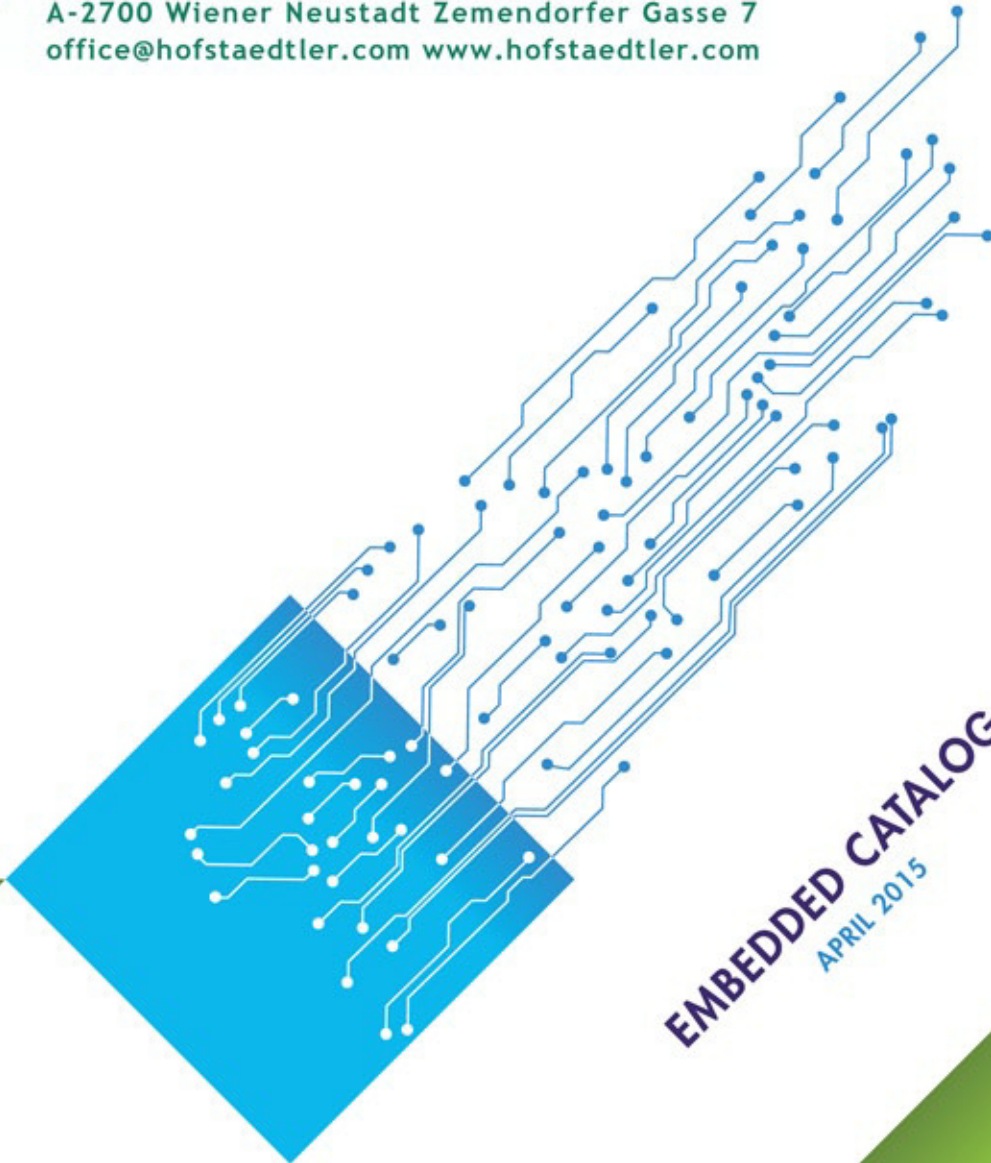# Hofstädtler I.E. GmbH

Telefon: +43 2622 / 21550-0
Telefax: +43 2622 / 21550-5
A-2700 Wiener Neustadt Zemendorfer Gasse 7
office@hofstaedtler.com www.hofstaedtler.com

EMBEDDED CATALOG
APRIL 2015

⑤ ENGICAM®

ENGICAM® Values and history

Engicam is an italian company based in Scandicci (Florence), entirely debt-free and wholly managed by the owners.

Engicam was founded in 2004 with the aim of providing design services of electronic systems with high content of technology, relying on a long experience in electronic design.

Considering customers as his partners allowed Engicam to develop a successful collaborations with the major National companies in consumer, automotive, marine and railway field and with small and medium companies operating in niches of the industrial market.

Starting from 2008, in order to simplify the development of innovative and technologically advanced products, Engicam developed several types of CPU modules based on latest generation Freescale processors.

The continuous investment on this kind of products allows Engicam to provide and to develop continuously increasingly powerful and efficient platforms.

The consolidated partnership with Freescale allows at Engicam to make available to its customers the latest technologies and platforms available on the market.

Engicam's philosophy is to assist its customers in all the development process and during the final system integration. High level hardware and software support is provided, from product development to mass production.

Engicam quality system is fully certified by CISQ/IMQ-CSQ according the standard ISO9001:2008 for the design and production of electronic systems.

SYSTEM ON MODULE
SOLUTIONS

Engicam offers a wide range of CPU modules to cover the needs of a variety of markets, from industrial to automotive, from marine to railway and to the consumer as well.

SCALABILITY

Most Engicam modules are available in SODIMM (SODIMM) format and are compatible with each other in order to have a complete scalability. This feature makes Engicam's SODIMM modules extremely flexible and allows the customer to develop different products, with different performance and cost-optimized, using the same carrier board.

LONGEVITY AND LONG TERM PRODUCTION

Thanks to Freescale longevity program, all Engicam modules have a guaranteed long term production availability.

SMALLEST FORM FACTOR

In order to make easiest the mechanical integration, SODIMM modules is designed and developed taking care to minimize the form factor.

ROBUSTNESS

Engicam SOM are proven in hundreds of different applications under extremely hard thermal and mechanical operating conditions.

STANDARD MODULE

Engicam, as member of SGET consortium can offer in its portfolio standard modules based on Qseven and SMARC pinout.

HIGH LEVEL SUPPORT

The well-known support offered during the product development stages, makes **Engicam** modules winning for the realization of technologically advanced and robust products with low investment in terms of time and costs; in addition, the complete scalability allows with minimal efforts, to always have products updated to the latest market technology.
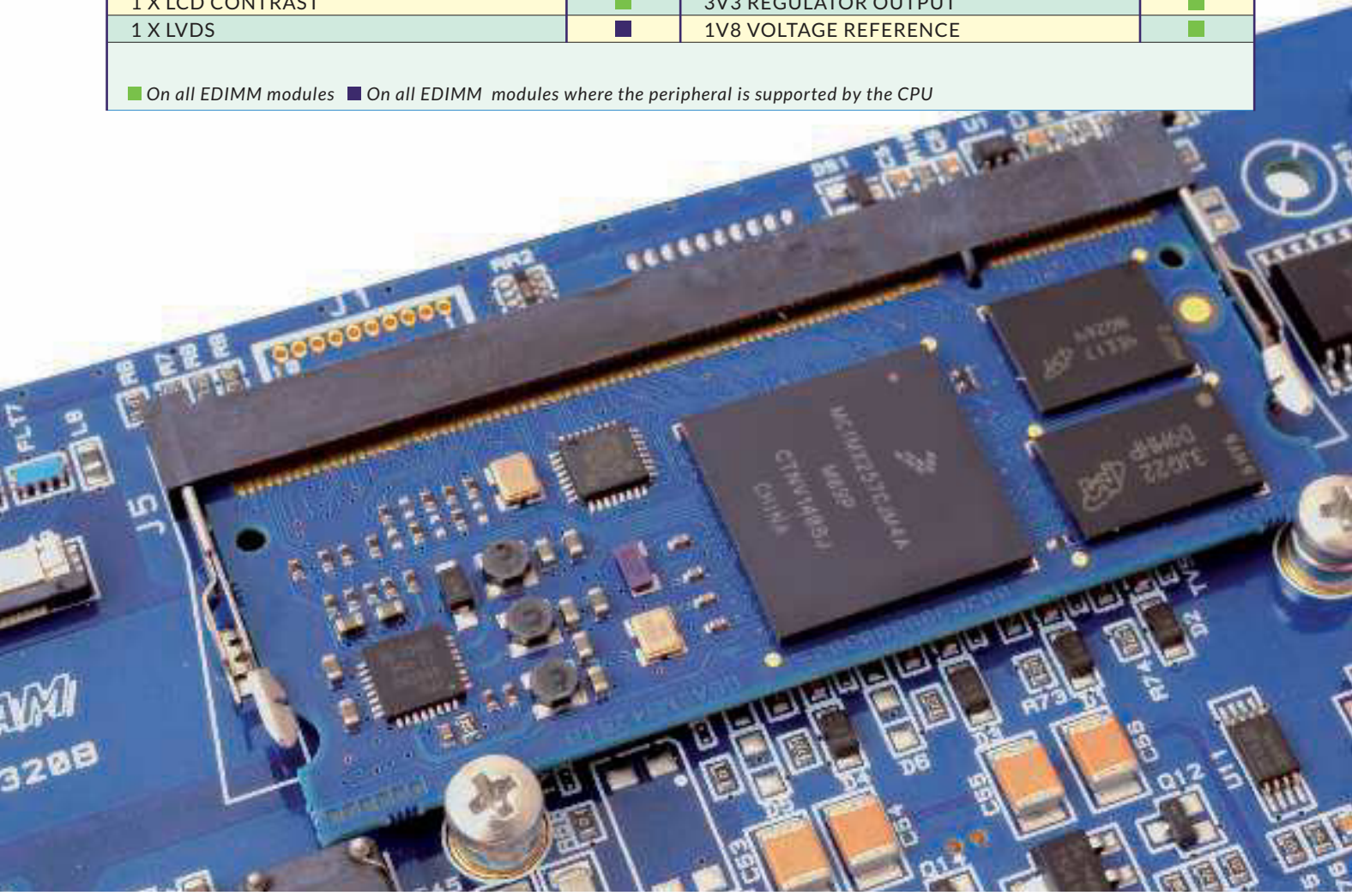
DIMM

