Wireless Gateway
ARG600 ANSI
Product Guide

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1. Description

Wireless Gateway ARG600 provides wireless monitoring and control of field devices via cellular network from a central site or a control center. The devices offer industrial quality connectivity for the TCP/IP and serial port based protocols. Wireless Gateway ARG600 exhibits integrated communication capability and seamless integration to the SCADA systems.

Wireless Gateway ARG600 is a member of ABB's Arctic product family and part of its 600 Wireless Gateway product series.

By using Wireless Gateway ARG600, Ethernet and serial devices can be attached to a TCP/IP based control system. With Wireless Gateway ARG600, conventional IEC60870-101 devices can be attached to a modern TCP/IP based IEC 60870-5-104 control system. This is made possible by the protocol conversion from IEC 60870-5-101 to IEC 60870-104. ARG600 also supports Modbus RTU to Modbus TCP protocol conversion.DNP3 serial devices can be attached to a DNP3 TCP SCADA system. In this case, the DNP3 protocol is transferred over TCP/IP communication (transparent serial gateway mode).

Wireless Gateway ARG600 can be utilized for various industrial and utility applications to maximize the benefits.

- Industrial grade TCP/IP router: several serial and TCP/IP based field devices can be integrated into a central supervisory and control system (SCADA)
- Integrated protocol conversion enables connecting the legacy serial-based devices into a TCP/IP-based supervisory control system (SCADA)
- Ideal for retrofitting by allowing the user to extend the life cycle of existing serial-based substation devices
- Remote access to field devices means less site visits for operations and maintenance
- Optimizing the cost of communication by using public cellular networks
- Possibility to upgrade from the existing legacy's private radio system to a higher bandwidth cellular network based solution. This enables to fully maximize the usage of the existing application. For example, the video surveillance of traffic can now be integrated into the same system.

2. Complete communication system

Wireless Gateway ARG600 is typically part of a complete communication system which consists of Arctic 600 series gateways and a central M2M Gateway ARM600 communication server. The M2M gateway is an essential part of the total communication solution and offers features that are needed to build a reliable end-to-end communication system.

- Static IP addressing for Arctic 600 series devices
- VPN Concentrator – Secure communication between a central location and remote sites
- Arctic Patrol – Centralized device management application for the Arctic 600 series devices monitoring and controlling
- Firewall – A network security system to control the incoming and outgoing network traffic

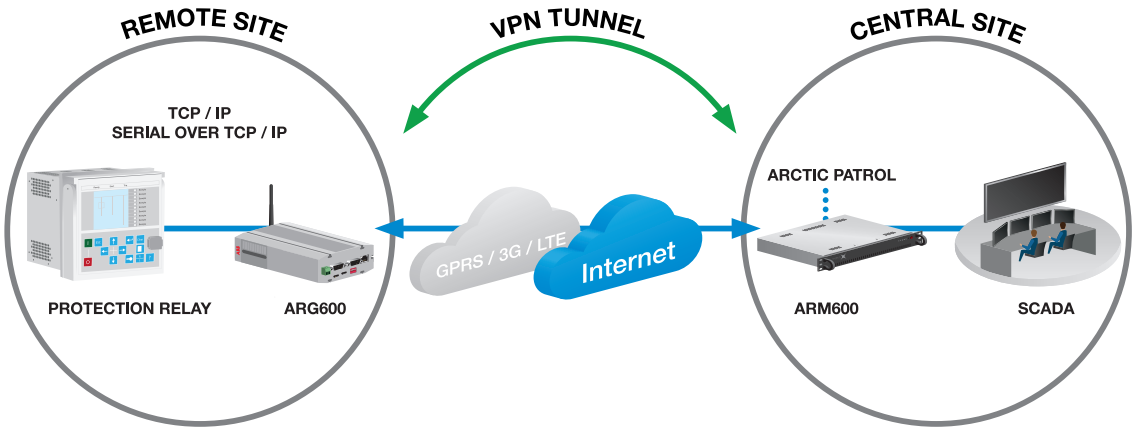

Figure 1. Communication system overview with Wireless Gateway ARG600 and a protection relay

3. Application

Wireless Gateway ARG600 can be used in feeder automation and substation applications to automate distribution networks in cooperation with other ABB grid automation equipment. Further, the devices can be used in secondary substations for various monitoring and control applications.

ARG600 can be used in various industrial applications.

