

# CEL-FI<sup>™</sup> QUATRA 1000 FN

## 3G / 4G / LTE

### In-building Cellular Solution

Cel-Fi QUATRA 1000 is a scalable in-building cellular solution that is both cost-efficient and easy-to-deploy, delivering high-quality signal in venues up to 500,000 square feet (50,000 square meters). It is a hybrid solution that combines the power of active DAS and Smart Booster technologies. It operates in off-air mode or can be integrated with the carrier's small cell equipment and operated as a distributed small cell, creating a Supercell.



## Benefits:

- **Lowest costs per ft<sup>2</sup>**
- **Scalable Coverage and Capacity**
- **Signal source can be off-air or small cell**
- **Remote Monitoring and Management via Cel-Fi WAVE Portal**
- **No retransmission agreement required**

MODEL NUMBERS:  
Q34-Series NU  
Q34-Series CU

### Model Number & Supported Bands

Model Number (base)	Bands Supported	MIMO Support	Crossover Support
Q34-2/12/14/66	2/4/12/14	4, 14	2, 12

### System Features

#### Enterprise-class, carrier-grade, hybrid active DAS

MIMO RF inputs for (a) small cell donor or (b) external off-air donor antenna  
 Network Unit (NU) (Head End) attaches to Coverage Unit (CU) (Remote Unit) via Cat 5e cable  
 A single NU and up to four (4) CUs may be attached (hub and spoke architecture) in a Cel-Fi QUATRA system  
 Multiple Cel-Fi QUATRA systems may be deployed to scale with building size  
 Up to 325 ft (100 m) range from NU to CU  
 Cel-Fi QUATRA Range Extender (QRE) (optional) may be used to increase NU-to-CU distance to 650 ft (200 m)  
 Remote Management through Nextivity's Cel-Fi WAVE cloud platform  
 Easiest installation in its class  
 Glanceable LED User Interface (UI)  
 Mounting hardware included

### Wireless Features

#### Supports up to four (4) bands simultaneously from a single operator

3G/4G/LTE support (WCDMA / HSPA+ / LTE)  
 Supports FDD  
 MIMO (in two bands, see table below for specifics per model)  
 Up to 100 dB system gain per band (in Off-Air mode)  
 Peaceful coexistence with adjacent Wi-Fi (2.4 GHz & 5 GHz), femtocells, and cellular devices  
 Advanced digital echo-cancellation (>30 dB) and channel select filtering algorithms  
 Active management of the cellular link between the Base Station and user devices  
 Automatic Gain Control (AGC) based on fast real-time echo-cancellation  
 Linear RF front end  
 Adaptive signal equalization  
 Uses Nextivity's 3rd-generation "ARES" chipset

### Mobile Network and Network Protection Features

Global band combinations available for Americas, Europe, Asia, Oceania, and Africa  
 Systems pre-configured for a single carrier (network operator)  
 Seamless integration, handover, and handoff with the macro network  
 Supports multiple channel bandwidths of 3.84/5/10/15/20 MHz per channel  
 Works with any user equipment (UE) for the configured network (no whitelist/blacklist)  
 Up to 75 MHz relay bandwidth  
 Support for 3GPP Release 10 features  
 Provider-specific system: Cel-Fi QUATRA distributes and boosts service only for the Operator PLMNIDs for which the device is authorized and configured  
 Secure and ciphered provisioning  
 System intelligence accurately establishes proper safe uplink power in real time  
 Uplink Muting Mode automatically shuts down uplink cellular transmissions when no active user equipment is detected

System shuts down upon Operator's network command or failure detection

## Benefits

Easiest to deploy Active DAS Hybrid

Distribute and boost cellular coverage indoors, eliminates dead zones

3G and 4G support, Voice and Data, network safe

Coverage footprint provided via Power over Ethernet (PoE); no requirement for additional power source at CU (RU)

System can accept various Donor signal inputs: Small Cell; OTA (off-air) via external antenna

