TECO

H610

Human Machine Interface

Human Machine Interface H610

TECO offers high resolutions touch screen[®]HMI from 4.3" to 15", we adopt WinCE 6.0® system as a standard and support Ethernet, Modbus and most industrial communication protocols. Besides, our H610 provide Remote Viewer and Historical Viewer software which help user to manage variable applications. To enhance your value and performance, please choose our H610!

Product Features

Five models in four sizes of 4.3", 7", 10" & 15"

Four high-performance models : HMI 045,075,105,155 and a low-cost model : HMI 073

Touch panels, higher resolution and all in 65,536 colors

Standard Ethernet, USB host, 2 Serial ports & SD Slot

Networks of MPI/Profibus-DP, ProfiNet, DeviceNet, EtherNet/IP, CANopen, EtherCAT, BACnet/IP, CC-Link,

Advanced and reliable WinCE 6.0$^{®}$, platform with more features for efficient and sophisticcated control solutions

HMI 075,105,155 standard aluminum front bezels, optional stainless steel fronts for food, beverage & pharmaceutical industries

Rugged Stainless Steel front bezels with IP66K for high protection on dust & water, and polished surface for easy cleaning

Large memory of 128 MB Flash, 128/256MB SDRAM, sound output

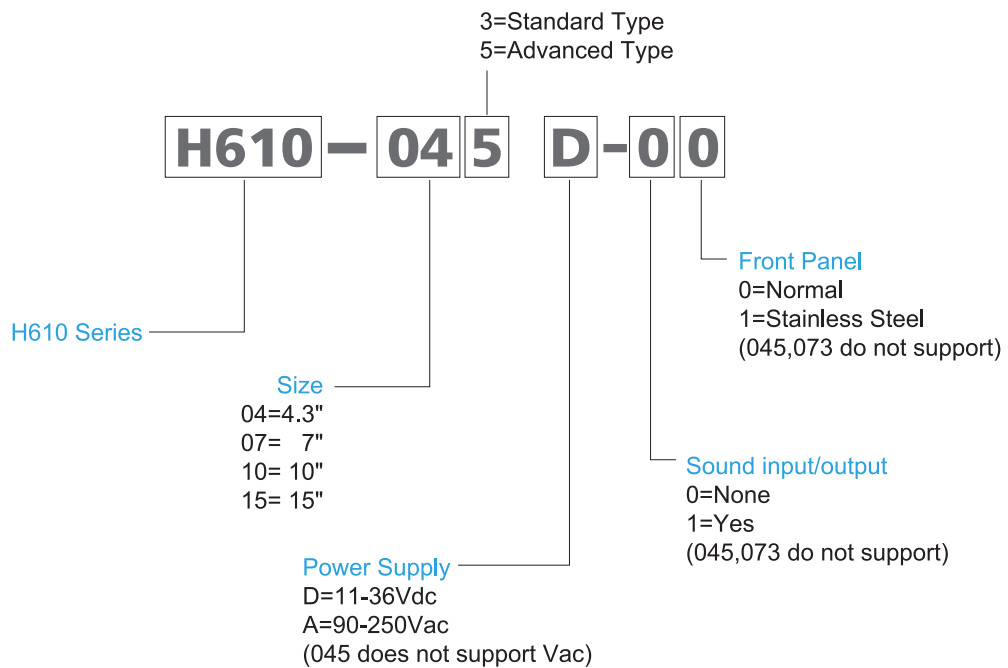USB Host port used for Keyboard, USB stick and Mouse

Horizontal or vertical installation and display

Wide range of power supply 11-36 VDC or 90-250 VAC

LED backlight for even-color displays and long lifetime

Open WinCE 6.0$^{®}$ panels for OEM business

Model Designation

3=Standard Type
5=Advanced Type

H610 – 045 D-00

H610 Series

Size
04=4.3"
07= 7"
10= 10"
15= 15"

Power Supply
D=11-36Vdc
A=90-250Vac
(045 does not support Vac)

Sound input/output
0=None
1=Yes
(045,073 do not support)

Front Panel
0=Normal
1=Stainless Steel
(045,073 do not support)

