

# ACCEED 1102 - 2 wire pairs SHDSL ACCEED 1104 - 4 wire pairs SHDSL

Carrier Ethernet access for ULAF+ and MSAN/DSLAM platforms



- Ethernet over up to 2/4 bonded copper wire pairs
- Standard compliant 802.3ah EFMC-LR (2Base-TL)
- Resilience auto failover and recovery functions
- Rate Adaptive SHDSL
- Network demarcation allowing SLA enforcement
- Ethernet Services with guaranteed bandwidth per flow
- E1 interface to support legacy customer equipment
- Standard Ethernet Link- and Service-OAM
- Service Assurance and Qualification
- «Zero Touch Provisioning»
- Graphical User Interface

## Product Overview

ACCEED 1102/1104 best supports bonded high speed symmetrical Carrier Ethernet services on ULAF+ MSAN and DSLAM platforms.

Comprehensive traffic management at the user network interface (UNI) enables the implementation of high revenue services on every broadband platform.

## Applications

ACCEED 1102/1104 focuses on the following applications:

- High Speed Business Access
- Network Demarcation for Wholesale Solutions
- Reliable Mobile Backhaul
- Business Access for Rural Areas
- Utility Solutions

## Copper based Ethernet services with fiber like quality

EFMC-LR is based on established ITU/ETSI SHDSL technology, supporting reliable, spectral compatible and symmetrical services of 192kbit/s to 6.4Mbit/s per wire pair. Using standard based EFM-bonding:

- ACCEED 1102 can aggregate up to 2 wire pairs providing a maximum data rate of 12.8 Mbit/s per customer.
- ACCEED 1104 can aggregate up to 4 wire pairs providing a maximum data rate of 25.6 Mbit/s per customer.

EFMbonding offers the great flexibility to aggregate wire pairs each with a distinct bit rate with very low overhead and little latency added.

## Compatibility

ACCEED 1102/1104 is interoperable with ACCEED 1416 as well as MSAN and DSLAM equipment of major suppliers providing standards compliant EFM connectivity.

## Carrier grade Ethernet services

Traffic aware switching with extended flow management allows providers to address the emerging market of premium voice and data services over Ethernet.

## Support of E1 legacy services

ACCEED 1102/1104 features an E1 port giving the possibility to connect legacy TDM customer equipment. This allows preserving customer investment and facilitates a successful migration to full Carrier Ethernet services.

## Ethernet Service Assurance

ACCEED 1102/1104 offers a set of standard based protocols and tools to support providers managing Ethernet services over the entire Life-Cycle. From provisioning to SLA performance monitoring and fault location ACCEED allows operation staffs to ease their work and increase their efficiency thus considerably contributing to reducing operating costs.

## Provisioning & Turn-up

- Use of configuration files, CLI scripts and «**Zero Touch Provisioning**» minimizes the installation effort by automating the configuration process.
- Built-in service qualification tools allow to cut operational costs for verifying the SLA performance at service turn-up. No need to dispatch skilled personal and costly test equipment to the customer premises.

## Performance Management

- Y.1731 based performance management continuously monitors SLA parameters such as Frame Loss, Availability, Frame Delay and Frame Delay Variation with microseconds accuracy and generates Alarms if Objective Thresholds are violated, giving providers the possibility to proactively take actions before the service is seriously degraded.
- Collection of statistics on physical-, packet- and service level as well as real time graphs monitoring service utilization allows to track the service performance, to analyze network traffic and to certify SLA conformity.