- Enables remote service and maintenance opportunities by allowing the service personnel to remotely access any type of field devices. For example, these field devices can securely report the condition monitoring information, which allows planning of preventative maintenance.
- Provides a fast, reliable and secure wireless link between Ethernet devices, such as a Distribution Automation Controller COM600F and 615 series protection relays
- Offers backup connectivity for any communication link
- Supports weather monitoring stations, live video streaming, building automation and smart traffic management system
- Connects IEC-101, DNP or Modbus RTU protocol based meters and fault passage indicators into an upper-level system

Key features

- Protocol converter for IEC-101 to IEC-104 protocol
- Wireless monitoring and control of IEC-101, IEC-104, DNP and Modbus field devices via cellular network
- Always-on TCP/IP routing and serial over TCP/IP based two-way communication
- Arctic Patrol connectivity supervision of the communication system
- Secure communication with VPN and Firewall
- OpenVPN client and server enable direct connection of one to five Arctic 600 series devices to a single Arctic 600 series device
- Static IP addressing with Arctic M2M Gateway ARM600

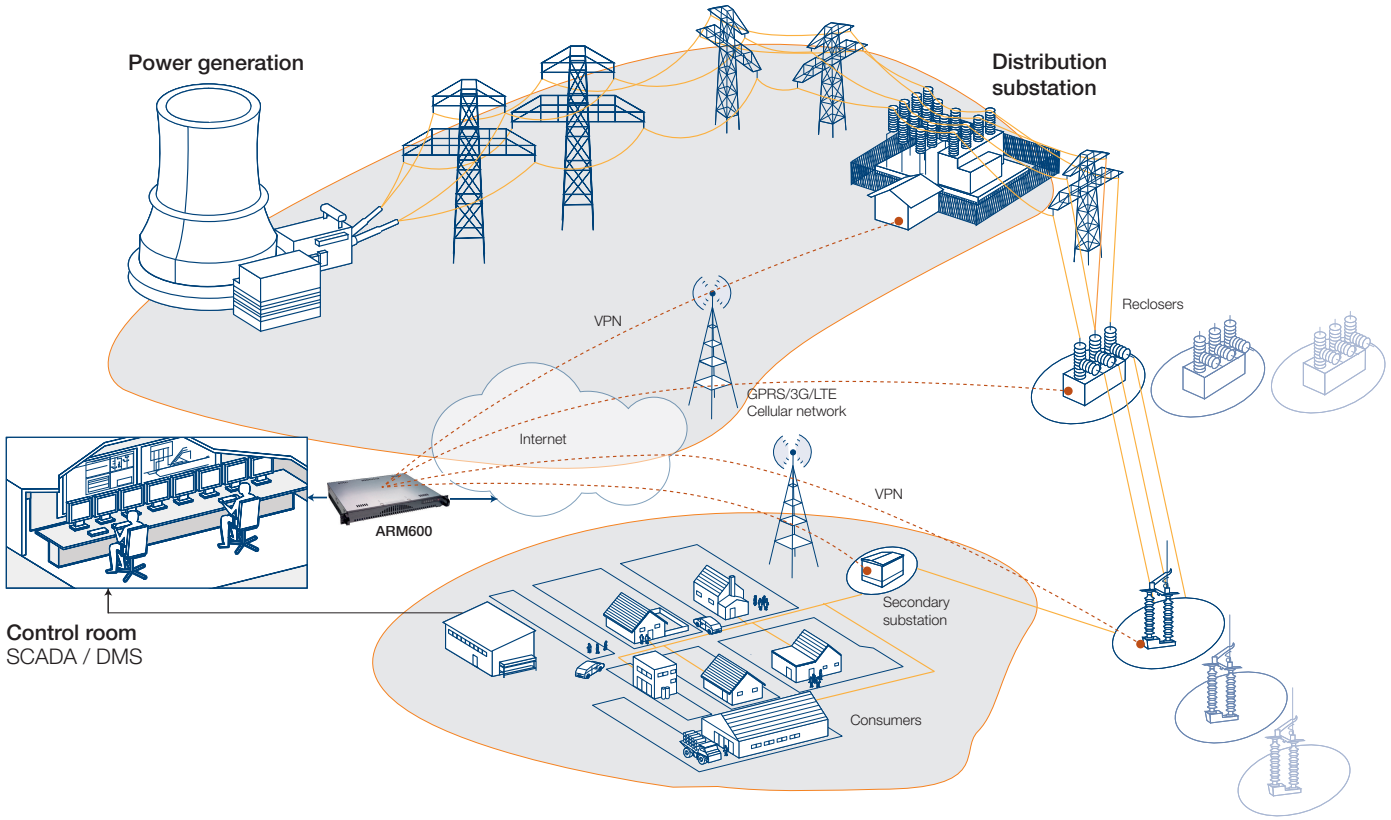

Figure 2. Communication solution in distribution automation overview

4. Physical interfaces

