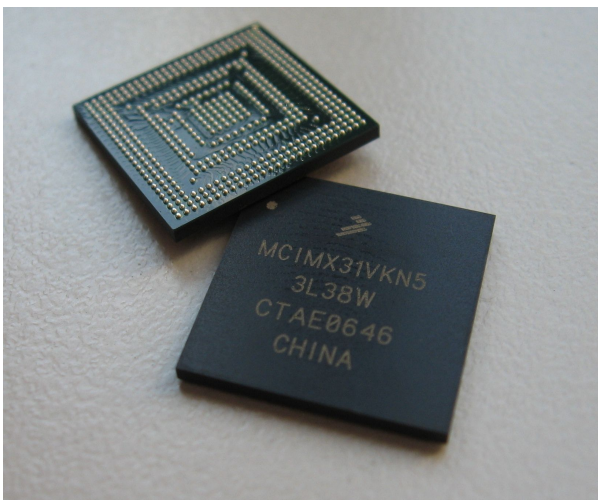


“QONG”®

Freescale ARM11 i.MX31 CPU Module



- ✓ CPU module based on ARM1136 “Dragonball” i.MX31C
- ✓ Windows CE 6.0 ready; ready for Linux 2.6 + native component drivers
- ✓ Evaluation Board available with exhaustive Development Kit environment
- ✓ Extremely compact form factor, inexpensive connector
- ✓ Low power consumption
- ✓ Great versatility



QONG is a ready-to-use CPU module based on Freescale ARM1136 “Dragonball” microprocessor characterized by its reliability, compactness as well as low power consumption.

QONG is suitable for palm-based solutions both in Linux and Windows CE environments. Due to 3.3V supply voltage, the intrinsic low consumption and the set of IC devoted to mobility, it is the right solution both for battery supported applications and steady operator panels.

QONG Evaluation Board is a flexible and complete system where users can test their own applications or add their own expansion boards.

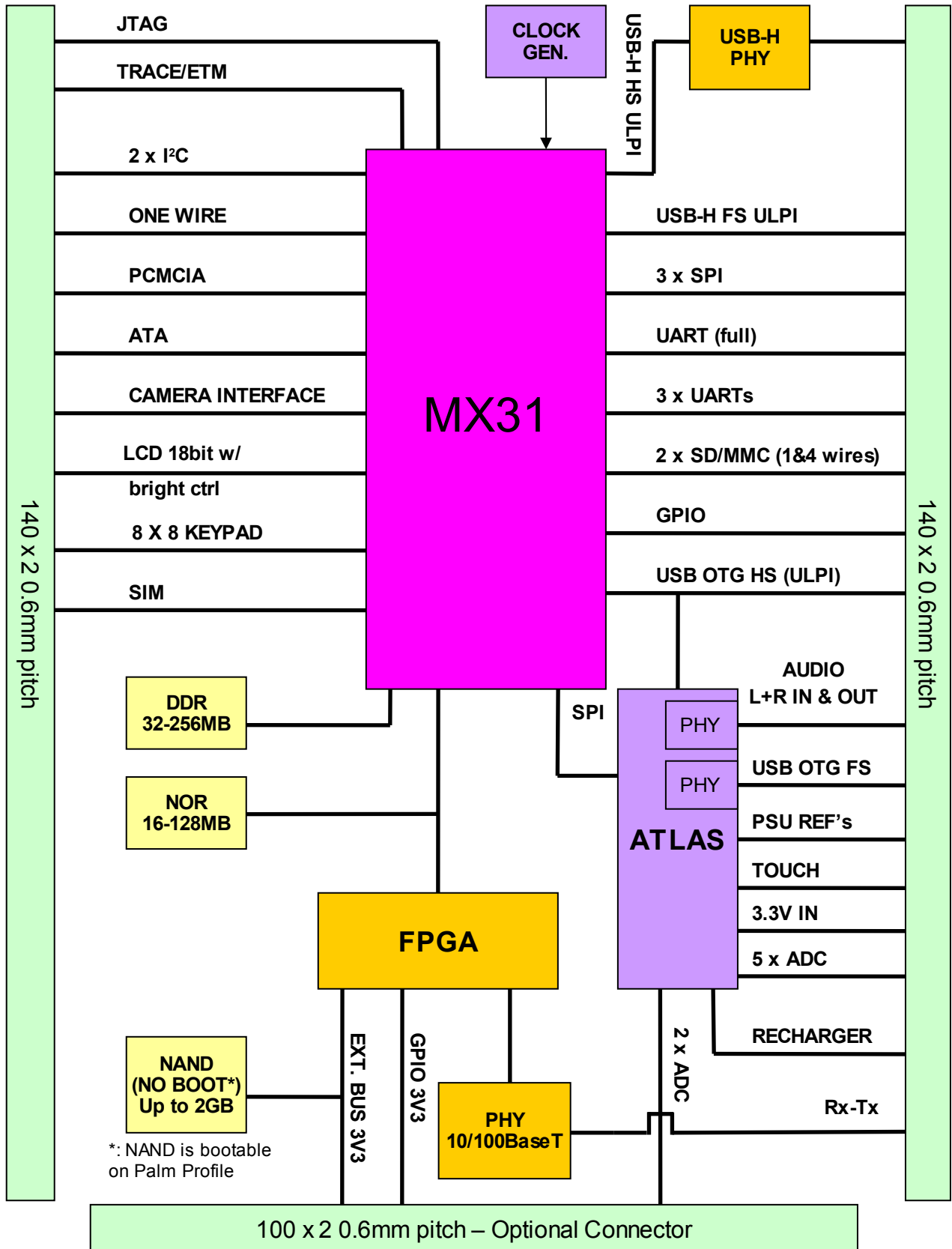
Main features:

- 3V3 direct PSU (also battery powered)
- Connectors for QONG Module
- 10/100 LAN (including PHY)
- USB: 2 Host + 1 OTG
- UART : 4 serial ports
- Serial buses: I2C, SPI
- LCD controller (typical 800x600, up to 1024x768 @16 bit/pixel)
- ATA, MMC/SD, PCMCIA, PWM
- Expansion Bus + GPIO
- FPGA on board
- JTAG interfaces and ETM Trace port
- Small form factor: 73mm x 51mm





<u>CPU</u>	Freescale iMX31C @400 MHz, 32 bit ARM1136JF-S core with MMU Vectored Floating Point Unit
<u>Multimedia</u>	Sustained Video @ 100 Mpixel/s Hardware MPEG4 SP VGA 30 fps Encoding (Software Decoding) 3D Multimedia Accelerator OpenGL ES compatible (0,9 MTri/s) Analog Audio Stereo Input/Output
<u>CPU supervision</u>	MC13783 power supply separate supervision; on-board power sequencer Dynamic Voltage Frequency Scaling RTC & Watchdog
<u>Memory</u>	
SRAM	16KBytes
ROM	32KBytes
Cache	16K instructions cache, 16K Level 1 + 128K Level 2
DDR	Low-power 32 MBytes to 256 MBytes
Flash NOR	16, 32, 64, 128 Mbytes (Not available on Palm profile)
NAND (NO boot)	0 to 2 GBytes (8 bit interface, bootable on Palm profile)
<u>Interfaces (to the connectors)</u>	
LAN	10/100 including PHY 10/100
UART	4
SPI	3 channels
USB	1 Host 2.0 (480 Mbps, 16 endpoints), PHY included 1 Host 2.0 (12 Mbps, 4 endpoints) 1 OTG
I ² C	2 multimaster @ 400 kHz
External Bus	8/16-bit byte - 29 Address Bits -4 direct Chip Select
I/O Controller	yes
Debug	JTAG IEEE 1149.1 Test Access Port
Memory Card support	Multimedia Card/Secure Digital
PC Card support	PCMCIA and Compact Flash
Hard Disk support	ATA
LCD Controller	
Resolution	Native: up to 800 x 600 @ 16 bit per pixel Resolution extension up to 1024 x 768 available through advanced module capabilities
Type	STN, CSTN, TFT, HR-TFT
Touch Screen	Resistive
Mechanical	
Physical	73 mm x 51 mm
Connectors	2 x 140 pins 0.6 mm pitch + 1 x 100 pin 0.6 mm pitch
Compatibility	Hirose FX8C-140S-SV, Hirose FX8C-100S-SV
PCB	10 layers
Material	FR4
Technology	Double-sided SMT
Temperature	Industrial Operative Temperature Range (-40÷ 85 °C)
<u>PSU</u>	
3.3V	Through connector; full regulation on-board
Consumption(PALM)	250 mA average (preliminary estimated power without LCD)
Consumption(NO-PALM)	450 mA average (preliminary estimated power)
Software	
RTOS	VxWorks, eCos, Xenomai
Multitasking OS	Linux 2.6.XX
Multitasking OS	Windows CE 6.0
<u>Agency approvals</u>	
EN 55022 (t.b.o.), EN 61000-4-3 (t.b.o.), EN 61000-4-4 (t.b.o.), EN 61000-4-6 (t.b.o.)	





