

## DTA-100A/B/C

### 155M/622M/2.5G SDH/SONET Analyser

The DTA-100A/B/C SDH/SONET Module, part of the platform family of products, is a rugged, battery-operated handheld test solution for testing legacy PDH/DSn, SDH/SONET circuits from 2.5Gbps to 2Mbps/1.5Mbps. Both in-service and out-of-services configurations installation, maintenance, and troubleshooting applications.

Experienced users will appreciate advanced features like overhead monitoring and control, APS timing measurement, and point monitoring and adjustment. All measurements conform to industry standards, and circuit impairments are displayed in a variety of ways, giving operators insight into the possible causes of circuit impairments



### Platform Highlight

PLATFORM intelligent network test platform provides a full range of communication technology connection and service test function, support the OTN, SDH / SONET, MSTP, PDH/DSn, Packet Ethernet, SyncE, IEEE1588v2 PTP, OTDR, Metro/Carrier Ethernet, Cable and Antenna Analysis, Spectrum Analysis and so on.

- Compact and Lightweight designed, high portable
- Powerful modular intelligent network test platform
- Graphical user interface, easy to use
- Dial, number keys and function keys for flexible scrolling and selecting.
- 6.5inches outdoor-enhanced LCD color touch screen
- Fast and efficient test result transfer to USB memory stick
- Remote control by PC using 10/100M Base-T port
- Ultra-high capacity field-exchangeable Li-ion battery pack extends testing time

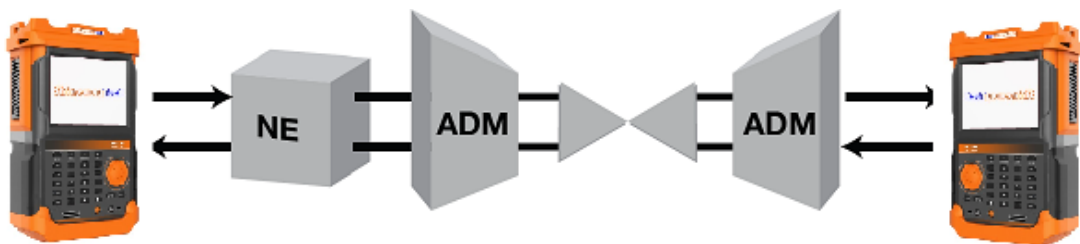
### Key Feature

- BNC port for DS1/DS3, E1/E3/E4/STM-1
- RJ48 port for E1
- SFP port for STM-1/4/16 and OC-3/12/48 SDH/SONET

- Bit error ratio testing and performance analysis
- SDH/SONET overhead control and decode
- Pointer monitoring and adjustment, G.783 Pointer Test Sequences generation
- APS Timing measurement
- Comprehensive payload mapping selection from VC4-16c/STS-48c (contiguous concatenation) to VC12/VT2, VC11/VT1.5, including PDH/DSn payload (E1/E2/E3/E4, DS1/DS3)

