01 07 Peak Load Limiter 801401

Use of the application program

Product family: Controller
Product type: Controller
Manufacturer: Siemens

Name: Peak Load Limiter 360
Order no.:   5WG1 360-1AB01

Functional description

The peak load limiter N 360 is a DIN rail mounted device with N-system dimensions. It is able to suppress load peaks and thus considerably reduce the costs for supplying energy to the user. Loads/consumer devices are disconnected/reconnected on the basis of a defined maximum value for the average power demand. Functional switching by the user has the highest priority and each peak load limiter can thus only access operational loads that have been switched on. Each load can be disabled by the respective bus sensor and enabled again i.e. this load is not available to the peak load limiter for switching when it is disabled.

A prerequisite for the use of the peak load limiter is the presence of a master clock on the EIB which sends the date and time cyclically. This application program can carry out maximum demand monitoring of up to 120 channels.

A maximum of 120 channels can be controlled. The current status of channels 1 to 8 is indicated via LEDs directly on the device. The following parameters can be set during commissioning via the ETS for all 120 channels available:

- Disconnection priority (1 to 10)
- Minimum ON period
- Minimum OFF period
- Maximum OFF period
- Number of permitted switching cycles per 24 h

The power limits that need to be adhered to by the peak load limiter can be set between 30 and 1000 kW. A warning limit can also be set between 25 and 1000 kW. When this warning limit is exceeded, it is indicated via an LED. This is possible for 2 tariffs (high and low rate). The measuring periods required for determining the average power demand can be set at 15, 30 and 60 minutes. The cyclic time for load projection can be selected at 15, 30, 60, 120 and 240 seconds. It is indicated via LEDs where the device is located timewise within the measuring period.

The peak load limiter is assigned parameters via the ETS and can be operated without any additional software. A software program is available for visualisation of the power demand statistics. Statistics for measuring periods as well as day, month and year statistics can be created and exported to Excel for further evaluation. It is therefore possible to create statistics for power consumption which act as a basis for the customer in negotiating better and more economical supply contracts with the power companies. The software is available as an option for EIB visualisation and as a stand-alone version.

The peak load limiter can also be operated simply as a detection unit during a recording phase. It is possible to record load curves and consumption values without having to assign parameters to the individual channels.

Bus voltage failure

The following values are stored on bus voltage failure:
- current time
- status of the objects
- object value for setpoint power during high tariff
- consecutive number of projected load

Bus voltage recovery (initialisation)

The following values are restored on bus voltage recovery:

- object value of maximum power at high tariff (queried by master clock)
- consecutive number for projected load is restored; if the reset is not carried out in the same measuring interval the consecutive number reverts to 1
- status of the actuators
- disable objects are queried
- switching objects are queried

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Communication objects

Phys.Addr.		Product	
no.	**Function**	**Object name**	**Type**
01.01.001		Peak Load Limiter	
0	Master clock	Date	3 Byte
1	Master clock	Time	3 Byte
2	Impulse	Measuring interval start	1 Bit
3	On / Off	Low rate	1 Bit
4	enabled / disabled	peak load limitation general	1 Bit
5	Value	Max. Power HR	4 Byte
6	Yes / No	load limit transgression	1 Bit
7	existent / not existent	synchron impulse	1 Bit
8	Statistic	Forecast	14 Byte
9	Statistic	measuring period	14 Byte
10	OK / not OK	Operation voltage	1 Bit
11	enabled / disabled	Channel 1 peak load limitation	1 Bit
12	On / Off	Channel 1 Switch	1 Bit
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Obj	Function	Object name	Type	Flags
0	Master clock	Date	3 Byte	CWTU
This object must be linked with the group address which the master clock uses to send the date.				
1	Master clock	Time	3 Byte	CWTU
This object must be linked with the group address which the master clock uses to send the time.				
2	Impulse	Measuring interval start	1 Bit	CT
When a new measuring interval is detected by the peak load limiter, a "1" is sent to this object. A new measuring interval can be initiated by a synchronous impulse or a change of tariff.				
3	On / Off	Low rate	1 Bit	CWTU
Depending on the parameters selected ("Switching HR/LR)", the information is either received from an external source or sent by the peak load limiter. If the change in tariff is generated via a directly connected contact, the peak load limiter sends this information. If this is not the case, the peak load limiter expects the information from another bus device. The default setting is high rate.				
4	enabled / disabled	Peak load limitation general	1 Bit	CWTU
The peak load limitation can be deactivated with this object. Neither the objects "Statistic", "Measuring interval start" and "High rate" nor their functions are influenced by this object.				

Obj	Function	Object name	Type	Flags
5	Value	Max. power HR	4 Byte	CWTU
This object is only available if the parameter "Power HR" is set to "by communication object". It is possible via this object to modify the maximum power for the high rate. The object value is adopted at the start of the next measuring interval.				
6	Yes / No	Load limit transgression	1 Bit	CT
This object is sent if the load exceeds or falls below the warning limit. The warning limits should be set with the parameters "Warning level at HR" and "Warning level at LR".				
7	existent / not existent	Synchron impulse	1 Bit	CT
If the peak load limiter detects that the synchronous impulse is missing or is available again, it sends the corresponding object value to this object.				
8	Statistic	Forecast	14 Byte	CT
The object value is sent after each projection.				
9	Statistic	Measuring period	14 Byte	CT
The object value is sent at the end of each measuring interval.				
10	OK / not OK	Operation voltage	1 Bit	CT
The object indicates the status of the operational voltage.				
11	enabled / disabled	Channel 1 peak load limitation	1 Bit	CWTU
Each channel can be enabled or disabled individually here.				
12	On / Off	Channel 1 Switch	1 Bit	CWTU
This object has two functions. On the one hand, the peak load limiter switches the corresponding actuator on or off. On the other hand, another bus device can switch the actuator on or off. In this case, the peak load limiter adopts this information. If the actuator is switched off by an external device for example, the peak load limiter can no longer switch this actuator on.				
13-250	As objects 11 and 12	As objects 11 and 12	1 Bit	CWTU
Two objects are available for each actuator which are identical to objects 11 and 12.				

