

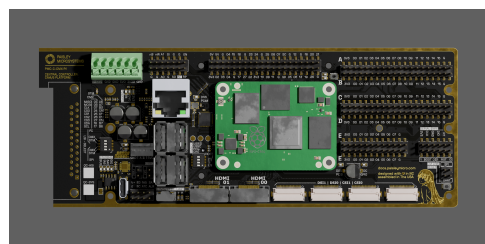
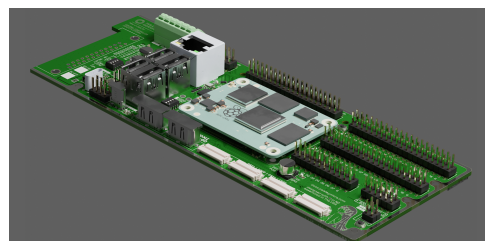
# PMC-C-CMX

## Versatile, plug-and-play system controllers for CM4/5

Featuring full breakouts for all CM4/5 IO, STM32H7 for real-time control, B/M key PCIe Gen 3 slots with cellular options and full compatibility with all PMC functional modules.

### Key advantages:

- Minimal, streamlined electronics configuration.
- Logically ordered and labeled IO/management pins.
- Standardized DIN rail-compatible form factor removes the need for hardware considerations.
- USB-C PD 2.0 and 7-55V DC input up to 10A.
- Rugged system includes IEC Level 4 ESD protection, ENIG gold finish for stellar EMI resistance.



## General Specification

Dimension	190.5 x 72.0	mm
Underside/top min. clearance	-5.8, +22.0	mm
Operating temperature range	-30 to +80	C

## Compute Module

### High Speed IO

HDMI(R) outputs	2	4k60p 1.4b, full-size
MIPI CSI/DSI	2 x 2	One of each 3/5 lane
Native USB	4 or 3 or 1 <sup>1</sup>	480Mbps USB 2.0
PCIe support	M or B key, with x1 link	8GT/s PCIe 3.0
PCIe NGFF card form factors	22/30 x 30/42/(M key only): 80	mm

### General IO

Cellular Capability	Yes, with Nano-SIM and B-key Card	
Ethernet	1000 (Base-T)	Mbps
Conforms to RPi 40P header	Yes	
Conforms to RPi HAT spec	Yes	
Max. Pin-Pin Crosstalk	0.25V [PASS] <sup>5</sup>	3V3 @ 10MHz, 50ns RT

### RS-485 USART Transceiver

RS-485 link speed	20	Mbps
Transceiver IO on CM	12/13	TX/RX
PROFIBUS-DP capable	Yes <sup>3</sup>	

## ESD Protection

HDMI(R)	Yes	IEC 61000-4-2 Level 4
USB	Yes	IEC 61000-4-2 Level 4

## Onboard Real Time Clock (RTC)

RTC Chip	PCF85063AT	
Crystal Tolerance/Drift	-6.666666667	PPM, PPM/yr
Wake-on-alarm and interrupt	Yes	

<sup>1</sup>4 USB A ports or 3 USB A ports with populated PCIe B card, or 1 USB-C 2.0 port as master or slave (for EEPROM flashing)

<sup>2</sup>Full electrical compliance with PROFIBUS-DP. Physical interface adapter available with additional SKUs.

<sup>3</sup>BCM2711 has internal 2.5kV HBM GPIO ESD tolerance

## Real Time Controller STM32H7B0

### General Information

Flash Size	128k/1.4M	flash/RAM
Core Clock	280	MHz, max
Ext. Clocks	16 + 32.768	MHz, KHz
OTA flash	Yes <sup>4</sup>	

### GPIO

User GPIOs	3x16 + 1x14 + 1x8 [70 total]	
ESD tolerance	+25kv	Conforms to IEC Level 4
Max. Pin-Pin Crosstalk	0.35V [PASS] <sup>5</sup>	3V3@10MHz, 50ns RT
Dedicated SWD/ST-LINK(R) interface	Yes (connected to PA13/14)	

<sup>4</sup>OTA capable through UART with program running on compute module, or SWD through additional SKU

<sup>5</sup>PASS status is given to the crosstalk spec if the maximum measured induced crosstalk ringing does not exceed 1/2 logic low

## Power Inputs

### Wire/Line-Pressing Terminal Input

Voltage range	7-55	VDC
Current Max.	10	ADC
Reverse Polarity protect	Yes	

### USBC-PD R2.0 Input

Valid VBUS Voltages	9/15/20	V
Valid PD Powers	21+/27+/45+/100	W
User-programmable PDOs	Yes <sup>6</sup>	

### Power Draw

Quiescent draw without compute module	560 +/-20	mW
Quiescent draw with compute module	2200 +/-50	mW
Short-circuit tolerance	Yes <sup>7</sup>	

<sup>6</sup>Suitable for live/hot development as 3V3 GPIO to GND does not cause compute module or STM32H7 reboot.

