Product data sheet Industrial HMI Controller

Characterstics

Processing

Raspberry CM4

Broadcom BCM2711 quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz

OpenGL ES 3.1, Vulkan 1.0

Options for 1GB, 2GB, 4GB or 8GB LPDDR4-3200 SDRAM

Options for 8GB, 16GB or 32GB eMMC Flash memory

2.4 GHz, 5.0 GHz IEEE 802.11 b/g/n/ac wireless;
Bluetooth 5.0, BLE;

Display

7 inch IPS Capacitive touch panel

I/O Availability

8 x Digital Inputs
8 x Analog Inputs 0-10V / 4-20mA
7 x Transistor outputs
1 x RS-485

Ports & Connections

1 x Gigabit Ethernet
2 x USB Type A Ports
1 x USB Host
1 x M.2 SSD Port - Internal
1 x microSD

Ordering Information

P/N	Model Code	CPU	RAM	WiFi	eMMC	Analog Input	Digital Input	Transistor Output	RS-485	Ethernet
SC-PC-AM8-TO7-G1	CPU G1	64-bit SoC @ 1.5GHz	2 Gb	Yes	-	4-20mA x 8	8	7	YES	YES
SC-PC-AM8-TO7-G2	CPU G2	64-bit SoC @ 1.5GHz	2 Gb	Yes	8	4-20mA x 8	8	7	YES	YES
SC-PC-AM8-TO7-G3	CPU G3	64-bit SoC @ 1.5GHz	2 Gb	Yes	16	4-20mA x 8	8	7	YES	YES
SC-PC-AM8-TO7-G4	CPU G4	64-bit SoC @ 1.5GHz	4 Gb	Yes	32	4-20mA x 8	8	7	YES	YES
SC-PC-AV8-TO7-G1	CPU G1	64-bit SoC @ 1.5GHz	2 Gb	Yes	-	0 - 10V x 8	8	7	YES	YES
SC-PC-AV8-TO7-G2	CPU G2	64-bit SoC @ 1.5GHz	2 Gb	Yes	8	0 - 10V x 8	8	7	YES	YES
SC-PC-AV8-TO7-G3	CPU G3	64-bit SoC @ 1.5GHz	2 Gb	Yes	16	0 - 10V x 8	8	7	YES	YES
SC-PC-AV8-TO7-G4	CPU G4	64-bit SoC @ 1.5GHz	4 Gb	Yes	32	0 - 10V x 8	8	7	YES	YES

