

MachineLink 3G Plus

Flexible IoT communications

Vodafone
Power to you



The Vodafone MachineLink 3G Plus is a powerful 3G IoT router featuring multiple interface options for simple connectivity to challenging IoT applications in 2G and 3G coverage areas globally.

What it does

The Vodafone MachineLink 3G Plus is a flexible 3G IoT device for demanding installations that require large selection of interface options and features including: a serial and USB port; built-in GPS location capabilities; Ethernet port; multipurpose I/O ports and support for a large number of communication protocols. The compact MachineLink 3G Plus is compatible with Vodafone networks worldwide and offers excellent integration with the Global M2M Platform, embedded Software Development Kit (SDK) and an open source Linux OS for flexible customisation.

Package contents

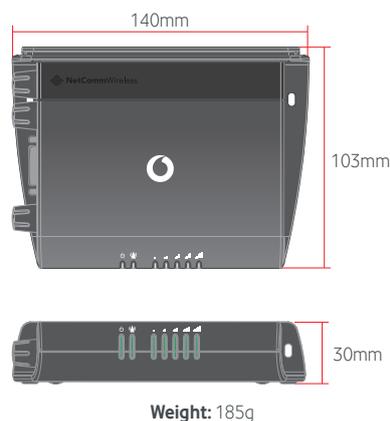
In the box:

- 1 x Vodafone MachineLink 3G Plus router
- 2 x 3G antennas
- 1 x 1.5m yellow Ethernet cable 8P8C
- 1 x DIN rail mounting bracket
- 1 x Six-way terminal block
- 1 x Quick start guide and safety manual

Available accessories:

- Standard PSU (6 interchangeable plugs)
- GPS Patch Antenna with 3m RF cable
- Serial Cable 1.8m DB9-female

Weight and dimensions



Mounting options

The Vodafone MachineLink 3G Plus can be installed quickly and easily in a variety of locations.

Description	
Option 1 Mount flat against the wall	
Option 2 Mount perpendicular to the wall	
Option 3 Mounted via DIN rail bracket	
C Section DIN rail mount Slide onto a rail	
Top hat DIN rail mount Mount on a bracket and slide onto a rail	
Desk mount Stand on a desk	

Processor and storage

- Powerful 450MHz ARM9 processor with 128MB DDR2 RAM
- 256MB flash memory storage (120MB available on-board storage space)

Operating system

- Embedded Linux 3.6

Cellular

- Bands: UMTS/HSDPA/HSUPA: 800/850/900/2100/1900 MHz and GSM/GPRS/EDGE: 850/900/1800/1900 MHz
- Profile managed packet data connections
- Default profile is plug-and-play auto configuring APN – instantly access private or internet APNs right out of the box
- Roaming algorithm with prioritisation for cost-effective and flawless network connection around the world
- NAT disable for framed route configuration
- Transparent bridge mode using PPPoE to allow the router to transparently forward Public WAN IP address to a downstream device
- SIM security management (PIN configuration, enable and disable)
- Automatic and manual cellular band selection, and operator selection

Modulation type

- GSM/GPRS/: GMSK
- EDGE: 8PSK
- WCDMA/HSDPA/HSUPA: QPSK

Channel separation

- GSM/PCS: 200kHz
- WCDMA: 5MHz

Max output power

- GSM: 33.0 dBm
- WCDMA: 24.0 dBm

Peak data speed

- HSPA+ data rates: DL: 14.4 Mbps, UL: 5.76 Mbps
- UMTS data rates: DL/UL: max. 384 kbps
- EDGE class 12: DL/UL: max. 237 kbps
- GPRS class 12: DL/UL: max. 85.6 kbps
- CSD data transmission 14.4 kbps, V.110

Connectivity

- 1x (RJ-45) 10/100Base-TX Port with Auto MDIX
- 1x RS232 Serial Port DB-9 female DCE supporting either 9 wire RS232 or RS485/RS422 (software selectable)
- Mini USB 2.0 OTG interface with 0.5A supply capability
- Mini USB 2.0 OTG feature control
- 3x Multipurpose I/O pins

SIM card reader

- Lockable tray reader with push button release
- Supports Mini USIM/SIM format (2FF)

Reset button

- Reset button (recessed, requiring pen/paperclip) with three functions: reboot, reboot into recovery mode, and reset unit to factory defaults
- Reset button override w/event alert notification

Antennae

- 2x SMA connectors for 2G/3G (1x Main and 1x RX Diversity)
- 1x SMA connector for GPS

LED indicators

- 7x tri-colour LEDs. Power, Network and 5x Signal Strength indicators

- Easy, clear LED status display for connection status, connected network type, and connection errors

