NEXTIVITY
Smarter by Design

Data Sheet

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.

Network Unit (NU)

Management Unit (MU)

Coverage Unit (CU)

FIRSTNET® Built with AT&T

SAFER BUILDINGS COALITION Member

Features and Benefits:

- ERCES Public Safety Solution: 700/800 MHz LMR and FirstNet
- Class A Device: 56 Channels at 12.5 kHz Bandwidth or 28 Channels at 75 kHz (Low Delay)
- Class B Device: 28 Channels at 100 kHz Bandwidth (Very Low Delay)
- 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; Suports 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
Fast Automatic Gain Control (AGC) prevents near-far effect of P25 phase 2 channels or time slots if on the same channel
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 / 75 kHz (usec) (Class A)	25/14.9					
System Group Delay @ 100 kHz (usec) (Class B)	13.2					

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

Certifications

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

SNMP v2c and v3: Support for Alarm Management and Software Updates

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)

NEXTIVITY
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