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SpectralWave
U-Node WBM
STM-64/16 Compact Multi-Service Platform

■ **Overview**
The SpectralWave U-Node WBM (Wide Band Manager) is a Multi-service Platform supporting STM-1/STM-4/STM-16/STM-64 optical transport. The U-Node WBM provides TDM service interfaces such as 2M, 34M, 45M, 140M, and data service interfaces with Gigabit and 10/100Base Ethernet.

■ **Compact and High Density Design**
The U-Node WBM accommodates 2M and Ethernet through STM-16/64 on one shelf. The WBM Shelf has 12 universal interface slots. Ethernet, 2/34/45M, STM-N universal slots offers flexible network configuration.

■ **Various Network Topology**
The STM-N ports in the universal interface slots can be flexibly assigned to 1+1 MSP, 2/4-Fiber MS-SPRing and SNCP. This ability enables economical and flexible Dual Node Interconnection and Multiple Rings.

■ **Flexible Bandwidth using GFP and VCAT**
For IP packet transport, the U-Node WBM supports to establish transparent paths between Ethernet. For efficient and reliable Ethernet transport over SDH networks, Generic Framing Procedure (GFP) and VC-n-Xv Virtual Concatenation (VCAT) are adopted.
The GFP adaptation encapsulates Ethernet MAC frames for subsequent transport over existing SDH networks. The VCAT enables the GFP adaptation to establish flexible bandwidth path.

■ **Link Capacity Adjustment Scheme**
The Link Capacity Adjustment Scheme (LCAS) provides a control scheme to hitless increase or decrease the bandwidth of a VCAT Group link to meet the bandwidth needs of the application. In addition, the LCAS automatically decrease the bandwidth if a VCAT member experiences a failure in the network, and increase the bandwidth when the network failure is repaired.

■ **Resilient Packet Ring**
The U-Node WBM offers efficient and reliable Ethernet bandwidth delivery and bandwidth management in optical networks.
The Resilient Packet Ring (RPR) technology is an emerging standard (IEEE 802.17) that enables Ethernet transport over existing SDH infrastructures while continuing to leverage the SDH networks for legacy TDM services.
The U-Node WBM RPR function combines low cost and simplicity of packet-based, connectionless networking with the reliability, managed bandwidth, and scalability of optical networks.

■ **Integrated O-AMP**
The U-Node WBM enables Ultra Long-Haul optical transmission up to 44dB using integrated optical amplifiers.

■ **Integrated Management**
The INC-100MS offers total management of the NEC's optical transport network composed of the SpectralWave U-Node BBM, WBM, UN5000, the SpectralWave V-Node, V-Node S, C-Node, the SpectralWave DWDM systems and other SMS series SDH products.

Technical Summary

Interfaces :
STM-64 : I-64.2, S-64.2, L-64.2, V-64.2
STM-16 : I-16, L-16.1, L-16.2, V-16.2, U-16.2
STM-4 : I-4, S-4.1, L-4.1, L-4.2
STM-1 : I-1, S-1.1, L-1.1, L-1.2
Electrical interface, G.703
Ethernet : 1000Base-SX
1000Base-LX
10/100Base-T
PDH : 140Mbit/s, G.703
45Mbit/s, G.703
34Mbit/s, G.703
2Mbit/s, G.703

Protection :
STM-64/16 : MS-SPRing
STM-64/16/4/1 : SNCP w/ non-intrusive
STM-16/4/1 : Linear MSP

Cross-connect Capacity :
VC-4 256 x 256
VC-12 2016 x 2016
VC-4-4c, VC-4-16c concatenation

Built-in Orderwire :
Station Calling : All-call, Selective-call, Group-call
Headset Interface : 4-wire 200 ohms
Telephone Interface : 2-wire 600 ohms

External Orderwire Interface :
VF interface : 4W 600 ohms
Number of ports : 2 (E1, E2)
Digital Interface : V.11, 64kbit/s
Co/Contra directional
Number of ports : 2 (E1, E2)

Housekeeping Interface :
Housekeeping Alarm : 16 ports
Housekeeping Control : 8 ports

User channel :
E1, E2, F1 : V.11, 64kbit/s
Co/Contra directional
D4-D12 : V.11, 576kbit/s
Co/Contra directional
Number of ports : 6

Management
Craft Interface Device : Windows PC
19200 bit/s, RS-232C
NMS Interface : Qnx and Qecc interface
Physical Interface : Ethernet (10BaseT)
DCCr (D1-D3)
DCCm(D4-D12)
Protocol : TL1/OSI
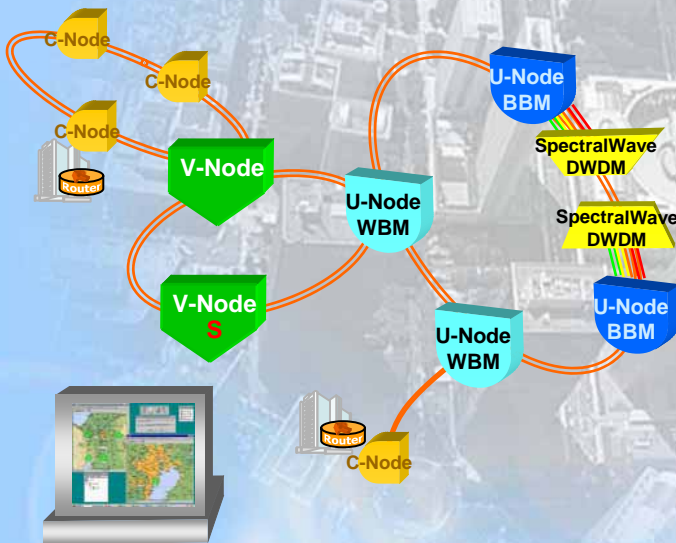TL1/OSI over TCP/IP

Power Requirements :
−48VDC (−38.4V to −60V)
−60VDC (−48V to −72V)

Environmental Conditions :
Temperature : −5°C to +45°C
Relative Humidity : 5% to 90%
EMC: EN55022 (Class A)
EN50082-1
Safety: EN60950
EN60825

Dimensions :
Shelf (mm) : 648(H) x 490(W) x 270(D)
Wiring Access : Full front access

C-Node
C-Node
C-Node
Router
V-Node
U-Node BBM
SpectralWave DWDM
U-Node WBM
SpectralWave DWDM
V-Node S
U-Node WBM
U-Node BBM
Router
C-Node

INC-100MS
Management System

⚠ Safety Precautions ★Before installing, connection or using this product, be sure to carefully read and observe the cautionary and prohibited matters provided in the instruction manual.

For inquiries, contact :
NEC
URL http://www.nec-mobilesolutions.com/infrastructures/