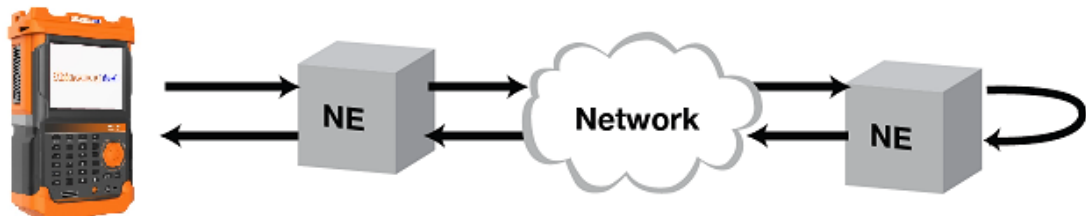
## Applications

### Out-of-Service Testing

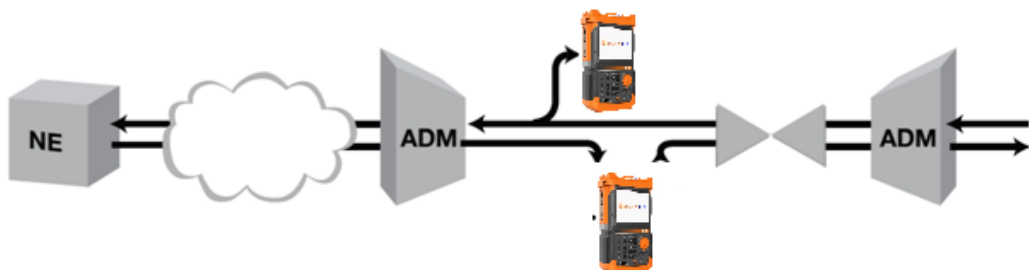


- End-to-End error free transmission verification
- Automatic Protection Switching verification
- SDH/SONET mapping verification down to VC12/VT1.5

### Round Trip Delay



### In-Service Testing



- Through mode
- In-Service monitoring protected monitoring points or optical splitters
- Overhead bytes monitoring and decoding

- Pointer monitoring

## General Specifications

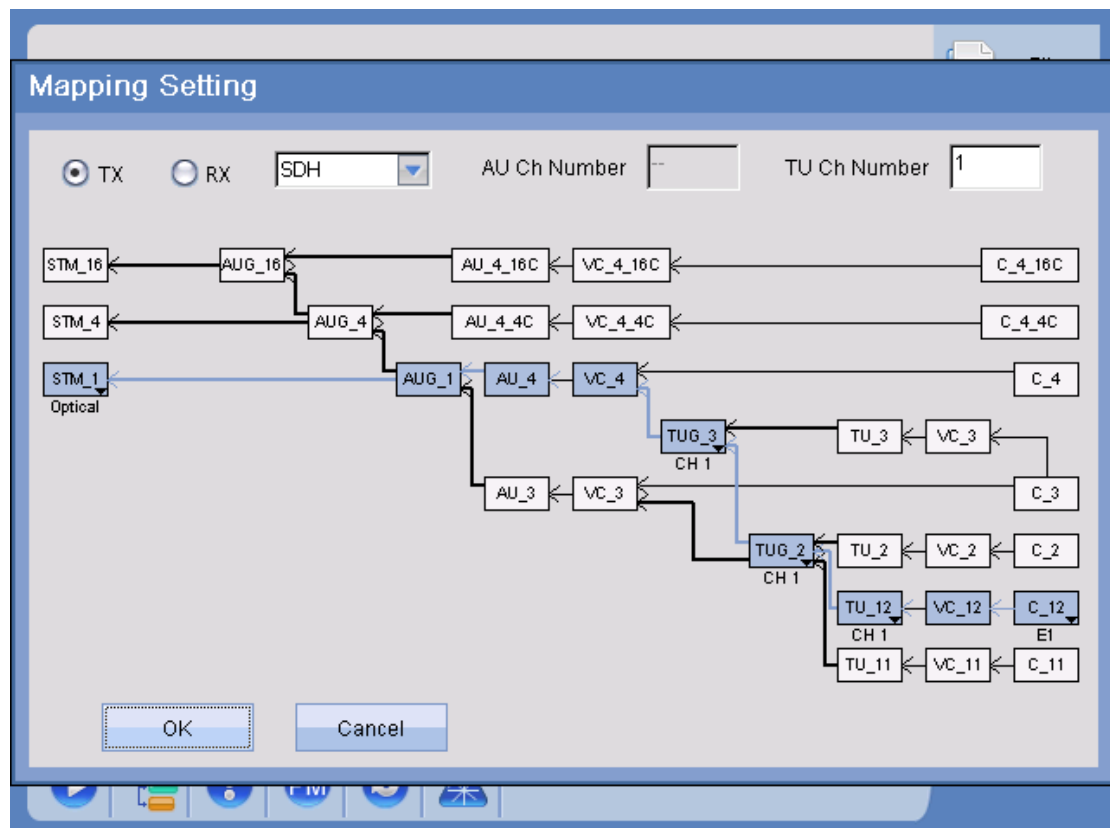
User Interface	
Screen	6.5 inch TFT touch screen (640×480)
Other Interface	
USB	USB, type A port, 2; USB type B port, 1
Ethernet	10/100M Base-T, RJ45 (port)
Other Parameters	
Storage	8G
Size and Weight	Platform: 319(H)x 202 (W) x 105(D) mm; 2.8kg DTA-100A/B/C: 25(H)x 97 (W) x 259(D) mm; 0.4kg
Temperature	Operating: -10°C to 50°C; storage: -40°C to 70°C
Relative Humidity	0% to 95% (non-condensing)
EMC	EN55022/CIPSR22, EN61000-3-2, EN55024
Battery and Power supply	
Battery	Rechargeable Li-Ion battery; Working time: 4 hour Charging time: <6 hours (typical: 25°C).
Power supply	Input: 100-240V AC, 50-60Hz, 2A Output: 19V DC, 4A.

