



Lighthouse™ 5G TDD Smart Network Controlled Repeater



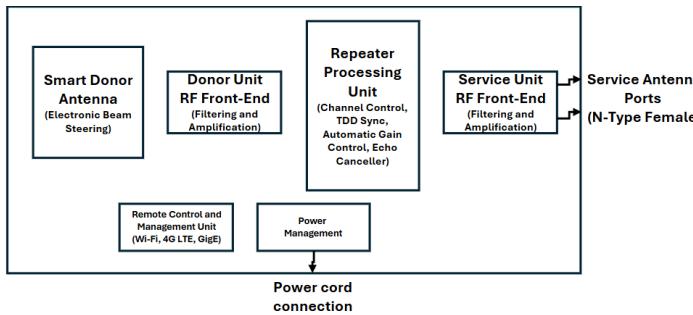
KEY FEATURES

- High output power (>27dBm OP, >40dBm EIRP)
- Plug and play with automatic gain control, TDD synchronization, and active echo cancellation
- Channelization (10~200MHz) compliant to 3GPP TS 38.106
- Up to two 100MHz non-contiguous CA 2T2Rs, 2x2 MIMO
- Optional built-in smart donor antenna with integrated electronic beam-steering capabilities
- IP66 rated

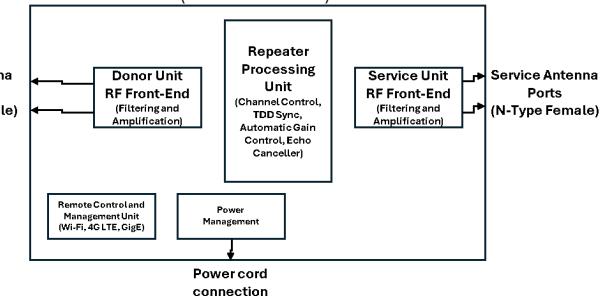
Airgain's Lighthouse™ Smart Network Repeater is a high-power, 5G NR solution designed to extend cellular coverage and enhance uplink/downlink signal power within the sub-6GHz n77 frequency band (3300 to 4000MHz, TDD FR1), or n41 frequency band (2496 to 2690MHz TDD FR1).

This repeater features an optional smart integrated donor antenna with beam-steering capabilities, simplifying installation and optimizing signal acquisition, or an external DU antenna. Advanced channelization allows operators to selectively amplify desired signals while mitigating interference. Automated functionalities, including Time Division Duplex (TDD) detection, Automatic Gain Control (AGC), and echo cancellation ensure stable, high-quality signal amplification. Lighthouse™ supports up to 200MHz instantaneous bandwidth, 2-carrier aggregation (2CA), and 2x2 Multiple-Input Multiple-Output (MIMO) across its operational bandwidth.

Integrated Smart DU Antenna SKU Block Diagram
(CY-LHX-22-SB1)



External DU Antenna SKU Block Diagram
(CY-LHX-22-XB1)



For more Information:

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5G TDD Smart Network Controlled Repeater

