

# Industrial IEC 61850-3 Cellular Router

## Merlin 4600 Series

- **Versatile Cat 4 LTE router for energy, industrial and trackside applications**
  - Complies with IEC 61850-3 Class 1 for medium voltage substations
  - EN 50121-4 track side approval
  - Zero-touch large scale deployment
  - Multi-service support: LTE, Fast Ethernet/GbE SFP, Digital I/Os, RS-232/485
  - Ports have high level of galvanic isolation
  - Industrial protocol gateway and conversion
- **Best-in-class Cybersecurity**
  - Secure Boot ensures software is authentic and unmodified
  - Trusted Platform Module keeps cryptographic keys secure
  - Cybersecurity suite: 802.1X, IPSec encryption, stateful firewall



**IEC 61850-3**  
Substation Automation

**EN 50121-4**  
Railway Trackside

**EN 61000-6-2**  
Industrial Immunity

**EN 61000-6-3**  
Residential Emission

**EN 61000-6-4**  
Industrial Emission

The Merlin 4600 series of versatile cellular routers provide high speed data network connectivity for demanding industrial, smart grid and trackside applications. Coupled with the Zero Touch deployment software Activator, it provides cost-effective, reliable, and consistent onboarding of routers in large-scale projects.

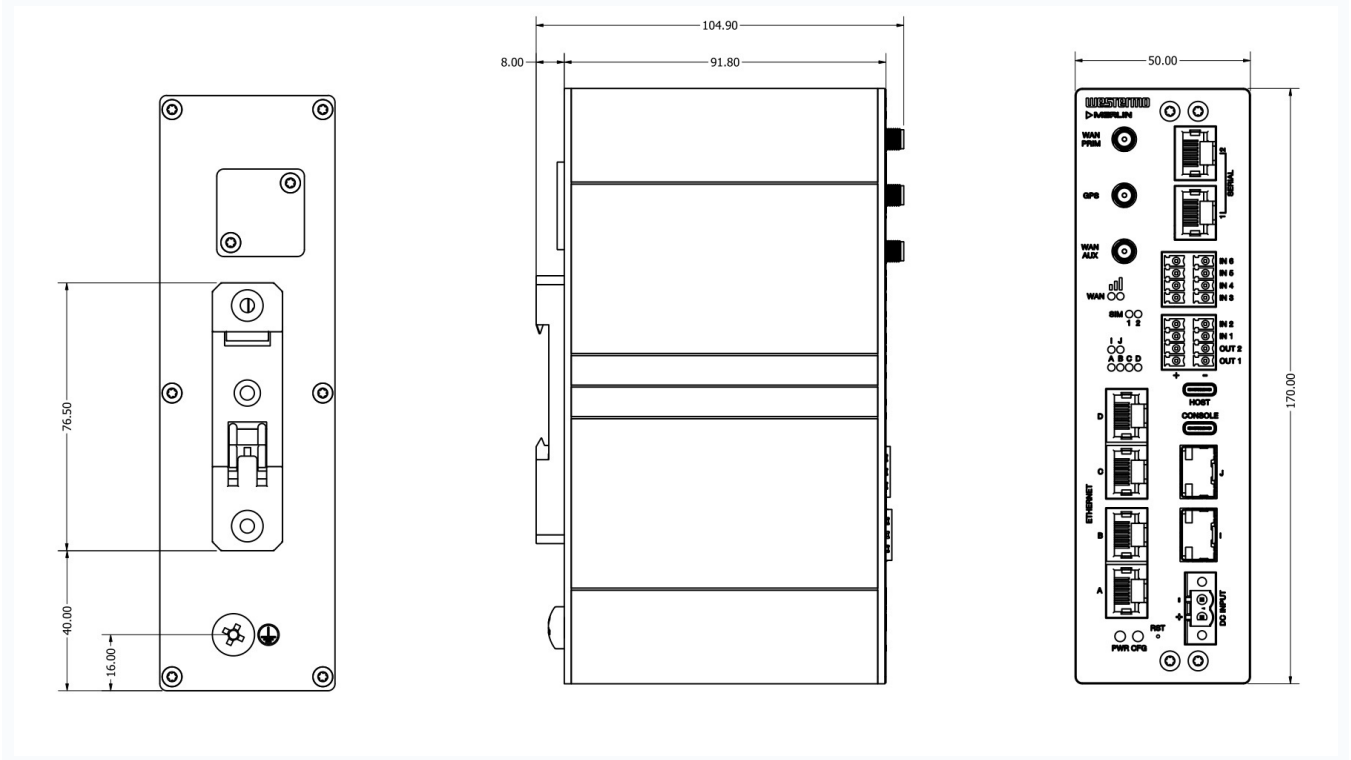
This compact, rugged unit is suited to tight spaces. It meets the requirements of IEC 61850-3 Class 1 Medium Voltage substation and also railway trackside EN 50121-4. The power supply and Ethernet ports benefit from a high level of galvanic isolation, up to 4 kVrms. Its high MTBF and wide temperature range support maximum service life.

To achieve best-in-class cybersecurity, the Merlin series is equipped with a TPM (Trusted Platform Module) chip that keeps cryptographic keys secure. Secure Boot ensures that the unit boots using only software that is signed and trusted by manufacturer. A set of cybersecurity tools is available as standard including VPN and stateful Firewall support for data security and user authentication.