<sup>7</sup>Programming and MCU interface exposed through onboard 8-pin header

## Onboard Power Converters

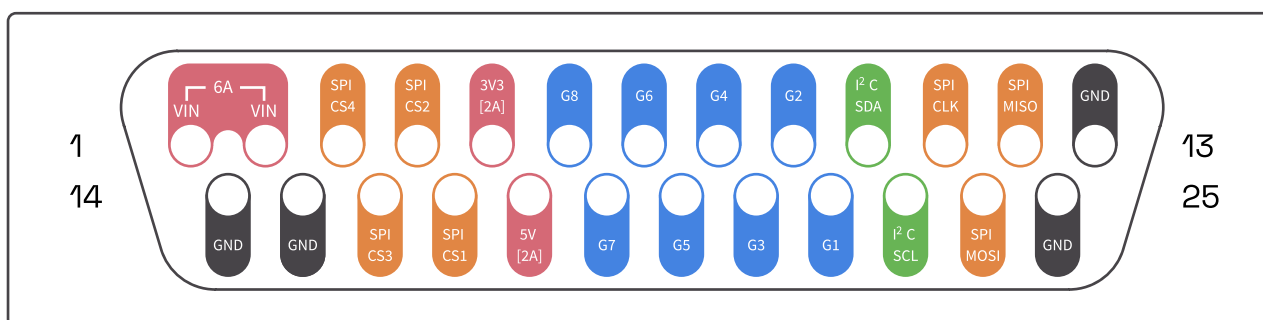
### 5V

5V bus total current	5	ADC
Input-5V efficiency	85-92	%@ 2.5A, 48VIN
5V maximum ripple	30	mV (CCM only)
5V GPIO current limit	Unregulated	
5V maximum ripple	20	mV (CCM only)

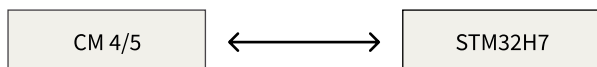
### 3V3

3V3 bus total current	5	ADC
3V3 GPIO current limit	1.5	ADC
Input-3V3 efficiency	82-90	%@ 2.5A, 48VIN

## Modular bus connector pinout



## LSI configuration and pin table

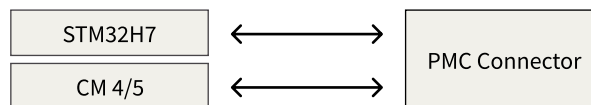


Definition

UART	CM GPIO	STM32H7 GPIO
TX	14	PA2
RX	15	PA3

### SPI

MISO	9	PC2
MOSI	10	PC1
CLK	11	PB10
CS	Undefined	Undefined



Definition

SPI	CM GPIO	STM32H7 GPIO
MISO	5	PA7
MOSI	6	PA6
CLK	7	PB3
CS [0-3]	[24, 25, 26, 27]	PC[10, 11, 12, 13]

### I<sup>2</sup>C

SDA	11	PB7
SCL	Undefined	PB6

Signal names are self-referential.  
SPI MOSI is buffered to MISO, UART TX to RX and vice versa.

## Modular Bus and CM-STM interconnect buffers

UART/SPI max speed	24	Mbps
I2C max speed	2	Mbps
UART/SPI maximum rise-time	9.3	ns
I <sup>2</sup> C maximum rise-time	132	ns

The PMC-C-CMX controller is tested to ensure reliable function on the fastest inter-chip and system communication data rates.

## Ordering information

Non-Stocked (NS) lead times are for reference only and are neither guaranteed nor binding. Please contact sales regarding specific production time information. In most cases, actual lead time and time-to-stock is less than the values referenced.

Product Name/ID	SKU	Description	Sale Price / 1u	/ 8u	/ 20u	NS lead time
PMC-C-CMX R1	PMC0100	Rapidly deployable controller solution for high performance embedded applications, to use with RPi(r) CM4/5 modules	149.99 USD	144.99	134.99	6 weeks
PMC-HW-G3	PMC0930	3D-printed IEC-DIN rail mount for 190.5mm (3 x 63.5L) PMC Series PC Boards, green	9.99 USD	9.49	8.79	2 weeks

Product Name/ID	SKU	Description	Sale Price / 1u	/ 8u	/ 20u	NS lead time
PMC-HW-B3	PMC0931	3D-printed IEC-DIN rail mount for 190.5mm (3 x 63.5L) PMC Series PC Boards, black	9.99 USD	9.49	8.79	2 weeks
ST-LINK V2	PMR2001	Official ST-LINK V2 programmer by STM	34.99 USD	29.99		2 weeks

Purchase online: [paisleymicrosystems.com/products](https://paisleymicrosystems.com/products)

Please contact sales regarding volume pricing on orders above 100 units

## Compliance Information

FCC Section 15	Compliant	CE for EEA	Compliant
FCC Section 18^	Compliant	UK CA	Compliant
RoHS China	Compliant	EU RoHS	Compliant

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