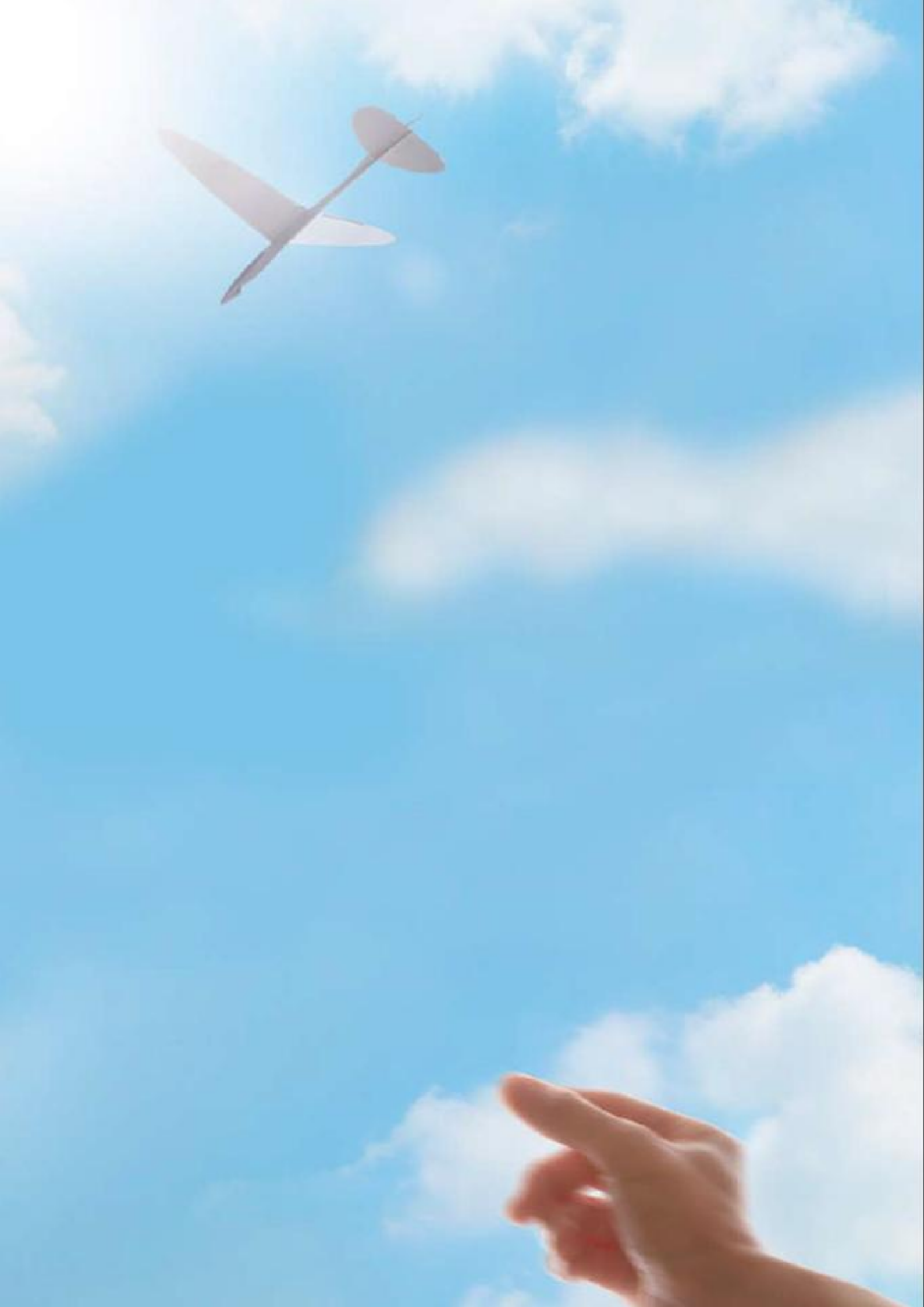


RTN 950 Product Brochure





RTN950

The RTN 950 is a new-generation TDM/Hybrid/Packet integrated microwave transmission system. The RTN 950 provides multiple types of service interfaces and can be installed easily and configured flexibly. It provides a solution where TDM, Hybrid, and Packet microwaves can be integrated. Therefore, traditional TDM and future IP network requirements are fully satisfied.

Architecture

The RTN 950 is 2U high, and adopts a split structure consisting of the IDU 950 and the ODU. The IDU 950 provides six valid slots, provides multiple features with different boards, and supports convergence of up to six RF directions.

