



ORION TELECOM NETWORKS INC.

E1 Protection (Fail-Over) Switch

Data Sheet & Product Brochure

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Product Overview

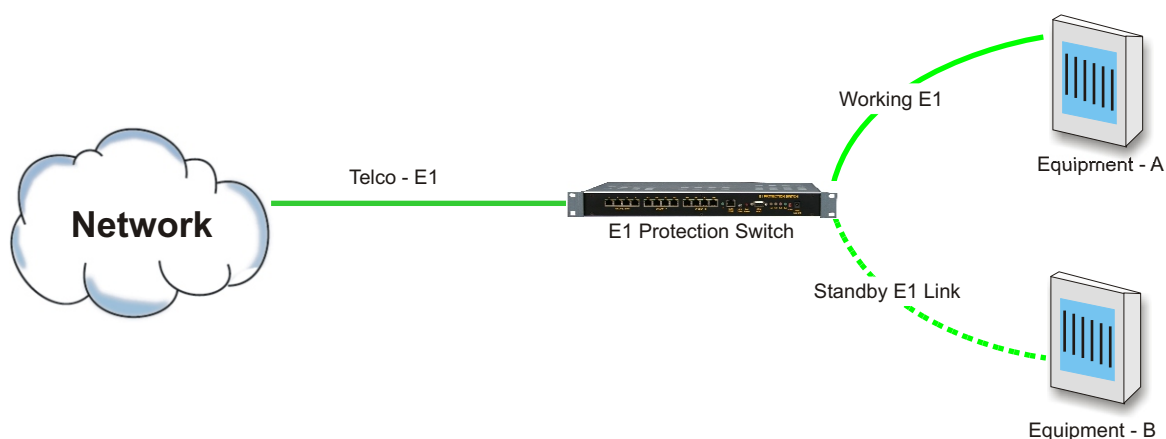
Orion 4 Port E1 Protection (Fail-Over) Switch allows the user to connect upto four E1 lines from the telephone company to **"active"**, as well as **"standby"** E1 terminal(s), such as data server(s), routers etc. at the customer premises.

In the event of the failure of the routers / data server(s) / equipment connected to the **"A / active"** ports, the E1 Protection (Fail-Over) Switch shall automatically switch and connect the E1 line(s) from the telephone company to the routers /data server(s) / equipment connected to **"B / standby"** ports. This ensures minimum downtime-that would have otherwise occurred due to equipment failure.



E1 Protection (Fail-Over) Switch

Application Diagram



User programmable criterion for switching between Active and Standby E1 Links at the customers premises:

Features

- Allows the users to connect upto 4 E1 lines from the Telephone Company to 4 active and 4 standby E1 terminals
- User configurable. May be used for a single E1 link and scaled upto 4 E1 links though user configuration
- Independent, user configurable switching parameters for each E1 link
- Built-in real-time clock / real-time logging maintains a history of all events
- Remotely accessible over a TCP-IP networks. Allows the user to access and carry out maintenance, or and E1 switch the links remotely, if required.

Benefits

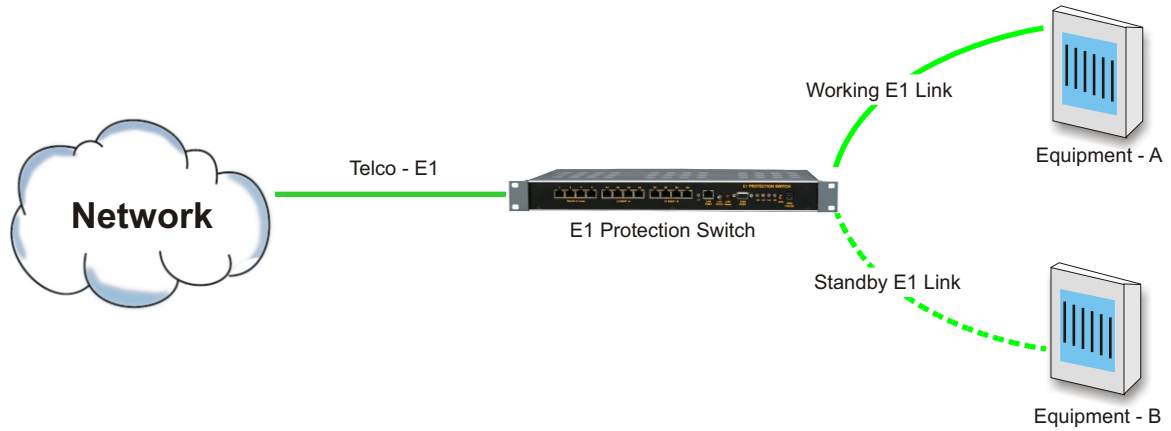
- Allows the users to create and maintain active/standby/duplicate customer premises data networks/data servers, without requiring to bear the recurring \$\$\$ expense of leasing additional expensive E1s lines from the telephone company
- Automatically switches the E1 link(s) from the Telephone Company between the **"active"** and **"standby"** E1 equipment at the customer premises, according to the customer-defined criterion
- Improves security. Allows the user to co-locate the "backup"/" standby" equipment in a different room/building and prevent data loss
- User programmable switching criterion independent for each E1 link
- Increases the reliability of the customer data/IT networks without the recurring additional cost of leasing additional E1 lines from the telephone company. The equipment may be used to create secondary/backup systems at the customer premises to provide virtually uninterrupted service.

