

MSA 2020/2030 Module

for NIC Platform



Single Module for Advanced Telecom and Datacom Testing...

Available with...

- SONET/SDH up to 10Gbps
- 10GigE LAN/WAN
- GigE (dual port)
- 10/100/1000BaseT (dual port)
- 100BaseFX
- OTN up to 10.7Gbps
- 10GigE FEC (OTU-1e and OTU-2e)
- ODU-1 to ODU-2 Multiplexing
- ATM
- Fibre Channel
- GFP and GFP-T
- VCAT (MSA 2030 only)
- LCAS (MSA 2030 only)
- PDH/T-carrier drop/insert
- All Path Testing™

The MSA 2020 and 2030 are available in three basic packages, with additional capabilities available as Test Options:

MSA 2020 SONET/SDH Bundle
SONET/SDH from 51M-10G with Test Options available to support Ethernet, OTN, Fibre Channel, GFP, All Path Testing and more

MSA 2030 SONET/SDH Bundle
Includes all features of the MSA 2020 SONET/SDH bundle and also supports VCAT and LCAS Test Options

MSA 2020 Ethernet Bundle
Ethernet 10GigE, GigE (dual port), 10/100/1000BaseT with Test Options available to support SONET/SDH, OTN, Fibre Channel, GFP, All Path Testing and more

KEY FEATURES

- Cost effective - With "Test Options", order only the features you need today and add additional capabilities as required
- Investment protection - Existing NIC products can be upgraded with MSA 2020/2030 modules
- Time saving - Run SONET/SDH/OTN plus two Ethernet tests simultaneously
- GFP-F, GFP-T and GFP Bulk
- VCAT/LCAS (MSA 2030 only)
- Telecom and Datacom testing capability with just one module
- Flexible 10G Ethernet testing — 10G LAN (10.3G), 10G WAN (9.953G), 10G Ethernet FEC (11.049/11.095G)
- ODU-1 to ODU-2 Mapping
- Hot-swappable SFP/XFP optical transceiver modules

PLATFORMS


 NIC^M

 NIC BPTM

 NIC Plus⁺

 NIC EPTM

SONET/SDH Testing

Standard on SONET/SDH Bundle, available as Test Option on Ethernet Bundle

- Available with OC-192/STM-64, OC-48/STM-16, OC-12/STM-4, OC-3/STM-1, EC-3/STM-1e, OC-1/STM-0, and EC-1/STM-0e interfaces
- Complete overhead control and monitor
- Overhead Byte capture
- User-definable alarms for power level, frequency, trace and expected path label
- Line and pointer (STS, VT, AU, TU) frequency offset +/- 100ppm

- GFP,VCAT, LCAS, ATM and All Path Testing™ available - see below
 - Intrusive/Passive Through Mode capability
 - APS testing and Service Disruption Measurement with user-selectable criteria
- For complete list of features and specifications, see SONET/SDH Features datasheet*

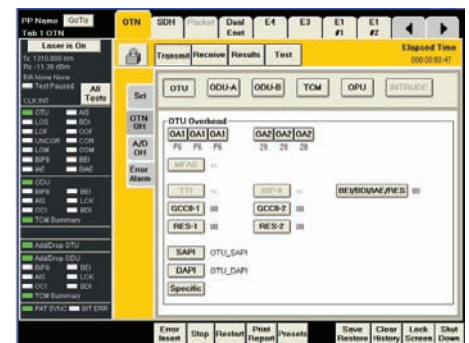


Optical Transport Network (OTN) Testing

Available as Test Options

- Supports the full range of OTN test:
 - OTU-1 (2.66Gbps)
 - OTU-2 (10.7Gbps)
 - OTU-1e (11.049Gbps)
 - OTU-2e (11.095Gbps)
- ODU-1 to ODU-2 Mapping Test Option for OTU-2 interface
- Overhead Byte Capture

- Activation via license-based Test Option
 - Full overhead access/manipulation
 - Intrusive/non-intrusive through mode
 - GFP mapping available (10G and below)
- For complete list of features and specifications, see OTN Features datasheet*



