

# Getting Started with XMC Pinout Tool V2.1.x

Manual (Pin-)Resource Assignment Tool

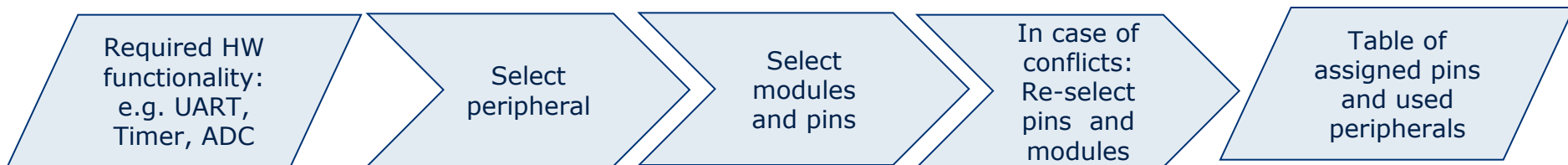


# Content

- Purpose of the XMC Pinout Tool
- Features of the XNC Pinout Tool
- How to use the XMC Pinout Tool
- How to install the XMC Pinout Tool

# Purpose of the XMC Pinout Tool

- The XMC Pinout Tool helps to select the required pins and modules of a peripheral
- The result is a table of assigned pins and used peripheral
- This table can be used:
  - As input for the manual pin assignment in DAVE
  - As input for the HW board design



**The “XMC Pinout Tool” allows fast and easy pin mapping**

# Main Features of the XMC Pinout Tool

- Assignment of peripheral related input and output functions to a dedicated pin and module
- Identification and alerting of conflicts to avoid double assignment of pins and modules
- Graphical "Pin Table View" to find an optimal arrangement of pins for the PCB layout
- Pin specific user comments
- Save and load settings in CSV-file format
- Pin mapping information can be used in DAVE to configure the peripherals and to create the required application library