## Technical Specifications

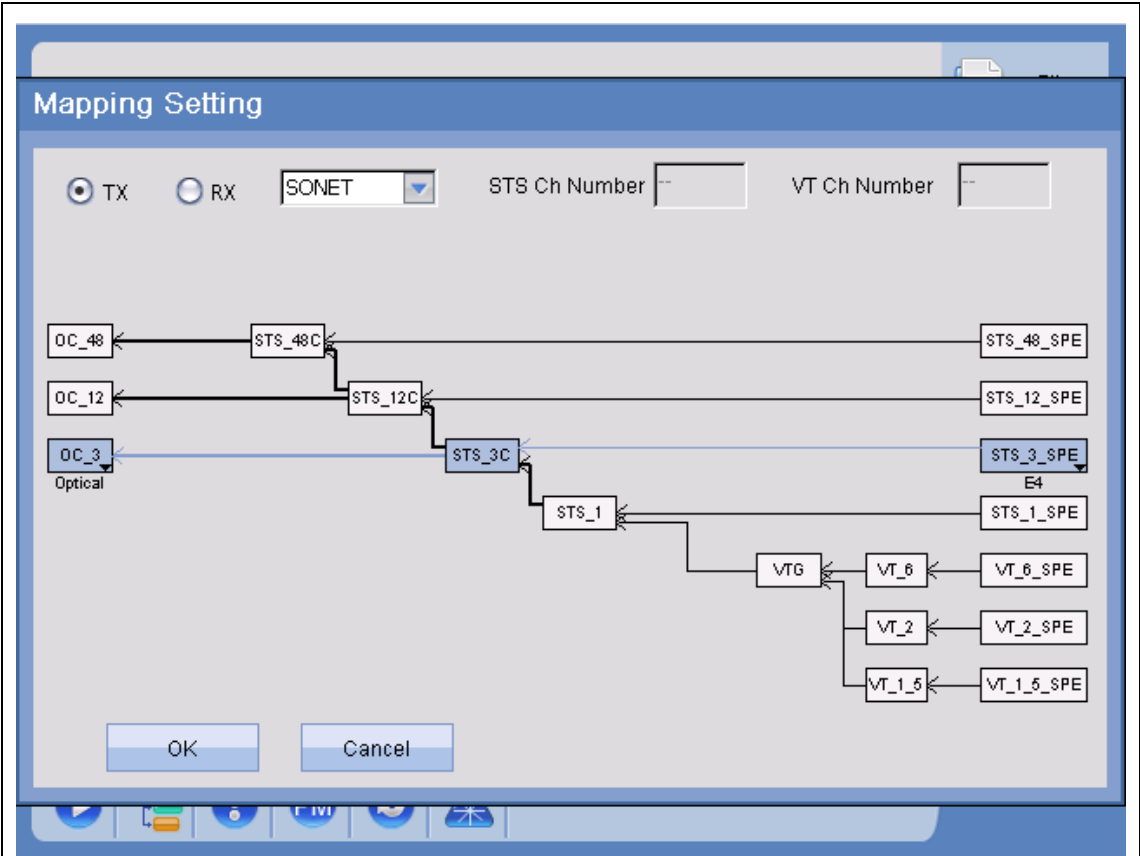
SDH and SONET Test	
Test Port	<ul style="list-style-type: none"> <li>· STM-16/STM-4/STM-1, OC-48/OC-12/OC-3 optical interface: SFP, 1 port</li> <li>· User selectable optical module: 1310nm, 1550nm</li> <li>· STM-1e, STS-3 electrical interface: BNC, 1 port</li> </ul>
Measurement Mode	<ul style="list-style-type: none"> <li>· Out-of-Service Mode</li> <li>· In-Service Mode</li> </ul>
Operator Mode	<ul style="list-style-type: none"> <li>· Pointer-to-Pointer Mode</li> <li>· Through Mode</li> <li>· Enhance Through Mode: Can be changed SOH/TOH, can injection alarms and errors</li> </ul>
Framing	<ul style="list-style-type: none"> <li>· SDH: Complies with latest version ITU-T G.707</li> <li>· SONET: Complied with latest version Telcordia GR-253</li> </ul>
Line Code	NRZ
Transmitter Clock	<ul style="list-style-type: none"> <li>· Internal clock accuracy: 4.6 ppm, up to 2 ppm</li> <li>· Clock offset: ±50ppm (1 ppm steps)</li> </ul>