Network and routing

- Static Routing, RIP (v1/v2), Port Forwarding, DMZ
- Dynamic DNS
- Intelligent VRRP w/event alert engine support
- Data Stream Manager providing ability to create mappings between input and output ports (e.g. Serial Port, SMS, GPS, USB) and perform required translation or data processing by each virtual tunnel
- Modbus Server TCP/IP Gateway and Client TCP/IP Agent with up to 247 slaves connected to the Serial TCP/IP Gateway
- Modbus RTU/ASCII frames support
- DHCP Server, including:
 - Address reservation by MAC address
 - Custom DNS server definitions
 - DHCP relay and DHCP list display in Web-UI
 - Advanced DHCP option configuration (option 42 NTP, option 66 TFTP, option 150, option 160)

Software development kit

- Develop and install custom software applications
- Open Linux standard development environment
- Develop applications/scripting in standard ANSI C/Shell script and LUA
- Package manager built into web UI for app installation/removal
- API (C, LUA and Shell libraries) to the unit's internal Runtime Database to allow full status monitoring configuration and control of the device from custom applications

GPS

- Embedded GPS receiver (1575.42Mhz)
- SMA Connector for external active GPS Antennae
- Active antenna voltage: 3.05V
- Maximum current: 50mA
- Short circuit protection
- Tracking sensitivity under open sky: -159dBm
- Acquisition sensitivity under open sky: -149dBm
- Cold start sensitivity: -145dBm
- Time to first fix (TTFF): Cold 25s, Warm 10s typical
- Redirect NMEA stream to serial or forward over IP
- Odometer reading available via Web-UI, CLI and SDK
- Geofence definition and entry/exit notification

VPN

- PPTP Client for VPN connectivity to remote PPTP VPN Server
- IPSec tunnel termination (for up to 5 tunnels)
- GRE Tunneling
- OpenVPN (Client, Server and P2P)
- SCEP VPN Support

Administration and configuration

- Web-based User Interface (HTTP/HTTPS) for full device status and configuration
- Password-protected configuration file backup and restore for quick device configuration and cloning
- Telnet Command Line Interface for status monitoring, configuration and control
- SNMP v1/v2 including cellular specific MIB, configuration and firmware download
- TR-069 Client for remote device configuration, configuration backup and restore, and firmware upgrade
- SMS Client (Send/Receive) including inbox, outbox
- Ping monitor watchdog (reset connection on repeated ping failure)

- Diagnostic Log Viewer (remote and local)
- System status and security logs
- NTP server support for device system clock network time sync
- User guide stored on the device and accessible via the web-based UI (HTTP/HTTPS)
- Advanced diagnostics and control via SMS
 - Query status information such as signal strength, WAN IP, uptime and more
 - Configure device remotely via SMS – such as APN, authentication settings, and many more
 - Execute commands via SMS – such as reboot, reset to defaults, go offline, and many more
 - Secure SMS management using sender whitelisting and password management
 - SMS acknowledgement replies for queries and commands
- Remote network quality diagnostics

Event Alert Engine

- Receive proactive network & device alerts
- User configurable
- Support for SMS / SMTP / IP
- Support for commands
- I/O event notification

Firmware management

- Firmware upgrade locally via LAN or remotely Over-The-Air (HTTP/HTTPS, SNMP, TR-069)
- Multiple firmware image storage on device and dynamic install
- Triggered firmware upgrade via SMS (initiate download & install from HTTP/HTTPS)

Temperature

- Operating temperature range -40°C to +80°C
- Operating humidity range 0-95% (RH)
- Storage temperature range -40°C to +85°C
- Storage humidity range 0-95% (RH)

Power supply

- Power input and I/O's via 6 way termination block receptacle
- Field terminable power input via screw type terminal block included
- DC Power (8 - 40V DC)
- 1x Dedicated ignition input on 6 way connector
- Power consumption 6W, recommended DC supply via terminal block (12V 1.5A)
- Vehicle compatible protection on DC Input Jack. (ISO7637 standard)

Dimensions, weight and mounting

- Device dimensions (excluding external antenna): 140mm (L) x 103mm (W) x 30mm (D) / 191.3g
- Wall mount support in multiple orientations via embedded mounting holes
- DIN Rail mount support via plastic bracket included in box (top hat section rail TH 35 IEC60715)
- C Rail mount support via mounting rail built into housing (C section rail C30 IEC60715)

Regulatory compliancy

- CE, CE with NB, E-Mark, RoHS, WEEE, REACH, Vodafone, ICASA, MOC/SII, BTK, IC, FCC, IFETEL, NOM, ANATEL, RCM, SIRIM, NBTC, KC MSIP, JRF & JPA, SRRC/CCC/NAL, NCC, BSMI, SDPPI, NTC, MIC, MACRA, INCM.

Only Vodafone can offer you a complete IoT solution on a global scale.

For more information about our IoT solutions, please contact your Vodafone account manager, email. iot@vodafone.com, or visit www.vodafone.com/iot