

Softclinic PV Plant - Monitor User Guide

Real time data monitoring and long term data analysis for PV Plants



Revision History

Version	Date	Version
1.0	07/2011	First release (Australian version)

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1. Introduction

1.1 General description

PV Clinics Monitor allows you to view (remotely over the internet):

- Tables of alarms that have been triggered by events around the PV Plant
- Current operation of the PV Plant
- Graphs of historical values recorded around the PV Plant

Typically you would use the PV Clinics Monitor software if you had received an alert about the plant via Email or SMS. For acknowledging and handling alerts the software lets you:

- Investigate the cause of the fault remotely
- Accept any alarms
- View measurements and diagnostic messages from devices around the plant
- View graphs of plant operation both current and historical

Access to areas of the PV Plant is governed by the user settings configured using PV Clinics Editor software (as described in the installation manual).

You can set up links to several PV Plants using the same software on the same computer/laptop. The software allows you to perform diagnostic checks around the plant, if there are Ethernet connections back to the Plant Room PC where the database is stored.

1.2 Installing the software

There are no options to select, simply run the file PV-Clinic Monitor.msi to install the program on your PC. The file is on the USB stick supplied with your software, alternatively you can simply ask us for the latest revision.

PV.Monitor [Site List]							
Weidmüller : PV Clinics M		Weidmüller 🏵					
Site.Name	Host	DB.Name	User				
Huntingwood	77.123.245.107	huntingwood	Jose				
<mark>8ª N</mark> ew ⊡ Edit XDelete			📄 <u>C</u> onnect				

1.3 Welcome screen (Site list)

The welcome screen provides a list of links to PV Plants. Along the bottom of the page are command buttons which allow you to Add (New), Edit and Delete links or to 'Connect' to the selected link. Click on a link to select.

1.4 Site editing screen

If you click the Edit or the New button, the site link editing window will appear as shown. Enter the details for the PV Plant that you wish to browse. Details are:

Site Name - a name used to describe the link in the site list so you can write anything you want here.

Host - fixed IP of PV Plant control room PC. If you are running PV Clinic Monitor on the control room PC put localhost in as the host name.

DB Name - the name of the PV Plant database.

User Name – User Names are case sensitive. You can select the required format for site usernames (Group.UserName or UserName) in PV Editor.

2 PY.Monitor [Site List]			×
Weidmüller : PV Clinics Monitor		Wei	dmüller 🏵
Site Name :	Huntingwood		
Host:	77.123.245.107		
DB Name :	huntingwood		
UserName	: Jose		
		✓ Accept	X <u>C</u> ancel

2. Main screen description

2.1 Overview

The main screen has three tabs:

Online Values – The online values Tab allows you to view the current (On-Line) communications status and current measurements from Custom devices and String boxes around the plant.

Historical – Historical Tab gives you access to a system of Graphs showing trends around the plant. It also allows you to query information for export to Excel.

Alarms – The Alarms tab shows a list of current (On-Line) or Historical alarms in tabular format. It allows you to find out more detail about an Alarm condition, comment on them and acknowledge them. Once an alarm condition clears it is moved from the On-Line to the Historical database.

2.2 Security

In the left hand side pane of the main screen is a system tree representation of the PV Plant. This tree will only show devices which the User is allowed to view. To change the settings for each user your system administrator will have to use the PV Clinic Editor program (described in the PV-Clinics Installation Manual).

