Product Overview

VCL-SafeComm-E is family of Ethernet Failover Switches that provide 1+1 Automatic Ethernet Failover, AB / Fallback Protection solution between an “active” and “standby” equipment that is connected to the network through an Ethernet Interface.

VCL-SafeComm-E is available in 2 variants.
1. VCL-SafeComm-EF
2. VCL-SafeComm-EN

VCL-SafeComm-EN provides 1+1 Automatic Ethernet Failover / Fallback Protection between 2, IP Networks. The VCL-SafeComm-EN can be used to provide protection between two IP networks across diverse domains such as fiber-radio; or fiber-satellite; or fiber-PSDN (Public Switched Data Network) to provide automatic fail-over protection to the “standby” network in the event of failure of the “primary” network. VCL-SafeComm-EN, Ethernet Network Protection Switch shall automatically switch and reroute all Ethernet traffic to “secondary”/“standby” IP network in the event of the failure of the “active” / “primary” network. This ensures minimum network downtime, which otherwise would have occurred upon the failure of the “primary” network (including associated network components such as routers/gateways etc.); does not occur.

VCL-SafeComm-EF provides 1+1 Automatic Ethernet Failover Protection between two (Main and Standby) RTUs, Terminals, Servers etc. The VCL-SafeComm-EF can be used to provide terminal equipment redundancy for applications which require 99.99% up-time. The VCL-SafeComm-EF automatic fail-over protection automatically switches to the “standby” terminal equipment in the event of failure of the “primary” equipment to ensure that the 99.99% up-time requirements are always being met. In the event of failure of the “primary / working” terminal equipment, the VCL-SafeComm-EF, Ethernet Failover Switch shall automatically switch and reroute all cables to “secondary”/“standby” terminal equipment. This ensures that downtime, which would have otherwise occurred upon the failure of the “primary” terminal equipment without automatic Ethernet failover capability, never occurs.

Applications:
- Enhances network availability and reliability.
- Eliminates network downtime by automatically / seamlessly
- Switch to the “backup” / “standby” network in the event of total failure of the primary/active IP network.
- Disaster Recovery. To provide automatic failover protection in mission critical applications.
- To switch between and automatically re-route IP traffic to the “standby” network upon the failure of the “primary” transmission network.
- VCL-SafeComm-EN may be used to provide automatic fail-over protection and switching across diverse IP domains such as fiber-radio; or fiber-satellite; or fiber-PSDN (public switched data network).
- Automatic Link Test Feature. Concurrently tests both “active” and “standby” IP links, for “end-to-end” network availability.
- Alerts the user upon the failure of any one of the two “active” / “primary”, or “secondary” / “standby” IP transmission network.

Features and Benefits:
- Fail-Safe. Never becomes a point of failure. Automatically reverts to and reconnects the “primary network” / even in a power down condition.
- End-to-End network Link monitoring
- Number of Ethernet Interfaces: 3
  - 1 x 10/100 Ethernet Interface: Network A (Primary)
  - 1 x 10/100 Ethernet Interface: Network B (Standby)
  - 1 x 10/100 Ethernet Interface User (Protected)
- User configurable link test parameters.
- User configurable switching parameters.
- Real-time logging maintains a history of all events.
- Serial Management Interface (USB) for local access.
- Remote access over TCP-IP networks. Allows the user to access and carry out maintenance, or / and switch the links remotely, if required
- Password Controlled Access. Maintains complete log of all logins.
- Script Assisted Switching. Automatically initiates switching upon the receipt of the scripted message / SNMP Trap.
- Switching initiated through external triggers such as “Dry Contact Alarm Relays”.
- Manual Switching through front-panel buttons with automatic front panel locking to prevent accidental switching
- The data connection through the Safecomm-EN between the local area network and the WAN is completely transparent. The Safecomm-EN is a simple failover switch and does not provide any data routing between its data ingress and data egress ports.
User programmable criterion for switching between Primary and Standby (Protected) Networks:

- Automatically switches between “active” and “standby” networks upon failure of the “connected” network.
- Completely eliminates the need to move (reconnect) cables. Automatically re-routes the traffic to the “available” network.

**Failsafe:** Never becomes a point of failure. Automatically reverts to and reconnects the primary link even in power down condition.

