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UNIVERSAL SWITCH PANEL

USP3-8
USP3-16
USP3-8D
USP3-S24
USP3-Shotbox

User Manual

TABLE OF CONTENTS

REVISIONS

1.00	08/10/15	Original draft.
1.01	08/24/15	Updated to include new web pages
1.02	10/16/15	Added TALLY ASSIGNMENT web page
1.03	08/09/16	Added MEM, SNMP, Serial and Toggle Actions with MEM pages
1.05	07/18/17	Added HTTP GET/POST ACTIONS and VIEW RECEIVED DATA page.

1. OVERVIEW

When you need to push a button, but it doesn't have any!

The **Universal Switch Panel** makes it easy to add tactile push buttons where and when you need them:

- Tabletop & Rackmount
- 8 and 16 Push Buttons

Press a button to:

- Control a GPI Output and status a GPI Input
- Transmit Ethernet TCP / UDP / HTTP messages and status responses
- Transmit Serial messages and status responses
- Start a sequence of actions: GPI Outputs, Serial & Ethernet messages
- Control Flex Control Network devices & Tally them

And more ...

Tactile – Fast – Easy – Dependable **CONTROL**

Getting Started…..

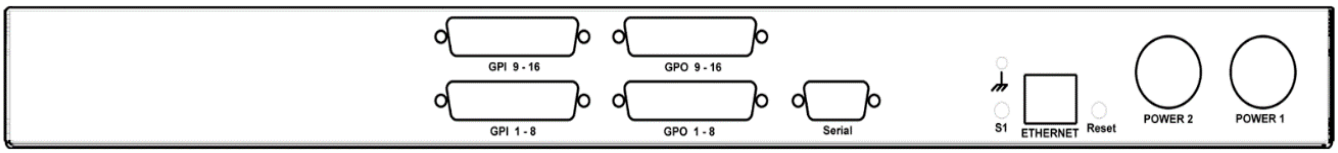
1. Go to Installation Section to install the USP3.
2. Go to System Configuration Section to set static IP address, Subnet Mask, and Gateway address.
3. Go to Remote Device Assignment Section to enter IP addresses for remote devices that USP3 will communicate with.
4. Go to System Configuration section to set default settings.

2. EQUIPMENT LIST

Qty	Component	DNF Part Number
1	USP3 Switch Panel	USP3-8, USP3-16
1	USP3 POWER SUPPLY	included
1	POWER CORD	included

3. INSTALLATION

1. Connect supplied power supply to POWER 1 connector. For redundant power option, connect power supplies to POWER 1 and POWER 2 connectors.
2. Connect Ethernet cable to ETHERNET connector.



Rear View

DEFAULT ETHERNET CONFIGURATION

IP Address: **192.168.10.217**
Subnet Mask: **255.255.255.0**
Gateway: **192.168.10.1**

The USP3 is configured using a standard web browser (Internet Explorer, Firefox, and Chrome). Enter the USP3's IP address in the Address/ URL bar, typically located at the top of the web browser page, to access the Home Page. Use the links on the left side of the Home Page to access the desired configuration web pages.

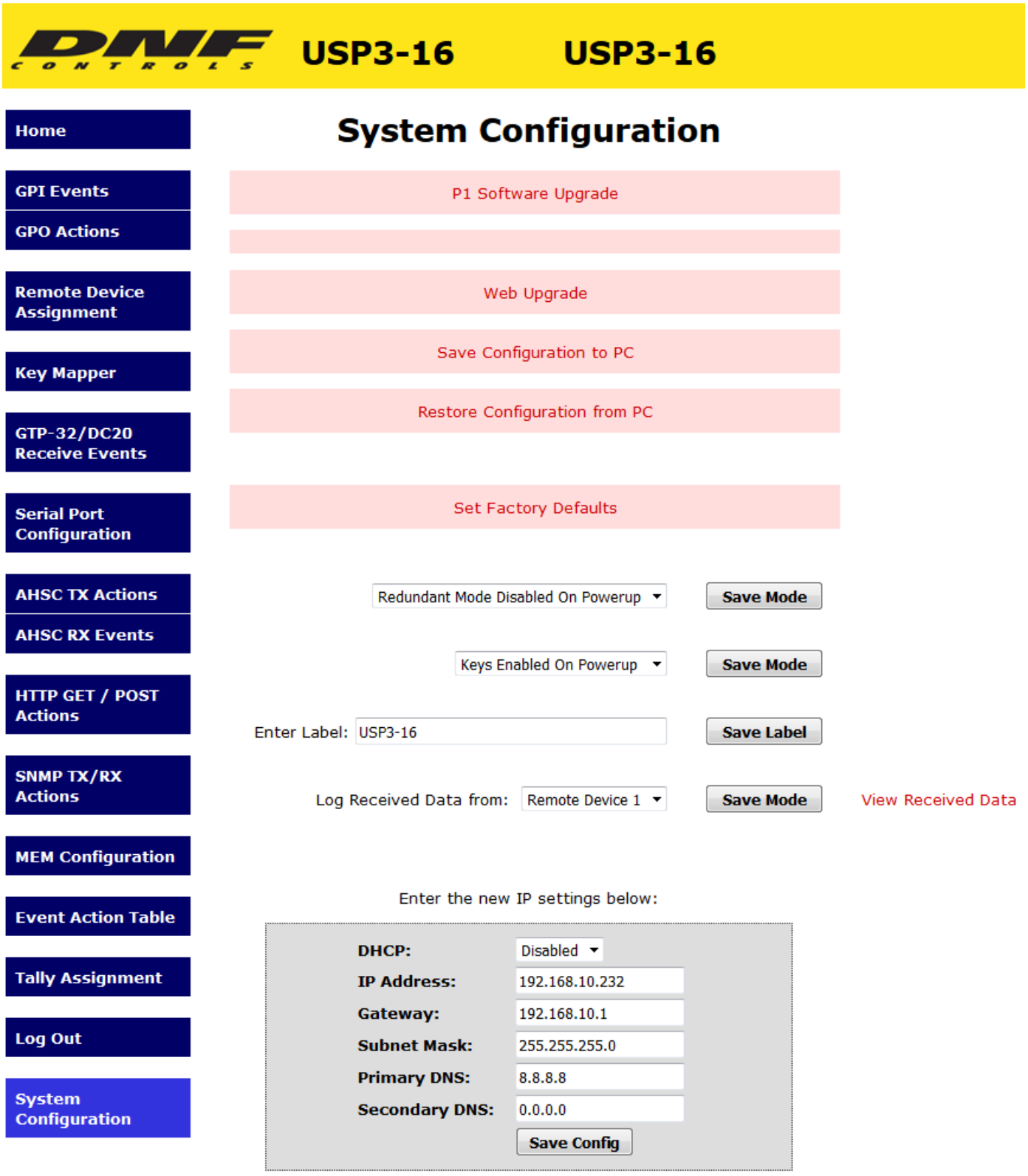
All configuration settings are saved in non-volatile memory in the USP3. Settings are retained when power is removed.

Settings may be uploaded to a computer as a configuration file (.dnf) for storage. Configuration files may be downloaded from a computer into the USP3 to restore a saved configuration. A configuration file contains all of the USP3's configurations except IP address, subnet mask, and gateway address. The USP3 does not support partial configuration upload or download. The configuration file is a not a text formatted file. It cannot be viewed or modified with a text editor.

To access the System Configuration web page, use the following log-on when prompted:

Username: dnfuser
Password: controls

4. SYSTEM CONFIGURATION WEB PAGE



P1 Software Upgrade:	Use this link to install the P1 upgrade file provided by DNF Controls
Web Upgrade:	Use this link to install the Web pages upgrade file provided by DNF Controls

Save Configuration to PC:	Use this link to save the USP3's current configuration to a configuration file on a computer. The web browser will prompt for file name and directory. The file extension must be 'dnf'.
Restore Configuration from PC:	Use this link to download a configuration file from your computer to the USP3. The web browser will prompt for directory and configuration file name. The file extension must be 'dnf'.
Set Factory Defaults:	Use this link to reset all USP3 configuration settings to factory defaults. This will NOT change the IP address, subnet mask or gateway address. The USP3 will automatically reboot.
Redundant Mode on Powerup:	Use this dropdown to set the Redundant Mode on Powerup. If set to "Enabled" the USP will boot up with redundant mode enabled upon powerup. If set to "Disabled" the USP will boot up with redundant mode disabled upon powerup.
Key Mode on Powerup:	Use this dropdown to set the Key Mode on Powerup. If set to "Enabled" the USP will boot up with its keys enabled upon powerup. If set to "Disabled" the USP will boot up with its keys disabled upon powerup.
Enter Label:	Enter label to be displayed on top right of all web pages
Log received data from:	Use this dropdown to set the remote device that the USP will log received data from. After the remote device has been selected, select the "View Received Data" to enter the log page (See below).
Enter the new IP settings below:	DHCP ENABLED/DISABLED: Use this dropdown to enable or disable DHCP. Enter the new IP address, Gateway, Subnet Mask Primary DNS and Secondary DNS. Click on Save Config to save the new entries. The USP3 will automatically reboot.

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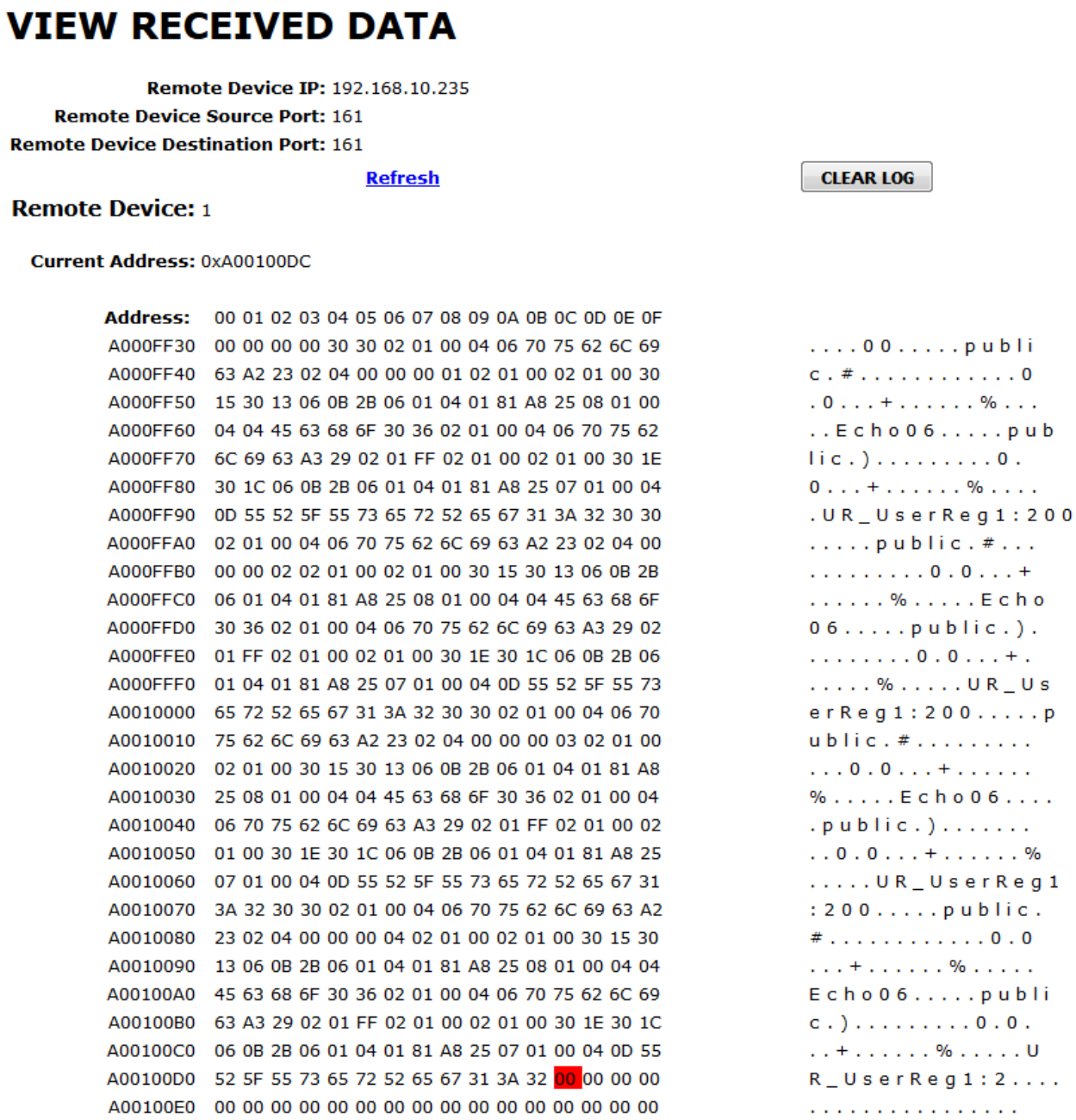
5. VIEW RECEIVED DATA

The USP3 View Received Data link under the System Maintenance page monitors all incoming data from the selected remote device. Use the Refresh link to view incoming data as it is received. Use the Clear Log link to clear the log data.

!!NOTE!! View Received Data page does not auto-refresh and does not generate a log file.