## Fault Management

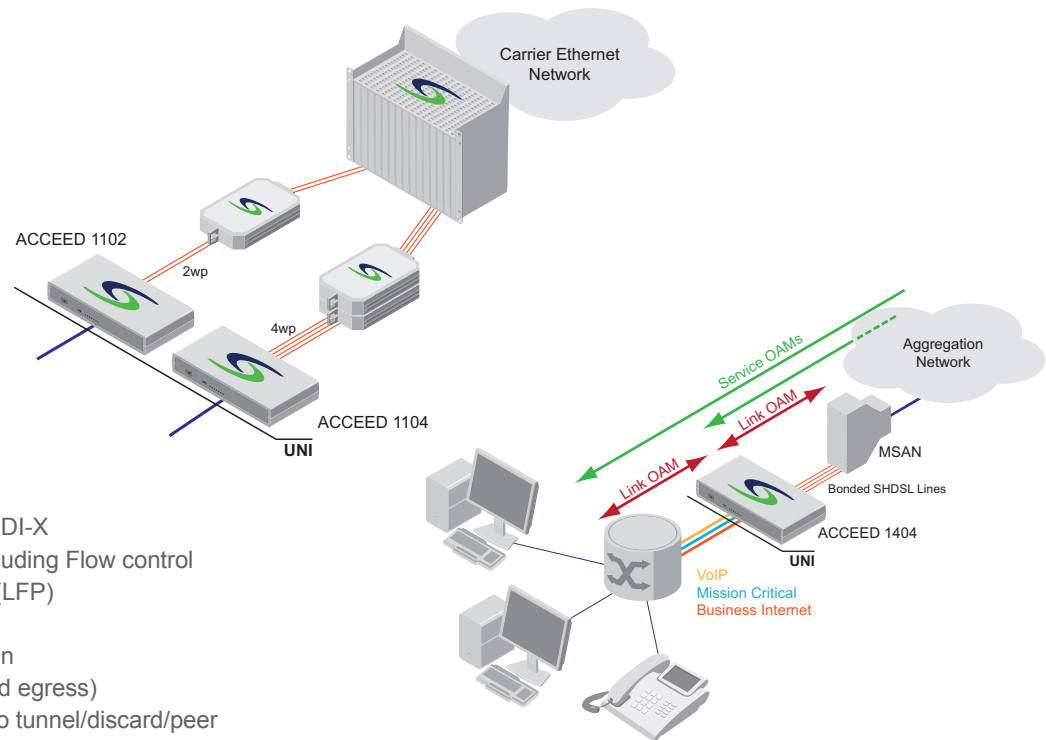
- EFM multi pair bonding and CCM based hot-/standby protection support the implementation of resilient services, minimizing the impact of faults on the service.
- Fault propagation (e.g. AIS/RDI, Dying Gasp...), link, port and service level alarms together with extensive localization tools such as continuity check, linktrace and loopback allow to quickly locate faults and re-establish the service in case of failures.

## Management

ACCEED 1102/1104 offers a rich variety of management solutions to fulfill the needs of each customer: intuitive and easy to operate graphical SW applications; standard-conform protocols; easy to integrate interfaces; fully automated «**Zero Touch Provisioning**» solutions. Local access as well as remote Inband- or dedicated DCN access.

The set-up of SHDSL and EFM bonding group is fully managed by the CO equipment according to G.991.2, G.994.1 and G.998.2.

- CLI console, Telnet and SSH
- Local Craft Terminal LCT+ (GUI)
- AccessIntegrator Management System
- CORBA Northbound interface
- Syslog and SNMP traps
- DHCP, TFTP, SCP
- Standard MIBs



## Ethernet Features

### Port control

- Flow Control, Auto MDI/MDI-X
- Configuration readout including Flow control
- Link Failure Propagation (LFP)
- Multicast storm protection
- Broadcast storm protection
- Port Mirroring (ingress and egress)
- L2CP list with possibility to tunnel/discard/peer
- Power over Ethernet
- Synchronous Ethernet

### Switch control

- MAC table 16k, self-learning
- MAC table readout
- Port isolation
- Aging time configurable

### VLAN

- 802.1Q (VLAN)
  - 4095 C-VLANs
  - Port VID explicit settable
- 802.1ad (Provider Bridge)
  - Provider VID
  - Provider Ethertype
  - Multiple customer services (different C-VLANs to P-VLANs) on same customer port
- TR-101 VLAN manipulations
  - Inner/outer swap
  - 1:1 translation
  - Port-based stacking
  - VLAN-based stacking

### Classification

- Predefined criteria:
  - Ingress Port
  - Destination MAC-Address
  - Source MAC-Address
  - Ethertype
  - VLAN-ID
  - VLAN Priority
  - Destination IP-Address
  - Source IP-Address
  - IP Priority (DSCP)
  - IP Datagram Protocol
  - TCP/UDP Destination Port
  - TCP/UDP Source Port
- Flows identified by any criteria in the first 128 bytes of the packet