# The XMC Pinout Tool helps to find an appropriate Pin Mapping

Function	Outputs						Inputs								
	ALT1	ALT2	ALT3	ALT4	HWO0	HWO1	HWI0	HWI1	Input	Input	Input	Input	Input	Input	Input
P1.5	CAN_N1_TXD	U0C0.DOUT0	CCU80.OUT23	CCU81.OUT10	U0C0.DOUT0		U0C0.HWING		U0C0.DIXDA	CAN_N1_RXDA	ERU0.ZA0	ERU1.SA0	CCU41.IN1C	D8D.DIN2B	
P1.6		U0C0.DOUT1			SOMMC.DAT1A_OUT	EBU.AD10	SOMMC.DAT1A_IN	EBU.D10	D8D.DIN2A						
P1.7					SOMMC.DAT1A_OUT	EBU.AD10	SOMMC.DAT1A_IN	EBU.D11		D8D.MOL2A					
P1.8								EBU.D12	CAN_N1_RXDA	D8D.MOL1A					
P1.9								EBU.D13		D8D.MOL2A					
P1.10													CCU41.IN2C		
P1.11													CCU41.IN3C		
P1.12	ETH0.TX_EN	CAN_N1_TXD	CCU81.OUT01		SOMMC.DAT1A_OUT	EBU.AD16		EBU.D16							
P1.13	ETH0.TXD0	U0C1.SEL03	CCU81.OUT20		SOMMC.DAT1A_OUT	EBU.AD17			CAN_N1_RXDA						
P1.14	ETH0.TXD1	U0C1.SEL02	CCU81.OUT10			EBU.AD18									
P1.15	SQU.EXTCLK	D8D.MOL2	CCU81.OUT00			EBU.AD19									
P2.0		CCU81.OUT21	D8D.GPVMIN	LEDTS0.COL1	ETH0.MD0	EBU.AD20							CCU40.IN1C		
P2.1		CCU81.OUT11	D8D.GPVMIP	LEDTS0.COL0	DB.TDO/TRACE_SWO	EBU.AD21							CCU40.IN2C		ETH0.CURXA
P2.2	VADC.EMUX00	CCU81.OUT01	CCU41.OUT3	LEDTS0.LINE0	LEDTS0.EXTENDED0	EBU.AD22							CCU41.IN3A		
P2.3	VADC.EMUX01	U0C1.SEL00	CCU41.OUT2	LEDTS0.LINE1	LEDTS0.EXTENDED1	EBU.AD23	LEDTS0.TSIN1A	EBU.D23	ETH0.RXD1A	U0C1.DIX2A	ERU0.IA2	POSIF1.IN2A	CCU41.IN2A		
P2.4	VADC.EMUX02	U0C1.SQUKOUT	CCU41.OUT1	LEDTS0.LINE2	LEDTS0.EXTENDED2	EBU.AD24	LEDTS0.TSIN2A	EBU.D24	ETH0.RXERA	U0C1.DIX1A	ERU0.DB2	POSIF1.IN1A	CCU41.IN1A		
P2.5	ETH0.TX_EN	U0C1.DOUT0	CCU41.OUT0	LEDTS0.LINE3		EBU.AD25									
P2.6	U0C0.SEL04		CCU80.OUT13	LEDTS0.COL3	U0C0.DOUT3										
P2.7	ETH0.MDC	CAN_N1_TXD	CCU80.OUT03	LEDTS0.COL2											
P2.8	ETH0.TXD0		CCU80.OUT32	LEDTS0.LINE4	LEDTS0.EXTENDED4	EBU.AD26									
P2.9	ETH0.TXD1		CCU80.OUT22	LEDTS0.LINE5	LEDTS0.EXTENDED5	EBU.AD27									
P2.10	VADC.EMUX10				DB.ETM_TRACE_DATA_3	EBU.AD28									
P2.11	ETH0.TXD2		CCU80.OUT02		DB.ETM_TRACE_DATA_4	EBU.AD29		EBU.D29							