- Switching criterion is completely user programmable.
- Automatic Failover Switching criterion includes:
  - Loss of Signal
  - Loss of Link; Loss of end-to-end link connectivity
  - Heartbeat;
  - Script (Message) based switching
  - User programmed timed switching based upon “Wall-Clock” (Time of Day)
  - Triggers generated by External Dry Contact Relays of connected equipment
- Packet flow based switching:
  - Received Packet Counter – Unicast, Multicast and Broadcast packet counters
- Manual Failover Switching:
  - Manual Switching through front-panel buttons with automatic front-panel locking to prevent accidental switching.

VCL-SafeComm-EN providing 1+1 Network Protection

1. Provides 1+1 Network / Link Protection
3. Completely eliminates re-routing of Ethernet cables. Ethernet cables are automatically moved to the available network port.
4. Essential for any application that requires 1+1 Network / Link / Path redundancy including small / medium office establishments, PoS (point-of-sale) equipment, banking establishments, hotels, ATMs, smaller Industrial Installations etc., requiring minimum service interruption due to network outage.
5. Disaster Recovery.

**Application: VCL-SafeComm-EN providing 1+1 Network Protection**

1. Provides 1+1 Network / Link Protection
2. **Failsafe:** Never becomes a point of failure. Automatically reverts to the primary link even in power down condition.
4. Completely eliminates re-routing of Ethernet cables. Ethernet cables are automatically moved to the available network port.
5. Essential for any application that requires 1+1 Network / Link / Path redundancy including small / medium office establishments, PoS (point-of-sale) equipment, banking establishments, hotels, ATMs, smaller Industrial Installations etc., requiring minimum service interruption due to network outage.
6. Disaster Recovery.

Switching parameters include:

- Loss of signal on the network interface.
- Gateway(s) / Routers are unreachable.
- Received Packet Counter – Unicast, Multicast and Broadcast packet counters
- External triggers (such as the closing of an external alarm relay on either of the routers).
- Script assisted switching (and SNMP trap generated by any one of the routers to initiate switching due to router / network failure).
- The actual network (target IP) becomes unreachable. This is done by programming a network target IP address in the Safecomm-EN. The network target IP address is the last point (or an omnipresent point) in a WAN network that can be programmed by the user which can be a Google DNS server (such as 8.8.8.8), or user's corporate server (such as 161.170.140.127), in protected VPNs. If, in the event, the connectivity between Safecomm-EN and the user programmed network target IP address is lost through the “primary” network / route, the Safecomm-EN automatically switches to the “standby” network / route.
- All switching events are time-stamped and logged in Safecomm’s non-volatile memory. The logs may be viewed by the network administrator at any time for network quality analysis.
- Recovery / fallback parameters to the primary route / primary network is also user programmable. These can be “automatic recovery to the primary network” upon the restoration of the primary route / primary network, or upon the failure of the standby / alternate network. One note to add here is the Safecomm-EN simultaneously tests both active and standby routes so the system is always aware of the status of both networks. Switching to a “dead” route shall never occur under any condition.

Shelf Description:

The Ethernet Failover Switch is available as a Desktop DIN Rail version and 19-inch rack mount options in 1U shelf that provides access to all external interfaces.

- Single and dual (redundant) power supplies.
- User and Network side Ethernet Interfaces, Access and Management ports (USB and 10/100BaseT Ethernet interfaces), external alarm outputs and external (alarm inputs) trigger connectors.
Application Diagrams: (Ordering Part#: VCL-2478-SafeComm-EN)

To provide 1+1 Network Protection - Explained

Ethernet link is connected to Network A

Network A fails. Ethernet link automatically switches to Network B

Network A recovers - Ethernet link automatically reverts and reconnects to Network A
Application Block Diagram #1 (monitoring internet connectivity)

Application Block Diagram #2 (monitoring enterprise server)
Technical Specifications

Specifications:

Number of Ethernet Interfaces - 3

Management and Control Ports:
- 1 x 10/100 Ethernet Interface: Network A (Primary)
- 1 x 10/100 Ethernet Interface: Network B (Standby)
- 1 x 10/100 Ethernet Interface User (Protected)

Guaranteed Maximum Data Throughput 100Mbps

Interface Type 10/100BaseT
Conformity IEEE-802.3

NMS (with Telnet) Specifications:

OAM Network Interface RJ-45 Ethernet, 10/100BaseT
Compatibility Ethernet Version 2.0 IEEE802.3
Monitoring and Management SerialLogin, Telnet, SSH (with option to disable clear text login for users).