TECHNICAL SPECIFICATIONS

Part Number	CY-LH0-22-SB1-A	CY-LH0-22-SB1-B	CY-LH0-22-XB1-A	CY-LH0-22-XB1-B
System	5G NR TDD			
Operational Frequency	3300~4000 MHz (n77)			
Maximum Instantaneous Bandwidth	200 MHz (two CAs up to 100MHz each)			
Channelization	10MHz up to 200MHz with 10MHz steps			
Carrier Aggregation	2CA (2T2R MIMO non-contiguous 10~100MHz) or 4CA (1T1R SISO 10~50MHz)			
MIMO Option	Up to 2T2Rs			
Maximum Output Power UL/DL	27/27 dBm ± 2 dB			
Maximum Gain UL/DL	40~85 dB ± 2 dB, 1 dB/step, Manual or Auto Gain Control Support			
Gain Flatness	<= 3 dBpp within 100 MHz			
Group Delay	<= 3.2 μs			
UL/DL EVM	<= 3.5% (at Maximum Output Power)			
UL Noise Figure	<= 5 dB (at Maximum Gain)			
VSWR	<= 1.8			
Maximum Input Power Without Damage	>= 0 dBm (UL&DL)			
Out-of-band Gain Rejection		Compliant to 3GPP TS 38.106		
Adjacent Channel Leakage Ratio				
Frequency Stability				
Spurious Emission				
Unwanted Emission (Emission Mask)				
TDD Synchronization	Automatic Frame Start Time Acquisition Rx Sensitivity: -88 dBm for 100 MHz and 30 kHz SCS User-set TDD Slot Format for RF SW Control			
DU Antenna	Integrated smart beam switching antenna, gain >= 13dBi, beam direction: 0°, ±15°, ±30°		External antenna. 2 x N-Type Female RF Connectors.	
SU Antenna	2 x N-Type Female RF Connectors			
Impedance	50Ω			
Power	AC 114~126V, 60Hz	AC 207~253V, 50Hz	AC 114~126V, 60Hz	AC 207~253V, 50Hz
Power Consumption	< 110W			
Dimensions	402 x 395 x 103 mm (LxHxD)			
Weight	10kg (22 LBS)			
Operating Temperature	-30°C to +60°C			
IP Rating	IP66			
Automatic Shutdown Function	RSSI Overpower Shutdown (Maximum 0 dBm Programmable) RSSI Underpower Shutdown (Minimum -86 dBm ± 2 dB, OMT Programmable)			
Local Control	Wi-Fi 802.11 b/g/n with commissioning tool			
Remote Control	Remote Control Unit with Cellular IoT Modem, 802.11 b/g/n, and Gigabit Ethernet OMC: Web Server Connection: SNMP			

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TECHNICAL SPECIFICATIONS N40/N41

Part Number	CY-LH1-22-SB1-A	CY-LH1-22-SB1-B	CY-LH1-22-XB1-A	CY-LH1-22-XB1-B
System	5G NR TDD			
Operational Frequency	2496~2690 MHz (n41)			
Maximum Instantaneous Bandwidth	194 MHz (two CAs up to 100MHz each)			
Channelization	10MHz up to 194MHz			
Carrier Aggregation	2CA (2T2R MIMO 10~100MHz) or 4CA (1T1R SISO 10~50MHz)			
MIMO Option	Up to 2T2Rs			
Maximum Output Power UL/DL	27/27 dBm ± 2dB			
Maximum Gain UL/DL	40~85 dB ± 2 dB, 1 dB/step, Manual or Auto Gain Control Support			
Gain Flatness	<= 3 dBpp within 100 MHz			
Group Delay	<= 3.2 μs			
UL/DL EVM	<= 3.5% (at Maximum Output Power)			
UL Noise Figure	<= 5 dB (at Maximum Gain)			
VSWR	<= 1.8			
Maximum Input Power Without Damage	>= 0 dBm (UL&DL)			
Out-of-band Gain Rejection		Compliant to 3GPP TS 38.106		
Adjacent Channel Leakage Ratio				
Frequency Stability				
Spurious Emission				
Unwanted Emission (Emission Mask)				
TDD Synchronization	Automatic Frame Start Time Acquisition Rx Sensitivity: -88 dBm for 100 MHz and 30 kHz SCS User-set TDD Slot Format for RF SW Control			
DU Antenna	Integrated smart beam switching antenna, gain >= 13dBi, beam direction: 0°, ±15°, ±30°		External antenna. 2 x N-Type Female RF Connectors.	
SU Antenna	2 x N-Type Female RF Connectors			
Impedance	50Ω			
Power	AC 114~126V, 60Hz	AC 207~253V, 50Hz	AC 114~126V, 60Hz	AC 207~253V, 50Hz
Power Consumption	< 110W			
Dimensions	402 x 395 x 103 mm (LxHxD)			
Weight	10kg (22 LBS)			
Operating Temperature	-30°C to +60°C			
IP Rating	IP66			
Automatic Shutdown Function	RSSI Overpower Shutdown (Maximum 0 dBm Programmable) RSSI Underpower Shutdown (Minimum -86 dBm ± 2 dB, OMT Programmable)			
Local Control	Wi-Fi 802.11 b/g/n with commissioning tool			
Remote Control	Remote Control Unit with Cellular IoT Modem, 802.11 b/g/n, and Gigabit Ethernet OMC: Web Server Connection: SNMP			

For more Information:

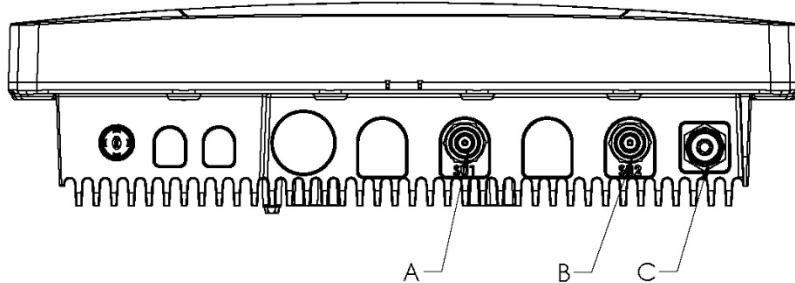
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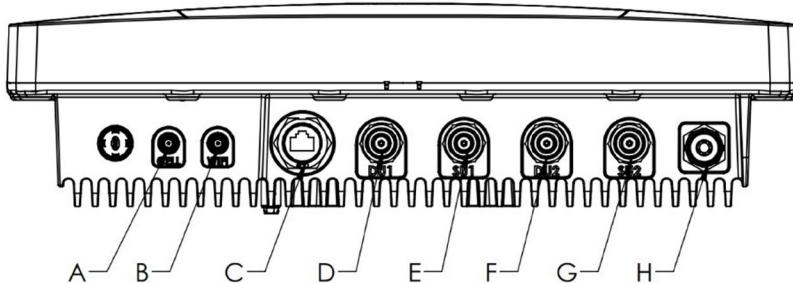
CY-LH0/1-22-SB1-xx-y (Integrated Smart DU Antenna):



PORT DEFINITIONS

A	N-Type (Female)	Service antenna, port 1
B	N-Type (Female)	Service antenna, port 2
C	Power	Power cord connection (not included)

CY-LH0/1-22-XB1-xx-y (External DU Antenna):



PORT DEFINITIONS

A	N-Type (Female)	Service antenna, port 1 (not used)
B	N-Type (Female)	Service antenna, port 2 (not used)
C	N-Type (Female)	Donor antenna, port 1
D	N-Type (Female)	Donor antenna, port 2
E	Power	Power cord connection (included in the package)
F	N-Type (Female)	Donor antenna, port 2
G	N-Type (Female)	Service antenna, port 2
H	Power	Power cord connection (not included)

For more Information:

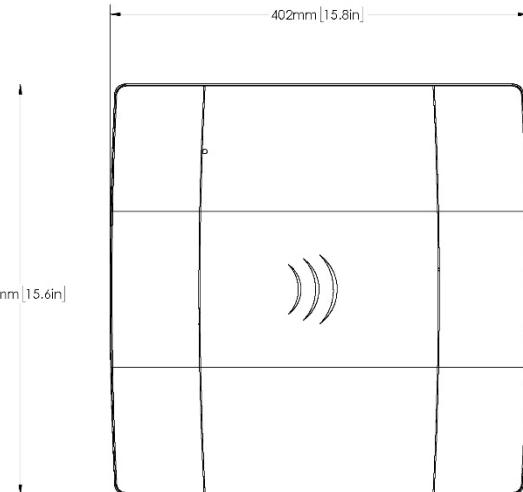
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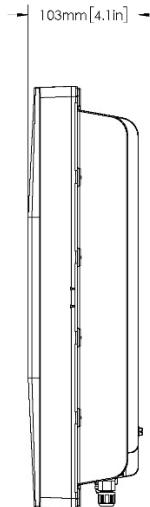
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5G TDD Smart Network Controlled Repeater

DIMENSIONS (in mm)