User programmable criterion for switching between Active and Standby E1 Links at the customers premises:

Loss Of E1 Signal (LOS)	The Loss of Signal condition in a E1 may occur due to: a) The failure of the E1 Port of the customer premises equipment. b) Or due to loss of power to the customer premises equipment. c) Or due to the disconnection of the E1 cable between the protection Switch and the E1 Port of the customer premises Equipment.
Loss Of Frame (LOF)	This Alarm indicates unframed all ones being detected in the incoming pulses on the receiver of E1 Protection Switch.
Alarm Indication Signal (AIS)	This Alarm indicates that the E1 link error has occurred.
CRC ERROR	This parameter is the number of CRC-4 errors (Cyclic Redundancy check errors) that occurred during the test period. The CRC-4 can be monitored either on-in-service or Out-of-Service E1 spans. Since the expected value of the CRC pattern can be anticipated, the received data can be compared to the expected results. Whenever the expected value does not equal the actual value a CRC error event is counted.
Switching Time	Change over time from main port to standby port is user configurable from 10 ms to 3000 ms. Recovery time from standby to main port is also user configurable from 10 sec to 1000 sec.

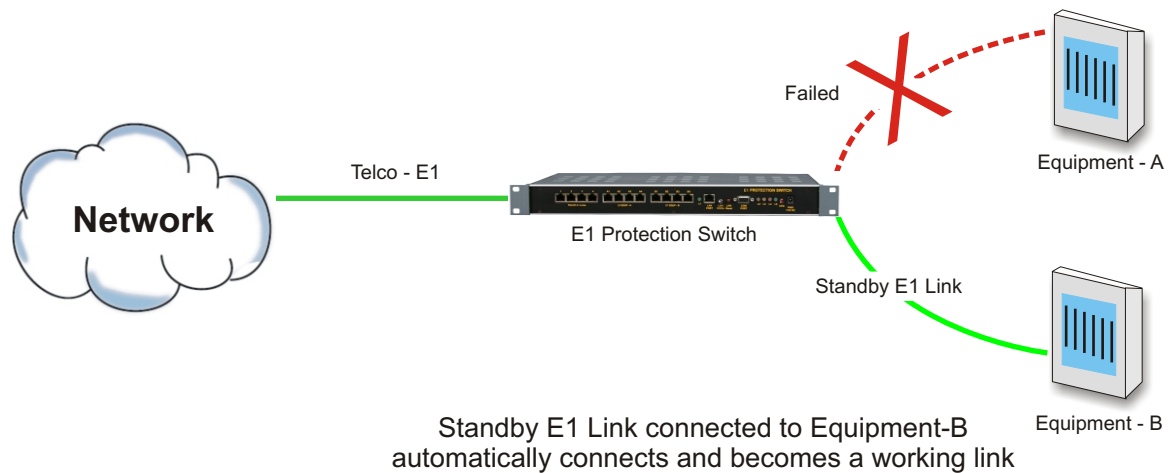
Application Diagram

Telco E1 link connected to Equipment-A

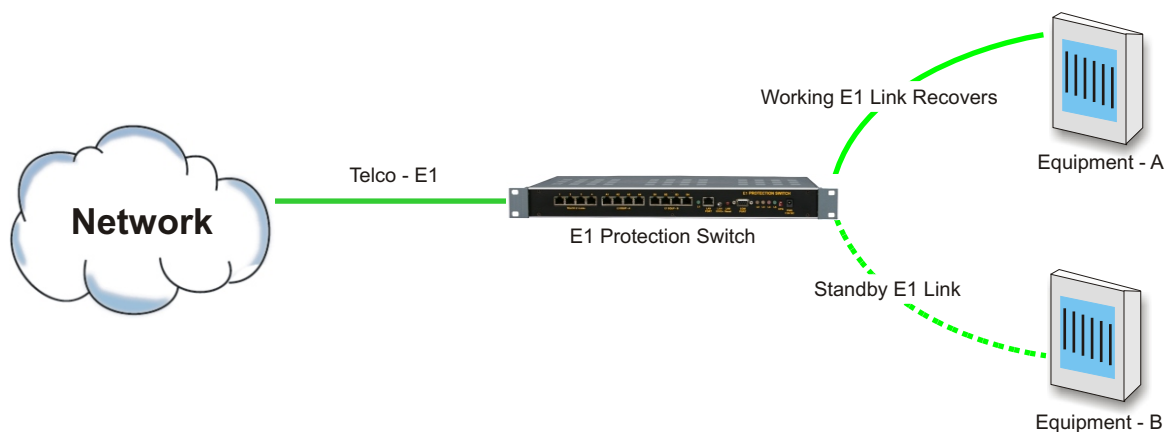


User programmable criterion for switching between Active and Standby E1 Links at the customers premises:

