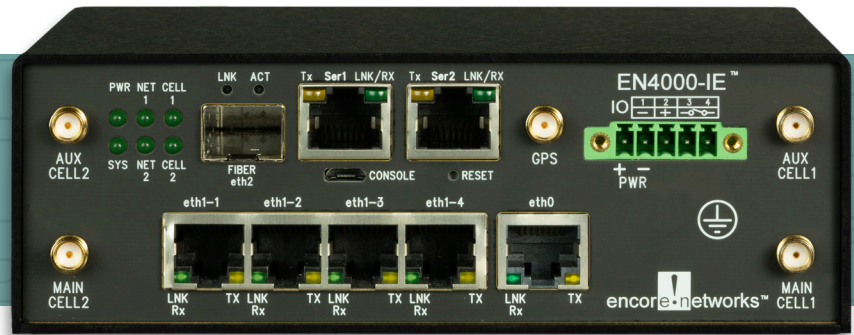


# EN4000-IE™ Industrial Edge Router



## EN4000-IE™ Prime Applications

- SCADA
- Power Grid Monitoring
- Substation
- PLC
- RTU
- Protocol Conversion
- Line Reclosure
- Capacitor Bank
- Switch Gear
- Video Surveillance
- Legacy Data to IP conversion

## EN4000-IE™ Features

- Active/Active Dual cellular modules
- Dual SIM
- Load Sharing
- Commercial and Private 4G LTE
- CBRS and Band 8, National Carriers
- 8 Gb/s memory
- Wi-Fi Access point, Client or Hotspot
- Automatic Traffic Load sharing between wireline and wireless links
- GigE and Fiber
- License free VRRP, and GRE routing protocols
- Assign traffic to different ports
- Redundant power sources AC & DC
- IPsec VPN (Tunnel, NAT-T, Dead Peer Detection)
- VPN IP Security AES 256 and 3DES, SSL/TLS and SSH
- Prioritization, QoS
- Open VPN (Client, Server w/Certificates)
- Flexible mounting. DIN Rail, Wall, Shelf

## Secure Utility Hosted On-Premises Management with enSite™ Enterprise Management System

## EN4000-IE™ INDUSTRIAL EDGE ROUTER

The EN-4000-IE™ is an industrial edge LTE router designed for utilities. Its ruggedized design and multiple interfaces can be used for a wide range of SCADA applications and utility services. It adds speed, capacity, and flexibility to the EN™ series of LTE enabled routers. The EN4000-IE™ base configuration includes, 5 10/100 Ethernet ports, two configurable serial ports (RS-232, RS-485), one GigE Fiber, programmable I/O contacts in a metal enclosure with 9-160 VDC input powering option and flexible mounting options using either DIN Rail, wall or shelf. The EN4000-IE™ utilizes Linux OS with optional 8 GB/s or more of memory allocated for running of third-party APIs in docker containers and large onboard data storage. Future software enhancements will accommodate data analytics. Multiple configuration options include 2 cellular modules with dual SIMs for active/active 4G LTE, CBRS, and Band 8 support, with an optional 802.11 Wi-Fi module, and an optional multi-port GPIO card.

The EN4000-IE™ has several advanced IP routing protocols and security features including IPsec VPN (AES 256/3DES), stateful firewall, Ethernet switching, and legacy industrial protocol and IP interworking to support MODBUS, DNP3 and other industrial protocols. This allows the EN4000-IE™ to support legacy SCADA and M2M equipment and applications commonly used by Utilities, Power, Oil & Gas and Water companies while simultaneously upgrading them to IP connectivity. This provides valuable flexibility and continued ROI for existing CAPEX by avoiding rip and replace of older working legacy hardware while upgrading to more secure and versatile Ethernet and IP connectivity.

The EN4000-IE™ provides exceptional features, with an intuitive Graphical User Interface (GUI) all at a low-cost with no user fees, and a five year hardware warranty.

## Manage the EN4000-IE™ with enSite™

In addition, EN™ routers can be monitored and managed with Encore's customer premises server based enSite™. Encore's enSite™ offers features that will make managing your entire network of EN™ routers easier, including Cellular data limit enforcement for individual and group plans, firmware updates, Zero and One touch deployment for new hardware, customizable OAM tiers for managed network services, and critical data analytics of the network devices and services.