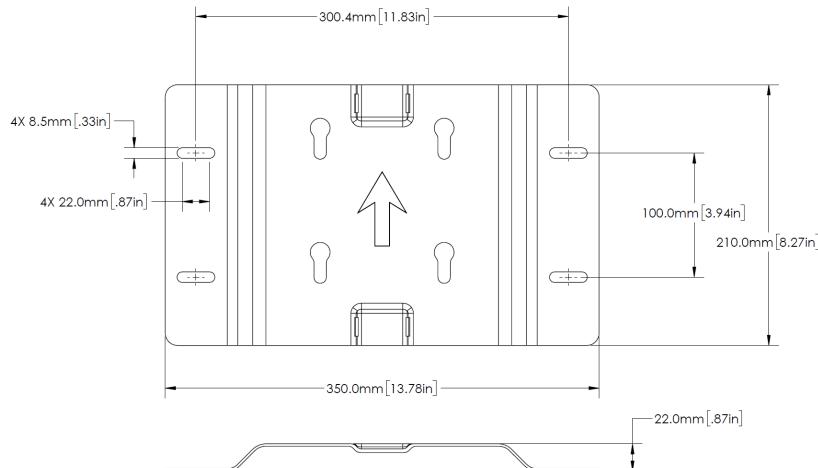
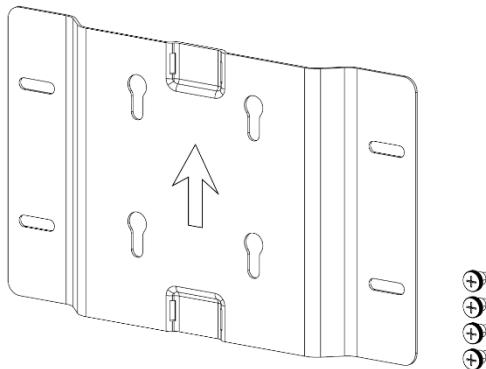


Front view



Side view

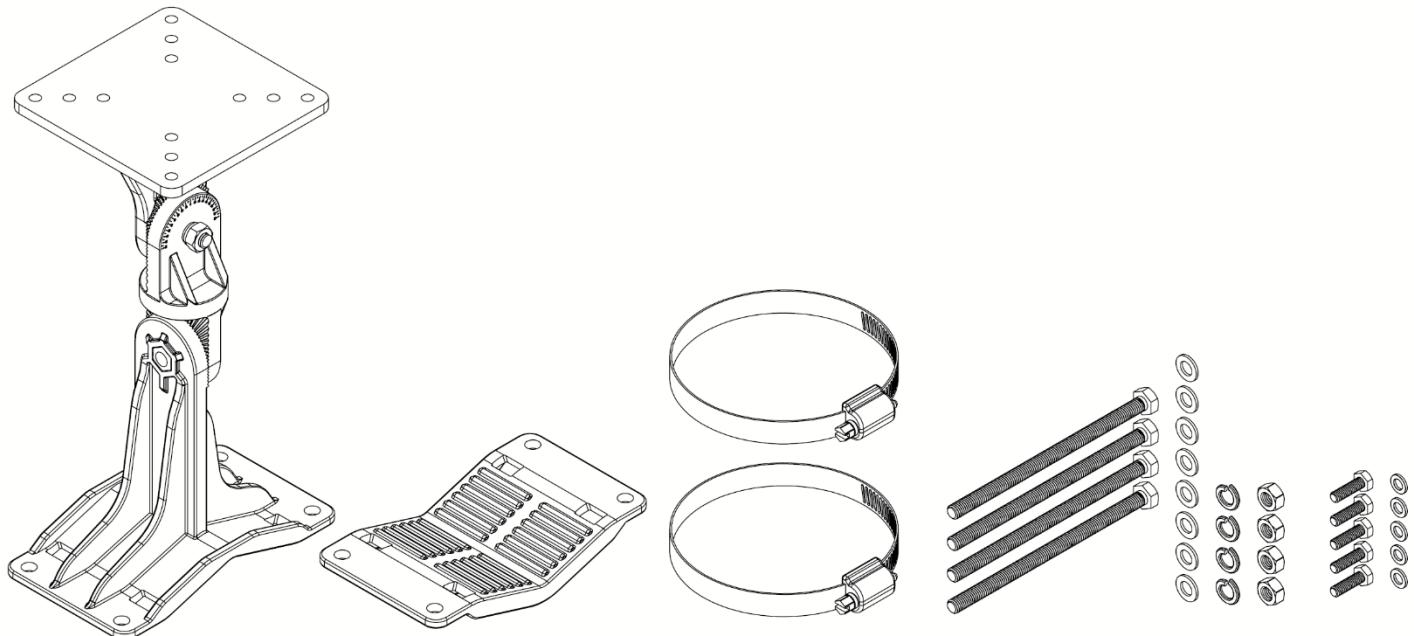
FIXED WALL MOUNTED BRACKET (Included in Box)



