



# Lighthouse™

## 5G TDD Smart Network Controlled Repeater



### KEY FEATURES

- High output power (>27dBm)
- 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 Channels supporting 2x2 MIMO
- Optional built-in smart donor antenna with integrated electronic beam-steering capabilities
- IP67 rated for outdoor deployments

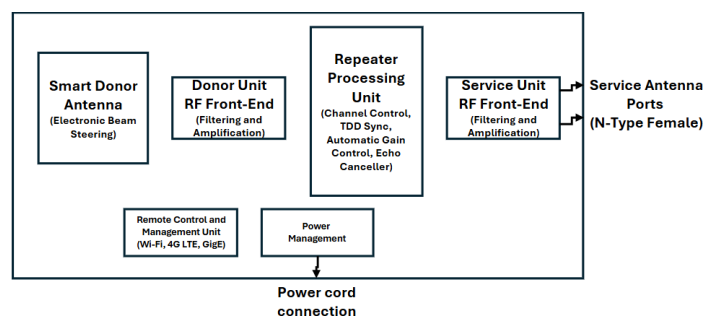
### ADVANTAGES

- Reduces infrastructure costs
- Offers a flexible design for multiple configurations
- Delivers both high power and high quality signal
- Supports remote control and management

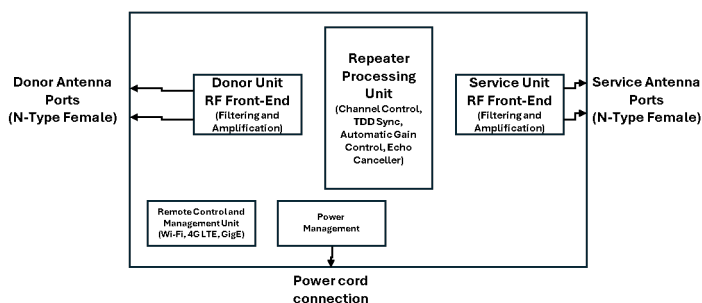
Airgain's Lighthouse™ Smart Network Repeater is a family of high-power, 5G NR solutions designed to extend cellular coverage and enhance uplink/downlink signal power within the sub-6GHz n77 & n78 frequency band (3300 to 4000MHz, TDD FRI), or n41 frequency band (2496 to 2690MHz TDD FRI).

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:  
[www.airgain.com](http://www.airgain.com) [sales@airgain.com](mailto:sales@airgain.com) + 1-855-AIRGAIN

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## 5G TDD Smart Network Controlled Repeater

### TECHNICAL SPECIFICATIONS N77

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	Up to 2CA (2T2R MIMO non-contiguous 10~100MHz)			
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	IP67, 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 remote device management			

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## 5G TDD Smart Network Controlled Repeater

### TECHNICAL SPECIFICATIONS N41

Part Number	CY-LH1-22-SB1	CY-LH1-22-XB1
System	5G NR TDD	
Operational Frequency	2496~2690 MHz (n41)	
Maximum Instantaneous Bandwidth	Two CAs up to 100MHz each	
Channelization	10MHz up to 100MHz	
Carrier Aggregation	Up to 2CA (2T2R MIMO non-contiguous 10~100MHz)	
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	
Power Consumption	< 110W	
Dimensions	402 x 395 x 103 mm (LxHxD)	
Weight	10kg (22 LBS)	
Operating Temperature	-30°C to +60°C	
IP Rating	IP67, 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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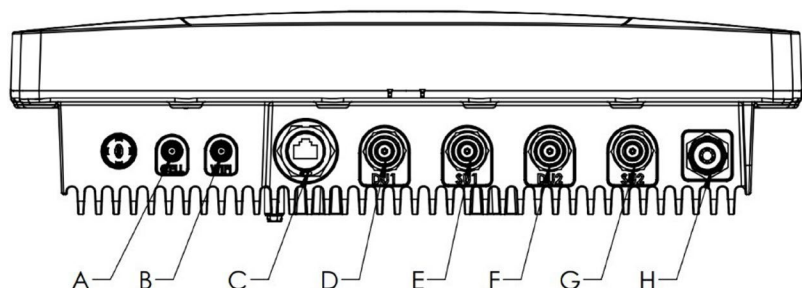
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## 5G TDD Smart Network Controlled Repeater