PIN-COMPATIBILITY COMMON FEATURES

The **DIMM** is a versatile pinout definition based on SODIMM-200 connector. SODIMM is a well known high speed signals connector and it is commonly used to interface DDR memory cards. **Engicam** experienced the robustness of this solution in many of different applications under extremely hard thermal and mechanical operating conditions, like automotive and railway.

EDIMM PIN-COMPATIBILITY COMMON FEATURES			
SODIMM 200 PIN CONNECTOR	🟩	1 X PCIE	🟦
3 X SERIAL PORTS	🟩	1 X SATA	🟦
2 X SD I/F	🟩	1 X CSI 8 BIT	🟦
1 X TTL DISPLAY 18 BIT	🟩	2 X CAN	🟦
1 X IIS	🟩	1 X HDMI	🟦
2 X USB	🟩	1 X RESISTIVE TOUCH	🟩
1 X ETHERNET WITH PHY	🟩	ADC CHANNELS	🟦
1 X SPI	🟩	GPIOS	🟩
1 X I2C	🟩	SINGLE 5V POWER SUPPLY	🟩
1 X LCD CONTRAST	🟩	3V3 REGULATOR OUTPUT	🟩
1 X LVDS	🟦	1V8 VOLTAGE REFERENCE	🟩

🟩 *On all EDIMM modules* 🟦 *On all EDIMM modules where the peripheral is supported by the CPU*

SODIMM MODULES – SUMMARY TABLE

	ARM9™		CORTEX™-A5 CORTEX™-M4	CORTEX™ -A8		CORTEX™ -A9				CORTEX™-A9 CORTEX™-M4
	GEA M6425IB	GEA M6428B/F	CHIMERA F600	i.CORE M51	i.CORE M53L/B	i.CORE M6S	i.CORE M6DL	i.CORE M6D	i.CORE M6Q	i.CORE M6SX
FORMAT	DIMM	DIMM	DIMM		DIMM	DIMM	DIMM	DIMM	DIMM	DIMM
CPU	i.MX257	i.MX283/7	VYBRID F600	i.MX512/5	i.MX536	i.MX 6S	i.MX 6DL	i.MX 6D	i.MX 6Q	i.MX6 SoloX
CORE NUM	1	1	2	1	1	1	2	2	4	2
FREQ (Mhz)	400	454	500/167	800	800	800	800	800	800	800/200
DRM WDT (Bit)	16	16	16	32	32	32	64	64	64	32
RAM TYPE	DDR2-266	DDR2-400	DDR3-400	DDR2-400	DDR3-800	DDR3-800	DDR3-800	DDR3-1066	DDR3-1066	DDR3-800
RAM SIZE (MB)	64	64	128	256/512	256/512	256	512	512	1024	256
FLASH SZ (MB)	256	256	256	256	256	512	512	512	512	512
FLASH TYPE	NAND SLC	NAND SLC	NAND SLC	NAND SLC	NAND SLC	NAND SLC	NAND SLC	NAND SLC	NAND SLC	NAND SLC
MAX LCD RES	SVGA	WVGA	XGA	WXGA	HD	FULLHD	FULLHD	FULLHD	FULLHD	WXGA
SIMULT LCDS	1	1	1	2	2	2	2	4	4	1
PARALLEL LCD	1x18	1x18	1x18	2x24	1x18	1x18	1x18	1x18	1x18	1x18
TVOUT	-	-	-	1	1	-	-	-	-	-
LVDS	-	-	-	-	2	2	2	2	2	1
HDMI	-	-	-	-	-	1xTX(1.4)	1xTX (1.4)	1xTX (1.4)	1xTX (1.4)	-
CSI INPUT (Bit)	8	-	-	12	8	8	8	2x8	2x8	8
HW ACC	-	-	2D	-/2D	2D	Yes	Yes	Yes	Yes	2D
VIDEO CODEC	-	-	-	-/Yes	Yes	Yes	Yes	Yes	Yes	-
SATA	-	-	-	-	1	-	-	1	1	-
EXT. BUS	Yes	-	-	Yes	Yes	-	-	-	-	-
SDIO	1x4bit	2x4bit	2x4bit	2x4bit	2x4bit	2x4bit	2x4bit	2x4bit	2x4bit	2x4bit
CAN	2	0/2	2	-	2	2	2	2	2	2
SERIAL	Up to 6	Up to 5	Up to 4	Up to 3	Up to 5	Up to 4	Up to 4	Up to 4	Up to 4	Up to 5
I2C	Up to 3	Up to 2	Up to 4	Up to 3	Up to 2	Up to 2	Up to 2	Up to 2	Up to 2	Up to 3
I2S	Up to 3	Up to 2	Up to 2	Up to 1	Up to 2	Up to 1	Up to 1	Up to 1	Up to 1	Up to 1
SPI	Up to 4	Up to 2	Up to 2	Up to 1	Up to 3	Up to 2	Up to 2	Up to 3	Up to 3	Up to 4
USB	2	2	2	2	2	2	2	2	2	2
PCIE	-	-	-	-	-	1x	1x	1x	1x	1x
ADC	4x	4x	4x	-	-	-	-	-	-	8x
VIDEO ADC	-	-	4x	-	-	-	-	-	-	4x
ETHERNET	1x10/100	1/2x 10/100	1x10/100	1x10/100	1x10/100	1x10/100	1x10/100	1x10/100	1x10/100	2x10/100
TEMPERATURE	Ind.	Ind.	Ind.	Comm./Ind.	Ind.	Comm./Ind	Comm./Ind	Ind.	Ind.	Ind.
OS	LINUX	LINUX	LINUX MQX	LINUX	LINUX ANDROID	LINUX ANDROID	LINUX ANDROID	LINUX ANDROID	LINUX ANDROID	LINUX MQX
STATUS	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production

ARM9™

GEA M6425

FEATURES

Freescale i.MX25 application processor	5V single power supply	Industrial temperature range
ARM9™@400MHz	Resistive touch screen controller	
64MB DDR2-266	MMC/SDIO	
256MB SLC NAND flash	USB OTG, USB HOST	
1xEthernet 10/100 with PHY	Up to 5xUART, 2xI2C, 3xSPI, 2xIIS	
18 bit parallel LCD port up to 800x600	2xCAN	

HIGHLIGHTS

Extremely roboust	Suitable for Automotive and Railway applications

GEA M6428

DIMM

FEATURES

Freescale i.MX28 application processor	5V single power supply	2xCAN (287 only)
ARM9™@454MHz	64MB DDR2-400	Industrial temperature range
64MB DDR2-400	Resistive touch screen controller	Single cell lithium battery management
256MB SLC NAND flash	MMC/SDIO	
2xEthernet 10/100 with PHY (1 on 283)	USB OTG, USB HOST	
18 bit parallel LCD port up to 800x600	Up to 5xUART, 2xI2C, 3xSPI, 2xIIS	