Main

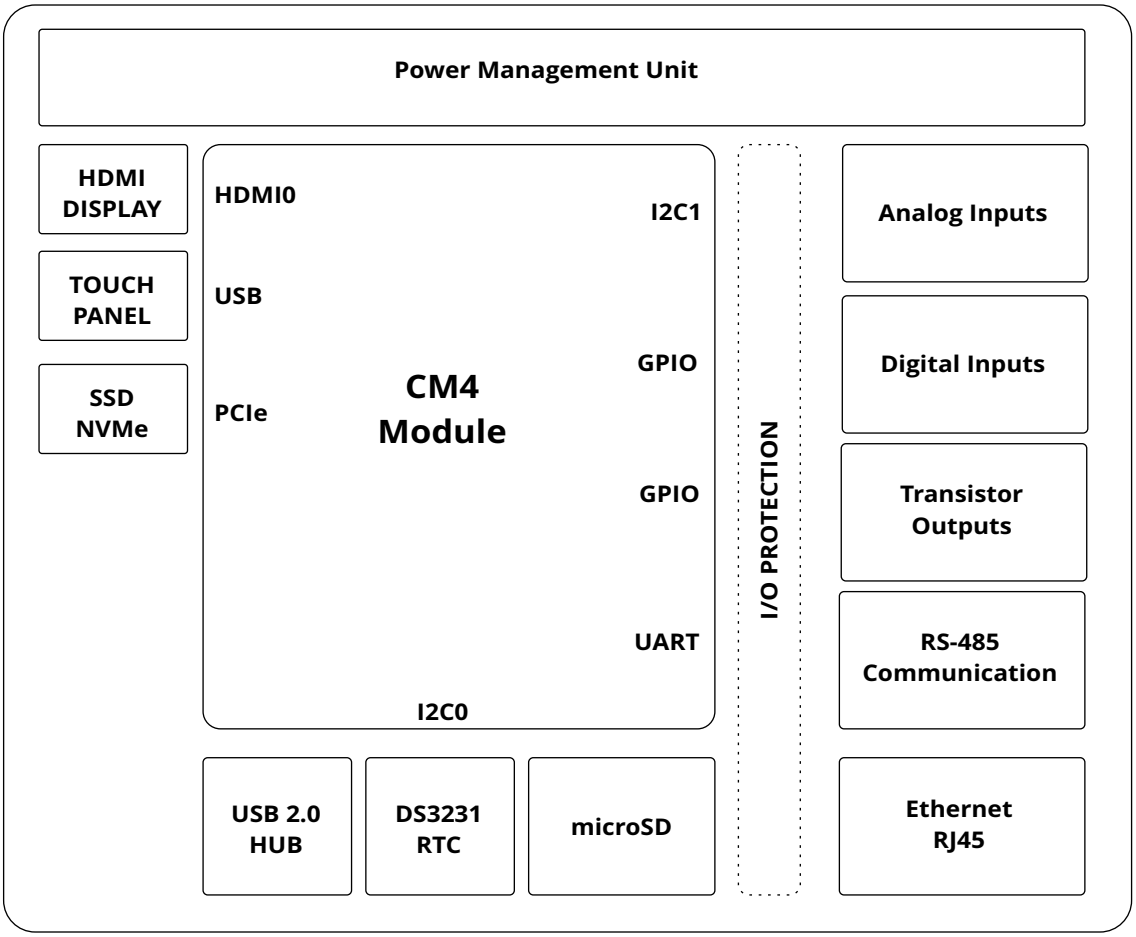
Range of product	Industrial HMI Controller
Product type	Programmable Panel Controller
Rated supply voltage	24V DC
Discrete input number	8 discrete input
Discrete output type	Transistor
Discrete output number	7 Transistor outputs
Discrete output current	0.5A with T0.0... T0.1 Transistor
Communication	1 x RS-485 1 x Gigabit Ethernet

Complementary

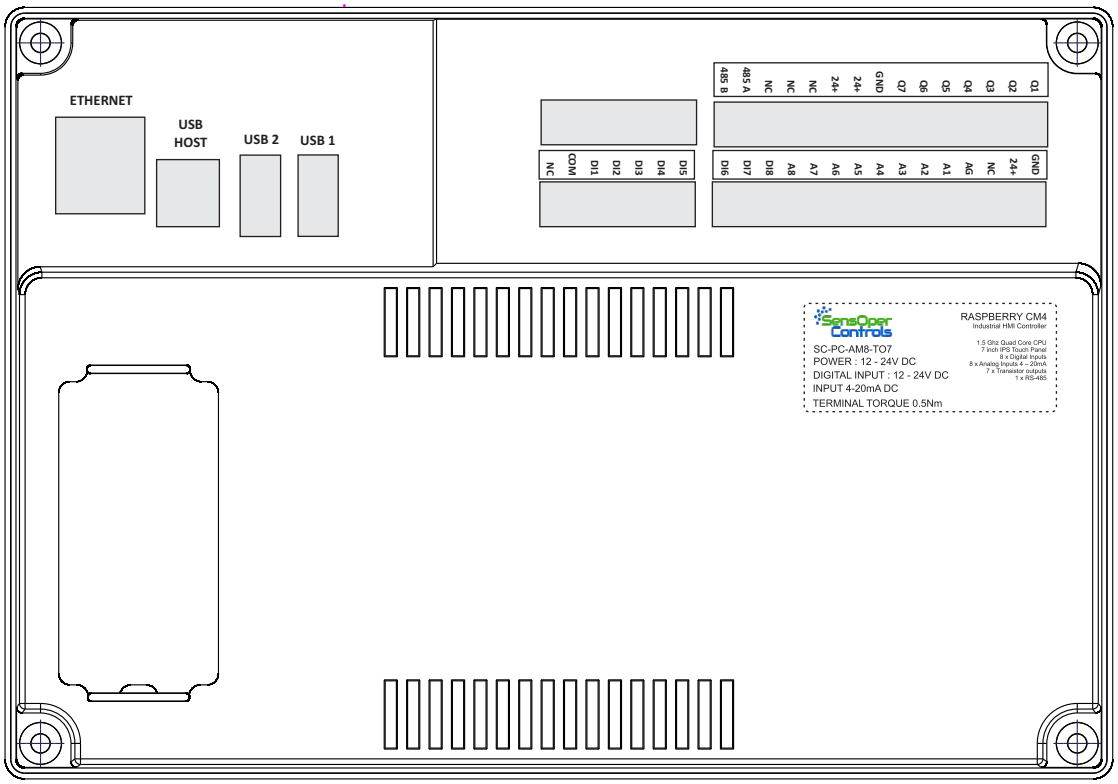
Discrete IO number	23
Number of Expansions	-----
Supply voltage limits	20.4....28.8V
Inrush current	<=50A
Power consumption in W	32.6.....40.4 with all outputs ON
Discrete logic input	Sink or source
Discrete input voltage	24V
Discrete input voltage type	DC
Voltage state 1 guaranteed	>=15 V for input
Voltage state 0 guaranteed	<=5 V for input
Discrete input current	5 mA for input
Input impedance	4.7k Ohm for input
Memory capacity	Depend on Model
Battery type	RTC CR1220
Backup time	1 - 2 years
Local signalling	1 LED green for PWR 8 LED green for I0.....I7 2 LED green for T0....T1