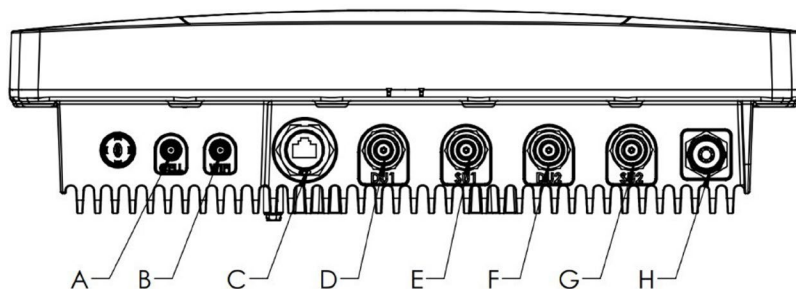
### CY-LH0/1-22-SB1-xx-y (Integrated Smart DU Antenna):



#### PORT DEFINITIONS

A	SMA (Female)	Not used
B	SMA (Female)	Not used
C	RJ45	Ethernet for local access
D	N-Type (Female)	Not used
E	N-Type (Female)	Service antenna, port 1
F	N-Type (Female)	Not used
G	N-Type (Female)	Service antenna, port 2
H	Power	Power cord connection (not included; see region-specific accessory cables later in this document)

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



#### PORT DEFINITIONS

A	SMA (Female)	Not Used
B	SMA (Female)	Not Used
C	RJ45	Ethernet for local access
D	N-Type (Female)	Donor antenna, port 1
E	N-Type (Female)	Service antenna, port 1
F	N-Type (Female)	Donor antenna, port 2
G	N-Type (Female)	Service antenna, port 2
H	Power	Power cord connection (not included; see region-specific accessory cables later in this document)

For more Information:

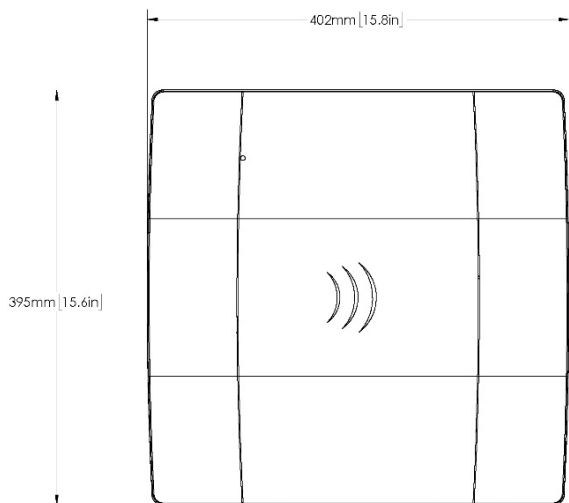
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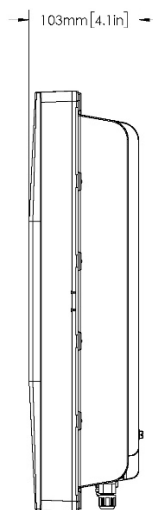


# Lighthouse™ 5G TDD Smart Network Controlled Repeater

## DIMENSIONS (in mm)

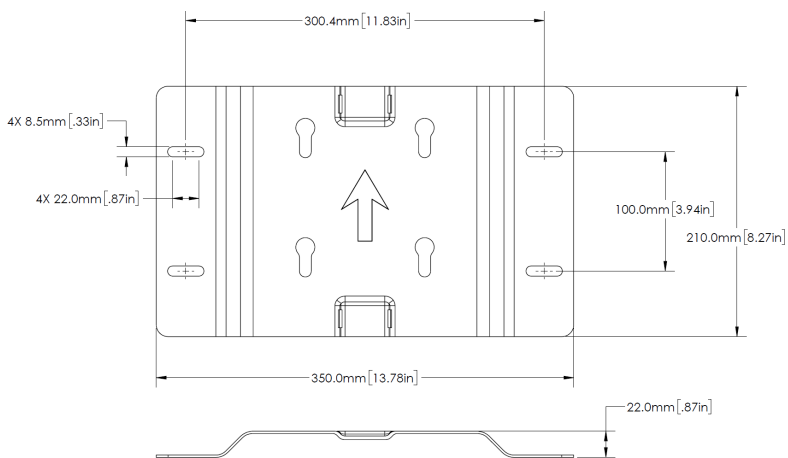
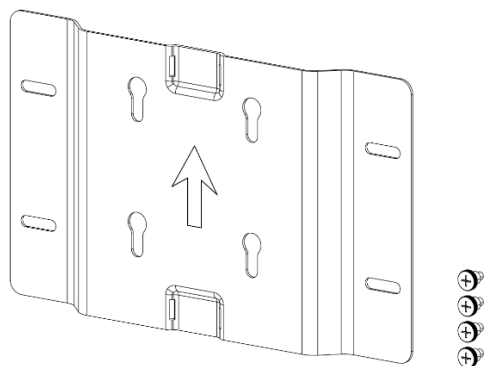