HIGHLIGHTS

Very low cost	Suitable for simple industrial applications

CORTEX™-A8

i.CORE M51

FEATURES

Freescale i.MX51 application processor	Multiformat HD720 video decoder and D1 video encoder	Up to 5xUART, 2xI2C, 4xSPI, 2xIIS
Cortex™-A8@800MHz		Industrial and commercial temperature range
Up to 512MB DDR2-400	1xEthernet 10/100 with PHY	
Hardware 3D/2D engine OpenGL-ES 2.0 and Open VG 1.1	Dual 18 and 24 bit parallel LCD port up WXGA	
	2xSD card i/f, 16-bit EIM	
256MB SLC NAND flash	USB OTG, USB HOST	

HIGHLIGHTS

Suitable for high performance Win CE 6.0 applications

i.CORE M53

DIMM

FEATURES

Freescale i.MX53 application processor	Multiformat HD1080p video decoder and HD720 video encoder	5V single power supply
Cortex™-A8@800MHz		1xCSI 8-bit, 2xSD card i/f, 16-bit EIM
Up to 512MB DDR3-800	256MB SLC NAND flash	USB OTG, USB HOST
256MB SLC NAND flash	1xEthernet 10/100 with PHY	Up to 5xUART, 2xI2C, 4xSPI, 2xIIS
Hardware 3D/2D engine OpenGL-ES 2.0 and Open VG 1.1	1x18 bit Parallel LCD , 2xLVDS and 1xVGA	Single cell lithium battery management
	SATA 1.5 Gbps	Industrial temperature range

CORTEX™-A9

i.CORE M6S/DL

DIMM

FEATURES

Freescale i.MX 6 application processor	NEON MPE co-processor and VFPC	1x PCIe, 1xCSI 8-bit, 2xSD card i/f
Cortex™-A9@800MHz	Multiformat HD1080 encoder/decoder	5V single power supply
(1GHZ consumer version)	Hardware 3D/2D engine OpenGL-ES 2.0	USB OTG, USB HOST
Single (S) and dual core (DL)	and Open VG 1.1	Up to 4xUART, 2xI2C, 3xSPI, 1xIIS
512MB SLC NAND flash	1xEthernet 10/100 with PHY	Industrial and commercial temperature range
Up to 1 GB 32/64-bit DDR3-800	1x18 bit Parallel LCD , 2xLVDS and 1xHDMI	

HIGHLIGHTS

Suitable for multimedia and high performance HMI application

i.CORE M6D/Q

DIMM

FEATURES

Freescale i.MX 6 application processor	NEON MPE co-processor and VFPC	1x PCIe,1x SATA II 3 Gbps
Cortex™-A9@800MHz	Hardware 3D/2D engine OpenGL-ES 2.0	5V single power supply
(1GHZ consumer version)	and Open VG 1.1	USB OTG, USB HOST
Dual (D) and quad core (Q)	Multiformat HD1080 encoder/decoder	2xCSI 8-bit, 2xSD card i/f
512MB SLC NAND flash	1xEthernet 10/100 with PHY	Up to 4xUART, 2xI2C, 3xSPI, 1xIIS
Up to 1 GB 64-bit DDR3-1066	1x18 bit Parallel LCD , 2xLVDS and 1xHDMI	Industrial and commercial temperature range

HIGHLIGHTS

Suitable for multimedia and highest performance HMI applications

HETEROGENEOUS DUAL CORE

CHIMERA VF600

DIMM

FEATURES

Freescale Vybrid application processor	128 MB 16-bit DDR3-1066	5V single power supply
Cortex™-A5 @ 500 MHz core,	18 bit parallel LCD (XGA)	1xParallel LCD 18 bit
NEON co-processor. DP FPU	HW 2D OpenVG engine	Touch screen, 1xSD card, 2xUSB HOST
Cortex™-M4 @ 167 MHz core,	ADCs,Video ADC inputs	Up to 5xUART, 2xI2C, 3xSPI, 2xIIS, 2xCAN
DSP instruction set, SP FPU	6-ch PWM and Quadrature encoder input	Industrial temperature range
256 MB SLC NAND Flash	1xEthernet 10/100 with PHY	

HIGHLIGHTS

Suitable for multimedia combined with realtime processes

i.CORE M6SX

DIMM

FEATURES

Freescale i.MX 6 SoloX application processor	256 MB 32-bit DDR3-800	Touch screen, 2xSDIO, USB HOST, USB OTG
Cortex™-A9 @ 800 MHz core, NEON co-processor. DP FPU, L1 and L2 I/D cache	18 bit parallel LCD and 24 bit LVDS	Up to 5xUART, 3xI2C, 4xSPI, 2xQSPI, 1xIIS
	Hardware 3D/2D engine OpenGL-ES 2.0 and Open VG 1.1	Industrial temperature range
Cortex™-M4 @ 200 MHz core		
SP Floating point unit, I/D chache	ADCs,Video ADC inputs,PWMs	
512 MB SLC NAND Flash	2x Ethernet 10/100 Mbps	

HIGHLIGHTS

Suitable for multimedia combined with realtime process   Dual port ethernet applications

STANDARD FORMAT

Engicam, as member of SGET consortium can offer in its portfolio standard modules based on Qseven and SMARC pinout.
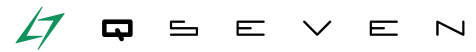
The Qseven concept is an off-the-shelf, multi vendor, Computer-On-Module that integrates all the core components of a common PC and is mounted onto an application specific carrier board. Qseven modules have a standardized form factor of 70mm x 70mm or 40mm x 70mm and have specified pinouts based on the high speed MXM system connector that has a standardized pinout regardless of the vendor. The Qseven module provides the functional requirements for an embedded application. These functions include, but are not limited to, graphics, sound, mass storage, network and multiple USB ports. A single ruggedized MXM connector provides the carrier board interface to carry all the I/O signals to and from the Qseven module. This MXM connector is a well known and proven high speed signal interface connector that is commonly used for high speed PCI Express graphics cards in notebooks.

STANDARD MODULES – SUMMARY TABLE

	CORTEX™-A9				CORTEX™-A9 CORTEX™-M4
	i.CORE RQS M6S	i.CORE RQS M6DL	i.CORE RQS M6D	i.CORE RQS M6Q	SMARTCORE M6SX
FORMAT	Qseven				SMARC
CPU	i.MX 6S	i.MX 6DL	i.MX 6D	i.MX 6Q	i.MX6 SoloX
CORE NUM	1	2	2	4	2
FREQ (MHZ)	800	800	800	800	800/200
DRM WDT (BIT)	32	64	64	64	32
RAM TYP	DDR3-800	DDR3-800	DDR3-1066	DDR3-1066	DDR3-800
RAM SIZE (MB)	256	512	512	1024	512
FLASH SZ (GB)	4	4	4	4	4
FLASH TYP	e-MMC	e-MMC	e-MMC	e-MMC	e-MMC
MAX LCD RES	FULLHD	FULLHD	FULLHD	FULLHD	WXGA
SIMULT LCDS	2	2	4	4	1
PARALLEL LCD	-	-	-	-	1x24
LVDS	2	2	2	2	1
HDMI	1xTX (1.4)	1xTX (1.4)	1xTX (1.4)	1xTX (1.4)	-
CSI INPUT (BIT)	8	8	8	8	8
HW ACC	Yes	Yes	Yes	Yes	2D
VIDEO CODEC	Yes	Yes	Yes	Yes	-
SATA	-	-	1	1	-
SDIO	1x8bit	1x8bit	1x8bit	1x8bit	1x4bit,1x8bit
CAN	2	2	2	2	2
SERIAL	Up to 4	Up to 4	Up to 4	Up to 4	Up to 4
I2C	Up to 3	Up to 3	Up to 3	Up to 3	Up to 2
I2S	Up to 1	Up to 1	Up to 1	Up to 1	Up to 1
SPI	Up to 2	Up to 2	Up to 3	Up to 3	Up to 2
USB	5	5	5	5	2
PCIE	1x	1x	1x	1x	1x
ETHERNET	1x10/100/1000	1x10/100/1000	1x10/100/1000	1x10/100/1000	2x10/100/1000
TEMPERATURE	Comm./Ind.	Comm.	Ind.	Ind.	Ind.
OS	LINUX ANDROID	LINUX ANDROID	LINUX ANDROID	LINUX ANDROID	LINUX MQX
STATUS	Production	Production	Production	Production	2Q 2015