	<ul style="list-style-type: none"> <li>· Recovered clock</li> <li>· TTL Level external 2.048MHz clock</li> <li>· E1: 2.048Mbps, DS1: 1.544Mbps</li> </ul>
Receive Single Rate	$\pm 50\text{ppm}$ Frequency deviation indication resolution: $\pm 1\text{ppm}$
TCM Frame Format	ITU-T G.783, G.707 Annex D and Annex E, POH bytes: HP-N1/LP-N1/LP-N2 for SDH, Z5/Z6 for SONET TCM Access Point Identifier(Apid): 15 bytes ASCII sequence, CRC-7
Scrambling	<ul style="list-style-type: none"> <li>· SDH: Complies with latest version ITU-T G.707</li> <li>· SONET: Complied with latest version Telcordia GR-253</li> </ul>

#### SDH Mappings



#### SONET Mappings



<p>Alarms</p>	<p>Alarm generation and monitor</p> <ul style="list-style-type: none"> <li>· SDH: LOS, LOF, OOF, MS-AIS, MS-RDI, AU-AIS, AU-LOP, HP-PLM, HP-UNEQ, HP-TIM, HP-RDI, TU-LOM, TU-AIS, TU-LOP, LP-PLM, LP-UNEQ, LP-TIM, LP-RDI, LP-RFI, LSS</li> <li>· SONET: LOS, LOF, OOF, AIS-L, RDI-L, AIS-P, LOP-P, TIM-P, PLM-P, UNEQ-P, RDI-P, LOM-V, AIS-V, LOP-V, PLM-V, UNEQ-V, RDI-V, TIM-V, LSS</li> <li>· TCM: TC-LTC, TC-TIM, TC-UNEQ, TC-AIS, TC-RDI, TC-ODI</li> </ul> <p>Alarm generation:</p> <ul style="list-style-type: none"> <li>· Continuous</li> <li>· Alternate</li> <li>· Burst</li> </ul>
<p>Errors</p>	<p>Error injection and monitor</p> <ul style="list-style-type: none"> <li>· SDH: FAS, B1, B2, MS-REI, HP-B3, HP-REI, LP-B3, LP-BIP2, LP-REI, Bit Error</li> <li>· SONET: FAS, B1, B2, REI-L, B3, REI-P, B3-V, BIP2-V, REI-V, Bit Error</li> <li>· TCM: TC-IEC, TC-BIP2, TC-REI, TC-OEI</li> </ul> <p>Error injection:</p> <ul style="list-style-type: none"> <li>· Continuous</li> <li>· Alternate</li> <li>· Rate</li> <li>· Single</li> <li>· Burst</li> </ul>
<p>BER Test Pattern</p>	<p>Pattern generation and monitor for O.181 bulk test pattern</p> <p>Test patterns supported: PRBS9, PRBS11, PRBS15, PRBS20, PRBS23, PRBS31</p>

