



eyePower Limited

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eyePower Lock Off – Latch On

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A customer requested a facility to dump a set of relays very quickly when switching over to the Backup supply to reduce the load on the UPS. Load shedding using the existing 'relay off' macro commands is not fast enough for multiple relays to be shed before the load was transferred to the UPS. The relays needed to be turned off faster than the time taken for the changeover relay to change over.

We have added some new commands to the macro language to allow for this and more.

&H55 and &H56 define relays that are to be locked off when on the Main (A) supply.

&H57 and &H58 define relays that are to be latched on when on the Main (A) supply.

&H59 and &H5A define relays that are to be locked off when on the Backup (B) supply.

&H5B and &H5C define relays that are to be latched on when on the Main (A) supply.

The hex values define which relays are affected by setting individual bits to 1. We have added a section to the macro editing form to calculate the hex values automatically.

Below is an edited macro template with two added lines for relays locked off when on the B supply, with no relays set.

The screenshot shows the 'eyePower Advanced Editing' window. At the top, there's a 'Refresh Desi' button and a row of 14 'ARM' buttons. Below that is a table of 14 relays, each with an 'ON' (green) and 'OFF' (red) button. The macro editor contains the following commands:

STOP	ALARM STATUS	GPI1 LOW	GPI2 LOW	GPI3 LOW	GPI4 LOW	10 02 4A Wait for 10.0 seconds
GOTO	CHANGE OVER INT	GPI1 HIGH	GPI2 HIGH	GPI3 HIGH	GPI4 HIGH	11 5A 00 Backup (B) lock off 1 - 8 ()
WAIT	CHANGE BACK INT	GPI1 LOW INT	GPI2 LOW INT	GPI3 LOW INT	GPI4 LOW INT	12 59 00 Backup (B) lock off 9 - 14 ()
ALL OFF	CH. BACK DELAY	GPI1 HIGH INT	GPI2 HIGH INT	GPI3 HIGH INT	GPI4 HIGH INT	13 03 00 GPI Disable
ALL ON	OFF LIMIT MAIN	GPI1 INHIBIT	GPI2 INHIBIT	GPI3 INHIBIT	GPI4 INHIBIT	14 D3 30 Set on/off switch off interrupt address 30
	OFF LIMIT RESERVE	GPI DISABLE	ON/OFF ON INT	COUNT1 LOAD	COUNT2 LOAD	15 D2 20 Set on/off switch on interrupt address 20
	PHASE LIMIT	GPI ENABLE	ON/OFF OFF INT	COUNT1 DEC	COUNT2 DEC	16 C0 63 Set supply loss interrupt address to 63
			ON/OFF INHIBIT	COUNT1 INC	COUNT2 INC	17 C1 20 Set supply resume interrupt address to 20
						18 04 00 GPI Enable
						19 C6 00 Alarm status Silent
						1A 00 00 Stop
						1B 00 00 Stop
						1C 00 00 Stop
						1D 00 00 Stop
						1E 00 00 Stop
						1F 00 00 Stop

At the bottom, the 'Lockout Calculator' shows hex values for outlets 1-8 (00) and outlets 9-14 (00).



To set the relays you want to turn off when on Backup, tick the check boxes in the calculator. Select line 11 in the macro list and set auto increment. Click on the “BACK (B) LOCK OFF 1-8” button.

Line 11 will update to show the relays you have selected within the group 1 – 8.

The screenshot shows the 'eyePower Advanced Editing' interface. At the top, there are two rows of buttons: the first row has 14 green 'ON' buttons, and the second row has 14 red 'OFF' buttons. Below these are several control buttons: 'CLEAR MEMORY', 'STANDARD SETTINGS', 'UPLOAD', 'SAVE FILE', and 'LOAD FILE'. The main area contains a macro list with columns for actions and parameters. Line 11 is highlighted in yellow and contains the text '11 5A 43 Backup (B) lock off 1-8 (1-2-7)'. To the right of the macro list, there are settings for 'Second Byte Hex' (43) and 'Second Byte As Time' (3.0 Secs). At the bottom, the 'Lockout Calculator' shows a grid of buttons for 'MAIN (A) LOCK OFF' and 'BACK (B) LOCK OFF' for outlets 1-8 and 9-14. The 'BACK (B) LOCK OFF 1-8' button is checked. The 'Hex for outlets 1-8' is set to 43 and 'Hex for outlets 9-14' is set to 2C. A 'GOTO' button is set to 10.