🚰 P¥ Plant						_ 🗆 ×
Weidmüller : PV Clinics	Weidmüll	er 🏵				
🛄 OnLine Values 🛛 🖂 Historical	🗍 🔔 Alarms	1				
Solar Plant : Demo	Power :	: Kw.				
Communication Status	Communic	ation Status				
inverters ⊨ relavs	Status	commDevice	moduleType	group		mod🛋
abb relay 1	Ok	Inverter1StringBoxe	stringBox	inv1		cb1_
ia di meteorology	Error	Inverter1StringBoxe	stringBox	inv1		cb1_
E In String Boxes		Inverter1StringBoxe	stringBox	inv1		cb2
in∨1		Inverter1StringBoxe	stringBox	inv1		cb2_
ttt cb1_west		Inverter1StringBoxe	stringBox	inv1		cb3_
_		Inverter1StringBoxe	stringBox	inv1		cb3_
		Inverter1StringBoxe	stringBox	inv1		cb4_
		Inverter1StringBoxe	stringBox	inv1		cb4_
		Inverter1StringBoxe	stringBox	inv1		cb5_

3. Online Values Tab

3.1 Overview

The Online Values Tab has a system tree representation of the PV Plant in the left hand side pane. It is divided up into three sections, which you can select to display detailed information in the right hand pane:

Communications – shows a table of the communication status between the PV Plant Control Room Computer (Running PV Clinics Runtime) and each device in the network.

Custom Devices – shows the measurements from any custom devices that have been included in the PV Plant. Typically these will include readings from Inverters, Weather Stations and other Modbus Devices from various manufacturers.

String Boxes – shows the string currents and voltages measured around the PV Plant.

The large headline at the top of the Tab shows the total power production of the PV Plant in kW.

3.2 Communications

The communications Tab shows a table of communication status. There is a row for each custom device/string box. In the first column the status is show as Error (on a red background) or OK (on a green background). In the example below string box cb1_east on communications device Inverter1StringBoxes is not responding however all other devices on the same communications link are OK.

If the status is blank it is either waiting to update or you do not have permission to view the Custom device or string box.

The text ("Communication Status") at the top of the table is green if all links are functioning correctly (and red otherwise).

🚰 P¥ Plant						<u><[]</u>				
Weidmüller : PV Clinics	s Monitor					Weidmüller 🟵				
📃 OnLine Values 🛛 🖂 Historical	🗘 Alarms	1								
Solar Plant : Demo Power : Kw.										
Communication Status	Communic	ation Status								
E-III String Boxes	Status	commDevice	moduleType	group	module	Description 🔺				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb1_west	Sub Array to the west of combiner box 1				
	Error	Inverter1StringBoxes	stringBox	inv1	cb1_east	Sub Array to the east of combiner box 1				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb2_west	Sub Array to the west of combiner box 1				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb2_east	Sub Array to the east of combiner box 2				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb3_west	Sub Array to the west of combiner box 3				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb3_east	Sub Array to the east of combiner box 3				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb4_west	Sub Array to the west of combiner box 4				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb4_east	Sub Array to the east of combiner box 4				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb5_west	Sub Array to the west of combiner box 5				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb5_east	Sub Array to the east of combiner box 5				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb6_west	Sub Array to the west of combiner box 6				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb6_east	Sub Array to the east of combiner box 6				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb7_west	Sub Array to the west of combiner box 7				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb7_east	Sub Array to the east of combiner box 7				
	Ok	Inverter1StringBoxes	stringBox	inv1	cb8 west	Sub Array to the west of combiner box 8				

₩ P¥ Plant								
Weidmüller : PV Clinics Monitor Weidmüller 32								
🛄 OnLine Values 🛛 🔂 Historical	🗘 Alarms							
Solar Plant : Demo	Power : Kw.							
Communication Status	26/07/2011 11:57							
inverters	Data	Value	Description					
TTT inv 2	Temperature_Mod		Temperature Module					
-ttt inv 3	Temperature_Amb		Temperature Ambient					
-ttt inv 5	Solar_Irradiation_Horit		Solar Irradiation Horitzontal					
TTT inv 6	Wind_Speed		Wind Speed					
inv 9								
E-M relays								
🖃 🔜 meteorology								
station_n13								
	1							

3.3 Custom Devices

Selecting a custom device allows you to see all the readings for that device. The top headline shows the time the data was last updated in green. If the headline (above the table) shows red then the On-line database in not being updated, i.e., PV Clinics Runtime may not be running on the Plant room PC.