### QoS/Policing

- Prioritization based on:
  - ingress port
  - 802.1p (L2)
  - DSCP (L3)
  - any other criteria (flow)
- MEF10.2 Ethernet Services Attributes: ingress and egress bandwidth profiles with
  - Committed Information Rate (CIR)
  - Peak Information Rate (PIR)
  - Committed Burst Size (CBS)
  - Excess Burst Size (EBS)
  - Peak Burst Size (PBS)
  - Color mode (CM)
- Metering according to RFC2697, 2698 and 3290 with single or two rate three color marking
- 8 priority queues per egress port
- Per color queue size
- Hard QoS (guaranteed traffic profile)
- Strict priority (SP)
- Weighted fairness algorithms (WFQ, WRR, SD-WRR)
- Per port shaping (rate and burst size)
- Per queue shaping (rate and burst size)
- Random early detection (RED)
- Flexible L2/L3 remarking
- Flexible traffic class assignment

### Counters

- Per port packet and byte counters (RMON Etherstats)
- Per ingress and egress service counters
- Transmit queue counters
- Per service counters
- History for all packet counters

### Power

- Green Ethernet (signal power adapted to cable length)

## Supported standards

- MEF 9, 10, 14, 17, 21, 25, 30, 31
- 802.3ah (Ethernet in the First Mile (EFM))
- 802.1ag (Connectivity Fault Management (CFM))
- Y.1731 (Service Layer OAM)
- 802.1D (MAC Bridging)
- 802.1Q (VLAN Bridging)
- 802.1v (VLAN Classification by Protocol and Port)
- 802.1ad (Provider Bridging)
- TR-101 (Flexible VLAN handling according to DSL Forum)
- 802.3i (10BASE-T)
- 802.3u (100BASE-TX)
- 802.3x (Flow Control)
- Y.1564 (Ethernet Service Activation Test)
- ETSI TS 101 524 SDSL
- ITU-T G.991.2 SHDSL
- ITU-T G.994.1 Handshake
- ITU-T G.998.2 Ethernet bonding

## Ordering information

### ACCEED 1102

- DT 2wp (Eth) S3118-H642-E413
- DT 2wp (Eth + E1) S3118-H642-B413

### ACCEED 1104

- DT 4wp (Eth) S3118-H643-E413
- DT 4wp (Eth + E1) S3118-H643-B413

### Accessories

- Cable adapter (2Mbit/s RJ45-BNC)  
C195-A336-A45

## Related Products

- ACCEED 1416
- ACCEED 1404
- ACCEED 2202

## Technical data

### Power Supply

|               |   |
|---------------|---|
| Input Voltage | 40 to 72 V <sub>DC</sub><br>95 to 260 V <sub>AC</sub> |
|---------------|---|

### Power Consumption

≤10 W

### Interfaces

#### User Network Interface (UNI)

4x RJ45 10/100Base-T ports  
1 x RJ45 G.703 120/75 Ohm port for E1 or Synchronization

#### Management

1x RJ45 serial RS232 Local Craft Terminal (LCT)  
1x RJ45 Ethernet 10/100Base-T DCN

#### EFM

|             |  |
|-------------|--|
| ACCEED 1102 | 1x RJ45 / 2 copper wire pairs SHDSL.bis<br>Line code TC-PAM 4/8/16/32/64/128 |
| ACCEED 1104 | 1x RJ45 / 4 copper wire pairs SHDSL.bis<br>Line code TC-PAM 4/8/16/32/64/128 |

#### Payload Bitrates

|             |   |
|-------------|---|
| ACCEED 1102 | 192 to 6400 kbit/s per wire pair<br>up to 12.8 Mbit/s with 2 wire pairs |
| ACCEED 1104 | up to 25.6 Mbit/s with 4 wire pairs                                     |

### Physical and Environment

(W x H x D) 272 x 47,5 x 175 mm  
(wall- and rack-mounting option)

#### Operating Temperature

-5° C to +55° C  
at 5 to 95 % rel. humidity

### Safety

EN 60950-1 (2006)

### EMC/EMF

EN 300386 V1.4.1 (2008)  
ES 201 468 V1.3.1 (2005)  
ITU-T K.20/K.21 (2003)  
ITU-T K.45 (2003)  
EN 300 132-1/2 V2.1.2 (2003)  
EN 50371 (2002)