

# OC-12c/STM-4 ATM Single & Multi Mode

Thunder Series Interfaces

## SOLUTION HIGHLIGHTS

Two full duplex ports per module (Rx, Tx)

Real time 7 layer protocol analysis

Physical layer error insertion including APS

Generation and analysis of up to 1024 channels on a single port for quality of service (QoS) 0.191 and generic cell rate algorithm (GCRA)

20ns time stamp resolution & correlation across all ports with 1.2ns GCRA measurement resolution

Full line rate capture with up to 128MB per port

ATM network impairment and emulation

MPEG video & LAN distribution models

Simultaneous monitoring, traffic generation and UNI signaling test applications running on a single port



## Overview

The versatile ATM Thunder Series interface modules are designed to provide wire rate data capture, playback and transmission, while performing real time simultaneous analysis of the seven OSI layers.

This module provides a dual port SC physical interface for SONET OC-12c/SDH STM-4 for the InterWatch platform. They operate at 622.08 Mbps using 1310nm single or multi mode optical fibre with software selectable OC12c or STM4 modes.

Up to 7 OC-12c/STM4 modules (14 ports) can be added to the InterWatch 96000 unit, 3 modules (6 ports) on the InterWatch 95000, allowing comprehensive system load testing across multiple ports simultaneously.

The OC-12c/STM4 interface provides application testing support for leading technologies including Voice over IP (VoIP), Quality of Service (QoS), ATM Signaling (UNI, PNNI) and IP Performance.

# OC-12c/STM-4 ATM Single & Multi Mode

## Thunder Series Interfaces

### Specifications

#### PORT DENSITY

InterWatch 96000

- Up to 7 modules (14 ports)

InterWatch 95000

- Up to 3 modules (6 ports)

#### RAM (PER RECEIVER)

•64 MB

•Upgradable to 128MB

#### DATA PATHS

•2 Transmit

•2 Receive

#### CONNECTORS

Dual Duplex SC

•622.08 Mbps

•SMB AC-Coupled External Link Clock

•BNC TTL Input & Output

#### TRANSMIT LEVEL

SINGLE MODE

•Maximum: -8 dBm

•Minimum: -15 dBm

MULTI MODE

•Maximum: -14 dBm

•Minimum: -26 dBm

#### TEST APPLICATIONS

•LAN & Frame over ATM

•xDSL

•ATM Physical Layer

•ATM Cell Layer

•ATM Signaling (UNI, PNNI)

•ATM Network Impairment

•IP Performance/QoS (non-real-time)

#### MONITORING

•Up to 128MB full line rate capture and simultaneous analysis on 2 ports

•20ns resolution with 20ns timestamp accuracy and correlation across all ports

•Simultaneous GCRA cell analysis on 1024 channels per port with 1.2ns resolution

•Combined simultaneous QoS 0.191 and GCRA cell analysis on 1024 channels per port

•Wire rate cell layer statistics on 1024 virtual channel connections (VCC) simultaneously

•Physical layer monitoring and analysis based on G.826 specifications

•Auto-recognition of encapsulated protocols on 1024 channels simultaneously

•Multiple cell header pre-filters with statistics

•ATM UNI and NNI Interface Support

•7 Layer LAN over ATM Decodes

•AAL1, AAL2, AAL3/4, AAL5, OAM and ICP (IMA) Decodes

#### TRAFFIC GENERATION

•Wire rate traffic generation, capture and playback across all channels

•QoS traffic generation across 1024 channels with user definable traffic profiles, based on I.356 specifications

•GCRA testing on 1024 channels

•Dynamic On-the-Fly modification of parameters

•User definable cell layer generation

•AALO, AAL5 traffic generation

•Runtime Statistic per channel generated

•GUI editor for IP, PDU and Frame Relay packet definition

•Physical layer error and alarm insertion based on G.826 spec.

Traffic Distribution Parameters:

•ABR

•CBR

•VBR (Simulated LAN & MPEG)

•GCRA (Single & Dual Leaky Bucket)

•2-state & 3-state Markov

•Poisson

•Normal

#### PHYSICAL CHARACTERISTICS

SINGLE SLOT MODULES

Width: 40.6mm (1.6")

Length: 311.2mm (12.25")

Weight: 885g (1.95 lbs.)

#### PART NUMBERS

COMPLETE MODULES

##### 01-104440C

**Thunder OC12c/STM4 622.08Mbps Short Haul/Intermediate Reach SM Fiber**

occupies 2 VME-64 slots  
128MB RAM per receiver

##### 01-104441C

**Thunder OC12c/STM4 622.08Mbps MM Fiber ATM Module**

occupies 2 VME-64 slots  
128MB RAM per receiver

##### 01-105069B

**ATM Thunder 512MB RAM Upgrade**  
256MB RAM per receiver

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