	PRBS pattern support normal and inverted User defined patterns support 16-bit length step
Pointer	<ul style="list-style-type: none"> <li>· Support AU/TU, STS/VT pointer monitor and generation</li> <li>· Support ITU-T G.783 pointer test sequences</li> <li>· Display pointer value of receiver side</li> </ul>
Overhead	<ul style="list-style-type: none"> <li>· Generation of section/transport and path overhead bytes</li> <li>· Display of current section/transport and path overhead bytes</li> <li>· All overhead can be decoded, including decoded J0, J1, J2 byte</li> <li>· All overhead and anyone overhead PRBS BER testing</li> <li>· Just All overhead and anyone overhead PRBS BER (Including with DCC) testing</li> <li>· 256 Frames overhead capture and decode</li> </ul>
SDH Tributary Scan	<ul style="list-style-type: none"> <li>· DS1 signals embedded in selected VC-11</li> <li>· E1 signals embedded in selected VC-12</li> <li>· E3/DS3 signals embedded in selected VC-3</li> <li>· E4 signals embedded in selected VC-4</li> </ul>
SONET Tributary Scan	<ul style="list-style-type: none"> <li>· DS1 signals embedded in selected VT-1.5</li> <li>· E1 signals embedded in selected VT-2</li> <li>· E3/DS3 signals embedded in selected STS-1</li> <li>· E4 signals embedded in selected STS-3c</li> </ul>
Smart Scan	Remote single auto detects and auto setup for SDH Analyser
<b>SDH and SONET Results</b>	
Status	<p>Current port information</p> <ul style="list-style-type: none"> <li>· Alarms and errors on monitored line</li> <li>· Input level indication for optical signals</li> <li>· Input level indication for electrical signals</li> <li>· Actual bit rate</li> <li>· Frequency deviation</li> </ul>
Statistics	Event log: Alarms (seconds and ratio), errors (count or count and rate), pointer operations, start/stop time, all events refresh with 1 second resolution
Histogram	All alarms and errors detected can be display in histogram, user can see all issues directly.
Error Performance	G.821/G.826/G.828/G.829/M.2100/M.2110/M.2101 analysis of received signals based on detected errors and alarms: ES, SES, BBE, AS, UAS and so on
APS	<p>APS (Automatic Protection Switching) test and analysis</p> <ul style="list-style-type: none"> <li>· APS switching time is measured <ul style="list-style-type: none"> <li>· Trigger events (user selectable)</li> </ul> </li> <li>· All SDH/SONET alarms and errors, Bit error, errors with threshold</li> <li>· Number of switchovers indicated by APS protocol</li> <li>· K1/K2 bytes set and displayed</li> <li>· Resolution of SDH/SONET APS switching time measurement: 1us</li> </ul>
Propagation Delay	Resolution: 0.1us

