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# Wireless Gateway ARG600

## 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 – Possibility to use operator independent standard SIM cards
- 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

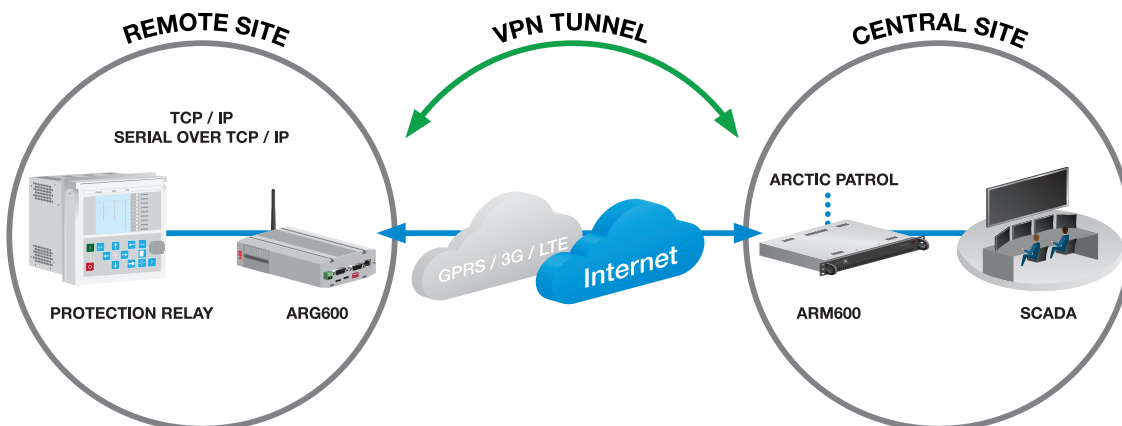


Figure 1. Communication system overview with Wireless Gateway ARG600 and a protection relay

### 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 COM600 Substation Management Unit 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
- Mobile operator independent static IP addressing with Arctic M2M Gateway ARM600
- Two SIM card slots and a four port LAN/WAN switch (dual SIM variants only)