The SMARC ("Smart Mobility ARChitecture") is a versatile small form factor computer Module definition targeting applications that require low power, low costs, and high performance. The Modules will typically use ARM SOCs similar or the same as those used in many familiar devices such as tablet computers and smart phones. Alternative low power SOCs and CPUs, such as tablet oriented X86 devices and other RISC CPUs may be used as well. The Module power envelope is typically under 6W. Two Module sizes are defined: 82mm x 50mm and 82mm x 80mm. The Module PCBs have 314 edge fingers that mate with a low profile 314 pin 0.5mm pitch right angle connector (the connector is sometimes identified as a 321 pin connector, but 7 pins are lost to the key). The Modules are used as building blocks for portable and stationary embedded systems. The core CPU and support circuits, including DRAM, boot flash, power sequencing, CPU power supplies, GBE and a single channel LVDS display transmitter are concentrated on the Module. The Modules are used with application specific Carrier Boards that implement other features such as audio CODECs, touch controllers, wireless devices, etc.

i.CORE RQS M6S/DL/D/Q

FEATURES

Standard micro Qseven pinout and form factor	NEON MPE co-processor and VFPC	USB OTG, 4xUSB HOST
Freescale i.MX 6 application processor	4GB e MMC Flash	Up to 3xUART, 3xI2C, 3xSPI, 1xIIS
Cortex™ -A9 @ 800 MHz core (1GHZ consumer version)	Simultaneous display driving support	PCIe and SATA
Single/DualLight/Dual/Quad core available	1x Gigabit Ethernet	WiFi on board option available
Up to 1 GB 32/64-bit DDR3-1066	5V single power supply	Industrial and commercial temperature range
	2xSD card i/f	

HIGHLIGHTS

Suitable for multimedia application   Low cost x86 replacement

SMARCORE M6SX

FEATURES

Standard micro Smarc pinout and form factor	512 MB 32-bit DDR3-800	2x Gigabit Ethernet
Freescale i.MX6 SoloX application processor	4 GB e-MMC Flash	Up to 4xUART, 2xI2C, 4xSPI, 1xIIS, 2xSPI
Cortex™-A9 @ 800 MHz core	24 bit parallel LCD and LVDS	USB HOST, USB OTG, PCIe
NEON co-processor. DP FPU, L1 and L2 I/D cache	Hardware 3D/2D engine OpenGL-ES 2.0 and Open VG 1.1	Industrial temperature range
Cortex™-M4 @ 200 MHz core	ADCs, PWMs	
SP Floating point unit, I/D chache		

HIGHLIGHTS

Suitable for multimedia combined with realtime process   Dual Gigabit Ethernet applications   Low cost x86 replacement

OPEN FRAME
SOLUTIONS

Engicam offers a wide range of open frame LCD solutions to cover the needs of a variety of markets from industrial to consumer

WIDE PRODUCTS PORTFOLIO

It's possible to choose between different LCDs qualification (industrial or consumer), between different touch technologies (resistive or capacitive) and between different LCD sizes as well.

SCALABILITY

The Engicam Open Frame solutions are based on a ⚡DIMM compatible connector. Thanks to the Engicam SOM portfolio a very flexible approach is allowed.
Low cost solutions can be target as well as very high performance applications.

CHOOSE TOUCH TECHNOLOGY

CHOOSE LCD SIZE

CHOOSE ⚡DIMM SOM

CREATE YOUR OWN DISPLAY SOLUTION

DEVELOP YOUR OWN APPLICATION
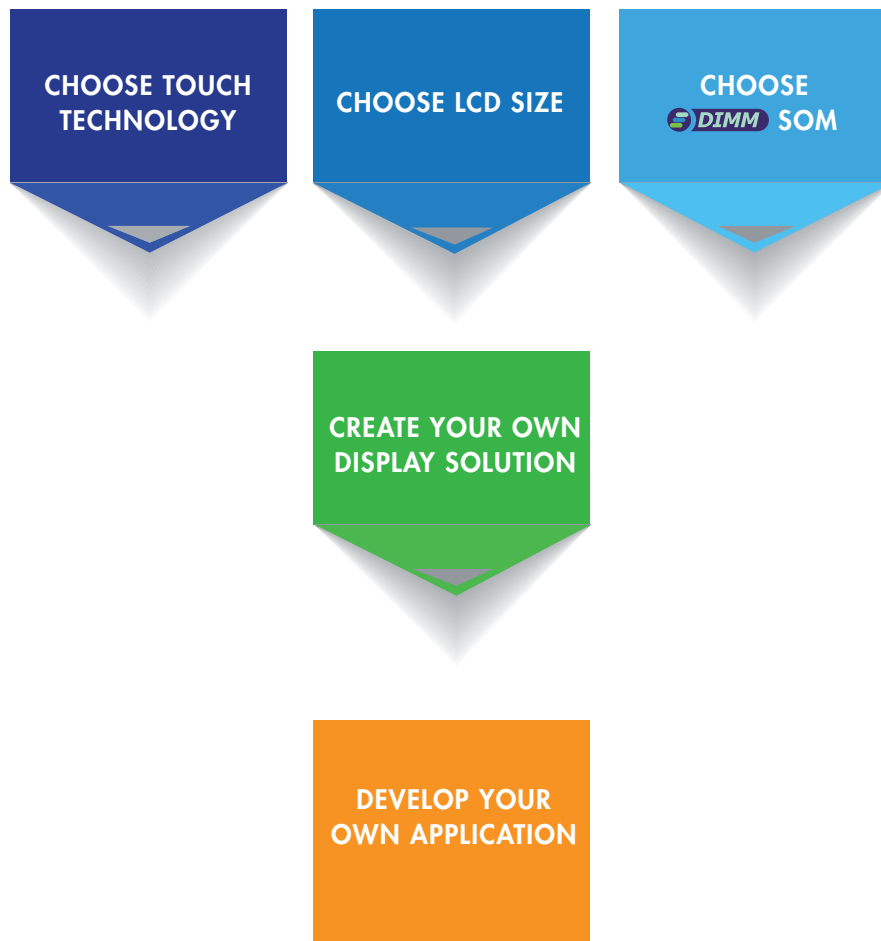
OPENFRAME – SUMMARY TABLE

	LOW COST FAMILY			R.TOUCH FAMILY				C.TOUCH FAMILY		
	4.3"	7"	10.1"	4.3"	5.7"	7"	10.4"	4.3" Wi	7"	10.1"
TOUCH TYPE	Resistive	Resistive	Resistive	Resistive	Resistive	Resistive	Resistive	Capacitive	Capacitive	Capacitive
RESOLUTION	480x272	800x480	1024x600	480x272	640x480	800x480	800x600	480x272	800x480	1280x800
LUMINANCE (CD/M^2)	220	500	250	400	375	400	400	450	300	300
TFT QUALIFICATION	Consumer	Consumer	Consumer	Industrial	Industrial	Industrial	Industrial	Industrial	Industrial	Industrial
MULTI-TOUCH	-	-	-	-	-	-	-	yes	yes	yes
ETHERNET	Full version only	Full version only	yes	yes	yes	yes	yes	yes	yes	yes
RS232	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
RS485	Full version only	Full version only	yes	yes	yes	yes	yes	yes	yes	yes
CAN	-	-	yes	yes	yes	yes	yes	-	yes	yes
USB HOST	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
USD CARD	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
AUDIO	-	-	-	-	-	-	-	-	yes	yes
RTC	option	option	option	option	option	option	option	option	yes	yes
WIFI ON BOARD	-	-	option	-	-	-	-	option	-	-
POWER SUPPLY	5Vdc	5Vdc	12-30 Vdc	12-30 Vdc	12-30 Vdc	12-30 Vdc	12-30 Vdc	12-30 Vdc	12-30 Vdc	12-30 Vdc
SUPPORTED OS	Linux	Linux	Linux	Linux	Linux	Linux	Linux	Linux	Linux Android	Linux Android

CAPACITIVE TOUCH FAMILY

C.TOUCH.Wi 4.3"

FEATURES

TFT 4.3" industrial, 480x272 resolution
LED backlight, brightness 450 Cd/m2
2 point multitouch CTP
Wide 10 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x uSD, 1 x USB
1 x RS232, 1 x RS485
1 x RTC (optional)
1 x WiFi (optional)
1 x expansion connectors (I2C, USB OTG, I2S, 2 x CAN, up to 16 GPIO)
⊜DIMM CPU modules compliant

C.TOUCH 7"

FEATURES

TFT 7" industrial, 800x480 resolution
LED backlight, brightness 300 Cd/m2
5 point multitouch CTP
15 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x audio output
1 x uSD, 1 x USB
1 x RS232, 1 x RS485
1 x RTC
1 x expansion connectors (I2C, SDIO or SPI, up to 10 GPIO)
⊜DIMM CPU modules compliant
Boxed version available
Front panel option available

C.TOUCH 10.1"