Front view



Side view

## FIXED WALL MOUNTED BRACKET (Included in Box)



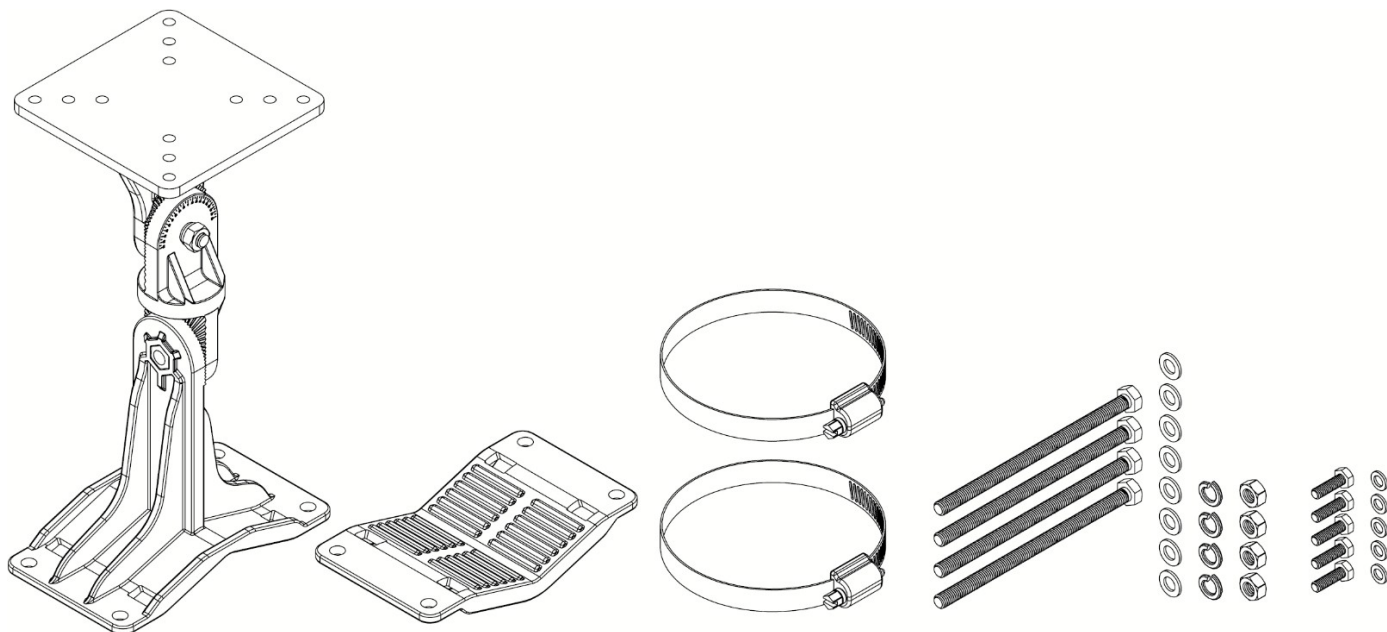
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# Lighthouse™ 5G TDD Smart Network Controlled Repeater

CY-LH-AMB-01 (ADJUSTABLE MOUNTING BRACKET KIT)



