

TECHNICAL SPECIFICATIONS

ACKCIO REPEATER NODE BEAM-RN



MODEL		
BEAM-RN		Repeater Node that helps to expand network coverage
MECHANICAL		
DIMENSION		100mm x 100mm x 80mm
WEIGHT		0.7kg
MATERIAL		Die-cast aluminium
LOW-POWER MCU / PERIPHERALS		
MCU		Ultra-low power Arm® Cortex®-M3 48MHz 32-bit CPU
MEMORY		128KB flash, 20KB ultra-low-leakage SRAM
CLOCK		High-precision RTC self-compensated in temperature (10ppm from -40°C to +80°C)
ON-BOARD SENSORS		Temperature sensor (range: -40°C to +80°C, resolution: 0.01°C, accuracy: ±1.8°C) Barometer sensor (range: 300 to 1100hPa, resolution: 0.18Pa, accuracy: ±1.7hPa)
INTERFACES		
DISPLAY / KEYBOARD	LEDs	SYS - System status indication
	Buttons	TEST - to test the Node RESET - to reset the Node
USB DEVICE PORT		USB 2.0 full speed (Micro B connector) 5V, max 500 mA for mobile OTG
IDC10 CONNECTOR		Only for firmware programming
LIFETIME		
BEAM-RN		24 months (with 2 x 19Ah D-Cell Li-SOCl2 batteries)

RF & MESH SPECIFICATIONS

RADIO BAND	ISM Band 863 - 870MHz, 902 - 928MHz
TRANSMIT POWER	Up to 1 W (30 dBm)
MODULATION	2-GFSK
CERTIFICATIONS	FCC: 2AT8M-RN-V3X0 IC: 27349-RNV3X0 CE/RED Anatel (Brazil) RCM(Australia & New Zealand)
ANTENNA	$\frac{1}{4}$ λ stub antenna with SMA connector
LINK DATA SPEED	50 kbps bitrate
DATA SECURITY	AES128 encrypted end-to-end data
HOPS	Up to 12
NETWORK SIZE	Up to 50 Nodes
RANGE*	Underground - Up to 500 m Urban - Up to 1 km Line of Sight - Up to 5 km

*Ranges are based on a transmission power of 30dbm. Actual transmission distances may vary depending on deployment conditions.

SOFTWARE & FIRMWARE

FIRMWARE	Ackcio Mesh: Ackcio's long-range low-power mesh networking firmware
SOFTWARE	Ackcio Nimbus: Android app for device setup, network monitoring, and troubleshooting

PROTECTION

CIRCUIT PROTECTION	Surge protection DC breakdown voltage 60V ($\pm 20\%$ @100V/ μ s) Impulse breakdown voltage 500V (@ 5kV/ μ s) typical Short circuit protection in power outputs Reverse supply protection
ESD	15kV

SYSTEM POWER REQUIREMENTS

SUPPLY VOLTAGE	2.7V to 4V
INTERNAL NON-RECHARGEABLE BATTERIES	2 x D-Cell Li-SOCl2 3.6V nominal voltage Recommended capacity 19Ah
TYPICAL CURRENT DRAIN	<20 μ A in system idle <100mA in system RX mode <300mA in system TX mode (depends on output RF power setting)

ENVIRONMENTAL CONDITIONS

OPERATING TEMPERATURE

-40°C to +80°C

PROTECTION

IP67

MOUNTING BRACKETS / PLATES

BEAM-BK-SM

Small multi-purpose mounting bracket (vertical/horizontal/pole) with mounting screws



Ackcio BEAM-RN

External view



Ackcio BEAM-RN

with our **BEAM-BK-SM** small multi-purpose mounting bracket for vertical/horizontal or pole mounting



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Inner view