



Smart Architecture of Espadana

Designing, Production, Customization and Consultant Service
in Network and Fiber Optic System



Technical Specification

SAE-TDP4FE4E1-F

4x10/100BASE-TX Ethernet Ports + 1x100BASE-FX Optical Port + 1-4x E1 Interface Ports (G.703)





Product Description

- 4x10/100BASE-TX Ethernet Ports + 1x100BASE-FX Optical Port + 1-4xE1 Interface Ports (G.703)
- Total Power: <5W / (AC100–240V or DC optional)
- Based on FPGA with self-copyright IC, supporting transparent Ethernet transmission over 1–4 E1 circuits
- Support local and remote device reset functionality
- Ethernet Interface: 100BASE-FX (Fiber) and 10/100BASE-TX (RJ45), support VLAN protocol
- Supports 10M/100M, half/full duplex auto-adaptation, AUTO-MDIX (automatic crossover/straight-through cable detection)
- E1 line rate per channel: 1984Kbps, up to 7936Kbps in 4-channel mode
- Supports independent communication between isolated Ethernet port pairs (e.g. A–A1, B–B1, etc.)
- Support asymmetric transmission and directional disconnection based on CRC error thresholds
- Supports inter-set dynamic MAC address table (up to 4096 entries), with local data filtering
- E1 interface conforms to ITU-T G.703, G.704, and G.823 standards, HDB3 encoding, and inter-set clock recovery
- Hot-plug support for E1 channels without data interruption
- Automatically detects valid E1 links and adjusts transmission accordingly
- Supports maximum 100ms delay difference between E1 channels and automatically bypasses high-delay lines
- Compact, reliable design suitable for telecom, industrial, and enterprise hybrid deployments



Full Description

SAE-TDP4FE4E1-F interface converter is designed to transmit Ethernet data over multiple E1 circuits using advanced FPGA-based architecture and reverse direction multiplexing technology. This device supports bundling of up to 4 E1 channels to enable data transfer for 4 Channel 100BASE-TX Ethernet interfaces. The converter allows seamless bidirectional conversion between Ethernet and E1 optical interfaces, ensuring point-to-point data transmission for E1 interconnection through optical Ethernet.

Unlike traditional remote bridges, **SAE-TDP4FE4E1-F** features intelligent E1 channel management, supporting flexible configurations from 1 to 4 E1 ports. It automatically detects active E1 lines and dynamically selects available ones for optimized performance. The system is tolerant of E1 line delay differences, enhancing transmission reliability in complex network environments. This converter provides a robust solution for extending Ethernet connectivity over legacy TDM infrastructure, making it ideal for hybrid network deployments. With its FPGA-based design, it delivers high performance and stability, suitable for telecom operators, enterprise networks, and industrial communication systems.

The device is compact, power-efficient, and designed for long-term operation in diverse conditions. SAE-TDP4FE4E1-F offers easy management through simple configuration interfaces and ensures consistent Ethernet delivery across multiple E1 backbones.

Application

- Point-to-point transmission over legacy E1 lines for Ethernet extension
- Secure isolated communication between multiple terminal pairs (A–A1, B–B1, C–C1, D–D1)
- Industrial protocol conversion over TDM-based networks
- Telecommunication backhaul using 1–4 channel E1 transmission (1984Kbps–7936Kbps)
- Long-distance data transmission between remote Ethernet nodes via E1 infrastructure
- Redundant Ethernet over E1 link aggregation for enterprise-grade reliability
- Interconnection of SCADA, PLC, and other serial-to-Ethernet systems in critical environments



Technical Specific

Product name	SAE-TDP4FE4E1-F
Interface	
Ports	4 × E1 interfaces, 4 × 10/100Base-TX Ethernet interfaces
standards	
<ul style="list-style-type: none">➤ Support ITU-T G.703 for E1➤ Support G.742 and G.823 for jitter tolerance➤ E1 module includes inter-set clock recovery and HDB3 coding circuit➤ Supports E1 channel hot-plug without interrupting data transmission➤ Automatically detects valid E1 channels (supports 1~4 E1 configuration)➤ Ethernet Interface: 100BASE-FX, supports VLAN protocol (IEEE 802.1Q)➤ Supports Ethernet MAC address filtering (MAC table: 4096 entries)➤ Logical Ethernet port isolation supported (independent transmission)➤ Supports AUTO-MDIX (auto cross/straight detection)➤ Supports remote and local reset➤ Supports asymmetric Ethernet transmission directions➤ Transmission delay difference tolerance: up to 100ms between E1 channels➤ Automatically cuts off high-delay E1 paths without affecting the rest	
E1 specification	
<ul style="list-style-type: none">➤ Standard: Complies with ITU-T G.703➤ Rate: $n \times 64\text{Kbps} \pm 50\text{ppm}$ (up to 1984Kbps per channel, 7936Kbps with 4 channels)➤ Encoding: HDB3➤ Impedance: 75Ω (unbalanced, BNC) / 120Ω (balanced, RJ45)➤ Jitter Tolerance: Meets G.742 and G.823 standards➤ Allowed Attenuation: 0–6dBm	
Ethernet interface(10/100M)	