Select a group to see a list of all devices in the group.

^{™ PV Plant} Weidmüller : PV Clini	ics Monitor						<u>_□×</u> Weidmüller ૐ
OnLine Values Historica	al (Alarms)	16.09 Kw.					
inverters	[▲] 26/07/2011 1	4:16 Volta	ge : 401 V.	Current	: 120.37 Amp. Av.Current : 15.05 Amp.	Power : 48.27 Kw.	Temp : 25.1 °C
TTT inv 2	String	Ampers	Power Kw.	Dev. %	Description		
-ttt inv 4	String.1	14.85	5.955	-1.33	String current.1		
TTT inv 5	String.2	15.28	6.127	1.53	String current.2		
-ttt inv 6	String.3	14.94	5.991	-0.73	String current.3		
TT inv 8	String.4	15.19	6.091	0.93	String current.4		
inv 9	String.5	14.76	5.919	-1.93	String current.5		
abb relay 1	String.6	15.36	6.159	2.06	String current.6		
meteorology	String.7	14.73	5.907	-2.13	String current.7		
⊟ I String Boxes	String.8	15.26	6.119	1.4	String current.8		
inv1 inv1							
-ttt cb1_west							
-ttt cb2_west							
ttt cb2_east	-						

3.4 String Boxes

Selecting a string box allows you to see all the string currents for that string box. It also shows totals, temperature and average values in the headline along with the time the data was last updated.

Select a group to see a table of totals and average values for each device in the group and the total power created by that group of string boxes (shown in the headline above the table).

Note: If the headline shows red then the On-line database in not being updated, i.e., PV Clinics Runtime may not be running on the Plant room PC.

eidmüller : PV Clinics Monitor Weidmüller 3									
OnLine Values 🖂 Historical 🗍 🗘 Alarms									
lar Plant : De	mo Power : 1484	4.35 Kw.							
Communication Status	Group : inv2 Po	wer : 767.49 ł	¢w.						
String Boxes	Module	Voltage	Ampers.	Avg. Amp.	Power Kw.	Temp. °C	Description		
-un Invi -ttt cb1_west	cb1 west	399	120.59	15.07	48.12	24.9			
ttt cb1_east	cb1 east	407	119.63	14.95	48.69	24.8			
ttt cb2_west	cb2 west	393	119.3	14.91	46.88	24.8			
-ttt cb3_west	cb2_east	396	119 44	14.93	47.3	25.2			
-ttt cb3_east	ch3 west	407	119.64	14.95	48.69	24.9			
	ch3_east	30/	120.83	15.1	47.61	24.8			
cb5_west	edst	409	110.36	14.02	40.00	25.1			
	west	409	119.30	14.92	40.02	20.1			
TT CD6_west	cd4_east	394	120.45	15.06	47.46	25.2			
ttt cb7_west	cb5_west	400	120.85	15.11	48.34	24.9			
-ttt cb7_east	_cb5_east	390	119.84	14.98	46.74	25.1			
m cb8_west	cb6_west	404	119.59	14.95	48.31	24.8			
1 inv2	cb6_east	405	119.48	14.94	48.39	24.8			
cb1_west	cb7_west	398	120.16	15.02	47.82	25.2			
cb1_east	cb7 east	394	119.29	14.91	47	24.8			
	cb8 west	409	119.94	14.99	49.06	24.9			
ttt cb3_west	ch8_east	404	119.47	14.93	48 27	24.9			
ttt cb3_east	Cust	104	119.47	11.00	19.21	21.0			

4. Historical Tab

4.1 Overview

The Historic Tab allows you to look back at specific details of the plants operation and export historical data about the plant as .xml type Excel spreadsheets.

4.1.1 Display areas

The historical Tab pane is split into three horizontal areas, starting at the top these are:

- Query table this area is where the results of a query on the database are shown as a table. The records shown in this table are available for export and are used to draw the graphs in the Graphical display.
- **Historical Graphic display** this area shows the data in the Query Table as a continuous graph. There are controls that allow you to examine different areas of the graph, change the pens, horizon-tal and vertical scaling, zoom in and out, etc.
- **Graph key** shows the pen colours assigned to each line on the chart and other useful data about each measurement (maximum, minimum and average values).

