



### Overview

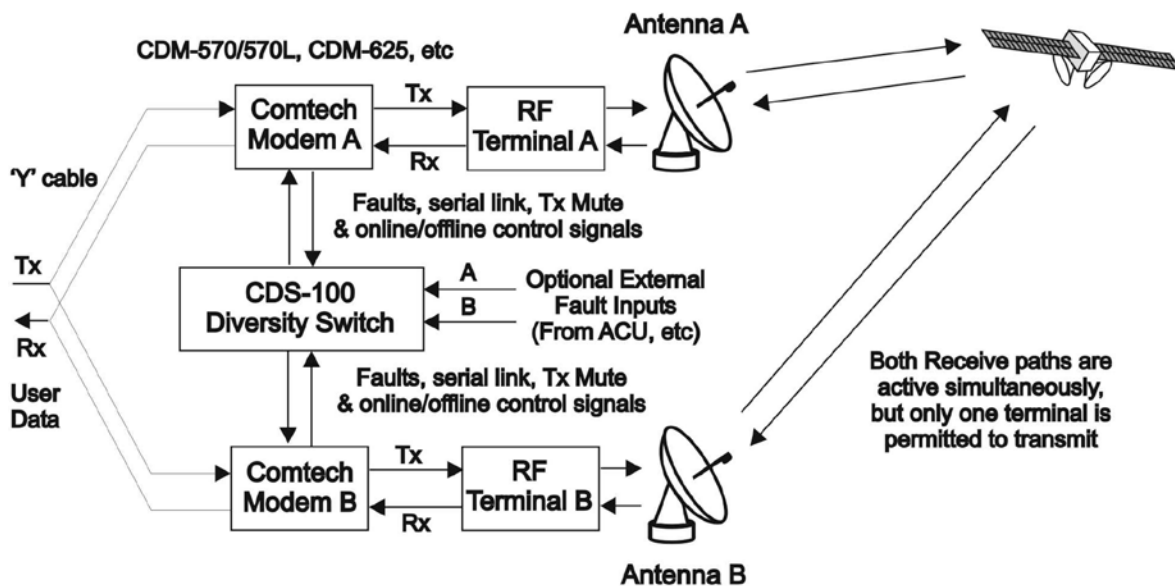
The Comtech EF Data CDS-100 Diversity Switch is a companion product for the following modems:

- CDM-570/570L
- CDM-625/625A
- CDM-700
- CDM-710/710G
- CDM-750

**Switched diversity** systems are those employing two (or sometimes more) antennas for the purpose of maintaining a communications link should the signal from one of those antennas become blocked, or severely degraded. In satellite communications, a switched diversity system is frequently employed in situations where:

- The ground station is mobile (such as a ship) and direct line-of-sight is blocked by buildings, bridges, fjords, etc.
- The ground station is fixed, but where there is frequent blockage of an antenna (such as an oil drilling platform, where helicopter traffic interrupts the line-of-sight view to the satellite)

A system employing the CDS-100 is shown below:



## Operation

The system permits both signal chains to receive and demodulate a common signal coming from each antenna, and to make the decision to switch based on:

- A simple comparison of the lock/unlock status of the two demodulators – if an antenna becomes blocked and its associated demod loses signal acquisition, while the other signal chain remains in lock, then it can be correctly concluded that the system should switch to the other antenna/signal chain) If both signal chains simultaneously report loss of acquisition (both antennas simultaneously blocked, or in a severe rain fade), then no switch will occur.
- A comparison of the signal quality reported by the two demodulators – in this way, an Eb/No value can be defined that guarantees a certain quality of service. If one antenna should become partially blocked, and the Eb/No falls below the defined threshold, then the system will switch to the other signal chain.
- Optionally, the state of externally supplied signals. The CDS-100 accepts signals (from an Antenna Control Unit, for example) that will cause the system to switch from one signal chain to the other.

Note that the CDS-100 always mutes the Transmit IF output of the Modem that is not online. In this manner, only one of the RF Terminals will be transmitting to the satellite at any given time.

## Manual and Automatic Switchover

Manual switchover is carried out from the front panel or via the remote control capability of the online modem. Automatic switchover conditions are user-defined by setting three switches at the front of the unit.

The user can select: **Unit Faults** only, **Unit Faults** or **Receive Traffic Faults**, **Unit Faults** or **Transmit Traffic Faults**, **Unit Faults** or **External Faults**, or any combination. The ability to define the conditions causing a switchover provides the CDS-100 user with a great deal of operational flexibility.

## Specifications

Operating Modes	<ul style="list-style-type: none"><li>• Fully automatic switchover</li><li>• Manual switchover (via the front panel of the online modem, or via the modem's remote control interface)</li><li>• Optional external fault inputs can be used to control switchover</li></ul>
Architecture	<ul style="list-style-type: none"><li>• TX clock and data signals fed to both online and standby units (uses 'Y' cable for supported interface types)</li><li>• Continuous fault comparison of online and standby units</li><li>• The configuration of online and standby units is synchronized via the Auxiliary Serial link between the two modems</li></ul>
Switchover Time	Within 0.1 seconds (typical) after fault detection
Fault Detection Time	0.5 seconds (maximum)
Control inputs	A and B modems connect via 9-pin D-sub male connectors
External Fault inputs	A and B external faults connect via 9-pin D-sub female connectors

External Fault input characteristics	For each A and B fault connector there are three inputs: <ul style="list-style-type: none"><li>• 2 inputs requiring, for fault activation:<ul style="list-style-type: none"><li>▪ 5 volt CMOS logic '0', or external relay closure to ground</li></ul></li><li>• Or 1 input requiring, for fault activation:<ul style="list-style-type: none"><li>▪ 5 – 15 volt voltage</li></ul></li></ul> <p>Unused inputs default to the non-failed state, and all external faults are logically 'OR'ed together</p>
Dimensions (height x width x depth)	1.7" x 5.7" x 4.1" (4.3 x 14.3 x 10.4 cm)
Weight	1.1 lbs (0.5 kg)
Power Requirements	+12 VDC @ 80 mA (max.) – provided by the two modems
Approval	CE

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