FXM-HP
RUGGED UPS MODULE
TIME OF DAY FLASH

an EnerSys® company

FXM HP UPS EDUCATION SERIES

TIME OF DAY FLASH

The FXM-HP UPS can control dry contact relays by Time of Day (TOD), also known as Time Spans (TS) in the HP. Customers have requested that this feature be used in a way that when the system is in inverter mode and the current time is with the TS, the UPS will energize a dry contact relay which can then take the intersection to flash when wired to the controller cabinet. A further request has been to also have the same relay be able to take the controller cabinet to flash if the battery system reaches the low battery threshold (typically 40%) or Timer, when not in the TS. Below is a partial truth table for these operations:

UPS Mode	In Time Span?	Battery %	Timer	Relay Status	Traffic Signal
Inverter	No	-	-	De-energized	Full Operation
Inverter	Yes	-	-	Energized	Flash
Inverter	No	40% or less	-	Energized	Flash
Inverter	No	-	At 0	Energized	Flash
Line	No	-	-	De-energized	Full Operation
Line	Yes	-	-	De-energized	Full Operation

OVERVIEW OF SETUP

To make the TOD flash to work as above, there are some steps that need to be taken:

1. Create and set the Time Span
2. Add Custom Data & Variables
3. Add a Custom Data equation for TOD Low Battery + No Line Flash (TOD & LBNL Flash)
4. Assign dry contact relay to be driven by the equation

CREATING AND SETTING THE TIME SPAN

In the search box of the web page, type "create time" and then enter. Select the "Create Time Span" wizard. The wizard will appear with the following options:

- Name – Enter "TOD Flash"
- Choose Days To Run – Select either "All Days", "Weekdays", or "Weekends"
- Start Time – Enter the start time of the TOD flash
- End Time – Enter the end time of the TOD flash
- Click "Next" and review your settings. Click "Next" if it looks good or "Previous" to edit. Click "Done"

CUSTOM DATA – ADDING CUSTOM DATA & VARIABLES

Navigate to Controller/Advanced Functions/Custom Data. Click "+ Add Custom Data" and a new line will appear. Click the arrow to get more details and change settings.

- Change the name to "TOD & LBNL Flash" or "TOD & Timer Flash" (use Timer if using the timer instead)
- Click "+ Add State Variable" three times to add three variables
- Click the arrow of the first variable to get more details and edit it to make it look like below. This variable monitors whether the current date/time is within the window you had specified. Make the name exactly as below. Do not have any spaces in the variable name. For the "Field", click edit and select the "TOD Flash" time span you had just created. Be sure to edit the "True If" to be "True."

TOD_FlashTimeSpan (State Variable/617)

Remove

Name	Value	Actions
Name	TOD_FlashTimeSpan	
Description	---	
Field	TOD Flash (Time Span/992): Within Time Span	
Field Value	True	
True If	True	

Inverter (State Variable/697)

Remove

Name	Value	Actions
Name	Inverter	
Description	---	
Field	FXM-HP 120V-48V/854: System Mode	
Field Value	Line	
True If	Inverter	

- Next is to edit the second variable you created. This one will monitor the mode of the UPS. Make the name exactly as above. For the "Field", click edit and look for "FXM-HP xxx," select and scroll to "System Mode" and select. Be sure to edit the "True If" to be "Inverter."
- Next is to edit the third variable you created. This one monitors the UPS to see if the UPS battery has reached the low battery threshold and that the AC line is not present. Make the name exactly as below. For the "Field", click edit and look for "FXM-HP xxx," select and scroll to "Low Battery + No Line Status" and select. Be sure to edit the "True If" to be "True." Don't use this variable if you are going to use Timer instead.

LowBattNoLine (State Variable/331)

Remove

Name	Value	Actions
Name	LowBattNoLine	
Description	---	
Field	FXM-HP 120V-48V/854: Low Battery + No Line Status	
Field Value	False	
True If	True	

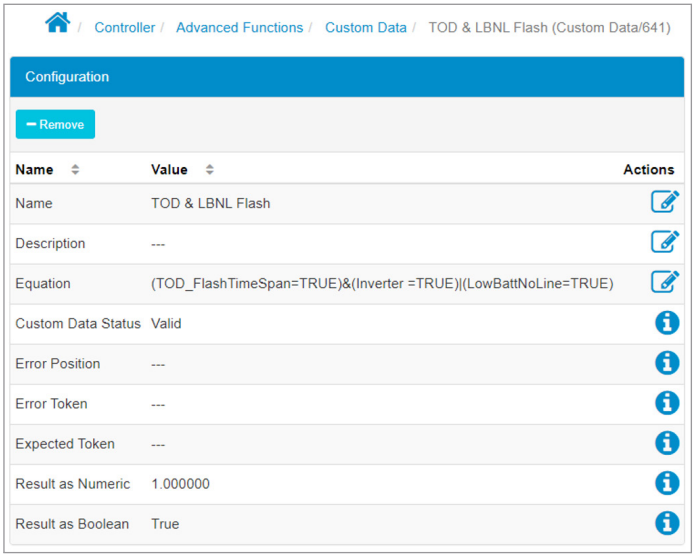
CUSTOM DATA – ADDING THE EQUATION

The equations below use variables you configured to decide if either of the conditions are true.