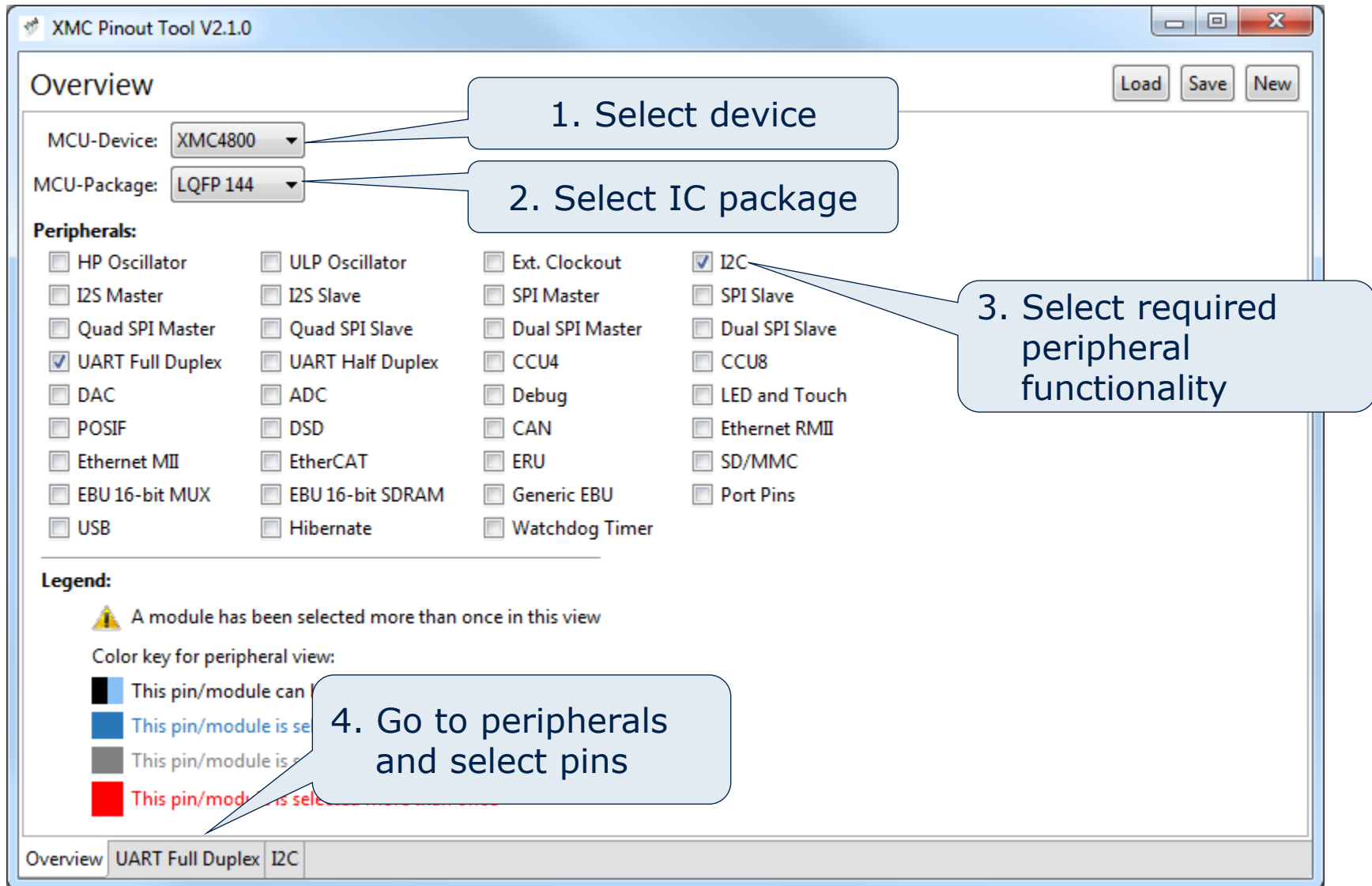
Can pin P1.5 be used for a UART transmission?

If yes, isn't this pin already used for the CAN interface?

Can U0C1.SEL0 be used as "chip select" for SPI interface or is U0C1 already used for the UART connection?

**The "XMC Pinout Tool" provides answers to these questions!**

# Overview Page to select the required Peripheral Functionality



The screenshot shows the 'Overview' page of the XMC Pinout Tool V2.1.0. The interface includes a title bar, a toolbar with 'Load', 'Save', and 'New' buttons, and a main content area. The 'MCU-Device' is set to 'XMC4800' and 'MCU-Package' is 'LQFP 144'. Under the 'Peripherals' section, a grid of checkboxes lists various modules. The 'I2C' checkbox is checked. A 'Legend' section at the bottom left explains the color coding for pin/module selection. Numbered callouts (1-4) highlight key steps: selecting the device, selecting the IC package, selecting required peripheral functionality, and navigating to the peripherals view to select pins.