Electrical connection	Removable screw terminal block for inputs and outputs (pitch 5.08 mm)
Mounting support	Top hat type TH35-15 rail conforming to IEC 60715 Top hat type TH35-7.5 rail conforming to IEC 60715 Plate or panel with fixing kit
Height	90.50 mm
Depth	56.60 mm
Width	60.60 mm
Product weight	0.84 Kg

System Architecture

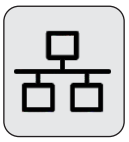


Terminal Layout



Ports & Connections

ETHERNET



Gigabit Ethernet Transceiver

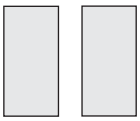
IEEE 1588-2008 compliant
MDI crossover,
Pair skew and pair polarity correction

TYPE B USB

USB DEVICE

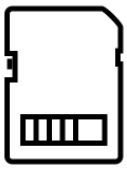
Designed to enable the CM4 to be updated via rpiboot. When a USB cable is plugged in the USB hub is automatically disabled, so the CM4 USB 2.0 port becomes a USB device

USB 2 USB 1



USB 2.0 HUB

The device has an onboard USB 2.0 hub. Can be used to connect third-part USB Devices like USB Modems and data converters.
This connects to the CM4 USB 2.0 port. Two ports from the hub are connected to a connector. The other port of the USB 2.0 hub is connected to the touch screen.
There is an internal current limit switch to provide VBUS to the USB connectors. The current limit is set to approximately
1.2A.
The USB interface is disabled to save power by default on the CM4 . To enable it you need to add the following to the config.txt file :
dtoverlay=dwc2,dr_mode=host
** The factory version of the Raspbian OS which is pre-installed on the device has USB 2.0 hub enabled by Default*



Micro SD Card socket

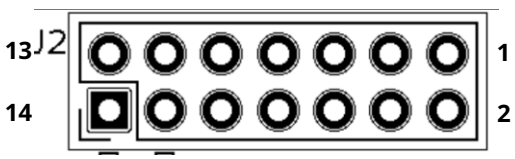
Primary storage source for non e-MMC versions of Cm4.
The micro SD Card socket is a PUSH-PUSH socket. To release the micro SD Card a gentle push on the micro SD Card will enable it to be removed.
** Available only for SC-PC-AM8-TO8-G1 / SC-PC-AV8-TO8-G1*

M.2 NVMe Storage (Internal Port)

M.2 NVMe Storage can be installed as additional storage for the controller, where heavy applications are run, NVMe boot is not supported by the boot loader, the device must boot from a separate source.