VIEW RECEIVED DATA

Remote Device IP: 192.168.10.235
Remote Device Source Port: 161
Remote Device Destination Port: 161

Refresh CLEAR LOG

Remote Device: 1

Current Address: 0xA00100DC

Address:	00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F	
A000FF30	00 00 00 00 30 30 02 01 00 04 06 70 75 62 6C 69	....00.....publi
A000FF40	63 A2 23 02 04 00 00 00 01 02 01 00 02 01 00 30	c.#.............0
A000FF50	15 30 13 06 0B 2B 06 01 04 01 81 A8 25 08 01 00	.0...+......%...
A000FF60	04 04 45 63 68 6F 30 36 02 01 00 04 06 70 75 62	..Echo06.....pub
A000FF70	6C 69 63 A3 29 02 01 FF 02 01 00 02 01 00 30 1E	lic.).........0.
A000FF80	30 1C 06 0B 2B 06 01 04 01 81 A8 25 07 01 00 04	0...+......%....
A000FF90	0D 55 52 5F 55 73 65 72 52 65 67 31 3A 32 30 30	.UR_UserReg1:200
A000FFA0	02 01 00 04 06 70 75 62 6C 69 63 A2 23 02 04 00	.....public.#...
A000FFB0	00 00 02 02 01 00 02 01 00 30 15 30 13 06 0B 2B	.........0.0...+
A000FFC0	06 01 04 01 81 A8 25 08 01 00 04 04 45 63 68 6F	......%.....Echo
A000FFD0	30 36 02 01 00 04 06 70 75 62 6C 69 63 A3 29 02	06.....public.).
A000FFE0	01 FF 02 01 00 02 01 00 30 1E 30 1C 06 0B 2B 06	........0.0...+.
A000FFF0	01 04 01 81 A8 25 07 01 00 04 0D 55 52 5F 55 73	.....%.....UR_Us
A0010000	65 72 52 65 67 31 3A 32 30 30 02 01 00 04 06 70	erReg1:200.....p
A0010010	75 62 6C 69 63 A2 23 02 04 00 00 00 03 02 01 00	ublic.#.........
A0010020	02 01 00 30 15 30 13 06 0B 2B 06 01 04 01 81 A8	...0.0...+......
A0010030	25 08 01 00 04 04 45 63 68 6F 30 36 02 01 00 04	%.....Echo06....
A0010040	06 70 75 62 6C 69 63 A3 29 02 01 FF 02 01 00 02	.public.).......
A0010050	01 00 30 1E 30 1C 06 0B 2B 06 01 04 01 81 A8 25	..0.0...+......%
A0010060	07 01 00 04 0D 55 52 5F 55 73 65 72 52 65 67 31	.....UR_UserReg1
A0010070	3A 32 30 30 02 01 00 04 06 70 75 62 6C 69 63 A2	:200.....public.
A0010080	23 02 04 00 00 00 04 02 01 00 02 01 00 30 15 30	#.............0.0
A0010090	13 06 0B 2B 06 01 04 01 81 A8 25 08 01 00 04 04	...+......%.....
A00100A0	45 63 68 6F 30 36 02 01 00 04 06 70 75 62 6C 69	Echo06.....publi
A00100B0	63 A3 29 02 01 FF 02 01 00 02 01 00 30 1E 30 1C	c.).........0.0.
A00100C0	06 0B 2B 06 01 04 01 81 A8 25 07 01 00 04 0D 55	..+......%.....U
A00100D0	52 5F 55 73 65 72 52 65 67 31 3A 32 00 00 00 00	R_UserReg1:2....
A00100E0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	....

6. GPI EVENTS WEB PAGE

Home
GPI Events
GPO Actions
Remote Device Assignment
Key Mapper
GTP-32/DC20 Receive Events
Serial Port Configuration
AHSC TX Actions
AHSC RX Events
HTTP GET / POST Actions
SNMP TX/RX Actions
MEM Configuration
Event Action Table
Tally Assignment
Log Out
System Configuration

Save Refresh

GPI CONFIGURATION

GPI#	GPI Label	User Defined "ON" State	User Defined "ON" Mode	Debounce (*10 ms)	Currently
1	GPI_1	OPTO ON	Latch	1	OFF
2	GPI_2	OPTO ON	Latch	1	OFF
3	GPI_3	OPTO ON	Latch	1	OFF
4	GPI_4	OPTO ON	Latch	1	OFF
5	GPI_5	OPTO ON	Latch	1	OFF
6	GPI_6	OPTO ON	Latch	1	OFF
7	GPI_7	OPTO ON	Latch	1	OFF
8	GPI_8	OPTO ON	Latch	1	OFF
9	GPI_9	OPTO ON	Latch	1	OFF
10	GPI_10	OPTO ON	Latch	1	OFF
11	GPI_11	OPTO ON	Latch	1	OFF
12	GPI_12	OPTO ON	Latch	1	OFF
13	GPI_13	OPTO ON	Latch	1	OFF
14	GPI_14	OPTO ON	Latch	1	OFF
15	GPI_15	OPTO ON	Latch	1	OFF
16	GPI_16	OPTO ON	Latch	1	OFF

GPI Label	Enter any 15 characters or symbols. For convenience only. Used in Event Action Table

User Defined ON State	OPTO ON: The GPI is ON when the opto-isolator is energized (powered). The GPI is OFF when the opto-isolator is de-energized. OPTO OFF: The GPI is ON when the opto-isolator is de-energized. The GPI is OFF when the opto-isolator is energized (powered).
User Defined ON Mode	LATCHED: The GPI turns ON and stays ON. The GPI turns OFF and stays OFF. MOMENTARY: The GPI turns ON for a short time and then turns OFF and stays OFF. This pattern repeats every time the GPI become active.
Debounce Time	The time period that the GPI must remain ON to be detected as ON. The selected time is multiplied by 10 milliseconds to compute the actual Debounce time.
Currently	Current state of GPI as defined by User Defined ON State.

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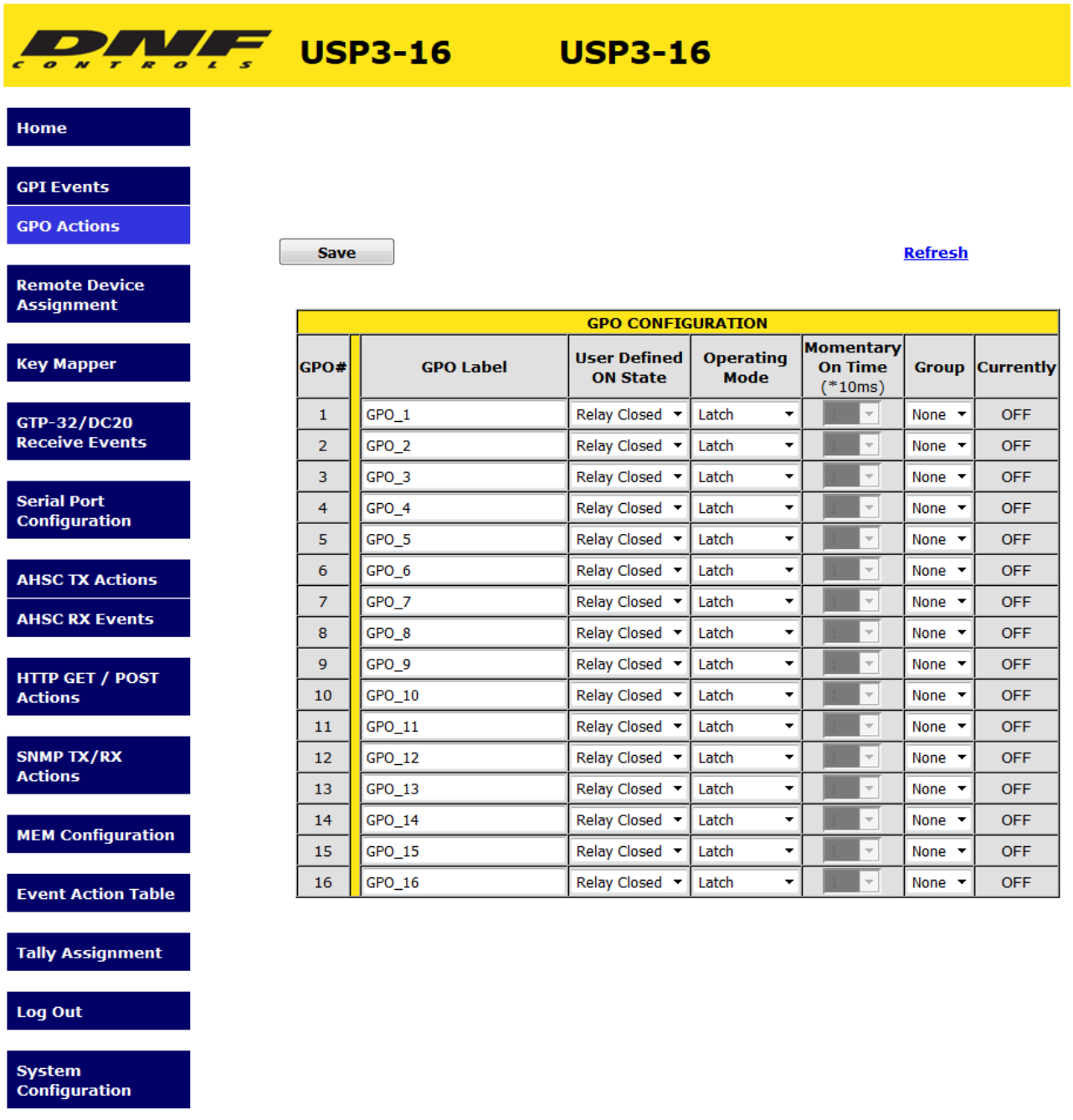
7. GPO ACTIONS WEB PAGE



GPO Label	Enter any 15 characters or symbols. For convenience only. Used in Event Action Table
User Defined ON State	**RELAY OPEN**: The relay is OPEN when the GPO is ON. The relay is CLOSED when the GPO is OFF. **RELAY CLOSED**: The relay is CLOSED when the GPO is ON. The relay is OPEN when the GPO is OFF (Factory Default).

User Defined Operating Mode	**MOMENTARY:** The GPO turns ON, waits for the MOMENTARY ON TIME to expire, and then automatically turns OFF. **LATCH:** The GPO turns ON and stays ON. The GPO turns OFF and stays OFF. **TOGGLE:** The GPO alternates states with each GPO ON action. The GPO turns ON if it was previously OFF. The GPO turns OFF if it was previously ON.
Momentary ON Time	For MOMENTARY operating mode only. ON duration for Momentary GPO. Drop down menu settable from 0.01 sec to 2.0 sec.
Group	**Radio Group** RG1 – RG4: Only one GPO in a Group can be ON at a time. Before a GPO is turned ON, all of the other GPOs in the group are immediately turned off. (Break before make)
Currently	Current state of GPO as defined by User Defined ON State.

