



an EnerSys® company

XM3.1-HP™ Broadband UPS

Uninterruptible Power Supply



Alpha® XM3.1-HP 3 A and 5 A models



Alpha® XM3.1-HP 8 A, 10 A, 15 A, and 18 A models

- **Advanced Ferro Technology:** Maximum power efficiency under all modes of operation
- **Compact 3 A and 5 A Models Available:** Optimized for lower power MDU and fiber-deep applications
- **AlphaGuard Embedded Battery Balancing:** Maximize battery life and optimize performance (select models only)
- **Advanced Battery Management:** Dynamic 5-stage charger technology maximizes AlphaCell® and PowerSafe® battery life
- **Integrated DOCSIS® 3.1 Communications:** Intelligent power management, RF network diagnostics and high-speed backhaul
- **AlphaApps+:** Intelligent diagnostics for remote battery maintenance and power train—advanced power monitoring and data logging
- **SFP Optical:** Optical power supply status monitoring for fiber-deep architectures
- **Remote Firmware Upgrades:** Latest features and firmware enhancements
- **Smart-Display:** Four-line display with intelligent, virtual keypad for optimal provisioning and diagnostics
- **Digital Step Attenuator:** Automatically or manually adjusts the RF receiver power level, simplifies product installation—eliminating the need for external attenuators
- **AlphaDOC:** Dual output controller manages two fault isolated outputs for advanced network power designs (select models only)
- **Extended Run Time (XRT) Capability:** Enhanced charger for large capacity battery systems in extended run time applications

The Alpha® XM3.1-HP™ platform builds on the proven transformer design of the award-winning XM3-HP™ power supply to deliver reliable, efficient power for broadband networks.

The platform supports DOCSIS® 3.1 status monitoring and data backhaul, SFP optical monitoring for fiber-deep architectures, and AlphaApps+ for advanced battery and power supply performance metrics. Remote firmware upgrade capability helps operators maintain system functionality throughout the product's service life. Together, these capabilities improve efficiency, optimize network performance and reduce operating costs.

