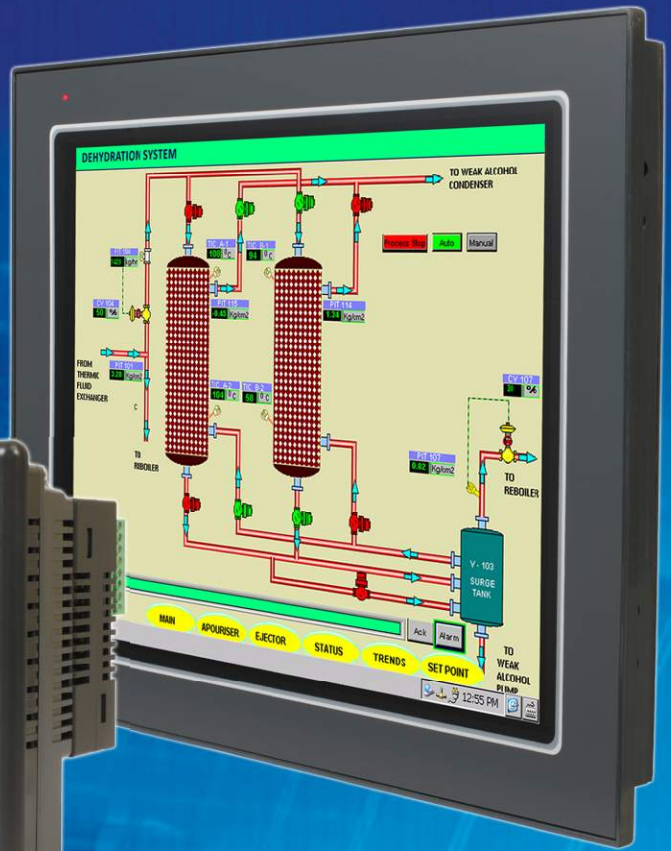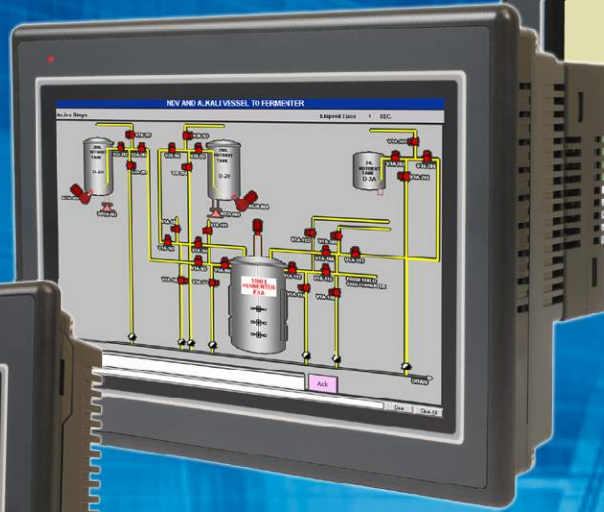# WinCE based FlexiPanels®

PC5121TN
12.1" TFT Color LCD

PC5070TN-E
7" TFT Color LCD

PC5043TN
4.3" TFT Color LCD

Back View for HMI with expansion
(Up-to 5 expansions)

Back View for HMI with expansion
(Up-to 3 expansions)

RENU
ELECTRONICS PVT. LTD.

Salient Features :-

- 4.3" WQVGA (480x272 pixels), 7" WVGA (800x480 pixels), 12.1" SVGA (800x600 pixels) TFT Color Touch screen Graphical Display

- Windows CE 6.0 R3 support

- Support for 65K color, Built-in RTC

- Dual Port communication supported

- Serial Communication Ports:
  Serial ports to connect PLC at RS232 / 485 levels

- USB Ports :
  One USB device port
  One USB host port: Can be used for Extended Memory / USB Keyboard / USB Mouse

- Ethernet Port :
  One Ethernet port (10/100 Mbps)

- Memory :
  Up-to 128 MB RAM
  Up-to 128 MB flash memory

- Integrated / Pluggable Digital and Analog Inputs and Outputs

- Digital Outputs - OC / Relays

- Analog Inputs for RTD, mV, mA, Thermocouple, 0 to 5 VDC, 0 to 10 VDC, -10 to +10VDC

- Analog Outputs are 4-20 mA / 0-10 VDC

- Support for Quadrature inputs and PWM output

- IP66 design. CE / UL approval. RoHS compliant

Operations :-

The WinCE based FlexiPanels®comes with preinstalled Windows CE 6.0 R3 operating system. It allows the user to execute Windows CE compatible third party software, SCADA on the device.