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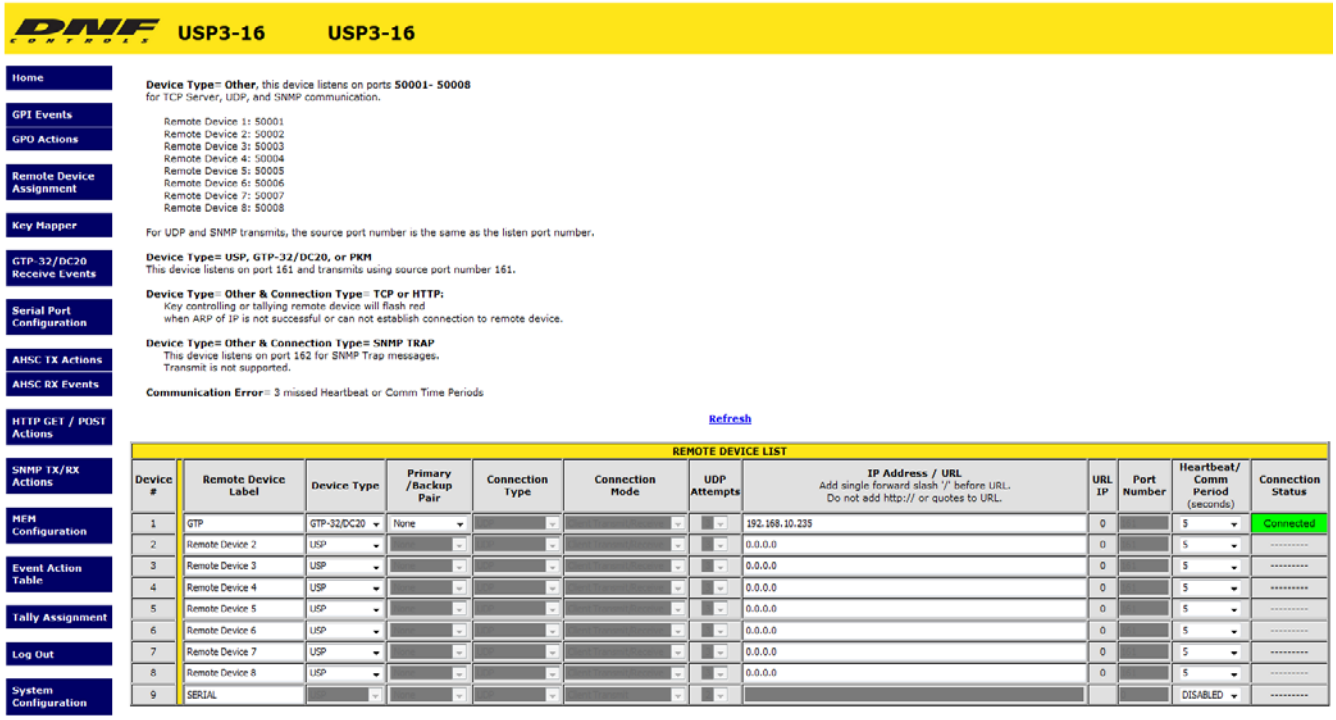
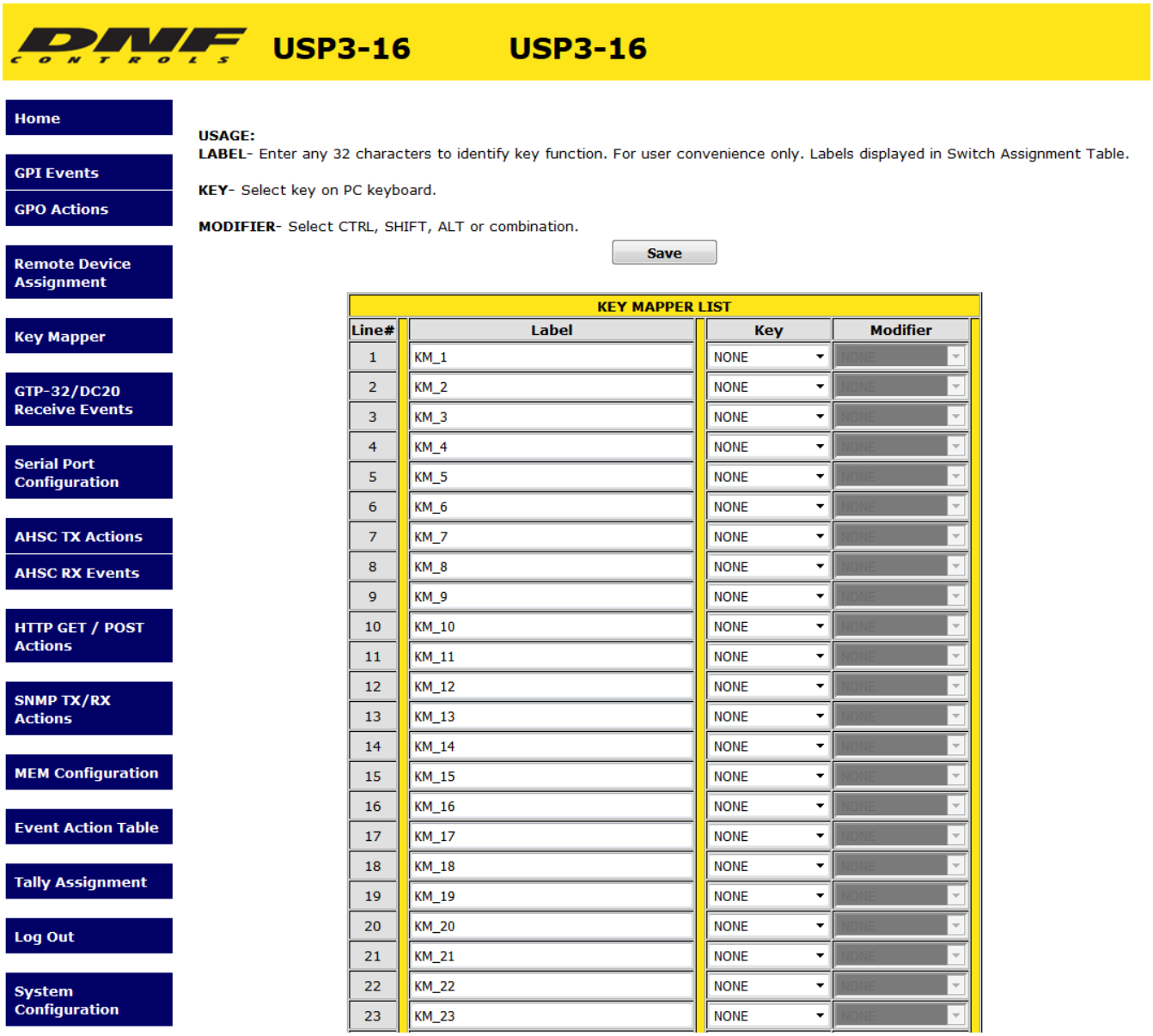
8. REMOTE DEVICE ASSIGNMENT WEB PAGE



Remote Device Label	Enter up to 32 characters. The label will be used in the Event Action Table device drop down menu
Device Type	USP- Use to connect to other DNF Controls USP's, AIB's, EB-4X's and EG-4's. GTP-32/DC20- Use to connect to DNF Controls GTP-32 and DC20/21. PKM – Use to connect to PC for Keymapper functionality. USP3 API – Use to connect to a 3rd party for direct control over the USP3. OTHER- Use to connect to other Ethernet devices
Connection Type	For OTHER Device Types only- Select UDP, SNMP, SNMP Trap, TCP/IP or HTTP GET/POST

Connection Mode	For TCP/IP Only Client Transmit: Establish connection to remote device. Transmit command. Disconnect from remote device. Client Transmit/Receive: Establish connection to remote device. Maintain connection to remote device. Server Receive/Transmit: Accept connection from client. Only client at assigned IP Address can connect. The client is responsible for maintaining connection. Server Mode only, USP3 listens on the following ports: Port **50001** for connection from Remote Device 1 Port **50002** for connection from Remote Device 2 Port **50003** for connection from Remote Device 3 Port **50004** for connection from Remote Device 4
UDP Attempts	For UDP Connection Type only. The number of times that the message will be sent separated by 10 milliseconds. Since UDP does not provide guaranteed delivery, UDP Attempts provides more than one transmit attempt to deliver the message.
IP Address / URL	Enter the IP address or URL for remote device to be controlled or monitored.
URL IP	Display the IP address associate with URL .
Port Number	Destination port number for transmit actions Source port number for receive events. Set to '0' to receive events from any port number at remote device IP address.
Heartbeat Rate	For USP and GTP-32/DC20 Device Types. Default value is 5 seconds. Communication error is defined as loss of two consecutive heartbeats.
Connection Status	For USP and GTP-32/DC20 device types and TCP/IP connection types only Displays "Connected" in green when communicating with remote device Displays "---------" when NOT communicating with remote device or no IP address has been entered.
Save Button	Click on Save button to save entered settings
Refresh Link	Click on Refresh link to refresh Connection Status

9. KEY MAPPER

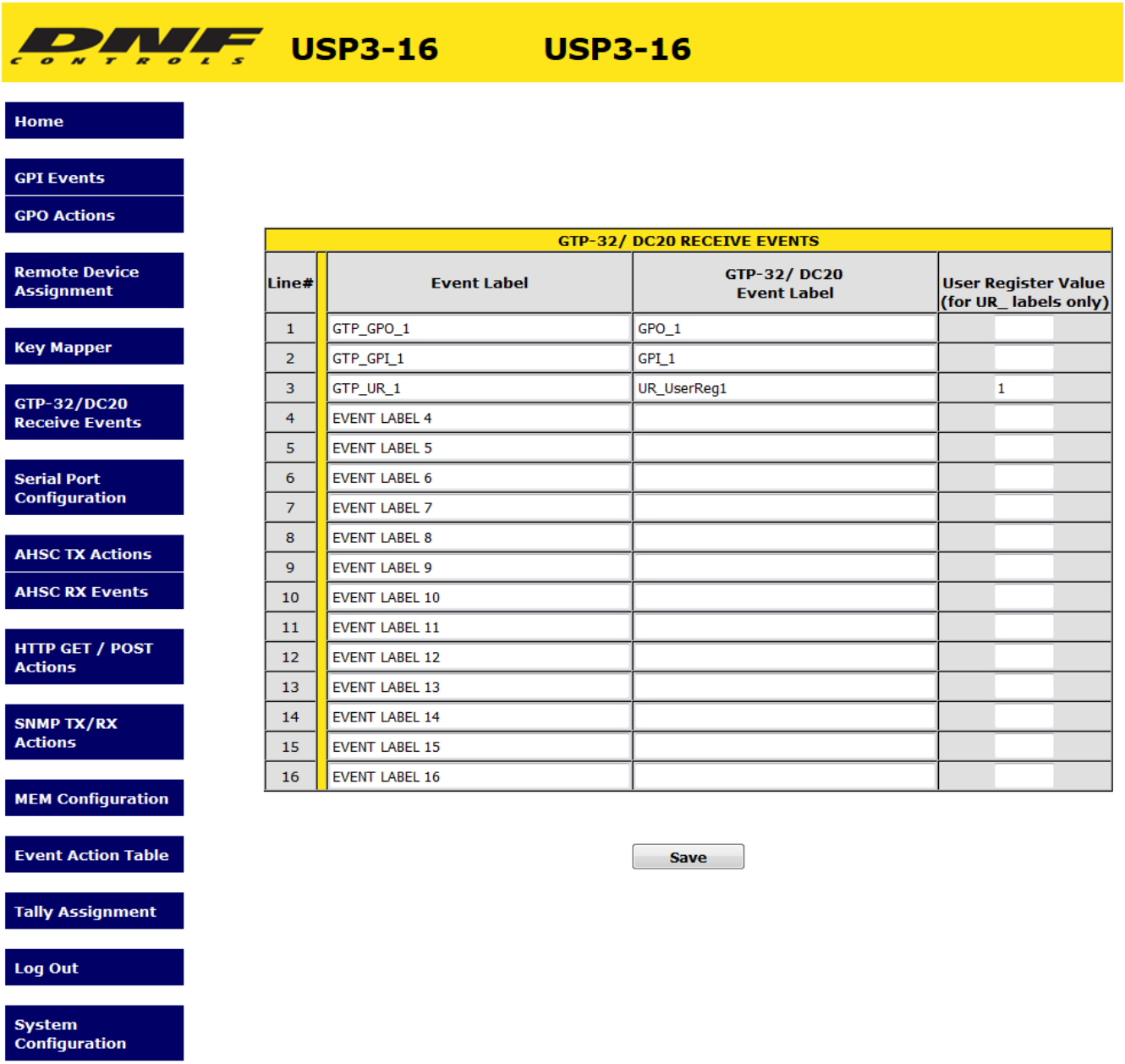


Label	Enter any 32 characters or symbols. For convenience only. Used in Event Action Table
Key	Select PC Keyboard key from drop down menu
Modifier	Select NONE or CTRL, SHIFT, ALT combination

The Key Mapper List contains 48 entries. Select a PC keyboard combination from the drop down menus and assign an identifier label for the Event Action Table.

When a USP key is pressed, the assigned Key Mapper List entry is transmitted to the Panel Key Mapper application, pkm.exe, running on the Microsoft Windows based remote device.

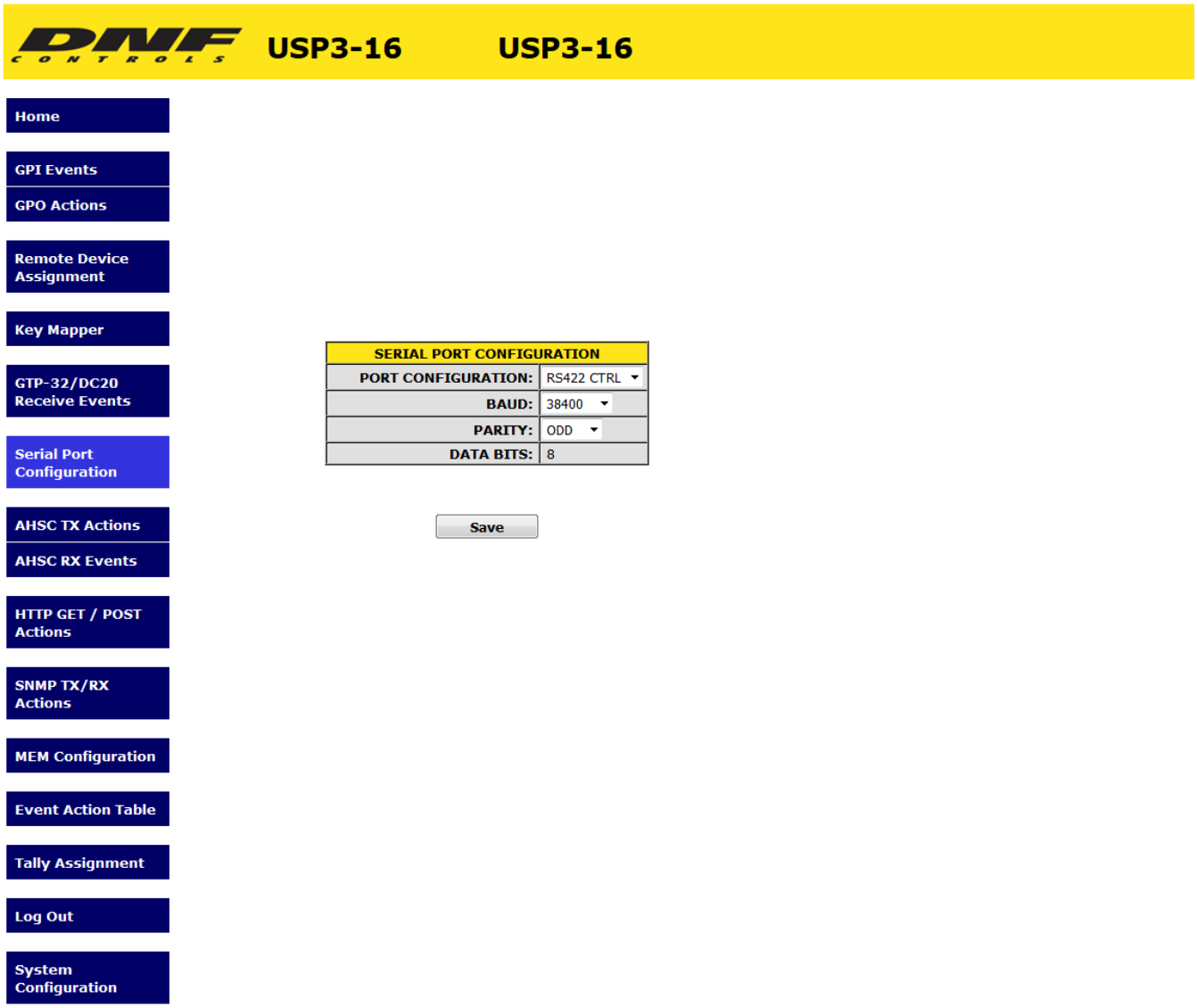
10. GTP-32 / DC20 RECEIVE EVENTS



Event Label	Enter any 32 characters. This label is used in the Event Action Table.
GTP-32/ DC20 Event label	Enter the GTP-32 or DC20 Event Label to tally. This Event Label must be listed in the GTP-32/ DC20's Event Notification Table with the IP address of this USP3. The entered Event Label must exactly match the event label in the Event Notification Table.
User Register Value	For use with "UR_" event labels only. Enter a value '1' to '255': When the received User Register value matches the entered value, the event turns ON. **Note- '0' value is treated as an OFF state**

