

For IoT, M2M and Industrial Applications - Made in Germany



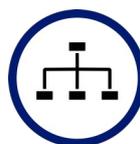
## RGX-870M IoT Gateway

The RGX-870M LTE / 4G IoT Gateway was specially developed to implement a wide range of mobile and industrial IoT applications quickly and easily. The system is based on a freely programmable Debian Linux system with full Node-RED support. The powerful and extremely energy-saving, industrial-grade Raspberry RPi-compatible ARM Quadcore platform is compatible with all modern software packages. The development of applications is greatly simplified by the RPi compatibility and applications developed on the RPi can easily be adopted.



### Modern radio technology

LTE / 4G, LTE-CAT-M1 (eMTC), NB-IoT  
WiFi  
Bis BT 5.1  
GNSS (GPS, GLONASS)



### Comprehensive interfaces

CAN-Bus, RS485, RS232, LAN, USB,  
GPIO, acceleration, gyroscope,  
1-Wire, I2C, analog-inputs  
Custom designs possible



### Node-RED ready to run

Applications in graphical user interface,  
created quickly and easily  
Ready-to-use node for interfaces  
Development support available



### Industrial RPi

Industrial version of the RPi system,  
compatible with Raspberry Pi  
Considerable time and cost savings  
for software development



### Free programmability

C/C++, Python Version V3.8, NodeJS V12,  
Java V11, PHP V7, HTML, CSS, SQL etc.



### Standard Debian System

Freely configurable and programmable  
Full functionality  
Customization support possible



### Cloud connection quick and easy

MS Azure, Amazon AWS, Google Cloud,  
Cumulocity, Private Server etc.



### Extensive VPN support

OpenVPN, IPSEC, Wireguard  
Installation support possible



### Powerful computer platform

1.2GHz QuadCore, 1GB main memory  
eMMC and up to 128GB flash storage  
RPi compatible system



### TPM 2.0 Security

Optional integrated TPM 2 chip  
TPM2Tools



### Modern radio technology

The integrated 4G / LTE technology of the RGX-870T ensures reliable, wireless internet access. LTE-CAT-M1 (eMTC) and NB-IoT technology are also available. These technologies support the best network coverage and also allow data transfer in buildings \*. The automatic fallback to 3G and 2G guarantees optimal internet availability. A fail-safe permanent link technology was specially developed for the cellular connection. The connection is established automatically and restored at any time in the event of an interruption. The radio module can be fully controlled and also reset by software.

The optionally integrated WiFi module can be operated in both client and access point mode. Both at the same time are also possible. The optionally also integrated BT 5.1 interface offers maximum ranges. Ready-made connections are available for the Bosch sensors CISS, TDL and SCD, among others.



### Extensive range of interfaces

An extensive set of industry standard interfaces is available for coupling and collecting the data on site:

- CAN Ports, LAN, USB
- RS485/RS232 Ports and RS232 terminal interface
- Digital-IO, analog-in, 1-Wire, I2C acceleration, gyroscope, onboard temperature
- Precision-GPS with cm precision on request
- HDMI display port
- Customizations and extensions are possible at any time



### Quick and easy implementation of the application with NodeRED

The RGX-870M system supports a ready-to-use Node-RED installation in the latest version. The version is equipped with full functionality including the compilability of nodes. Specially developed nodes are included for the operation of all hardware components. Furthermore, nodes for standard protocols such as Modbus-TCP, Modbus-RTU etc. are available.

Node-RED typically reduces the development time for specific application systems considerably and can be used at any time for professional productive systems. Axotec also offers development support for new developments or modifications of nodes and applications.



### Powerful and energy-saving industrial RPi computer platform

IoT applications are characterized by very different ranges of requirements. The powerful and extremely energy-saving computer architecture with simultaneous compatibility with the RPi platform, which is widely used in the industry, ideally meets the requirement:

- 1.2 GHz QuadCore system with 1 GB RAM
- 4GB to 128GB onboard flash memory eMMC and microSD technology
- Compatible with industry standard Raspberry Pi
- Power consumption from 3-4 watts
- Extended temperature range
- Powercontrol

\* depending on the respective network expansion of the provider



### Free programmability

For programming the RGX-870M, all common programming languages are available in their current version through the use of the standard Debian system. Examples are C / C ++, Python Version V3.8, NodeJS V12, Java V11, PHP V7, HTML, CSS and SQL etc. Proven systems such as Netbeans, Eclipse, Remote-GDB etc. are available as development systems.



### Open standard Debian system

RGX-870M comes with a Debian Linux operating system. It is a fully featured standard Debian system. This means that all common software packages are readily available and can be installed automatically with one command. Examples are MQTT, NPM, MySQL, SQLite, PostgreSQL, Docker, Paho, Apache, LightTPD, etc. The standard Debian operating system is of course freely configurable. Access to the command line is already set up and accessible via the serial terminal interface and via network and ssh access. Axotec offers development support for the connection of specific hardware such as RFID readers, barcode readers, USB adapters, sensors, etc. Due to the open and RPi compatible system, many other operating systems can also be run.



### Cloud connection to the leading providers or to your own cloud

The connection to the common cloud providers such as Microsoft Azure / Amazon AWS / Google Cloud / Cumulocity is possible without any problems.

A connection to a private cloud is also easy to implement. The common required services and protocols such as MQTT and REST are ready for operation.



### Support of all common VPN technologies

VPN technology is regularly used for secure data transmission. The VPN technology used is often predetermined due to existing infrastructures or other reasons. The RGX-870M therefore supports all common VPN technologies, including OpenVPN and IPsec. OpenVPN, StrongSwan and Wireguard can be used directly as packages. Axotec can offer support with the configuration and commissioning of VPN technology.