All Path Testing™ (APT)

Available as Test Option

- Simultaneous testing of all HP/STS containers/SPEs
- Each path can be configured separately with any test pattern desired
- Supports any combination of homogenous or mixed mappings
- Auto-detection of mapping type and pattern (if standard PRBS type) for the entire bandwidth

- Service Disruption Measurement on all containers/SPEs simultaneously. With selectable criteria, All Path Testing detects single or multiple disruptions, reporting the latest event, shortest, longest and average events.
- For complete list of features and specifications, see All Path Testing™ Features datasheet*



Ethernet Testing

Standard on Ethernet Bundle, available as Test Option on SONET/SDH Bundle

- Available with 10GigE LAN/WAN and 10GigE FEC (OTU-1e, OTU-2e)
- Dual port GigE, 10/100/1000BaseT and 100BaseFX
- Supports RFC 2544 and RFC 1242 Benchmarking with Throughput, Frame Loss, Latency, Back-to-Back Burst and Round-Trip Delay testing
- Up to 32 simultaneous streams per port

- Rate setting by interpacket gap up to 18 minutes, burst traffic, ramped traffic, through mode, ARP support, runt frame support, an increase of max frame size to 16,000 bytes
 - IP reflection mode enables RFC testing through routers
 - Stacked VLAN (Q in Q), up to four
- For complete list of features and specifications, see Ethernet Features datasheet*



NOTE: Features listed above require specific hardware and software plus license-based Test Options in order to operate. See ordering information.

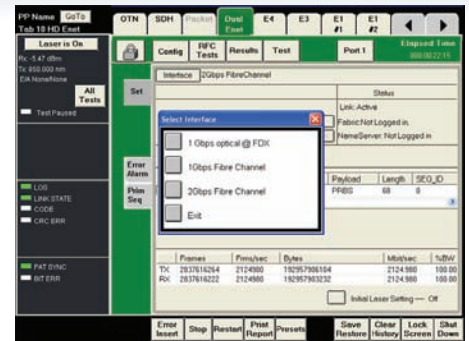
Fibre Channel (FC) Testing

Available as Test Option

- 1Gbps and 2Gbps Fibre Channel testing
- Dual port simultaneous testing
- BER testing, round-trip latency and performance monitoring and characterization of in-service Fibre Channel
- Simultaneous traffic generation and testing at 100% wire speed on all ports simultaneously
- Supports Primitive Sequence Generation

- Supports RFC 2544 and RFC 1242 Benchmarking with Throughput, Frame Loss, Latency, Back-to-Back Burst and Round-Trip Delay testing
- Characterize performance of Fibre Channel networks for varying frame sizes

For complete list of features and specifications, see [Fibre Channel Features datasheet](#)



Asynchronous Transfer Mode (ATM) Testing

Available as additional module, daughter board

- Asynchronous Transfer Mode testing at the following rates: 622M, 155M, 52M
- If equipped with A11 or A14 module, installed adjacent to MSA, supports ATM testing (Direct&PLCP) at DS1/E1/E3/DS3 rates
- UNI/NNI interface types
- AAL0, AAL1, AAL5

- PVC and SVC support
- 240 VCCs transmit/255 VCCs receive
- Bit error rate testing plus ATM alarm/error insertion and monitoring
- VCC scon for automatic detection of VCCs

For complete list of features and specifications, see [ATM Features datasheet](#)



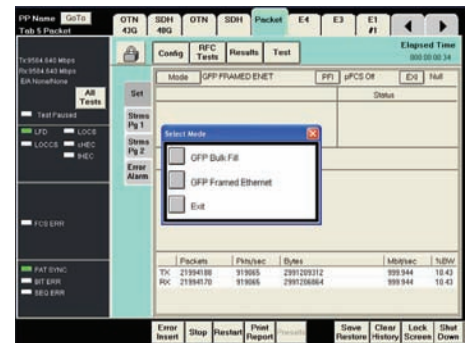
Generic Framing Procedure (GFP) Testing

Available as Test Option

- GFP-F, GFP-T and GFP Bulk
- Supports FULL Ethernet test functionality including the following:
 - 32 independent test streams
 - Supports RFC 2544 and RFC 1242 Benchmarking with Throughput, Frame Loss, Back-to-Back Burst testing
 - IP reflection mode enables RFC testing through routers