Model	H610 - 045	H610 - 073	H610 - 075
Display			
Size	4.3"	7"	7"
Resolution (W x H in pixels)	480 x 272	800 x 480	800 x 480
Display type	TFT wide touch screen	TFT wide touch screen	TFT wide touch screen
Colors	65,536	65,536	65,536
Touch screen Type	Resistive analog	Resistive analog	Resistive analog
Active Display Area (W x H mm)	95 x 54	152 x 91	152 x91
Display position	Both horizontal & vertical	Both horizontal & vertical	Both horizontal & vertical
MTBF backlight at 25°C	30,000 hrs	50,000 hrs	50,000 hrs
Backlight	LED	LED	LED
Brightness Adjustment	Yes	Yes	Yes
Screen Saver	Yes	Yes	Yes
Language Fonts	Unicode including Simplified and Traditional Chinese, Japanese & Korean		
Main Hardware			
Processor, CPU speed	ARM 11, 533Mhz	ARM 11, 533Mhz	ARM Cortex-A8, 667Mhz
Flash Memory (ROM)	128 MB	128 MB	128 MB
SDRAM(RAM)	128 MB	128 MB	256 MB
Operation System	WinCE 6.0®	WinCE 6.0®	WinCE 6.0®
Real Time Clock	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes
Sound Output	N.A.	N.A.	Option
SD card slot	Yes	N.A.	Yes
Interfaces			
RS232C, DB9 Male	1	1	1
RS232C/ RS422/ RS485, DB25 Female 1	1	1	1
Ethernet 10/100 Mbps, RJ45	1	1	1
USB Host	1	1	1
Other Networks			
PROFIBUS DP, PROFINET(1 port or 2 ports) Option	Option	N.A.	Option
DeviceNet, EtherNet/IP	Option	N.A.	Option
CANopen, EtherCAT	Option	N.A.	Option
CC-Link, ControlNet, CompoNet	Option	N.A.	Option
General Specifications			
Power Supply	11-36VDC	11-36VDC, 90-250VAC	11-36VDC, 90-250VAC
Consumption (w/o sound output)	10W	12W	13W
Power on LED indicator	Yes	Yes	Yes
Outer dimensions (W x H x D mm)	140 x 116 x 57	212 x 156 x 57	212 x 156 x 57
Mounting depth (mm)	51	51	51
Panel cutout (W x H mm)	123^{+1} x 99^{+1}	197^{+1} x 141^{+1}	197^{+1} x 141^{+1}
Protection	IP65 front, IP20 rear	IP65 front, IP20 rear	IP65 front, IP20 rear
Front bezel, housing	plastic, plastic	plastic, plastic	Aluminum, plastic
Stainless Steel front bezel (option)	N.A.	N.A.	Option, IP66K
Installation	Panel Mount	Panel Mount	Panel Mount
Net Weight (Kgs)	0.5Kg	1.2Kg	1.4Kg

H610 - 105	H610 - 155
10"	15"
1024 x 768	1024 x 768
TFT wide touch screen	TFT wide touch screen
65,536	65,536
Resistive analog	Resistive analog
203 x 152	304 x 228
Both horizontal & vertical	Both horizontal & vertical
50,000 hrs	50,000 hrs
LED	CCFL
Yes	Yes
Yes	Yes
Unicode including Simplified and Traditional Chinese, Japanese & Korean	
ARM Cortex-A8, 667Mhz	ARM Cortex-A8, 667Mhz
128 MB	128 MB
256 MB	256 MB
WinCE 6.0®	WinCE 6.0®
Yes	Yes
Yes	Yes
Option	Option
Yes	Yes
1	1
1	1
2	2
1	1
Option	Option
Option	Option
Option	Option
Option	Option
11-36VDC, 90-250VAC	11-36VDC, 90-250VAC
15W	27W
Yes	Yes
325 x 263 x 56	400 x 310 x 56
50	50
310^{+1} x 248^{+1}	367^{+1} x 289^{+1}
IP65 front, IP20 rear	IP65 front, IP20 rear
Aluminum, metal	Aluminum, metal
Option, IP66K	Option, IP66K
Panel Mount	Panel Mount
3.6Kg	5.1Kg

Operating temperature	0˚C to 50˚C
Storage temperature	-20˚C to 60˚C
Humidity	10% to 90 % RH
Vibration resistance	9 to 150 Hz, 9.8 m/s², X,Y & Z directions 10 times (100 min.)
Operating Shock resistance	15g at 11 msec
Altitude	2000 Meters
Safety standards	CE, UL, CSA

Software Features

Panel Studio

Free powerful and friendly HMI editing software

2-editing styles in both GUI wizard and Property grid

Picture box to import pictures in bmp, wmf, jpg, gif & png formats

Dynamic objects like animating bar graph, button, bit lamp, 32-bit word lamp, drawing tools, etc.

