

Aport-214PG

FreeRTOS Programmable Device Server

Hardware Guide



Version: 1.0

2018 APR.



Trademarks

The Artila logo is a registered trademark of Artila Inc. All other trademarks or registered marks in this manual belong to their respective manufacturers.

Disclaimer

Information in this document is subject to change without notice and does not represent a commitment on the part of Artila.

Artila provides this document as is, without warranty of any kind, either expressed or implied, including, but not limited to its particular purpose. Artila reserves the right to make improvements and/or changes to this manual, or to the products and/or the programs described in this manual, at any time.

Information provided in this manual is intended to be accurate and reliable. However, Artila assumes no responsibility for its use, or for any infringements on the rights of third parties that may result from its use.

This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Document Amendment History

Revision	Date	Remark
V 1.0	2018 Apr.	Initial

Table of Contents

1. Introduction	5
1.1 Features.....	5
1.2 Specifications.....	5
1.3 Packing List	6
1.4 Optional Accessory	6
2. Layout.....	7
2.1 Outline	7
2.2 Dimension.....	8
3. Pin Assignment and Definition.....	9
3.1 LED Indicator	9
3.2 Power In: (+9 ~ +48VDC).....	9
3.3 RS-485 Serial Port (D1 & D2)	10
3.4 Relay Output (DO0 & DO1).....	10
3.5 Isolated Digital Input.....	10

1. Introduction

Aport-214PG is a FreeRTOS Programmable Device Server. It features Ethernet, RS-485 and DIO in a single unit and is C programmable with embedded web server. Software developer can use powerful Atmel Studio to program to compile and debug their applications. Lots of example programs are included for users to jump start their applications. A Manager utility is included to discover Aport-214PG and upgrade its application firmware remotely.

1.1 Features

- Atmel SAM4E16E ARM Cortex-M4 120MHz
- 1MB on-chip flash and 128KB on-chip SRAM.
- 2MB flash and 128KB SRAM via SPI expansion
- One 10/100Mbps Ethernet port
- Two RS-485 serial port
- Four isolated Digital input
- Two Relay output
- FreeRTOS operating system
- Support lwIP and BSD socket library
- Support tiny web server
- Windows configuration utility included
- Toolchain: Atmel Studio
- One Micro-SD Card interface
- Low Power operating
- Remote firmware upgrade

1.2 Specifications

- **CPU:** Atmel SAM4E16E Cortex-M4 120MHz
- **Memory:** 1MB on-chip flash and 128KB on-chip SRAM
2MB flash and 128KB SRAM via SPI expansion
- **Mass Storage:**
 - MicroSD socket inside x 1
 - SD 2.0 compliant, Support SDHC
- **Network Interface:**
 - 1 x 10/100Mbps Ethernet
 - RJ45 Connector
 - Protection: 1.5KV Magnetic isolation

- **Serial port:**
 - 2 x RS-485
 - Signal: Data+ (D+), Data-(D-)
 - RS-485 Automatic Flow Control: Yes
- **Isolation digital input:**
 - Channel number: 4
 - Photo isolation (AC in): 2500Vrms
 - Logical High: 5~24Vdc
 - Logical Low: 0~1.5Vdc
 - Input type: AC input
 - Input resistance: 1.2K Ohms@0.5W
- **Relay output:**
 - Channel number: 2
 - Contact rating: 30VDC@1A or 125VAC@0.5A
 - Pin define: NC / COM / NO
- **Power Input:** +9 ~ +48VDC, terminal block
- **Dimension (W x L x H):** 78 x 108 x 24mm (3.0 x 4.25 x 0.94in)
- **Weight:** 290g (0.64lb)
- **LED Indicator:** Power, Ready, DO, RS-485, LAN, Status (user defined)
- **Operating Temperature:** 0~70°C
- **Installation:** Wall mounting, DIN-rail mounting (with optional kit)