## Wireless Benefits

Clear and reliable cellular connections within coverage area

Highest gain (100 dB) provides best coverage footprint

Advanced Echo-Cancellation allows Cel-Fi QUATRA to transmit more power without interference or feedback

Subscriber devices require less transmit power for improved battery life

Linearity eliminates IMD desense issues

Dynamic gain control ensures maximum gain—best coverage—at all times in ever changing RF environments, without user intervention

Nextivity purpose-built, high-performance, six core ASIC processor, provides best performance at lowest cost

## Mobile Network Benefits

Flexibly deploy in LTE, VoLTE, LTE-Advanced, and WCDMA networks, with multiple cellular bands, simultaneously

Automatically adjusts channel bandwidths from 3.84 MHz to 20 MHz

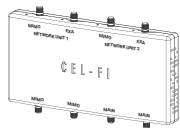
Sufficient relay bandwidth (75 MHz) to support SISO and MIMO in multiple bands

Off-load the macro network in Supercell mode, or use to improve macro capacity and building propagation/penetration

UE control is transparent and remains centralized in the network core (no gateways or third-party software)

## Small Cell Interface Kit (SCIF)

#Q34-SC1



The Cel-Fi QUATRA SCIF is designed to simplify connecting a Small Cell to up to two Cel-Fi QUATRA Network Units.

The SCIF may be ordered separately (a second NU requires purchase of two additional connection cables)

Connects a small cell to up to four Cel-Fi QUATRAs (additional cables or splitters may apply)

Provides port isolation and attenuation

Supports small cells with up to one or two band dependent RF feeds per MIMO channel

SMA connectors (50 ohm)

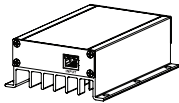
Includes Input and Output cables

699–2690 MHz

1 watt max input power on all ports

## QUATRA Range Extender (QRE)

#Q34-E1000



The Cel-Fi QUATRA Range Extender is a Power over Ethernet (PoE) device that allows Cel-Fi QUATRA Network Unit (NU) to Coverage Unit (CU) interconnect cable lengths up to 650 ft (200 m).

Plug and Play installation.

Power over Ethernet (PoE)

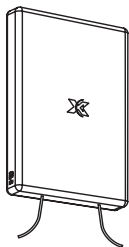
Extends NU to CU cable to 200 meters

Supports Cel-Fi QUATRA proprietary protocols

Note: Will not support other (non Cel-Fi QUATRA) PoE device

## Wideband MIMO Panel Antenna

#A52-X12-100



The Wideband MIMO Panel Antenna may be used as an Off-Air (OTA) donor source

MIMO Directional Panel Antenna

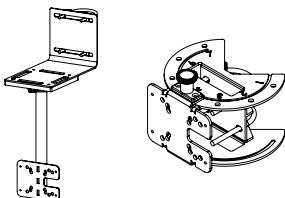
Integrated antenna cables (200 cm)

Mounting hardware included

## Cel-Fi Mounts

Indoor: #F66-100-000

Pole: #F26-100-000



Indoor/outdoor mounts designed to secure a donor signal antenna for Cel-Fi QUATRA and work with the Cel-Fi WAVE Antenna Positioning Application

A rugged outdoor pole mount, designed for mounting antenna externally to a pole, and supporting the Antenna Positioning Application

**Power**  
(Network Unit only)

54 VDC @ 2.22 Amp via external supply (51.3 to 56.7 VDC tolerance)  
External supply: 100 to 240 VAC, 47– 63 Hz  
Power consumption less than 120W max  
Network Unit provides power to Coverage Units over Cat 5e (PoE)

**Environmental**

Operating temperature: 0° to 40°C  
Storage temperature: -25° to 60°C  
Convection Cooling  
Relative humidity: 0% to 95%, noncondensing  
RoHS II 2011/65/EU  
IP20

**Installation**

Mounting hardware included  
NU may be wall mounted  
CUs may be wall or ceiling mounted  
One (1) NU supports up to four (4) CUs  
iBwave VEX files and template available