- Interface Rate: 10/100 Mbps, half/full duplex auto-negotiation
- Standard: IEEE 802.3, IEEE 802.1Q (VLAN compatible)
- MAC Address Table: 4096 entries
- Connector: RJ45, supports Auto-MDIX
- Isolation: Ethernet ports can be logically isolated for secure transmission

Power

Power Supply Options:

AC 180V ~ 260V

DC -48V

DC +24V

Max Power Consumption: $\leq 10W$

Dimension

Mini Type: 216 × 140 × 31 mm (W × D × H), 1.3 kg

Rackmount Type (19" 1U): 483 × 138 × 44 mm, 2.0 kg

Environmental Aspects

Operating Temperature: $-10^{\circ}C$ to $+50^{\circ}C$

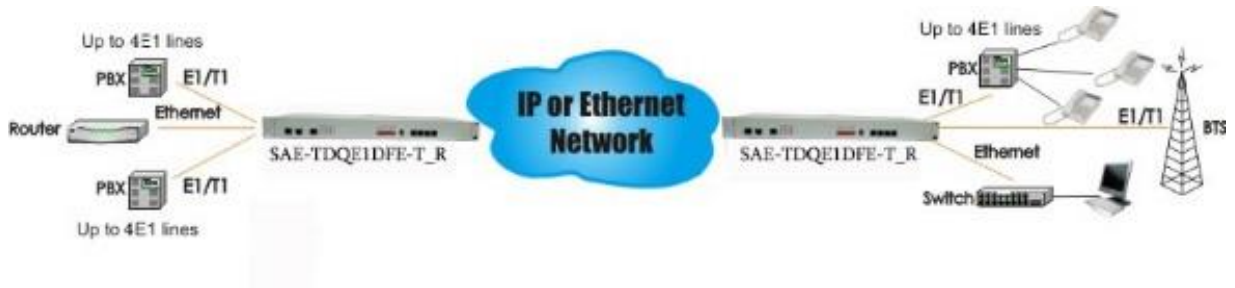
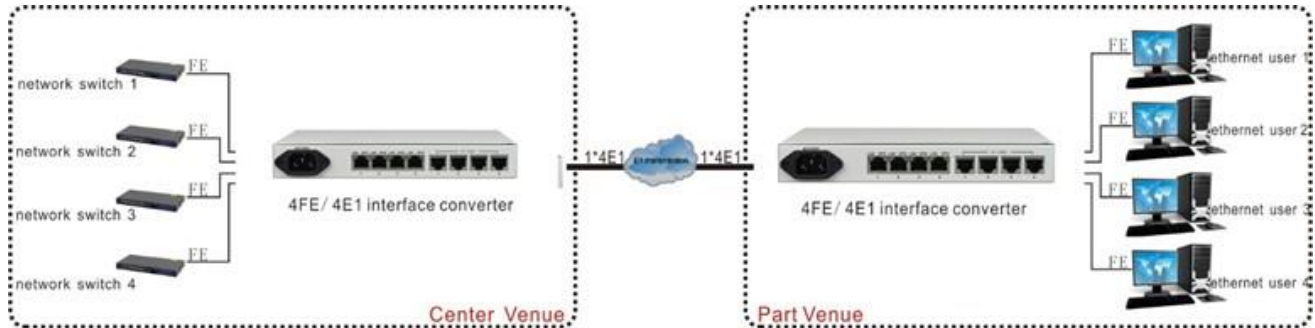
Storage Temperature: $-40^{\circ}C$ to $+80^{\circ}C$

Operating Humidity: 5% to 95% (non-condensing)

Storage Humidity: 5% to 95% (non-condensing)



Product Application Display



**Technical Specification of:
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