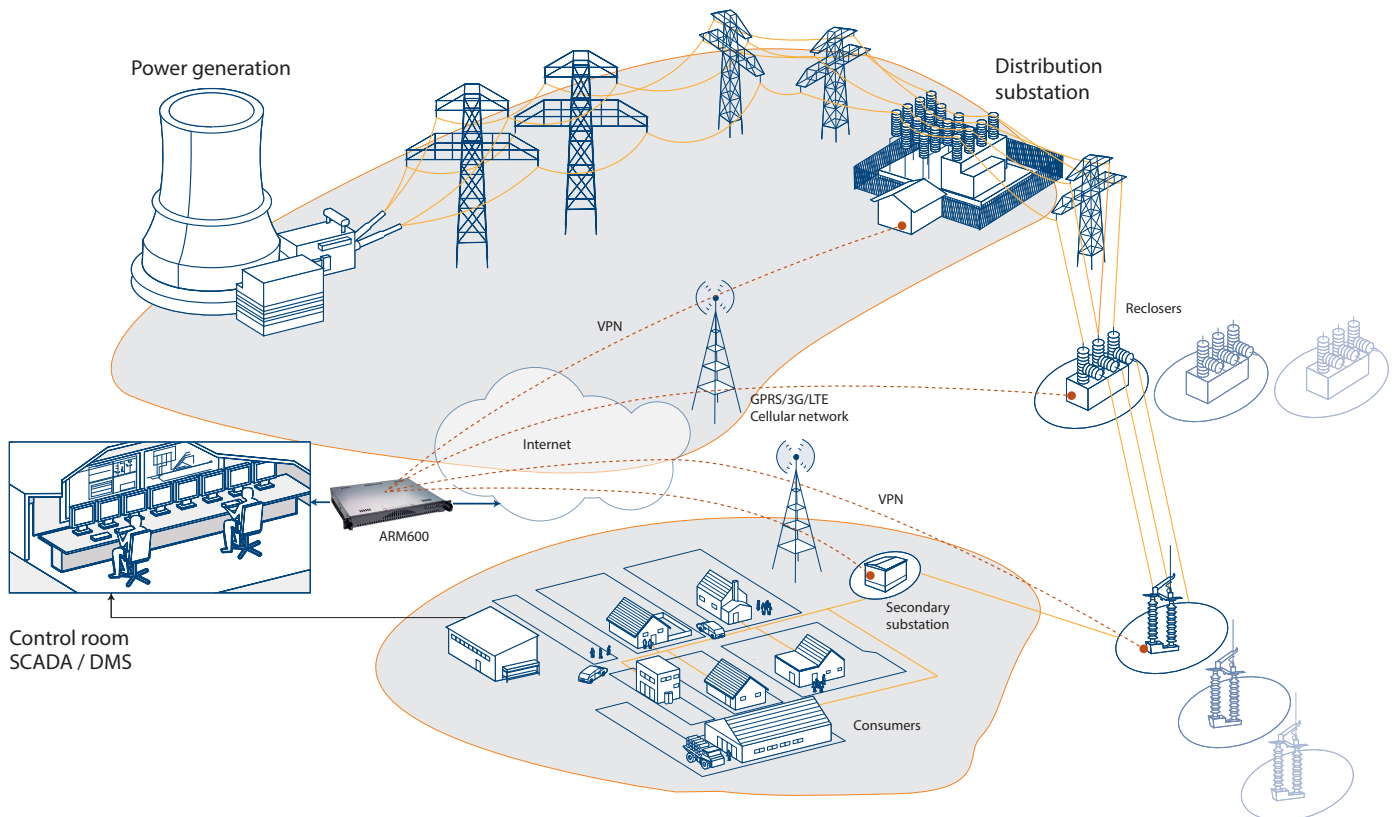


Figure 2. Communication solution in distribution automation overview

#### 4. Physical interfaces

Wireless Gateway ARG600 has two hardware variants called dual SIM and single SIM.

##### Variant with dual SIM

The dual SIM variant has two serial ports (RS-232, RS-485) and a four port LAN/WAN switch (RJ-45) for device connectivity. For communication to an upper-level system, the dual SIM version supports 4G (LTE) connectivity, but is also compatible with GPRS and 3G. The dual SIM variant also has two SIM card slots for operator redundancy.

##### Variant with single SIM

The single SIM variant 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, the single SIM version supports 4G (LTE) connectivity, but is also compatible with GPRS and 3G.

##### LED panel

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

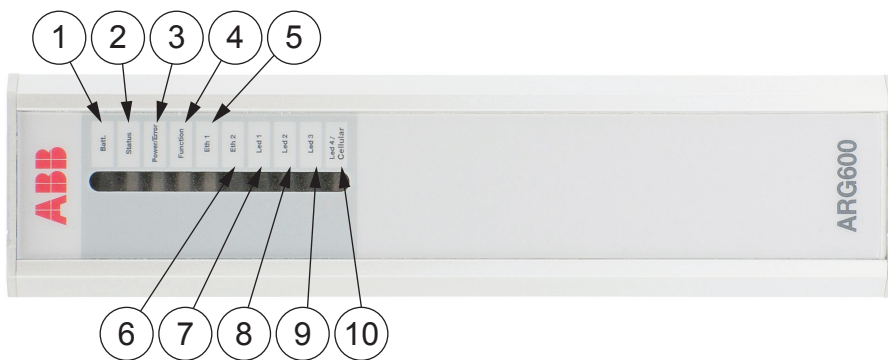


Figure 3. LEDs in single SIM variant

- 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 on the side panel (single SIM variants)

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 communication module logic. For more information, see <b>Tools/Modem info</b> on the Web HMI.
		Flashing	This LED is controlled by the internal communication module logic. For more information, see <b>Tools/Modem info</b> on the Web HMI.
		Off	Cellular connection is inactive