The SDK (software development kit) built for the these devices can be used to develop native and managed custom applications, using VC++, VB, C# languages using Visual Studio.   .Net frame work 3.5 is included in the device which allows running managed application on the device.

WinCE based FlexiPanels® can be connected to PC over USB cable, and Active sync 3.5 on Windows XP/Mobile Device Center on Windows 7/VISTA can be used for device browsing, copying files to and from device. USB Host can be used for attaching USB keyboard, USB Mouse, USB Stick and USB PCL Printer, the required drivers and support is preinstalled in the device.

Pluggable I/O (Digital)

WinCE based FlexiPanels® have facility to support I/O using pluggable I/O modules. The I/O modules can be selected based on the application requirement. Each high speed I/O module can support 4 nos. of high speed inputs of 25KHz. Quadrature input of up-to 20KHz is also supported. Each high speed I/O Module can support 1 quadrature input of 20KHz or 2 quadrature inputs of 5KHz. Each high speed I/O Module can support up-to 2 PWM outputs of 10KHz. Up-to 5 I/O modules can be connected to one WinCE based FlexiPanels®.

Digital I/O

WinCE based FlexiPanels® can have up-to 80 digital I/O on the unit through the expansion units. Digital inputs are high impedance 24 VDC and outputs are transistor outputs with NPN/ PNP types.

Analog I/O

WinCE based FlexiPanels® support pluggable Analog I/O Modules. These devices can have up-to 40 Analog inputs and / or 10 Analog outputs. The Analog inputs are 0-5 VDC, 0-10 VDC,4-20 mA, mV, TC, RTD, - 10 to + 10 VDC and Analog outputs are 4-20mA / 0-10VDC. User can Plug only Analog I/O modules or use them in combination with Digital I/O.

High Speed Counters

WinCE based FlexiPanels® with I/O support High Speed Counter inputs up-to 25 KHz. These High Speed Counter inputs can be used for applications such as Rate Measurement, Speed Measurement, Totalizer, etc. The user can define up-to 4 High Speed inputs in each high speed Digital I/O module.

Software Features :-

- Active Sync
- .Net Compact Framework
- Remote Desktop Protocol
- Web Browser
- Web Server / Telnet Server / FTP Server
- Database (SQL CE 3.5)
- Software Development Kit and Emulators
- Application Installer / Uninstaller

- COM / DCOM Support
- Silverlight
- PDF Viewer
- Office Viewer
- Word Pad
- Media Player *
- Audio / Video Support*

*Not supported in PC5043TN

Specifications :-

Power	:	+ 24V DC ±10%	Type of LCD	:	TFT
		PC5043TN - 6 W Max	LCD Life	:	30000* hrs at 25°C
		PC5070TN - 9 W Max	Supported Colors	:	65K
		PC5121TN - 16 W Max	Immunity to ESD	:	as per IEC61000-4-2
Bezel	:	IP66 rated Touch Screen	Immunity to Fast Transients	:	as per IEC61000-4-4
Operating Temperature	:	0° to 50°C	Immunity to Radiated		
Storage Temperature	:	-20° to 80°C	electromagnetic field	:	as per IEC61000-4-3
Humidity	:	10% to 85% (Non condensing)	Immunity to		
Communication Ports	:	One / Two serial ports	Conducted disturbances	:	as per IEC61000-4-6
		(RS232/RS485 levels supported)	Surge	:	as per IEC61000-4-5
USB Device Port	:	It can be used for communication with PC through ActiveSync Software	Radiated emission	:	as per EN55011
USB Host port	:	Supports USB Mass Storage / USB Keyboard / USB Mouse	*70000 for PC5121TN		