If either of below statements are true it will energize the relay we will configure in the next section. In the configuration window, click to edit the equation. Then copy and paste this text exactly.

TOD is within the set TS **AND** the UPS is in Inverter mode **OR** the UPS battery has reached the low battery threshold
(TOD_FlashTimeSpan=TRUE) & (Inverter =TRUE)|(LowBattNoLine=TRUE)
OR
TOD is within the set TS **AND** the UPS is in Inverter mode
(TOD_FlashTimeSpan=TRUE) & (Inverter =TRUE)
OR
TOD is within the set TS **AND** the UPS is in Inverter mode **OR** the UPS is in Inverter mode **AND** Timer (2 hours) has elapsed
(TOD_FlashTimeSpan=TRUE) & (Inverter =TRUE) Make sure "Relay To Change" in step 4 is tagged to (Output Relay C4) as well
OR
UPS is in Inverter mode **AND** Timer (2 hours) has elapsed. This is a default configuration on Timing Relay 1(Output Relay C4) from the factory

The Custom Data Status will tell you if the formula you entered is valid. Example below uses the 1st use case scenario.



DRIVING A DRY CONTACT RELAY

To drive a dry contact relay with the results of our equation there are two steps:

- Remove any existing triggers from the relay you wish to use
- Add a Change Relay Action

Removing relay triggers:

Navigate to System/FXM-HP xxx/Status, scroll to the Relays section. Decide which relay you will use and select the arrow. Look at the "Is Driven By" window. This window lists all the things that will change the state of this relay. Select the arrow of each and on the Relay line, select edit and choose "—" and save.

Add a Change Relay Action:

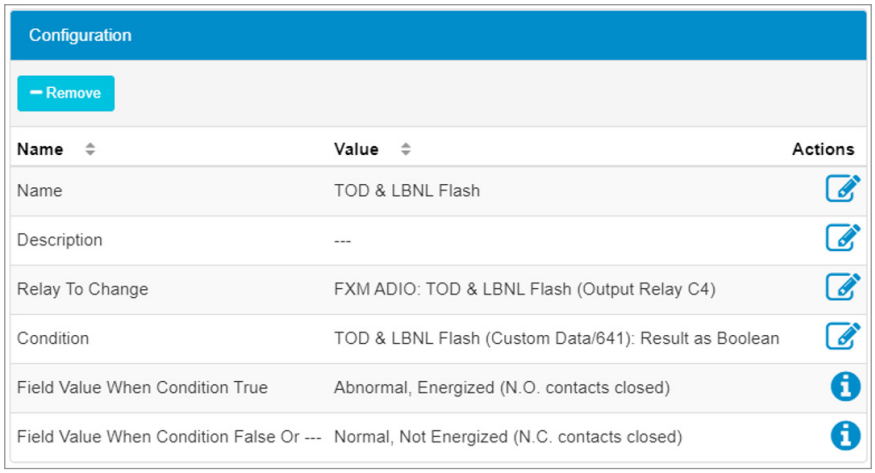
Search "change relay" and select "Go to View" in the Actions section. Scroll to "Change Relay and Change Field to Constant Actions." Click "+ Add Change Relay Action." A relay action will add to the list, select the arrow.

- Change the name to "TOD & LBNL Flash" or "TOD & Timer"
- Change "Relay To Change" to the relay you selected.

NOTE – If you did not remove all items that previously drove that relay it will not show up in the list as an option

NOTE – Don't select C6 as this is reserved to power the cabinet fan

- Select the "Condition" to be "TOD & LBNL Flash" (Custom Data)/ Result as Boolean (or TOD & Timer Flash)



TIMER RELAY

If you are going to use the Timer instead of low battery, be sure to navigate to System/FXM-HP xxx/System Functions/Load Shedding Relays. Select the Timer you are going to use, and in the Configuration section, be sure to:

- Enable the relay
- Select the same relay as the above section
- Set the relay activation delay to the amount of time you want

For assistance, contact Alpha Technical Support:

Toll Free North America: 1.888.462.7487

International: +1.604.436.5547

Monday - Friday, 7:00 AM - 5:00 PM PST for regular inquires

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