Alpha® XM3.1-HP™ Broadband UPS Specifications

	120 VAC Models						240 VAC Models		
Model	903-HP	905-HP	908-HP	910-HP	915-HP	918-HP	905P-HP	915P-HP	918P-HP
Fine Mode Parameters									
Nominal AC Input Voltage	120 VAC						240 VAC		
Nominal Input Frequency	60 Hz						60 Hz		
Input Frequency Tolerance	±3%						±3%		
Input Voltage Operating Range Tolerance	−30 to +15%		−25 to +15%				−30 to +20%	−25 to +15%	
Input Voltage Range	84 to 138 VAC		90 to 138 VAC				161 to 276 VAC	173 to 276 VAC	
Output Voltage	60/89 VAC		63/89 VAC				60/89 VAC	63/89 VAC	
Output Voltage Regulation; Based on Nominal Input Voltage at 50% Load, 77°F (25°C)	−4 to +1%		−2.5 to +1%				−4 to +1%	−2.5 to +1%	
Maximum Rated Output Current	3 A	5 A	8 A	10 A	15 A	18 A	5 A	15 A	18 A
Maximum Output Power	270 VA	450 VA	720 VA	900 VA	1,350 VA	1,620 VA	450 VA	1,350 VA	1,620 VA
Line Mode Efficiency	Up to 90%		Up to 94%				Up to 90%	Up to 94%	
Standby Efficiency	Up to 88%		Up to 91%				Up to 88%	Up to 91%	
Output Waveform	Quasi-square wave								
Short Circuit Protection	<150% of maximum current rating								
Transfer Characteristics	Uninterrupted output								
Auxiliary Output Voltage	110 VAC		N/A				220 VAC	N/A	
Auxiliary Output Current	0.4 AAC maximum		N/A				0.4 AAC maximum	N/A	
Battery Voltage	12 VDC single battery or parallel battery configurations		36 VDC				12 VDC single battery or parallel battery configurations	36 VDC	
Mechanical									
Inverter Module	Integrated		Front plug in, hot swappable				Integrated	Front plug in, hot swappable	
Dimensions H × W × D (Handle Folded)	8.84 × 8 × 11.63 in. (224.6 × 203.2 × 295.5 mm)		7.76 × 16.43 × 10.57 in. (197 × 417 × 268 mm)				8.84 × 8 × 11.63 in. (224.6 × 203.2 × 295.5 mm)	7.76 × 16.43 × 10.57 in. (197 × 417 × 268 mm)	
Net Weight	31 lb (14.1 kg)	31 lb (14.1 kg) or 32.2 lb (14.5 kg)	49 lb (22.3 kg)		61 lb (27.6 kg)		31 lb (14.1 kg) or 32.2 lb (14.5 kg)	61 lb (27.6 kg)	
Input Power Connector (IEC 320/C20)	NEMA® 5-15P plug				NEMA® 5-20P plug		NEMA® 6-15P plug		
Input Power Interface	IEC® 320/C14 inlet connection accepts a variety of detachable cord sets to match country-specific wall receptacles								
Output 1 and 2 Interface	2-position terminal block		2-position Anderson™ style connector				2-position terminal block	2-position Anderson™ style connector	
Auxiliary Output Interface	2-position terminal block		N/A				2-position terminal block	N/A	
Vout Selector	2-position terminal block		Terminal block				2-position terminal block	Terminal block	
Battery Connector	2-position red 50 A Anderson™ style		Anderson™ style 75 A				2-position red 50 A Anderson™ style	Anderson™ style 75 A	
Status Display	4 line × 20 character white LCD with soft-key menu controls								
Indicators	LEDs for output status and major/minor alarm status								
Self Test Mode	Push-to-test switch to initiate local self-test mode								
Tamper Connector	2-position MTA-100 connector								
Environmental Control Connector (ENV)	10 position connector – input/output sense control								
LRI Connector	2-position Anderson™ style connector								
Local Ethernet Port	1 port, auto-MDX, RJ-45, 10/100/1000 Mbps, data backhaul; complies with DOCSIS® 3.1 CPE interface operations								
SFP Optical Module Port	SFP optical module (small form-factor pluggable) may be installed. Optional/supplied by the operator for status monitoring purposes. Supports common SFP module communication standards to 1 Gbps.								
SFP Port Power Rating	Element Monitoring Module (EMM) with red PCBA (PN: 704-00302-30-002) supports SFP modules drawing up to 3.3 W. EMM with blue or green colored PCBA (PN: 704-00302-30-001 or 704-00292-20-001) supports SFP modules drawing up to 1.0 W.								
Battery Temperature Sensor	Ring lug fastens to negative terminal on battery								
Finish	TGIC-free polyester powder coat								

