

SHIELD EXTEND

Scalable Public Safety ERCES

MODEL NUMBERS:

MU: F40-0E; (Class A) NU: F42-67ENU, CU: F41-8XCU; (Class B) NU: F42-67ENUB, CU: F41-8XCUB

SHIELD EXTEND is a public safety ERCES that solves for the toughest emergency communication challenges and delivers consistent coverage in any building. Available in Class A or Class B variations, EXTEND is built upon Power-over-Ethernet (PoE) architecture and includes a Network Unit (NU), Coverage Unit (CU), and Management Unit (MU). The system is scalable to fit buildings of all sizes and compatible with additional equipment such as the SHIELD EXTEND Battery Backup Unit and Fiber Range Extenders, the SHIELD Remote Annunciator, Emergency Power-Off Switch, and Active Server Antennas, as well as third-party public safety options.

SHIELD EXTEND is the only ERCES to concurrently provide 700/800 MHz Land Mobile Radio (LMR) coverage and true carrier-grade support for all FirstNet bands. In addition to delivering industry-leading talk-in and talk-out performance with a no noise guarantee, EXTEND is listed to UL 2524 and complies with IFC 510 and NFPA 1221. The system also works alongside the Nextivity WAVE PRO App and WAVE Portal for seamless installation and robust remote monitoring and management capabilities.

Features and benefits include:

- ERCES Public Safety Solution: 700/800 MHz LMR and FirstNet
- Class A Device: 56 Channels at 12.5 kHz Bandwidth
- Class B Device: 28 Channels at 100 kHz or 150 kHz Bandwidth
- No Noise Guarantee: Automatic Calculation and Setting of Isolation as well as Uplink and Downlink Gain
- Talk-Out and Grid Testing: Industry-First Uplink and Downlink Tests via Nextivity WAVE PRO App and COMPASS XR
- Nextivity Proprietary IntelliBoost Chip: Delivers Unparalleled Real-Time Talk-In and Talk-Out Performance
- End-to-End System Monitoring: Built-in Remote Monitoring and Management via Nextivity WAVE Portal
- Management Unit: Controls and Monitors all System Components, including NU and CU as well as SHIELD Remote Annunciator Panel (RA), Emergency Power-off Switch (EPO), and Active Server Antennas
- Network Unit: Head-End of the System; Supports up to 6 CUs via PoE
- Coverage Unit: Remote Unit of the System that Rebroadcasts LMR and FirstNet Donor Signals



System Features

Real-time automatic gain control (AGC) per time-slot
 PoE architecture allows 325 ft distance range between the NU and the CUs
 Up to six (6) CUs can be attached to a single NU
 Remote monitoring through Nextivity WAVE PRO app and WAVE Portal

Public Safety Network and Network Protection Features

Support for all FirstNet LTE bands (2, 4, 12, 14)
 Support for 700 MHz and 800 MHz (P25, Analog)
 NFPA 1221, IFC 210, NEMA 4 certified, listed to UL 2524
 Automatic UL and DL gain setting for Public Safety Channels
 Uplink Muting Mode (Squelch) automatically shuts down uplink transmissions when no active user equipment is detected
 Independent donor antenna ports for FirstNet and LMR

Benefits

One solution provides a complete code-compliant ERCES system
 Centralized Power-over-Ethernet (PoE) architecture reduces equipment costs
 Modular architecture allows scaling the system from 1W to 6W
 Certifications reduce time-to-market and downstream costs
 Remote monitoring assures that the system is performing per design
 Minimal noise in network through optimal gain and power settings ensure best overall radio performance
 Assured best audio quality

Power

Band Configuration	Consumption (Watts) @ 48 VDC					
FirstNet + 700/800 MHz LMR	1X CU	2X CU	3X CU	4X CU	5X CU	6X CU
	102	161	220	279	338	397
Input voltage	110 VAC					
Output voltage	54 VDC					