**Overview**


MCU-Device: XMC4800

MCU-Package: LQFP 144





**Peripherals:**

<input type="checkbox"/> HP Oscillator	<input type="checkbox"/> ULP Oscillator	<input type="checkbox"/> Ext. Clockout	<input checked="" type="checkbox"/> I2C
<input type="checkbox"/> I2S Master	<input type="checkbox"/> I2S Slave	<input type="checkbox"/> SPI Master	<input type="checkbox"/> SPI Slave
<input type="checkbox"/> Quad SPI Master	<input type="checkbox"/> Quad SPI Slave	<input type="checkbox"/> Dual SPI Master	<input type="checkbox"/> Dual SPI Slave
<input checked="" type="checkbox"/> UART Full Duplex	<input type="checkbox"/> UART Half Duplex	<input type="checkbox"/> CCU4	<input type="checkbox"/> CCU8
<input type="checkbox"/> DAC	<input type="checkbox"/> ADC	<input type="checkbox"/> Debug	<input type="checkbox"/> LED and Touch
<input type="checkbox"/> POSIF	<input type="checkbox"/> DSD	<input type="checkbox"/> CAN	<input type="checkbox"/> Ethernet RMII
<input type="checkbox"/> Ethernet MII	<input type="checkbox"/> EtherCAT	<input type="checkbox"/> ERU	<input type="checkbox"/> SD/MMC
<input type="checkbox"/> EBU 16-bit MUX	<input type="checkbox"/> EBU 16-bit SDRAM	<input type="checkbox"/> Generic EBU	<input type="checkbox"/> Port Pins
<input type="checkbox"/> USB	<input type="checkbox"/> Hibernate	<input type="checkbox"/> Watchdog Timer	

**Legend:**

 A module has been selected more than once in this view

Color key for peripheral view:

-  This pin/module can be selected
-  This pin/module is selected
-  This pin/module is not selected
-  This pin/module is selected and is not available

**4. Go to peripherals and select pins**

Overview | UART Full Duplex | I2C

# Peripheral Page shows the available Modules and related Pins

5. Select required pins for  
the specific function:

Example: RXD signal...

... and TXD signal for a UART  
Full Duplex connection

## UART Full Duplex

U0C0	U0C1	U1C0
<b>RXD</b> <input type="checkbox"/> ↓ P1.5, DX0A <input checked="" type="checkbox"/> ↓ P1.4, DX0B <input type="checkbox"/> ↓ P4.7, DX0C <input type="checkbox"/> ↓ P5.0, DX0D <input type="checkbox"/> • XTAL1, DX0F	<b>RXD</b> <input type="checkbox"/> ↑ P2.2, DX0A <input type="checkbox"/> ↑ P2.5, DX0B <input type="checkbox"/> ↓ P6.3, DX0C <input type="checkbox"/> ↑ P3.13, DX0D <input type="checkbox"/> ↑ P4.0, DX0E <input type="checkbox"/> • XTAL1, DX0F	<b>RXD</b> <input type="checkbox"/> ↑ P0.4, DX0A <input type="checkbox"/> ↑ P0.5, DX0B <input type="checkbox"/> ↑ P2.15, DX0C <input type="checkbox"/> ↑ P2.14, DX0D <input type="checkbox"/> ↑ P1.14, DX0E <input type="checkbox"/> • XTAL1, DX0F
<b>TXD</b> <input checked="" type="checkbox"/> ↓ P1.5, DOUT0 <input type="checkbox"/> ↑ P1.7, DOUT0 <input type="checkbox"/> ↓ P5.1, DOUT0	<b>TXD</b> <input type="checkbox"/> ↑ P2.5, DOUT0 <input type="checkbox"/> ↑ P3.13, DOUT0 <input type="checkbox"/> ↑ P3.5, DOUT0 <input type="checkbox"/> ↑ P6.4, DOUT0	<b>TXD</b> <input type="checkbox"/> ↑ P0.5, DOUT0 <input type="checkbox"/> ↑ P1.15, DOUT0 <input type="checkbox"/> ↑ P2.14, DOUT0

↓ : Standard IN/OUT Pad (Type: A1+)  
↑ : High Current IN/OUT Pad (Type: A2)  
• : Clock Pad (Type: clock\_IN)

# Color Code

Blue frame indicates:  
"Module is in use in the  
current view"

Blue pin indicates:  
"Pin is used (checked) in  
the current view"