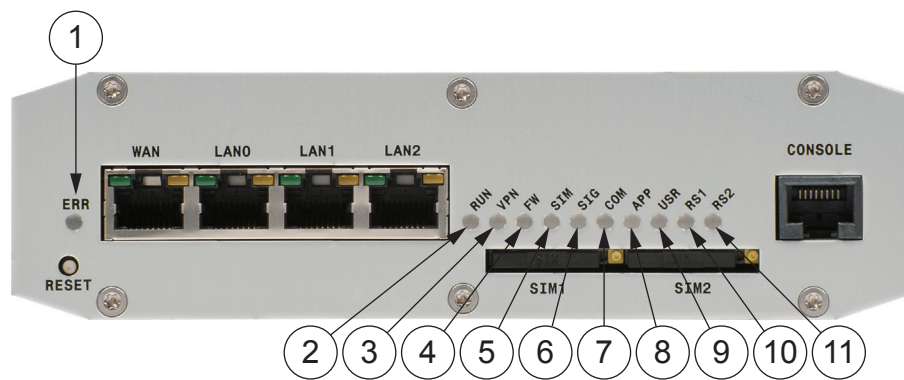


Figure 4. LEDs in dual SIM variant

- 1 ERR
- 2 RUN
- 3 VPN
- 4 FW
- 5 SIM
- 6 SIG
- 7 COM
- 8 APP
- 9 USR
- 10 RS1
- 11 RS2

Table 2. Description of available LEDs on the side panel (dual SIM variants)

LED	Label	State	Description
1	ERR	On	Unit is restarting. LED should be turned off after restart (usually about 30 seconds)
		Flashing	Error with power supply. Device restarts constantly.
		Off	Device is operating normally
2	RUN	Flashing	Device is operating normally
		Off	If the unit is turned on and RUN LED is not blinking, the system has an error and is waiting for restart. The unit should restart soon.
3	VPN	On	VPN connection is up
		Flashing	VPN connection is starting
		Off	VPN connection is disabled
4	FW	-	Reserved for future use
5	SIM	On	SIM card has been initialized and it is ready for use
		Flashing	SIM card initialization is in progress
		Off	SIM card is not used
6	SIG	On	Signal level is normal or good
		Flashing	Signal level is weak
		Off	There is no signal
7	COM	On	Cellular network (Wireless WAN) connection is up
		Flashing	Cellular connection is starting. If the connection is not coming up, check the SIM and SIG LEDs
		Off	Cellular connection is stopped
8	APP	-	Reserved for future use
9	USR	-	Reserved for future use
10	RS1	-	Reserved for future use
11	RS2	-	Reserved for future use



