

Process & Acquisition Controller

XTD043RB-K620A / K620B OVERVIEW



One Compact Solution

This compact controller incorporates an embedded microprocessor, resistive TFT colour touchscreen and isolated direct-connect peripheral interfaces into one package.

Connect temperature / analogue sensors and switched inputs to enable PID control of PWM, analogue and switched outputs.

12 isolation zones protect the system from transient voltages and differential grounds.

Create and store multi-level parameters, menu navigation, server and peripheral communication, data logging, PID loops and machine state control.

Supported by the iDevOS operating system specifically designed for user interface and process control applications.

Dual Isolated Interfaces

- Up to 8x Digital Inputs 3V3-5VDC / 9-30VDC
- 8x Digital Outputs 5-30VDC @100mA
- 4x Power PWM Outputs 9-30VDC @ 1.7A
- 2x PT100/PT1000/TC/0-30V 16bit ADC Inputs
- 1x 4-20mA/0V-30V 16bit ADC Input
- 1x 4-20mA/9V-24V Output
- 1x RS232, 2x RS485/TTL
- 1 x FlexCAN (-K620B), 1x Master I2C
- 1x 10/100 Ethernet

Single Isolated Interfaces

- 1x ONE WIRE Dallas Sensor Bus
- 1x 0-30V 12bit ADC Input

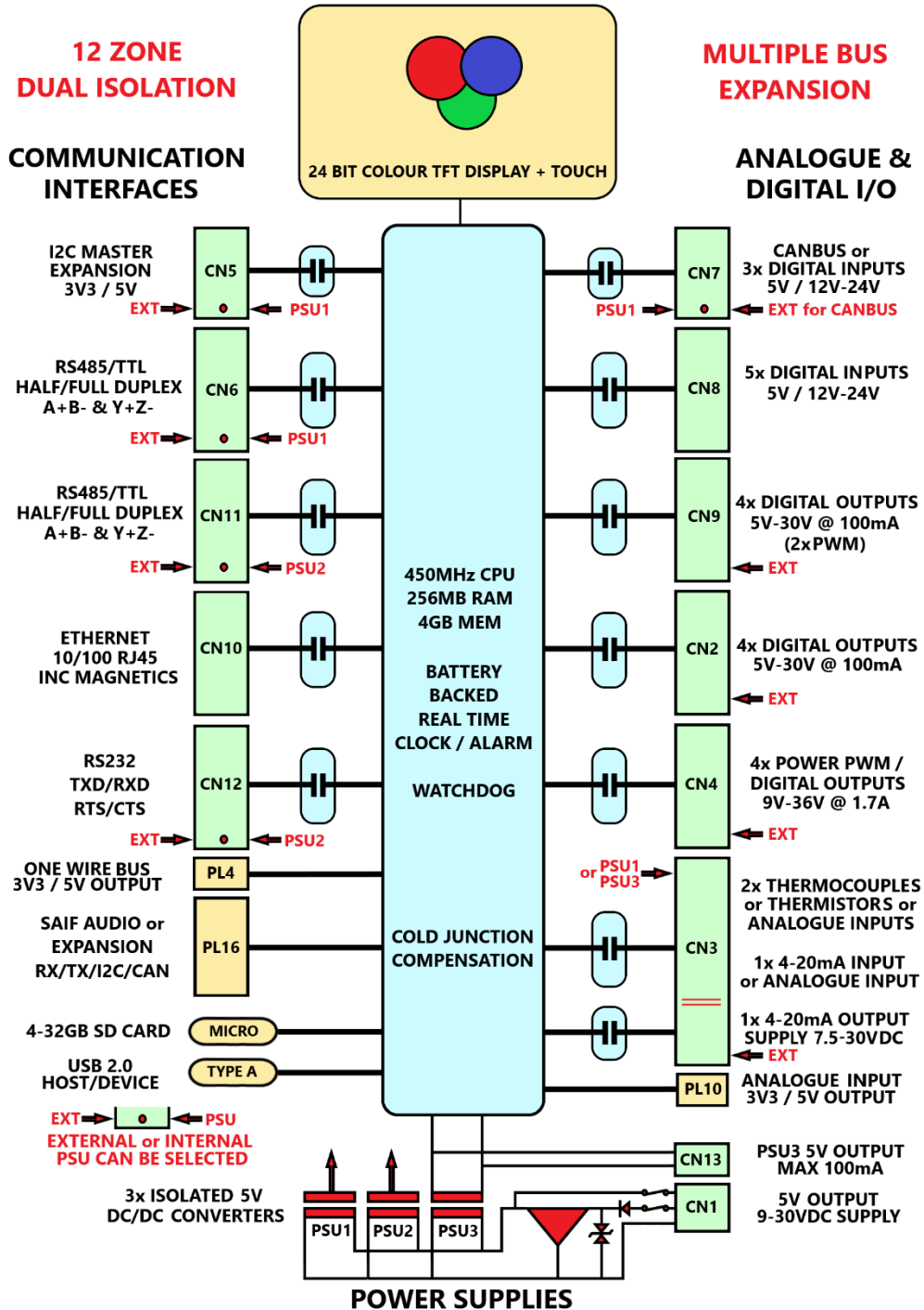
Product Features

- 450MHz CPU with 128MB RAM
- 4GB Program/Data memory
- 4-32GB SDHC card slot
- USB 2.0 OTG/Host socket
- IP65 Bezel with built-in panel mounting
- 4.3inch 24bit Colour TFT + Resistive Touch
- Optional 1W Audio Output Module
- Optional 2nd FlexCAN, Async & I2C

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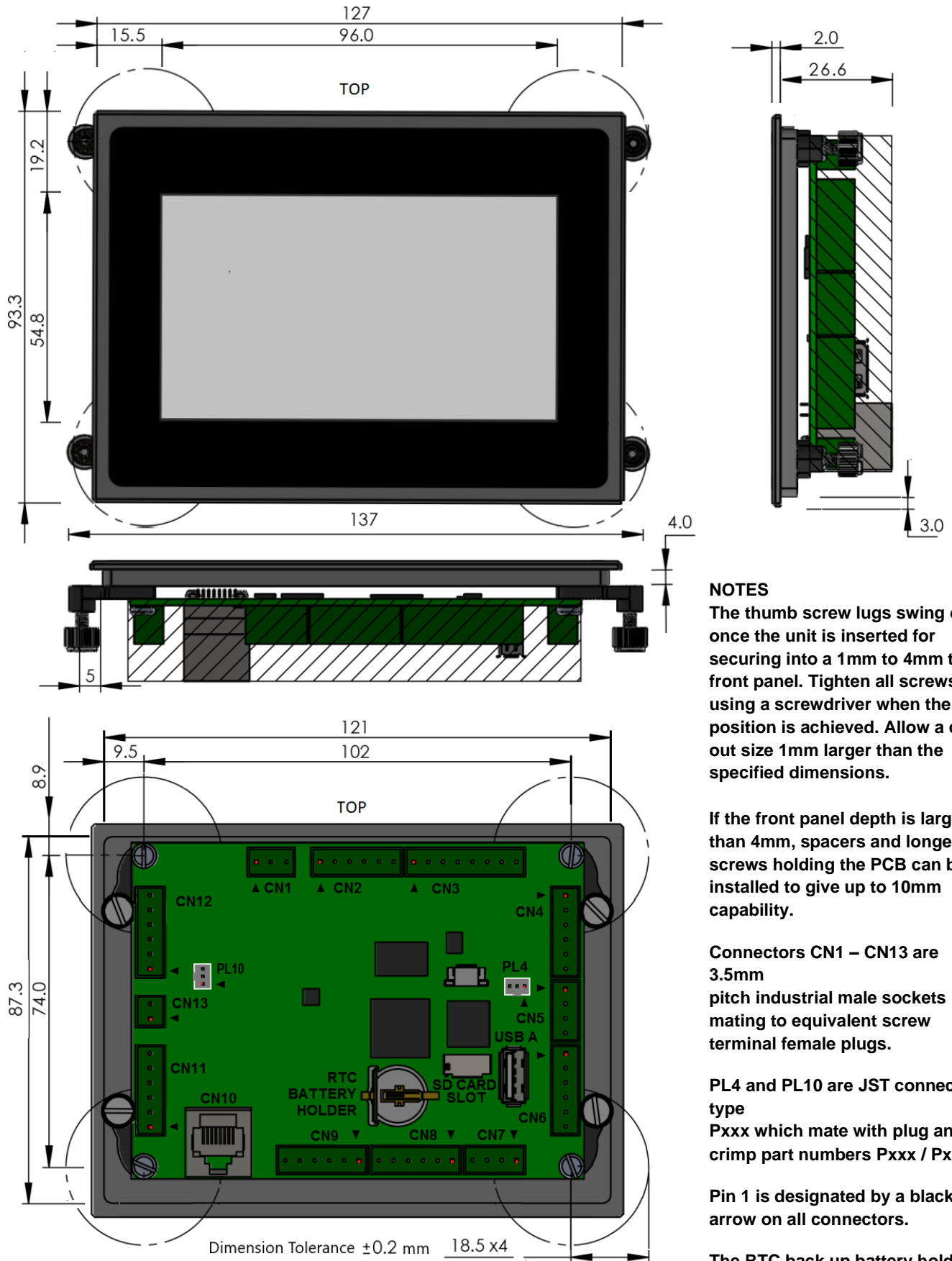
PRODUCT OVERVIEW

