



# MPX28



## System On Module

- Processor: Freescale i.MX287, 454 MHz based on ARM926EJ-S
- RAM: 128MB DDR2-400 SDRAM
- ROM: 128MB NAND Flash
- Power supply Single 4.5V to 5.5V
- Size 33mm SO-DIMM format
- Temp.-Range 0°C..70°C

## Key Features

- Two 10/100Mbps Ethernet ports with IEEE1588 support
- Two High-Speed USB 2.0 ports
- True colour LCD controller max resolution 800 x 480 pixels
- Two CAN interfaces
- 4/5 wire Touchscreen interface
- Several peripheral interfaces:
  - UART, SD-CARD, I2C, PWM, Serial Audio, SPI
- Power management optimized for long battery life
- 3.3V I/O

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## OS Support

- Linux 2.6.35.3

## Development tools

- QT Creator
- Open source Soft PLC based on IEC 61131-3 languages

## Applications

- Industrial Human Machine Interface
- Operator panel
- PLC
- Handheld instruments
- Component for automation system
- Internet Of Things

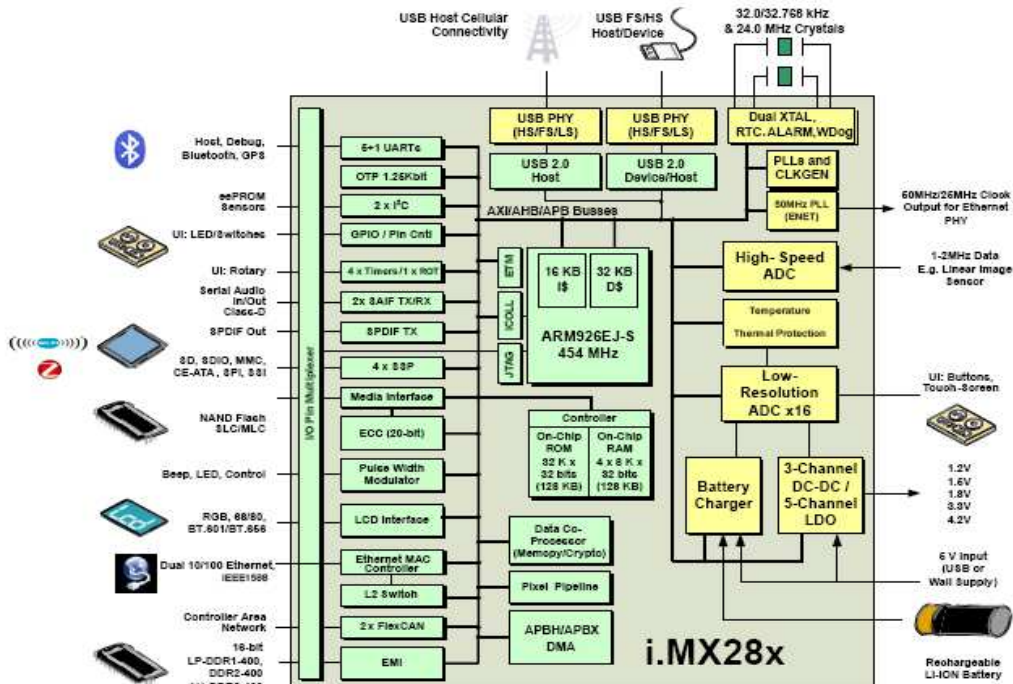


## Board highlights:

MPX28 is a complete computer on a board smaller than a credit card. The module includes a Freescale® i.MX28x a SDRAM, a Flash memory and up to two Ethernet PHY interfaces. The integrated LCD-controller enables direct connection of an LCD screen with touch screen capability.

On the MPX28 200pin SO-DIMM connector, are available a few interfaces as:

- 2 x CAN
- 1 x USB ITG
- 1 X USB HOST
- 2 x Ethernet interfaces
- 3 x UART
- 2 x I2C bus
- 2 x Serial audio
- 1 x four wires SD card



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## System on module

Additional interfaces like CAN, 4/5-wire resistive touch-screen, 3 UARTs and external memory interface are available on MPX28 specific pins.

Some interfaces are multiplexed with other functions.