Specifications :-

Digital Inputs

Rated Input Voltage

Rated Input Voltage	For Normal Input 24 VDC (Max is 28 VDC)	For High Speed 24 VDC (Max is 28 VDC)
Impedance	4.7 k	2.3 k

Logic '0' Voltage : 0 to 5 V   Logic '1' Voltage : 14 to 28 V

Rated Input Current at (24 VDC)

	For Normal Input	For High Speed
Rated Input Current	4.89 mA	10 mA

Digital Outputs (Open Collector)

Maximum Load current :	500 mA NPN or PNP. Short circuit protected
Voltage drop at ON :	0.4 V or less

Digital Outputs (Relay)
Relay Rating :   230 V AC, 2 Amp. (Max) 5 Amp per common

Analog Inputs

Resolution	12-bit
Voltage Mode	Y
Input Range	-10V to +10V
Value of LSB	For 0-10V : 2.44mV
	For +/- 10V : 4.88mV
Input Impedance	200KΩ
Accuracy at 25°C	0.1% of full scale
Overall accuracy (−25°C to 55°C) % Full Scale	0.3% of full scale
Frequency Limit (-3db)	3.5KHz
Behavior upon sensor failure	Input goes to 0, as if no input is connected
Current Mode	Y
Input Range	4mA – 20mA, 0mA - 20mA
Value of LSB	3.906uA
Input Impedance	120Ω
Accuracy at 25°C	0.2% of full scale
Overall accuracy (−25°C to 55°C) Full scale	0.8% of full scale
Frequency Limit (-3db)	15KHz
Behavior upon sensor failure	Input goes to 0, as if no input is connected
Maximum permissible voltage (surge voltage) between analog inputs	500V
between analog inputs and reference	1000V
Reverse Connection Protection	No

Analog Outputs

Resolution	12bit
Voltage Mode	Y
Output Range	0 to +10V
Value of LSB	2.44mV/step
Output Load minimum	1000Ω
Accuracy at 25°C	0.05% of full scale
Overall accuracy (−25°C to 55°C) % Full Scale	±10ppm/°C
Current Mode	
Output Range	4mA to 20mA
Value of LSB	3.9umA
Output Load maximum	500Ω
Accuracy at 25°C	0.13% of full scale
Overall accuracy (−25°C to 55°C) % Full Scale	±10ppm/°C
Current Mode	
Output Range	0mA to 20mA
Value of LSB	4.8umA
Output Load	500Ω
Accuracy at 25°C	0.13% of full scale
Overall accuracy (−25°C to 55°C) % Full Scale	±10ppm/°C

High Speed Digital inputs and PWM output -
FPED-HS-0808N (NPN Type transistor output)
FPED-HS-0808P (PNP Type transistor output)

24V DC Digital Inputs

Number of Inputs	8 Inputs Bi-directional Type (Within which 4 are high speed)
Isolation	Optically isolated from internal circuit. High isolation voltage(BV=3750Vr.m.s.)
Input Impedance	4.9KΩ
Turn OFF time	10msec
Turn ON time	10msec

High Speed Inputs

Number of HS Inputs	4
High Speed Channels	X0, X5, X2, X7
Max. input frequency	25KHz
Max. input count	4294967295

24V DC Digital Outputs PNP / NPN Transistor type

Number of Outputs	8 PNP / NPN type (Within which 2 are high speed outputs)
Nominal Output current per channel	500mA Typical [For HS: FPED-HS-0808N: 300mA and FPED-HS-0808P: 250mA]
Isolation	Optically isolated from internal circuit. High isolation voltage(BV=3750Vr.m.s.)
Short Circuit protection	Auto Protection for 6 normal digital output PNP / NPN type channels.
Nominal load	
- Ohmic	48 Ω / 12 W
- Lamp	12 W
- Inductive	12 VA (1.2 H, 50 W)
Switching frequency with - Inductive nominal load	0.5 Hz (1.2 H, 50 W), maximum

24V DC Auxiliary Power Supply

Nominal value	24 V DC
Tolerance	-15% / +20% according to EN 61131-2
Safety equipment	Surge voltage, protection against Reversal polarity