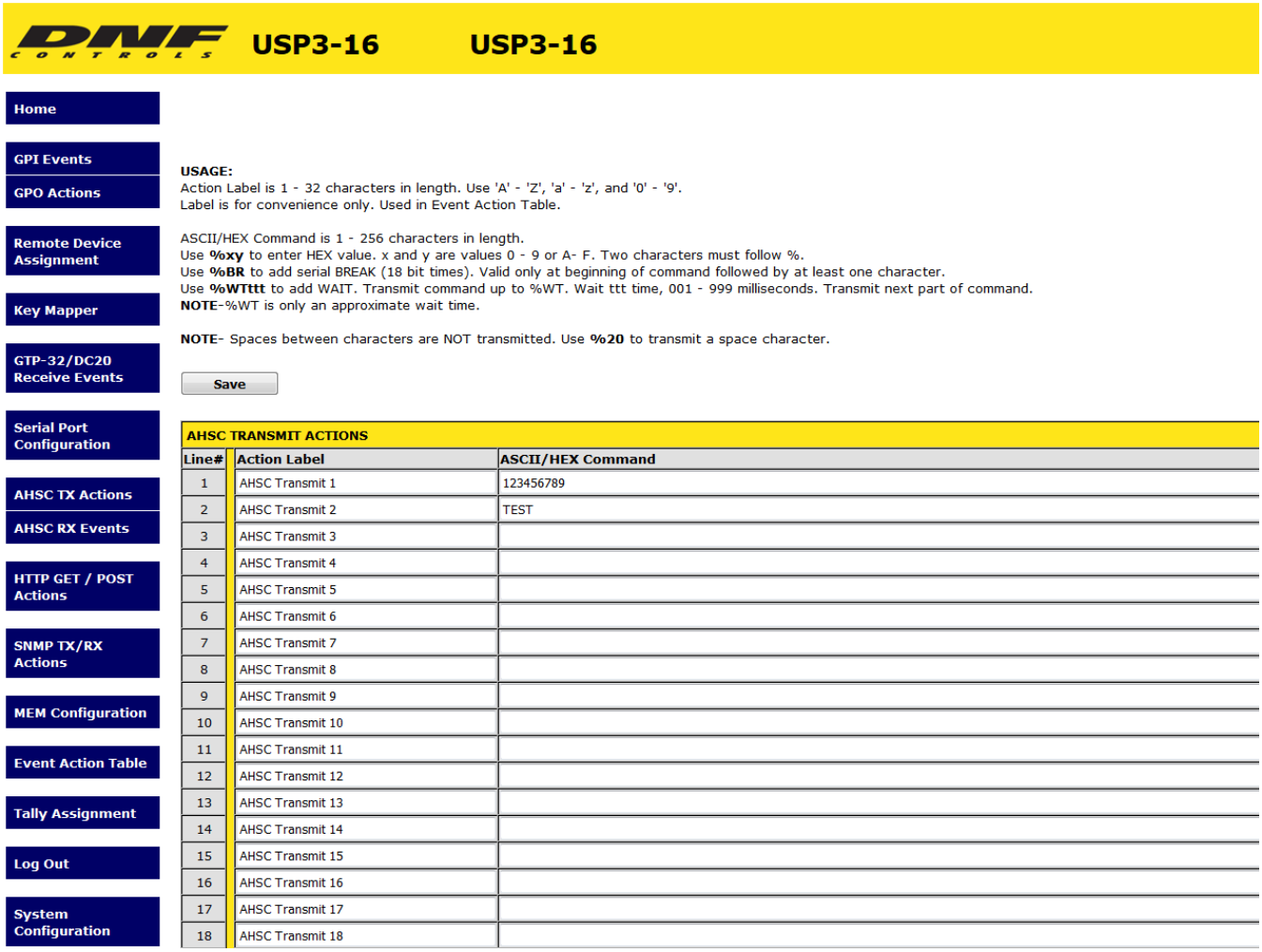
NOTE- The GTP-32/ DC20 Receive Event type event is only displayed in the Event Action Table for Remote Devices of Device Type "GTP-32/ DC20".

11. SERIAL PORT CONFIGURATION



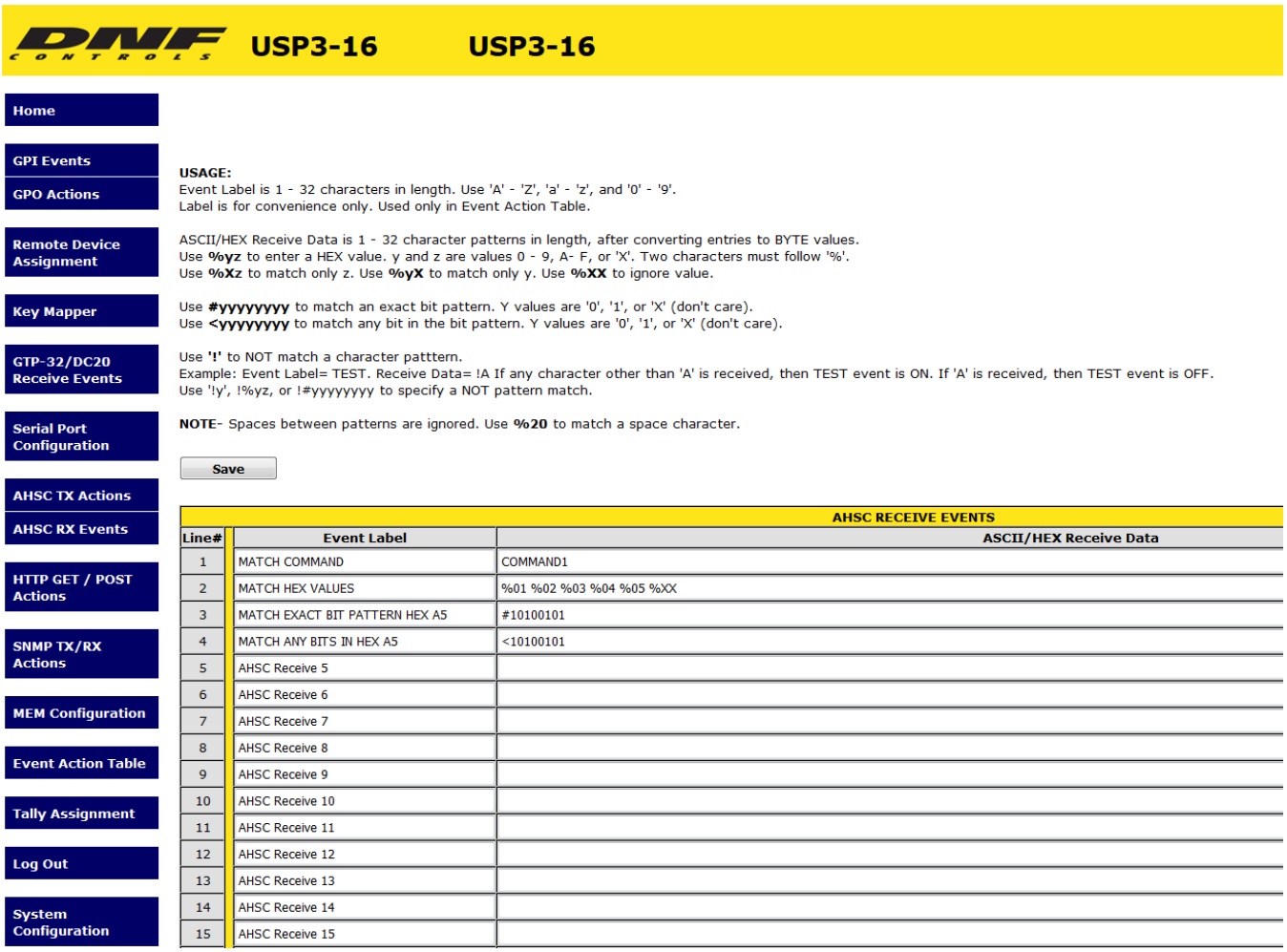
Port Configuration	RS232 DTE or RS422 Controller
Baud Rate	300, 1200, 2400, 4800, 9600,19200, 38400
Parity	None, Odd, Even
Data Bits	Fixed at 8
Stop Bits	Fixed at 1
Start Bits	Fixed at 1

12. AHSC TRANSMIT ACTION



Action Label	Enter any 32 characters. This label is used in the Event Action Table.
ASCII/ HEX Command	The ASCII/HEX Command is 1 - 256 characters in length. Use %yz to enter a HEX value. 'y' and 'z' are values 0 - 9 or A-F. Two characters must follow %. Use %WTttt to add a WAIT time, 001 - 999 milliseconds. Three numbers must follow %WT. The characters preceding %WT are sent immediately. The characters after %WTttt are sent after the wait time expires. More than one %WT can be included in a command. NOTE- %WT is only an approximate wait time. For SERIAL only- Use %BR to add a BREAK character as the first transmitted character. NOTE- Spaces between characters are NOT transmitted. Use %20 to transmit a space character.

13. AHSC RECEIVE EVENT



Event Label	Enter any 32 characters. This label is for convenience only and is used in the Event Action Table.

ASCII/ HEX Receive Data	Enter 1- 16 characters and/or bit patterns to match against received serial data. The received characters must exactly match the order and value of the entered patterns. If a received character does not match the entered pattern, all previous matches are discarded and the match process begins again with the first entered pattern. If more than 1 second elapses between received characters, all previous matches are discarded and the match process begins again. Use %yz to enter a HEX character. 'y' and 'z' are values 0 - 9, A - F, or 'X' (don't care). Enter %Xz to match only the z part of the HEX character. Enter %yX to match only the y part of the HEX character. Enter %XX to ignore the received value. Use #yyyyyyyy to match an exact bit pattern. 'y' values are '0', '1', or 'X' (don't care). For example, enter #0XXX1XXX to match bit7= 0 and bit3= 1. Bit0 is on the far right. Bit7 is on the far left. Use <yyyyyyyy to match any bit in the bit pattern. 'y' values are '0', '1', or 'X' (don't care). For example, enter <0XXX1XXX to match bit7=0 or bit3= 1. Bit0 is on the far right. Bit7 is on the far left. Use '!' to NOT match a character pattern. For example: Event Label= TEST. Receive pattern= !A. If any character other than 'A' is received, then TEST event is ON. If 'A' is received, then TEST event is OFF. Use !y, !%yz, or !#yyyyyyyy to specify a NOT pattern match. NOTE- Spaces between patterns are ignored. Use %20 to match a space character.

Pattern matching examples can be found in the back of this manual.

