Multi-Service Access Platform OPCOM3500E-12

Overview
OPCOM3500E MSAP is carrier-class Multi-Service Access Platform, and designed to enable establishment of service-integrated for Last Mile. The carrier-class compact design, the powerful interfacing capabilities and the rich mounting options open up a whole new area of application for OPCOM3500E. It can deliver a mix of voice and high-speed data service. OPCOM3500E can extend user LAN services in the Last Mile by working opposite dedicated customer located equipment such as Raisecom's SDH CPE, PDH Multiplexer, Fiber Modem, Interface Converter, Inverse Multiplexer, Ethernet Demarcation, Ethernet Switch and Media Converter, and all the remote device could be aggregated to SDH directly.

OPCOM3500E MSAP has 2 version, the 1st version is OPCOM3500E-12 it is a rack with room for 12 modules with an aggregate capacity of up to 622Mbps, and tributary capacities down to 2Mbps. The flexibility provided by offering mapping of data traffic into a number of VC12. Next-generation SDH technology, GFP, VCG and LCAS is used for Ethernet service over SDH. OPCOM3500E-12 is an ideal product for carriers to groom and consolidate traffic from various source in a Metro network.

OPCOM3500E-12 has 6Unit high for more capacity. The second version is OPCOM3500E-6 is a smaller size of MSAP, only 3 Unit high 19 inch width chassis will save more space installation, total 4 STM-1 uplinks and 3 or 4 slots for tributary modules.

OPCOM3500E-12 Feature

One platform of aggregation and cross-connection based on TDM technology, including SDH, PDH, Ethernet over SDH, Ethernet over PDH, G.SHDSL, as well as Ethernet Layer 2, 15 slots totally
Slot-0: SNMP NMS module, which could manage all module
Slot-POWER1, Slot-POWER2: Redundant power supply modules
Slot-6,7: SDH aggregation unit, totally 4*STM-1 or 4*STM-4 uplink
Slot-9: Gigabit Ethernet aggregation unit, totally 2 GE Combo interfaces
Slot-1,2,3,4,5,8,9,10,11,12: Totally 10 slots for tributary units, maximum 160 E1 electrical ports / 80 E1 optical ports / 40 PDH fiber optical ports / 80 Ethernet ports
Redundant 110/220VAC or -48V/DC power supply, Redundant aggregation modules protection, redundant PDH interface protection
No-block cross connection of 16×16 VC4 or 1008×1008 VC12 when STM-1 aggregation module inside
VC12 cross connection between all tributary units and aggregation units
All service is physically isolated, providing leased line features
Ethernet over SDH supports GFP, LAPS encapsulation, and VCG/LCAS. The bandwidth can be controlled and assigned as per the customer's need. And it makes no damage to adjust Ethernet over PDH supports inverse multiplexing technology, and LCAS to auto-adjust the capacity of available E1 transmission
Optional E1 impedance 75 ohm unbalanced or 120 ohm balanced
Optional PDH fiber optical tributary for connecting with multi-E1 plus Fast-Ethernet fiber optical multiplexer CPE
Optional multimode, single mode or single strand fiber optic cables
Available with 850, 1310, and 1550nm optical wavelengths
Auto Laser Shutdown protection and Dying Gasp (remote power off)
All interface on front panel except DC power input
Optional overhead bytes DCC channel for SNMP remote management
Optional appointed VC12 channel for SNMP remote management in case of DCC channel has been blocked by other brand SDH ADM
Standard SNMP network management, realizing centralized standard SNMP network management through in-band or out-of-band network management channels
Build-in management VC12 channel in aggregation links
OAM of remote CPE monitoring and configuration
Raisecom universal power supply module SUB-PWRII-AC and SUB-PWRII-DC are serving on OPCOM3500E-12, OPCOM3500E-6, RC006-12, RC006-6, RC3000-15, RC3000-6, and ISCOM5800 series chassis and platform.

Introduction
OPCOM3500E adopts rack design, including chassis, fans board, plug board and power supply board.
For the plug board, including following parts:
Network management board: NMS board should be in slot 0
Aggregation ports: STM-1, STM-4 boards should be in slot 6,7
Tributary ports: STM-1, E1, E1-fiber, PDH fiber, Multi-service PDH fiber (wire-speed Ethernet and several E1), Ethernet fiber optical and electrical (EoS/EoP), G.SHDSL boards should be in slot 1,2,3,4,5,8,9,10,11,12.
Application of OPCOM3500E-12

Aggregating most kinds of Raisecom CPE to STM-1 or STM-4 directly and Fast Ethernet to STM-1/STM-4 or Gigabit Ethernet uplinks

Specification of OPCOM3500E-12

Dimension:
480×267×248 (W×H×D)  19 inch, 6U high

Power supply condition:
DC: -36~72V,  AC: 90~265V,
Power Consumption < 300W

Temperature: -5~50 degrees

Relative humidity: ≤90%(35 degree)

Slot number: totally 15 slots on front panel

Connector on rear panel:
2 connectors of 3-pin -48VDC input
1 connector of 2 dry connect alarm output
1 connector of 3-pin -48VDC output for outside fan

OPCOM3500E MSAP and mini-SDH add/drop multiplexer can do the 3G Node B backhaul through multiple STM-1 sub-rings to Metro-E. Sometimes E1 lines and Fast-Ethernet should be transparent transmitted to backbone simultaneously for voice and data services.
OPCOM3500E-NMS NMS module in OPCOM3500E-12

Feature of OPCOM3500E-NMS

OPCOM3500E-NMS is network management module of OPCOM3500E-12 platform in slot 0 only. It communicates with network management software of upper layer and accepts management of upper layer. It can manage OPCOM3500E-12 equipment and corresponding remote equipment. Provide external clock input and output for whole OPCOM3500E-12 system. Keep running service without NMS card available. Support on-line upgrade of system and tributary board. In support of automatic read and save the configurations, running informations and from all other modules while a new NMS module inserted without any initial setup.