## UART Full Duplex

U0C0	U0C1
<b>RXD</b> <input type="checkbox"/> ↓ P1.5, DX0A <input checked="" type="checkbox"/> ↓ P1.4, DX0B <input type="checkbox"/> ↓ P4.7, DX0C <input type="checkbox"/> ↓ P5.0, DX0D <input type="checkbox"/> • XTAL1, DX0F	<b>RXD</b> <input type="checkbox"/> ↑ P2.2, DX0A
<b>TXD</b> <input checked="" type="checkbox"/> ↓ P1.5, DOUT0 <input type="checkbox"/> ↑ P1.7, DOUT0 <input type="checkbox"/> ↓ P5.1, DOUT0	<b>TXD</b> <input type="checkbox"/> ↑ P2.5, DOUT0 <input type="checkbox"/> ↑ P3.13, DOUT0 <input type="checkbox"/> ↑ P3.5, DOUT0 <input type="checkbox"/> ↑ P6.4, DOUT0

Light Blue Colour:  
Module is available (free)

Grey Pin/Frame:  
Pin/Module is already in use

Black Pin:  
Pin is free

Red frame indicates:  
Module has been  
assigned twice or more

Red pin indicates:  
Pin has been assigned  
twice or more

## I2C

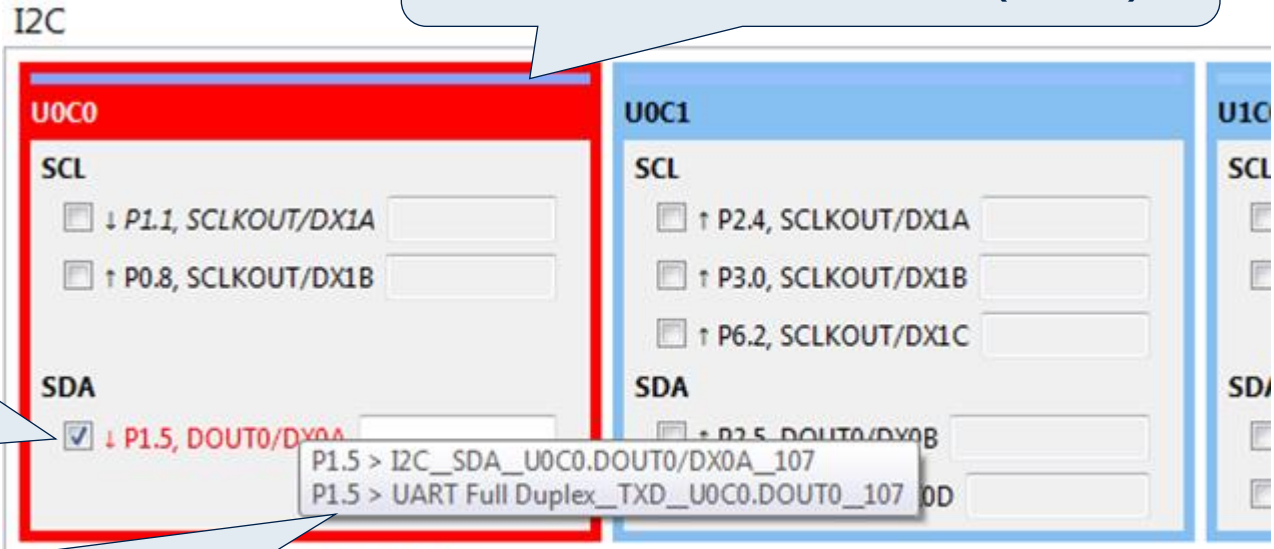
U0C0	U0C1	U1C0
<b>SCL</b> <input type="checkbox"/> ↓ P1.1, SCLKOUT/DX1A <input type="checkbox"/> ↑ P0.8, SCLKOUT/DX1B	<b>SCL</b> <input type="checkbox"/> ↑ P2.4, SCLKOUT/DX1A <input type="checkbox"/> ↑ P3.0, SCLKOUT/DX1B <input type="checkbox"/> ↑ P6.2, SCLKOUT/DX1C	<b>SCL</b> <input type="checkbox"/> ↓ P... <input type="checkbox"/> ↑ P...
<b>SDA</b> <input checked="" type="checkbox"/> ↓ P1.5, DOUT0/DX0A	<b>SDA</b> <input type="checkbox"/> ↑ P2.5, DOUT0/DX0B <input type="checkbox"/> ↑ P3.13, DOUT0/DX0D	<b>SDA</b> <input type="checkbox"/> ↑ P... <input type="checkbox"/> ↑ P...