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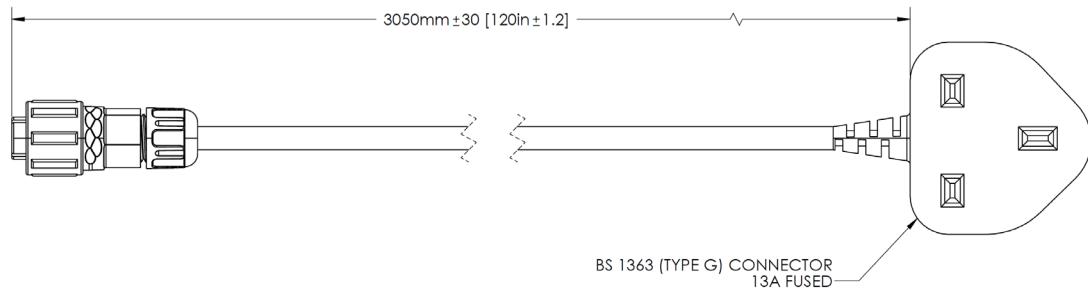
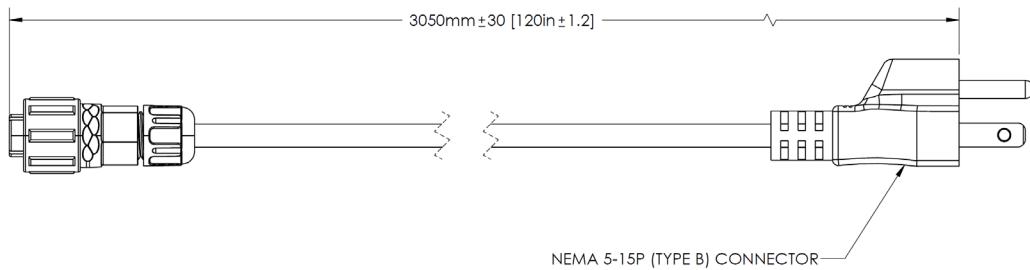
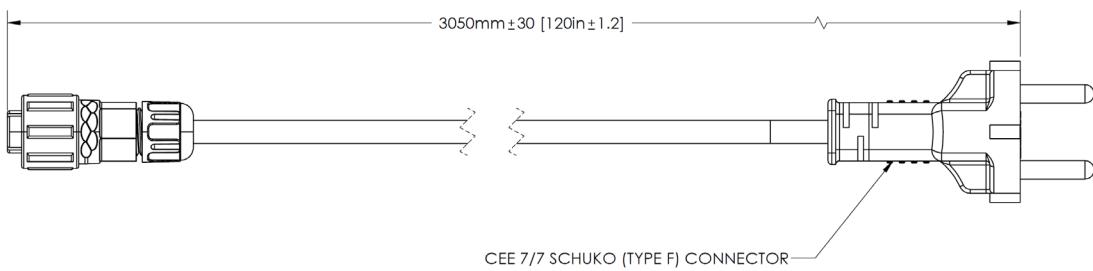
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Lighthouse™
5G TDD Smart Network Controlled Repeater**CY-LH-AMB-01 (ADJUSTABLE MOUNTING BRACKET KIT)**

