RFID Solution ART FINEX

RFID Reader/Writer Unit

AMG3002

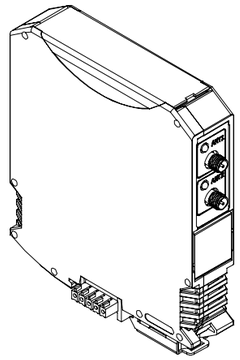
Product Code: ASK3680

AMG3000 Series Electromagnetic Inductive RFID System
13.56MHz Middle Power RFID Reader/Writer Unit

CE

Instruction Sheet

7 Sep. 2017



Precautions for Safe Use

Observe the following precautions when using this product

WARNING The following contents which may lead to death or serious injury.

- Do not use the product in environments subject to inflammable, explosive, or corrosive gases.
- Do not disassemble, modify, or repair this product in any way.
- Do not pour water or insert wire in the gaps of the case.
- Do not touch this product with wet hands.
- Confirm that the DC power supply voltage is within the rated power supply voltage (12 VDC-24 VDC) before using it.
- Do not use this product for purposes other than communicating with IC tags.
- This product must be operated with a minimum separation distance of 23 cm (8.7inch) or more from a person's implanted medical device such as cardiac pacemakers.

CAUTION The following contents which may lead to serious personal injury or damage to property.

- Always turn off the power supply before attaching or removing the product and antenna cable.
- Make sure that the wiring is correctly connected and securely fixed.
- Do not reverse polarity when connecting the power supply.
- Do not connect anything other than a dedicated antenna to the antenna terminal.
- Do not cut, damage or modify the antenna cable. Do not pull, bend or twist the cable with unnecessary force. Do not place heavy objects on the cable or allow the cable to get pinched in between objects.
- If you suspect that anything is wrong with the product at any time, stop using it immediately, turn off the power supply.
- This product is a communication facility using radio waves of 13.56 MHz which is the ISM band which can be generally used. For this reason, interference may occur depending on the application and location to be used. In order to minimize the influence of this interference, please be confirmed prior to installation. Also, there is a danger of affecting radio astronomy and medical equipment, etc. Please pay particular attention to the use in such an environment.
- Do not store / install the product in the following locations :
  - Locations subject to flammable, explosive, corrosive gases, dust, metal powder or salt.
  - Locations subject to contact with water, oil, or chemicals.
  - Locations where the temperature and humidity conditions specified in the specification are exceeded or locations where the temperature changes drastically (where dew condensation occurs).
  - Locations subject to outside or direct sunlight.
  - Locations subject to shock or vibration.
  - Locations subject to near morter, high-voltage or high-current wiring.
  - Locations subject to strong electromagnetic field, static electricity occurs.
- When disposing of the product, dispose of it as industrial waste.

Suitability for Use

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used. Know and observe all prohibitions of use applicable to this product.

THE QUALITY LEVEL OF THIS PRODUCT IS LIMITED TO A GENERAL USE. NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY, SUCH AS NUCLEAR CONTROL SYSTEM, RAILROAD SYSTEM, AVIATION SYSTEM, VEHICLES, COMBUSTION SYSTEM, DIALYSIS EQUIPMENT, LIFE-SUPPORT EQUIPMENT, OR SAFETY EQUIPMENT.
FOR USE WITH SERIOUS RISK TO HUMAN LIFE OR PROPERTY, OR FOR USE UNDER CONDITIONS NOT DESCRIBED IN THE SPECIFICATIONS, ART FINEX CO., LTD. WILL NOT MAKE ANY WARRANTY AGAINST THE PRODUCTS AND RESULTS OF USING IT.