You can vary the size of the panes by dragging the border between them around.

Mary Planc	X
Weidmüller : PV Clinics Monitor [Runtime-Demo]	Weidmüller 🔀
🗄 OnLine Values 🖾 Historical 🛕 Alarms	
Buery Refresh	XML Excel export
Query Table	
🖾 Pens 🛛 🕂 Multi Axis 🕮 H. Zoom 🛛 🧿 Time 📄 Label	🖨 Print
Historical Graph Display	
Image: Size View: 1 1 100 % 1	
Graph Key	

I Last Dates Size 7 → Days C From Date	▼ Interval 15 Minutes ▼]
C From Date Select Query Custom Querys Conversion Check Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Check Custom	Query Conversion Check Image: Conversion Check Data Value Insolation Insolation South Insolation North Ambient Temperature Wind Speed q2_1 Power q2_3 Power q2_4 Power q2_5 Power q1_1 Power q1_3 Power	Bnew Query ➤ Delete Query om.meteo].[Solar_Irradiation_Horit] > 0 Description Horizontal Insolation Weather Station Insolation - South Weather Station Insolation - North Ambient Temperature Wind Speed Power collected by q2_1 Power collected by q2_2 Power collected by q2_3 Power collected by q2_5 Power collected by q1_1 Power collected by q1_2 Power collected by q1_3
	🗹 🗌 😽 New 🐻 Edit	: 🗙 Delete 🗈 Copy 🖺 Paste 🛛 🍝 🔶 🚽 🗸 Ok 💢 Cancel

4.2 Query Table

4.2.1 Selecting the data for the Graph

To start analysing the Historical data you will have to select a set of data to view in graphical form or Export. The first step is to query the MySQL database and you start this process by pressing the Query button:

🔒 Query

The Query Design Screen (see picture above) will be shown. In the example shown we are looking at a Custom Query called 'Conversion check'.

To run the selected query, click the OK button at the bottom right of the screen. PV Clinic Monitor will display a screen that allows you to define the pen colours for each graph trace. Go to the Graphical interface section for more information.

4.2.2 Preset Queries

Select a string box or custom device name from the System tree in the right hand pane for preset queries. Once you have selected a preset query you can check or uncheck the boxes next to the different data types to have them included or excluded from your query. The screen also gives the option of adding a 'WHERE' clause to the query.

Note: there are preset queries available that summarise String Box Group Data. They appear below the group with names in the format group.summary.

Data Defi	nition	
Data Name Description DB Field	Solar_Irradiation_Horit Solar_Irradiation_Horit [view.cd.meteorology.custom.station_n13].[Solar_Irradiation_Horit]]
	🗸 <u>O</u> k 🗡 <u>O</u> k	ancel

4.2.3 Adding a WHERE clause to a query

Click the checkbox to use a where statement. You can use any MySQL 'Comparison Operator' that works for the version of MySQL that the site uses. These do not vary much between versions and a full list can be found on the MySQL website.

To find the name of data field for the comparison, double click on a row in the query table. The data definition screen (shown above) will open and you can cut and paste the 'DB Field' value to use in the WHERE clause.

Note: be aware that some DB fields may contain NULLs.

4.2.4 Query timeframe and interval

The top of the query design screen allows you to select the timeframe and the interval between readings. You can either use the "Last Dates" selection (to view the most recent data) or specify a specific time period for the query. Long timeframes and short intervals may lead to queries that take a long time to run so keep it simple.