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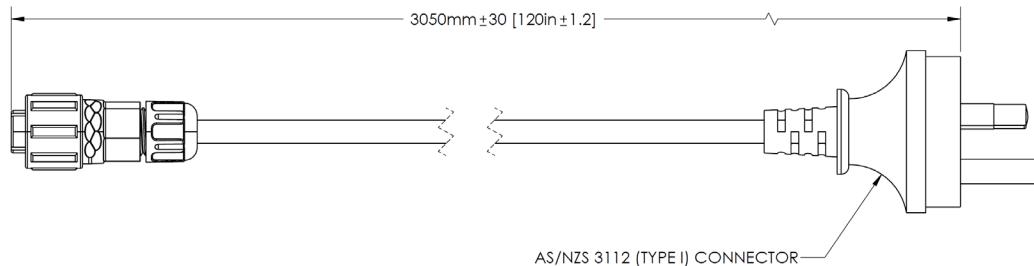
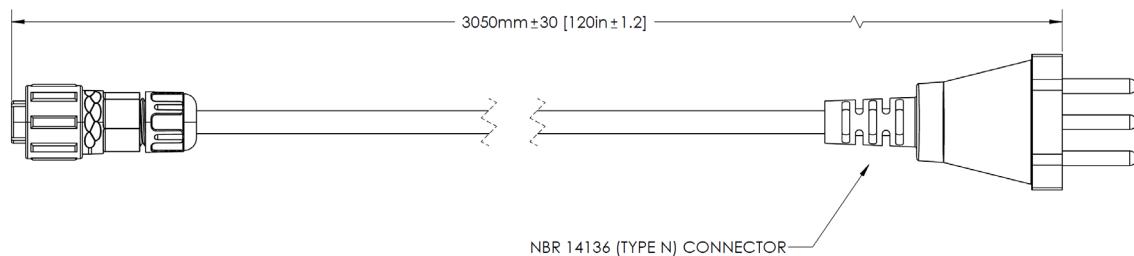
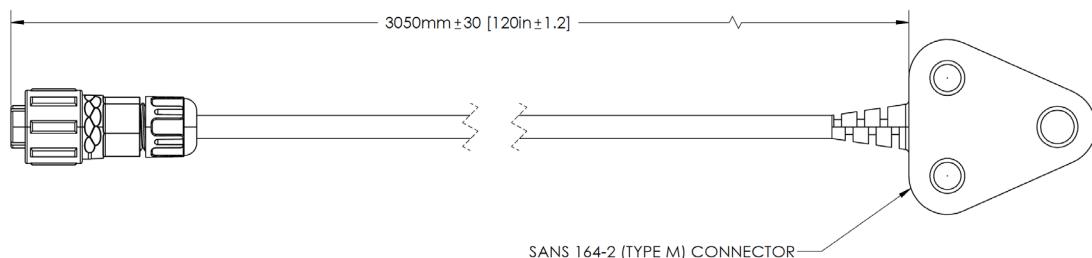
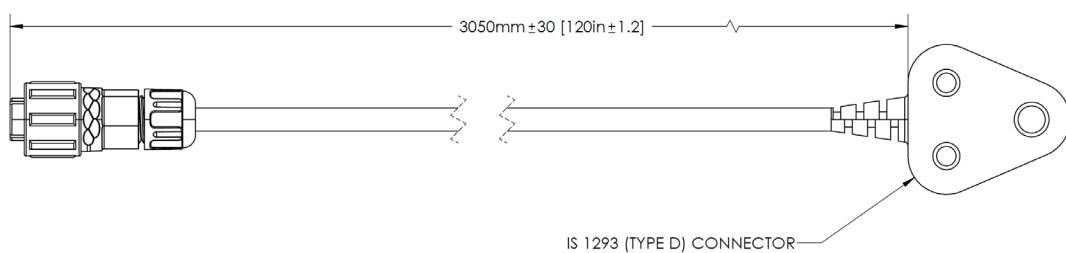
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Power Cable Accessory SKUs
Type G Power Cable

Type B Power Cable

Type F Power Cable


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Type I Power Cable

Type N Power Cable

Type M Power Cable

Type D Power Cable


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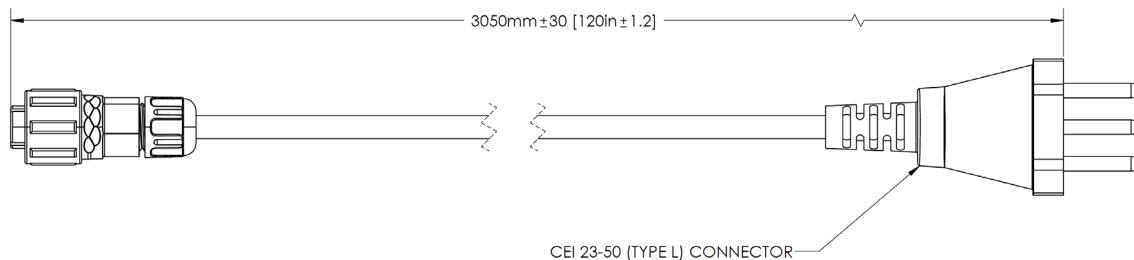
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Type L Power Cable