- Freescale® i.MX28, 454 MHz
- 128 MByte DDR2-400 SDRAM (16bit)
- 128 MByte NAND Flash memory
- DIMM200-module (67,6mm x 26 mm x 3,6mm)
- Operating temperature range 0..70°C

## Power Supply

The MPX28 accepts an input voltage from various sources:

- 1-cell Li-Ion/Polymer (3.1V to 4.2V)
- 5.0V USB supply or AC wall adapter

## Pinout

PINOUT						
PIN	Type	Function		Alternate function	GPIO	Description
<b>POWER SUPPLY</b>						
1-4	Power	Vin				+5V ± 10%
5-8	Power	GND				Power GND
9-12	Power	Vin LAN				3,3V LAN power
13	Power	Vbackup				Supply voltage for internal RTC
14		PSWITCH				Used for power up
15-16	Power	Vin				+5V ± 10%
17,18,19,21,25,27,32,50,58,63,64,71,80, 87,94,99, 101,115,116,125,126,135, 136,143,146,157,160,162, 166,170,179,181,182, 183,184,185,188,189,192, 193,196,197,200	Power	GND				Power GND
<b>ETHERNET</b>						
20		ENET0_100MLED2				
22		ENET0_LINKLED1				
24		TXN0				
26		TXP0				
28		RXN0				

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30		RXP0			
29		ENET1_100MLED2			Only on iMX287
31		ENET1_LINKLED1			Only on iMX287
33		TXN1			Only on iMX287
35		TXP1			Only on iMX287
37		RXN1			Only on iMX287
39		RXP1			Only on iMX287
111	OUT	EN_LAN			Signal to enable power on LAN modules
<b>USB0</b>					
38		USB0DM			
40		USB0DP			
90	OUT	USB0_PWR_EN		GPIO3_8	Configure as Host or device
23	IN	USB0_ID		GPIO3_7	
88	IN	USB0_OC		GPIO3_6	
<b>USB1</b>					
34		USB1DM			
36		USB1DP			
42	OUT	USB1_PWR_EN		GPIO3_9	
82	IN	USB1_OC	SSP2_SS1 / SSP2_D4	GPIO3_6	
<b>CAN0 - CAN1</b>					
81		CAN0_RX		GPIO0_23	
85	OUT	CAN_PWR_DWN	SSP1_CMD	GPIO2_13	Enable driver interface
172		CAN0_TX		GPIO0_22	
76		CAN1_RX		GPIO0_19	
78		CAN1_TX		GPIO0_18	
<b>UART 0</b>					
65		UART0_RTS	UART4_TX	GPIO3_3	
67		UART0_RX	I2C0_SDA	GPIO3_0	
69		UART0_TX	I2C0_SDA	GPIO3_1	
66		UART0_CTS	UART4_RX	GPIO3_2	
<b>UART 1</b>					
68		UART1_TX	SSP3_CARD_DETECT	GPIO3_5	
70		UART1_RX	SSP2_CARD_DETECT	GPIO3_4	
<b>UART 3</b>					
72		UART3_RX		GPIO3_12	
73		UART3_TX		GPIO3_13	
74		UART3_RTS		GPIO3_15	
75		UART3_CTS		GPIO3_14	
<b>SSP0</b>					
61		SSP0_SCK		GPIO2_10	
51		SSP0_DETECT		GPIO2_9	

