AM070RVS01
7 Inch High Performance
Capacitive Smart Display

Product Specification

March 2021

Revision C

Amulet

Introduction

The AM070RVS01 is the enhanced version of Amulet's 7" high performance smart module. The mechanical dimensions and performance remain identical to the previous MK-070C-HP, with I/O connectors in the exact same location. The enhancement comes in the form of better EMI mitigation with re-designed hardware and optimized firmware. The AM070RVS01 comes with 802.11 b/g/n WiFi with easy programmability using Amulet's custom utilities. The smart module is based around a 32-bit ARM Cortex A5 processor architecture running up to 500MHz. The memory and storage capacity of the AM070RVS01 includes 256MB of DDR2-400, 4GB eMMC Flash module, and SD card socket with support up to 64GB.

The High Performance Graphics Display Card integrates the Amulet Graphical OS (GEMOS) with the high performance, cost-sensitive, processor architecture of the ARM Cortex series. With an integrated LCD controller and graphics accelerator utilizing the dedicated floating point unit (FPU), the Graphics Display Card is the perfect solution for any integrated, embedded, HMI solution.

Features

Module

- Amulet Graphical GEM OS
- 500Mhz ARM A5 Processor
- 256MB of DDR2-400 DRAM
- 4GB eMMC Flash and microSD Card Socket
- 24V AC and 12V DC
- Operating Temperature: -20°C to 85°C

Display

- 7" WVGA (16:9 diagonal)
- 350 nit (cd/m2)

- Contrast Ratio: 400:1
- 6 o'clock Viewing Angle: Top-60° Bottom-70°; 70° Left-Right

Touch Panel

- Projected Capacitive Touch
- Operates with gloved hands and rejects liquids
- Gestures: Tap, Flick, Scroll, Pan, Pinch-and-Zoom
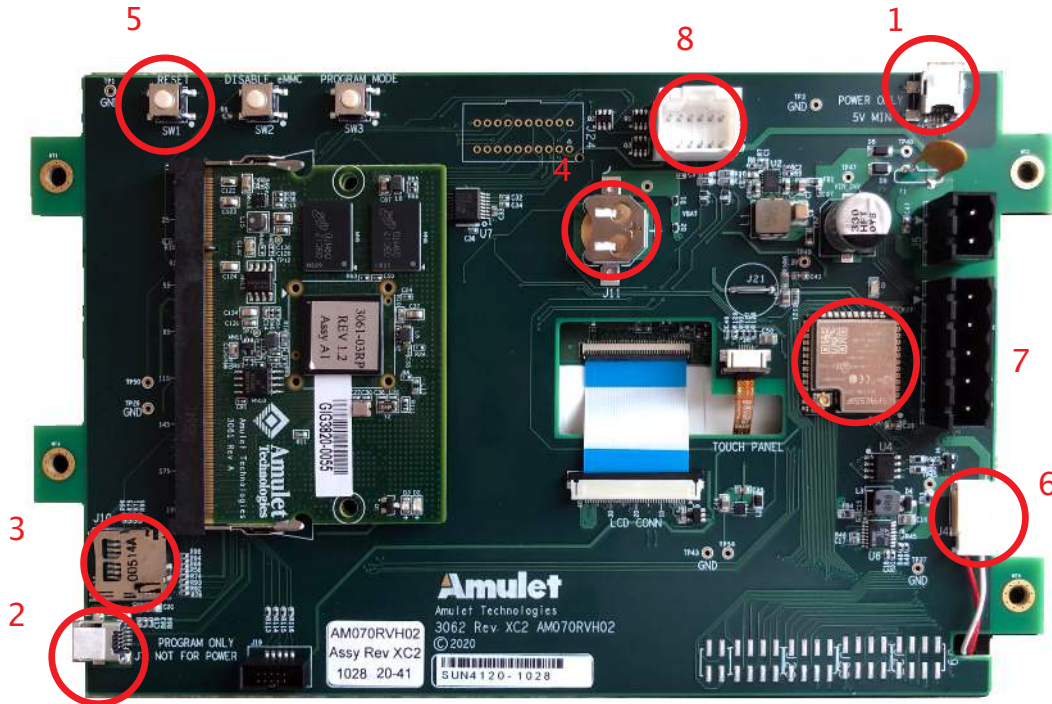- 2 finger Multi-touch

