



Arctic AMR Hardware Manual

Arctic AMR Hardware Manual (2170)



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Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name: Viola Systems Ltd.

Manufacturer's Address:

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declares that this product:

Product Name:

Arctic AMR

conforms to the following standards:

EMC:

EN 55022 Emission Test (Class A)

1. Radiated Emissions (30-1000MHz)
2. Conducted Emissions (0.15-30MHz)

EN 50082-1 Immunity Test

1. IEC 801-3: Radio Frequency Electromagnetic Field
2. IEC 801-2: Electrostatic Discharge
3. IEC 801-4: Fast Transients, AC Power Ports and Signal cables

Supplementary Information:

"The product complies with the requirements of the Low Voltage Directive 73/23/EEC and EMC directive 89/336/EEC."



Warning!

This is a Class A product. In a domestic environment this product may cause radio Interference which may make it necessary for the user to take adequate measures.

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Warranty and Safety Instructions

Read these safety instructions carefully before using the products mentioned in this manual:

Warranty will be void if the product is used in any way in contradiction with the instructions given in this manual or if the product has been tampered with.

The devices mentioned in this manual are to be used only according to the instructions described in this manual. Faultless and safe operation of the devices can be guaranteed only if the transport, storage, operation and handling of the devices is appropriate. This also applies to the maintenance of the products.

To prevent damage both the product and any terminal devices must always be switched OFF before connecting or disconnecting any cables. It should be ascertained that different devices used have the same ground potential. Before connecting any power cables the output voltage of the power supply should be checked.

This product is not fault-tolerant and is not designed, manufactured or intended for use or resale as on-line control equipment or as part of such equipment in any hazardous environment requiring fail- safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of Viola Systems manufactured hardware or software could lead directly to death, personal injury, or severe physical or environmental damage.

Revisions

Date	Document Version	Firmware Version	Description of changes
12/2010	1.1	1.x	Cable shield images added.

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1 Introduction

Arctic AMR is an intelligent GPRS modem device for AMR connectivity. The device has an integrated 1/3 phase AC power supply and GPRS connectivity. Intended audience for this manual are engineers and technical staff planning and commissioning the devices to field operations.

1.1 Safety Operation



Warning!

The device uses lethal voltages. Carefully read through all the instructions in this manual and follow local safety regulations. Device must not be operated when back panel is removed. Voltage inside the device is extremely dangerous and may cause death or severe injury.



Warning!

Do not touch the integrated circuits on the circuit board. Static voltage discharge may damage the components.

Carefully read through all the instructions in this manual before installing or operating the device.

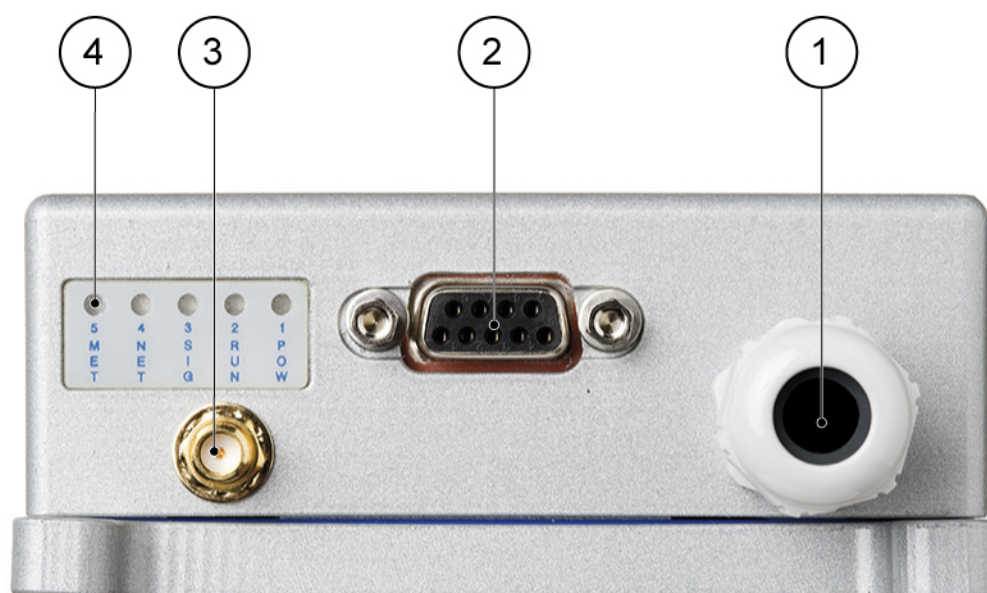
2 Hardware

This section describes the physical interfaces on Arctic AMR.

The device has four external interfaces:

1. Power supply
2. Serial port (RS-232)
3. Antenna connector (SMA)
4. System status LEDs

Figure 1. Physical Interface



2.1 Power supply

Arctic AMR operates with external AC power. The power supply can be used in 1 or 3 phase configuration.

Table 1: Power supply range

Voltage range	
Phase - Phase	90-440 VAC
Phase - N	52-254 VAC

Power cable installation is described in the chapter [Connecting power cable](#) on page 15. Recommended power cabling is (conductor) 0.5mm² to 2.5mm².