Wireless Gateway ARG600 has two serial ports (RS-232, RS-485) and one LAN/WAN port (RJ-45) for device connectivity. For communication to an upper-level system, ARG600 provides 4G LTE cellular network connectivity, but is also compatible with 3G (WCDMA) and GPRS networks.

LED panel

The LED panel of the device contains LEDs to indicate the complete operational status of the device.

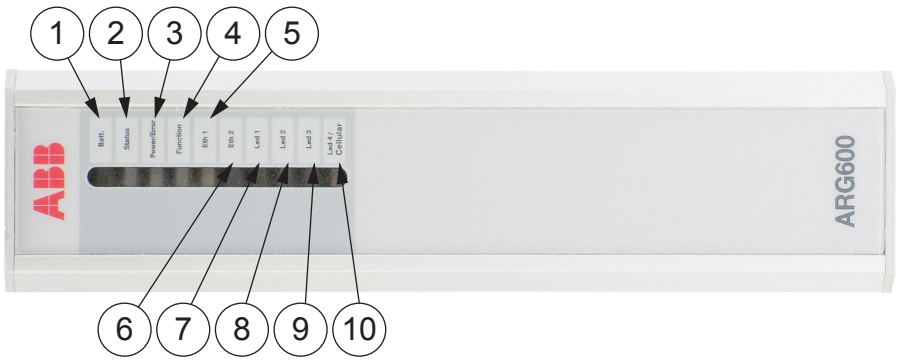

Figure 3. LEDs

1 Batt.
2 Status
3 Power/Error
4 Function
5 Eth 1
6 Eth 2
7 Led 1
8 Led 2
9 Led 3
10 Cellular

Table 1. Description of available LEDs

LED	Label	State	Description
1	Batt	-	LED unassigned
2	Status	On	VPN connection is up
		Flashing	VPN connection is starting
		Off	VPN connection is disabled
3	Power/Error	On	Operating power is turned on
		Off	Operating power is turned off
4	Function	On	Device is starting
		Flashing	Device is operating normally
		Off	Device is not operational
5	Eth 1	On	Ethernet link is up
		Flashing	Ethernet link is transferring data
		Off	Ethernet link down
6	Eth 2	-	LED reserved for future use
7	Led 1	-	LED reserved for future use
8	Led 2	-	LED reserved for future use
9	Led 2	-	LED reserved for future use
10	Cellular	On	This LED is controlled by the internal cellular module.
		Flashing	Cellular connections up and active
		Off	Cellular connection is inactive

Front panel

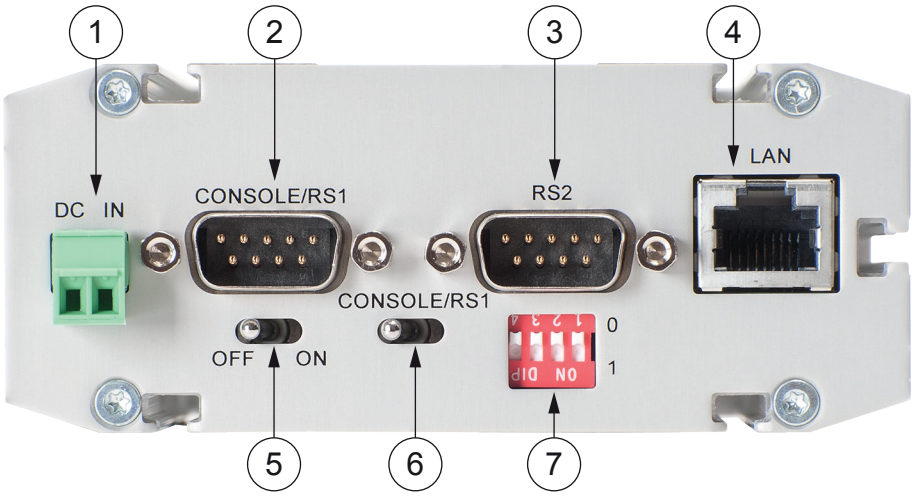

Figure 4. Front panel

1 Power supply 12…48 VDC, limited (<240 VA) power source that fulfills the requirements of standard IEC 60950-1
2 Console/serial port
3 Application serial ports
4 LAN/WAN port
5 Power switch
6 Console/serial port switch
7 DIP switches