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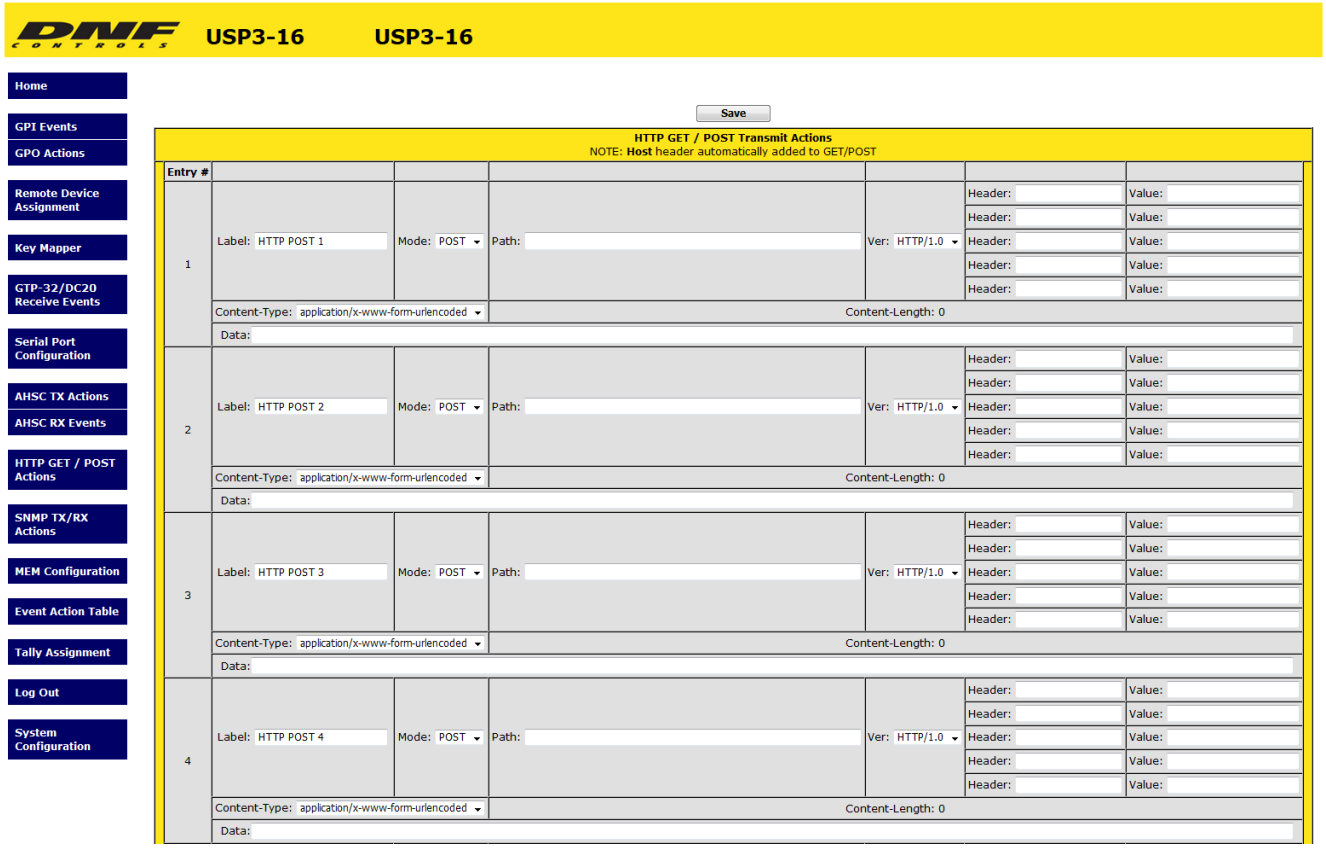
14. HTTP GET / POST ACTIONS



The Hypertext Transfer Protocol (HTTP) is designed to enable communications between clients and servers. HTTP works as a request-response protocol between a client and server.

Two commonly used methods for a request-response between a client and server are: GET and POST.

GET - Requests data from a specified resource
POST - Submits data to be processed to a specified resource

Action Label	Enter any 32 characters. This label is used in the Event Action Table.
Mode	Use the dropdown to select between HTTP “POST” and HTTP “GET”.
Path	Define the path of the HTTP “POST” or “GET”.
Ver	Use the dropdown to select between “HTTP/1.0” and “HTTP/1.1”.
Header	Enter the header data of the HTTP “POST” or “GET”.
Value	Enter the value data of the HTTP “POST” or “GET”.

Content-Type	Options available: • Text/plain • Text/HTML • Application/XML • Application/JSON • Application/x-www-form-urlencoded
Data	Enter the data of the HTTP “POST” or “GET”.

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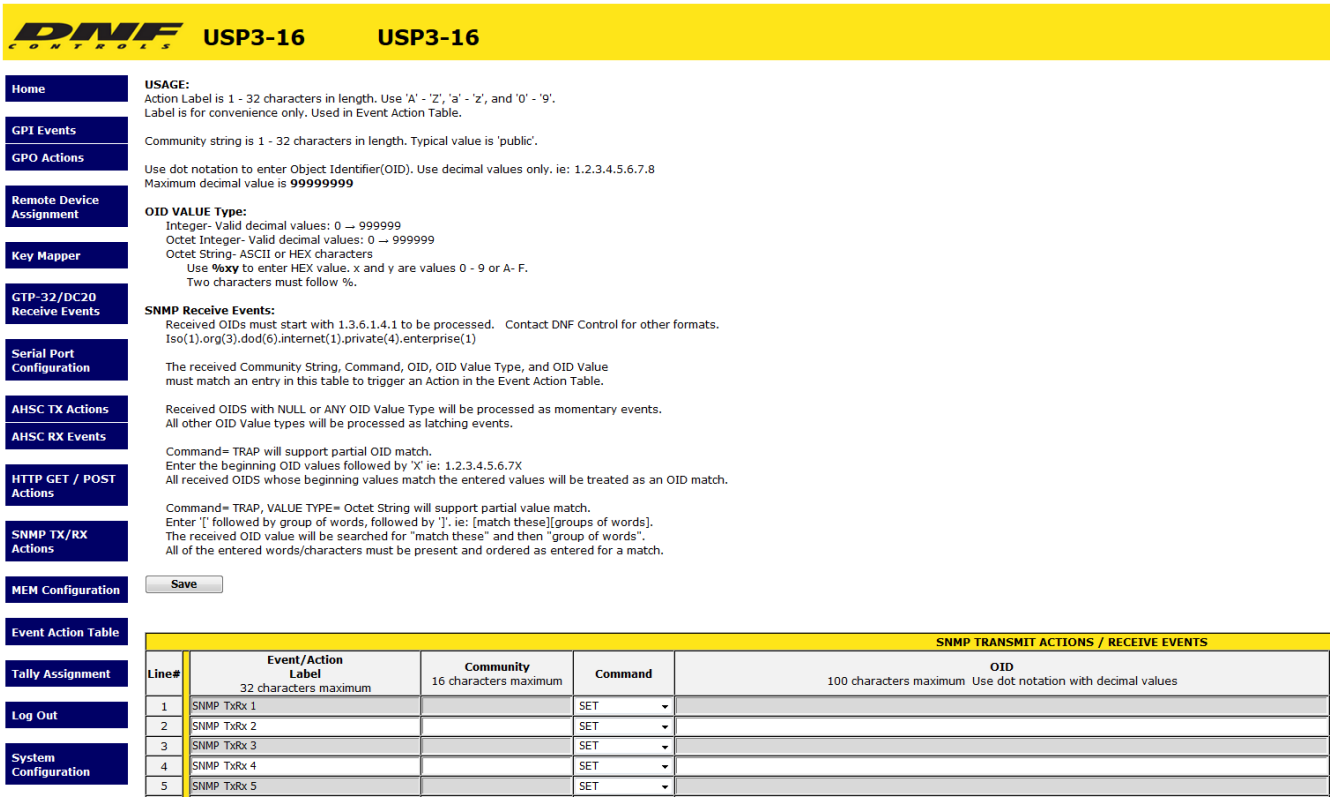
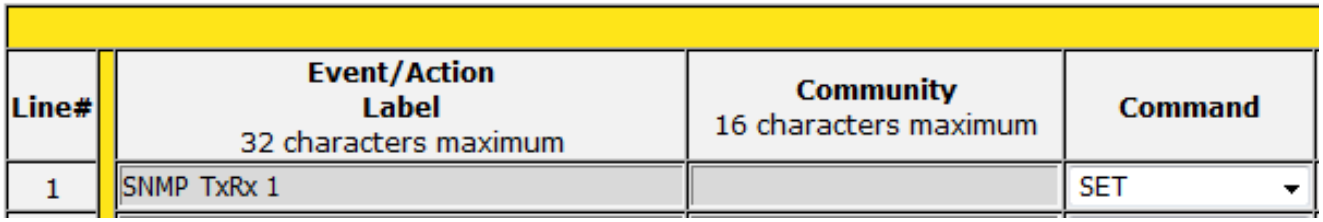
15. SNMP TX/RX ACTIONS





Event/Action Label	Enter any 32 characters. This label is for convenience only and is used in the Event Action Table.
Community	Community string is 1 - 32 characters in length. Typical value is 'public'.
Command	SET, GET, GET RESPONSE or TRAP (RX ONLY)

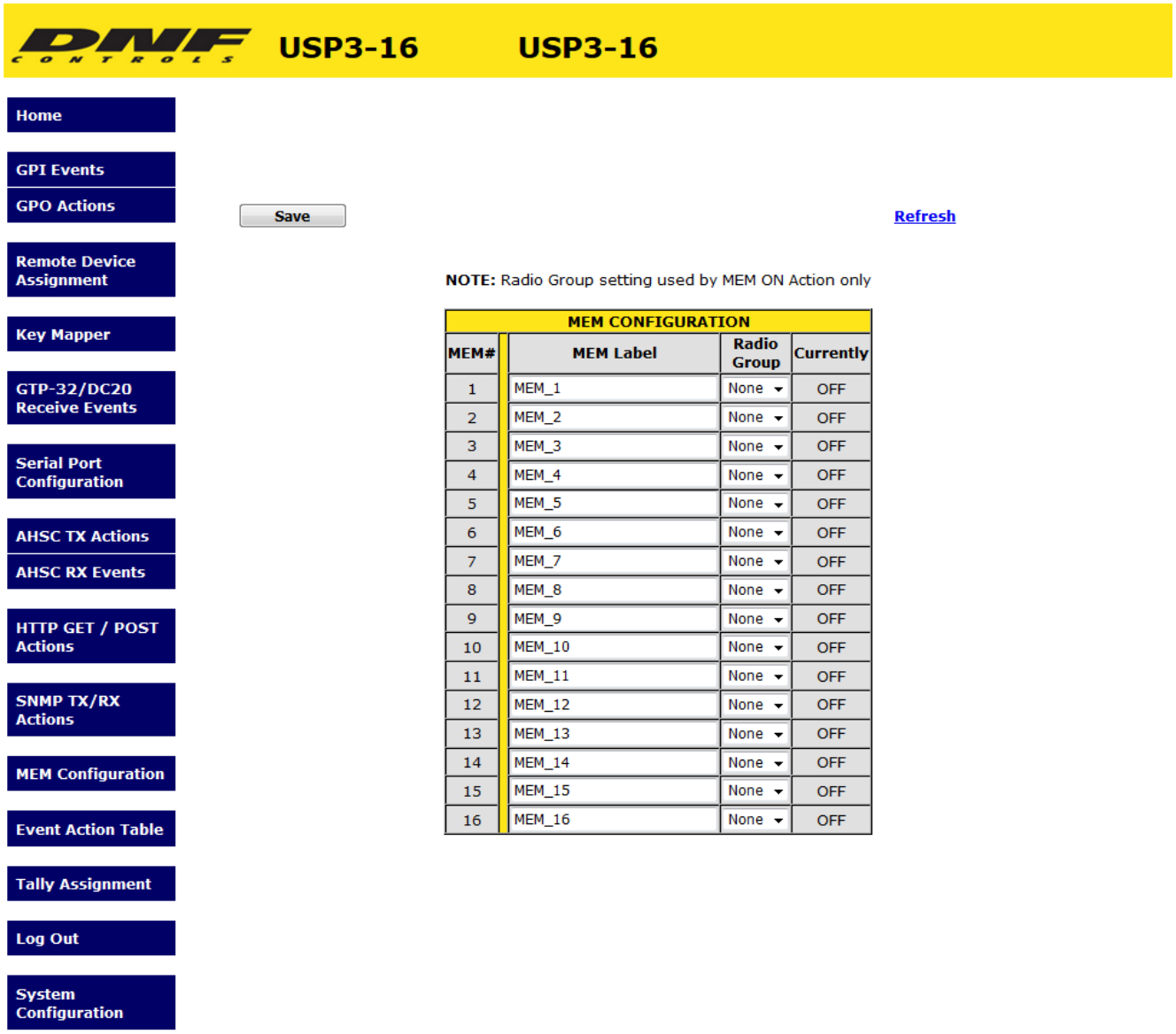
SNMP TRANSMIT ACTIONS / RECEIVE EVENTS
OID 100 characters maximum Use dot notation with decimal values

Object Identifier (OID)	The OID is 8 - 256 decimal values in length entered in dot notation. Only decimal values are accepted. ie: 1.22.333.4.55.666.7.88. Maximum entered decimal value is 99999999.

VALUE TYPE	**OID VALUE** 100 characters maximum
Null	

Value Type	OID Value Type:
	Integer: Enter decimal value 0 - 999999 for OID value.
OID Value	**Octet Integer**: Enter decimal value 0 - 999999 for OID value.
	Octet String: Enter 16 alphanumeric characters.
	NULL: Set to NULL when no OID value is entered.
	ANY: Any of the options available.

16. MEM CONFIGURATION



MEM Label	Enter any 32 characters. This label is for convenience only and is used in the Event Action Table.
Radio Group	Select from “RG1 – RG6” to put the selected mem into a radio group.