Universal Analog Inputs -   FPEA-0402U-16

Analog Inputs

Number of inputs	4
Resolution	16 Bit
Input range:	
Voltage	0 to 10VDC and 0 to 5VDC
Current	0 to 20mA and 4 to 20mA
Thermocouple	J type -210 to 1200°C
	K type -200 to 1373°C
mV	0 to 50mV and 0 to 100mV
RTD	α (PT100): -200 to 850°C
	α (PT100): -100 to 457°C
	and PT1000: -200 to 850°C
Overall accuracy	1 % of full scale (Max)
Input Impedance	1MΩ for voltage, thermocouple, mV and RTD input 100Ω for current input (with fuse)
Absolute maximum input	±30VDC, 30mA

Output Type   Analog (voltage and current), non-isolated

Number	2
Resolution	16 bit
Output range:	
Voltage	0 to 10VDC and 0 to 5VDC
Current	0 to 20mA and 4 to 20mA
Overall accuracy	1% of full scale (Max)
Load	1KΩ (Min) for Voltage and 500Ω (Max) for current

24V DC Auxiliary Power Supply

Nominal value	24 V DC
Tolerance	-15% / +20% according to EN 61131-2
Safety equipment	Surge voltage, protection against Reversal polarity

Specifications :-

FPEA0800LV

Analog Inputs	
Number of inputs	8
Resolution	12 Bit
Voltage Mode:	
Input Range	-10V to +10V, 0V to 10V
Value of LSB	For 0-10V : 2.44mV
	For +/- 10V : 4.88mV
Input Impedance	200 KΩ
Accuracy	At 25°C: 0.1% of full scale.
	Overall accuracy (−25°C to 55°C) :
	1% of full scale Max.
Behavior upon sensor failure	Input goes to 0, as if no input is connected

FPEA0800LC

Analog Inputs	
Number of inputs	8
Resolution	12 Bit
Current Mode:	
Input Range:	4 - 20mA, 0 - 20mA
Value of LSB:	3.906uA
Input Impedance	120 Ω
Accuracy	At 25°C: 0.1% of full scale.
	Overall accuracy (−25°C to 55°C) :
	1% of full scale Max.
Behavior upon sensor failure	Input goes to 0, as if no input is connected

Supported Printers :-

FlexiPanels® support HP Laser Jet 1010 printer.

Model Comparison :-

Product	Model	Display	LCD Life at 25°C	Touch Screen	Memory	Expansion	Serial Ports **	USB	Ethernet	RTC	Power Consumption	Weight (Approx.)	Bezel Dimensions W x H x D (mm)	Panel Cutout W x H (mm)
PC5043TN	PC5043TN	480x272 WQVGA 4.3" Color TFT	30000 hrs	Yes	Up-to 128 MB RAM, Up-to 128 MB Flash	NA	2	Device and Host	Yes	Yes	5W	320 gms.	128 x 110 x 45 (Drawing A)	119 x 93
	PC5043TN-E	480x272 WQVGA 4.3" Color TFT	30000 hrs	Yes	Up-to 128 MB RAM, Up-to 128 MB Flash	3	2	Device and Host	Yes	Yes	6W	330 gms.	128 x 110 x 45 (Drawing A)	119 x 93
PC5070TN	PC5070TN	800x480 WVGA 7" Color TFT	30000 hrs	Yes	Up-to 128 MB RAM, Up-to 128 MB Flash	NA	2	Device and Host	Yes	Yes	9W	610 gms.	195 x 150 x 50 (Drawing B)	184.3 x 131.3
	PC5070TN-E	800x480 WVGA 7" Color TFT	30000 hrs	Yes	Up-to 128 MB RAM, Up-to 128 MB Flash	5	2	Device and Host	Yes	Yes	9W	620 gms.	195 x 150 x 50 (Drawing B)	184.3 x 131.3
PC5121TN	PC5121TN	800x600 SVGA 12.1" Color TFT	70000 hrs	Yes	Up-to 128 MB RAM, Up-to 128 MB Flash	NA	2	Device and Host	Yes	Yes	16W	1.680 kg	312 x 246 x 48 (Drawing C)	293.5 x 226.2