Interfaces

- RS-485
- RS-232
- 802.11 b/g/n
- 1x I2C
- 2x ADC
- 3x PWM
- USB 2.0 Device Interface

Power

- Multiple options for input power
  - 12V DC
  - 24V AC
  - 5V USB power
- Supports both AC and DC
- Running Mode: ~800mA @ 9V
- RTC with battery backup

Board Component Descriptions

1. Mini-USB input power supply: This port designated J18 on the PCB is just one of many methods to power the display module. The power supply must be 5V ± 5%, supplying at least 1A.

2. Mini-USB device programming port: When connected to the PC, the device will be recognized as a USB Mass Storage Device. Within GEMstudio Pro, Amulet's integrated design environment, the compiled projects will get stored in the onboard eMMC.

3. µSD card slot: The external SD card has two functions. Display projects can be updated using the SD card. During boot, the project on the SD card can be read and written onto the eMMC directly. The SD Card can be used for data storage accessed through read/written to from GEMscript.

Note: the µSD card is not supplied with the module.

4. Battery Backup: the function of the battery backup is to keep the RTC (Real-Time Clock) operating even with the loss of module power. The battery used is the CR1225 3V watch battery. Note: the battery is not supplied with the module.
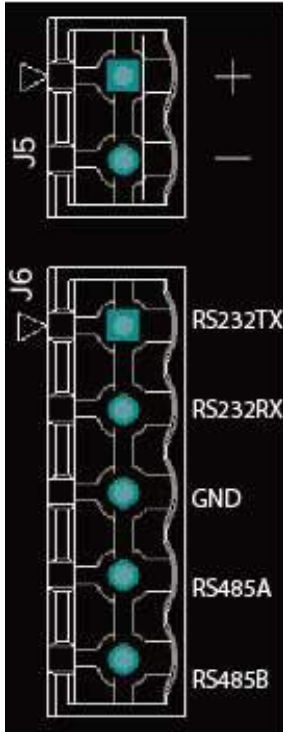
5. Reset switch.

6. Power cable for the LCD backlight.

7. ESP32 WiFi and Bluetooth module

8. Peripheral I/O connector

Main Power and Communication

Power Input Header- J5		
Pin Number	Function	Details
1	AC/DC Power Input	24VAC or 12VDC
2	GND	Common Ground

Note: Header J5 is reverse polarity protected

Communications Header - J6		
Pin Number	Function	Details
1	RS232TX	RS232 Transmit
2	RS232RX	RS232 Receive
3	GND	Common Ground
4	RS485A	Inverting Differential Line
5	RS485B	Inverting Differential Line