**Radio Performance**  
(check product version  
for specific band support)

Band	Downlink	Uplink	Boost
1	2110–2170 MHz	1920–1980 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE SISO
2	1930–1990 MHz	1850–1910 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE SISO
3	1805–1880 MHz	1710–1785 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE MIMO
4	2110–2155 MHz	1710–1755 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE MIMO
5	869–894 MHz	824–849 MHz	Up to 15 MHz contiguous boost BW, HSPA or LTE SISO
7	2620–2690 MHz	2500–2570 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO
8	925–960 MHz	880–915 MHz	Up to 15 MHz contiguous boost BW, LTE SISO
12	729–746 MHz	699–716 MHz	Up to 10 MHz contiguous boost BW, LTE MIMO
13	746–756 MHz	777–787 MHz	Up to 10 MHz contiguous boost BW, LTE MIMO
20	791–821 MHz	832–862 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO
28	758–788 MHz	703–733 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO
66	2110–2200 MHz	1710–1780 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO

Total boost all-channel bandwidth 75 MHz (2x2 MIMO uses double bandwidth per channel)  
DL Maximum NU in-band donor level -40 dBm  
DL Maximum NU survival donor level 30 dBm  
UL Maximum CU donor level -20 dBm  
Maximum UL power 22 dBm bands 1, 2, 3, 4, 7  
Maximum UL power 20 dBm bands 5, 8, 12, 13, 20, 28  
Maximum DL power 10 dBm per 5 MHz bands 1, 2, 3, 4, 7  
Maximum DL power 10 dBm per 5 MHz bands 5, 8, 12, 13, 20, 28  
LTE 5/10/15/20 MHz and WCDMA 3.84/5MHz bandwidths  
*Specific power settings may be influenced and/or modified for regulatory compliance. Check specific model for power values.*

**Physical Specifications**

Network Unit	Coverage Unit
250x188x55 mm	188x188x50 mm
1.2 kg (40.8 oz.)	0.83 kg (29.2 oz.)

**Connections**

4x CU RJ45 Proprietary Gigabit link  
100 m max CU cable length Cat 5e  
200 m max CU cable length with Cel-Fi QUATRA Range Extender (Cat 5e or Cat 6)  
PoE IEEE 802.3at  
RJ45 LAN management port (10/100 Fast Ethernet)  
RJ45 LAN management output port (10/100 Fast Ethernet)  
2x MIMO External RF Input (QMA-Female 50 ohm)

**Compliance**  
(check individual product  
version for specific  
regional compliance)

3GPP TS 25.143 Rel.10  
3GPP TS 36.143 Rel.10  
CE  
FCC Part 15, 20, 22, 24, 27  
ISED Canada  
UL 62368-1/CSA C27.2  
Bluetooth BQB  
RCM

Note: Certifications are regional; not all products need or have the same certifications. Please check with Sales or Support, the specific model number to determine exactly which certifications it has, or are best for your region.

## Patents & Design

Cel-Fi QUATRA products are covered by multiple Nextivity, Inc., patents and pending patents.  
Designed by Nextivity, Inc. in San Diego, California, USA.  
Specifications subject to change without notice.

## System Management (Software)

Cel-Fi WAVE cloud portal

Cel-Fi WAVE Remote Management:

- Status (list and map)
- Commissioning
- Diagnostics
- Software Updates
- Settings
- Reporting
- Alarms & Notifications



Cel-Fi QUATRA 2000  
Datasheet



Cel-Fi QUATRA  
Accesories



Cel-Fi QUATRA  
BOM Estimator



Cel-Fi QUATRA  
Install Checklist



Cel-Fi  
SOLO

Copyright © 2020 by Nextivity, Inc, U.S. All rights reserved. The Nextivity and Cel-Fi logos are registered trademarks of Nextivity Inc. All other trademarks or registered trademarks listed belong to their respective owners. Designed by Nextivity in California. data\_quatra1000-fn\_eng\_20-0710