







Product Reference Guide

Carrier Ethernet Over Copper™

	ML2300	ML1300	ML130	ML600	ML650	XR239 Repeater
	 <p>Front and Rear Access Models Available</p>					
Application	<ul style="list-style-type: none"> Aggregation of symmetrical, high-speed Ethernet over bonded copper pairs Carrier Class, high availability applications 	<ul style="list-style-type: none"> Aggregation of symmetrical, high-speed Ethernet over bonded copper pairs Carrier Class, high availability applications 	<ul style="list-style-type: none"> Aggregation of symmetrical, high-speed Ethernet over bonded copper pairs Particularly suited for low density and RT installations 	<ul style="list-style-type: none"> Ethernet Access Device for symmetrical, high-speed Ethernet over bonded copper pairs Copper ADM 	<ul style="list-style-type: none"> Integrated TDM & Ethernet Access Device for seamless migration from all TDM to combined TDM and Ethernet Backhaul Mobile/Cell Site Backhaul PBX Backhaul 	<ul style="list-style-type: none"> Industry's only Ethernet in the First Mile Repeater Extends reach of high Ethernet to over 98% loop lengths
Network/Service I/F	<ul style="list-style-type: none"> 10/100/1000Base-T 100/1000Base-FX 	<ul style="list-style-type: none"> 10/100/1000Base-T 100/1000Base-FX 	<ul style="list-style-type: none"> 10/100/1000Base-T 100/1000Base-FX 	<ul style="list-style-type: none"> 10/100Base-T 100/1000Base-FX 	<ul style="list-style-type: none"> E1/T1/CLK 10/100Base-T 100Base-FX 	<ul style="list-style-type: none"> N/A
Copper I/Fs	<ul style="list-style-type: none"> 2Base-TL (IEEE 802.3ah / ITU-T G.998.2 over Extended G.SHDSL) 	<ul style="list-style-type: none"> 2Base-TL (IEEE 802.3ah / ITU-T G.998.2 over Extended G.SHDSL) 	<ul style="list-style-type: none"> 2Base-TL (IEEE 802.3ah / ITU-T G.998.2 over Extended G.SHDSL) 	<ul style="list-style-type: none"> 2Base-TL (IEEE 802.3ah / ITU-T G.998.2 over Extended G.SHDSL) 	<ul style="list-style-type: none"> 2Base-TL (IEEE 802.3ah / ITU-T G.998.2 over Extended G.SHDSL) 	<ul style="list-style-type: none"> 2Base-TL (IEEE 802.3ah / ITU-T G.998.2 over Extended G.SHDSL)
Topology	<ul style="list-style-type: none"> Point-to-multipoint (CO side) Stack Ring 	<ul style="list-style-type: none"> Point-to-multipoint (CO side) Stack Ring 	<ul style="list-style-type: none"> Point-to-multipoint (CO side) Point-to-point (CO/RT) Stack Ring 	<ul style="list-style-type: none"> Point-to-multipoint (RT) Point-to-point (CO/RT) Linear add/drop (688) 	<ul style="list-style-type: none"> Point-to-multipoint (RT) Point-to-point (CO/RT) 	<ul style="list-style-type: none"> 2 pairs per repeater Up to 4 repeaters line powered with one Power Feeding Unit (PFU) Power feeding in both Point-to-Point and Point-to-Multipoint topologies
Main Features	<ul style="list-style-type: none"> Up to 128 copper pairs/shelf Up to 64 high-speed Ethernet over bonded copper pair links Ethernet L2 network processor Multi-linecard configuration Fully redundant configurations Carrier Grade 	<ul style="list-style-type: none"> Up to 64 copper pairs/shelf Up to 32 high-speed Ethernet over bonded copper pair links Ethernet L2 switch Multi-linecard configuration Carrier Grade 	<ul style="list-style-type: none"> Up to 32 copper pairs/shelf Up to 32 high-speed Ethernet over bonded copper pair links Up to 100 Mbps per HSL 	<ul style="list-style-type: none"> 2, 4 or 8 pairs ML620, ML630, ML640 and ML680 product series Up to 100 Mbps ML640 advanced service provisioning, bandwidth control, traffic management and QoS services 	<ul style="list-style-type: none"> 4 or 8 pairs 4x E1/T1 ports Advanced service provisioning, bandwidth control, traffic management and QoS services Accurate E1/T1 clock synchronization CES Protocols 	<ul style="list-style-type: none"> 2 pairs per repeater Up to 5.7 Mbps per pair
Shared Features	<ul style="list-style-type: none"> Wirespeed switching IEEE 802.3ah EFM IEEE 802.3ah clause 57 EFM OA&M 802.1Q VLAN and VLAN stacking MEF 10 compliant, flexible service configuration capabilities 	<ul style="list-style-type: none"> 802.3ad Link aggregation 802.1ad Provider Bridges 802.1ag CFM OA&M 	<ul style="list-style-type: none"> L2 & L3 Classification Fully managed 			<ul style="list-style-type: none"> Fully managed Outdoor hardened Compliant to 239-based field enclosures and other customer specific enclosures
Standards Compliance	<ul style="list-style-type: none"> MEF 9, 10, 14 IEEE 802.3ah, ITU-T G.998.2 ITU-T G.991.2, ETSI TS 101 524 FCC, UL, CE, ITU-T NEBS 3 	<ul style="list-style-type: none"> MEF 9, 14 IEEE 802.3ah, ITU-T G.998.2 ITU-T G.991.2, ETSI TS 101 524 FCC, UL, CE, ITU-T NEBS 3 	<ul style="list-style-type: none"> MEF 9, 14 IEEE 802.3ah, ITU-T G.998.2 ITU-T G.991.2, ETSI TS 101 524 FCC, UL, CE, ITU-T NEBS 3 	<ul style="list-style-type: none"> MEF 9, 10 (ML 640), 14 IEEE 802.3ah, ITU-T G.998.2 ITU-T G.991.2, ETSI TS 101 524 FCC, UL, CE, ITU-T NEBS 3 	<ul style="list-style-type: none"> MEF 8, 9, 10, 14, 18 IEEE 802.3ah, ITU-T G.998.2 ITU-T G.991.2, ETSI TS 101 524 FCC, UL, CE, ITU-T NEBS 3 	<ul style="list-style-type: none"> IEEE 802.3ah, ITU-T G.998.2 ITU-T G.991.2, ETSI TS 101 524 FCC, UL, CE NEBS 3
Spectral Compliance		<ul style="list-style-type: none"> ITU-T G.991.2 (Annex A, B, F, G) ETSI TS 101 524 (Annex E) ANSI T1.417, T1.426 Per country regulatory compliant spectral modes 				