Drawing tools like rectangle, ellipse, etc., maximum 32 bands, each band with visible control, filling color & blinking, with run-time animation like filling, moving & sizing

Many PLC drivers supported on both Serial & Ethernet ports via OPC server

Data exchange between two different PLCs as a gateway

Diagnostic tools for drivers like OPC server & OPC client to test communication between PC and PLC directly

IO poll groups, different scan rates for PLC tags, possible to scan tags always or only tags on active page

Retentive and non-retentive internal variables available for mathematical calculation

3 types of screens in Page, Template and Pop-up

The Scheduler to trigger actions at specific time or time intervals

Recipe management to create data elements and data records in design time

Recipe viewer to edit data records and transfer setpoints from HMI to PLC and vice versa in run-time

Real-time alarms in 7 types, historical alarms and alarm management in maximum 9 groups

Alarm banner to display the latest alarm in single line

Real-time trends and historical trends, with maximum 24 pens for each component

Bit-wise alarms for integer tag received from PLC

Data stored in internal memory, optional SD card or thumb drive

Data logging by 4 methods, 2 types and 10 rates

Script/Macro programmed in C language for mathematical and logical calculation

Run-time user administration done by user-view component

Software in multilingual, easy for local application engineers

Multilingual on the display, easy for users, 30 languages

Online and offline simulating

Copy screens between projects to save developing time

Copy/paste animation for drawing tools like rectangle, ellipse etc., to save developing time

Message libraries via Word Lamp with animations to display various messages based on different values

Advanced buttons with animation in 3 kinds of actions namely clicked, pressed and released with timing and support object oriented

Bit-wise animation used with bit lamp for integer tag to show status of integer tag received from PLC
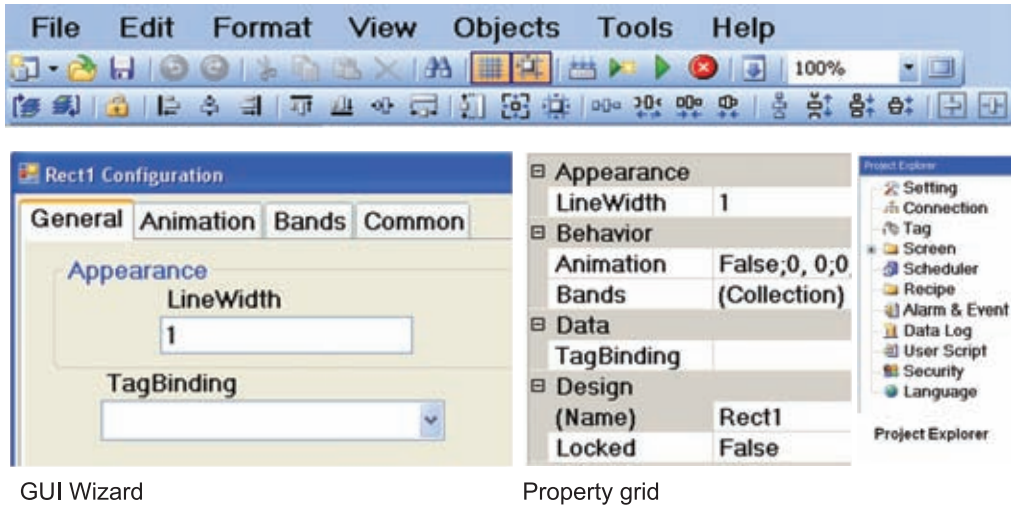
Handy components for tables to quickly draw rows and columns

Project explorer and Tool box to quickly view hierarchy of all objects in software

To download application program efficiently from PC to HMI via Ethernet port, or via USB stick
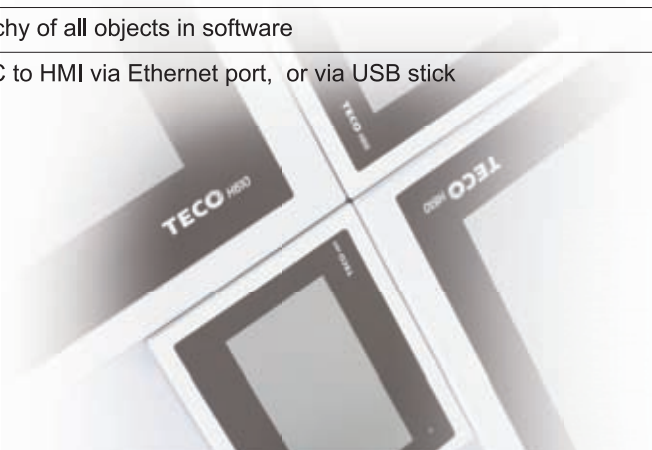
Editing tools & style

GUI Wizard   Property grid

To edit properties of objects via user-friendly GUI Wizard or Property grid similar to Visual Studio® environment