Note!

External fuses are required for each phase line to protect the device. The fuse with a rating not greater than 2A is recommended. All the connections to the power connector (phase and neutral) must be connected via all-pole safety switch.

2.2 Antenna connector

The device has an SMA (female) connector. The antenna has an SMA male connector.

2.3 System status LEDs

The device has 5 system status LEDs. When the system is fully operational, all LEDs should be on.

Table 2: LEDs Status

No.	Legend	LED name	Description (LED ON)
1	POW	POWER	Device has AC power and it's operational
2	RUN	RUN	Device SW is running OK
3	SIG	SIGNAL	GPRS signal level is OK
4	NET	NETWORK	GPRS is registered successfully to network
5	MET	METER	Meter connected to device successfully and serial port is polling

2.4 Serial port

The serial port connector is a 9-pin D-sub (female) connector supporting serial speeds from 300 to 115200 bps.

Serial port signals and pin connections are listed in table 3:

Table 3: Serial Port Pin Connection

Number	Name	Explanation
1	DCD	Data Carrier Detect
2	RXD	Received Data
3	TXD	Transmitted Data
4	DTR	Data Terminal Ready. Handshake output
5	GND	Signal ground
6	DSR	DSR
7	RTS	Ready To Send. Handshake output
8	CTS	Clear To Send. Handshake input
9	RI	Ring Indicator

2.5 Device identification and product label

The device can be identified on product label. The device has a unique serial number as shown in the figure 2.

Figure 2. Unique serial number



3 Installing the device

This chapter describes the safe installation of the device.



Warning!

The device uses lethal voltages. Device must not be operated when the back panel is removed. Voltage inside the device is extremely dangerous and may cause death or severe injury.

3.1 Unpacking the device

Arctic AMR is delivered in a bulk package containing the device itself, antenna, cable clamp, cable shield and torx screws for back panel mounting.

If any of the items are missing or are damaged, please contact Viola Systems Ltd. All packaging materials are recyclable. Viola Systems urges its customers to follow environmental regulations regarding the disposal of all materials.

3.2 Installing SIM card

For GPRS connectivity, SIM card must be installed to the device. SIM card installation is done using torx (T10). To open the device, open the screws on bottom of the device (4 pcs).



Warning!

The device must be powered off and power supply cables removed when installing SIM card. If the device has already been powered, wait for 5 minutes after all the LEDs have been disabled before opening the device.

Figure 3. Before SIM Installation



When the device is opened, gently push and slide SIM holder for opening the cover. Insert the SIM card to the cover of the holder and close the SIM holder in the reversed order.

Figure 4. SIM holder open for installing the SIM card



Figure 5. *SIM card inserted and SIM holder closed*



3.3 Connecting power cable



Warning!

If the device has already been powered, wait for 5 minutes after all the LEDs have been disabled before opening the device.

- When the device is opened, connect phase and neutral cables to power connector. Power connector is show in figure 6.

Figure 6. Power connector



- Insert cable shield on top of SIM card holder (see figure 7 and 8).
- Insert cable to device via cable gland. Tighten the cable gland.

Note!

Install SIM card and cable shield before connecting power cabling.



Warning!

Device must not be operated without cable shield and cable clamp securely connected.

Table 4: Power connector

N	Neutral
L1	Phase 1
L2	Phase 2
L3	Phase 3

Figure 7. Cable Tightening



- Securely tighten cables to the power connector as shown in figure 7.

