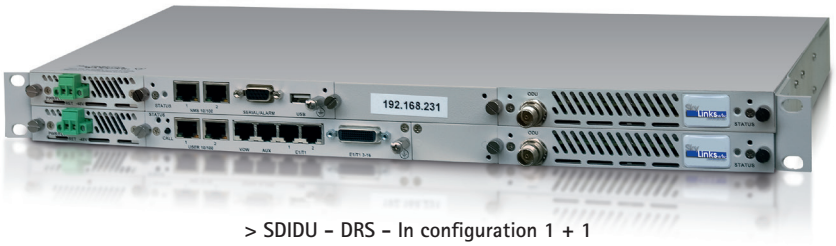
SDIDU - DRS

Software Defined Indoor Unit (Hybrid Modem) up to 620Mbps - XPIC

> SDIDU - DRS - In configuration 1 + 0



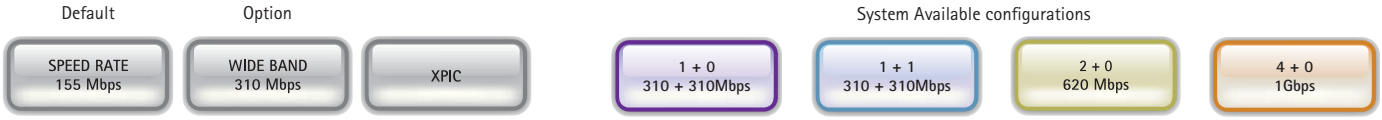
> SDIDU - DRS - In configuration 1 + 1

Main Features

- Support for multiple configurations for both PDH and SDH:
  - 1+0, 1+1 protection/diversity
  - Hot Standby
  - East/West Repeater (2 + 0)
- Selectable Spectral Efficiency of 0.8 to 6.25 bits/Hz (including FEC and spectral shaping effects).
- QPSK, 16 -256 QAM Modulation Link Provisioning.
- Powerful Trellis Coded Modulation concatenated with Reed-Solomon.
- Error Correction.
- Built-in Adaptive Equalizer.
- Support of Data Orderwire Channels:
  - Up to 19.2 kbps asynchronous RS-232
  - 64 kbps synchronous RS422
- Adaptive Power Control.
- Built-in Network Management System (NMS).
- Consecutive Point ring architecture.
- Built-in Bit Error Rate (BER) performance monitoring.

The DRS Software Defined IDU provides high capacity transmission, flexibility, features, and convenience for wireless digital communications networks. The DRS SDIDU represents a new microwave architecture that is designed to address universal applications for both PDH and SDH platforms. This advanced technology platform is designed to provide the flexibility to customers for their current and future network needs.

The DRS SDIDU family is based upon a common platform to support a wide range of network interfaces and configurations. It supports links for 16/32/42/63 x E1/T1, 1/2 x 100BaseTX Ethernet, DS-3/E-3/STS-1, 1000BaseTX Ethernet, and 1/2 x STM-1/OC-3. The SDIDU™ is spectrum and data rate scalable, enabling service providers or organizations to trade-off system gain with spectral efficiency and channel availability for optimal network connectivity. DRS SDIDU enables network operators (mobile and private), government and access service provides to offer a portfolio of secure, scalable wireless applications for data, video, and Voice over IP (VoIP).
The Software Defined IDU™ includes integrated Operations, Administration, Maintenance, and Provisioning (OAM&P) functionality and design features enabling simple commissioning when the radio network is initially set up in the field at the customer's premises. Furthermore, a highlight of DRS SDIDU is scalability and the capability to support a ring-type architecture. This ring or consecutive point radio architecture is self-healing in the event of an outage in the link and automatically re-routes data traffic, thereby ensuring that service to the end user is not interrupted.
The Software Defined IDU™ supports 1+0 and 1+1 protection and ring architectures in a single 1 RU chassis. The modem and power supply functions are supported using easily replaceable plug-in modules. An additional feature of the SDIDU™ is provision for a second plug-in modem/IF module to provide repeater or east/west network configurations.



The major functions of the SDIDU™ can be summarized as follows:

- I/O Processing - The SDIDU comes with a standard I/O capability that includes support for up to 16xT1/E1 and 2x100Base-TX user payloads, 2x100Base-TX for SNMP, and voice orderwire. In addition, option cards for DS-3/E3/STS-1, 1-2 x STM-1/OC-3, and 4xDS-3/E3/STS-1 may be added. The SDIDU architecture is flexible and allows for the addition of other I/ O types in the future.
- Switch/Framing - The SDIDU™ includes an Ethernet Switch and a proprietary Framer that are designed to support 1+1 protection switching, ring architecture routing, and overall network control functions.
- Network Processor - The SDIDU includes a Network Processor which performs SNMP and Network Management functions.
- Modem/IF - The SDIDU™ Modem performs forward-error-correction (FEC) encoding, PSK/QAM modulation and demodulation, equalization, and FEC decoding functions. The IF chain provides a 350 MHz carrier and receives a 140 MHz carrier. The multiplexer function is built into an appliqué that resides in the Modem/IF Module. Two modems can be used for 1+1 protection or ring architectures.
- Power Supply - The SDIDU power supply accepts -48 Vdc and supplies the SDIDU™ and ODU with power. A second redundant power supply may be added as an optional module.
- Signal Timing - STM-1 and E1/T1 signals that are received by an SDIDU over the link for transmitting out the front-panel interfaces have their Tx timing recovered from the respective STM-1 or E1/T1 signal. In this manner the STM-1 and E1/T1 signals are through-timed from the transmitting SDIDU™.

