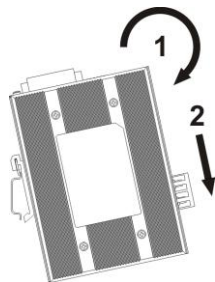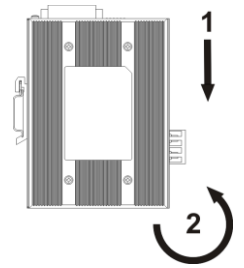

Figure 9. Mounting

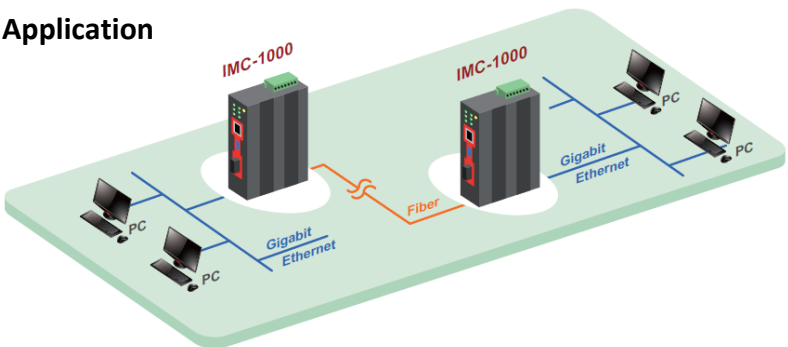**Figure 10.Un-mounting**

Application

Figure 11. IMC-1000(-E) & IMC-1000S(-E) Media Converter Transmission