↓ : Standard IN/OUT Pad (Type: A1+)  
 ↑ : High Current IN/OUT Pad (Type: A2)



# Solve Pin Conflicts

- Multiple assignments of pins and modules will be displayed in red colour



The screenshot shows a pin configuration interface with three modules: U0C0 (I2C), U0C1, and U1C. The U0C0 module is highlighted with a red border, and its SDA pin P1.5 is also highlighted in red. A tooltip for the red pin P1.5 shows two conflicting assignments: 'P1.5 > I2C\_SDA\_U0C0.DOUT0/DX0A\_107' and 'P1.5 > UART Full Duplex\_TXD\_U0C0.DOUT0\_107'. A callout box points to the red border of the U0C0 module, stating 'Red frame colour indicates multiple allocation of the module (U0C0)'. Another callout box points to the red pin P1.5, stating 'Red colour of pin indicates multiple allocation of the pin P1.5'. A third callout box points to the tooltip, stating 'Mouse-over shows conflict between the peripherals "I2C" and "UART Full Duplex"'. The U0C1 module is highlighted with a blue border and shows SCL pins P2.4, P3.0, and P6.2. The U1C module is partially visible on the right.

- Reason for the conflict can be display by hovering with the mouse over the red pin or frame

# Comment Fields

Each pin provides a field for a **user comment**.

**HINT:** Pressing TAB twice would move the curser to the next comment field.

## UART Full Duplex

U0C0	U0C1
<b>RXD</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> P1.5, DX0A</li> <li><input checked="" type="checkbox"/> P1.4, DX0B <b>PC-Interf.</b></li> <li><input type="checkbox"/> P4.7, DX0C</li> <li><input type="checkbox"/> P5.0, DX0D</li> <li><input type="checkbox"/> XTAL1, DX0F</li> </ul>	<b>RXD</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> P2.2, DX0A</li> <li><input type="checkbox"/> P2.5, DX0B</li> <li><input type="checkbox"/> P6.3, DX0C</li> <li><input type="checkbox"/> P3.13, DX0D</li> <li><input type="checkbox"/> P4.0, DX0E</li> <li><input type="checkbox"/> XTAL1, DX0F</li> </ul>
<b>TXD</b> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> P1.5, DOUT0 <b>PC-Interf.</b></li> <li><input type="checkbox"/> P1.7, DOUT0</li> <li><input type="checkbox"/> P5.1, DOUT0</li> </ul>	<b>TXD</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> P2.5, DOUT0</li> <li><input type="checkbox"/> P3.13, DOUT0</li> <li><input type="checkbox"/> P3.5, DOUT0</li> <li><input type="checkbox"/> P6.4, DOUT0</li> </ul>

# Pin Table View

XMC Pinout Tool V2.1.0 - Table View

**Infineon**

QFP / QFN Package (Top View)