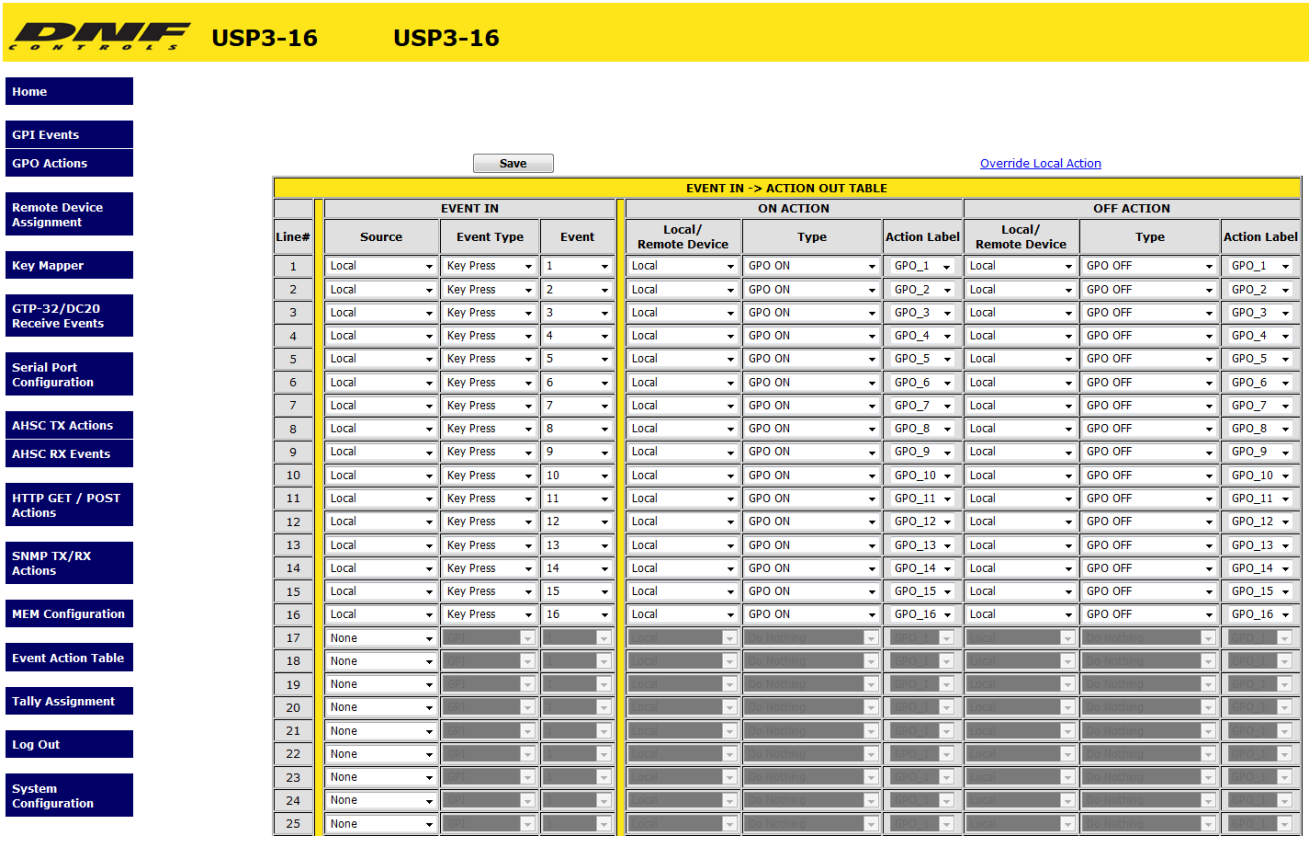
MEM’s are used to save an Event In's ON or OFF state and trigger an ON or OFF ACTION. MEMs are also used on the Tally Assignment web page to control LCD Key text and color.

In the Event Action Table, an Event IN can turn ON, turn OFF or TOGGLE the state of a MEM. Also, a MEM can be used as an Event IN to trigger an ON or OFF ACTION.

For example, a MEM can be used to convert a momentary event into a latching tally. VTR Play status turns on MEM 1. VTR Stop status turns off MEM 1. The LCD Key tallying MEM 1 displays PLAY when MEM 1 is on and STOP when MEM 1 is off.

Please refer to section 18 for example of MEMs FLIP FLOP and RADIO GROUP.

17. EVENT ACTION TABLE



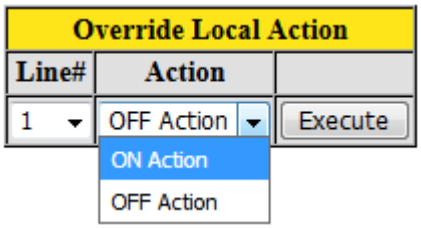
On an Event Action Table line, select an EVENT IN on the left side of the table and then select an ACTION on the right side. Some events only support ON ACTIONS, so the OFF ACTION entries will be grayed out.

One EVENT IN can trigger more than one ACTION. Select the same EVENT IN on multiple lines and then select an ON or OFF ACTION on each line.

Only EVENTs and ACTIONs associated with the Remote Device's Device Type or Connection Type will be displayed in the drop down menus. If the desired event or action is not displayed, then go to the Remote Device Assignment web page and change the Device Type or Connection Type for the Remote Device.

There are 16 Sequence Timers. Use each Sequence Timer event number in multiple lines as the Event Type to create a sequence of actions. The first Sequence entry from the top of the table will be the first sequence action. The next Sequence entry from the top of the table will be the next sequence action. The Event column time is the delay before that line's action will execute. Use Sequence Start action to start a sequence. Use Sequence Stop/ Reset to stop a sequence. The Sequence will always start at its first line.

An "Override Local Action" link lets users execute the ON or OFF Actions of a given Event Action Table line without triggering the source event.

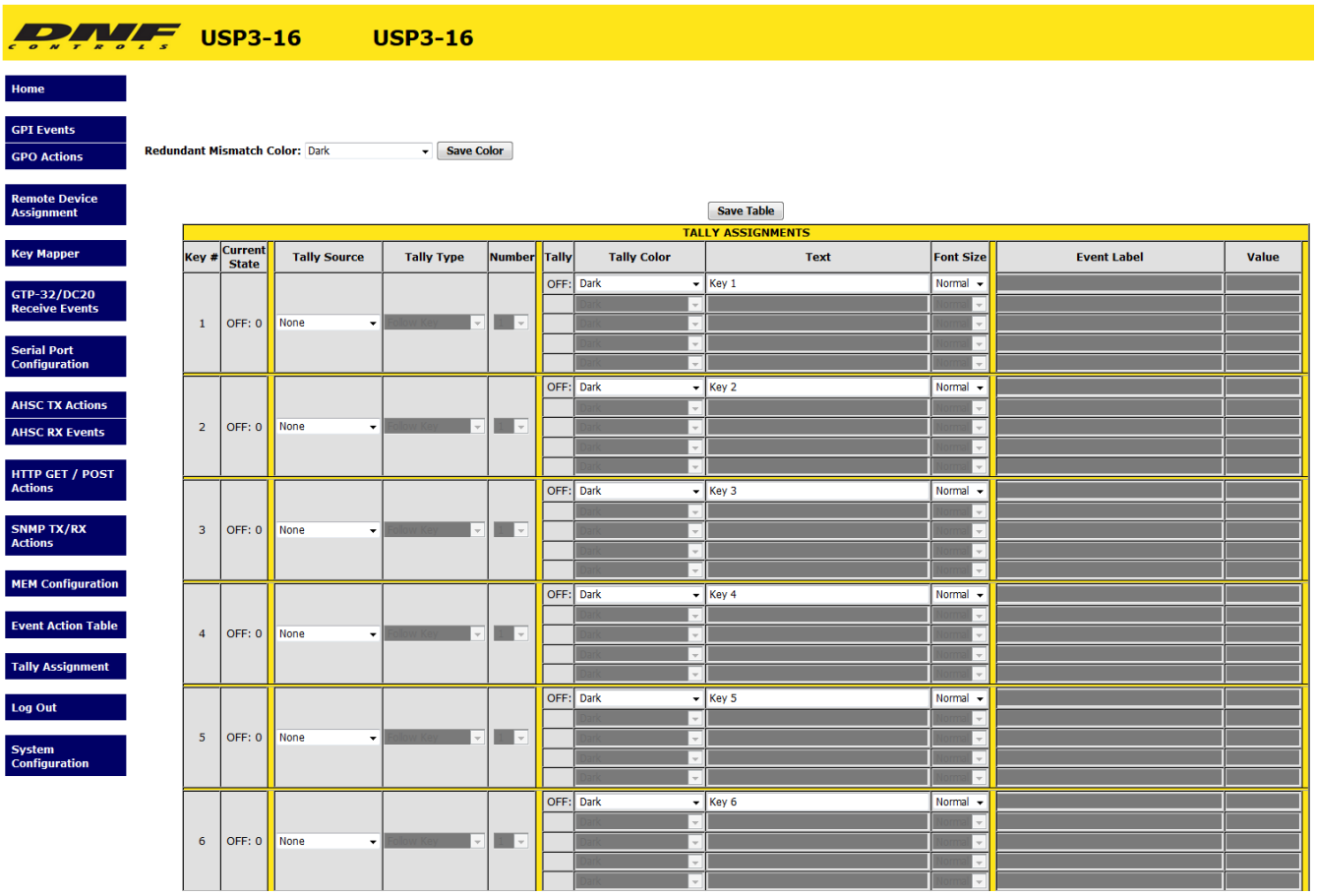


EVENT IN	**Source**	None (Greys out line) Local Event Remote Device Event Serial
	Event Type	Local: **Keypress** Keypress changed from OFF to ON. The selected ON ACTION will execute. Keypress changed from ON to OFF. The selected OFF ACTION will execute **GPI** GPI changed from OFF to ON. The selected ON ACTION will execute. GPI changed from ON to OFF. The selected OFF ACTION will execute **MEM** MEM changed from OFF to ON. The selected ON ACTION will execute. MEM changed from ON to OFF. The selected OFF ACTION will execute **Sequence Timer** The sequence timer's time has expired. Only ON ACTION is executed. The timer automatically restarts for the time period of the next sequence event in the table. After the last sequence event in the table has expired and its ON ACTION executed, the timer automatically restarts for the time period of the first sequence event in the table. MANUAL EVENT – Sequence time is ignored. **Continuous Timer** The Continuous timer's time has expired. Only ON ACTION is executed. The timer automatically starts once "Save" is pressed in the Event Action table. After the timer has expired and its ON ACTION executed, the timer automatically restarts for the time period setup in the Event Action table.
		Remote: **AHSC Receive Event** A successful pattern match has occurred for the selected AHSC Receive Event pattern on the selected Remote Device. Only ON ACTION is executed. If the AHSC Receive Event pattern is assigned to multiple Remote Devices, only the ON ACTION associated with the Remote Device that received the successful match will execute. **GTP-32/DC20 Receive** (Only available for Device Type "GTP-32/DC20") An Event Label was received that matched the selected GTP-32/DC20 Event Label on the selected Remote Device. Only ON ACTION is executed. If an Event Label is assigned to multiple Remote Devices, only the ON ACTION associated with the sending Remote Device will execute. **USP Keypress** (Only available for Device Type "USP") An event (Keypress or GPI) was received that matched the selected event on the selected Remote Device.
	Event	GPI Number, AHSC Receive Event Label, Ethernet Receive Event Label, or GTP-32/DC20 Event Label, Sequence Timer time period. The display labels in the drop down menus are the same user entered labels on the event web pages

ON ACTION	**Local / Remote**	Execute Action on Local USP3 Execute Action on Remote Device
	Type	Local: **GPO** Do Nothing Turn GPO ON Turn GPO OFF **MEM** Do Nothing Turn MEM ON Turn MEM OFF **Sequence Start** Start identified sequence at its first line in the Event Action Table. **Sequence Stop / Reset** Immediately stop sequence. **Sequence Toggle** Toggle current sequence. **Sequence Repeat** Repeat current sequence **Sequence Next** Allows Manual Sequence operation. **Key Enable** Turn ON Key Enable Turn OFF Key Enable Toggle Key Enable **Redundant** Turn ON Redundant Mode Turn OFF Redundant Mode Toggle Redundant Mode **Main/Backup** Select MAIN Select BACKUP Toggle between MAIN/BACKUP **Restart Timer** Restarts the currently selected timer in the Event Action Table.
		Remote: **AHSC Transmit Action** Transmit the selected AHSC Action command. If command contains WAIT (%WT), then transmit all characters prior to %WT, wait for the time period defined by %WT, and then transmit the remaining characters or until the next %WT. A command may contain more than one %WT. **GTP-32/ DC20** (Only available for Device Type "GTP-32/DC20") Transmit GPI ON (as a Key Press), GPI OFF (as a Key Release), GPO ON, and GPO OFF messages to a GTP-32 /DC20 Remote Device. **USP** (Only available for Device Type "USP") Transmit a Key Press to a Remote USP panel.
	Action Label	GPO Number AHSC Transmit Action

<table>
<tr><td rowspan="3">OFF ACTION</td><td>Local / Remote</td><td>Execute Action on Local USP3
Execute Action on Remote Device</td></tr>
<tr><td rowspan="2">Type</td><td>Local: GPO Do Nothing
Turn GPO ON
Turn GPO OFF
MEM Do Nothing
Turn MEM ON
Turn MEM OFF
Sequence Start
Start identified sequence at its first line in the Event Action Table.
Sequence Stop / Reset
Immediately stop sequence.
Sequence Toggle
Toggle current sequence.
Sequence Repeat
Repeat current sequence
Key Enable Turn ON Key Enable
Turn OFF Key Enable
Toggle Key Enable
Redundant Turn ON Redundant Mode
Turn OFF Redundant Mode
Toggle Redundant Mode
Main/Backup Select MAIN
Select BACKUP
Toggle between MAIN/BACKUP
Restart Timer
Restarts the currently selected timer in the Event Action Table.</td></tr>
<tr><td>Remote:
AHSC Transmit Action
Transmit the selected AHSC Action command. If command contains WAIT (%WT), then transmit all characters prior to %WT, wait for the time period defined by %WT, and then transmit the remaining characters or until the next %WT. A command may contain more than one %WT.
GTP-32/ DC20 (Only available for Device Type “GTP-32/DC20”)
Transmit GPI ON (as a Key Press), GPI OFF (as a Key Release), GPO ON, and GPO OFF messages to a GTP-32 /DC20 Remote Device.
USP (Only available for Device Type “USP”)
Transmit a Key Press to a Remote USP panel.</td></tr>
<tr><td></td><td>Action Label</td><td>GPO Number
AHSC Transmit Action</td></tr>
</table>

