



External Interface Specification

CC Pilot XLII

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Revision history

Rev	Date	Author	Note
PA1	2006-05-08	Johan Bäckström	Document created from other document [ref 1].
PA2	2006-05-08	Johan Bäckström	Updated after new information from Michael Jonsson

References

[1] CCP rev2 technical descriptionA5.doc [dated 2006-01-10]



CC Pilot XLII – External Interface specification

Introduction

Purpose

This document describes the external connectors of the CC Pilot XLII computer. The computer is manufactured with two different display sizes, but the connectors are the same on both models.

External connector placement on the PC module



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External connectors on the PC module

Name	Description	Connector	Type	Comments
X1	Power In	Serial 723 8 Pin	Male	CCP rev 0-1 compatible
X2	USB 1	M12 5 Pin (A-coded)	Male	Lengthened GND Pin
X3	USB 3	M12 5 Pin (A-coded)	Male	Lengthened GND Pin
X4	Ethernet	M12 4 Pin (D-coded)	Female	
X5	CAN 2	M12 5 Pin (A-coded)	Female	
X6	COM 1	M12 8 Pin (A-coded)	Male	
X7	DMI	Lemo	Female	Max recommended length 5,5 m. Lengthened GND Pin
X8	Audio	M12 8 Pin (A-coded)	Female	
X9	USB 2	M12 5 Pin (A-coded)	Male	Lengthened GND Pin
X10	USB 4	M12 5 Pin (A-coded)	Male	Lengthened GND Pin
X11	Video In	M12 5 Pin (B-coded)	Male	
X12	CAN 1	M12 5 Pin (A-coded)	Female	
X13	VGA Out	M12 8 Pin (A-coded)	Female	

X1 – Power in

Pin	Signal	Description	Comments
1	NC		Not connected
2	Don	PC on	6-36 V = PC on
3	Dpow	Unswitched power	
4	Preheating		Signal to starts preheating of HD and display
5	Don	PC on	6-36 V = PC on
6	GND	Ground	
7	Dpow	Unswitched power	
8	GND	Ground	

X2 – USB 1

No limitation of USB 2.0 speed, i.e. this port has a High-speed interface (480 Mbps). This port can supply 2A, but then the other USB ports can't supply anything since the total current consumption of USB port 1 – 4 has to be less than 2A.

Pin	Signal	Description	Comments
1	Vbus	Power to external USB-unit	5 Volt max 2A. Internal over current and short-circuit protected.
2	D-	Data	
3	D+	Data	
4	NC	Not connected	
5	GND	Ground reference	



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X3 – USB 3

Limited to USB 2.0 Full-speed (12 Mbps).

Pin	Signal	Description	Comments
1	Vbus	Power to external USB-unit	5 Volt max 500 mA. Internal over current and short-circuit protected.
2	D-	Data	
3	D+	Data	
4	NC	Not connected	
5	GND	Ground reference	

X4 – Ethernet 1

Pin	Signal	Description	Comments
1	TX+		
2	RX+		
3	TX-		
4	RX-		

X5 – CAN 2

Pinning according to the CANopen standard

Pin	Signal	Description	Comments
1	CAN2 SHLD		
2	NC	Not connected	
3	CAN GND		
4	CAN2 H	CAN2 High	
5	CAN2 L	CAN2 Low	

X6 – COM 1

Pin	Signal	Description	Comments
1	DCD	Data Carrier Detect	
2	RxD	Receive data	
3	TxD	Transmit data	
4	DTR	Data Terminal Ready	
5	GND	Signal reference	
6	DSR	Data Set Ready	
7	RTS	Request To Send	
8	CTS	Clear To Send	