Class A Product

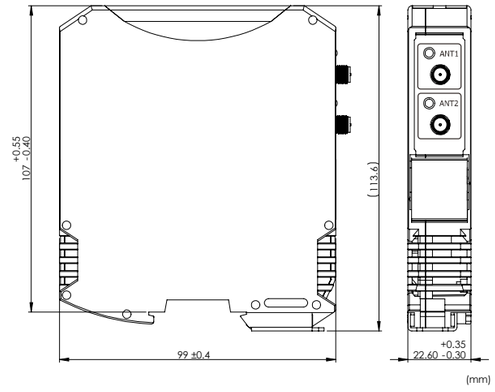
This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.
Ensure a minimum distance of 23 cm between antenna and human bodies.

Specifications

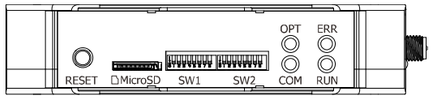
General Specifications

Item	Specification
Product Name	RFID Reader/Writer Unit
Model Name	AMG3002
Power supply voltage	12VDC to 24VDC（±10%）
Current (Power) consumption	0.4A max (3W max)
Ambient operating temperature	-10 to +60ºC（with no icing）
Ambient operating humidity	30% to 80%RH（with no condensation）
Ambient strage temperature	-20 to +70ºC（with no icing）
Ambient strage humidity	30% to 80%RH（with no condensation）
Host Interface	Half-Duplex RS485 (Isolated)
Carrier frequency	13.56MHz
Supporting RFID standards	ISO/IEC 15693
Type of modulation	Amplitude Shift Keying (ASK)
Conducted power	Up to 27dBm (without antenna gain)
Output field strength (with AT1M12 anntenna)	Up to 63dBuV/m at 3m Up to 15dBuV/m at 30m
Antenna connections	2 channels (RP-SMA Female connector)
Supporting Antenna	ART Finex AT1M12
Supporting IC Tags	The IC Tags conforming to ISO/IEC 15693 Tag-it HF-I Plus/Pro/Standard I-CODE SLI/I-CODE SLIX SRF55V10P/SRF55V02P MB89R116/MB89R118/MB89R119
Weight	Approx. 110 g
Housing Material	Nylon66, PC
Mounting method	35 mm width DIN rail (EN 50022)
Standard Accessories	Phenix Contact #2713722 Ferrite core for power cable

Dimensions



Control Panel



Indicator LED

Indicator	Off	Green	Orange	Red
RUN	Power Off	Running	Initializing	Updating firmware
COM	Command waiting	Command processing	Recieve error (RS-485)	Send error (RS-485)
ERR	No error	Command succeeded	Antenna disconnected*1	Command failured /System failure*2
OPT	Controllable by command			
ANT1/ANT2	Antenna disconnected	Antenna connected	Command processing	Command failured

*1 The LED lights up when the antenna is not connected to either connector of ANT1 / ANT2.
*2 When the system fails, the LED (Red) is always on.

DIP Switches

The setting contents of DIP switches SW1 and SW2 are reflected at startup.
If you change the settings of the SW1 and or SW2 during operation, the setting contents will not be reflected until reset or power is turned on again.

Function	Position	On	Off	
Controler ID*1	SW1-1	+1	0	ID can be set from 0 to 31  *Ex.* ID:18(2+16)
	SW1-2	+2		
	SW1-3	+4		
	SW1-4	+8		
	SW1-5	+16		
Write Verify	SW1-6	Off	On	Verify after Write command
Reserved	SW1-7	-	Fixed	Please use at the Off position
	SW1-8	-	Fixed	Please use at the Off position
Baud Rate	SW2-1	(SW2-1,SW2-2) RS-485 baud rate (OFF,OFF):9,600bps, (On,Off):19,200bps (OFF,On):38,400bps, (On,On):115,200bps		
	SW2-2			
Data Length	SW2-3	8bit	7bit	RS-485 data length
Parity Bits	SW2-4	(SW2-1,SW2-2) RS-485 parity bits (OFF,OFF):Non-Parity, (On,Off):Non-Parity (OFF,On):Odd Parity, (On,On):Even Parity		
	SW2-5			
Stop Bits	SW2-6	1bit	2bit	RS-485 stop bits
Protocol	SW2-7	ASI	AMG	Interface protocol type
Terminate*2	SW2-8	On	Off	RS-485 Terminating resistance

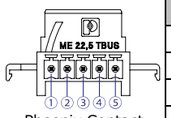
*1 The Controller ID is the sum of the values specified by SW1-1 to SW1-5.
When installing multiple devices on the bus, please set different ID each other devices.
*2 Please turn on only device located at the end of bus.

