



ENCLUSTRA
FPGA SOLUTIONS

Selection Guide and Roadmap

Intel Mercury and Mars SoC Modules Selection Guide Cyclone V SoC modules

Valid as of 25 th February 2020	Mercury™ SA1	Mercury+™ SA2	Mars™ MA3	
FPGA Family	Cyclone® V SX	Cyclone® V ST	Cyclone® V SE	Cyclone® V SX
FPGA Device Name	C6	D6	A5	C6
FPGA Speed Grade*2	7	7	7	7
FPGA Part Number*2	5CSXFC6C6 U2317N	5CSTFD6D5 F3117N	5CSEBA5 U23C8N	5CSXFC6C6 U2317N
CPU Cores	2 x ARM® Cortex™-A9	2 x ARM® Cortex™-A9	2 x ARM® Cortex™-A9	
CPU Frequency @ MHz	800	800	600	800
HPS Cores & Peripherals	2 x CAN	2 x CAN	2 x CAN	
HPS Ethernet USB	1 Gbps USB 2.0 OTG	1 Gbps USB 2.0	1 Gbps USB 2.0 OTG	
HPS SDRAM Size (MByte)	1,024	2,048	1,024	
HPS SDRAM Type Bandwidth (MByte/s)	DDR3L 3,200	DDR3L 3,200	DDR3L 3,200	
FPGA System Logic Elements	110'000	110'000	85'000	110'000
FPGA Block RAM (kbit)	5'570	5'570	3'970	5'570
FPGA DSP Systolic FIR (MMAC/s)	112	112	70	112
FPGA MGT Transceivers @ Gbps*6	6 @ 3.125	9 @ 6.144	-	2 @ 3.125
FPGA Peripherals	PCIe® Gen1 x4	PCIe® Gen2 x4	-	PCIe® Gen1 x2
FPGA Ethernet USB*5	-	2 x 100 Mbps Cypress FX3™ USB 3.0	1 Gbps + 100 Mbps	
FPGA SDRAM Size (MByte)	-	-	-	
FPGA SDRAM Type Bandwidth (MByte/s)	-	-	-	
Flash Memory	64M QSPI 16G eMMC	64M QSPI 16G eMMC	64M QSPI 16G eMMC	
Connector Pins IO Pins	336 178	504 294	200 96	200 104
FPGA 3.3V FPGA 1.8V Pins HPS Pins	134 - 16	234 - 18	80 - 16	76 - 16
Module Dimensions (mm)	56 x 54	74 x 54	67.6 x 30	
Temperature Range*2	-40..+85°C	-40..+85°C	0..+70°C	-40..+85°C
Boot Modes	QSPI SD Card eMMC	QSPI SD Card USB3	QSPI SD Card eMMC	
Product Status	Mass Production	Mass Production	Mass Production	
Estimated Product Lifetime*3	2030+	2030+	2030+	
Preferred Configuration MOQ*4	Yes	Yes	No 100	Yes
Module Order Code	ME-SA1-C6-7I-D10	ME-SA2-D6-7I-D11	MA-MA3-A5-8C-D10	MA-MA3-C6-7I-D10
Budgetary Price 1+ (EUR)	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; text-align: center;"> <p style="color: orange; font-weight: bold; font-size: 1.2em;">Check www.enclustra.com for up-to-date prices</p> </div> <div style="width: 45%; text-align: center;"> <p style="color: orange; font-weight: bold; font-size: 1.2em;">Check www.enclustra.com for up-to-date prices</p> </div> </div>			
Budgetary Price 30+ (EUR)				
Budgetary Price 100+ (EUR)				
Budgetary Price 1000+ (EUR)				
Budgetary Price 10000+ (EUR)				

*** Notes**

1. We are actively looking for interested customers in this or a similar module. Please contact us with your detailed requirements.
2. The module is also available in different speed and temperature grades. Visit the product web page for more information.
3. Please contact us about production data backup and module production license options.
4. For non-preferred configurations, the minimum order quantity (MOQ) only applies if the modules are not in stock - contact us for more details.
5. Check out our FPGA Manager IP solution for simple data streaming into Windows/Linux embedded/host PCs.
6. Please ensure that adequate signal integrity is obtained over the full signal path when using MGT's at high performance.

General notes

- Not all features are available simultaneously. Please check the documentation to know the applicable constraints.
- All specifications and release dates are subject to change without notice. Please verify component specifications with vendors' datasheets.
- Enclustra maintains an errata and revision history document for each product. Please also check the errata of the FPGA device and other components.
- All prices are non-binding estimates - please use the online Enquire/Order form to get definitive pricing and lead-time information.
- All trademarks are the property of their respective owners. All prices do not include shipping, taxes and duties.

Valid as of 25 th February 2020	Mercury™ CA1			Mercury+™ AA1			
FPGA Family	Cyclone® IV E			Arria® 10			
FPGA Device Name	30	75	115	SX 270	SX 270	SX 480	SX 480
FPGA Speed Grade*2	8	8	7	3	2	1	2
FPGA Part Number*2	EP4CE30 F23C8N	EP4CE75 F23C8N	EP4CE115 F23I7N	10AS027E4 F29E3SG	10AS027E2 F29I2SG	10AS048E2 F29E1HG	10AS048E3 F29I2SG
CPU Cores	-			2 x ARM® Cortex™-A9			
CPU Frequency @ MHz	-			1'000	1'200	1'500	1'200
HPS Cores & Peripherals	-			3 x EMAC			
HPS Ethernet USB	-			1 Gbps USB 2.0			
HPS SDRAM Size (MByte)	-			2,048 + ECC		4,096 + ECC	
HPS SDRAM Type Bandwidth (MByte/s)	-			DDR4 7,464	DDR4 8,532	DDR4 9,600	DDR4 8,532
FPGA System Logic Elements	28'848	75'408	114'480	270'000		480'000	
FPGA Block RAM (kbit)	594	2'745	3'888	15'000		28'620	
FPGA DSP Systolic FIR (MMAC/s)	13	40	53	1'228	1'461	2'999	2'408
FPGA MGT Transceivers @ Gbps*6	-			12 @ 10.3125	12 @ 12.5		
FPGA Peripherals	-			PCIe® Gen3 x8			
FPGA Ethernet USB*5	1 Gbps FTDI USB 2.0			Cypress FX3™ USB 3.0			
FPGA SDRAM Size (MByte)	128	256	256	2,048 + ECC		4,096 + ECC	
FPGA SDRAM Type Bandwidth (MByte/s)	DDR2 666			DDR4 7,464	DDR4 8,532	DDR4 9,600	DDR4 8,532
Flash Memory	16M SPI			64M QSPI 16G eMMC			
Connector Pins IO Pins	336 146			504 286			
FPGA 3.3V FPGA 1.8V Pins HPS Pins	146 - -			- 212 18			
Module Dimensions (mm)	56 x 54			74 x 54			
Temperature Range*2	0..+70°C		-40..+85°C	0..+85°C	-40..+85°C	0..+85°C	-40..+85°C
Boot Modes	Passive Serial Active Serial USB2			QSPI SD Card eMMC USB3			
Product Status	Mature			Mass Production			
Estimated Product Lifetime*3	2025+			2030+			
Preferred Configuration MOQ*4	No 80	Yes	No 60	Yes	No 40	No 30	Yes
Module Order Code	ME-CA1-30- 8C-D7	ME-CA1-75- 8C-D7	ME-CA1-115- 7I-D8	ME-AA1-270- 3E4-D11E	ME-AA1-270- 2I2-D11E	ME-AA1-480- 1E2-D12E	ME-AA1-480- 2I3-D12E
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