# TECHNICAL SPECIFICATIONS

## GENERAL FEATURES

Protocol management and translation of legacy industry serial protocols  
 SNMPv3  
 Access for control via SSH, Telnet, and web access interface  
 Up to five antennas - LTE cellular, 802.11 Wi-Fi, 4G LTE, CBRS, and GPS services.  
 enSite™ Enterprise Management System  
 Disaster Recovery and Traffic Load Sharing over WAN connections  
 QoS enforcement to prioritize critical traffic  
 VDC 9-160 VDC power source

## SECURITY APPLIANCE FEATURES

Stateful inspection firewall  
 IEEE 802.11i (WPA2, RSN)  
 DMZ LAN port  
 NAT (Network Address Translation)  
 SSL/TLS1  
 IP Sec (RFC 2401) with AES 256 and 3DES  
 Generic Router Encapsulation GRE (RFC 1701)  
 Internet Key Exchange--IKE (RFC-2409)  
 RADIUS authentication  
 TACACS+  
 Open VPN

## TRANSPORT PROTOCOLS

**WAN**  
 IP over Ethernet (compatible with MPLS services)  
 Asynchronous PPP  
 Synchronous PPP  
 X.25  
 MLPPP  
 PPPoE  
**IP**  
 IP Versions 4 and 6  
 IP Routing (RIP v1/v2), OSPF, BGP, or static routing  
 DHCP client/server/BootP/Relay  
 IP QoS and traffic prioritization  
 IP fragmentation/reassembly  
 IP routing over VPN; TCP and UDP  
 802.1q VLAN tagging  
 Virtual Redundant Routing Protocol (VRRP)  
 DMVPN  
 IDMVPN Intelligent DMVPN - Encore Enhanced - Proprietary  
 Dead Peer Detection

## CELLULAR

AT&T; LTE 6 300/50 Mb/s – Bands 2, 4, 5, 30 – UMTS 850/1900  
 Verizon; LTE 6 300/50 Mb/s – Bands 2 (25), 4, 5, 13, 66  
 Sprint; LTE 4 150/50 Mb/s – Bands 25, 26 and 41 (1900/800/2500) MHz  
 US Cellular; LTE 4 150/50 Mb/s - Bands 5, 12  
 Private LTE 900 MHz Band 8  
 CBRS 3.5 MHz Band 48

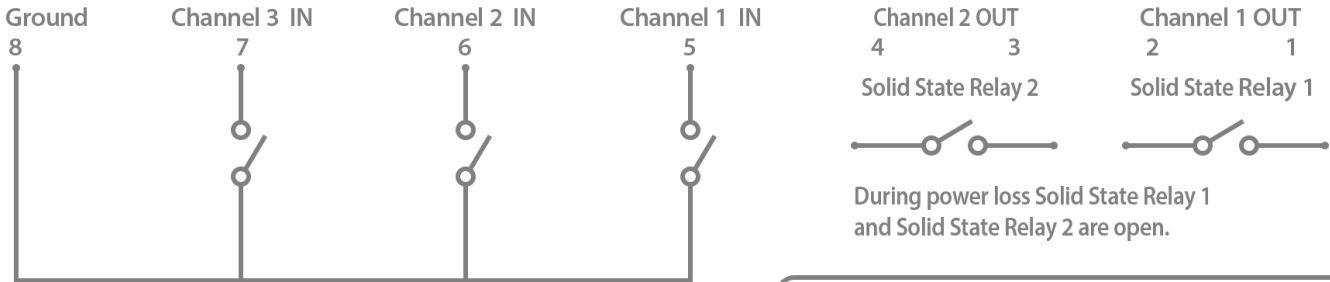
## MANAGEMENT

enSite™ Device Management System - Customer Premises Server Based  
 enCloud™ Device Management System - Cloud Based  
 SNMP v3  
 Craft Interface  
 GUI Web Management  
 Telnet  
 SSH (secure shell)  
 DMNR, PNTM  
 Syslog

# TECHNICAL SPECIFICATIONS

<b>PHYSICAL FEATURES</b>	<p>Six LEDs for network, system, cell, and power indication</p> <p>Five antenna connectors per internal factory-installed internal radios: Cellular: 4G LTE, CBRS, Band 8, GPS and 802.11ac</p> <p>Dual SIM Slots (2FF)</p> <p>Reset switch</p> <p>Micro USB port</p> <p>Five 10/100 Ethernet ports configurable for any port combination for LAN switching/LAN/WAN/DMZ</p> <p>Dual high-speed serial ports RS-232 and RS-485</p> <p>Single Optical Ethernet (SFP) interface for fiber, 1 Gb/s 10/100/1000 Mbit/s</p> <p>9-160 VDC input</p>
<b>OPTIONAL MODULES</b>	<p>One to Two Cellular 4G LTE, CBRS and Band 8</p> <p>GNSS GPS</p> <p>Wi-Fi Access/Client</p> <p>7 GPIO - 4 input, 3 output card</p>
<b>SERIAL DATA SUPPORT</b>	<p>Legacy Protocol support for IEC 60870-5-101/103/104 MODBUS, DNP3</p> <p>Other Protocols Available</p>
<b>POWER SUPPLY OPTIONS</b>	<p>Isolated Power:</p> <p>24 VDC, nominal range 9-36 VDC   48VDC, nominal range 18-59 VDC   110 VDC, nominal range 40-160 VDC</p> <p>13 Watts maximum</p>
<b>ENVIRONMENTAL</b>	<p>Operating Temperature: -40 C to +85 C (without cellular modules)</p> <p>-40 C to +75 C (with cellular modules)</p> <p>Storage: -40 C to +85 C</p> <p>Humidity: 5% to 95%, non-condensing</p>
<b>MECHANICAL</b>	<p>Height: 6.015 inches/153 mm</p> <p>Width: 2.019 inches/52 mm</p> <p>Depth: 4.234 inches/108 mm</p> <p>Weight: 2 lb. (0.90 kg)</p>
<b>STANDARDS COMPLIANCE</b>	<p>RoHS Compliant</p> <p>Class 1/Div 2</p> <p>EMC: FCC Part 15, EN 55011/CISPR II, IEC 61850-3, IEEE 1613</p> <p>Product Safety: UL/CSA 60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN 60950-1</p>

