SIGNAMAX™
CONNECTIVITY SYSTEMS
An AESP Company

Network Connectivity Systems

10/100/1000 to 1000 SFP Redundant Link Switching Gigabit Media Converter

Signamax's model 065-1096RED Redundant Link Gigabit Ethernet Media Converter is a 10/100/1000BaseT/TX to 1000Base SFP converter that provides automatic failover protection of a Gigabit Ethernet fiber optic connection without relying on a managed switch. It is designed to provide high-speed recovery (less than 10 ms) of mission-critical segments within networks serving Telco/ISP backbones, cable operators, military, banking and enterprise networks. It is configured by using two Small Form-factor Pluggable (SFP) Gigabit Ethernet fiber optic modules to provide a primary and secondary fiber optic pathway to another 065-1096RED converter at a distant location. The 1000Base fiber connections are provided by slide-in Small Form-factor Pluggable (SFP) modules; a number of different SFP modules are available for multimode or singlemode fiber applications.

The 065-1096RED is a switching media converter, that auto-negotiates speed and duplex mode on its twisted-pair connection. 10BaseT, 100BaseTX, or 1000BaseT connections are automatically speed and duplex mode matched to the Gigabit Ethernet fiber optic connections. For full auto-switch protection capability, these converters are required to be used in pairs. The redundant fiber optic pathways can be routed either via strand diversity, where the secondary protection fiber circuit resides in the same fiber optic cable jacket as the primary connection, or in route diversity protection architectures where the secondary protection fiber circuit is routed through a completely different physical pathway. Route diversity ensures that physical damage to a single fiber optic cable would not shut down the secondary path as well.

KEY FEATURES

- Switch-defeatable Link Fault Signaling (LFS) to operate in concert with managed Ethernet switches.
- Automatic recovery from the secondary to the primary fiber link upon primary link restoral.
- Alarm and status LEDs to monitor both the redundant fiber links and the twisted-pair copper link.
- SFP slots allow flexible, cost-effective, and easy Gigabit Ethernet fiber link configuration.
- Supports auto-negotiation of speed and duplex mode plus Auto MDI/MDI-X on the RJ-45 port.
- Distance extension from 220 meters up to 110 km is possible in full duplex mode.

SPECIFICATIONS

www.signamax.com
16295 N.W. 13th Avenue • Miami, FL 33169 • 800.446.2377 • 305.944.7710 • Fax: 305.949.4483

SIGNAMAX™
CONNECTIVITY SYSTEMS
An AESP Company

Network Connectivity Systems

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
065-1096RED	10/100/1000BaseT/TX to 1000Base SFP Redundant Link Gigabit Media Converter (Requires SFP Modules shown below for operation)
065-79SXMG	1000BaseSX SFP Module – MM/LC, 220m Span on 62.5µm Fiber / 550m Span on 50µm Fiber **
065-79SXEDMG	1000BaseSX SFP Module 1310 nm – MM/LC, 2 km **
065-79LXMG	1000BaseLX SFP Module 1310 nm – SM/LC, 10 km **
065-79LXEDMG	1000BaseLX SFP Module 1310 nm – SM/LC, 40 km **
065-79XDMG	1000BaseXD SFP Module 1550 nm – SM/LC, 40 km **
065-79ZXMG	1000BaseZX SFP Module 1550 nm – SM/LC, 80 km **
065-79EZXMG	1000BaseEZX SFP Module 1550 nm – SM/LC, 110 km **

** Please see our website at www.signamax.com for detailed SFP module specifications.

SPECIFICATIONS

- **APPLICABLE STANDARDS**
  IEEE 802.3 (10BaseT Ethernet);
  IEEE 802.3u (100BaseTX & 100BaseFX Fast Ethernet);
  IEEE 802.3ab 1000BaseT
  IEEE 802.3z 1000BaseSX/LX

- **PORTS**
  1x RJ-45 Twisted Pair; 10/100/1000BaseT/TX
  2 x 1000Base SFP module slots

- **DATA RATES**
  Twisted Pair: 10 Mbps, 100 Mbps, or 1000 Mbps
  Fiber SFP Slots: 1000 Mbps

- **DISTANCES SPANNED**
  Copper: 100 meters
  Fiber: 220 meters to 80 km; varies based upon fiber type and SFP models chosen for use.
  Please Note: Fiber span distances shown are for typical field conditions. Please use the link power budget specifications shown below for meaningful comparisons between competing products.