Tabbed pane

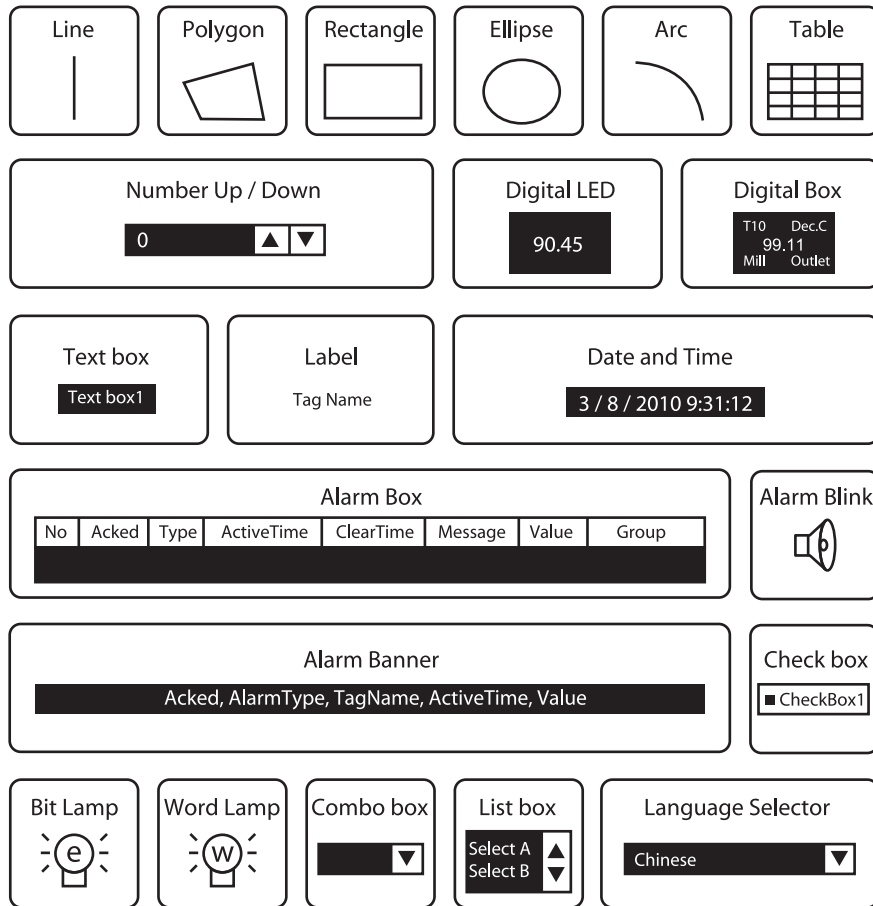| Template | Page1 | Page2 | Page3 | Tag | Event & Alarm | Scheduler |

To quickly retrieve tools in project explorer can be done by using tabbed pane. For example, once user has edited three pages, tag database, alarms, Scheduler, all these are available in tabbed pane for quick retrieval from Main window afterwards.
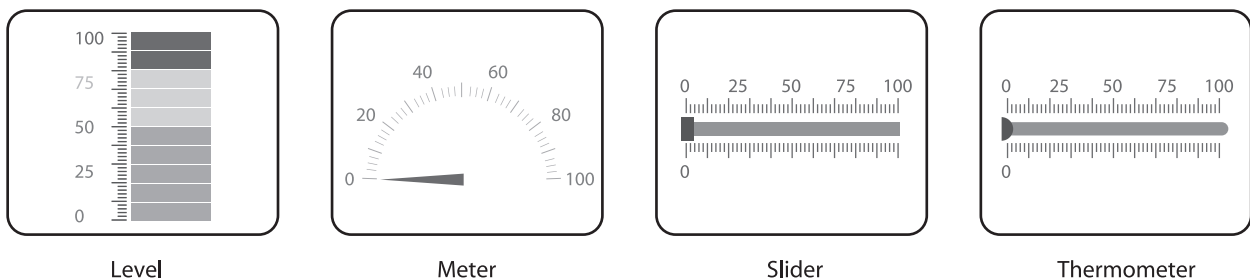
Basic objects

Line, Polygon, Rectangle, Ellipse, Arc, Table, Numerical Up/Down, Digital LED, Digital Box, Text box, Label, Date/Time Label, Alarm Box, Alarm banner, Alarm Blink, Button, Bit lamp, Word lamp, Check box, Combo box, List box, Recipe view, User view and Language selector