Equipment-A fails - Telco E1 automatically switches to Equipment-B



Equipment-A recovers - Telco E1 automatically switches to Equipment-A



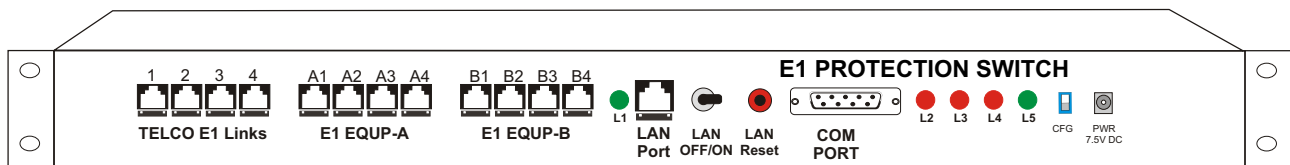
E1 Protection (Fail-Over) Switch

Shelf Description

The E1 Protection (Fail-Over) Switch is fitted in a 19-inch 1U shelf that provides access to all external interfaces.

The E1 interfaces, power input and access and Management Ports (RS232) and 10BaseT Ethernet interfaces) are accessible from the front panel.

Front View



E1 Protection (Fail-Over) Switch LED Indications

The LEDs indicate the following:

- L1- (Green) LAN ON
- L2 - Equipment Port A “In Use” for at least one of the four (enabled) Links
- L3 - Equipment Port B “In Use” for at least one of the four (enabled) Links
- L4 - (Red) Self test failure/Hardware failure
- L5 - (Green) + 5 V DC

Mechanical Specifications

Rack mounting	Standard 19-Inch. DIN Rack
Height	44.00 mm.
Depth	260.00 mm.
Width	477.00 mm.
Weight	4.00 kg.

Technical Specifications

Network Interface

Number of Interfaces	4 Telco E1 Links (common link/Telco E1s) 4 Active E1 Links (for Equipment-A) 4 Standby E1 Links (for Equipment-B)
Line Rate	E1 - 2.048 Mbps \pm 50ppm
Line Code	HDB3
Frame Structure	As per ITU (CCITT) G.704 or un-framed E1
Bit Rate	2048 Kbps \pm 50 ppm
Jitter Tolerance	As per ITU-T G.823
Output Jitter	< 0.05 UI (in the frequency range of 20 Hz to 100 KHz)
Nominal Line Impedance	120 Ohms Balanced RJ-45
Nominal Pulse Width	244 ns
Pulse Mask	As per ITU (CCITT) Rec. G.703
Loss and recovery of frame alignment	As per clause 3 of ITU (CCITT) G.732
Loss and recovery of multiframe alignment	As per clause 5.2 of ITU (CCITT) G.732

AC Power Supply Specifications

Range of input of AC Adapter Voltage	100 V to 240 V AC, 50Hz / 60Hz.
System Input voltage	7.5 V DC to 9.0 V DC, DC input polarity protection.
Maximum full load output current	2.5 A at 7.5 V DC/9.0 V DC
Input voltage reversal protection	Provided in the Card
Efficiency at full load	>86%

Temperature

Operating	0°C to 50°C
Humidity	5% to 95% Non-Condensing

Management Ports (COM Port)

Serial Port: 9.6Kbps (Async). ASCII/VE100/HyperTerminal.
10BaseT Ethernet: Telnet

NMS (with Telnet) XPort Specifications

Network Interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing)
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, SMTP and HTTP
LEDs	10Base-T and 100Base-TX Activity, full/half duplex
Management	Internal web server, SNMP (read only), Serial login, Telnet login
EMI Compliance	<ul style="list-style-type: none"> - Radiated and conducted emissions - complies with Class B limits of EN55022:1998 - Direct and Indirect ESD - complies with EN55024:1998 - RF Electromagnetic Field Immunity - complies with EN55024:1998 - Electrical Fast Transient/Burst Immunity - complies with EN55024:1998 - Power Frequency Magnetic Field Immunity - complies with EN55024:1998 - RF Common Mode Conducted Susceptibility - complies with EN55024:1998

Command Language

Command Line Interface (English text commands)
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Compliance/Regulatory

<ul style="list-style-type: none"> • EMC FCC Part 15 Class 2
<ul style="list-style-type: none"> • Operation ETS 300 019 Class 3.2
<ul style="list-style-type: none"> • Storage ETS 300 019 Class 1.2
<ul style="list-style-type: none"> • Transportation ETS 300 019 Class 2.3

Ordering Information

S. No.	Product Description	Part No.
1.	4 Port Protection (Fail-Over Switch) 19" Shelf 1U High Mount Version 110/120 V AC, 50/60 Hz power	VCL-E1-PRO-1421