FEATURES

TFT 7" industrial, 1280x800 resolution
LED backlight, brightness 350 Cd/m2
2 point multitouch CTP
15 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x audio output
1 x uSD, 1 x USB
1 x RS232, 1 x RS485
1 x RTC
1 x expansion connectors (I2C, SDIO or SPI, up to 10 GPIO)
⊜DIMM CPU modules compliant
Boxed version available

LOW COST RESISTIVE TOUCH FAMILY
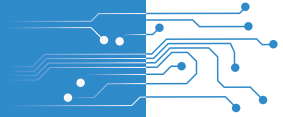
LOCO 4.3"

FEATURES

TFT 4.3" diagonal, 480x272 resolution
LED backlight, brightness 220 Cd/m2, consumer
Resistive touch
Power supply 5V
1 x uSD, 1 X RTC
1 x RS232 serial
1 x RS485 and 1 x Ethernet 10/100T (full version only)
GEA M6428 SOM based

LOCO 7"

FEATURES

TFT 7" consumer, 800x480 resolution
LED backlight, brightness 320 Cd/m2, consumer
Resistive touch
Power supply 5V
1 x uSD, 1 X RTC
1 x RS232 and 1 x RS485 serials
1 x Ethernet 10/100T
GEA M6428 SOM based

LOCO 10.1"
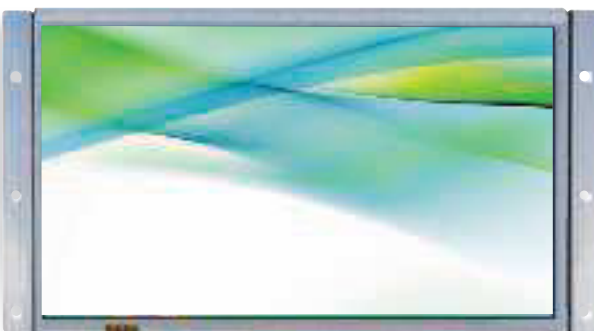
FEATURES

TFT 10.1" consumer, 1024x600 resolution
LED backlight, brightness 240 Cd/m2, consumer
Resistive touch
Power supply 12 or 24V
1 x uSD, 1 x USB, RTC (option)
1 x RS232, 1 x RS485, 1 x CAN IF
1 x Ethernet 10/100T
28 pin expansion connector
WiFi on board (option)
i.Core M6S SOM based

RESISTIVE TOUCH FAMILY
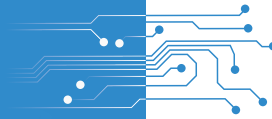
R.TOUCH 4.3"

FEATURES

TFT 4.3" industrial, 480x272 resolution
LED backlight, brightness 400 Cd/m2
Resistive touch
Wide 10 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x uSD, 1 x USB
1 x RS232, 1 x RS485, 1 x CAN IF
1 x expansion connectors (I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO)
Real time clock option available
DIMM CPU modules compliant

R.TOUCH 5.7"

FEATURES

TFT 5.7" industrial, 640x480 resolution
LED backlight, brightness 400 Cd/m2
Resistive touch
Wide 10 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x uSD, 1 x USB
1 x RS232, 1 x RS485, 1 x CAN IF
1 x expansion connectors (I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO)
Real time clock option available
DIMM CPU modules compliant

R.TOUCH 7"

FEATURES

TFT 7" industrial, 800x480 resolution
LED backlight, brightness 400 Cd/m2
Resistive touch
Wide 10 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x uSD, 1 x USB
1 x RS232, 1 x RS485, 1 x CAN IF
1 x expansion connectors (I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO)
Real time clock option available
DIMM CPU modules compliant

R.TOUCH 10.4"

FEATURES

TFT 10.4" industrial
800x600 resolution
LED backlight, brightness 400 Cd/m2
Resistive touch
Wide 10 to 30 Vdc single power supply
1 x Ethernet 10/100T
1 x uSD, 1 x USB
1 x RS232, 1 x RS485, 1 x CAN IF
1 x expansion connectors (I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO)
Real time clock option available
⊜DIMM CPU modules compliant

LOCO 4.3"
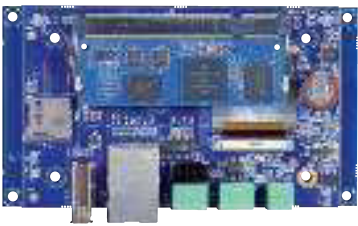
LOCO 7"

LOCO 10.1"

R.TOUCH 4.3"

R.TOUCH 5.7"

R.TOUCH 7"

R.TOUCH 10.4"

C.TOUCH.Wi 4.3"

C.TOUCH 7"

C.TOUCH 10.1"

CARRIER

Carrier boards used in the Engicam standard products are also available for purchasing

READY FOR PRODUCTION

All boards can be used by the customer as "ready products". No custom hardware design is required where the available peripherals of a standard carrier boards fit the application requirements.

SCALABILITY

Engicam carrier board are based on **SODIMM** CPU modules. This feature makes Engicam's carrier board extremely flexible and allow the customer to make different products, with different performance and cost-optimized, using the same carrier board.

CARRIER BOARDS TABLE

	R.TOUCH CARRIER	C.TOUCH CARRIER	C.TOUCH.WI CARRIER	LOCO10.1" CARRIER	HDMI CARRIER
ETHERNET	1 x 10/100T	1 x 10/100T	1 x 10/100T	1 x 10/100T	1 x 10/100T
MICROSD	1	1	1	1	1
USB TYPE A	1	1	1	1	1
PARALLEL LCD	1 x 18-bit	-	1 x 18-bit	-	-
LVDS	1 x 18 bit	1 x 18 or 24 bit	1 x 24 bit	2 x 24 bit (1 optional)	-
HDMI	-	-	-	-	1
CAN	1	1	2 x TTL on expansion	1	-
RS232	2	2	2	2	-
RS485	1	1	Optional	1	-
RTC	Optional board on expansion connector	1	Optional	Optional	1
AUDIO OUT	-	1	-	-	1
EXPANSION CONNECTOR	I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO	I2C, SDIO or SPI, up to 10 GPIO	I2C, USB OTG, I2S, 2 x CAN, up to 16 GPIO	I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO	-
WIFI OPTION	-	-	Optional	Optional	Optional
USB OTG FOR O/S CONSOLE	-	-	-	-	1
USB OTG	By expansion	By expansion	By expansion	By expansion	1
RESISTIVE TOUCH I/F	Yes	-	-	Yes	-
BACKLIGHT CONNECTOR	Yes	PWM, +5V, 12V on LCD connector	PWM, +5V on LCD connector	PWM, +5V on LCD connector	-
CAPACITIVE TOUCH I/F	By expansion	Yes	Yes	By expansion	-

CARRIER

R.TOUCH CARRIER

S)DIMM
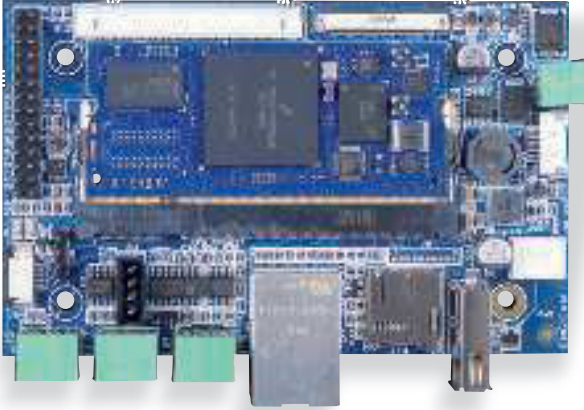
S)DIMM CPU modules compliant	1 x 18 bit parallel LCD connector	Resistive touch connector
Industrial temperature range	1 x 18 bit single channel LVDS connector	Backlight connectors
Wide 10 to 30 Vdc single power supply	1 x CAN bus	1 x expansion connectors (I2C, USB OTG,
1 x Ethernet 10/100	1 x RS485	I2S, SDIO or SPI, up to 18 GPIO)
1 x microSD	1 x RS232	
1 x USB Type A	1 x RS232 for O.S. Console	

CARRIER

C.TOUCH CARRIER

DIMM

FEATURES

DIMM CPU modules compliant	1 x USB Type A	1 x expansion connector (I2C, SDIO or SPI, up to 10 GPIO)
Industrial temperature range	1 x CAN bus	
Wide 15 to 30 Vdc single power supply	1 x RS485	General purpose LCD connector:
1 x Ethernet 10/100	1 x RS232	• 1 x 18 or 24 bit single channel LVDS
1 x microSD	1 x RS232 for O.S. Console	• 1 x USB, 1 x I2C for CTP i/f,
1 x audio output		• 1 x PWM for backligth control
		• Power supply for LCD (+3V3, +5V, 12V)