Installation

Wiring

- Wrap the power cable 3 times around the ferrite core of the accessory, install it within about 9 cm from the AMG3002 side.
- Use cables with a length of 3 m or less for signal and power wiring.
- Use shielded twisted pair cable for signal wiring and connect signal ground (SG) to shielded wire of twisted pair cable.

Pin assign of Bus connector

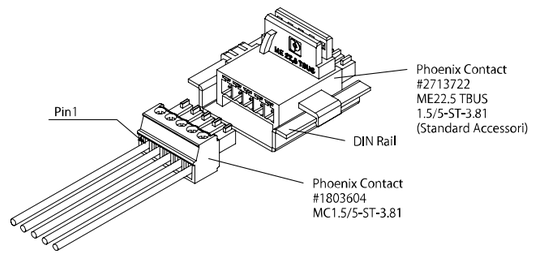


Phoenix Contact
#2713722

Pin	Signal	Type	Description
①	SG	RS-485	Connect to SG terminal of RS-485
②	TRX+	RS-485	Connect to (+) terminal of RS-485
③	TRX-	RS-485	Connect to (-) terminal of RS-485
④	VCC	Power	Connect to (+) terminal of Power
⑤	GND	Power	Connect to (-) terminal of Power

Phoenix Contact MINI COMBICON MC 3.81 mm pitch plug 1.5/5-ST-3.81 series connector is recommended for harness connection to bus connector (#2713722).

Connector installation



Attach the bus connector #2713722 to the fixed DIN rail, and then mount the AMG3002 after wiring the cables.

- Check the polarity of the power supply / signal line and that the cable connection is correctly performed.
- Use the DIN rail by grounding (grounding resistance 100 Ω or less).
- Use a power supply whose voltage fluctuation range is within the rated range and has sufficient margin in output capacity.

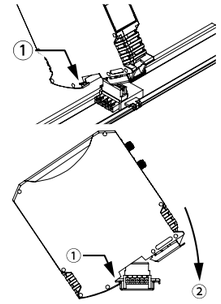
Mounting to DIN Rail

When mounting the AMG3002 to DIN Rail,

① Hook the housing to DIN Rail at the point indicated in the figure.

② Push down the housing in the direction shown in the figure until it is fixed.

- Allways turned off the power supply when mounting the AMG3002 to DIN Rail.



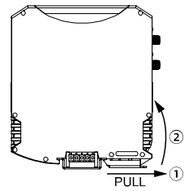
Removing from DIN Rail

When removing the AMG3002 from DIN Rail,

① While pulling the metal fitting at the bottom of the housing in the direction shown in the figure,

② Lift the housing in the direction shown in the figure.

- Allways turned off the power supply when removing the AMG3002 from DIN Rail.



Regulations and Standards

FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- Properly shielded and grounded cables and connectors must be used for connection to host computers and/or peripherals in order to meet FCC emission limits.
- AC adaptor with ferrite core must be used for RF interference suppression.

Note:
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice for Korea Radio Law

해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다
A 급 기기 (업무용 방송통신기자재)
이 기기는 업무용 환경에서 사용할목적으로 적합성평가를 받은 기기로서가정용 환경에서 사용하는 경우전파간섭의 우려가 있습니다.
본 기기는 통상 이용 상태의 경우 인체(머리, 몸통)와 20cm 초과하는 거리에서 사용되어야 합니다

Notice for Taiwan Radio Law

低功率電波輻射性電機管理辦法
第十二條
經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
第十四條
低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信法規定作業之無線電通信。
低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

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