18. TALLY ASSIGNMENT



Key Number	The USP3 key number.	
Tally Type	Local- Follow Key, Follow GPI, Follow GPO, Follow ENABLE Key, Follow Memory Location (MEM), Follow Sequence (SEQ) Remote- Tally Remote Device: USP, GTP-32/DC20, Other	
Tally Source	Local	Follow Key- Tally is ON when key is pressed Tally is OFF when key is released Follow GPI- Tally is ON when GPI is ON Tally is OFF when GPI is OFF Follow GPO- Tally is ON when GPO is ON Tally is OFF when GPO is OFF Follow ENABLE- Tally is ON when ENABLE is ON Tally is OFF when ENABLE is OFF Follow MEM- Tally is ON when MEM is ON Tally is OFF when MEM is OFF Follow SEQ- Tally is ON when Sequence is in progress Tally is OFF when Sequence is not running

Tally Source	Remote	Follow remote USP GPI or GPO- Tally is ON when remote GPI/GPO is ON Tally is OFF when remote GPI/GPO is OFF Follow GTP-32 or DC-20 Event Label Tally is ON when Event Label state is ON Tally is OFF when Event Label state is OFF Extended Follow GTP/DC- For use with "ET_" Event Labels only Formatted: ET_NameField_StatusField The Extended Tally is off when received ET Event Label matches Name Field but does not match any Status entries assigned to key or matches OFF entry ET1Tally is ON when the received Event Label matches the Name Field and Status Field for ET1 and the Event Label is ON ET2 through ET4 Tally is ON when the received Event Label matches the Name Field and Status Field for ET2 through ET4, respectively, and the Event Label is ON Follow GTP/DC User Register- For use with "UR_" Event Labels only The UR Event Label is OFF when User Register value does not match any UR entries for key or matches OFF entry value UR1Tally is ON when the received User Register value matches the UR1 value entry UR2 through UR4 Tally is ON when the received User Register value matches the UR1 through UR4 value entry, respectively
Tally Number		GPI / GPO Number SNMP Table Entry Number AHSC Table Entry Number
Tally		OFF / ON OFF / ET1, ET2, ET3, ET4 for Extended Tallies OFF / UR1, UR2, UR3, UR4 for User Register Tallies
Tally Color		Dark, Red, Green, Amber Flashing Red, Flashing Green, Flashing Amber Blinking Red, Blinking Green, Blinking Amber Dim Red, Dim Green, Dim Amber Dim Flashing Red, Dim Flashing Green, Dim Flashing Amber Dim Blinking Red, Dim Blinking Green, Dim Blinking Amber
Text		Text displayed on key face for each tally entry
Font Size		Small: 3 rows x 6 characters per row Normal: 2 rows x 4 characters per row Big: 1 row x 3 characters per row
Event Label		Manually enter, or cut & paste, the Event Label from the GTP-32's or DC20's Event Notification Table. The event label is case sensitive, may not contain spaces, and must exactly match the Event Notification Table entry. (Refer to the GTP-32 or DC20 User Manual.)
Value		Enter User Register value to match

19. EXAMPLES: RECEIVE PATTERN MATCHING

NOTE- ASCII and HEC data can be mixed in a user entered pattern. For simplicity only, the examples do not mix ASCII or HEX in a user entered pattern.

ASCII Examples

User Entered Pattern	Received ASCII Data	Notes
ABCD	ABCDEFG	Successful pattern match of first 4 received characters
ABCD	1234ABCDEFG	Successful pattern match of 5th , 6th, 7th, and 8th received characters
ABCD	1234A5BCDEFG	No pattern match. User entered pattern must be received as entered.
A %XX C D **NOTE**- spaces are not included in pattern match	ABCD ACCD AJCD A2CD	The value of the second character in the pattern, %XX, is like a wildcard, so it can be any character. A successful pattern match will result if the first, third and fourth characters are correct. All four received character patterns are a successful pattern match.
A %XX C D	1234ABCDEFG 1234A5CDEFG 4AKCDE	Successful pattern matches.
A %XX C D	ACD	No pattern match. Four characters must be received.

Hex Examples (Base 16 Numbering)

User Entered Pattern	Received Hex Data (spaces for display only)	Notes
%12 %34	12 34 12 34 56 78 56 78 12 34 9A 56 78 12 34	Successful pattern matches for hexadecimal values 12 and 34.
%X2	12 32 52 A2	The first half of the received Hex value is like a wildcard and can be any value. Only the second half must match the user entered value. Successful pattern matches.
%12 %4X	12 43 12 4A 12 49 56 98 12 49	The second half of the received Hex value is like a wildcard and can be any value. Only the first half must match the user entered value. Successful pattern matches.
%12 %4X	12 34 12 84 12 56	No pattern match.

Binary Examples (Base 2 Numbering)

User Entered Pattern	**Received Binary Data** (spaces for display only)	**Notes**
#0XXX1XXX Bit7 = 0, Bit3= 1 All other bits are “Don’t care”	01011000	Bit 7 is immediately after the ‘#’. Bit 0 is on the far right. A pattern match occurs only when Bit 7= 0 and Bit3= 1. The received data must exactly match these identified bit values for a match. The values of the other 6 bits are ignored. Successful match.
#0XXX1XXX	01111111 00001000 01101001	Successful pattern matches.
#0XXX1XXX	10001000	No pattern match. Bit 7, on the far left is ‘1’. It must be ‘0’ to match.
#0XXX1XXX	00000000	No pattern match. Bit 3 is ‘0’. It must be ‘1’ to match.

User Entered Pattern	**Received Binary Data** (spaces for display only)	**Notes**
<0XXX1XXX Bit7 = 0, Bit3= 1 All other bits are “Don’t care”	01011000	Bit 7 is immediately after the ‘#’. Bit 0 is on the far right. A pattern match occurs when Bit 7= 0 or Bit3= 1. Only one of the bits in the received data must match. The values of the other 6 bits are ignored Successful match.
<0XXX1XXX Bit7 = 0, Bit3= 1 All other bits are “Don’t care”	11111111	Received Bit 7 =1. Received Bit 3= 1. At least one identified bit, Bit 3, matches. Successful pattern match.
<0XXX1XXX Bit7 = 0, Bit3= 1 All other bits are “Don’t care”	10000000	Received Bit 7 =1. Received Bit 3= 0. None of the identified bits match the user entered pattern. No pattern match.
<0XXX1XXX Bit7 = 0, Bit3= 1 All other bits are “Don’t care”	11111111 00000000 01010101 10101010	Successful pattern matches.
<0XXX1XXX Bit7 = 0, Bit3= 1 All other bits are “Don’t care”	11110111 10000000 11010101 10100010	No pattern match.

ASCII Examples

User Entered Pattern	Received ASCII Data	Notes
!A	B	A pattern match is successful when the received character is any character except 'A'.
!A	AAAAAA	All of the received characters are 'A'. No pattern match.
!A	AB	The second character is not an 'A'. The received data is a successful pattern match.
!A	BA	The first character is not an 'A' and is a successful pattern match. The received data is a successful pattern match.
!A	BC	No character is an 'A'. Successful pattern match.
!AB	AB	The first character can be any character except 'A'. The second character must be 'B'. No pattern match
!AB	CB DB ZB	The first character can be any character except 'A'. The second character must be 'B'. Successful pattern match
!AB	CD	The first character can be any character except 'A'. The second character must be 'B'. No pattern match

Hex Examples (Base 16 Numbering)

User Entered Pattern	Received Hex Data	Notes
!%12	12	A pattern match is successful when any value is received except 12. No pattern match.
!%12 34	22 34	A pattern match is successful when any value is received except 12, immediately followed by 34 Successful pattern match.
!%12 34	11 34 21 34 9F 34 87 34	Successful pattern matches.
!%12 34	11 12 34	No pattern match
!%12 34	11 22 34 11 45 34 56	Successful pattern matches

20. EXAMPLES: SEQUENCES

When the Sequence Timer's event time expires, the associated ON Action will execute and then the timer for the sequence's next entry in the Event Action Table will start.

Upon receipt of a Sequence Start action, the timer for the Sequence's first entry in the Event Action Table will start.

Upon receipt of a Sequence Stop action, the sequence will immediately stop. The sequence entry in progress will halt without executing. The next Start action will cause the sequence to start at its first entry in the Event Action Table.

When the last Sequence action executes, the sequence will automatically turn off and stop executing. If the last Sequence action is Sequence Start, the sequence will loop until a Sequence Stop is received.

Example #1 Wait for Sequence Start action and then play sequence until end and stop.

Event Type	Event	Description
Key Press	1	Sequence 1 Start action
Sequence 1 Timer	100ms	Delay 100ms and then execute assigned ON Action
Sequence 1 Timer	1 sec	Delay 1 second and then execute assigned ON Action
Sequence 1 Timer	10 sec	Delay 10 seconds and then execute assigned ON Action
Sequence 1 Timer	100ms	Sequence 1 Start action
Key Press	2	Sequence 1 Stop action

21. EXAMPLES: MEM / FLIP FLOP

To setup a FLIP FLOP action the use of a MEM is required. A source events (GPI or Keypress) ON action will FLIP FLOP the action of two GPO's.

The selected MEM that is being toggled will need to be setup in following manner to trigger the FLIP FLOP action.

ON ACTION: TURN ON GPO_1, TURN OFF GPO_2

OFF ACTION: TURN OFF GPO_1, TURN ON GPO_2

Example #1 MEM FLIP FLOP GPO 1 and 2

Local	Key Press	1	Local	MEM Toggle	MEM_1	Local	Do Nothing	
Local	MEM	MEM_1	Local	GPO ON	GPO_1	Local	GPO OFF	GPO_1
Local	MEM	MEM_1	Local	GPO OFF	GPO_2	Local	GPO ON	GPO_2

22. EXAMPLES: MEM / RADIO GROUP TALLY

To setup a MEM based RADIO GROUP TALLY the use of MEMs is required.

First a MEM/s will need to be assigned to a Radio Group (RG1 – RG6)

MEM CONFIGURATION

MEM#	MEM Label	Radio Group	Currently
1	RWD	RG1	OFF
2	PLAY	RG1	OFF
3	STOP	RG1	ON

A source events (GPI, Keypress or Serial Event) ON action will turn ON the MEM/s associated with the Radio Group. MEM ON must be selected as the ON action for the Radio Group functionality to work properly.

	EVENT IN			ON ACTION			OFF ACTION		
Line#	Source	Event Type	Event	Local/ Remote Device	Type	Action Label	Local/ Remote Device	Type	Action Label
1	Local	Key Press	1	Local	MEM ON	RWD	Local	Do Nothing	
2	Local	Key Press	2	Local	MEM ON	PLAY	Local	Do Nothing	
3	Local	Key Press	3	Local	MEM ON	STOP	Local	Do Nothing	

Assign each MEM to a specific USP3 Key in the Tally Assignment page.

TALLY ASSIGNMENTS

Key #	Current State	Tally Source	Tally Type	Number	Tally	Tally Color	Text	Font Size	Event Label	Value
1	OFF: 0	Local	Follow MEM	RWD	OFF:	Red	RWD	Normal		
					ON:	Green	RWD	Normal		
2	OFF: 0	Local	Follow MEM	PLAY	OFF:	Red	PLAY	Normal		
					ON:	Green	PLAY	Normal		
3	ON: 1	Local	Follow MEM	STOP	OFF:	Red	STOP	Normal		
					ON:	Green	STOP	Normal		

When a Source Event triggers on the USP3, the MEM tied to this source event will turn ON. This MEM ON action will cause its Key tally to turn ON all other Key tallies in the same Radio Group will turn OFF.

23. EXAMPLES: GPO MOMENTARY RADIO GROUP

To setup a GPO Momentary Radio Group the use of MEMs is required.

First, in the GPO actions page set the operating mode of each GPO you will be using to “momentary” and set the desired momentary on-time.

GPO CONFIGURATION

GPO#	GPO Label	User Defined ON State	Operating Mode	Momentary On Time (*10ms)	Group	Currently
1	GPO_1	Relay Closed	Momentary	100		OFF
2	GPO_2	Relay Closed	Momentary	100		OFF
3	GPO_3	Relay Closed	Momentary	100		OFF

Next, in the MEM Configuration page assign a MEM to each GPO that you will be using for your Radio Group. Under the Radio Group Dropdown, assign all MEM’s to the same radio group (RG1 – RG5)

MEM CONFIGURATION

MEM#	MEM Label	Radio Group	Currently
1	GPO_1	RG1	OFF
2	GPO_2	RG1	OFF
3	GPO_3	RG1	OFF

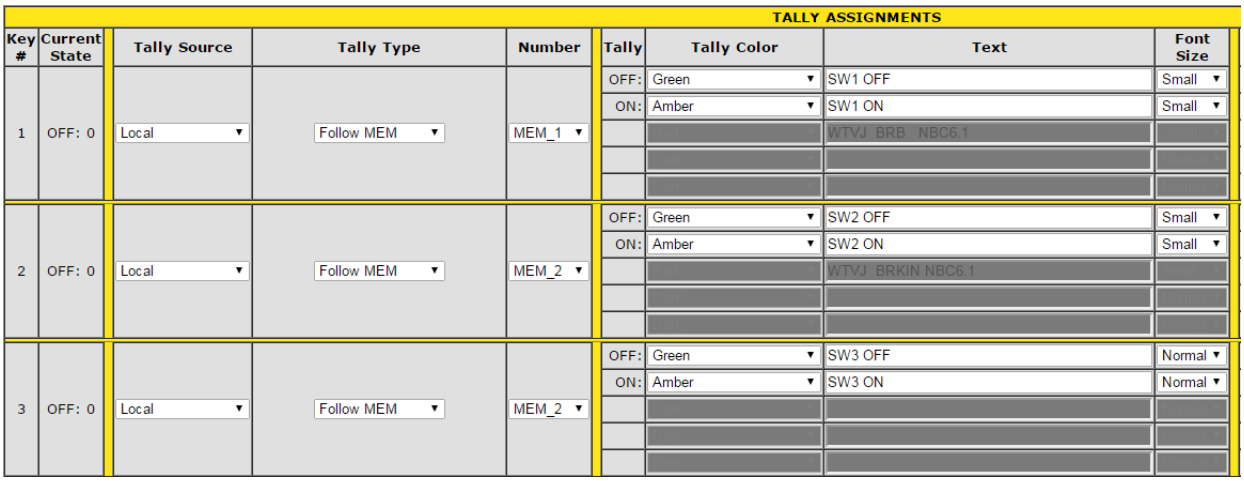
A source event (GPI, Keypress or Serial Event) ON action will turn ON the MEM/s and GPO’s associated with the Radio Group. MEM ON must be selected as the ON action for the Radio Group functionality to work properly.