1.3 Packing List

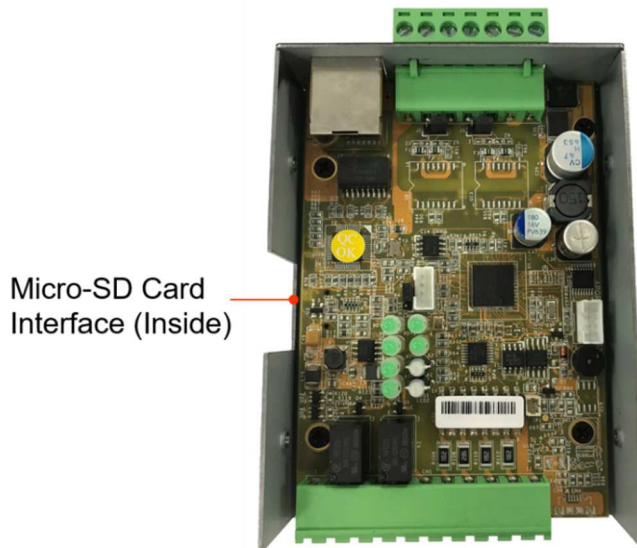
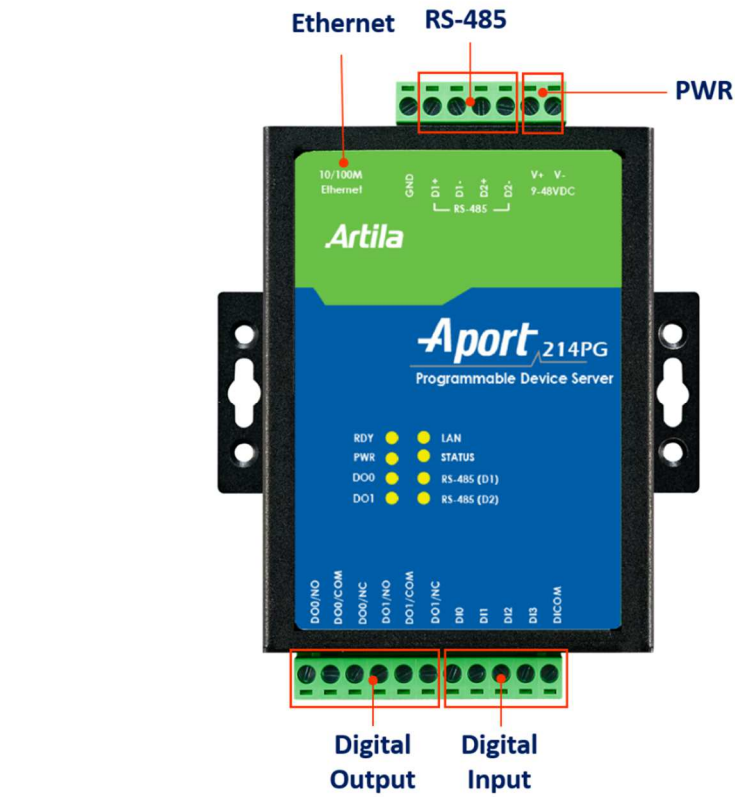
- Aport-214PG: Programmable device server
- Software toolchain (download from Atmel web support)
- Manager Utility (download from Artila web)

1.4 Optional Accessory

- DK-35A (36-DK35K-000): DIN RAIL Mounting Kit
- PWR-12V-1A (31-62100-000): 110~240VAC to 12VDC 1A Power Adaptor