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62		SSP0_CMD			GPIO2_8
52		SSP0_D0			GPIO2_0
53		SSP0_D1			GPIO2_1
54		SSP0_D2			GPIO2_2
55		SSP0_D3			GPIO2_3
56		SSP0_D4			GPIO2_4
57		SSP0_D5			GPIO2_5
60		SSP0_D6			GPIO2_6
59		SSP0_D7			GPIO2_7
<b>SSP1</b>					
85		SSP1_CMD	SSP2_D2		GPIO2_13
83		SSP1_SCK	SSP2_D1		GPIO2_12
149		SSP1_D0	SSP2_D6		GPIO2_14
111		SSP1_D3	SSP2_D7		GPIO2_15
<b>SSP2</b>					
91		SSP2_MOSI	SSP2_CMD		GPIO2_17
93		SSP2_MISO	SSP2_D0		GPIO2_18
95		SSP2_SCK			GPIO2_16
97		SSP2_SS0	SSP2_D3		GPIO2_19
82		SSP2_SS1	SSP2_D4 / USB1_OC		GPIO2_20
89		SSP2_SS2	SSP2_D5		GPIO2_21
<b>SSP3</b>					
46		SSP3_MOSI	UART4_RX		GPIO2_25
47		SSP3_MISO	UART4_RTS		GPIO2_26
48		SSP3_SCK	UART4_TX		GPIO2_24
49		SSP3_SS0	UART4_CTS		GPIO2_27
<b>SAIF0</b>					
44		SAIF0_LRCLK			GPIO3_21
45		SAIF0_SD0			GPIO3_23
84		SAIF0_MCLK			GPIO3_20
163		SAIF0_BITCLK			GPIO3_22
<b>SAIF1</b>					
117		SAIF1_LRCLK	I2C1_SDA		GPIO3_11
43		SAIF1_SD0			GPIO3_26
78		SAIF1_MCLK	CAN1_TX		GPIO0_19
119		SAIF1_BITCLK	I2C1_SCL		GPIO3_10
<b>I2C0</b>					
41		I2C0_SCL			GPIO3_25
86		I2C0_SDA			GPIO3_24
<b>I2C1</b>					
119		I2C0_SCL			GPIO3_10
117		I2C0_SDA			GPIO3_11
<b>PWM</b>					
156		PWM2/BACKLIGHT			GPIO3_18
122		PWM3			GPIO3_28
124		PWM4			GPIO3_29



<b>LCD</b>						
139		LCD_D00			GPIO1_00	LCD data bus
92		LCD_D01			GPIO1_01	LCD data bus
131		LCD_D02			GPIO1_02	LCD data bus
129		LCD_D03			GPIO1_03	LCD data bus
107		LCD_D04			GPIO1_04	LCD data bus
96		LCD_D05			GPIO1_05	LCD data bus
109		LCD_D06			GPIO1_06	LCD data bus
98		LCD_D07			GPIO1_07	LCD data bus
105		LCD_D08			GPIO1_08	LCD data bus
100		LCD_D09			GPIO1_09	LCD data bus
113		LCD_D10			GPIO1_10	LCD data bus
102		LCD_D11			GPIO1_11	LCD data bus
120		LCD_D12			GPIO1_12	LCD data bus
104		LCD_D13			GPIO1_13	LCD data bus
118		LCD_D14			GPIO1_14	LCD data bus
106		LCD_D15			GPIO1_15	LCD data bus
121		LCD_D16			GPIO1_16	LCD data bus
108		LCD_D17			GPIO1_17	LCD data bus
127		LCD_D18			GPIO1_18	LCD data bus
110		LCD_D19			GPIO1_19	LCD data bus
128		LCD_D20			GPIO1_20	LCD data bus
112		LCD_D21			GPIO1_21	LCD data bus
132		LCD_D22			GPIO1_22	LCD data bus
134		LCD_D23			GPIO1_23	LCD data bus
138		LCD_EN			GPIO1_31	LCD enable signal
140		LCD_DOTCLK			GPIO1_30	LCD pixel clock
142		LCD_HSYNC			GPIO1_29	LCD horizontal sync
144		LCD_VSYNC			GPIO1_28	LCD vertical sync
150		LCD_RDE			GPIO1_24	
174		LCD_WR_WRN			GPIO1_25	
114		LCD_RST			GPIO3_30	LCD reset
103		LCD_RS			GPIO1_26	
154		LCD_CS			GPIO1_27	
<b>ADC</b>						
186		HSADC0				Hi speed ADC
187		ADC00				
190		ADC01				
191		ADC02				Touch-screen
194		ADC03				Touch-screen
195		ADC04				Touch-screen
198		ADC05				Touch-screen
199		ADC06				
<b>GPIO</b>						
145					GPIO0_17	
130				GPMI_READY1	GPIO0_21	



<b>DUART</b>						
77		DUART_TX			GPIO3_17	Debug uart
79		DUART_RX			GPIO3_16	Debug uart
<b>JTAG</b>						
161		JTAG_TDO				
165		JTAG_TRST				
167		JTAG_TMS				
168		JTAG_RTCK				
176		JTAG_TCK				
178		JTAG_TDI				
<b>BOOT MODE</b>						
141		BM0				
137		BM2				
133		BM3				
<b>RESET</b>						
180	IN	RESETn				
<b>SPDIF</b>						
123		SPDIF				
<b>UNCONNECTED PINS</b>						
147,148,151,152,153,155, 158,159,164,168, 171,173,175,177						