- **STATUS LEDs**
  PWR: Illuminates under normal operation.
  ALM: Illuminated when failure occurs on any fiber link or on Link Fault Signaling (LFS).
  PRI (Primary link): Illuminated when receiving link pulses from compliant devices; flashing when data packets are being transmitted or received.
  RDT (Redundant link): Illuminated when receiving link pulses from compliant devices; flashing when data packets are being transmitted or received.

- **PERFORMANCE**
  Automatic Failover to Redundant Link: < 10 ms
  Latency: < 4.2 µs (LIFO)
  Throughput @ 100Base: 148,810 pps (64-byte packets)
  Throughput @ 1000Base: 1,488,100 pps (64-byte packets)

- **ENVIRONMENT**
  Operating:
  Temperature: 32°F to 122°F (0°C to 50°C)
  Relative Humidity: 10% to 80%, non-condensing
  Non-Operating/Storage:
  Temperature: -4°F to 176°F (-20°C to 80°C)
  Relative Humidity: 5% to 90%, non-condensing

- **ELECTRICAL REQUIREMENTS**
  Operating Voltage: 9 -32V DC
  Power Supply: 12 Volts DC, 0.8 A

- **PHYSICAL CHARACTERISTICS**
  Dimensions: 4.30 x 2.91 x 0.92 inches [D x W x H]
  (109.2 x 73.8 x 23.4mm)
  Weight: 0.35 lbs. (160 grams)

- **EMISSIONS**
  FCC Part 15 of Class A & CE approved

- **WARRANTY**
  Lifetime

SPECIFICATIONS

www.signamax.com
16295 N.W. 13th Avenue • Miami, FL 33169 • 800.446.2377 • 305.944.7710 • Fax: 305.949.4483

SIGNAMAX™
CONNECTIVITY SYSTEMS
An AESP Company

APPLICATION DIAGRAMS:

Figure 1 – Normal Operation: Primary Link Up, Redundant Link in Hot Standby Mode

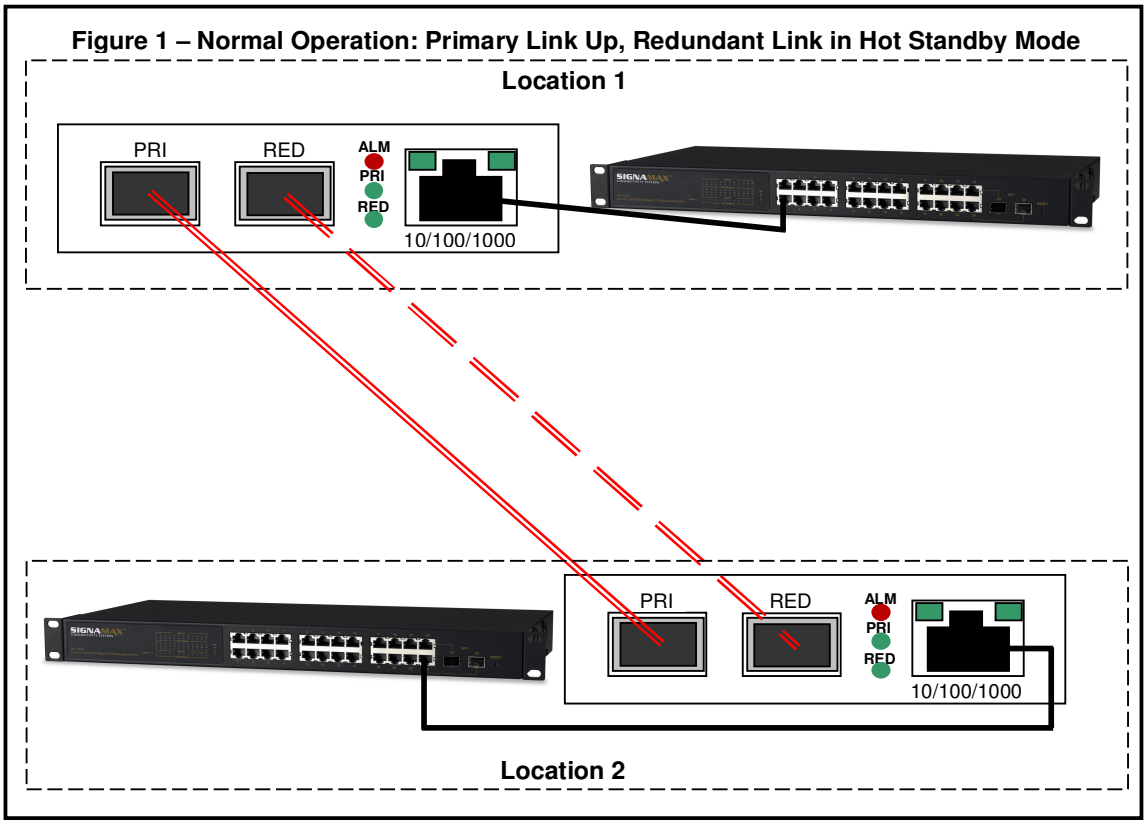
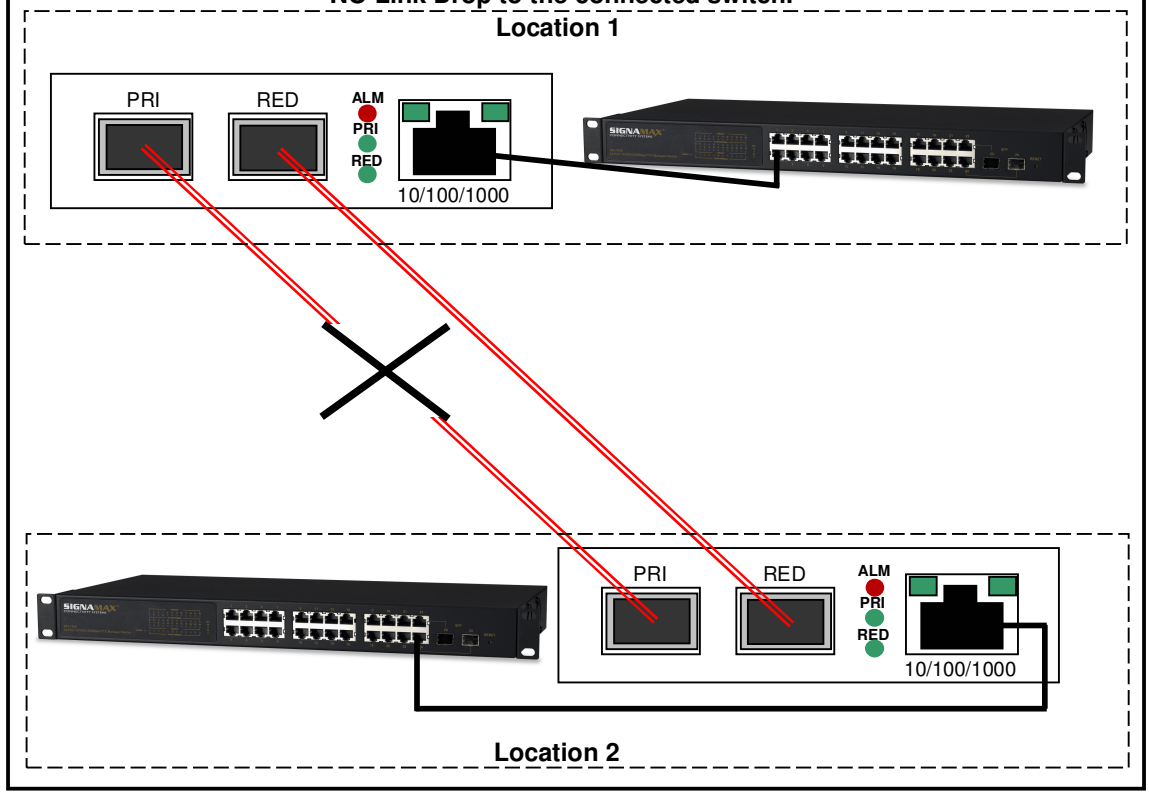