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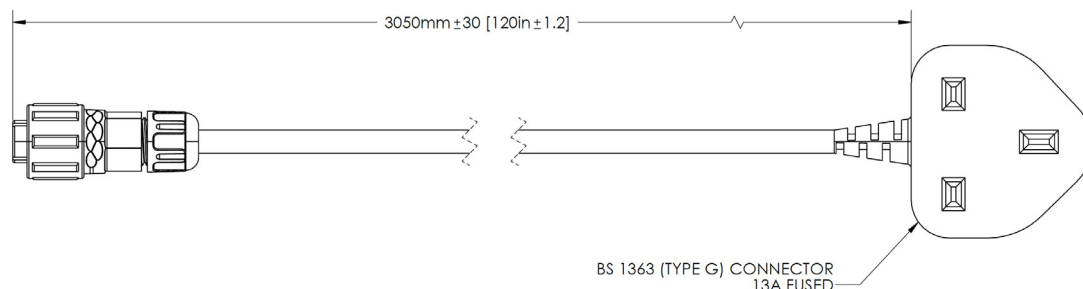
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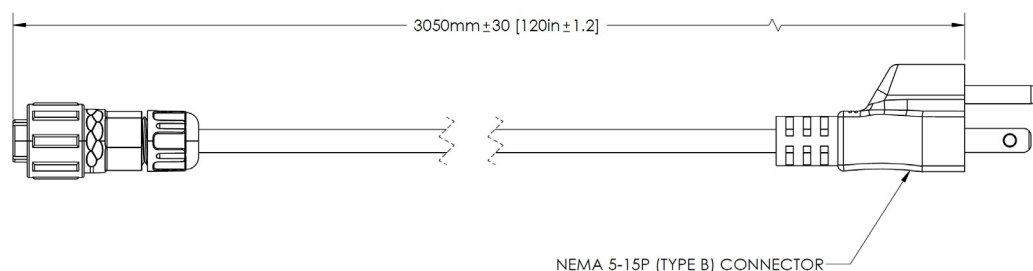
# Lighthouse™ 5G TDD Smart Network Controlled Repeater

## Power Cable Accessory SKUs

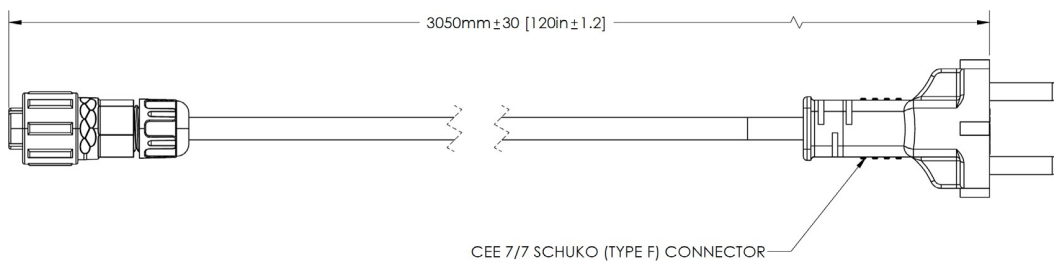
### Type G Power Cable



### Type B Power Cable



### Type F Power Cable



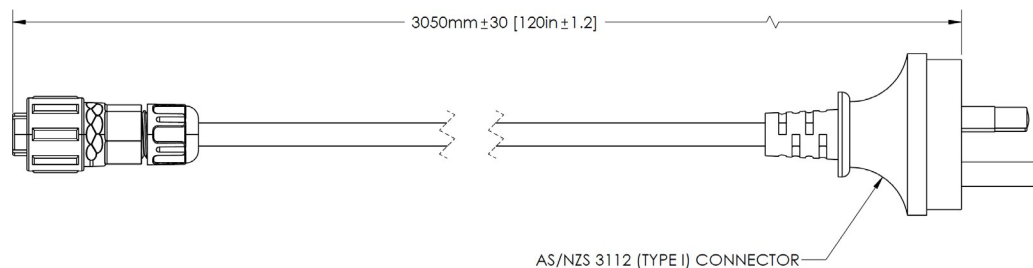
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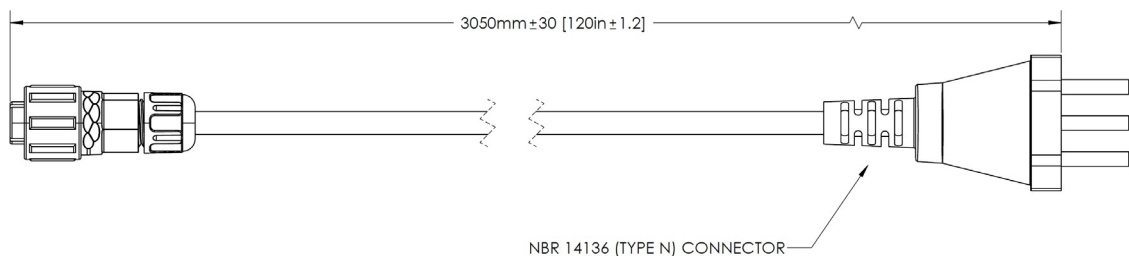