Click on the “BACK (B) LOCK OFF 9-14” button.

Line 12 will update to show the relays you have selected within the group 9 – 14.

This screenshot is similar to the previous one, but line 12 is highlighted in yellow and contains the text '12 59 2C Backup (B) lock off 9-14 (11-12-14)'. In the 'Lockout Calculator', the 'BACK (B) LOCK OFF 9-14' button is checked, and the 'Hex for outlets 9-14' is set to 2C. The 'Second Byte Hex' field is now set to 2C, and the 'Second Byte As Time' is set to 4.4 Secs. The 'GOTO' button remains at 10.

Click Upload to upload the new macro code and then power cycle the PDU.



When the unit switches to the Backup supply, the selected relays will turn off immediately.

The screenshot shows the eyePower software interface. At the top, there's a status bar with 'TX' and 'RX' indicators, and a red 'ALARM CANCEL' button. The main title is 'THE NEXT LEVEL DUMP OUTLET DEMO'. Below this, there's a row of 14 'ARM' buttons. A row of 14 circular indicators shows the status of each relay, with some showing 'ON' (green) and others 'OFF' (red). Below the indicators is a grid of 'ON' and 'OFF' buttons for each relay. The bottom section is a macro editor with a table of commands and a 'Lockout Calculator' at the very bottom.

Command	Parameter 1	Parameter 2	Parameter 3	Parameter 4	Address	Value
STOP	ALARM STATUS	GPI1 LOW	GPI2 LOW	GPI3 LOW	GPI4 LOW	5D 00 00 Stop
GOTO	CHANGE OVER INT	GPI1 HIGH	GPI2 HIGH	GPI3 HIGH	GPI4 HIGH	5E 00 00 Stop
WAIT	CHANGE BACK INT	GPI1 LOW INT	GPI2 LOW INT	GPI3 LOW INT	GPI4 LOW INT	5F 00 00 Stop
ALL OFF	CH. BACK DELAY	GPI1 HIGH INT	GPI2 HIGH INT	GPI3 HIGH INT	GPI4 HIGH INT	60 00 00 Stop
ALL ON	OFF LIMIT MAIN	GPI INHIBIT	GPI2 INHIBIT	GPI3 INHIBIT	GPI4 INHIBIT	61 00 00 Stop
	OFF LIMIT RESERVE	GPI DISABLE	ON/OFF ON INT	COUNT1 LOAD	COUNT2 LOAD	62 00 00 Stop
	PHASE LIMIT	GPI ENABLE	ON/OFF OFF INT	COUNT1 DEC	COUNT2 DEC	63 C1 20 Set supply resume interrupt address to 20
			ON/OFF INHIBIT	COUNT1 INC	COUNT2 INC	64 00 00 Stop
						65 00 00 Stop
						66 00 00 Stop
						67 00 00 Stop
						68 00 00 Stop
						69 00 00 Stop
						6A 00 00 Stop
						6B 00 00 Stop
						6C 00 00 Stop

When the unit switches back to the Main supply, the relays turned off will be sequenced back on again using the existing macro code.

The relays that have been turned off using the 'Lock Off' macro command cannot be turned on from macro commands, the web browser interface, or using 'relay on' commands over serial/TCP.



Using the same user interface, we have also added the facility for relays to be latched on.