Features

- Unified Platform for TDM/Hybrid/Packet, Meeting the Requirements of Network Evolution Towards All-IP Backhaul
 - » Supports the processing and access of native TDM services, native Ethernet services, and PWE3 services.
 - » Supports multi-mode microwave radio: Hybrid mode (E1+ETH), pure Packet mode, PDH mode, and SDH mode.
 - » Provides packet-based IEEE 1588v2 clock synchronization, facilitating cost-effective clock solutions.

• Large-Capacity and Broadband-Oriented Microwave Platform

- » Adopts highly efficient encapsulation and advanced header compression technologies, increasing the maximum capacity of one carrier to more than 1 Gbit/s.
- » Supports XPIC technology, doubling the capacity of one carrier to 2 Gbit/s.
- » Supports Air-LAG.
- » All channels and frequencies have hitless switching from QPSK to 1024QAM with Adaptive Modulation (AM). Priority levels can be set for native E1 services and packet services.

• Multi-directions and Network-Oriented Nodal Equipment

- » Supports convergence of up to six RF directions.
- » Supports TDM cross connection and Ethernet switching.

• Robust IP Service-Processing Capability

- » Supports E-Line or E-LAN services based on VLAN or QinQ, and supports E-Line services based on PW.
- » Supports basic MPLS functions and service forwarding, and supports static LSPs.
- » Adopts the LSP tunnel and PWE3 technologies to form an MPLS network, where multiple services can be accessed.
- » Supports 8-class QoS, provides a wide range of services, and ensures the quality of high priority services.
- » Supports EOS/EOPDH.
- » Supports ETH LAG.
- » Supports VLAN sub-interface.
- » Supports various OAM features, including Eth OAM, MPLS OAM, ATM OAM, and PW OAM. These features allow the management and maintenance in IP networks to be similar to that of SDH networks.

• Complete Protection Schemes

- » Protection for radio links
 - N+1 protection
 - 1+1 HSB/SD/FD protection
 - XPIC 1+1
- » Network-level protection
 - TDM SNCP protection (including SDH link and radio link)
 - IMA protection for ATM over E1 services
 - Linear MSP and ring MSP
 - Ethernet Ring Protection Switching (ERPS) protection and MSTP protection
 - LAG protection for Ethernet services
 - MPLS 1:1 tunnel protection

- Complete Protection Schemes

- » Equipment-level protection
- » 1+1 hot backup for the power input, internal power modules
- » 1+1 hot backup for control, switching, and timing boards

- Easy Installation

- » The RTN 950 can be installed in any standard telecom cabinet, outdoor cabinet, or on a desktop/pole/wall.
- » The RTN 950 and wireless base station can share one cabinet

- Easy Maintenance

- » Supports different types of loopbacks at the service port and the IF port.
- » Supports RMON performance events and the MPLS OAM functions.
- » Supports MPLS OAM, IEEE 802.1ag, and IEEE 802.3ah.
- » Supports ITU-T Y.1731.
- » Supports ATM OAM.
- » Provides a built-in test system to perform the pseudo-random binary sequence (PRBS) error test at the E1 port and the IF port.
- » Provides a hot-pluggable CF card, which stores data configuration files and software. The CF card can be changed for data loading or software upgrade.
- » Supports remote data and software loading by using the NMS, which allows the entire network to be upgraded rapidly, enabling in-service software upgrades.

- Multiple Methods for Network Management

- » RTN devices and Huawei optical transport devices are managed by the iManager U2000. The iManager U2000 enables fast fault locating and quick service provisioning, and achieves visual IP service management while reduce the OPEX.
- » Single or multiple RTN NEs are managed in a centralized manner using the Web LCT.
- » Users can query alarms and performance events through the simple network management protocol (SNMP).
- » Dedicated DCN channels are not required as the inband DCN scheme is used, reducing the network construction costs.

Figure 1-1 RTN 950 (IDU 950)



