41. Energy

This chapter explains how to setup Energy Demand Settings to monitor and record energy consumption and calculate future energy demands.

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41.1. Energy Demand Setting

41.1.1. Overview

By monitoring the recorded energy consumption in a specified period, the Energy Demand Setting feature can calculate future energy demands, and help saving energy.

41.1.2. Configuration



Click [Data/History] and then click [Demand Setting] to open the settings dialog box. Configure General and Demand Threshold settings and click OK; an Energy Demand Setting object will be created.

Energy Demand Setting	
New	Exit



General Tab

General	Demand	Threshold	Demand Out	tput				
Accum	rulative er	Comment nergy						
1	Device : Address :	Local HMI LW	Units : 0	▼ 0 .01 ,	- kWh]	16-bit Ui	Isigned
Contro	ol 🔽 Enat Device :	le Local HMI			₩ 		•	
1	Address : *Contro	L W ol command	: 1 [clear]	• 0			[16-bit Ui	isigned
	Dem	and update f Demand	requency : 1 duration : 1	5	minute (s) (1~60)) (1~60)		

Setting	Description
Accumulative	This address records energy consumption. The unit
energy address	can be 0.1/0.01/0.001 kWh (kilowatt-hours).
Control	Giving control command 1 in the designated address
	can clear the energy consumption record.
Demand update	The frequency to record energy consumption, the
frequency	range is from 1 to 60 minutes.
Demand duration	The frequency to calculate energy demand. The
	range is from 1 to 60 minutes.

Note

 Please note that Demand Duration (T) must be an integral multiple of Demand Update Frequency (t).



Demand Threshold

reshold Warning : LW-0 kW Alarm : LW-2 kW Dynamic PLC : Local HMI Address : LW	Ihreshold Warning : LW-0 kW Alarm : LW-2 kW Image: Dynamic PLC : Local HMI Settings Address : LW 0 32-bit Unside
✓ Dynamic PLC : Local HMI Address : LW Ification ✓ Enable Set ON ● Follow (set ON when event recovered) PLC : Local HMI VEC : Local HMI Address : LB	Image: PLC : Local HMI Settings Address : L W 0 32-bit Unside
PLC : Local HMI Settings Address : LW C Enable Set ON Enable Follow (set ON when event recovered) PLC : Local HMI Address : LB O	PLC : Local HMI Settings Address : LW O Strings
Address : LW	Address : LW 🔹 0 32-bit Unsi
tification	No. of the second se
Image: Construction of the second	Intification
Follow (set ON when event recovered) PLC : Local HMI Address : LB	Tenable 💿 Set ON 💿 Set OFF
PLC : Local HMI Address : LB	Follow (set ON when event recovered)
Address : LB 🔹 0	PLC : Local HMI
	Address : LB 🗸 0
Warning : LB-0	Warning : LB-0
Alarm: LB-1	Alam : LB-1

Setting	Description
Threshold	When the values in the specified addresses reach
	the values specified in Warning and Alarm fields, the
	warning and alarm will be triggered. The threshold
	limits can be dynamically changed at runtime.
Notification	When the estimated energy demand reaches the
	threshold limit, the status of the specified bit
	address will change accordingly.
Follow	If selected, when the estimated energy demand falls
	less than the threshold limit, the status of the
	notification bit address will return to its original
	state.



Demand Output

General	Demand	Threshold	Demand output					
E F	nable den	nand output						
Maxd	emand sta	atistics						
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W 11.				<u> </u>	ICIONE IIIOII	un and and and and and and and and and an	autus	
1	lime form	hat : [HH:M	M:SS 👻	Da	te format :	MM/DI	VYY -	
			Begin day	of billin	ig cycles :	1	-	(1-28)
			in 192	s(3				
	PLC :	Local HMI				•	Setting	;s
A	ddress :	LW	•	0			32-bit Un:	signed
			Constan		TWO			_
		Maria			1 10 - 10			
		Max		uuay .	L 197-Z			
		Max dem	and date/time for t	oaay :	L W-4			
		Maxo	iemand value yeste	erday :	LW-14			
		Max dem	and date/time yeste	erday :	LW-16			
		Max d	emand value this n	10nth :	LW-26			
		Max dema	und date/time this n	nonth :	LW-28			
		Max d	emand value last n	nonth :	LW-38			
		Max dema	und date/time last n	nonth :	LW-40			

Setting	Description
Enable demand output	Opens [Max. demand statistics] settings.
Max demand	The maximum energy demand of today/yesterday,
statistics	and current month/last month, can be recorded in the corresponding addresses. The time/date format, and the beginning day of the billing cycle, can be
	specified.



41.2. Energy Demand Display

41.2.1. Overview

Energy Demand Display object graphs the result from Energy Demand Setting object at runtime.

The font, grid and watch line style can be specified, and the threshold limits can be shown in the graph.

41.2.2. Configuration



Click [Data/History] and then click [Demand Display] to open the settings dialog box. Configure the attributes and click OK; an Energy Demand Display object will be created.

General Tab

Demand setting : 1. • Time format : HH:MM:SS •
Demand setting : 1. Time format : HH:MM:SS
Date format : MM/DD/YY Chart Grid : Frame : Prame :
Background :
Latest position ratio : 90
minute (s)
Maximum : L W-1
▼ Settings
▼ 0 16-bit Unsigned
Sansi 🔹 Color :
•
•
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Setting	Description
Object index	Select an existing Energy Demand Setting object as
	the data source of Energy Demand Display object.
Time/Date format	Set Time and Date format.
Chart	Set the colors of Grid, Frame, and Background.
X axis	Set the number of divisions and time duration on
	the X axis. Latest position ratio: The ratio represents
	a position along the X axis, where 50% represents
	the middle and 100% represents the right end. This
	field sets the position to mark the latest data, and
	the acceptable range is: 50%~100%.
Y axis	Set the number of divisions, maximum and
	minimum scale values on the Y axis. The limits can
	be changed dynamically at runtime.
Scale text	Set the font and color of the scale text.
Line	Three watch lines marking Demand, Alarm, and
	Warning can be shown. The type, width, and color of
	the lines can be customized.

Example 1

The following example illustrates the relationship between Demand Duration (T) and Demand Update Frequency (t) mentioned in Energy Demand Setting guide above.





- As shown in the above figure, when t=1, the frequency to record energy consumption will be once per minute. When T=15, each 15 minutes the sum of the energy consumption measured every minute (t=1) will be calculated.
- 2. From the 1st to the 15th minute (red zone), the energy consumption measured each minute will be added up to get the total sum. The total sum times 4 (15 minutes is a quarter of an hour) to obtain a value (kWh) indicating the estimated energy demand.
- 3. From the 2nd to the 16th minute (blue zone), the energy consumption measured each minute will be added up to get the total sum. The total sum times 4 (15 minutes is a quarter of an hour) to obtain a value (kWh) indicating the estimated energy demand.
- 4. From the 3rd to the 17th minute (green zone), the energy consumption measured each minute will be added up to get the total sum. The total sum times 4 (15 minutes is a quarter of an hour) to obtain a value (kWh) indicating the estimated energy demand.
- 5. The Energy Demand Display object will graph the estimated energy demand.
- If t=3 and T=15, the estimated energy demand will be: Sum of the latest 5 records (15/3=5) times 4 (15 minutes is a quarter of an hour).
- If t=5 and T=30, the estimated energy demand will be: Sum of the latest 6 records (30/5=6) times 2 (30 minutes is half an hour).

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