Measurement	Measurement Max. time: 10.0s
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PDH and DSn Test	
Test Port	<ul style="list-style-type: none"> <li>· PDH: E1, E3, E4 1 port</li> <li>· DSn: DS1, DS3 1 port</li> <li>Connector: BNC, RJ48(Only for E1 interface)</li> </ul>
Measurement Mode	<ul style="list-style-type: none"> <li>· Out-of-Service Mode</li> <li>· In-Service Mode</li> </ul>
General	<ul style="list-style-type: none"> <li>· E1: Complies with latest version ITU-T G.703 for 2048kbps</li> <li>· DS1: Complies with latest version ANSI T1.102 for 1544kbps</li> <li>· E3: Complies with latest version ITU-T G.703 for 34368kbps</li> <li>· DS3: Complies with latest version ANSI for 44736kbps</li> <li>· E4: Complies with latest version ITU-T G.703 for 139264kbps</li> </ul>
Impedance	<ul style="list-style-type: none"> <li>· E1: 75Ω (unbalanced), 120Ω (balanced)</li> <li>· DS1: 100Ω</li> <li>· E3: 75Ω</li> <li>· DS3: 75Ω</li> <li>· E4: 75Ω</li> </ul>
Line Code	<ul style="list-style-type: none"> <li>· E1: HDB3, AMI</li> <li>· DS1: B8ZS, AMI</li> <li>· E3: HDB3</li> <li>· DS3: B3ZS,</li> <li>· E4: CMI</li> </ul>
Framing	<ul style="list-style-type: none"> <li>· E1: Unframed, PCM30, PCM31, PCM30CRC, PCM31CRC</li> <li>· DS1: Unframed, SF-D4, ESF</li> <li>· E3: Unframed, Framed (G.751)</li> <li>· DS3: Unframed, Framed</li> <li>· E4: Unframed, Framed (G.751)</li> </ul>
Transmitter Clock	<ul style="list-style-type: none"> <li>· Internal clock accuracy: 4.6 ppm</li> <li>· Clock offset: <math>\pm 125</math>ppm (1 ppm steps)</li> <li>· Recovered clock</li> <li>· TTL Level external 2.048MHz clock</li> <li>· E1: 2.048Mbps, DS1: 1.544Mbps</li> </ul>
Receive Single Rate	<ul style="list-style-type: none"> <li>· <math>\pm 150</math>ppm</li> <li>· Frequency deviation indication resolution: <math>\pm 1</math>ppm</li> </ul>
Impedance Mode	<ul style="list-style-type: none"> <li>· E1: Terminate, Monitor</li> <li>· DS1: Terminate, Monitor</li> <li>· E3: Terminate, Monitor</li> <li>· DS3: Terminate, Monitor</li> <li>· E4: Terminate</li> </ul>
Alarms	<ul style="list-style-type: none"> <li>· Alarm generation and monitor</li> <li>· E1: LOS, LOF, OOF, RAI, AIS, CRCLOFM, MFASOOF, LOFMFAS, MFASRAI, LSS</li> <li>· DS1: LOS, LOF, OOF, RAI, AIS, LSS</li> </ul>