- Rate setting by interpacket gap up to 18 minutes, burst traffic, ramped traffic, through mode, ARP support, runt frame support, frame size to 16,000 bytes in GFP-F and GFP-T
- Simultaneously test and monitor OTN, SONET/SDH, GFP and Ethernet layers

For complete list of features and specifications, see [GFP Features datasheet](#)



Virtual Concatenation (VCAT) and Link Capacity Adjustment Scheme (LCAS) Testing

Available as Test Option (MSA 2030 only)

VCAT Features Include:

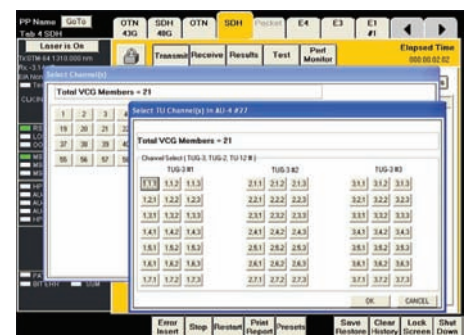
- High-Order and Low-Order support
- Insert frame delay or pointer delay on each VCG member
- Supports GFP payload with Ethernet functionality

LCAS Features Include:

- Automatic Source and Sink state machine emulation

- Monitoring and evaluation of Control Packets
- Plain text State Machine Trace
- LCAS Protocol Emulation

For complete list of features and specifications, see [VCAT/LCAS Features datasheet](#)

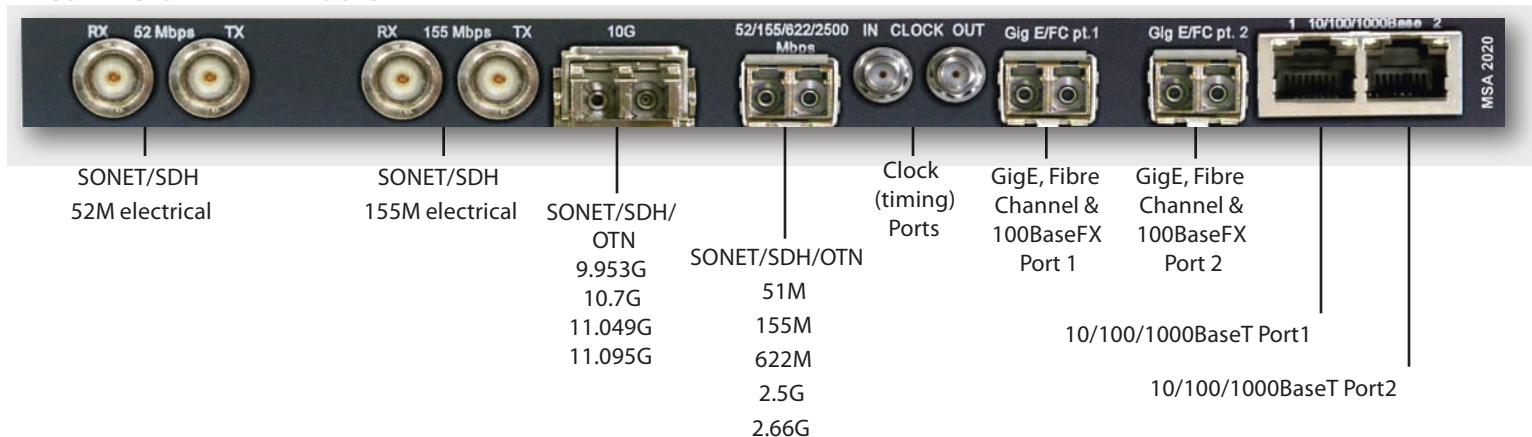


NOTE: Features listed above require specific hardware and software plus license-based Test Options in order to operate. See ordering information.