Profiles

QONG flexibility derives directly from MX31 versatility. Each MX31 port can be reconfigured in order to provide different functionality. A further freedom degree is provided by a powerful FPGA that bridges MX31 bus with the connectors. This FPGA provides stable 3.3V 16 bit bus and several GPIOs. On request, this may provide more UART's, more Ethernet ports, logic combinational ports and many other features.

To make it easier, five standard “profiles” have been defined, implementing different interfaces. Choosing among them, customers can rapidly and easily get to a product.

FEATURES	PROFILES				
	INDUSTRIAL1	A INDUSTRIAL2	KIOSK	B CONNECTIVITY	C PALM
BATTERY CHARGER					•
10/100 LAN	•	•	•	•	•
UART1 (full)	•	•	•	•	•
UART2	•	•	•	•	•
UART3 (alt.SPI3)	•	•	•	•	•
UART4					
USB1 Host 12Mbps (alt. SPI1)		•		•	•
USB2 Host 480 Mbps (w/PHY)	•	•	•	•	•
USB3 OTG	12Mbps (w/PHY)	12Mbps (w/PHY)	12Mbps (w/PHY)	480Mbps	480Mbps
SD/MMC2 (1 & 4 wires) – MSHC2	•	•	•	•	•
SD/MMC1 (1 & 4 wires) – MSHC1		•	•	•	•
TIMER 1	•	•	•	•	•
TIMER 2	•	•	•	•	•
TIMER 3	•	•	•	•	•
PWM	•	•	•	•	•
SPI 1 (alt. USB1)		•		•	•
SPI2	•	•	•	•	•
SPI 3 (alt. UART3)	•	•	•	•	•
I ² C 1		•		•	•
I ² C 2	• ¹⁾	• ¹⁾	• ¹⁾	•	•
ONE WIRE	•	•	•	•	•
KEYPAD	•	•	•	•	•
ATA	•	•	•	•	•
LCD	•	•	•	•	•
PCMCIA	•	•	•	•	•
SIM	•	•	•	•	•
SUPPLEMENTARY NAND	•	•	•	•	• ²⁾
NOR ON BOARD	•	•	•	•	•
SERVICE	•	•	•	•	•
DMA	•	•	•	•	•
FPGA (with GPIO)	•	•	•	•	•
CAMERA INTERFACE	•	•	•	•	•
ANALOG AUDIO IN L+R	•	•	•	•	•
ANALOG AUDIO OUT L+R	•	•	•	•	•
TOUCH SCREEN	•	•	•	•	•
ADC	•	•	•	•	•

- 1) I²C is available if UART1 is Rx-Tx only.
 2) NAND is bootable in PALM profile

Order Codes (preliminary)

DQB3220	400MHz, 32MB NOR, 128MB DDR, 128MB NAND, Industrial2 profile
DQD1600	400MHz, 16MB NOR, 64MB DDR, Connectivity profile
DQD1220	400MHz, 16MB NOR, 128MB DDR, 128MB NAND, Connectivity profile
DQE0220	400MHz, 128MB DDR, 128MB NAND, Palm profile