Line	Polygon	Rectangle	Ellipse	Arc	Table

Number Up / Down

0 ▲ ▼

Digital LED

90.45

Digital Box

T10   Dec.C
99.11
Mill   Outlet

Text box

Text box1

Label

Tag Name

Date and Time

3 / 8 / 2010 9:31:12

Alarm Box

No	Acked	Type	ActiveTime	ClearTime	Message	Value	Group

Alarm Blink

Alarm Banner

Acked, AlarmType, TagName, ActiveTime, Value

Check box

■ CheckBox1

Bit Lamp

e

Word Lamp

w

Combo box

▼

List box

Select A ▲
Select B ▼

Language Selector

Chinese   ▼

Enhanced objects

Level, Meter, Slider, Thermometer, Bar box, Scale, Historical Trends, Real Time Trends, Picture box

Level

100
75
50
25
0

Meter

40   60
20   80
0   100

Slider

0   25   50   75   100
0

Thermometer

0   25   50   75   100
0

Basic symbols in Panel Studio

Free basic symbols include 112 different ones divided by 18 popular categories.

All symbols are made in high resolution, vector wmf format in less memory.

Symbols of 10 categories are made in 6 colors of red, green, yellow, blue, brown and grey.

Transparent or color background can be selected for any symbols.

Run-time animation: moving, maximum 32 bands, animation on background color, visibility, flipped and rotated in 4 directions, linked to picture file
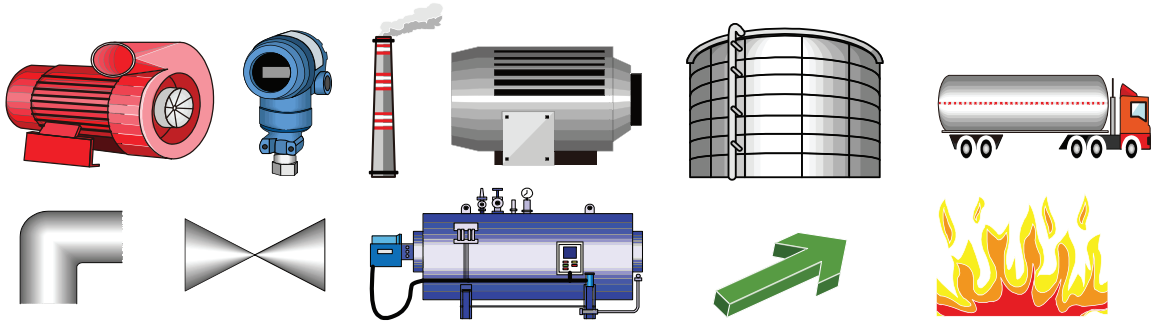
Symbol Factory in Panel Studio Plus

Symbol Factory offers over 4000 high-resolution symbols with run-time animation

Transparent or color background can be selected for any symbols.

All symbols are made in high resolution and .NET components in less memory.

Run-time animations: maximum 50 bands, each band covering foreground color or blinking in different styles of shade, solid or visibility

Within Panel Studio, only 1st symbol to be selectable in each category

Within Panel Studio Plus, all symbols to be selectable

Fig: Pump
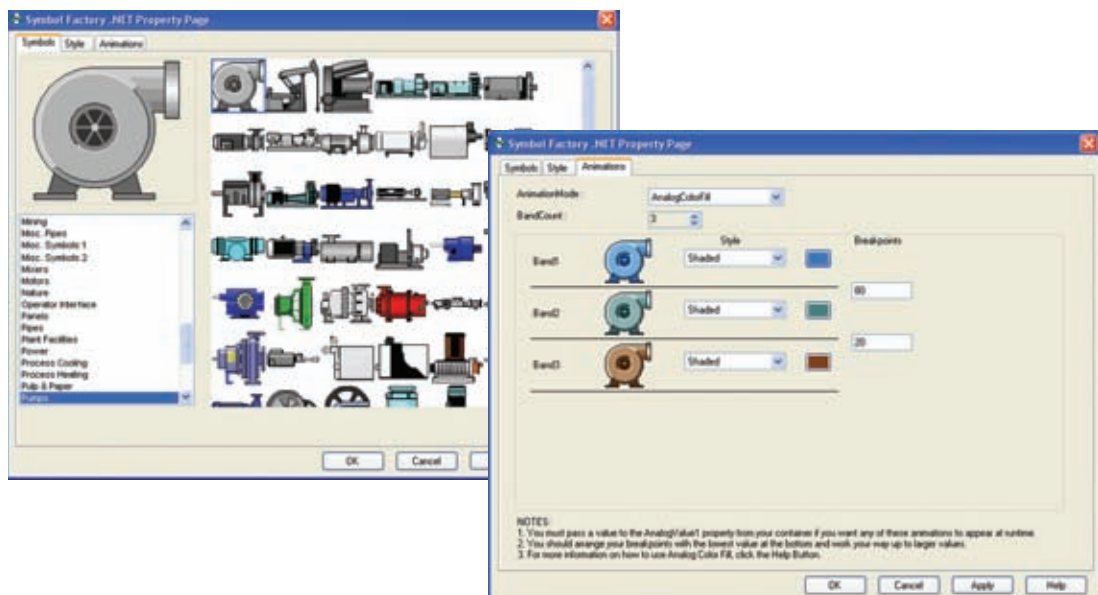
Online simulator

It is to test HMI project on PC by connecting it with PLC directly. The online simulating software can last only for 2 hours.