The headers J5 and J6 used on the board are manufactured by Molex. The part number for J5 is 39531-1002 and the J6 part number is 39531-1005. This type of connector mates with the Molex 39530 family of connectors.
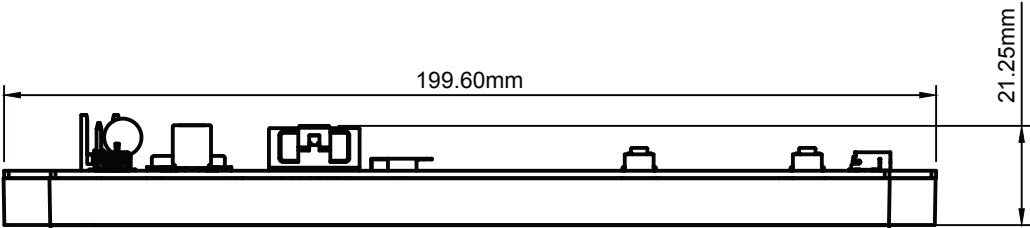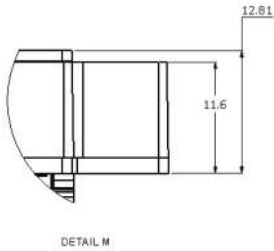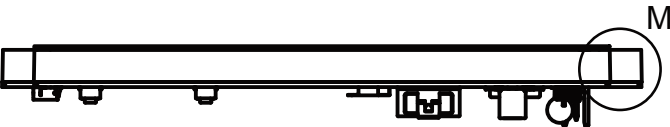
Peripheral I/O Connector
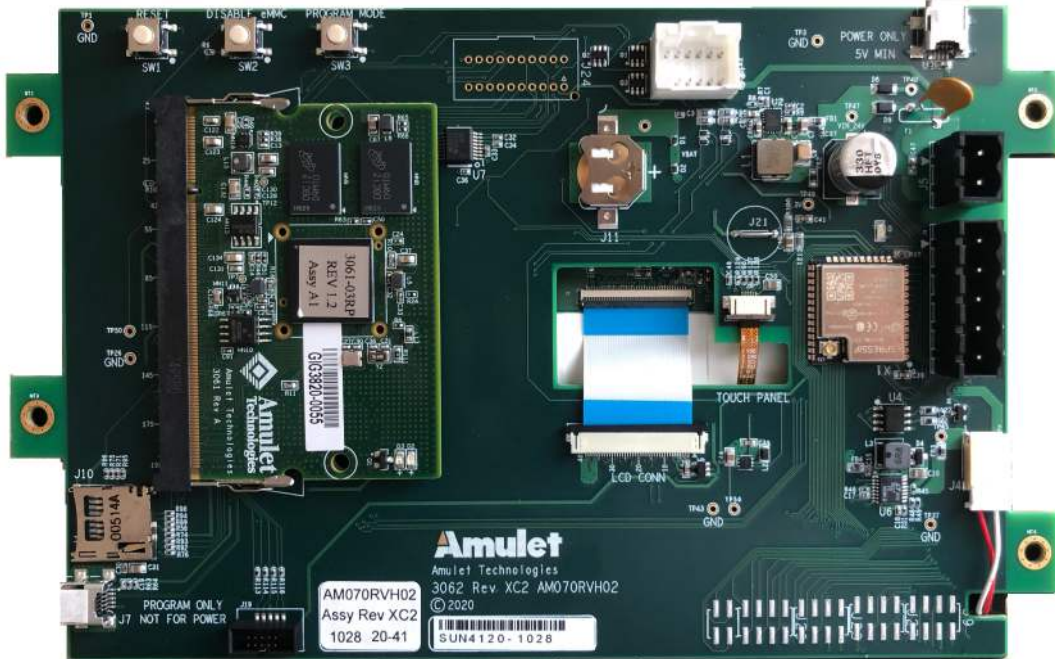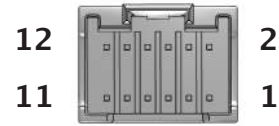
Pin#	Type	Function	Details
1	P	24V AC	24V AC Input
2	P	GND	Ground
3	I/O	SCL	I²C Clock
4	I/O	SDA	I²C Data
5	I/O	RS485A TXD	RS485 Transmit
6	I/O	RS485B RXD	RS485 Receive
7	I	ADC0	Analog Input 0
8	I	ADC1	Analog Input 1
9	P	5V DC	5V Output
10	O	PWM0	PWM Output 0
11	O	PWM3	PWM Output 3
12	O	PWM1	PWM Output 1

The header J20 used on the board is manufactured by Molex. The part number is 055917-2010. This type of connector mates with the Molex 51353 family of connectors.