CARRIER

LOCO 10.1" CARRIER

DIMM

FEATURES

DIMM CPU modules compliant	1 x USB Type A	1 standard + 1 optional LCD connector driving:
Industrial temperature range	1 x CAN bus	• 2 x 18 or 24 bits single channel LVDS
Wide 10 to 30 Vdc single power supply	1 x RS485	(indipendent, mirror or dual channel mode)
1 x Ethernet 10/100	1 x RS232	• 1 x PWM for backligth control
1 x microSD	1 x RS232 for O.S. Console	• Power supply for LCD (+3V3, +5V)
1 x RTC (optional)	1 x expansion connector (I2C, USB OTG, I2S, SDIO or SPI, up to 18 GPIO)	
1 x WiFi (optional)		

CARRIER

C.TOUCH.Wi CARRIER

DIMM
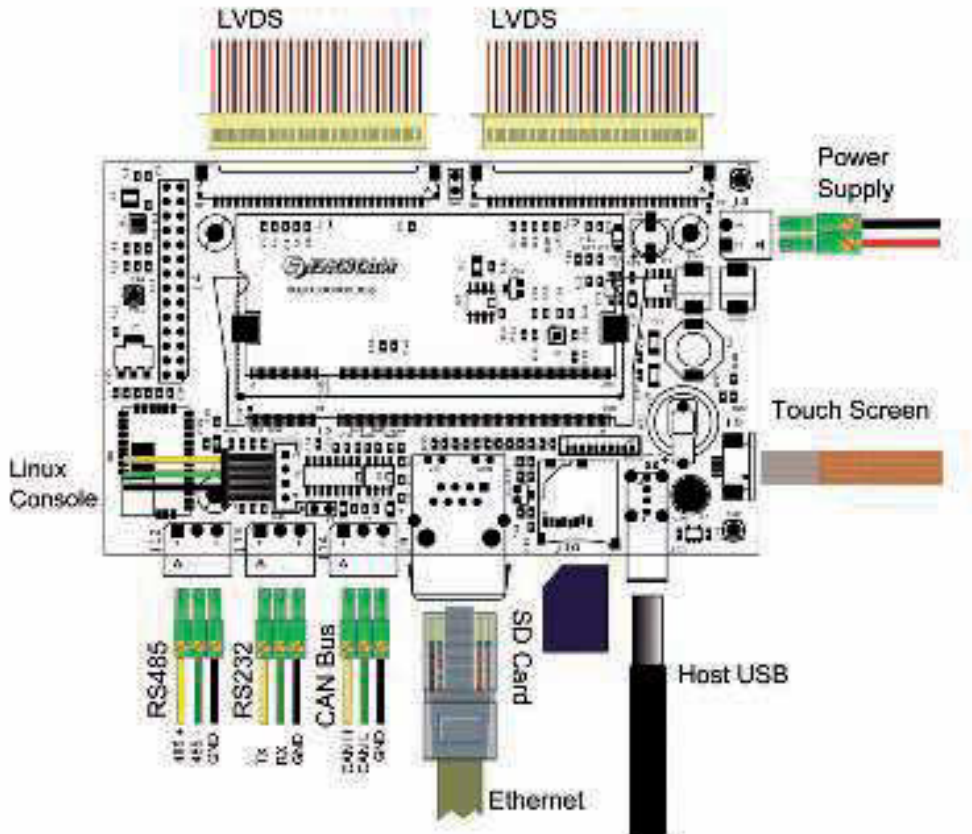
FEATURES

DIMM CPU modules compliant	1 x RTC (optional)	1 x 18 bit parallel LCD connector (1 x PWM and 1 x I2C included)
Industrial temperature range	1 x WiFi (optional)	
Wide 10 to 30 Vdc single power supply	1 x RS485	1 x 18 or 24 bit single channel LVDS optional connector (1 x PWM, 1 x USB, 1 x I2C included)
1 x Ethernet 10/100 with PHY	1 x RS232	
1 x microSD	1 x RS232 Amp ModuII	1 x expansion connector (I2C, USB OTG, I2S, 2 x CAN, up to 16 GPIO)
1 x USB Type A	connector for O.S. Console	

23
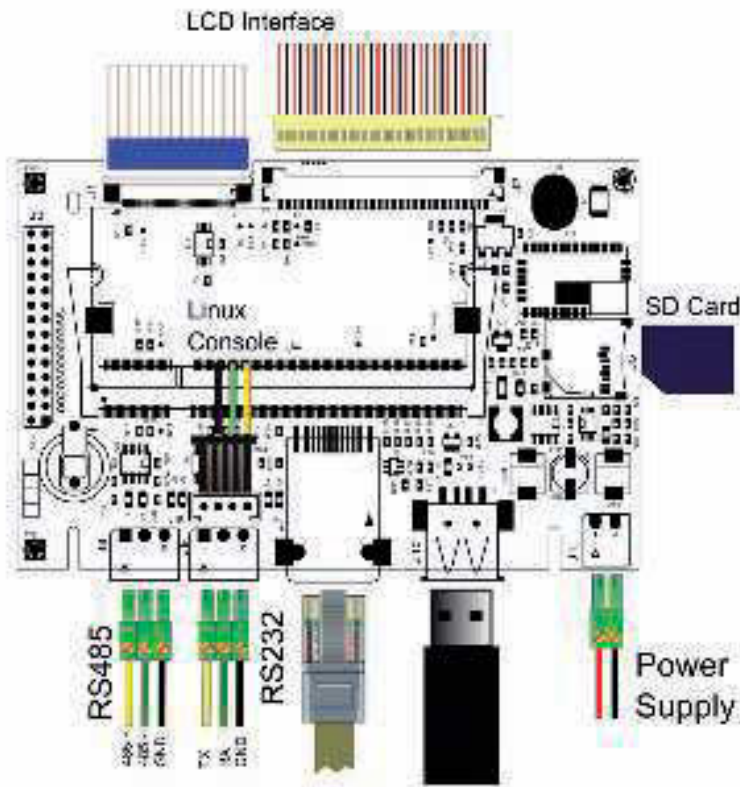
CARRIER

HDMI PLAYER CARRIER

FEATURES

i.Core M6 S/DL/D/Q modules compliant	1 x WiFi (optional)
Industrial temperature range	1 x USB Type A
Wide 10 to 30 Vdc single power supply	1 x USB mini AB OTG connector
1 x Ethernet 10/100	1 x HDMI connector
1 x audio output	1 x USB mini AB OTG
1 x microSD	connector for O.S. Console
1 x RTC	

BOXED VERSION

Boxed version available on request

Basic software for digital
signage available on Linux

DEVELOPMENT

Engicam provides complete hardware and software kits for all SOM, in order to make easy the customer's product development.

COMPLETE FOR AN EASY STARTUP

Engicam starter kit is the easiest way to start a new product development. Whole SOM, hardware, software BSP, cables and AC adapter are included for a very easy evaluation.

SOFTWARE AND HARDWARE DEVELOPED AND SUPPORTED BY ENGICAM

All the hardware and software kits support is done directly by Engicam development team.

MAIN OS ARE SUPPORTED

Depending on used SOM, Engicam starter kit is available with the Linux and Android BSP. MQX is also supported in the SOM powered by a M4 core based CPU.

SOM STANDARD

All Engicam modules are supported by the starter kit depending on the form factor:
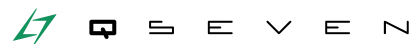
EVALUATION BOARD