## Front panel

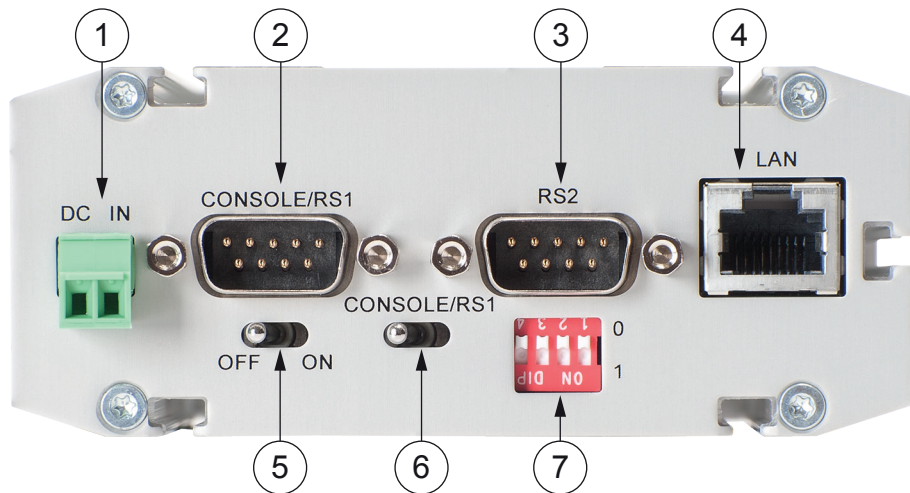


Figure 5. Front panel for single SIM variants

- 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

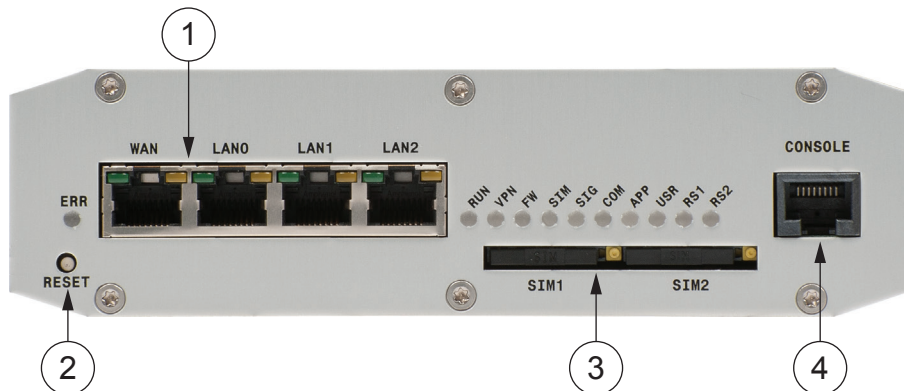


Figure 6. Front panel for dual SIM variants

- 1 LAN/WAN ports
- 2 Reset button
- 3 SIM card slots
- 4 Serial console port

### Back panel



Figure 7. Back panel for single SIM variants

- 1 Protective earth screw
- 2 Antenna connector SMA (female)
- 3 SIM card slot



Figure 8. Back panel for dual SIM variants

- 1 Application serial ports
- 2 Antenna connector FME (male)
- 3 DIP switches
- 4 Power supply 12...36 VDC, limited (<240 VA) power source that fulfills the requirements of standard IEC 60950-1

### Antenna panel

The SIM card slots 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 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.

Dual SIM variants include a four port LAN/WAN switch and two SIM card slots. This can be used in applications such as multiple device connectivity and backup re-routing for a primary communication link.

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/substationautomation](http://abb.com/substationautomation).

## 6. Technical data

Table 3. Dimensions

Description	Value
Width × Height × Depth	108 × 45 × 175 mm (without antenna) for single SIM variants 167 × 46 × 114 mm (without antenna) for dual SIM variants
Weight	510 g for single SIM variants 570 g for dual SIM variants

Table 4. Hardware

Description		Value/Single SIM variants	Value/Dual SIM variants
Processor environment	Processor	32 bit RISC	32 bit RISC
	Memory	128 MB Flash 128 MB RAM	32 MB Flash 64 MB RAM
Power	Power supply <sup>1)</sup>	12...48 VDC (nominal)	12...36 VDC (nominal)
	Power consumption	<7 W	1...7 W
Other	Internal clock	Real time	Real time
Approvals		CE	CE
Environmental conditions	Temperature range <sup>2)</sup>	-30...+70°C (operating)	-30...+70°C (operating)
		-40...+85°C (storage)	-40...+85°C (storage)
	Humidity	5...85% RH (non condensing)	5...85% RH (non condensing)
	Protection class	IP30	IP30

1) The device must be supplied by an external limited (<240 VA) power source that fulfills the requirements of standard IEC 60950-1. The supply voltage must be separated from hazardous voltages by reinforced insulation.

2) Hot surface: If the device operates in the ambient temperature range 55...70°C, it must be installed in a restricted access location.