C Last Dates		
● From Date 01/01/10 ▼ 06:20 ÷	Size 14 🕂 Days 🔹	Interval 15 Minutes

 C Last Dates ✓ From Date 01/01/10 ▼ 06:20 ÷ 	Size 14 📩 Days 💌 🔽 Interval 15 Minutes 💌
Select Query	Group Custom Querys 🔀 New Group 🗙 Delete Group
Custom Querys Personal Custom Devices Custom Custom Devices Custom Custom Cust	Grupo Description

4.2.5 Adding a Custom Query group

By default the Query Design Screen as a single group ("Personal") to keep Custom Queries in. You can manage the folders using the New Group and Delete group buttons.

4.2.6 Adding a new Custom Query

To add a new custom query to a new group use the New Query button at the custom query group level. You can also add and delete queries when a custom query is selected.

C Last Dates ● From Date 01/01/10 ▼ 06:20 ÷ 5	Size 14 📩 Days 💌	✓ Interval 15 Minutes ▼
Select Query	Group Personal	Hew Query
Custom Querys Custom. Custom Devices Custom	Consulta G Custom.	Description

 C Last Dates Size 7 → Days C From Date 	▼ Interval 15 Minutes ▼		
Select Query Personal Custom Devices Custom Devices Custom Devices Tirrad_nord Firrad_sud Firrad_sud Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Devices Custom Check Custom	Query Conversion Check. Image: Conversion Check. Image: Conversion Check. Data Insolation Insolation South Insolation North Ambient Temperature Wind Speed q2_1 Power q2_2 Power q2_3 Power q2_5 Power q1_1 Power q1_2 Power q1_3 Power	Be New Query ▲ Delete Query Immeteo].[Solar_Irradiation_Horit] > 0 Description Horizontal Insolation Weather Station Insolation - North Ambient Temperature Wind Speed Power collected by q2_1 Power collected by q2_2 Power collected by q2_3 Power collected by q2_4 Power collected by q1_1 Power collected by q1_2 Power collected by q1_3	

4.2.7 Designing a custom query

i.

Custom query command line buttons

Once you have created a new Query with the New Query button, you will need to make up the set of data (from database fields) to be included. The DB Fields are show in table format and at the bottom of the table is a command line. The buttons on the command line work as show below:

lcon	Button	Action
<mark>₽•</mark> <u>N</u> ew	New	Add a new data line
<mark>∎b</mark> ∭ <u>E</u> dit	Edit	Edit the currently selected line
X <u>D</u> elete	Delete	Delete the current data line
🖹 <u>C</u> opy	Сору	Copy the current data line to the clipboard
<u>P</u> aste	Paste	Paste from the clipboard to after the current position
著 🛧 🝷 🛓	Shift	Shift the currently selected line up and down the table
✓ <u>O</u> k	OK	Run the selected query
🗙 <u>C</u> ancel	Cancel	Exit without running the query (changes will still be saved)
	Select	Select all data lines (for inclusion in the query)
	Deselect	Deselect all data lines (no data will be included)

Note: You can copy data fields from any of the preset queries using the copy and paste buttons.

Data Defi	nition
Data Name	Insolation
Description	Horizontal Insolation
DB Field	[view.cd.meteo.custom.meteo].[Solar_Irradiation_Horit]
	Qk → <u>C</u> ancel

Defining which PV Plant measurements to include in a query

When you click the New or Edit buttons the Data Definition screen will show. To define the DB Field press

the Select button (\geq). The Data select screen will show (see below). The data select screen allows you to pick any measurement from around the plant to include in your query. When you have selected the DB Field, values will be filled out automatically for the Name and Description. You can edit these if you like.

4.2.8 Exporting historical data

XML Excel export

After the query has been run by clicking the OK button you can export the data table using the Excel export button.