The CPU block consists of a powerful 450MHz i.MX28 processor with 128M bytes of DDR2 RAM and 4G bytes of EMMC NAND for program, parameter and data logging storage. The μ SDHC slot provides additional removable storage using a 4G-32G byte micro SD Card. Interface protection is provided by high speed, 60-year life, galvanic isolation divided into 12 zones to protect peripherals and the system core from adverse transients and power surges. System builders can configure each zone to use internal isolated power sources or add additional power supplies for specific applications. The 9-30VDC input capable power supply provides 3.3VDC and 5VDC outputs for driving local peripherals subject to operating current constraints. Thermocouple and thermistor temperature sensors, solenoids, motors, fans, heaters and relays can be directly connected making this product a cost effective and compact 'all in one' solution for industrial control and acquisition applications.



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MECHANICAL DRAWING



NOTES

The thumb screw lugs swing out once the unit is inserted for securing into a 1mm to 4mm thick front panel. Tighten all screws using a screwdriver when the final position is achieved. Allow a cut out size 1mm larger than the specified dimensions.

If the front panel depth is larger than 4mm, spacers and longer screws holding the PCB can be installed to give up to 10mm capability.

Connectors CN1 – CN13 are 3.5mm pitch industrial male sockets mating to equivalent screw terminal female plugs.

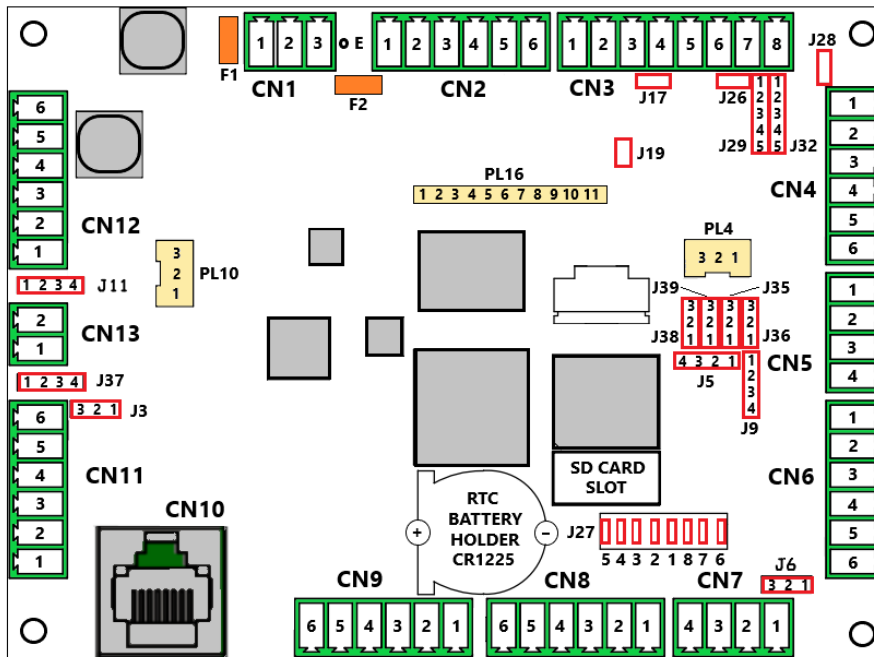
PL4 and PL10 are JST connectors type Pxxx which mate with plug and crimp part numbers Pxxx / Pxxx

Pin 1 is designated by a black arrow on all connectors.

The RTC back up battery holder is compatible with cell type CR1225 which is not included.