S DIMM SOM STARTER KIT

EVAL Board CABLE MAP
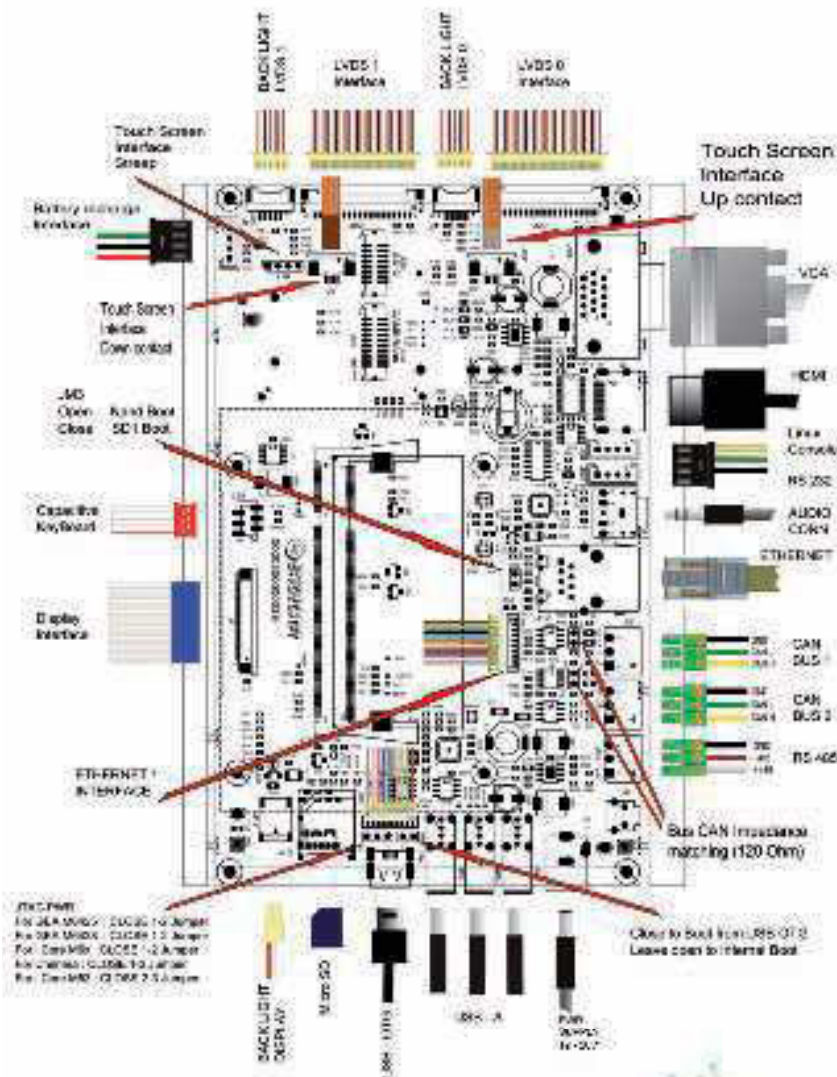
SUPPORTED SOM

i.Core M6S/DL/D/Q
i.Core M6SX
Chimera
i.Core M53
GEA M6428, GEA M6425

FEATURES

Selected SOM included
LCD 7" with resistive touch-screen
1 x Software BSP/SDK included: Linux or Android*
AC adapter and serial cable included

OPTIONS AVAILABLE

Analog camera interface board
WiFi interface board

S DIMM

*Please check the BSP availability for each SOM

EVALUATION BOARD

QSEVEN STARTER KIT
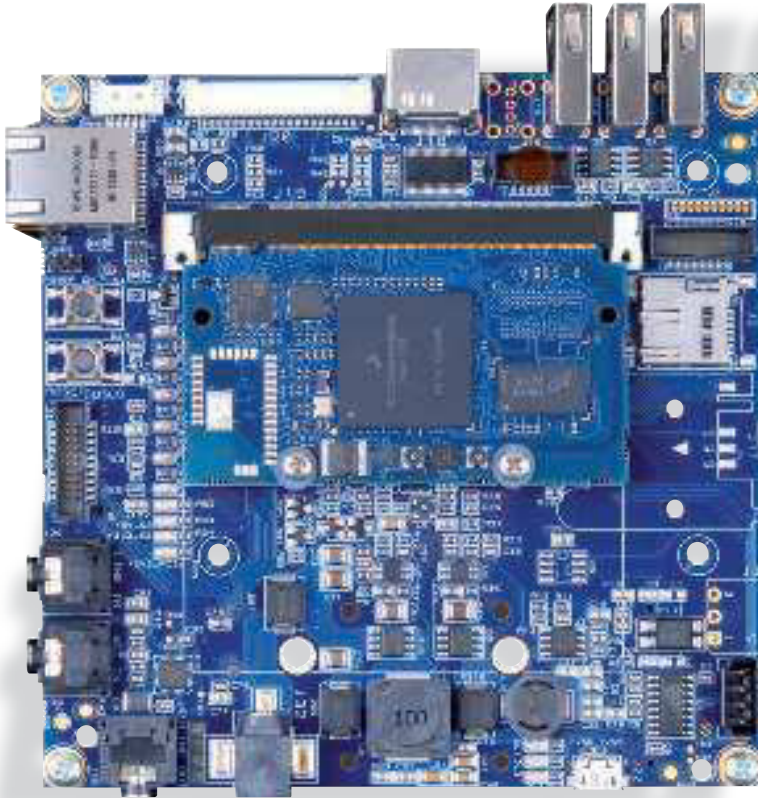
FEATURES

Selected SOM included
1 x software BSP/SDK included: Linux or Android*
AC power supply adapter and serial cable included

Back Light A · LVDS A INTERFACE · HDMI · 3 X USB HOST A · Gb Ethernet · SD/MMC/SDIO EXPANSION · Micro SD · SIM Card · CAN BUS · RS232 Linux Console · GP SLOT · LINE OUT · MIC IN · HP/LINE OUT · PWR SUPPLY · USB OTG

QSEVEN
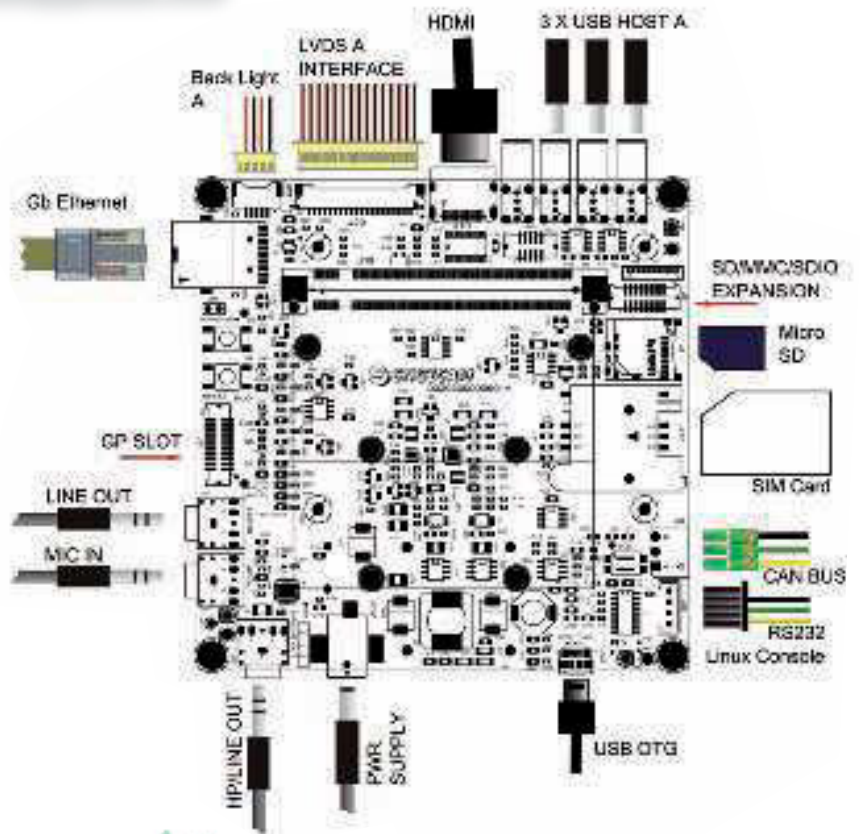
*Please check the BSP availability for each SOM