1st pin row, 2nd pin row, 3rd pin row, 4th pin row

**Pins table is sorted by "pin rows"**

**Display options**

☒ Simple View

☒ Color Groups

**Pin table export to csv-file**

**Export table view**

1st Pin Row	2nd Pin Row	3rd Pin Row	4th Pin Row
1 P0.1	13 P14.5	25 P2.1	37 P1.3
2 P0.0	14 P14.4	26 P2.0	38 P1.2
3 USB_DM	15 P14.3	27 VSS	39 P1.1
4 USB_DP	16 P14.0	28 VDDP	40 P1.0
5 VDDP	17 VSSA/VAGND	29 XTAL1	41 VDDP
6 VDDC	18 VDDA/VAREF	30 XTAL2	42 P0.8
7 HIB_IO_0	19 P14.9	31 VDDC	43 P0.7
8 RTC_XTAL1	20 P14.8	32 PORST#	44 P0.6
9 RTC_XTAL2	21 P2.5 U0C1.DOUT0	33 TMS	45 P0.5
10 VBAT	22 P2.4 U0C1.SCLKOUT	34 TCK	46 P0.4
11 P14.7	23 P2.3 U0C1.SEL00	35 P1.5 U0C0.DOUT0 PC-Interf.	47 P0.3
12 P14.6	24 P2.2 U0C1.DX0A	36 P1.4 U0C0.DX0B PC-Interf.	48 P0.2
Exp. Pad VSS			

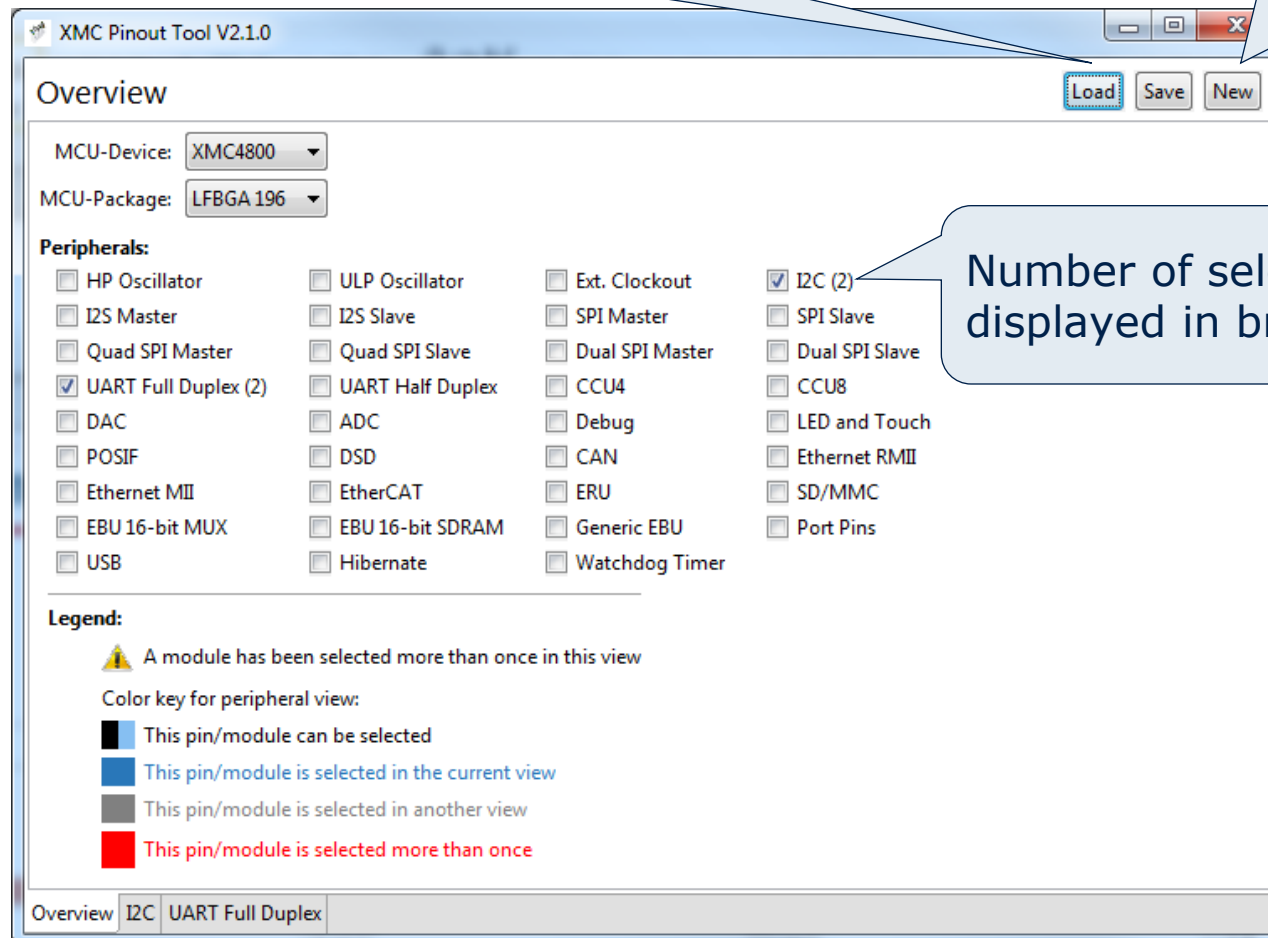
**Pins with same colour belong to the same module (e.g. U0C1, U0C0)**