AC Power Supply Specifications:

Range of input AC 100V~240V AC, 50Hz / 60Hz.
Voltage

48VDC Power Supply Specifications:

Input DC voltage -48V DC (nominal)
Dual Input
Range of input voltage -18V to -72V DC
Input voltage reversal Provided in the System
Protection
Short circuit protection Provided in the system

110VDC~220VDC Power Supply Specifications:

Input DC voltage -110VDC or 220VDC (nominal)
Dual Input
Range of input voltage 85VDC to 290VDC
Input voltage reversal Provided in the system
Protection
Short circuit protection Provided in the system

Power Supply Options:
- AC power (100 to 240V AC, 50/60 Hz)
- DC Power 24VDC; 48VDC; 110VDC; 220VDC

Power Consumption:
- < 10W at ambient (steady state 24°C)

Local / Remote Management and Monitoring Ports:
- USB, 10/100BaseT Ethernet, RJ45
- 2 x External Alarm Relay Outputs (Dry Contacts)
- 2 x External Alarm Trigger Inputs (Dry Contacts)

Local / Remote Communication Options:
- Telnet / SSH (option to disable clear text communication to comply with NERC security requirements)
- CLI Control Interface (HyperTerminal or Vt100)

Security and Protection:
- Password Protection with password strength monitor
- SSH

Environmental (Equipment):

Operational: -10C to +65C (Typical: +25C)
Cold start 0C
Storage -20C to +70C
Humidity 95% non-condensing
Cooling Convention Cooled. No cooling fans are required.

Mechanical Specifications:

Height 44 mm
Width 480 mm (DIN 19-inch)
Depth 225 mm
Weight 3.5 Kg
Rack Mount 19" Rack mounting

Command Language:
- English text commands
- Graphical User Interface (GUI) - English

MTBF and Equipment MTBF:
- Never becomes a point of failure
- Per MIL-HDBK-217F: ≥ 37 years @ 24C
- Per Telcordia SSR 332, Issue 1: ≥ 42 years @ 24C

Compliance:
- CE, RoHS
- EMC FCC Part 15 Class 2
- Operation ETS 300 019 Class 3.2
- Storage ETS 300 019 Class 1.2
- Transportation ETS 300 019 Class.
## Ordering Information

### Core Unit without PSUs

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Part No.</th>
<th>Product Description</th>
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</table>
| 1      | VCL-2478-SafeComm-EN | Automatic Ethernet Failover Switch  
- Provides 1+1 Automatic Ethernet Failover Protection between 2, IP Networks  
- 19-inch, Rack Mount. - 3 x Ethernet [100Mbps RJ45 (F)]  
  [1 for Network A, 1 for Network B, 1 for User]  
- Management: SNMP, Telnet (RJ45 (F) Port), Serial Port (USB), EMS, Graphical User Interface (GUI)  
- Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual |

*Add Power Supply Options

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<thead>
<tr>
<th>S. No.</th>
<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>AC220</td>
<td>1 x 100-240V AC Power Supply Input</td>
</tr>
<tr>
<td>2</td>
<td>DC048</td>
<td>1 x (-) 48V DC Power Supply Input</td>
</tr>
<tr>
<td>3</td>
<td>DC220</td>
<td>1 x 110~220V DC Power Supply Input</td>
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<tr>
<td>4</td>
<td>AC220R</td>
<td>2 x 100-240V AC Power Supply Input [Redundant]</td>
</tr>
<tr>
<td>5</td>
<td>DC048R</td>
<td>2 x (-) 48V DC Power Supply Input [Redundant]</td>
</tr>
<tr>
<td>6</td>
<td>DC220R</td>
<td>2 x 110~220V DC Power Supply Input [Redundant]</td>
</tr>
</tbody>
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Technical specifications are subject to changes without notice.  
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