Table 5. 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 6. 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
	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 7. Network interfaces (dual 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	RS-232 DTE, RS-422, RS-485 (selectable)
		Male DB-9 connector
		IEC 60870-5-101 protocol support
		Full serial and modem signals
		1200...460 800 bps
		Data bits: 7 or 8
		Stop bits: 1 or 2
		Parity: None, Even, Odd
		Flow control: None, RTS/CTS
	Serial 2	RS-232 DTE
		Male DB-9 connector
		IEC 60870-5-101 protocol support
		Full serial and modem signals
		1200...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
Serial console port	RJ-45 connector	
	115200 bps	
	Data bits: 8	
	Parity: No parity	
	Stop bits: 1	
	Flow control: No flow control	

Wireless Gateway	1MRS758462 K
ARG600	
Product version: 3.4	

Table 8. Electromagnetic compatibility tests (single SIM variants)

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 9. Electromagnetic compatibility tests (dual SIM variants)

Description		Reference
Emission tests according to the test specification ETSI EN 301489-1 (V1.8.1 2008-04)	Conducted spurious emissions 0.15...30 MHz	CISPR 22 (2006-03)
	Radiated spurious emissions 30...1000 MHz	CISPR 22 (2006-03)
Immunity tests according to the test specification ETSI EN 301489-1 (V1.8.1 2008-04)	Electrostatic discharge (ESD)	EN 61000-4-2 (2008-12)
	Radiated radiofrequency electromagnetic field	EN 61000-4-3 (2006-02)

Table 10. EMC compliancy

Description	Reference
Standard	ETSI EN 301489-1 (V1.8.1 2008-04)

Table 11. RoHS and REACH compliancy

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

## 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 antenna connector for dual SIM variants is designed primarily for indoor use.

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. If the device operates in the ambient temperature range 55...70°C, it must be installed in a restricted access location due to risk of hot surface.

## 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 12. Ordering data

Description	ARG600A1260NA	ARG600A2625NA
Radio IF	LTE	LTE
Data speed max	See the mobile data reference guide (2NGA001029).	See the mobile data reference guide (2NGA001029).
LAN/WAN	1	4
RS-232/RS-485	2	2
SIM card	1	2
Supply voltage	12...48 VDC	12...36 VDC

## 9. Accessories and ordering data

Table 13. Single SIM variant accessories

Description	Order code
DIN rail mounting kit	2RCA028234
3G puck antenna (SMA male)	2RCA037240
Accessory kit	2RCA037645
SMA(m)/FME(m) adapter <sup>1)</sup>	2RCA037659
Laird LTE antenna 700...2700 MHz (SMA male)	2RCA037660
Europe power supply for single SIM variants	2RCA041790

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



<b>Wireless Gateway</b>	<b>1MRS758462 K</b>
<b>ARG600</b>	
<b>Product version: 3.4</b>	

Table 14. Dual SIM variant accessories

<b>Description</b>	<b>Order code</b>
DIN rail mounting kit (plastic clips)	2RCA028233
3G puck antenna (FME female)	2RCA037239
Accessory kit	2RCA037646
SMA(f)/FME(f) adapter	2RCA037658
Laird LTE antenna 700...2700 MHz (SMA male) <sup>1)</sup>	2RCA037660
Europe power supply for dual SIM variants	2RCA041789

1) Requires SMA(f)/FME(f) adapter 2RCA037658

## 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](http://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/2015-12-18	A	First release
B/2017-06-07	3.3	Content updated
C/2017-09-22	3.4	Content updated to correspond to the product version
D/2018-06-29	3.4.5	Content updated to correspond to the product version
E/2019-04-24	3.4.7	Content updated to correspond to the product version
F/2020-07-09	3.4.7	Content updated
G/2021-05-31	3.4.7	Content updated
H/2021-12-10	3.4.7	Content updated
K/2022-06-20	3.4	Content updated





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**ABB Distribution Solutions**

P.O. Box 699

FI-65101 VAASA, Finland

Phone +358 10 22 11

**[abb.com/mediumvoltage](http://abb.com/mediumvoltage)**