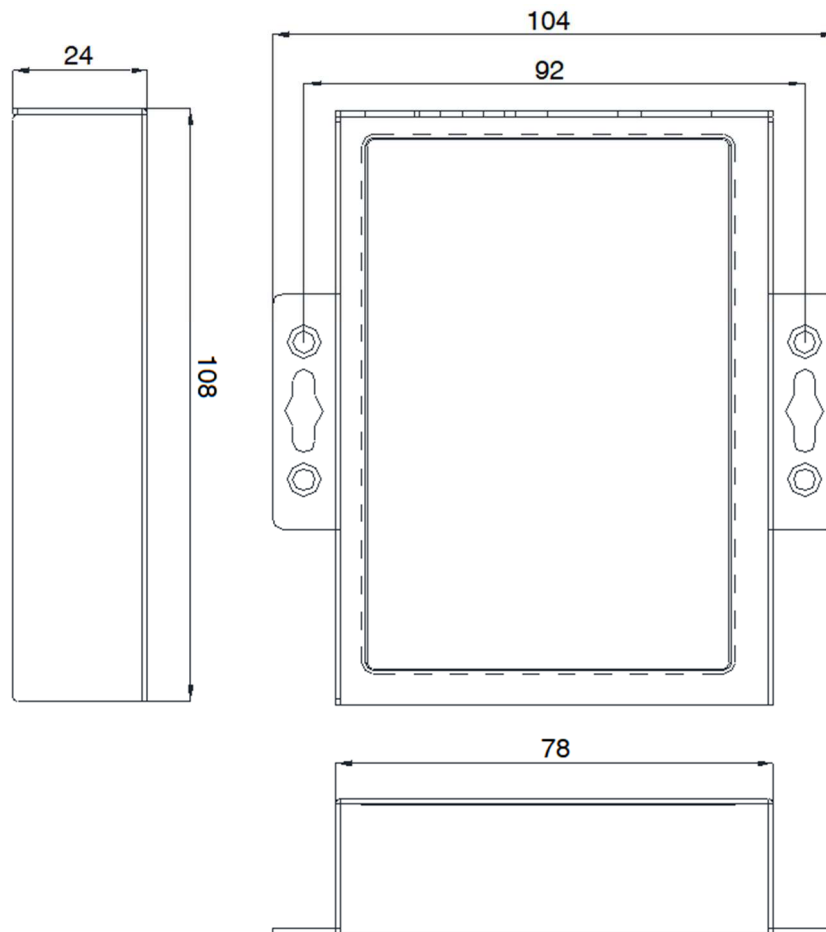
2. Layout

2.1 Outline



2.2 Dimension

Unit=mm



3. Pin Assignment and Definition

3.1 LED Indicator

The LED provides the Aport-214PG operation information described as follow:



- **RDY:** Ready LED keeps ON when Aport-214PG software is ready for operation.
- **PWR:** Power LED keeps ON if power (+9VDC to +48VDC) is correct.
- **DO0 / DO1:** These LEDs indicate the relay status. When the coil of relay is energized, the LED will be ON.
- **LAN:** Link and Activity LED will turn ON when the Ethernet cable is connected. When there is network data traffic, this LED will flash.
- **STATUS:** User defined, control by software/GPIO
- **RS-485 (D1/D2):** This LED is dual color and it indicates the serial data traffic of RS-485 respectively. The Yellow LED stands for receiving data and Green LED means transmitting data.

3.2 Power Input

Connecting +9 ~ +48VDC power line to the Power in terminal block(V+/V-). If the power is properly supplied, the Power LED will keep solid green and a beep will be heard.

V+: DC power + in

V-: Power ground

3.3 RS-485 Serial Port (D1 & D2)

D1+ / D2+: Data+

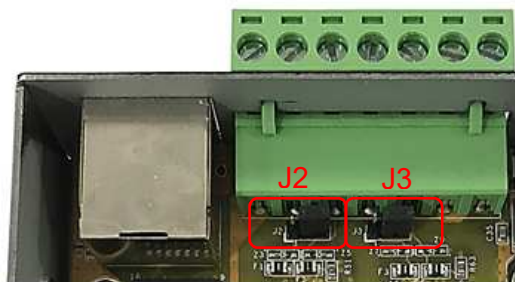
D1- / D2-: Data-



Enable/Disable Termination resistor for RS-485 (J2 & J3)

The Aport-214PG equips on-board 120Ohm termination resistor for each RS-485 port. Default setting is disable termination resistor. In order to enable termination resistor, please remove the top cover of the Aport-214PG, and the adjust the associated jumper to short position 1 - 2, shown below:

J2 is termination resistor selection for RS-485(D1)

J3 is termination resistor selection for RS-485(D2)



Termination Resistor Enabled	 3 2 1
Termination Resistor Disabled (default)	 3 2 1

3.4 Relay Output (DO0 & DO1)

DO0_NC: Relay two normal close

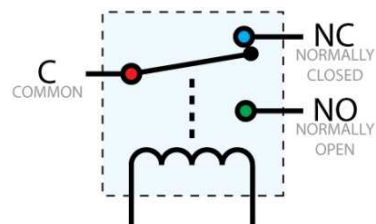
DO0_COM: Relay two common

DO0_NO: Relay two normal open

DO1_NC: Relay one normal close

DO1_COM: Relay one common

DO1_NO: Relay one normal open



3.5 Isolated Digital Input

DI0: Digital input 1

DI1: Digital input 2

DI2: Digital input 3

DI3: Digital input 4

DICOM: Common pin of DI0~DI3