Environmental

54 VDC
Product Ingress Protection (IP) Rating
Relative Humidity
Maximum Surface Temperature (any point)
-4 to 122°F (NU-CU) / 32-122°F (MU)
NEMA 4
0% to 95%, noncondensing
44°C @ 30°C ambient / 111°F @ 86°F

Installation

Mounting hardware included
NU and CU can be wall mounted
1 NU supports 1 to 6 CUs
iBwave VEX files available

Radio Performance

Band	2(LTE)	4 (LTE)	12 (LTE)	14(LTE)	700 (LMR)	800 (LMR)
Frequency Range, Downlink (MHz)	1930–1990	2110–2155	728–746	758–768	768–775	851–861
Frequency Range, Uplink (MHz)	1850–1910	1710–1755	699–716	788–798	798–805	806–816
Technology	LTE–20 MHz	LTE–20 MHz	LTE–10 MHz	LTE–10 MHz	P25/Analog	P25/Analog
DL (Downlink) Output Power (dBm)			24			30
UL (Uplink) Output Power (dBm)		23	21	23		26
Minimum Input level (DL/UL) dBm				-100 / -90		
Maximum Input level (DL/UL) dBm		-20 / 0		-20 / -35		-20 / -27
System maximum gain (dB)				100		
Noise Figure at max gain (dB)				5		
Return loss (dB)				-8		
System Group Delay @ 12.5 kHz (usec) (Class A)				28		
System Group Delay @ 100 kHz / 150 kHz (usec) (Class B)				15 / 13.6		

Physical Specifications

	Width	Height	Depth	Weight
NU	12.36 in	14.61 in	4.29 in	15.43 lb
CU	11.18 in	13.50 in	3.50 in	12.13 lb
MU	10.63 in	12.20 in	4.80 in	8.82 lb

Connections (NU)

2x Donor antenna ports – Type-N female connectors
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1x RJ45 LAN management output port (10/100 Fast Ethernet)
1x SFP+ Optical port, 5 Gbps, up to 6500 ft range from NU1 to NU2

Connections (CU)

1x Server antenna port – Type-N female connectors
2x RJ45 Proprietary Gigabit link, 300 ft range from NU to CU

Connections (MU)

LAN Port: RJ45	PoE Port Power: 10W
Port Capability: 10 Mbps	Antenna Port: SMA

Supported Alarms

• Normal AC power	• Battery Charger Fail
• Donor Antenna Disconnection	• System Component Malfunction
• Loss of Normal AC power	• Low Battery Capacity @ 30% of Capacity
• Active RF Emitting Device Malfunction	• Donor Antenna Malfunction

Certifications

FCC Part	Listed to UL 2524	UL 50E (CU)
15, 22, 24,	IFC 510	NEMA 4
27, 20, 90	NFPA 1221	ISED (Canada)



System Management (Software)

Nextivity WAVE PRO mobile app

Antenna aiming (Cellular only)

Nextivity WAVE Portal: Status (list and map), Commissioning, Diagnostics, Software Updates, Settings, Reporting, Alarms and Notifications

Patents and Design

Nextivity products are covered by multiple Nextivity, Inc., patents and pending patents.

Designed by Nextivity, Inc. in San Diego, California, USA.

Ordering Information

Model Numbers	Product Description
F40-0E	SHIELD EXTEND MU, FirstNet + 700/800 MHz LMR (Class A or Class B)
F42-67ENU	SHIELD EXTEND NU, FirstNet + 700/800 MHz LMR (Class A)
F41-8XCU	SHIELD EXTEND CU, FirstNet + 700/800 MHz LMR (Class A)
F42-67ENUB	SHIELD EXTEND NU, FirstNet + 700/800 MHz LMR (Class B)
F41-8XCUB	SHIELD EXTEND CU, FirstNet + 700/800 MHz LMR (Class B)



nextivityinc.com/shield-extend

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