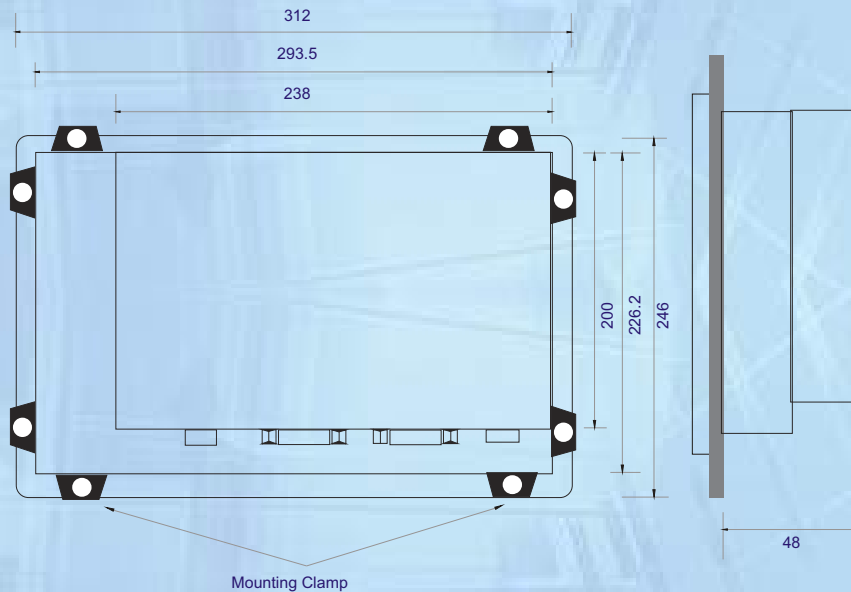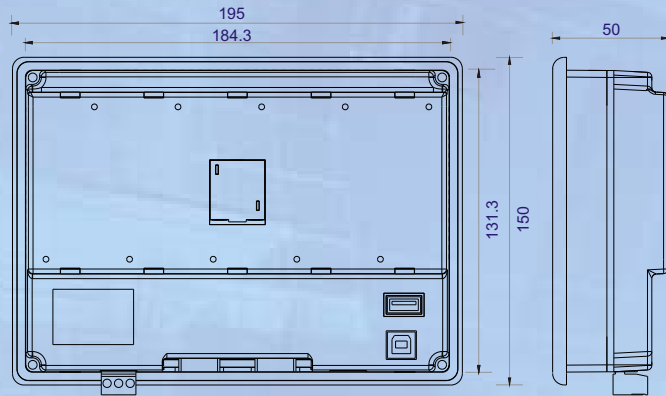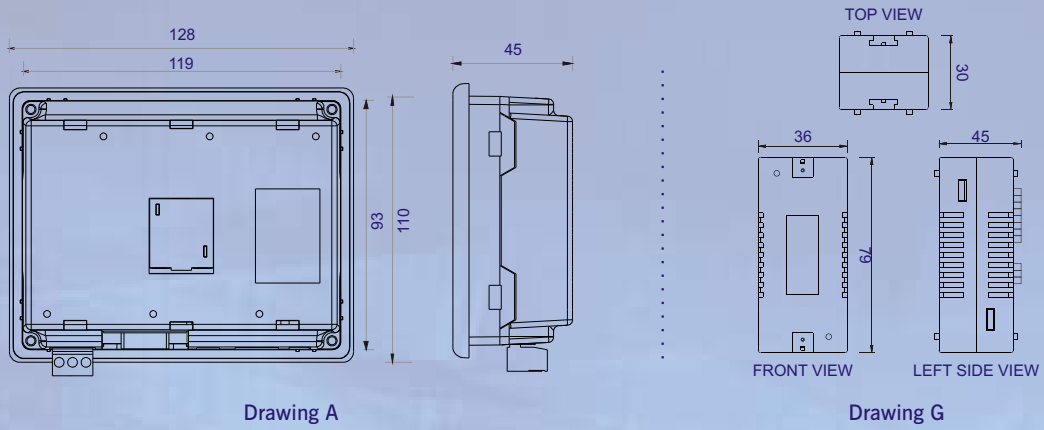| Pluggable Expansion Modules (Digital I/O)		Power Consumption	Weight (Approx.)	Dimensions (mm)
FPED0808P	8 Digital inputs (PNP or NPN) and 8 outputs (0.5A PNP transistor)	0.3 W	70 gms.	36 W x 79 H x 45 D (Drawing G)
FPED-HS-0808P#	8 Digital inputs and 8 Digital Outputs (PNP Type)	0.3 W	70 gms.	36 W x 79 H x 45 D (Drawing G)
FPED0808N	8 Digital inputs (PNP or NPN) and 8 outputs (0.5A NPN transistor)	0.3 W	70 gms.	36 W x 79 H x 45 D (Drawing G)
FPED-HS-0808N#	8 Digital inputs and 8 Digital Outputs (NPN Type)	0.3 W	70 gms.	36 W x 79 H x 45 D (Drawing G)
FPED0012R	12 Digital outputs (Relay)	0.3 W	90 gms.	36 W x 79 H x 45 D (Drawing G)
FPED1600	16 Digital inputs	0.3 W	65 gms.	36 W x 79 H x 45 D (Drawing G)
FPED0016N	16 Digital outputs (0.5A NPN transistor)	0.3 W	65 gms.	36 W x 79 H x 45 D (Drawing G)
FPED0016P	16 Digital outputs (0.5A PNP transistor)	0.3 W	75 gms.	36 W x 79 H x 45 D (Drawing G)
FPED-HS-0808RP	8 Digital inputs (PNP or NPN) and 8 outputs (6 Relay, 2 PNP)	0.3 W	70 gms.	36 W x 79 H x 45 D (Drawing G)
FPED-HS-0808RN	8 Digital inputs (PNP or NPN) and 8 outputs (6 Relay, 2 NPN)	0.3 W	70 gms.	36 W x 79 H x 45 D (Drawing G)