Mechanical Specification

199.60mm

21.25mm

9.83mm

179.95mm

15.00mm

154.10mm Visible Area

55.75mm

121.10mm

81.75mm

92.49mm Visible Area

12.17mm

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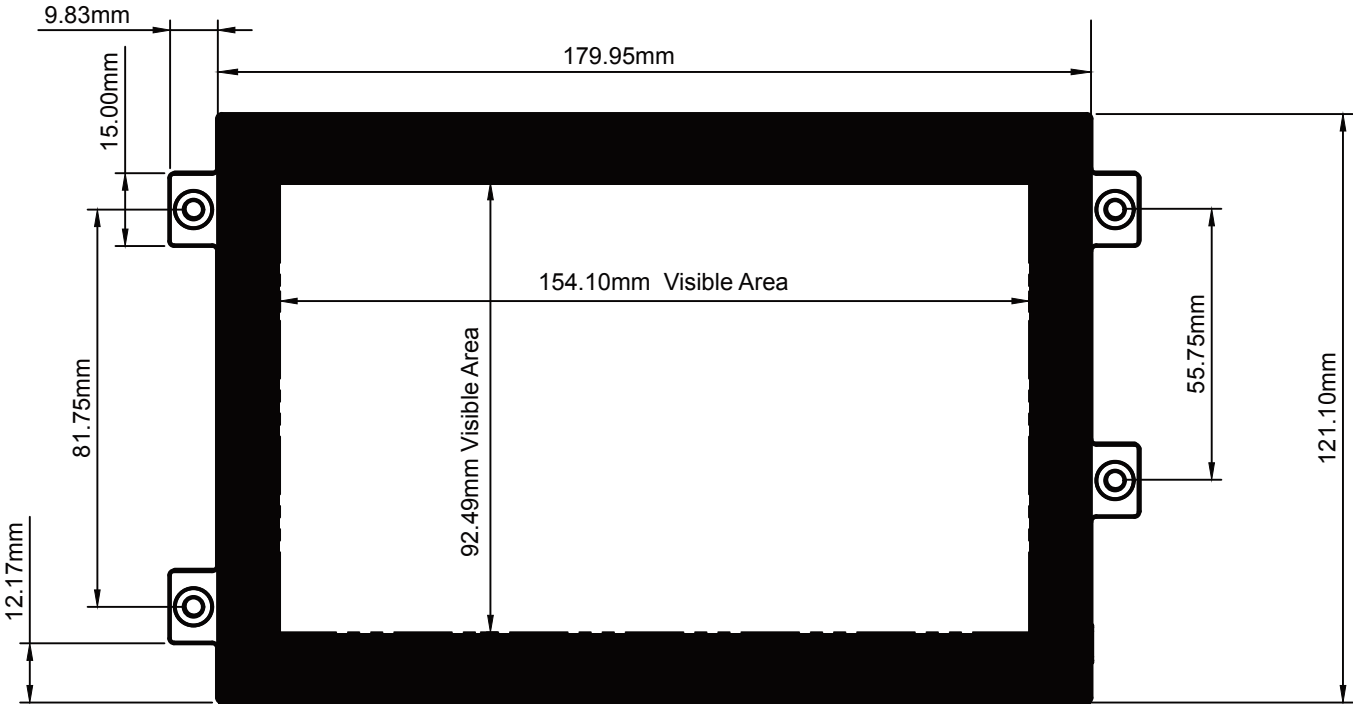
Mounting Specification

J

M

L

Ø7.71

Ø3.81

DETAIL J

11.6

3.8

Ø7.71

2.54

SECTION L-L

12.81

11.6

DETAIL M

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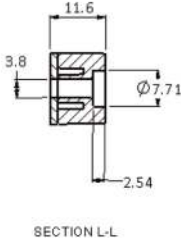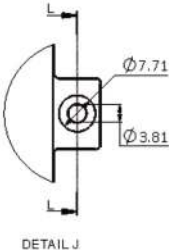
Recommended Operating Conditions

Parameter	Conditions	Min	Typ	Max	Units
DC Supply Voltage	Stable external supply required	7.4	12	24.6	Vdc
AC Supply Voltage	Stable external supply required	20.4	24	27.6	Vdc
USB Port Supply Voltage	Stable external supply required	4.75	5	5.25	Vdc

Environmental Specification

Parameter	Min	Typ	Max	Units
Storage Temp	-30		80	$^{\circ}$C
Operation Temp	-20		70	$^{\circ}$C

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Revision History

Date	Revision	Notes
January 29, 2021	A	Initial release
February 19, 2021	B	Bluetooth information added
March 25, 2021	C	Part number changed to AM070RVS01

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Contact Us:

You have Embedded GUI Questions. We have Answers.

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