Select Data	Query inv1.Summary			
⊞	 Data	Description		
	₩ Voltage.cb1 west	Voltage.cb1 west		
inv1	™ TotalCurrent.cb1_west	TotalCurrent.cb1_west		
🖓 inv1.Summarv	AverageCurrent.cb1_west	AverageCurrent.cb1_west		
避 cb1_west	TotalPower.cb1_west	TotalPower.cb1_west		
- 🛺 cb1_east	⊠ Voltage.cb1_east	Voltage.cb1_east		
🖓 cb2_west	™ TotalCurrent.cb1_east	TotalCurrent.cb1_east		
🖓 cb2_east	🖂 AverageCurrent.cb1_east	AverageCurrent.cb1_east		
- Jan Cb3_west	™ TotalPower.cb1_east	TotalPower.cb1_east		
GE CDJ_east	🖂 Voltage.cb2_west	Voltage.cb2_west		
Generation of the section of the se	⊠ TotalCurrent.cb2_west	TotalCurrent.cb2_west		
- GD (_east	🖂 AverageCurrent.cb2_west	AverageCurrent.cb2_west		
🖓 cb5_east	🖂 TotalPower.cb2_west	TotalPower.cb2_west		
🖓 cb6_west	🖂 Voltage.cb2_east	Voltage.cb2_east		
🖓 🖓 cb6_east	🖂 TotalCurrent.cb2_east	TotalCurrent.cb2_east		
- 🚝 cb7_west	🖂 AverageCurrent.cb2_east	AverageCurrent.cb2_east		
- J⊒ cb7_east	🖂 TotalPower.cb2_east	TotalPower.cb2_east		
Generation Contraction	🖂 Voltage.cb3_west	Voltage.cb3_west		
⊡ GDO_east	► TotalCurrent.cb3_west	TotalCurrent.cb3_west		
	🖂 AverageCurrent.cb3_west	AverageCurrent.cb3_west		
	🖂 TotalPower.cb3_west	TotalPower.cb3_west		
	🖂 Voltage.cb3_east	Voltage.cb3_east		
	🖂 TotalCurrent.cb3_east	TotalCurrent.cb3_east		
	🖂 AverageCurrent.cb3_east	AverageCurrent.cb3_east		
	🖂 TotalPower.cb3_east	TotalPower.cb3_east		•
			V Ok X Canc	el.



4.3 Historical graph display

4.3.1 Overview

The historical graph display provides a powerful tool for analysing the performance of your PV Plant. The example above shows the total power output for five arrays. As you can see from the graph, arrays q_2^5 and q_2^4 (the yellow and gray traces) are underperforming in relation to the others. Another query to separate out each string of q_2^5 could be used to identify the reason for this difference. Note also that the total output of array q_2^3 (purple trace) is shifted toward the end of the day.

4.3.2 Controlling the graph display

1

There are a number of command buttons you can use to alter the display. You can also select an area or the graph to view in detail. In the example above, the data for a single day was selected from a far wider set of data. The controls operate as shown in the table.

Icon	Button	Action		
🖂 Pens	Pens	Choose colours for each trace and decide which data to include		
} ⊶3 Multi Axis	Multi-Axis	Show all the traces on the same axis (toggles setting)		
1 H. Zoom	H. Zoom	Expands the display vertically to fit the window (toggles setting)		
🛛 🕝 Time	Time	Allows you to measure an interval on the graph		
🗖 Label	Label	Adds labels to each point on the graph (toggles setting)		
🖨 Print	Print	Prints the graph		
	Shift display	When you have zoomed in to an area, shifts the display across		
7 🕂 Days	Days	Select how many days data to show from the query data		
Zoom 100 % 💌	Zoom	Select a percentage zoom to show more detail		
💢 Cancel Zoom	Cancel Zoom	Cancel the zoom level		

Pens Configuration			
Select TrendGraph	Pens	Weidmüll	er 3 E
Data	Description	Width	Color
 Insolation 	Horizontal Insolation	1	
 Insolation South 	Weather Station Insolation - South	1	
 Insolation North 	Weather Station Insolation - North	1	
Ambient Temperature	Ambient Temperature	1	
Wind Speed	Wind Speed	1	
✓ q2_1 Power	Power collected by q2_1	1	
✓ q2_2 Power	Power collected by q2_2	1	
✓ q2_3 Power	Power collected by q2_3	1	
✓ q2_4 Power	Power collected by q2_4	1	
✓ q2_5 Power	Power collected by q2_5	1	
✓ q1_1 Power	Power collected by q1_1	1	
✓ q1_2 Power	Power collected by q1_2	1	
✓ q1_3 Power	Power collected by q1_3	1	
		√ <u>0</u> k	X <u>C</u> ancel

4.3.3 Selecting the pens

Press the pens button to see the Pens Configuration window. You can add or remove data from the graph and or change the pen colour and thickness. You will also see this screen when you first run a query to select data for the graph.

