

# ATM Interface Modules

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The ATM interface modules allow full line rate generation, monitoring and capture across each individual port. Dual port ATM interfaces are available for OC-12/OC-3 (software selectable), DS3, and E3 rates. The multi-rate cards provide a high-density, yet cost effective solution for your ATM testing requirements.

## Traffic Generation

Traffic generation capabilities allow users to define the complete VC. The data can be specified using the ATM Adaptation Layers (AALs), the resource management (RM) cell and the OAM cell. Set payload content with user-defined data over the entire header and payload. Provision payload scrambling, VCs and Headers. Ability to control the traffic profile over all VCs.

- 1024 full-duplex traffic streams can be generated and monitored per port
- Define traffic, AALs, OAM cells, AAL-5 PDUs, 0.191 test cells, Quality of Service (QoS), BERT test, RAW cells, user enable/disable Sequence Number and time stamping
- 1024 Virtual connections can encapsulate protocols such as: TCP/IP, PPP ILMI, LANE, PPPoE, PPPoA, MPLS
- IP Over ATM and IP Ping testing
- Define header and payload, predefined payload patterns or user defined cells and PDUs including programmable embedded words in any position
- CRC generated by hardware: AAL-5 generate, CRC 32, 0.191 Test Cell generate CRC 16, OAM generate CRC 10
- 1024 streams have independent traffic shaping: Constant Bit Rate (CBR), Variable Bit Rate (VBR), Unspecified Bit Rate (UBR) service categories. Definable Sustained Cell Rate (SCR), Peak Cell Rate (PCR), Maximum Burst Size (MBS), Cell delay Variation Tolerance (CDVT).

## Monitoring and Analysis

Real-time traffic monitoring is made easy with comprehensive filters and triggers. Using graphical histograms and charts users can perform easy analysis of real-time traffic.

- Full rate traffic monitor: 1024 Virtual Connections monitored simultaneously including TX, RX, error counters
- Each port accumulates statistics in real time, including the count and rate of cells and frames sent and received.
- Auto-Scan of all active network VPI/VCI up to 16 million.
- Global statistics: transmit cells, receive cells, test cells, OAM cells, BERT cells, Sequence Numbers SN, Filtered cells, Triggered cells, HEC errors, CRC10/16/32 errors, Header match, payload match, Transmit/Receive packets
- Bandwidth Utilization, rate/peak rate, Cells/bits per second
- Extensive Filter and Trigger Capabilities: 32 Header Filters, 2 Payload Filters: Header Bit mask/48 Byte payload mask
- Transmit and Receive BERT cells, OAM cells, AAL5 PDUs 32 Channel Hardware SAR- Segmentation and Reassembly



## Physical Layer Testing

Detect and inject Physical and ATM layer alarms and errors including framing and cell delineation testing. Monitor PHY status for alarm and error counters on each port including HEC Correctable and uncorrectable counts, Section LOS, Section LOF, Section BIP (B1), Line AIS, Line RDI, Line REI (FEBE), Line BIP (B2), Path AIS, Path RDI, Path REI (FEBE), Path BIP (B3), Path LOP.

## BERT-Bit Error Rate Testing

BERT testing to verify transmission line quality Perform Bit error rate testing on each port to verify transmission line quality. BERT-Bit Error Rate Test patterns: Predefined PRBS 15,20,23 All ones, All zeros. Inject Single Bit Errors or inject a constant error rate 10-3 or 10-6.

## Quality Of Service Testing (ITU-T O.191)

Quality of Service testing provides accurate performance measurements on each port. Perform 1-point or 2-point QoS including lost cells, mis-inserted cells, cell transport delay and cell delay variation. Graphical histograms and charts provide easy to read accurate measurements of cell loss, cell delay and error rate.

## Real-Time Capture

Full-rate capture can be performed on each of the individual ports. An extensive set of triggers and filters is available for capturing based on header or payload, cell type, data pattern, error conditions and other user definable fields. Turn on or off any variety of Pre-and/or Post-Capture filters/triggers to perform specialized captures to isolate data.

## Operation, Administration and Maintenance (OAM)

Perform OAM tests and Insert OAM cells on live traffic with our programmable OAM cells. OAM cells used for alarm surveillance, performance monitoring and troubleshooting. Programmable OAM cell insertion of F4/F5 End-to-end, Loopback, segment management, AIS, RDI, Continuity Check, activation/deactivation, loopback test. OAM cell capture, decode and perform CRC 10 check.