Figure 8. Cable Gland



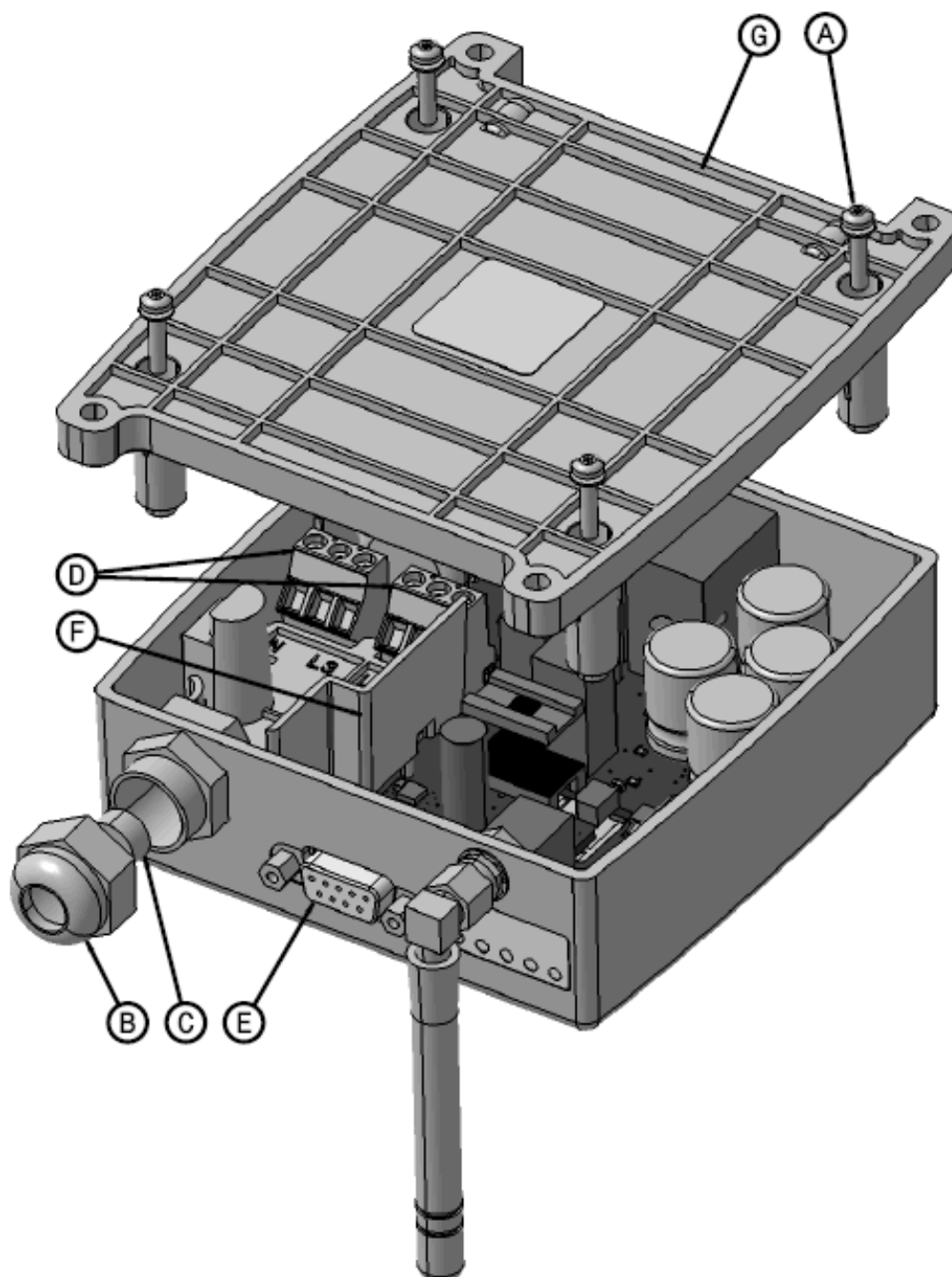
Note!

Cable gland must be securely connected to prevent cable damage.

3.4 Mounting the back panel

Insert the device back panel and tighten torx screws on bottom of the device (4 pcs torx T10).

Figure 9. Mounting the device



A	Torx screw, 4 pcs
---	-------------------

B	Cable gland
C	Cable gland plug
D	Power connectors
E	Serial port
F	Cable shield
G	Back panel



Warning!

The device uses lethal voltages. Device must not be operated before back panel is mounted and securely tightened with torx (figure 8).

3.5 Mounting the device

Arctic AMR device can be mounted by using the mounting holes in the back panel. With these holes, the device can be mounted on a flat surface, for example a cabinet. If DIN rail mounting (35 mm) is needed, an optional DIN rail mounting kit (product code 3003) can be mounted to the side panel.

Figure 10. *Optional DIN rail mounting installed*



4 Specifications

Table 5: Specifications

Product name	Arctic AMR
Product code	2170
Input voltage (Phase – Phase)	90-440 VAC
Input voltage (Phase – N)	52-254 VAC
Power consumption	<5W
Weight	0.3 kg
GSM/GPRS Frequency band	Quad band, 800, 900, 1800 and 1900 MHz

5 Limited Warranty

Coverage

Viola Systems warrants this hardware product to be free from defects in materials and workmanship for the warranty period. This non-transferable, limited warranty is only to you, the first end-user purchaser. The warranty begins on the date of purchase and lasts for the period specified below:

Arctic AMR : one (1) year

Excluded Products and Problems

This warranty does not apply to: (a) Viola Systems software products; (b) expendable components such as cables and connectors; or (c) third party products, hardware or software, supplied with the warranted product. Viola Systems makes no warranty of any kind on such products which, if included, are provided "AS IS." Excluded is damage caused by accident, misuse, abuse, unusually heavy use, or external environmental causes.

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The above is Viola Systems' entire obligation to you under this warranty. IN NO EVENT SHALL VIOLA SYSTEMS BE LIABLE FOR INDIRECT, INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, USE, OR PROFITS EVEN IF VIOLA SYSTEMS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. In no event shall Viola Systems' liability exceed the original purchase price of the device server. Some states or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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You must notify Viola Systems within the warranty period to receive warranty service. During the warranty period, Viola Systems will repair or replace, at its option, any defective products or parts at no additional charge, provided that the product is returned, shipping prepaid, to Viola Systems. All replaced parts and products become the property of Viola Systems. Before returning any product for repair, customers are required to contact the Viola Systems.

6 Technical Support

Contacting Technical Support

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Internet: <http://www.violasystems.com>

Recording Arctic Information

Before contacting our Technical Support staff, please record (if possible) the following information about your Arctic product:

Product name:

Serial no:

Note the status of your Arctic in the space below before contacting technical support. Include information about error messages, diagnostic test results, and problems with specific applications.