NMS Unit

SNMP and NM-EXT Interface:
Connector type: RJ45
Standard: 10/100Base-Tx
Bit rate: 10/100Mbps Auto-negotiation

RS232 Interface for User:
Connector type: RJ45
Standard: complies with RS232 standard
Bit rate: 9600bps

Specification

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Console Interface:</td>
<td>connector type: RJ45</td>
</tr>
<tr>
<td>Standard:</td>
<td>complies with RS232 standard</td>
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<tr>
<td>Bit rate:</td>
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<td>2Mbit/s Synchronous Clock Interface:</td>
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<td>Working Ambience:</td>
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<td>Weight:</td>
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</table>
OPCOM3500E-6 Mini Multi-service Access Platform

OPCOM3500E-6 has a similar function as OPCOM3500E-12, but only half size. The 19inch 3unit high design of OPCOM3500E-6 has totally 8 slots for all modules, and also includes redundant power supply, redundant aggregation unit, as well as the Gigabit Ethernet aggregation uplink.
OPCOM3500E-6 can share service cards with OPCOM3500E-12 except NMS and GE aggregation unit.

**OPCOM3500E-6 Feature**

One platform of aggregation and cross-connection based on TDM technology, including SDH, PDH, Ethernet over SDH, Ethernet over PDH, G.SHDSL, as well as Ethernet Layer 2, 6 slots totally
Slot-1: SNMP NMS module(including 2 STM-1 aggregation optical interfaces), which could manage all module
Slot-2: Aggregation module or tributary module
Slot-3,4,5: Tributary modules only
Slot-6: Gigabit Ethernet aggregation module
Slot-PWR1,PWR2: Redundant 110/220VAC or -48VDC power supply
No-block cross connection of 8x8 VC4 or 504×504 VC12 when NMS-STM1 module inside VC12 cross connection between all tributary units and aggregation units
All service is physically isolated, providing leased line features
Ethernet over SDH supports GFP, LAPS encapsulation, and VCG/LCAS. The bandwidth can be controlled and assigned as per the customer’s need. And it makes no damage to adjust Ethernet over PDH supports inverse multiplexing technology, and LCAS to auto-adjust the capacity of available E1 transmission
Optional E1 impedance 75 ohm unbalanced or 120 ohm balanced
Optional PDH fiber optical tributary for connecting with multi-E1 plus Fast-Ethernet fiber optical multiplexer CPE
Optional multimode, single mode or single strand fiber optic cables
Available with 850, 1310, and 1550nm optical wavelengths
Auto Laser Shutdown protection and Dying Gasp (remote power off)
All interface on front panel except DC power input
Optional overhead bytes DCC channel for SNMP remote management
Optional appointed VC12 channel for SNMP remote management in case of DCC channel has been blocked by other brand SDH ADM
Standard SNMP network management, realizing centralized standard SNMP network management through in-band or out-of-band network management channels
Build-in management VC12 channel in aggregation links
OAM of remote CPE monitoring and configuration
Raisecom universal power supply module SUB-PWR1II-AC and SUB-PWR1II-DC are serving on OPCOM3500E-12, OPCOM3500E-6, RC006-12, RC006-6, RC3000-15, RC3000-6, and ISCOM5800 series chassis and platform.

**Introduction**

OPCOM3500E-6 adopts rack design, including chassis, plug board and power supply board.

For the plug board, including following parts:
- Network management board: NMS-STM1 board should be in slot 1
- Aggregation ports: STM-1, boards should be in slot 2.
- Tributary ports: STM-1, E1, E1-fiber, PDH fiber, Multi-service PDH fiber (wire-speed Ethernet and several E1), Ethernet fiber optical and electrical (EoS/EoP), G.SHDSL boards should be in slot 2.3.4.5.
- GE aggregation unit: MS3-ESW-2GE should be in slot 6.
OPCOM3500E-NMS-STM1 is network management and aggregating function module of
OPCOM3500E-6 platform in slot 1 only
It communicates with network management software of upper layer and accepts management of
upper layer.
It can manage OPCOM3500E-6 equipment, and corresponding remote equipment.
Support on-line upgrade of both local and remote software.
Provides 2 STM-1 optical interfaces.
Card level protection for SDH service when work together with aggregation card at slot 2.
Inbuilt 8x8 VC4 or 504x504 VC12 cross connection module, supporting VC12 cross connection
between all tributary cards and aggregation cards.
Inbuilt clock module provides system clock for OPCOM3500E, clock feature conform to ITU-T G.813
criterion.
Provides cross card protection function for remote tributary card with dual-optical interfaces
protection, like P240EOS, STM1-S, 120EOSx4 card.
In support of ALS (Auto-Laser Shutdown) function.
Selectable E1 link BERT function.
External and internal loopback function of SDH optical interface.

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<td><strong>SNMP and NM-EXT Interface:</strong></td>
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