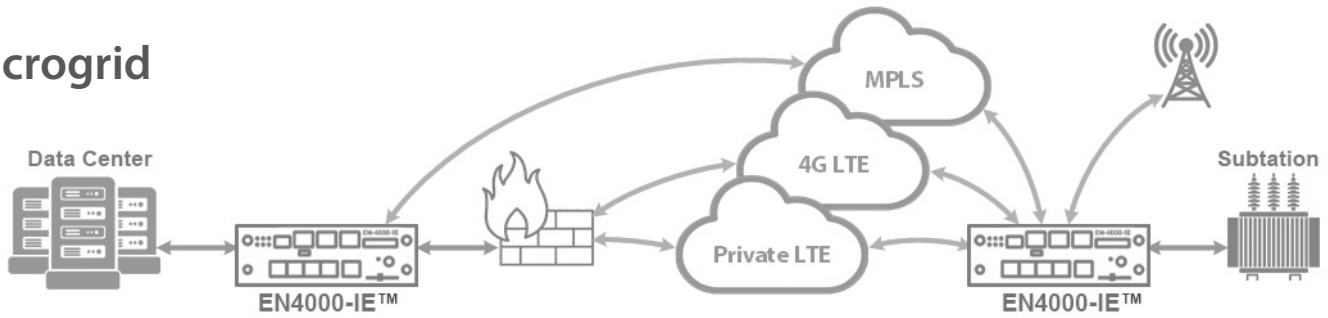
## GPIO Expansion Port Details\*



Three (3) input detectors with 5000V RMS isolation. The card detects a charge at its input. When the input is grounded, a 4K resistor pulls each input up to 12V.

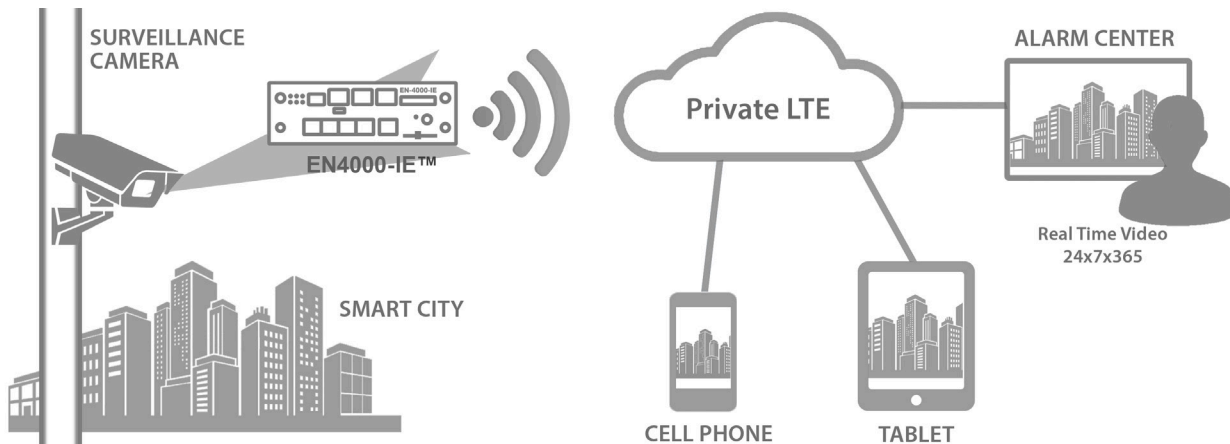
- Max. Current 1.5 A per contact
- Typical on time 1.2 ms
- Typical off time 0.1 ms
- Isolation 2500 Vrms
- Max. Switching voltage 60 V
- Min. 2500 V Isolation

## Microgrid



Private LTE Band 8, CBRS

## Video Surveillance



Private LTE Band 8, CBRS

## Industrial SCADA - M2M