STM-1

- The SDIDU™ meets G.703, G.957 (S-1.1), G.825 for the STM-1/OC-3 signals passed across the RF link. Performance monitoring is not provided as the SDIDU™ does not act as a regenerator. The SDIDU™ does not support add/drop MUX (ADM) capability. The SDIDU™ does support terminal MUX capability.

Gigabit Ethernet

- Scalable Ethernet data rates up to 300 Mbps can be achieved with a Gigabit Ethernet scalable SDIDU™ (see Table 2-4). Data rates up to 155 Mbps are available with the Standard Modem/IF module (CCM-4900) and data rates up to 300 Mbps are available with the Wideband Modem I/F module (CCM-4960).
- The SDIDU™ may be configured to aggregate Ethernet bandwidth across two or four links when operating as 2+0 or 4+0, allowing for a total throughput of up to 600 Mbps or 1000 Mbps, respectively (Section 2.14.1).

SDIDU GigE Ethernet throughput Examples by modulation and bandwidht

Bandwidth/Modulation	30MHz	40MHz	50MHz	56MHz
QPSK	30 Mbps	45 Mbps	55 Mbps	60 Mbps
16-QAM	80 Mbps	100 Mbps	130 Mbps	160 Mbps
32-QAM	100 Mbps	130 Mbps	160 Mbps	200 Mbps
64-QAM	125 Mbps	160 Mbps	200 Mbps	250 Mbps
128-QAM	150 Mbps	200 Mbps	250 Mbps	300 Mbps

Options

- Embedded SNMP Agent with 2 port 10/100 Base-T Hub.
- Network Management System.
- Integrated Crosspoint switch up to 160E1.
- Integrated STM-1 MUX-DEMUX.
- Scalable Ethernet.
- Proprietary quick-release circular waveguide interface.
- PDH Options
  - Up to 16 x E1/T1
  - 100BaseTX/Ethernet: Scalable 1-100 Mbps
  - DS-3/E-3/STS-1 (option; consult factory for availability)
- Super PDH Options
  - Up to 32/42/63 x E1/T1
- Ethernet Options
  - 100 BaseTX/Ethernet: Scalable 1-155 Mbps
  - 1000BaseTX/Ethernet Scalable 1-300 Mbps
- SDH Options
  - 1-2 x SDH STM-1/OC-3 SONET
- Support for multiple configurations for both PDH and SDH
  - 1+0, 1+1 protection/diversity
  - Hot Standby
  - East/West Repeater (2 + 0)
- Optional STM-1 Mux/Demux: allows the SDIDU™ to extract up to 63
- E1 (or 84 T1) from an STM-1. In conjunction with an integrated
- Crosspoint Switch, up to 223 E1 (284 T1s) can be mapped any-to-any between front-panel ports, STM-1, and RF link(s).

SDIDU - DRS

PAYLOAD INTERFACE PARAMENTERS

SDH	Line Rate	1 or 2 STM-1/OC3 155.52 Mbps
	Interfaces	Optical Type SC single mode 1310nm, Electrical BNC
	Standards Compliances	Telcordia
Ethernet	Line Rate	Full Duplex, scalable up to 100 Mbps
	Interfaces	100 Base-Tx or 1000 Base Tx for Gigabit Ethernet
	Standards Compliances	IEEE 802.3

CONFIGURATION

Supported Configurations	1+0, 1+1 (1U), 2+0 (1U)
Radio Protection	Hot standby, hitless switching with frequency or space diversity

MECHANICAL/ENVIROMENTAL

Dimensions	IDU: 19" standard rack (1U), 445 x 238.5 x 44.5mm ODU: 240mm x 240mm x 70mm
Weight	IDU: 4 Kg; ODU: 6.0 Kg
Operating Temperature	IDU: -5° to +45°C; ODU: -33° to +55°C
Altitude	Up to 4500 meters
Humidity	IDU: 95% condensing; ODU: 100% all-weather
Power Inpu	-48V DC (-36V to -60V DC)
Power Consumption	IDU: < 25 watts; ODU: <25 watts
Cooling	Air forced Cooled
Coaxial Interfaces	IDU TNC female, ODU N-type female
IDU-ODU Cable	Belden 9913/RG-8, up to 300m
Antenna Interface	Antenna Interface Coaxial N-type connector (6-11 GHz); proprietary direct mount (13GHz and above)
Standards Compliance	ETSI ETS 300 019

NETWORK MANAGEMENT

Support	SNMP, Fully featured MIB, WEB based GUI, Embedded HTML server, CLI
Local Access	Ethernet 10/100 Base-T / RJ-45
Control Channel	In band