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CONNECTOR AND JUMPER PIN OUT



CN3 THERM 1 / AN1	
Function	= Jumper(Pins)
TC	= J32(3-4)
PT100	= J32(2-3,4-5)+J28
PT1000	= J32(2-3)+J28
AN1	= J32(1-2,3-4)

CN3 THERM 2 / AN2	
Function	= Jumper(Pins)
TC	= J29(3-4)
PT100	= J29(2-3,4-5)+J26
PT1000	= J29(2-3)+J26
AN2	= J29(1-2,3-4)

CN3 20mA / AN3	
Function	= Jumper(Pins)
20mA	= J17+J19
AN3	= none

CN7/8 DIGITAL IN	
Fit J27 Jumper	= 5V
No J27 Jumper	= 12-24V

SMD FUSES	
+VA 12/24V F1	= 1206 2A
+VB 5V F2	= 1206 3A

CN1 POWER	
Pin	Signal
1	+VA 12V/24V
2	0V
3	+VB 5V0
CN2 DOUT 9-12 / SPI	
Pin	Signal
1	+Vext isol
2	0Vext isol
3	DOUT9 / CS2
4	DOUT10 / CS1
5	DOUT11 / SCK
6	DOUT12 / SOUT
CN3 ANALOGUE	
Pin	Signal
1	4-20mA OUT-
2	4-20mA OUT+
3	20mA IN- / 0V 1/3
4	20mA IN+ / AN3
5	THERM 2- / 0V 1/3
6	THERM 2+ / AN2
7	THERM 1- / 0V 1/3
8	THERM 1+ / AN1

CN4 POWER PWM	
Pin	Signal
1	+Vext isol
2	0Vext isol
3	DOUT/PWM0
4	DOUT/PWM1
5	DOUT/PWM3
6	DOUT/PWM4
CN5 I2C BUS	
Pin	Signal
1	5V isol 1
2	0V isol 1
3	SCL
4	SDA
CN6 RS485/TTL	
Pin	Signal
1	5Visol 1
2	0Visol 1
3	Tx+ / TTLTx
4	Tx-
5	Rx-
6	Rx+ / TTLRx

CN7 DIGITAL IN/CAN	
Pin	Signal
1	DIN6 / 5VISO 1
2	DIN7 / 0VISO 1
3	DIN8 / CAN0H
4	COM / CAN0L
CN8 DIGITAL IN	
Pin	Signal
1	DIN1
2	DIN2
3	DIN3
4	DIN4
5	DIN5
6	COM
CN9 DOUT / PWM 5-8	
Pin	Signal
1	+Vext isol
2	0Vext isol
3	DOUT5
4	DOUT/PWM6
5	DOUT/PWM7
6	DOUT8

CN11 RS485/TTL	
Pin	Signal
1	5Visol 2
2	0Visol 2
3	Tx+ / TTLTx
4	Tx-
5	Rx-
6	Rx+ / TTLRx
CN12 RS232	
Pin	Signal
1	5V isol 2
2	0V isol 2
3	TXD
4	RTS
5	RXD
6	CTS
CN13 5V OUT	
Pin	Signal
1	5V PSU 3
2	0V PSU 3

PL4 ONE WIRE BUS	
Pin	Signal
1	3V3 PSU 3
2	ONEWIRE I/O
3	0V PSU 3
PL10 ADC 1	
Pin	Signal
1	3V3 PSU 3
2	ADC 1
3	0V PSU 3
PL16 AUDIO / EXP	
Pin	Signal
1	SDATA2 / TX3
2	SDATA1 / RX3
3	BITCLK / SCL1
4	LRCLK / SDA1
5	MCLK / CAN1RX
6	3V3 PSU3
7	0V PSU3
8	5V0 PSU3
9	SDA0 @ 3V3
10	SCL0 @ 3V3
11	P18 / CAN1TX

CN6-J6 / CN11-J3	
Pin	Function
1-2	TTL RX
2-3	RS485 TERM

CN11/CN12 PSU	
PSU2	Connect
CN11	J37 (1-2&3-4)
CN12	J11 (1-2&3-4)

CN6/CN7 PSU	
PSU1	Connect
CN6	J5 (1-2&3-4)
CN7	J9 (1-2&3-4)

CN3 PSU	
Use	Connect
PSU1	J38(1-2) + J39(1-2)
PSU3	J38(2-3) + J39(2-3)

CN5 PSU	
Use	Connect
PSU1	J35(1-2) + J36(1-2)
PSU3	J35(2-3) + J36(2-3)

Go to the full connector description for detailed information on power sources, isolation, jumpers and software ports.

The COM pins on CN7 and CN8 are connected together and can be set to +ve/-ve according to the DIN active polarity.

The 5V/0Visol 1/2 pin pairs are jumper connectable to internally isolated PSUs 1 and 2.

CN13 is a 5V @ 100mA 'isolated use' output from the CPU PSU 3. Connecting CN13 0V to another supply compromises PSU3 isolation.