Offline simulator

It is to test HMI project offline on PC without connecting with PLC. It is possible to enter tag values via Tabular column, simulate the tag values, and check the behavior of objects.

Project compile

It is to check problems in application development like syntax errors, missing tags for objects, etc. After successful compilation, it creates a build for downloading to HMI.

Download the projects

via Ethernet port or USB stick

Multiple sessions

Two projects can be opened simultaneously on PC and copy screen from project 1 to project 2. It saves time and the cost for the programmer.

HMI Remote Viewer

Remoting on site situation from PC/NB in the office.

Button function editor

Advanced buttons with 3 kinds actions namely clicked, pressed and released with timing Hold time to stay the command by predefined time after clicking button, and repeat time for pressed button

Page control functions	Navigate to various pages- 1st, next, last, previous, by number, pop-up
Alarm control functions	dump, clear, Ack, move to 1st page, last page, PageUp and PageDown
Historical trend control	zoom in, out, all, move to 1st page, previous page, next page, last page
Data log control	start/stop data logging, dump, clear
Scheduler control	start/stop at a specific time
On/Off	turn bit on, turn bit off, toggle bit
Math	set value to Tag, add value on Tag, subtract value from Tag, copy TagB to TagA, add TagB on TagA, subtract TagB from TagA, swap TagA for TagB
Others	log in/out, shut down, audio functions, recipe functions

Data exchange as gateway

It is possible to exchange data from different PLCs via different ports of HMI simultaneously. Tools in HMI software are able to copy Tags from COM1 port to COM2, Ethernet, internal memory, or vice versa.

Diagnostic tools of OPC server, client

It is to test communication between PC and PLC, mainly on wirings & drivers, for quick trouble shooting and diagnostic purpose without using HMI and editing software.

OPC server

OPC client
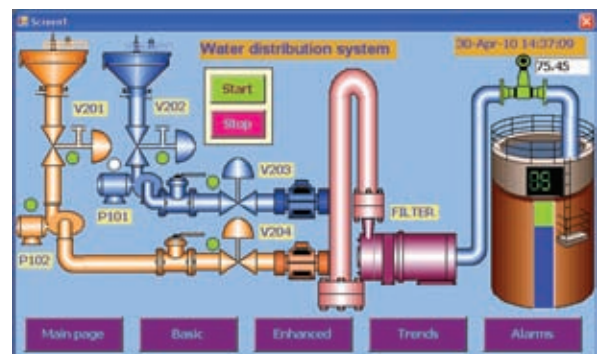
Tag database

Tag scan mode   active page or always
Tag scan rate (IO poll groups)   100 msec. to 10,000 msec.
Simulation of tag   possible
Retentive internal memory available

Templates

Screen can be defined as template and linked with another pages. For example, buttons, date/time etc. can be defined once and reused in other screens easily.

Pop-up screens

They are triggered by alarms with messages for the operator or display more information about process working area whenever the space of main screen is unavailable.
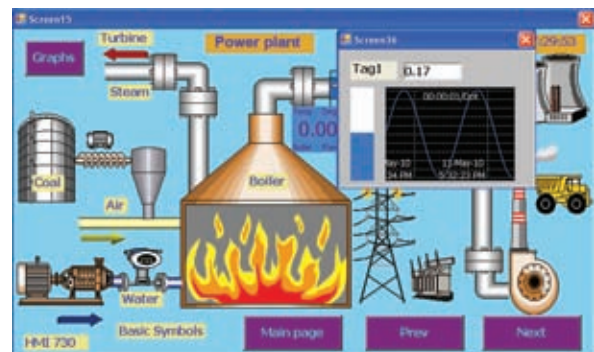
Scheduler types

Countdown	to trigger an action one time after elapse of time
Repeat countdown	to trigger an action repeatedly at certain time interval
Daily	to trigger an action at specific time daily
Weekly	to trigger an action at specific time weekly
Monthly	to trigger an action at specific time monthly