The built-in industrial protocol gateway enables several devices using different protocols to be accessed via a common protocol interface. The unit supports up to 6 digital inputs and 2 outputs for local control or monitoring. Support for more digital inputs and outputs is possible using external modules.

# Specifications - Merlin 4600 Series

## Dimensional drawing



### Housing

Dimensions (W x H x D)	50 x 170 x 100 mm (2.0 x 6.7 x 3.9 inches)
Housing	Full metal
Weight	750 g

### Power parameters

Operating voltage	9.6 to 60 VDC
Power consumption	7 W
Hold up time	100 msec
Isolation	4.0 kVrms galvanic isolation on power port

### Environmental

Temperature, operating	-40 to +70°C (-40 to +158°F)
Temperature, storage and transport	-50 to +85°C (-58 to +185°F)
Ingress protection	IP40
Humidity, operating	5-95% relative humidity

Interface	
Ethernet	Ethernet 4 x 10/100 Mbit/s, Ethernet TX, RJ45 Up to 2 x 1000 Mbit/s, SFP 4.0 kVrms galvanic isolation on the RJ45 Ethernet ports
Mobile	LTE Cat 4
GNSS	GPS, GLONASS, BeiDou, Galileo
SIM cards	2 x Mini-SIM (2FF) card slots to rear, covered by metal plate
Antenna connectors	3 x SMA compatible connectors
Console	USB type-C. Router acts as device
USB host	Type-C. Router presents as host. Provides power at 5V @ 500mA
Serial	Up to 2 serial ports, each software configurable for RS232/RS485
Digital inputs	Up to 6 digital inputs for detecting remote contact open/close
Digital outputs	Up to 2 relay contact outputs. 220 VDC, 2 Amp rating

MTBF hours	
Telcordia	825.000 hours

Approvals	
<b>EMC</b>	<ul style="list-style-type: none"> <li>EN/IEC 61000-6-2, Immunity industrial environments</li> <li>EN/IEC 61000-6-3, Emission residential environments</li> <li>EN/IEC 61000-6-4, Emission industrial environments</li> <li>EN 50121-4, Railway signalling and telecommunications apparatus</li> <li>IEC 61850-3, Communication networks and systems for power utility automation - Part 3: General requirements</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>EN 62368-1, Safety Communication Technology</li> <li>UL 62368-1 (pending)</li> </ul>
<b>North American standards/ approvals</b>	<ul style="list-style-type: none"> <li>UL 62368-1, FCC, PTCRB, AT&amp;T, Verizon, T-Mobile (all pending)</li> </ul>

Software Features	
<b>Management</b>	Web interface (HTTPS), SMS management support, CLI via console, SSHv2, TFTP, SNMPv1/v2c/3, Secure Copy (SCP), Flexible alarm and event system, Port monitoring
<b>Monitoring</b>	Built-in diagnostics and packet tracing, event logging, SNMP Traps, Syslog
<b>IP Routing</b>	IPv4 and IPv6, DHCP, DynDNS, NAT, NAT Traversal, NTP Client, VLAN support, Packet filtering, Port forwarding, BFD, BGPv4, OSPF, RIP (v1 and v2), IPSec/L2TP/GRE, DMVPN, SNMP v1/v2/v3, TLS 1.2, 802.1x authentication, IEC104, QoS, VRRP, VRF
<b>Firewall</b>	Stateful inspection firewall
<b>IPSec VPN</b>	IKE Version 2, X.509 certificates, ECC, SHA2_512 support, AES_CBC (256), PFS, SCEP, DH_8192
<b>SCADA Protocol Conversion</b>	Control of I/O from SCADA master, IEC 60870-5-104, IEC 60870-5-101, IEC 61850, Modbus RTU, Modbus TCP, Modbus RTU to TCP conversion, DNP3, Serial to Ethernet, MQTT protocol translation
<b>RTU Functionality</b>	Monitoring and Control of I/O from SCADA master, Protocol conversion, Basic PLC functions

Mobile Frequency Bands					
Region	2G Bands	3G Bands	LTE Bands	LTE Category	GNSS
EMEA	900/1800	B1, B8	B1, B3, B7, B8, B20, B28	4	Yes
North America	-	B2, B4, B5	B2, B4, B5, B12, B13, B14, B17, B66	4	Yes
Australia	-	B1, B5, B8	B1, B3, B5, B7, B8, B28	4	Yes

Warranty	
Validity	5 years

Art.no.	Product	Ethernet	Serial	Fibre SFP	USB host	Digital Inputs	Digital Outputs	Region
3460-00001	Merlin-4609-F2G-T4-S2-DI6-DO2-LV-QFZ	4	2	2	1	6	2	EMEA
3460-00002	Merlin-4609-F2G-T4-S2-DI6-DO2-LV-PFG	4	2	2	1	6	2	North America
3460-00004	Merlin-4609-F2G-T4-S2-DI6-DO2-LV-PFJ	4	2	2	1	6	2	Australia

Accessories	
3125-0150	PS-60, power supply. DIN-mounted. Input voltage: 100 to 240 VAC, 50 to 60 Hz or 110 to 250 VDC