Table 1-1 Technical specifications

| | | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Frequency Band | 6GHz, 7GHz, 8GHz, 10GHz, 10.5GHz, 11GHz, 13GHz, 15GHz, 18GHz, 23GHz, 26GHz, 28GHz, 32GHz, 38GHz, 42GHz | |
| Channel Spacing (MHz) | 3.5 MHz, 7 MHz, 14 MHz, 28 MHz, 40 MHz, 56 MHz | |
| Modulation Mode | QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM*, 1024QAM* | |
| Interface Type | E1 interface | TDM E1, Smart E1 (CES E1, IMA E1 ML-PPP E1*) |
| | SDH interface | STM-1 optical/electrical interface, STM-4 optical interface* |
| | Ethernet interface | FE interface: 10/100BASE-T(X), 100BASE-FX GE interface: 1000Base-SX, 1000Base-LX, 10/100/1000BASE-T(X) |
| | Auxiliary interface | Order-wire interface, external clock input/output interface, IEEE 1588v2 clock input/output interface |
| | Alarm interface | External alarm 4 input/2 output interface ,external alarm 2 output cascading interface |
| Maximum Interface | PDH interface: 192 × E1 SDH interface: 12× STM-1, 12 × STM-4* Ethernet interface: 48× FE , 12 × GE | |
| Maximum Capacity | Switching capacity: 10Gbit/s TDM cross connection capacity: 32×32VC-4, full timeslot cross-connections at the VC-12/VC-3/VC-4 level | |
| RF Direction | A maximum of 6 RF directions | |
| XMC-2 ODU | Frequency bands: 7/8/11/13/15/18/23/26/28/32/38/42 GHz. Modulation schemes: QPSK/16QAM/32QAM/64QAM/128QAM/256QAM Channel spacings: 7/14/28/40/56 MHz. | |
| Configuration | N × (1+0) configuration (1≤N≤6) N+0 configuration (1≤N≤6) N+1 configuration (1≤N≤4) XPIC configuration 1+1 configuration: 1+1 HSB, 1+1 FD, 1+1 SD, XPIC 1+1 | |

| | | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Ethernet Function | Ethernet II, IEEE 802.3, and IEEE 802.1q/p service frame formats E-line and E-LAN Ethernet services Adding, deletion, and exchange VLAN tags (IEEE 802.1q/p) Flow control (IEEE 802.3x) Link aggregation group (LAG) RMON (IETF RFC 2819) | |
| Synchronous Ethernet | ITU-T G.8261- and ITU-T G.8262-compliant synchronous Ethernet. | |
| Security | MAC address-based black list Suppression of broadcast packets Access control list (ACL) | |
| PWE3 | Simulation of TDM E1 and ATM/IMA E1 services Encapsulation of Ethernet services over LSP tunnel to implement E-line services Static PW | |
| QoS | IP DSCP/IP TOS, MPLS EXP, VLAN 802.1p CAR and traffic policing in color-blind or color-aware mode 8 classes for queue scheduling | |
| MPLS Capacity | Number of VLAN tags: 4,094 Number of tunnels (including MPLS tunnel, TMPLS tunnel, IP tunnel, and GRE tunnel): 1,024 Number of CESs: 192 Number of PWs: 1,024 Number of E-lines: 1,024 Number of APS protection groups: 32 | |
| Dimensions and Weight | Dimensions: 442 mm (width) x 220 mm (depth) x 88 mm (height) Weight: 5.5 kg | |
| Working Temperature | IDU | - 5°C to +60°C |
| | ODU | - 33°C to +55°C |
| Relative Humidity | IDU | 5% to 95% |
| | ODU | 5% to 100% |
| Power Supply | - 72 V to -38.4 V | |
| Heat Dissipation | Fan cooling | |
| Maximum Working Altitude | 4,500 m | |

* Available in roadmap

Table 1-2 Information about the 18GHz frequency band (XMC-2 ODU)

| T/R Spacing (MHz) | Sub-Band | Lower Sub-band TX Frequency (MHz) | | Higher Sub-band TX Frequency (MHz) | |
|-------------------|----------|-----------------------------------|-------------|------------------------------------|-------------|
| | | Lower Limit | Upper Limit | Lower Limit | Upper Limit |
| 1010/1008 | A | 17,685.00 | 18,230.00 | 18,695.00 | 19,240.00 |
| 1010/1008 | B | 18,180.00 | 18,700.00 | 19,190.00 | 19,710.00 |
| 1560 | C | 17,700.00 | 18,140.00 | 19,260.00 | 19,700.00 |
| 1092.5 | A | 17,712.50 | 18,060.00 | 18,805.00 | 19,152.50 |
| 1092.5 | B | 17,987.50 | 18,595.00 | 19,080.00 | 19,687.50 |

Copyright © Huawei Technologies Co., Ltd. 2011. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

Trademark Notice



HUAWEI and are trademarks or registered trademarks of Huawei Technologies Co., Ltd.

Other trademarks, product, service and company names mentioned are the property of their respective owners.

General Disclaimer

The information in this document may contain predictive statements including, without limitation, statements regarding the future financial and operating results, future product portfolio, new technology, etc. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in the predictive statements. Therefore, such information is provided for reference purpose only and constitutes neither an offer nor an acceptance. Huawei may change the information at any time without notice.

HUAWEI TECHNOLOGIES CO., LTD.
Huawei Industrial Base
Bantian Longgang
Shenzhen 518129, P.R. China
Tel: +86 755 28780808

www.huawei.com