Pluggable Expansion Modules (Analog I/O)		Power Consumption	Weight (Approx.)	Dimensions (mm)
FPEA0202L	2 Analog inputs (4-20mA, 0 – 20mA, 0 – 10 V, -10 to + 10V ranges) 2 Analog Outputs (4-20mA, 0 – 20mA, 0 – 10 V)	0.3 W	85 gms.	36 W x 79 H x 45 D (Drawing G)
FPEA0400L	4 Analog inputs (4-20mA, 0 – 20mA, 0 – 10 V, -10 to + 10V ranges)	0.3 W	80 gms.	36 W x 79 H x 45 D (Drawing G)
FPEA-0402U-16	4 Universal Analog Inputs (4-20mA, 0 – 20mA, TC , RTD, 0-5V, 0 – 10 V, 0-50mV, 0 - 100mv ranges) 2 Analog Outputs (4-20mA, 0 – 20mA, 0 – 10 V). All AI/O 16 bit resolution	0.3 W	90 gms.	36 W x 79 H x 45 D (Drawing G)
FPEA0800LC	8 Analog inputs (4-20mA)	0.3 W	90 gms.	36 W x 79 H x 45 D (Drawing G)
FPEA0800LV	8 Analog inputs (0-10VDC)	0.3 W	90 gms.	36 W x 79 H x 45 D (Drawing G)

4 inputs can be configured as high speed inputs (25KHz) and 2 outputs can be configured for PWM (10 KHz) or 1 quadrature input of 20KHz or 2 quadrature inputs of 5 KHz.

** One "D" type port that supports RS232 and RS485 levels on different pins. "Y" type cable can be used for separate RS232 and RS485 levels simultaneously.

** Universal Serial Port supporting RS232/RS485/RS422.

Dimensions :-

TOP VIEW

30

Drawing A
Depth 90mm with pluggable module. Height including power connector

128
119
93
110
45

36
79
45

FRONT VIEW   LEFT SIDE VIEW

Drawing G

195
184.3
50
131.3
150

Drawing B
Depth 95mm with pluggable module. Height including power connector

312
293.5
238
200
226.2
246
48

Mounting Clamp

Drawing C

All dimensions are in mm.

(Specifications subject to change without prior notice. DS-WinCE-FlexiPanels: Rev. J)