EVALUATION BOARD

SMARC STARTER KIT

SMARC

*Please check the BSP availability for each SOM
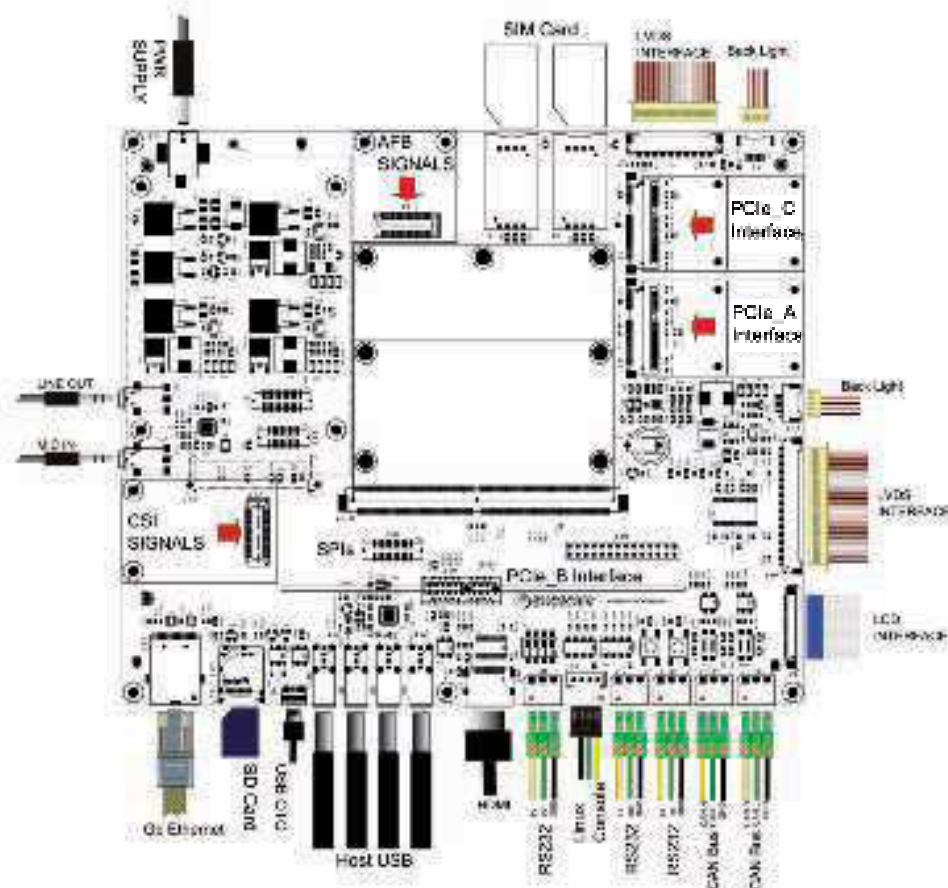
SOFTWARE

LINUX SDK

SINGLE FILE INSTALLATION

The Engicam SDK (software development kit) consists of a single file containing the image of a virtual machine of Ubuntu ready to be run by a Virtual Machine player.

FASTER EVALUATION AND EXHAUSTIVE DOCUMENTATION

For a faster evaluation of the standard **Engicam** platform the binary images are included together all hardware and software documentation for the purchased product.

READY TO USE DEVELOPMENT KIT

Inside VM are available all the packages needed for the sofware development:

- the bootloader, kernel patched for the **Engicam** platform,
- the toolchain, ready to use for the configuration and build of each package,
- the complete hardware and software documentation,
- one image builder like ltib or Yocto
- the QT framework for application software development
- when supported by the CPU a multimedia framework.

COMPLETE OPEN SOURCE SOLUTION

All the source code are available inside the VM.
Most of the common packages are already included in the BSP and ready to be compiled and used without effort.

FULL ENVIRONMENT, OS CONFIGURATION AND APPLICATION DEVELOPING

The toolchain can be used to configure and build the booloader, the kernel and every package in the filesystem. QT framework can be used to develop applications and graphic interface, while gstreamer semplify the multimedia application development.

BSP SUMMARY TABLE

	YOCTO BSP	LTIB BSP	QT	GSTREAMER	LINUX	MQX
GEA M6428		YES	4.8		2.6.35	
GEA M6425			4.7		2.6.31	
CHIMERA		YES	4.8		3.0.35	4.0
I.CORE M51		YES	4.7	YES	2.6.31	
I.CORE M53		YES	4.8	YES	2.6.35	
I.CORE M6	YES	YES	5.2	YES	3.10.17	
I.CORE M6SX	YES		5.2	YES	3.10.17	4.1

POPULAR PACKAGES
ALREADY INSTALLED AND SUPPORTED IN LINUX SDK

FILE SYSTEM BUILDER

HMI INTERFACE DEVELOPMENT

WEB SUPPORT

MULTIMEDIA AND IMAGE PROCESSING

DATABASE SUPPORT

SERVICES

Engicam provides quick and free of charge support for every customer during the whole development process.
Engicam can help customers to customize their product.
High level hardware, software, mechanical design can be provided by Engicam for a quick product development.

FREE OF CHARGE SERVICES

Free of charge support directly by our development engineers is given to the registered customers for the main hardware and software issues.

HARDWARE SUPPORT

- Clear and rich documentation: hardware manual for modules and starter kit, application note for hardware design.

- Starter kit carrier board schematics available on request.

- Direct hardware support for questions about modules and carrier board design.

- Design review for customers carrier boards schematics.

- EMC precompliance for starter kit and open frame available on request.
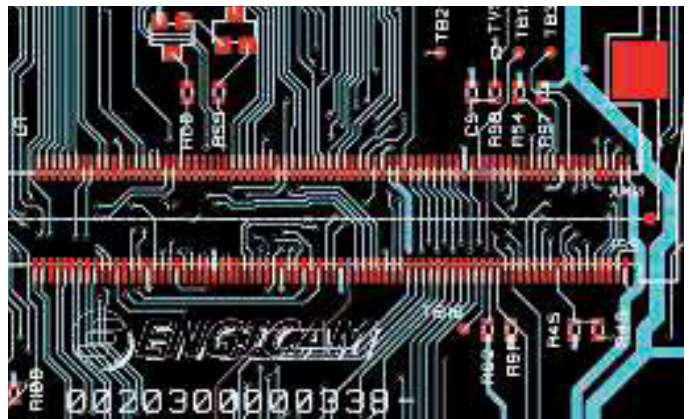
SOFTWARE SUPPORT

- Virtual machine with BSP ready to use for all CPU modules for Linux.

- Android BSP for selected modules.

- Startup training on Engicam site planned every month.

- Support for driver developments.

- Support for standard package porting.

ON REQUEST SERVICES

Engicam can supply to the customer many services, directly by development engineers, in order to make easy the customer product design.

HARDWARE DESIGN

- Customer carrier board design: schematics and pcb.

- Customer carrier board prototype.

  Customer carrier board hardware debug.

- Customer product EMC precompliance test.

- Mechanical design: board and LCD integration, enclosure.

SOFTWARE DESIGN

BSP porting on customer carrier board. Custom driver porting and development.

Multimedia application development: based on gstreamer or mplayer.

Customer graphic interface software development.
QT based application development.

Web application based on PHP, lighttpd or apache. Network application development.

MANUFACTURING SERVICES

- Custom carrier board production

- Plastic or metal enclosures manufacturing by selected and certified suppliers

- Assembly of finished electronic devices

- Packaging and shipping directly by Engicam
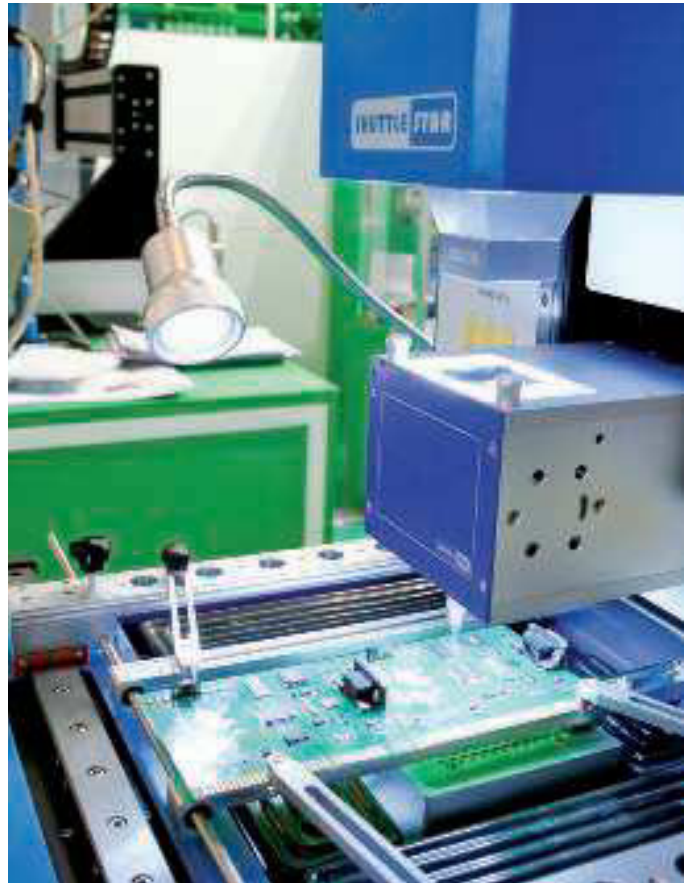
MANUFACTURING QUALITY

- All Engicam manufacturing services are compliant to EN ISO 9001:2008.

- Purchasing of all materials directly by Engicam.

- Automatic optic and XRAY inspection an whole SMT production.

- All products 100% tested directly by Engicam.

SOM

OPEN FRAME

CARRIER

DEVELOPMENT

SERVICES

Hofstädtler I.E. GmbH

Telefon: +43 2622 / 21550-0
Telefax: +43 2622 / 21550-5
A-2700 Wiener Neustadt Zemendorfer Gasse 7
office@hofstaedtler.com www.hofstaedtler.com

ENGICAM®