Recipe administration

Run-time	Design-time
User friendly recipe viewer	Create recipe elements
Add data records	Add data records
Edit data records	
Save and Delete data records	
Write data records from HMI to PLC	
Read data records from PLC to HMI	
Select recipe	

Alarms
real Time, historical alarms

|	
Alarm setpoint reference	constant or tag
Hysteresis	available
Alarm types	Hi, Low, High High, Low Low, Dev+ & Dev-
Alarm control functions	acknowledge, dump, clear, navigation between pages
Job types	log alarm, log auto ack.alarm and log event
Customized alarm messages	possible

Data logging

Log trigger type	by timer, by change
Timer	100 msec., 1,2,5,10,20,30 sec., 1, 5 & 10 min.
Max. data points	as per predefined set point
Data log method	Instant, average, minimum and maximum

Data acquisition software
Historical Viewer

Historical data and events are stored in internal memory or SD card first, then downloaded to USB stick. The PC software **Historical Viewer** is used to view historical data & events on USB stick. Features of Historical Viewer are listed below,
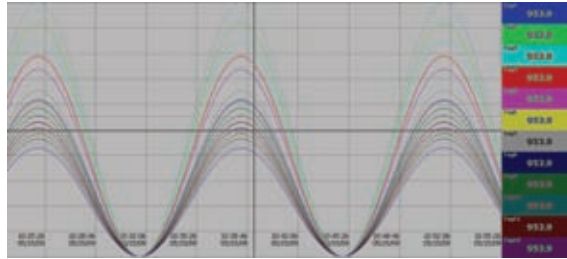
- display historical trend
- display historical alarms/events
- display historical values on table
- search data at a specific time, time period, event/alarm and tag wise
- view trends both horizontally and vertically

- zoom out & zoom In
  display options as x sec., min./dot, x min.,
- hrs.,days, weeks, months/page
- display white or black background
- print trend view, event/alarm list & Tag values
- export data and alarms/events to CSV files.

Security

Numbers of users	100
Numbers of levels	9
Password expiry period	define the number of days or unlimited
Run-time user administration	available
Prevent operators from unauthorized access to controls and data entry.	

Script / Macro supported functions
C program

System functions	ack. alarms, start/stop scheduler, etc.
Math functions	Trigonometric, Log, Exp, Round, Power, etc.
Arithmetic functions	addition, subtraction, multiply, division, remainder
Logical functions	and, or, true, false, not, etc..
Shift functions	left, right
Relational functions	=, !=, >, <, <=, >=
Selection functions	If, else
Iteration functions	while, for
Jump functions	break, continue
Support Object Oriented	

The application

SD Card（Up to 32G）

SD slot

* To store historical data and alarms

Speaker

Sound Output + input

* Sound intput (recorded messages for other operators)
* Sound output (to speaker)
* 3DI+3DO

Computer   Wireless device   PLC

Ethernet

* Ethernet 10/100 BaseT, One standard port
* To connect with various PLC's, Inverters etc.
  (See driver list for supported protocols)
* To download application program from PC to HMI
* To upload application program from HMI to PC
* Load SD card data from PC

USB Disk

USB, Host

* To transfer historical data, historical alarms
* Upload firmware and application program
* Connect with Mouse / Keyboard / Printer

Networks (all slaves except MPI)

* MPI/Profibus DP Slave/ Profinet IO/ DeviceNet/
EtherNet/IP/ CANopen/ EtherCAT/ BACnet/IP/CC-Link

PLC

COM1

* COM1 (RS232C), DB9 male
* To connect with various PLC's, Inverter's, Controllers etc.
  (See driver list for supported protocols)
* Modbus Slave is available

Controller   IO module

Inverter   PLC

COM2

* COM2 (RS232C/ RS422/ RS485), DB25 female
* To connect with various PLC's, Inverter's, Controllers
   etc. (See driver list for supported protocols)
* Modbus Slave is available

Drivers of PLC & inverters

OPC server within Panel Studio includes many drivers for PLCs, inverters and 3rd party devices for both Serial (RS232, RS422, RS485) and Ethernet ports. HMI is able to communicate on both ports simultaneously.