Maximum number of group addresses: 254
Maximum number of associations: 253

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Parameters

General

Parameters	Settings
Impulse valency in watt hours (10 - 20000)	10-20000 in watt hours **default 10000**
The pulse value of the meter pulse is determined here. It is dependent on the setting of the connected meter.	
Measuring interval duration	**15 minutes** 30 minutes 60 minutes
This time indicates the length of a measuring interval. The time by preset by the appropriate power company.	
Switching HR/LR	**by directly contacted contact** by communication object
This parameter indicates whether the tariff should be changed by a communication object or via the integrated contact in the device. If the setting "by directly contacted contact" is selected, this value is transferred to the communication object.	
Power HR	by communication object **by parameter**
The maximum permitted power can be preset via a parameter or via the object value of a communication object. If it should be determined via a parameter, a further parameter "Max. power at HR" is displayed and the object "High rate" is no longer available.	
Max. power at HR in watt (30000- 1000000)	30000- 1000000 watt **default 100000**
The maximum permitted power for the high rate must be entered here. This parameter is only visible if the parameter "Power HR" has been set to "by parameter".	
Max. power at LR in watt (30000- 1000000)	30000- 1000000 **default 100000**
The maximum permitted power for the low rate is given here.	

Parameters	Settings
Warning level at HR in watt (25000- 1000000)	25000- 1000000 watt **default 90000**
If the power level specified here for high rate is exceeded, a warning is triggered (object and LED), if high rate is selected. The warning is reset when the level drops again.	
Warning level at LR in watt (25000- 1000000)	25000- 1000000 watt **default 90000**
If the power level specified here for low rate is exceeded, a warning is triggered (object and LED). The warning is reset when the level drops again.	
Cycle time for load control	15 seconds 30 seconds **60 seconds** 120 seconds 240 seconds
After this period has elapsed, the peak load limiter checks the consumption. If it establishes that the actuators should be switched, this is carried out at this point. The value range as well as the default value are dependent on the parameter "Measuring interval duration". With a measuring interval duration of 15 min. the values are 15 s, 30 s, 60 s; default 60 s; 30 min. the values are 30 s, 60 s, 12 s; default 120s; 60 min. the values are 60s, 120s, 240s; default 240s;	

Start up behaviour

Parameters	Settings
Latency time after restart	**no delay** 2 seconds 5 seconds 10 seconds 30 seconds 1 minute 2 minutes 5 minutes 10 minutes
The module does not send any bus telegrams before the time set here.	
Delay time between two value send telegrams	**no delay** 0.2 seconds 0.3 seconds 0.5 seconds 0.7 seconds 1 second 2 seconds
This parameter is used to distribute the bus load after a restart.	

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Channel-specific parameters

Parameters	Settings
Channel number (1-120)	1- 120 **default 1**
The channel that is to be processed is entered here.	
Channel 1	disabled **enabled**
Further parameters are only displayed if the channel is enabled.	
Power in watt (10- 1000000)	10- 1000000 watt **default 1000**
The average power for the actuators connected to this channel is entered here.	
Priority	1-10 **default 5**
This parameter defines the priority of the actuator. "1" is the highest priority and "10" is the lowest. When a load is disconnected, a check is made first to determine whether sufficient loads with priority 10 are available. If this is not the case, the next lowest priority is checked. Lower priorities are switched more regularly. When connecting the load, the opposite procedure applies.	
Number of switching cycles per day (2- 255) 255 = unlimited	2- 255 **default 255**
The maximum number of switching cycles must be entered here. If the value 255 is entered, it is possible to switch as often as required. If the number of switching cycles is exceeded, the peak load limiter no longer switches this actuator.	
Minimum off time in seconds (0 – 30000)	0-30000 seconds **default 0**
If the actuator is switched off by the peak load limiter, a restart is not carried out until this period has elapsed. The period can be extended by the "Cycle time for load control" as actuators can only be switched during the load control. If the value "0" is entered, the minimum OFF period is deactivated.	

Parameters	Settings
Maximum off time in seconds (0 – 30000) **0 = none**	0-30000 seconds **default 0**
Once the period set here has elapsed, the peak load limiter switches this actuator on again. The actuator should not have been disabled externally or switched off in the meantime. The period can be shortened by the "Cycle time for load control" as actuators are only switched during the load control. If the value "0" is entered, the maximum OFF period is deactivated.	
Minimum on time in seconds (0 – 30000) **0 = none**	0-30000 seconds **default 0**
The peak load limiter does not switch the actuator off until the minimum ON period has elapsed. It does not matter if the actuator has been switched on by the peak load limiter or by another bus device. The period can be extended by the "Cycle time for load control" as actuators are only switched during the load control. If the value "0" is entered, the maximum ON period is deactivated.	

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