Note: it is quicker to design a query with all the information that you want and use this screen to add and remove traces because PV Clinics Monitor does not have to query the database for the data again.

In the original example, we could select temperature and wind speed for display so we could see the effect on q2_5 power. Maybe the underperforming array is closer to the middle of the park or is out of the wind and that has affected its output.

4.3.4 Measuring an interval on the graph

Click the Time button to measure an interval on the graph. Then hold down the control key and click the mouse on the graph to define the start point. The interval between the start and the cursor is displayed in a yellow box next to the cursor.



Color	Data	Description	Cursor	Minimum	Maximum	Average
	q2_1 Power	Power collected by q2_1	0.24	0.21	12.85	5.8
	q2_2 Power	Power collected by q2_2	0.25	0.21	13.04	5.86
	q2_3 Power	Power collected by q2_3	0.67	0.22	12.68	5.67
	q2_4 Power	Power collected by q2_4	0.21	0.2	10.76	4.65
	q2_5 Power	Power collected by q2_5	0.21	0.17	10.78	4.95
	q1_1 Power	Power collected by q1_1	0.64	0.25	12.84	5.68
	q1_2 Power	Power collected by q1_2	0.24	0.2	13.08	5.85
	q1_3 Power	Power collected by q1_3	0.51	0.17	10.8	4.75

4.4 Graph key

The graph key pane shows the pen colours assigned to each line on the chart and other useful data about each measurement (maximum, minimum and average values). There are no controls associated with the graph key.

5. Alarms Tab

5.1 Overview

The Alarms Tab gives a quick display of any current (On-Line) or past Alarms that have been triggered around the plant. It allows service personnel to acknowledge alarms and put notes against them to describe the cause.

5.2 Display areas

Alarms are listed in simple Table format. You can double click on an alarm to acknowledge it and add a 'User Comment' to the record.

5.3 Alarm Status

As alarms are acknowledged and cleared the colour of the first column changes as shown in the table.

Colour	Status
Orange	Unacknowledged, active alarm
Yellow	Acknowledged, active alarm
Green	Acknowledged, inactive alarm

Once and alarm condition has cleared and the alarm has been acknowledged, PV Clinics Runtime moves it into the historic table.

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	í 🗩 e n										
OnLine Values	🖾 Histor	rical 🕂 Alarms									
OnLine 🔽		Online: 1 Alarms					1		1		
DateTime	Elapsed	Group	Module	Туре	Data	Value	Acknowledgement	Elapsed	Message	User comment	
25/07/2011 15:24:14	00:06:34	StringBox.inv1	cb1_west	HI	Digital.2	1			Array Isolation Switch operated		
											<u>•</u>

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Alarm Acknowledgement						
Alarm Group : Alarm Data :	StringBox.inv1 Module : cb1_west Digital.2 Type :					
Message :	Array Isolation Switch operated					
Alarm Time	25/07/2011 15:24:14 Acknowledgement					
Normalization						
User comment						
This alarm was Module cb1_we	generated as a test by operating the array Isolation switch connected to String Box est in group inv1.					
	✓ <u>O</u> k X <u>C</u> ancel					

5.4 Acknowledging alarms and adding comments

Double click on an alarm to acknowledge it. The date it was acknowledged will be completed automatically and the Alarm acknowledge screen will be shown. You can add comments to the alarm acknowledge screen. Press OK to save the changes or cancel to discard.