Serial drivers

Manufacturers	Protocols	Models
Allen Bradley	DF1 protocol	SLC 500 series, MicroLogix, CompactLogix, ControlLogix, PLC5 series
Allen Bradley	DH485	SLC 500 series, MicroLogix
Beckhoff serial	KS8000 protocol	CX 90x0, & CX10x0 series
Danfoss	FC protocol	FC series for AutomationDrive / HVAC Drive
Delta	DVP serial	DVP-ES, DVP-EX, DVP-SS, DVP-SA, DVP-SX, DVP-SC, DVP-EH, DVP-EH2, DVP-SV, DVP-PM
Fatek	Fatek	FB series
Festo	CI Command	FEC series
Fuji	T-Link protocol	Micrex- F series
Fuji	Micrex Series protocol	SPH 200, SPH 300, SPH 300EX, SPH 2000
GE Fanuc	Series Ninety protocol (SNP)	Micro PLC, GE 90-30/ 90-70, Versa Max
GE Fanuc	SNP-X protocol	Micro PLC, GE 90-30/ 90-70, Versa Max
Hitachi	Hitachi Hi protocol	Micro EH, EH, EHV & H series PLC's
IDEC IZUMI	Data Link	MicroSmart,OpenNet Controller,Micro3
Keyence	ASCII	KV 700, KV1000, KV3000 & KV5000
Koyo	Direct Net	DL05, 06, 105, 205, 305 & 405 series
Koyo	K Sequence	DL05, 06, 105, 205 & 405 series
Lenze	LECOM	8200/ 9300 Vector, 9300 Servo controller, 9300 Servo PLC, Driver PLC, 8200 Motec
LG	LG Cnet	GM series, MK series-K80S, K120S, K200S, K300S, K1000S, XGB & XGK series
Matsushita Panasonic	Mewtocol	FP series-FP0, FP2, FP-X, FP-Sigma, FP2SH
Messung	Modbus RTU	Nextgen 2000, 5000 series
Mitsubishi	Melsec	FX, A, QnA & Q series, FX direct CPU port
Modicon	Modbus ASCII, RTU Master	Any device
Moeller	CANopen	XC100, XC200 series (Via CANopen option converter)
Omron	HostLink	CV, CVMX, CX, CH, CS, CJ, CQM1H series
Omron	Fins	CP, CS, CJ series
Schneider	UniTeleway	TSX-Micro & TSX series
Siemens	PPI	S7-200
Siemens	MPI	S7-300/400
Toshiba	Computer link,T series serial	S2E/ST2 series
Toshiba	T1-micro series serial	T1-Micro
Vigor	Vigor Serial	M, VB, VH series
Vipa	MPI, MP^{2}I	100V,200V,300V,300S,500S
Yaskawa	Memobus- MP Serial	Memocon, MP-900 & MP-2000 series
Yaskawa	Memobus-Inverter serial	F1000, V1000, T1000, A1000
Yokogawa	Factory Ace FA-M3 serial	FA-M3 model F3SPX series

Ethernet drivers

Manufacturers	Protocols	Models
Allen Bradley Ethernet	Ethernet/IP, CIP	SLC 500 series, MicroLogix, CompactLogix,ControlLogix,PLC5 series
Beckhoff Ethernet	Beckhoff Ethernet	CX90x0, CX10x0 series
Delta Ethernet	Delta Ethernet Protocol	DVP-SV series
Fatek Ethernet	Fatek Ethernet	FB series
Festo-Ethernet	Ethernet CI Command	FEC series
GE Ethernet	SRTP	GE 90-30/ 90-70, Versa Max
Hitachi Ethernet	H series Ethernet	EH, EHV and H series PLC
Keyence Ethernet	Keyence Ethernet	KV 700, KV1000, KV3000 & KV5000
Koyo Ethernet	Direct ECOM	DL05,06, 205, 405
LG Ethernet	LG Fast Ethernet	GM series, MK series 200S, 300S, 1000S, XGB & XGK series
Mitsubishi Ethernet	A, Q, QnA & FX Ethernet	A, Q, QnA & FX series PLC
Modicon	Modbus TCP Master	Any device
Omron Ethernet	FINS UDP	CH,CS & CJ Series
Siemens S7 Ethernet	Siemens TCP/IP	S7-200,300, 400 (Connection Via CP card at PLC),S7-1200
Toshiba Ethernet	Toshiba Ethernet	T series, V series
Vipa	TCP/IP	200V,300S,500S
Yaskawa MP Ethernet	Memobus Ethernet	MP-900 & MP- 2000 series
Yokogawa Ethernet	Yokogawa FA-M3 Ethernet	FA-M3 model F3SPX series

Optional Accessories

Networking Cards

Item	Ordering Code
MPI/Profibus-DP	Hnet 01
ProfiNet	Hnet 02
DeviceNet	Hnet 04
EtherNet/IP	Hnet 05
CANopen	Hnet 06
EtherCAT	Hnet 07
BACnet/IP	Hnet 08
CC-Link	Hnet 09

Panel Studio Plus

Optional USB Hard Key provides symbol factory and more than 4000 symbols

Item	Ordering Code
Panel Studio Plus Hard Key	Hkey01