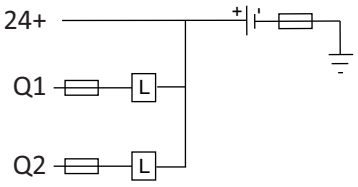
Jumpers

1	GND	GND
2	NRPIBOOT	nRPIBOOT If fitted forces USB booting, it is useful if the eMMC becomes corrupte
3	GND	GND
4	EEPROM NWP	EEPROM_nWP If fitted write protects the EEPROM on the CM4
5	AIN0	AIN0 MXL7704 analog input consult MXL7704 datasheet for details
6	AIN1	AIN1 MXL7704 analog input consult MXL7704 datasheet for details
7	GND	GND for AIN signals
8	SYNC_IN	SYNC_IN
9	SYNC_OUT	SYNC_OUT
10	GND	GND
11	TV_OUT	TV_OUT
12	GND	GND
13	NC	GND
14	GLOBAL+EN	Connect a push button to wake up the CM4 from low power mode. It can't be used to shutdown the CM4



Terminal Connections

Transistor Outputs
Q1 - Q7 Open Collector Outputs
24+ : 24V DC Power for transistors
* 24V DC Power Input at 24+ input is compulsory for transistors to operate.



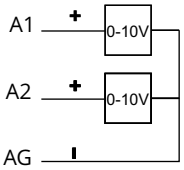
RS-485 Communication
Half Duplex RS-485 communication via UART

Q1	GND
Q2	24+
Q3	NC
Q4	AG
Q5	A1
Q6	A2
Q7	A3
GND	A4
24+	A5
24+	A6
NC	A7
NC	A8
NC	DI8
485 A	DI7
485 B	DI6
	DI5
	DI4
	DI3
	DI2
	DI1
	COM
	NC

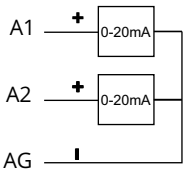
24V DC Power
2A Power Supply Recommended

Digital Inputs
AG : Ground for Analog Inputs
A1 - A8 : Analog Inputs
0 - 10 V for Voltage input versions

Analog Input 0 - 10V

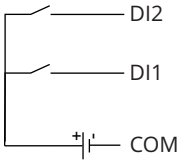


Analog Input 0-20mA

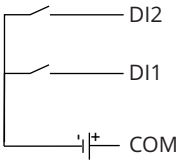


Digital Inputs
COM : Digital Input Common
Di1 - Di8 : Input Signals 24V DC

Source Configuration



Sink Configuration



Internal Connection Reference

Digital Input

Terminal Mark	*Description*	*GPIO*
DI1	Digital Input 1	GPIO6
DI2	Digital Input 2	GPIO5
DI3	Digital Input 3	GPIO22
DI4	Digital Input 4	GPIO27
DI5	Digital Input 5	GPIO17
DI6	Digital Input 6	GPIO4
DI7	Digital Input 7	GPIO3
DI8	Digital Input 8	GPIO2

Transistor Output

Terminal Mark	*Description*	*GPIO*
Q1	Transistor Output 1	GPIO21
Q2	Transistor Output 2	GPIO20
Q3	Transistor Output 3	GPIO16
Q4	Transistor Output 4	GPIO24
Q5	Transistor Output 5	GPIO23
Q6	Transistor Output 6	GPIO19
Q7	Transistor Output 7	GPIO26

Analog Inputs

I2C Connections : SDA GPIO0
SCL GPIO1

Terminal Mark	*Description*	*I2C Address*	*Channel*
A1	Analog Input 1	0x49	0
A2	Analog Input 2	0x49	1
A3	Analog Input 3	0x49	2
A4	Analog Input 4	0x49	3
A5	Analog Input 5	0x48	0
A6	Analog Input 6	0x48	1
A7	Analog Input 7	0x48	2
A8	Analog Input 8	0x48	3

RS-485 Communication

UART Connections : RX GPIO14
TX GPIO15
Flow Control : FC GPIO18

DS3231 RTC

I2C Connections : SDA GPIO44
SCL GPIO45

Supported Programming Methods

Python
Node-RED

Factory Installed OS

Raspbian OS Full

Pre-configured for
DS3231 RTC
USB2.0 HUB
Disabled Display Sleep

Reach-Us

Technical Support

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