### TPM-Security

An integrated TPM chip is optionally available. This has a wide range of possible uses in the area of security for IoT applications, for example for storing cryptographic keys, for generating real random numbers and for authentication. TPM2 software stack support is available as well as e.g. authentication with cloud services.



### Codesys

A ready-to-use Codesys implementation is also available for the RGX-870M system. With this RGX-870M can e.g. operated as a soft PLC. CANopen and J1939 stacks are automatically included.

	RGX-870M CAN	RGX-870M FLEX
<b>Linux Operating System</b>	Debian 10/9 (Buster / Stretch) -based Raspbian system with full access to the software, tools and know-how of the Raspberry Pi	
<b>Processor</b>	1.2GHz Cortex A53 Quad core	
<b>Flash</b>	4 GB eMMC onboard, alternatively 8/16/32/64/128 GB microSD onboard flash memory (order option)	
<b>Main memory</b>	1GB Low Power DDR2 memory	
<b>LTE/4G</b>	CAT4 150MBit/s download, 50 MBit/s upload (maximum values) Dual-Band TDD-LTE B38/B40, Five-Band FDD-LTE B1/B3/B7/B8/B20, Dual-Band UMTS/HSDPA/HSPA+ B1/B8, Dual-Band GSM/GPRS/EDGE 900/1800 MHz Power and Reset of the module can be controlled independently via software	
<b>LTE-CAT-M1 (eMTC) / NB-IoT optional instead of LTE / 4G</b>	Global-Band LTE CAT-M1: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28/B39; Global-Band LTE CAT NB-IoT1: B1/B2/B3/B5/B8/B12/B13/B17/B18/B19/B20/B26/B28; GPRS/EDGE 850/900/1800/1900Mhz	
<b>4G antenna connector</b>	SMA female connector, Optional: auxiliary antenna connector, optional FAKRA connector	
<b>GNSS (GPS, GLONASS)</b>	Protocol: NMEA-0183, GPS supports MS/UE-based, MS/UE-assisted and hybrid modes with AFLT (CDMA), NMR (GSM), and MRL(UMTS, WCDMA, LTE), standalone and network-aware modes , A-GPS Accuracy: 2.5m (CEP50) TTFF (Open Sky), Hot start <1s, Cold start 35s , GPS: Cold start sensitivity: -148dBm, Tracking sensitivity: 159 dBm, GLONASS: Tracking sens. -158 dBm	
<b>Precision GPS / cm GPS, L1/L2 with NTRIP Client</b>	on request	
<b>GNSS antenna connector</b>	SMA female connector, integrated power supply for active antennas, optional FAKRA connector	
<b>Integrated WiFi</b>	Optional WiFi 802b/g/n with external antenna connector (combined with external Bluetooth antenna if option is present)	
<b>Integrated BT interface up to BT 5.1</b>	Options: BT5.1 or BT V4.1, V3.0 + HS, V2.1 + EDR with external antenna connection, support of sensors such as Bosch CISS, TDL, SCD	
<b>CAN-Bus, 2.0A/2.0B</b>	2	0/1/2
<b>Network</b>	1 x 10/100 BaseT Ethernet Port	
<b>USB Host</b>	2 x USB host 2.0 high speed 480MBit/s, Power supply of each USB port can be controlled by software So the USB device can be reset by software without user intervention	
<b>RS232 Console</b>	1 x RS232 - Console interface	
<b>RS232 / RS485</b>	-	0/1/2/3/4 isolated/non isolated RS485 interfaces or RS232 interfaces (RS485 12MBit/s speed available)  additionally 0/1 nonisolated RS485 interface or RS232 interface (BT is disabled with this additional 1 serial interface option present)
<b>Digital inputs</b>	8 digital, isolated inputs	0/4/8/10 digital, isolated inputs
<b>Digital outputs</b>	4 digital outputs	0/2/4/6 digital outputs
<b>Analog inputs</b>	-	Up to 4 analog inputs 0..5V, 0..10V, 0..20mA
<b>HDMI Port</b>	Optional: HDMI Interface Typ A connector	
<b>RTC</b>	Battery-buffered RTC	
<b>Sensors integrated</b>	3-Axis acceleration: +2G,+4G,+8G, Temperature sensor: -40°C..+85°C, opt.: 6 axis gyroscope with acceleration sensor	
<b>iButton (1-Wire)</b>	-	0/1/2
<b>Sensor Port</b>	-	0/1/2 Port(s) for external sensors like temp./hum. lum., gyroscope etc.
<b>Status LEDs</b>	1 x Power on, 1 x eMMC access, 4 user-programmable LED's, LTE/4G status	
<b>Hardware Watchdog</b>	Hardware Watchdog for automatic reboot trigger	
<b>ActionButton</b>	Hidden button for starting a user-specific program or script	
<b>Power supply</b>	Wide range DC input 9..40 Volts with polarity protection, Industrial connector very low power consumption from ~ 3 watts	
<b>Powercontrol</b>	Optional: Intelligent power control by means of a power control input The power supply can be switched on and be switched off by software	
<b>Temperature</b>	Storage: -40 °C .. + 85 °C, Operating: -25 °C .. + 70 °C non-condensing Optionally extended temperature range -30 °C .. + 70 °C non-condensing	
<b>Case</b>	Sturdy aluminum housing, Dimensions: ca. 102 x 95 x 38 mm	
<b>Mounting options</b>	Mounting brackets, DIN-Rail holder	