MSA 2020/2030 Module for NIC Platform



CONNECTOR PANEL LAYOUTS



ORDERING INFORMATION

Base Modules - MSA 2020 SONET/SDH Bundle:

- MSA 2020 155M to 52M, 1310nm SFP standard - [NL51](#)
- MSA 2020 622M to 52M, 1310nm SFP standard - [NL61](#)
- MSA 2020 2.5G to 52M - [NL71](#) (1310), [NL71b](#) (1550)
- MSA 2020 2.5G to 52M, no optics, sold only with jitter module - [NL78](#)
- MSA 2020 10G to 52M, [NL81](#) (1310/1310), [NL81b](#) (1310/1550), [NL81c](#) (1550/1550)
- MSA 2020 10G only - [NL84](#) (1310), [NL84b](#) (1550)
- MSA 2020 10G only, no optics, sold only with Jitter Module - [NL88](#)

Base Modules - MSA 2030 SONET/SDH Bundle:

- MSA 2030 155M to 52M, 1310nm SFP standard - [N51](#)
- MSA 2030 622M to 52M, 1310nm SFP standard - [N61](#)
- MSA 2030 2.5G to 52M - [N71](#) (1310), [N71b](#) (1550)
- MSA 2030 2.5G to 52M, no optics, sold only with jitter module - [N78](#)
- MSA 2030 10G to 52M, [N81](#) (1310/1310), [N81b](#) (1310/1550), [N81c](#) (1550/1550)
- MSA 2030 10G only - [N84](#) (1310), [N84b](#) (1550)
- MSA 2030 10G only, no optics, sold only with Jitter Module - [N88](#)

Base Modules - MSA 2020 Ethernet Bundle:

- MSA 2020 Ethernet, 850nm SFP (x2) / 1310nm XFP - [NE81](#)

ATM Module (add to any MSA module):

- ATM Testing daughter board - [C9](#)

Optical modules available:

- 100BaseFX - 1310nm SFP
- GigE/Fibre Channel - 850nm SFP
- GigE/Fibre Channel - 1310nm SFP
- GigE/Fibre Channel - 1550nm SFP

- SONET/SDH/OTN 2.66G to 52M - 1310nm SFP
- SONET/SDH/OTN 2.66G to 52M - 1550nm SFP
- SONET/SDH/OTN 10/10.7/11.049/11.095 - 850nm XFP
- SONET/SDH/OTN 10/10.7/11.049/11.095 - 1310nm XFP
- SONET/SDH/OTN 10/10.7/11.049/11.095 - 1550nm XFP

Test Options for SONET/SDH Bundle modules:

- 10/100/1000BaseT Test Option
- GigE plus 10/100/1000BaseT Test Option
- 10G Ethernet LAN (10.3G) Test Option

Test Options for Ethernet Bundle modules:

- Add SONET/SDH Testing 10G-52M (requires SFP+XFP)
- Add SONET/SDH Testing 2.5G-52M (requires SFP)
- Add SONET/SDH Testing 622M-52M (requires SFP)
- Add SONET/SDH Testing 155M-52M (requires SFP)
- Add SONET/SDH Testing 10G-Only (requires XFP)

Test Options for all modules:

- 10G Ethernet WAN (9.9953G) Test Option
- 10G Ethernet FEC OTU-1e (11.049G) / OTU-2e (11.095G) Test Option
- Fibre Channel Test Option
- OTU-1 (2.66G) Test Option
- OTU-2 (10.7G) Test Option
- ODU-1 to ODU-2 Mapping Test Option
- GFP over OTN (OTU-1e/OTU-2e) Mapping Test Option
- Generic Framing Procedure (bulk/framed) Test Option
- Generic Framing Procedure-Transparent Test Option
- Virtual Concatenation (VCAT) High-Order Test Option
- Virtual Concatenation (VCAT) Low-Order Test Option
- Link Capacity Adjustment Scheme (LCAS) Test Option
- All Path Testing™ Test Option
- Ethernet 100BaseFX Test Option

Distributor:



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