**User comments are displayed here.**

# Save/Load/Delete Settings

Pin Configurations can be loaded/stored in an CSV file format.

To de-select all peripherals and pins press „New“



Number of selected pins displayed in brackets (x)

# CSV File Content

DEVICE_NAME	PACKAGE_NAME	VERSION_NO				
XMC4700	LQFP 144	V1.0.102				
PIN_NO	PHYSICAL_PIN	PERIPHERAL_NAME	MODULE_NAME	SIGNAL_NAME	PIN_NAME	COMMENT
141	P0.5	Ethernet RMII	ETH0	Transmit Data	TXD0	
142	P0.4	Ethernet RMII	ETH0	Transmit Data	TX_EN	
143	P0.3	Ethernet RMII	ETH0	Receive Data	RXD1B	
144	P0.2	Ethernet RMII	ETH0	Receive Data	RXD0B	
1	P0.1	Ethernet RMII	ETH0	Control	CRS_DVB	
2	P0.0	EtherCAT	ECAT0	Phy Management	PHY_RST	
29	P15.3	EtherCAT	ECAT0	Control	P1_LINKB	
30	P15.2	EtherCAT	ECAT0	Control	P1_RX_ERRB	
128	P0.7	EtherCAT	ECAT0	Status	LED_ERR	
140	P0.6	Ethernet RMII	ETH0	Transmit Data	TXD1	
35	P14.7	EtherCAT	ECAT0	Receive Data	P1_RXD0B	
38	P14.4	EtherCAT	ECAT0	Control	LATCH1A	
36	P14.6	EtherCAT	ECAT0	Clock	P1_RX_CLKB	
111	P1.1	SD/MMC	SDMMC	Control	SDWC	
37	P14.5	EtherCAT	ECAT0	Control	LATCH0A	
115	P1.7	SD/MMC	SDMMC	Data	DATA2_IN&DATA2_OUT	
114	P1.8	EtherCAT	ECAT0	Transmit Data	P0_TXD2	
74	P2.0	Ethernet RMII	ETH0	Phy Management	MDO&MDIB	
73	P2.1	Ethernet RMII	ETH0	Clock	CLK_RMIIA	
116	P1.6	SD/MMC	SDMMC	Data	DATA1_IN&DATA1_OUT	

# Install and Run the XMC Pinout Tool V2.1.x

- **Download** the XMC Pinout Tool V2 from <http://www.infineon.com/cms/de/product/microcontroller/32-bit-industrial-microcontroller-based-on-arm-registered-cortex-tm-m/xmc-development-tools-software-tools-and-partner/software-downloads/channel.html?channel=db3a30433b47825b013b4b9e224a0de6>
- **Extract** the folder inside the zipped archive „XMC Pinout Tool V2.x.x.zip“ to your favorite place
- To start the XMC Pinout Tool **double-click** on the „**XMC Pinout Tool V2.x.x.exe**“ file
- In case the XMC Pinout Tool does not work, make sure you have installed the latest JAVA version from <https://www.java.com/de/download/>



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