Back panel

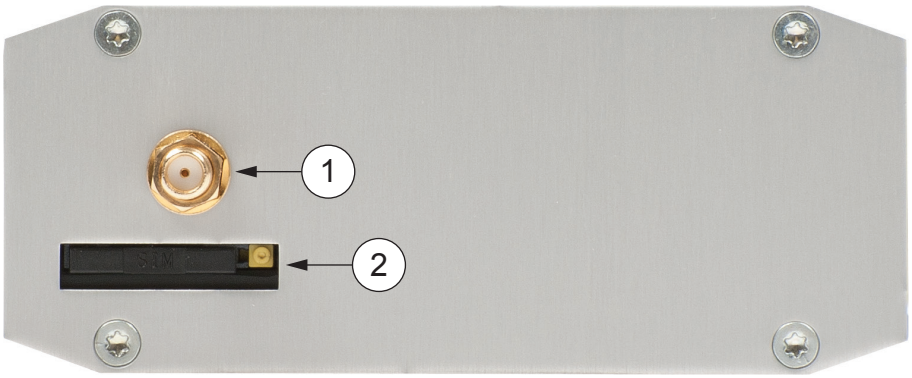

Figure 5. Back panel

1 Antenna connector SMA (female)
2 SIM card slot

Antenna panel
The SIM card slot and antenna connector can be found on the antenna panel.

5. Communication

Wireless Gateway ARG600 provides a complete solution for integrating remote serial (RS-232/RS-485) or Ethernet devices with a central management system over a GPRS, 3G or LTE connection. Industrial protocols IEC-104, DNP-TCP and Modbus TCP are supported for the SCADA connectivity. With the ARG600 protocol conversion feature, conventional IEC-101 and Modbus serial devices can be connected in a reliable way to modern TCP/IP based IEC-104 and Modbus TCP control systems.

ARG600 makes it possible to have cost-effective communication networks over long distances and at high data rates. When this is combined with the possibility for multiple field devices' connectivity by serial and Ethernet ports, ARG600 Wireless Gateway is the ideal solution for the monitoring and controlling of field devices when a reliable and secure communication with high data bandwidth is required.

ARG600 provides a secure and reliable communication solution with support for secure VPN communication, static IP routing, an intelligent self-testing system, NAT, port forwarding and a firewall for monitoring IP traffic and blocking unwanted connections.

More information is available in the Technical data section of this product guide or technical manual available at abb.com/mediumvoltage.

6. Technical data

Table 2. Dimensions

Description	Value
Width × Height × Depth	108 × 45 × 175 mm (without antenna)
Weight	510 g

Table 3. Hardware

Description		Value
Processor environment	Processor	32 bit RISC
	Memory	128 MB Flash
		128 MB RAM
Power	Power supply	12…48 VDC, limited (<240 VA) power source that fulfills the requirements of standard IEC 60950-1
	Power consumption	1...5 W
Other	Internal clock	Real time
Approvals		CE and FCC
Environmental conditions	Temperature range	-30...+70°C (operating)
		-40...+85°C (storage)
	Humidity	5...85% RH (non condensing)
	Protection class	IP30

Table 4. Supported protocols

Master protocol	Slave protocol
IEC 60870-5-104	IEC 60870-5-101
Modbus TCP	Modbus RTU/ASCII
TCP/IP, UDP/IP (DNP3)	Serial gateway - serial port data stream (such as DNP3)

Table 5. Network interfaces (single SIM variants)