Lighthouse Ordering Information

Base Unit SKUs

Part Number	Description	Bands	DU Antenna	AC Voltage	MNO Approvals	Type Approvals
CY-LH0-22-SB1-A	Lighthouse 5G Repeater with Integrated Smart DU Antenna	n77/n78 (3300-4000MHz)	Integrated Smart	110V AC, 60Hz	Verizon (TBD) AT&T (TBD) T-Mobile (TBD) U.S. Cellular (TBD) Boost Mobile (TBD)	FCC (TBD) PTCRB (TBD) IC Canada (TBD) CE/RED (TBD) GCF (TBD)
CY-LH0-22-SB1-B	Lighthouse 5G Repeater with Integrated Smart DU Antenna	n77/n78 (3300-4000MHz)	Integrated Smart	220V AC, 50Hz	Omantel	Oman TRA CE/RED (TBD) GCF (TBD)
CY-LH0-22-XB1-A	Lighthouse 5G Repeater with External DU Antenna	n77/n78 (3300-4000MHz)	External	110V AC, 60Hz	Verizon (TBD) AT&T (TBD) T-Mobile (TBD) U.S. Cellular (TBD) Boost Mobile (TBD)	FCC (TBD) PTCRB (TBD) IC Canada (TBD) CE/RED (TBD) GCF (TBD)
CY-LH0-22-XB1-B	Lighthouse 5G Repeater with External DU Antenna	n77/n78 (3300-4000MHz)	External	220V AC, 50Hz	Omantel	Oman TRA CE/RED (TBD) GCF (TBD)
CY-LH1-22-SB1	Lighthouse 5G Repeater with Integrated Smart DU Antenna	n41 (2496-2690MHz)	Integrated Smart	110V AC, 60Hz / 220V AC, 50Hz	T-Mobile (TBD) Omantel (TBD)	FCC (TBD) PTCRB (TBD) Oman TRA (TBD) CE/RED (TBD) GCF (TBD)
CY-LH1-22-XB1	Lighthouse 5G Repeater with External DU Antenna	n41 (2496-2690MHz)	External	110V AC, 60Hz / 220V AC, 50Hz	T-Mobile (TBD) Omantel (TBD)	FCC (TBD) PTCRB (TBD) Oman TRA (TBD) CE/RED (TBD) GCF (TBD)

Note: All base units include a wall-mount bracket with M6 thumb screws. A power cord must be ordered separately.

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Accessory SKUs

Mounting Hardware

Part Number	Description	Applications
CY-LH-AMB-01	Adjustable Mounting Bracket Kit	Professional pole, mast, and flat surface mounting with articulation capability

Power Cord Kits (Regional)

Part Number	Plug Type	Regions	Specifications
CY-LH-PWR-UK-10	BS 1363 (Type G)	UK, Ireland, Malta, Cyprus, Singapore, Malaysia	10ft outdoor-rated, 1.5mm ² copper, H07RN-F jacket, 13A fused plug
CY-LH-PWR-NA-10	NEMA 5-15P (Type B)	USA, Canada, Mexico	10ft outdoor-rated, 14 AWG copper, SOOW jacket, UL/CSA listed
CY-LH-PWR-EU-10	CEE 7/7 Schuko (Type F)	Germany, Austria, Netherlands, Belgium, Spain, Portugal	10ft outdoor-rated, 1.5mm ² copper, H07RN-F jacket, CE/VDE approved
CY-LH-PWR-AU-10	AS/NZS 3112 (Type I)	Australia, New Zealand, Papua New Guinea, Fiji	10ft outdoor-rated, 1.0mm ² copper, V-90 PVC jacket, SAA approved
CY-LH-PWR-BR-10	NBR 14136 (Type N)	Brazil	10ft outdoor-rated, 1.5mm ² copper, EPR jacket, INMETRO certified
CY-LH-PWR-ZA-10	SANS 164-2 (Type M)	South Africa	10ft outdoor-rated, 1.5mm ² copper, H05RN-F jacket, SABS approved
CY-LH-PWR-IN-10	IS 1293 (Type D)	India, Nepal, Sri Lanka (older installations)	10ft outdoor-rated, 1.5mm ² copper, PVC jacket, BIS approved
CY-LH-PWR-IT-10	CEI 23-50 (Type L)	Italy, Chile, San Marino	10ft outdoor-rated, 1.5mm ² copper, H05RN-F jacket, IMQ approved

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