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X7 – DMI

Pin	Signal	Description	Comments
1	TXOUT0-	LVDS	
2	TXOUT0+	LVDS	
3	TXOUT1-	LVDS	
4	TXOUT1+	LVDS	
5	TXOUT2-	LVDS	
6	TXOUT2+	LVDS	
7	TXCLK-	LVDS	
8	TXCLK+	LVDS	
9	DMI power supply	+24 V	
10	TFT_ON	TFT power control	
11	Beeper	Simple sound unit	
12	TS_Tx	Touch screen Tx	
13	TS_Rx	Touch screen Rx	
14	SPI_MISO	SPI data Display-PC	
15	RESET AVR	Reset input to AVR	Low in, while programming AVR. No connection in the cable
16	SPI_MOSI	SPI data Display-PC	
17	SPI_CLK	SPI clock Display-PC	
18	ON_OFF_2	On/off button from display to the PC	
19	GND	Ground reference	

X8 – Audio

Pin	Signal	Description	Comments
1	Line out L		
2	Line out R		
3	GND (Speaker)		Shield in cable
4	Microphone		
5	GND (Microphone)		Shield in cable
6	Speaker output L		Amplified
7	Speaker output R		Amplified
8	GND (Line out)		Shield in cable

X9 – USB 2

Limited to USB 2.0 Full-speed (12 Mbps).

Pin	Signal	Description	Comments
1	Vbus	Power to external USB-unit	5 Volt max 500 mA. Internal over current and short-circuit protected.
2	D-	Data	
3	D+	Data	
4	NC	Not connected	
5	GND	Ground reference	



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X10 – USB 4

Limited to USB 2.0 Full-speed (12 Mbps).

Pin	Signal	Description	Comments
1	Vbus	Power to external USB-unit	5 Volt max 500 mA. Internal over current and short-circuit protected.
2	D-	Data	
3	D+	Data	
4	NC	Not connected	
5	GND	Ground reference	

X11 – Video A

Pin	Signal	Description	Comments
1	GND	GND Video A	
2	Video A	PAL/NTSC input A	
3	Video B	PAL/NTSC input B	
4	12V_OUT	Power out +12 V	Power supply to video camera, Max 300 mA
5	GND	GND Video B	

X12 – CAN 1

Pinning according to the CANopen standard.

Pin	Signal	Description	Comments
1	CAN1 SHLD		
2	NC	Not connected	
3	CAN GND		
4	CAN1 H	CAN1 High	
5	CAN1 L	CAN1 Low	

X13 – VGA out

Pin	Signal	Description	Comments
1	VGA R	VGA Red	
2	VGA G	VGA Green	
3	VGA B	VGA Blue	
4	H Sync	Horizontal Sync	
5	V Sync	Vertical Sync	
6	GND R	Ground reference Red	Shield on VGA Red cable
7	GND G	Ground reference Green	Shield on VGA Green cable
8	GND B	Ground reference Blue	Shield on VGA Blue cable



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External connector on the display module

Name	Description	Connector	Type	Comments
X1	DMI	Lemo or ODU 26 pin	Female	

X1 – DMI

Pin	Signal	Description	Comments
1	RXOUT0-	LVDS	
2	RXOUT0+	LVDS	
3	RXOUT1-	LVDS	
4	RXOUT1+	LVDS	
5	RXOUT2-	LVDS	
6	RXOUT2+	LVDS	
7	RXCLK-	LVDS	
8	RXCLK+	LVDS	
9	DMI power supply	+24 V	No load dump protection or filtering
10	TFT_ON	TFT power control	Display ON/OFF
11	Beeper	Simple sound unit	
12	TS_Rx	Touch screen Rx	
13	TS_Tx	Touch screen Tx	
14	SPI_MISO	SPI data Display-PC	
15	RESET AVR	Reset input to AVR	Low in, while programming AVR. No connection in the cable
16	SPI_MOSI	SPI data Display-PC	
17	SPI_CLK	SPI clock Display-PC	
18	ON_OFF_2	On/off button from display to the PC	
19	GND	Ground reference	
20	VGA R	VGA Red	
21	VGA G	VGA Green	
22	VGA B	VGA Blue	
23	H Sync	Horizontal Sync	
24	V Sync	Vertical Sync	
25	VGA Enable		Pull external to GND when used
26	GND VGA	Ground reference	