Description		Value
Ethernet ports	Ethernet/LAN	10/100 Base-T. Shielded RJ-45
		1.5 kV isolation transformer
		Ethernet IEEE 802-3, 802-2
Serial ports	Serial 1/Console	RS-232 DTE
		Male DB-9 connector
		IEC 60870-5-101 protocol support
		Full serial and modem signals
		300...460 800 bps
		Data bits: 7 or 8
		Stop bits: 1 or 2
		Parity: None, Even, Odd
		Flow control: None, RTS/CTS
		Protection: 15 kV ESD and short circuit
		Console: RS-232, 19200 bps, 8 data bits, 1 stop bit, no parity (8N1)
	Serial 2	RS-232 DTE, RS-422, RS-485 (selectable)
		Male DB-9 connector
		IEC 60870-5-101 protocol support
		Full serial and modem signals
		300...460 800 bps
		Data bits: 7 or 8
		Stop bits: 1 or 2
		Parity: None, Even, Odd
		Flow control: None, RTS/CTS
		Protection: 15 kV ESD and short circuit

Table 6. Electromagnetic compatibility tests

Description		Reference
Emission tests according to the test specification IEC 61850-3 (Edition 2.0 2013-12)	Radiated disturbance	CISPR 16-2-3
	Conducted disturbance	CISPR 16-2-1
Immunity tests according to the test specification IEC 61850-3 (Edition 2.0 2013-12)	Electrostatic discharge (ESD)	EN 61000-4-2 (2008-12)
	Radiated radiofrequency electromagnetic field	EN 61000-4-3 (2006-02)
	Electrical fast transient (EFT)	EN 61000-4-4 (2012-04)
	Surge	EN 61000-4-5 (2005-11)
	Conducted radiofrequency electromagnetic field	EN 61000-4-6 (2008-10)
	Power frequency magnetic field	EN 61000-4-8 (2009-09)

Table 7. RoHS and REACH compliancy

Description	Reference
Directive	RoHS directive 2002/95/EC
	REACH directive 2006/1907/EC

Table 8. FCC compliancy

Description	Reference
Standard	FCC 47 CFR FCC Part 15
	ANSI C63.4-2014

7. Mounting

The devices have been equipped with mounting arrangements that are specially designed for DIN rail mounting. A set of DIN rail mounting clips is recommended to be used when mounting. The device should be mounted preferably inside a robust, locked and weatherproof control cabinet.

As the device uses a cellular radio for data transmission, the surrounding environment can negatively affect the efficacy of these radio signals. Therefore, if a device with the antenna is mounted on the antenna connector, the unit should not be placed in a location where the radio signal might be shadowed, and therefore deteriorated by nearby obstacles or enclosures.

The large metallic surfaces, racks or walls with metallic structures (cabling, concrete iron, and so on) may degrade the antenna performance to a very high extent. In this case, it is highly recommended to use the optional external antenna with appropriate cable. This allows for better positioning of the devices, antennas and thus optimal performance.

Another restriction to the positioning of the device during installation is that it should be mounted in such a way that the required environmental conditions that are set in the Technical data section of this product guide are met.

8. Ordering data

The product label contains basic information about the unit such as product name, serial number and Ethernet MAC address.

The product label is found at the bottom of the device.

Table 9. Ordering data

Description	ARG600A1270NA	ARG600A1290NA
Cellular operator	AT&T (operator approved)	North America and Mexico generic
Radio IF	LTE	LTE
Data speed max	See the mobile data reference guide (2NGA001029).	See the mobile data reference guide (2NGA001029).
LAN/WAN	1	1
RS-232/RS-485	2	2
SIM card	1	1
Supply voltage	12...48 VDC	12...48 VDC

9. Accessories and ordering data

Table 10. Accessories

Description	Order code
DIN rail mounting kit	2RCA028234
3G puck antenna (SMA male)	2RCA037240
Accessory kit	2RCA037645
SMA(m)/FME(m) adapter[1)]	2RCA037659
Laird LTE antenna 700...2700 MHz (SMA male)	2RCA037660
America power supply single SIM variants	2RCA041791

1) Needed for single SIM Arctic products, if the third party antenna's connector type is FME female

10. Tools

The devices can be configured using a graphical user interface via a Web based browser. A conventional console interface is also provided. Software updates or configuration adjustments for the devices can be made remotely by uploads over the network from the central control center.

11. References

The abb.com/substationautomation portal provides information on the entire range of distribution automation products and services.

12. Document revision history

Document revision/date	Product version	History
A/2017-09-22	3.4	First release
B/2018-06-29	3.4.5	Content updated to correspond to the product version
C/2019-04-24	3.4.7	Content updated to correspond to the product version
D/2020-07-09	3.4.7	Content updated
E/2021-05-31	3.4.7	Content updated

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