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Lifting Handle	Foldable handle								
Environment									
Operating Temperature	−40 to 140°F (−40 to 60°C); derate by 3.6°F (2°C) per 1,000 ft (304.8 m) above 3,000 ft (914.4 m)								
Storage Temperature	−40 to 158°F (−40 to 70°C); derate by 3.6°F (2°C) per 1,000 ft (304.8 m) above 3,000 ft (914.4 m)								
Relative Humidity	0 to 95% non-condensing								
Battery Charger									
Temperature Compensation	Programmable: 0 to 2.78 mV/Cell/°F (0 to 5 mV/Cell/°C)								
Bulk Charger Current	10 A								
Charger Stages	3 to 5 stages (refresh, bulk, accept, float, rest)								
Charger Profiles	Selectable, AlphaCell [®] battery models or other (customized settings)								
XRT Capability	Enhanced charger for large capacity battery systems maximizing charger current (918-HP and 918P-HP models only) • Front Terminal TPPL Batteries: Maximum power supply output 6 A • PowerSafe[®] Lithium Batteries: Maximum power supply output 12 A								
Advanced Functions									
Smart Alpha Guard (SAG) Option (Models: 908-HP, 910-HP, 915-HP, and 918-HP)									
Advanced Functionality	Embedded battery balancer with multiple string capability and integrated intelligent functions								
Indicators	LEDs provide visual indicators of the battery sense wiring, balancer state and alarms								
Connector	10-position connector—SAG battery sense harness								
Number of Battery Strings	SAG-2: Supports up to two battery strings								
	SAG-4: Supports up to four battery strings								
Firmware	Remote firmware upgrade capable								
Dual Output Controller (AlphaDOC) Option (Models: 908-HP, 910-HP, 915-HP, and 918-HP)									
Advanced Functionality	Dual output controller manages two fault isolated outputs; short circuit trip capable								
Programmable Parameters	Programmable overcurrent thresholds, retry delays, retry limits, overcurrent tolerance periods and output resets								
Output Transient Suppression	150 V peak clamped output								
Firmware	Remote firmware upgrade capable								
Advanced Analytics (AlphaApps+) Option (All Models)									
Advanced Analytics	Battery health, battery remaining run time, utility event log, PS event log, active drop alarming, system downtime								
User Inputs	Battery model, battery manufacturing date, battery siemens values, technician code/ID								
Firmware	Remote firmware upgrade capable								
Regulatory Compliance									
Safety	North America (NRTL): ANSI [®] /UL [®] 62368-1, CAN/CSA-C22.2 No. 62368-1								
	International (CB Scheme): IEC [®] 62368-1								
EMC	North America: FCC CFR47 Part 15 Class B¹ (US), CAN ICES-003(B)/NMB-003(B) (Canada)								
Cable Modem Specifications									
Hardware									
CPU	Single chip Intel [®] Puma [™] 7 CE2753i, industrial temperature rated								
Memory	FLASH: 8 Gb (NAND)								
	DRAM: 8 Gb (DDR3L)								
LAN Port	1 Gbps (2.5 Gbps optional) MDI/MDIX								
Diplexer Options²	Modem Model	Upstream Range 1		Downstream Range 1		Upstream Range 2		Downstream Range 2	
	CMOA-4285	5 to 42 MHz		54 to 1,002 MHz		5 to 85 MHz		108 to 1,002 MHz²	
	CMOA-45204	5 to 45 MHz		258 to 1,218 MHz		5 to 204 MHz		258 to 1,218 MHz	
WAN Port	F connector, 75 Ohm (DOCSIS [®] 3.0, 3.1 compliant)								
LEDs	Upstream ranging and registration lock, downstream RF carrier detection and lock, CPE link, CPE activity								