**Figure 2 – Primary Link Has Failed. Hot Standby Redundant Link Is Now Up.
NO Link Drop to the connected switch.**



SPECIFICATIONS

www.signamax.com

16295 N.W. 13th Avenue • Miami, FL 33169 • 800.446.2377 • 305.944.7710 • Fax: 305.949.4483

SIGNAMAX™
CONNECTIVITY SYSTEMS
An AESP Company

APPLICATION DIAGRAMS (continued):

Figure 3 – Primary Link AND Secondary Redundant Link Have Both Failed.
Twisted-Pair Port Drops Link to Managed Ethernet Switch.

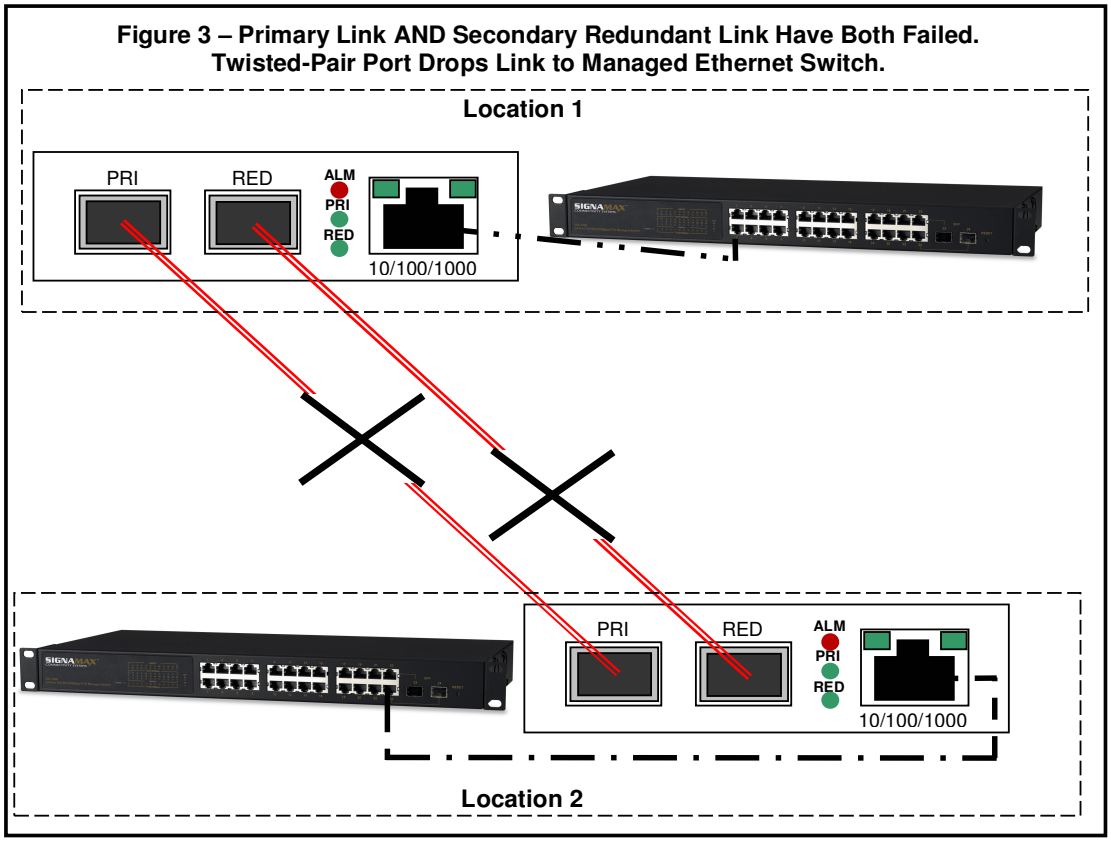
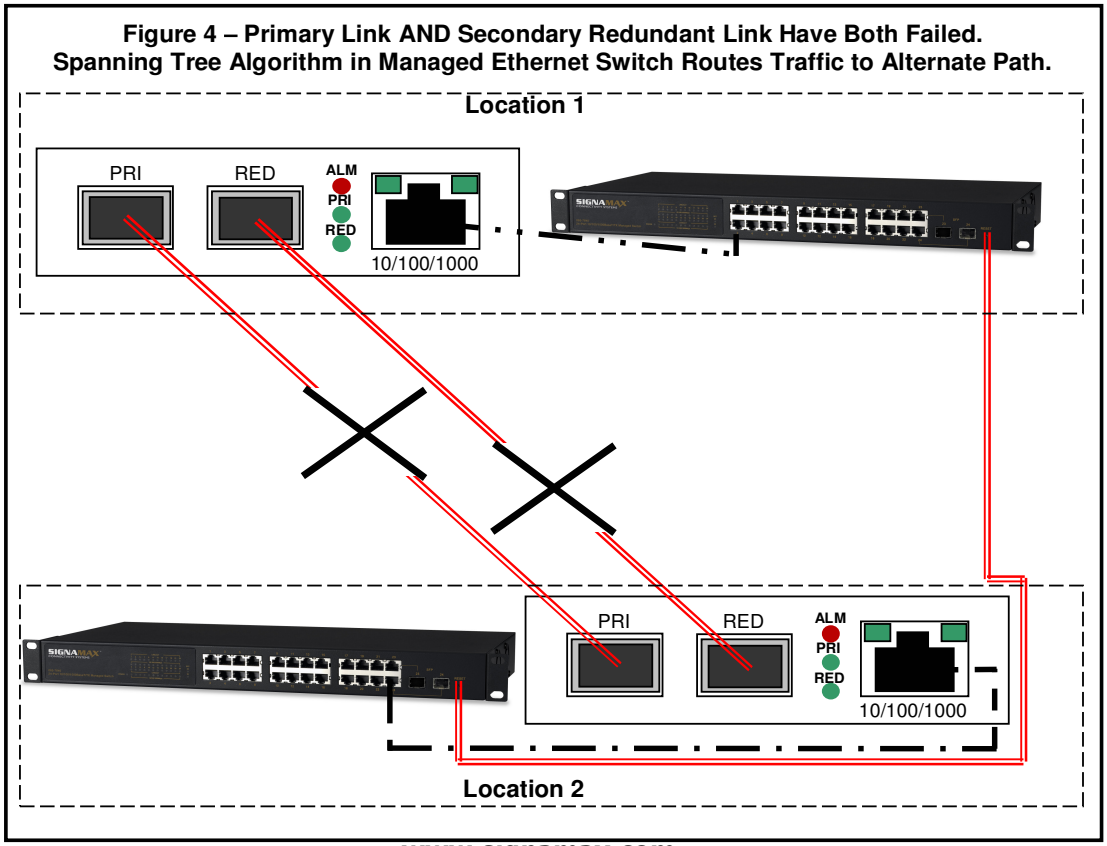


Figure 4 – Primary Link AND Secondary Redundant Link Have Both Failed.
Spanning Tree Algorithm in Managed Ethernet Switch Routes Traffic to Alternate Path.



SPECIFICATIONS

16295 N.W. 13th Avenue • Miami, FL 33169 • 800.446.2377 • 305.944.7710 • Fax: 305.949.4483