STOP	ALARM STATUS	GPI1 LOW	GPI2 LOW	GPI3 LOW	GPI4 LOW	Address	Command
GOTO	CHANGE OVER INT	GPI1 HIGH	GPI2 HIGH	GPI3 HIGH	GPI4 HIGH	10 02 4A	Wait for 10.0 seconds
WAIT	CHANGE BACK INT	GPI1 LOW INT	GPI2 LOW INT	GPI3 LOW INT	GPI4 LOW INT	11 58 03	Main (A) latch on 1 - 8 (1-2)
ALL OFF	CH. BACK DELAY	GPI1 HIGH INT	GPI2 HIGH INT	GPI3 HIGH INT	GPI4 HIGH INT	12 57 30	Main (A) latch on 9 - 14 (13-14)
ALL ON	OFF LIMIT MAIN	GPI1 INHIBIT	GPI2 INHIBIT	GPI3 INHIBIT	GPI4 INHIBIT	13 03 00	GPI Disable
	OFF LIMIT RESERVE	GPI DISABLE	ON/OFF ON INT	COUNT1 LOAD	COUNT2 LOAD	14 D3 30	Set on/off switch off interrupt address 30
	PHASE LIMIT	GPI ENABLE	ON/OFF OFF INT	COUNT1 DEC	COUNT2 DEC	15 D2 20	Set on/off switch on interrupt address 20
			ON/OFF INHIBIT	COUNT1 INC	COUNT2 INC	16 C0 63	Set supply loss interrupt address to 63
						17 C1 20	Set supply resume interrupt address to 20
						18 04 00	GPI Enable
						19 C6 00	Alarm status Silent
						1A 00 00	Stop
						1B 00 00	Stop
						1C 00 00	Stop
						1D 00 00	Stop
						1E 00 00	Stop
						1F 00 00	Stop

Note: This command does not turn on relays if they are off but will latch them on once they have been turned on by other commands.

The relays that have been latched on using the 'Latch On' macro command cannot be turned off from macro commands, the web browser interface, or using 'relay off' commands over serial/TCP.

Cycle timers, added previously for the same customer to power a load off then back on, will still operate even if an output is latched on.

If you set the same relay to be both 'Latch On' and 'Lock Off' for the same supply, the 'lock off' setting will take precedence.



Reading/Setting the Lock/Latch settings over serial/TCP.

Two new serial/TCP commands have been added to read and set the Lock/Latch settings from external control systems.

To read an eyePower Lock/Latch status,

Read lock/latch status **6BH**

and that address will respond

Status **6BH**
 Lock off Main (A) 9 – 14
 Lock off Main (A) 1 – 8
 Latch on Main (A) 9 – 14
 Latch on Main (A) 1 – 8
 Lock off Backup (B) 9 – 14
 Lock off Backup (B) 1 – 8
 Latch on Backup (B) 9 – 14
 Latch on Backup (B) 1 – 8

	128	64	32	16	8	4	2	1
Main (A) Lock Off	Always 0	Always 0	Relay 14	Relay 13	Relay 12	Relay 11	Relay 10	Relay 9
	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Relay 1
Main (A) Latch On	Always 0	Always 0	Relay 14	Relay 13	Relay 12	Relay 11	Relay 10	Relay 9
	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Relay 1
Backup (B) Lock Off	Always 0	Always 0	Relay 14	Relay 13	Relay 12	Relay 11	Relay 10	Relay 9
	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Relay 1
Backup (B) Latch On	Always 0	Always 0	Relay 14	Relay 13	Relay 12	Relay 11	Relay 10	Relay 9
	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Relay 1

To change the Lock/Latch settings of the eyePower MDU, affecting all supply/relays combinations,

Set Lock/Latch settings **6CH**
 Lock off Main (A) 9 – 14
 Lock off Main (A) 1 – 8
 Latch on Main (A) 9 – 14
 Latch on Main (A) 1 – 8
 Lock off Backup (B) 9 – 14
 Lock off Backup (B) 1 – 8
 Latch on Backup (B) 9 – 14
 Latch on Backup (B) 1 – 8

The response is the same as for 6BH

Using this command will overwrite the Lock/Latch settings from the Macro command. Lock Off relays will be turned off if the relevant supply is active, but Latch On relays will not be turned on. They must be turned on by using the normal macro Relay On commands.



The macro settings for Lock Off/Latch On can be reinstated by using the GOTO command to the correct macro address.

Please note that Lock/Latch settings set by serial/TCP are not remembered over a power cycle of the unit.