	<ul style="list-style-type: none"> <li>· E3: LOS, LOF, AIS, RDI</li> <li>· DS3: LOS, LOF, AIS, RAI, LSS, IDLE</li> <li>· E4: LOS, LOF, AIS, RAI, LSS</li> </ul> <p>Alarm generation:</p> <ul style="list-style-type: none"> <li>· Continuous</li> <li>· Alternate</li> <li>· Burst</li> </ul>
Errors	<p>Error injection and monitor</p> <ul style="list-style-type: none"> <li>· E1: FAS, CRC4, E-BIT, Code, Bit</li> <li>· DS1: FAS, Code, Bit, CRC6</li> <li>· E3: FAS, Bit</li> <li>· DS3: FAS, C-BIT, P-BIT, FEBE, BIT</li> <li>· E4: FAS, Bit</li> </ul> <p>Error injection:</p> <ul style="list-style-type: none"> <li>· Continuous</li> <li>· Alternate</li> <li>· Rate</li> <li>· Single</li> <li>· Burst</li> </ul>
BER Test Pattern	<p>Pattern generation and monitor for O.181 bulk test pattern</p> <p>Test patterns supported: PRBS9, PRBS11, PRBS15, PRBS20, PRBS23, PRBS31</p> <p style="text-align: center;">PRBS pattern support normal and inverted</p> <p style="text-align: center;">User defined patterns support 16-bit length step</p>
PDH and DS <sub>n</sub> Results	
Status	<p>Current information</p> <ul style="list-style-type: none"> <li>· Alarms and errors on monitored line</li> <li>· Input level indication</li> <li>· Actual bit rate</li> <li>· Frequency deviation</li> </ul>
Statistics	<p>Event log: Alarms (seconds and ratio), errors (count or count and rate), pointer operations, start/stop time, all events refresh with 1 second resolution</p>
Histogram	<p>All alarms and errors detected can be display in histogram, user can see all issues directly.</p>
Error Performance	<p>G.821/G.826/M.2100 analysis of received signals based on detected errors and alarms: ES, SES, BBE, AS, UAS and so on</p>
APS	<p>APS (Automatic Protection Switching) test and analysis</p> <ul style="list-style-type: none"> <li>· APS switching time is measured <ul style="list-style-type: none"> <li>· Trigger events (user selectable)</li> </ul> </li> <li>· All PDH/DS<sub>n</sub> alarms and errors, Bit error, errors with threshold</li> <li>· Number of switchovers indicated by APS protocol</li> <li>· Resolution of PDH/DS<sub>n</sub> APS switching time measurement: 0.25ms</li> </ul>
Propagation Delay Measurement	<p>Resolution: 0.1us</p> <p>Measurement Max. time: 10.0s</p>



## Order Information

Model	Name
<b>Main Frame</b>	
Platform	Modular intelligent network test platform
DTA-100A	155M SDH/SONET Analyser , support E1/E3/E4/STM-1, DS1/DS3/OC-3 electrical port and STM-1/OC-3 optical port testing
DTA-100B	622M SDH/SONET Analyser , support E1/E3/E4/STM-1, DS1/DS3/OC-3 electrical port and STM-1/STM-4, OC-3/OC-12 optical port testing
DTA-100C	2.5G SDH/SONET Analyser , support E1/E3/E4/STM-1, DS1/DS3/OC-3 electrical port and STM-1/STM-4/STM-16, OC-3/OC-12/OC-48 optical port testing
<b>Standard accessory</b>	
16080010	LC/PC to LC/PC full-duplex single-mode fiber, 3 meter, one
16060090	2M 75ohm BNC cable, two
14020090	1.25G 1310nm 15Km LC SFP Optical Module, for DTA-100A/B, one
14020350	2.5G 1310nm 15km LC SFP Optical Module for DTA-100A/B/C, one
43170020	100-240V input and 19V output AC/DC Power Adapter, one
43160031	PLATFORM Lithium Polymer Rechargeable Battery, one
19070010	PLATFORM Package, one
	Factory Test Report, one
	Calibration Certification, one
	One Year warranty card, one
<b>Software Options</b>	
OPAP-OHSeqCapture	256 frames SDH/OTN overhead capture and decode capability
OPAP-TCM	SDH N1 and N2 bytes for Tandem Connection Monitoring capability
<b>Hardware Options</b>	
43160031	PLATFORM Lithium Polymer Rechargeable Battery
14020160	1.25G SFP Optical Module, 850nm, 550m, SX
14020090	1.25G SFP Optical Module, 1310nm, 15km, LX
14020340	1.25G SFP Optical Module, 1550nm, 40km, ZX
14020350	2.5G SFP Optical Module, 1310nm, 15km, LX
14020380	2.5G SFP Optical Module, 1550nm, 80km, ZX
OPAP-Two warranty	Two years extended warranty service

\* Specifications subject to change without notice