# Lighthouse™ 5G TDD Smart Network Controlled Repeater

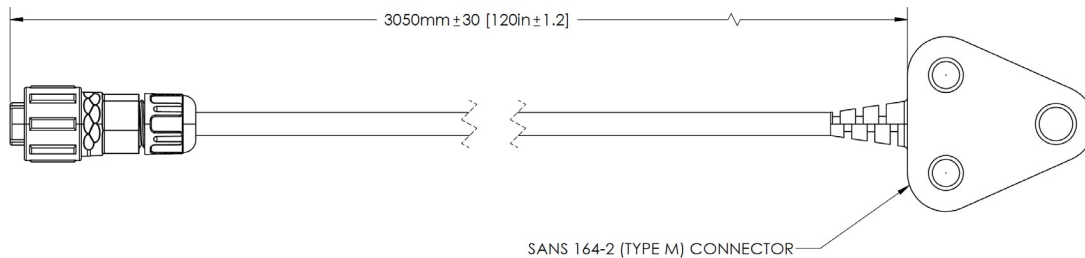
## Type I Power Cable



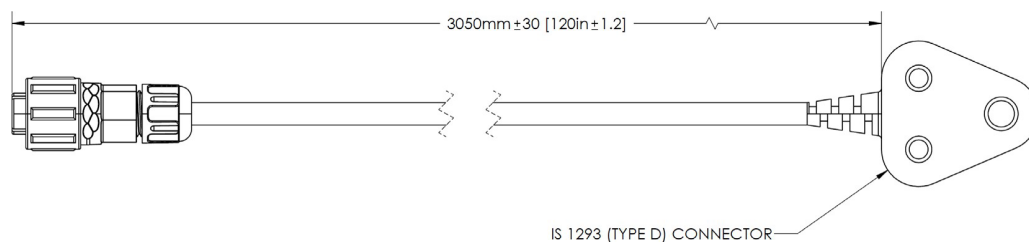
## Type N Power Cable



## Type M Power Cable



## Type D Power Cable



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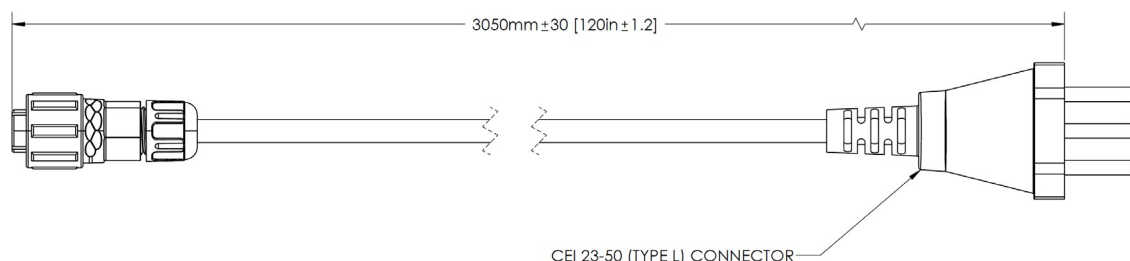
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## 5G TDD Smart Network Controlled Repeater

### 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> copper, V-90 PVC jacket, SAA approved
CY-LH-PWR-BR-10	NBR 14136 (Type N)	Brazil	10ft outdoor-rated, 1.5mm <sup>2</sup> copper, EPR jacket, INMETRO certified
CY-LH-PWR-ZA-10	SANS 164-2 (Type M)	South Africa	10ft outdoor-rated, 1.5mm <sup>2</sup> 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 <sup>2</sup> copper, PVC jacket, BIS approved
CY-LH-PWR-IT-10	CEI 23-50 (Type L)	Italy, Chile, San Marino	10ft outdoor-rated, 1.5mm <sup>2</sup> copper, H05RN-F jacket, IMQ approved

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