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Cable Modem Specifications									
Standards									
Regulatory/Standards (Verified with CMOA installed in application product)	UL® 60950-1: Information Technology Equipment - Safety - Part 1								
	UL®/CSA® 1778 (5 th): Uninterruptible Power Systems as a guide for backfeed								
	IEC® 60728-11 (4 th): 2016 CATV Networks - Part 11 - Safety (applicable parts)								
	EN 50083 2:2006: EMC requirements for CATV equipment								
	EN 62040 2:2006: Uninterruptible Power Systems (UPS) - Electromagnetic Compatibility (EMC) Requirements - Category C2								
	FCC Part 15 – Class B								
	CISPR24/EN55024: 10V/m radiated susceptibility								
	IEEE® 587 – Category B3: Surge, test method: 10 positive cycles/10 negative cycles, alternating								
	IEEE® C62.41: RF surge, 6,000 V peak, combination wave, ten events, alternating positive and negative, using a 2 Ohm source impedance with “Outcome 1” per IEEE C62.45								
	IEC®/EN 61000-4-2: Direct electrostatic contact discharge at 8 kV at the RF connector shield without data loss								
RoHS® Compliant/Directive 2002/95/EC									
Advanced Diagnostics									
RF Network	Full band capture data available through CableLabs® MIB and internal web server								
	Micro-reflection diagram available via internal web server								
Power Supply Display	Power supply display will show advanced network diagnostics including: Upstream and downstream frequencies and RF levels, IPv4 or IPv6 address assigned by network DHCP server, MAC address, DOCSIS® timeout error codes and firmware versions								
Utility Power Diagnostics	With XM3.1-HP app card, utility performance status including outages, sags, surges and out-of-frequency events								
Battery Diagnostics	With XM3.1-HP app card, power supply diagnostics report when batteries should be serviced including battery string run time remaining and battery life remaining								
Event Logging	With XM3.1-HP app card, logs include power supply events, power supply configurations and battery events								
Status Monitoring									
Standards	ANSI®/SCTE® 38-4: Hybrid fiber/coax outside plant status monitoring SCTE-HMS-PS-MIB management information base								
	ANSI®/SCTE® 38-6: Hybrid fiber/coax outside plant status monitoring - Alpha® proprietary, portable generator management information base - Cheetah proprietary, KPI management information base								
Power Supply Monitored Parameters (ANSI-HMS)	Major alarm, minor alarm, input voltage, output voltage, output current, output power, input current, input power, UPS status, charger current, battery discharge current, battery voltage, battery temperature, remote test control, enclosure door								
Features									
DOCSIS® 3.0 Bonded Channels	Up to 32 downstream, 1,216 Mbps ⁴								
	Up to 8 upstream, 216 Mbps ⁴								
DOCSIS® 3.1 OFDM Channels (Receiver)	24 to 192 MHz OFDM channels downstream, 10 Gbps ⁴								
	Supports (2) OFDM channels and 24 SC-QAM channels								
	SC channel modulation up to 4,096 QAM								
DOCSIS® 3.1 OFDMA Channels (Transmitter)	96 MHz maximum OFDMA channel bandwidth upstream, 2 Gbps ⁴								
	Supports (2) OFDMA channels (requires 204 MHz upstream split, future version)								
WAN/LAN Bridging and Routing	802.1d transparent bridging or routing modes configurable								
LAN Services over Ethernet	IPv4, IPv6, UDP, TCP, DHCP Server, NAT, RIPv2								
	DNS address resolution (WAN pass through DNSSEC and EDNSO requests and responses, dynamic DNS support, SRV, and A records supported)								
	Static IPv4, IPv6 configurable								

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WAN Services over DOCSIS®	IPv4, IPv6, UDP, TCP, DHCP, TDD, TFTP, NAT, BPI, RIPv2, SNMPv1, SNMPv2c, SNMPv3, SSH, HTTP								
	TR-181 parameters over TR-069 and SNMP								
	Business Services over DOCSIS® (BSoD) supports L2VPN encrypted traffic								
	DNS address resolution WAN LAN pass through modes supported, see LAN DNS								
	Static IPv4, IPv6 configurable								
	Full spectrum capture (CableLabs® MIBs and HTML)								
	Full spectrum diagnostics (proprietary MIB)								
	Micro reflections (HTML)								
Web Page	Web interface accessible through WAN interface (Port 80 enabled via TLV) and local IP address LAN port								
	Write access password controlled (can be disabled using TLV in configuration file)								
	Web interface displays operating parameters including: DOCSIS® parameters, Ethernet diagnostics (for example, RFC 2544, latency, jitter, frame loss), full band capture statistics, micro reflection statistics, application specific parameters								
Password of the Day (PotD) Option	Operator provided date and seed; PotD encryption from 3DES/AES algorithm								
Software Implementation	Modem uses RDK-M/RDK-B (reference design kit modem/broadband)								
CableLabs® Compliance	DOCSIS® 3.1 cable modem, DOCSIS® 3.0 cable modem, IPv4, IPv6 eRouter specifications								
¹ Precision temperature sensor (PTS) with ferrite bead required for Class B installations for models 908-HP, 910-HP, 915-HP, 915P-HP, 918-HP, and 918P-HP.									
² Dual hardware duplexers per model. Range 1 and Range 2 are software selectable within each model. (Factory default: Range 1).									
³ A downstream upper limit frequency of 1,218 MHz available with firmware upgrade.									
⁴ Maximum theoretical DOCSIS® payload throughput.									



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