EVENT IN -> ACTION OUT TABLE

	EVENT IN			ON ACTION			OFF ACTION		
Line#	Source	Event Type	Event	Local/ Remote Device	Type	Action Label	Local/ Remote Device	Type	Action Label
1	Local	Key Press	1	Local	GPO ON	GPO_1	Local	Do Nothing	
2	Local	Key Press	2	Local	GPO ON	GPO_2	Local	Do Nothing	
3	Local	Key Press	3	Local	GPO ON	GPO_3	Local	Do Nothing	
4	Local	Key Press	1	Local	MEM ON	MEM_1	Local	Do Nothing	
5	Local	Key Press	2	Local	MEM ON	MEM_2	Local	Do Nothing	
6	Local	Key Press	3	Local	MEM ON	MEM_3	Local	Do Nothing	

(Continued on Next Page)

Assign each MEM to a specific USP3 Key in the Tally Assignment page.



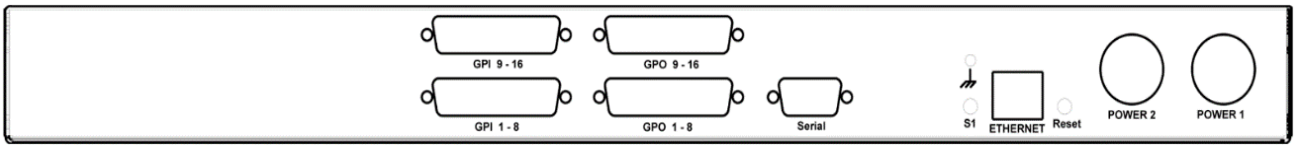
TALLY ASSIGNMENTS

Key #	Current State	Tally Source	Tally Type	Number	Tally	Tally Color	Text	Font Size
1	OFF: 0	Local	Follow MEM	MEM_1	OFF:	Green	SW1 OFF	Small
					ON:	Amber	SW1 ON	Small
							WTVJ BRB NBC6.1	
2	OFF: 0	Local	Follow MEM	MEM_2	OFF:	Green	SW2 OFF	Small
					ON:	Amber	SW2 ON	Small
							WTVJ BRKIN NBC6.1	
3	OFF: 0	Local	Follow MEM	MEM_2	OFF:	Green	SW3 OFF	Normal
					ON:	Amber	SW3 ON	Normal

When a Source Event triggers on the USP3, the MEM tied to this source event will turn ON. This MEM ON action will cause its Key tally to turn ON all other Key tallies in the same Radio Group will turn OFF.

24. SPECIFICATIONS

*Illustration below is Rear Panel of USP3-8 & USP3-16:



<table>
<tr><td>REAR PANEL CONNECTORS</td><td></td></tr>
<tr><td>POWER 1:</td><td>+12V DC, 3.0Amps</td></tr>
<tr><td>POWER 2:</td><td>Optional power supply for redundant power</td></tr>
<tr><td>RESET Switch:</td><td>Press to reset USP3</td></tr>
<tr><td>ETHERNET:</td><td>RJ45 100baseT, Full Duplex</td></tr>
<tr><td>S1 Switch:</td><td>Press and hold 10 seconds to reset IP address to 192.168.10.217 and configuration to factory default</td></tr>
<tr><td>SERIAL CONNECTOR:</td><td>
<table>
<tr><th>Pin</th><th>RS232 DTE</th><th>RS422 Controller</th><th>RS422 Device</th></tr>
<tr><td>1</td><td>N/C</td><td>Frame Ground</td><td>Frame Ground</td></tr>
<tr><td>2</td><td>RxD</td><td>Receive A (-)</td><td>Transmit A (-)</td></tr>
<tr><td>3</td><td>TxD</td><td>Transmit B (+)</td><td>Receive B (+)</td></tr>
<tr><td>4</td><td>Tied to 6</td><td>Receive Common</td><td>Receive Common</td></tr>
<tr><td>5</td><td>Ground</td><td>N/C</td><td>N/C</td></tr>
<tr><td>6</td><td>Tied to 4</td><td>Transmit Common</td><td>Transmit Common</td></tr>
<tr><td>7</td><td>N/C</td><td>Receive B (+)</td><td>Transmit B (+)</td></tr>
<tr><td>8</td><td>N/C</td><td>Transmit A (-)</td><td>Receive A (-)</td></tr>
<tr><td>9</td><td>N/C</td><td>Frame Ground</td><td>Frame Ground</td></tr>
</table>
</td></tr>
</table>

REAR PANEL CONNECTORS

GPI CONNECTOR 1-8:
Opto-isolator Inputs

NOTE:
GPI (+) is opto-isolator anode
GPI (-) is opto-isolator cathode

To WET GPIs:

Connect GPI + to nearby +V pin.

Connect GPI – to Ground to turn on GPI.

Pin #	Description	Pin #	Description
1	Ground	14	GPI 8 **+**
2	GPI 8 **—**	15	+V
3	+V	16	GPI 7 **—**
4	GPI 7 **+**	17	GPI 6 **+**
5	GPI 6 **—**	18	+V
6	+V	19	GPI 5 **—**
7	GPI 5 **+**	20	GPI 4 **+**
8	GPI 4 **—**	21	+V
9	+V	22	GPI 3 **—**
10	GPI 3 **+**	23	GPI 2 **+**
11	GPI 2 **—**	24	+V
12	+V	25	GPI 1 **—**
13	GPI 1 **+**		

GPI CONNECTOR 9-16:
Opto-isolator Inputs

NOTE:
GPI (+) is opto-isolator anode
GPI (-) is opto-isolator cathode

To WET GPIs:

Connect GPI + to nearby +V pin.

Connect GPI – to Ground to turn on GPI.

Pin #	Description	Pin #	Description
1	Ground	14	GPI 16 **+**
2	GPI 16 **—**	15	+V
3	+V	16	GPI 15 **—**
4	GPI 15 **+**	17	GPI 14 **+**
5	GPI 14 **—**	18	+V
6	+V	19	GPI 13 **—**
7	GPI 13 **+**	20	GPI 12 **+**
8	GPI 12 **—**	21	+V
9	+V	22	GPI 11 **—**
10	GPI 11 **+**	23	GPI 10 **+**
11	GPI 10 **—**	24	+V
12	+V	25	GPI 9 **—**
13	GPI 9 **+**		

REAR PANEL CONNECTORS

GPO CONNECTOR 1-8:

Isolated Relay Contact Closures

To WET GPOs:

Connect external power supply output to Common Bus, pin #1.

Connect GPO commons to nearby Common Bus pins

There is no need to connect power supply Ground to GPO connector

Pin #	Description	Pin #	Description
1	Common Bus	14	GP0 8 N.O
2	GPO 8 Common	15	Common Bus
3	Common Bus	16	GPO 7 N.O.
4	GPO 7 Common	17	GPO 6 N.O.
5	GPO 6 Common	18	Common Bus
6	Common Bus	19	GPO 5 N.O.
7	GPO 5 Common	20	GPO 4 N.O.
8	GPO 4 Common	21	Common Bus
9	Common Bus	22	GPIO 3 N.O.
10	GPO 3 Common	23	GPO 2 N.O.
11	GPO 2 Common	24	Common Bus
12	Common Bus	25	GPO 1 N.O.
13	GPO 1 Common		

GPO CONNECTOR 9-16:

Isolated Relay Contact Closures

To WET GPOs:

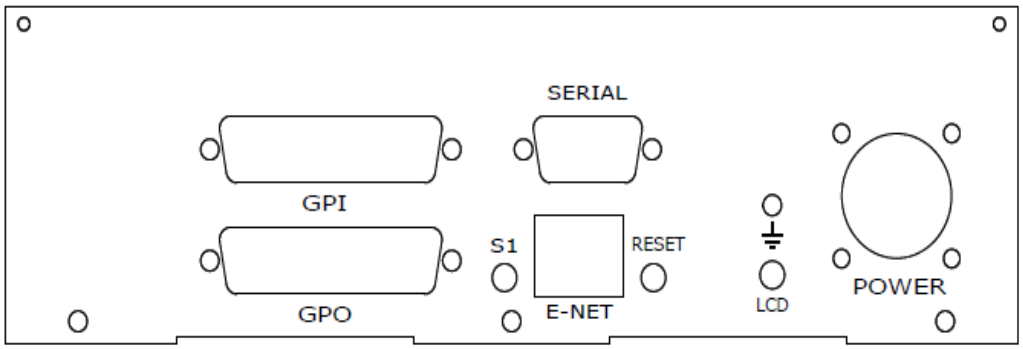
Connect external power supply output to Common Bus, pin #1.

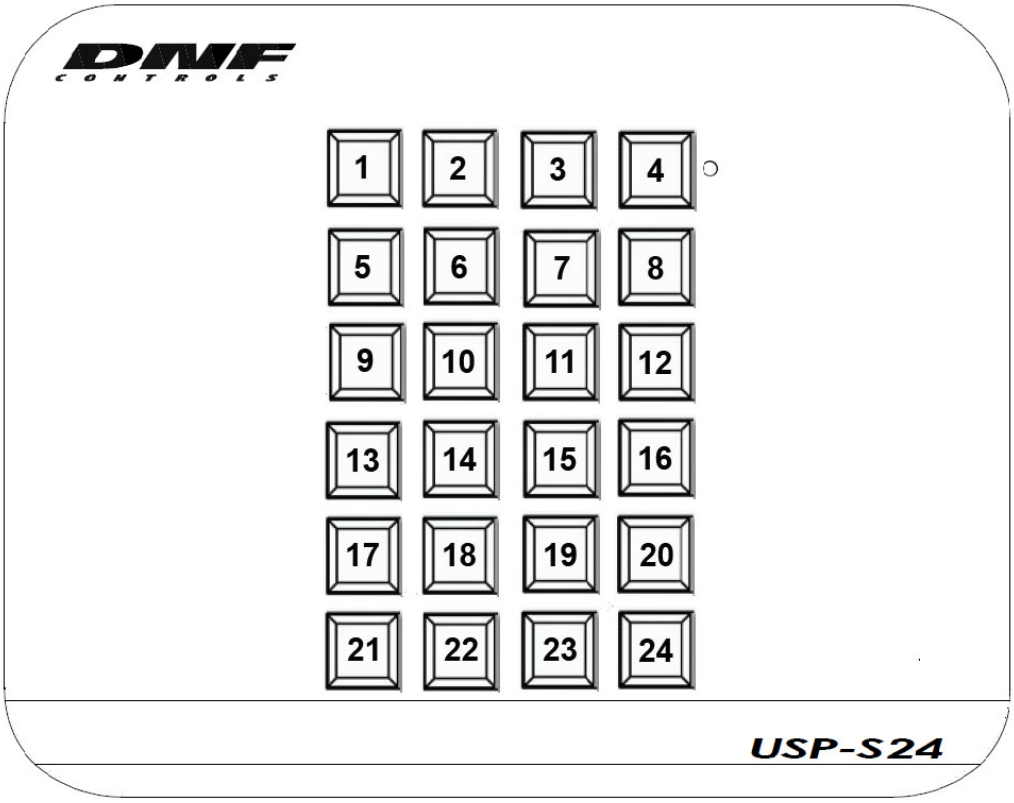
Connect GPO commons to nearby Common Bus pins

There is no need to connect power supply Ground to GPO connector

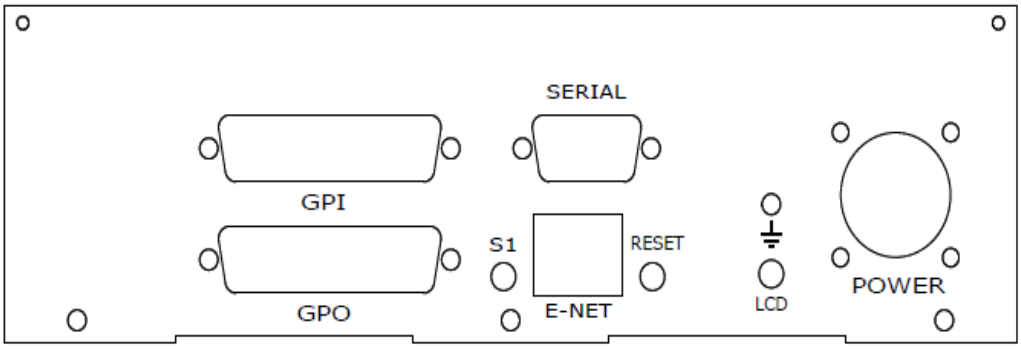
Pin #	Description	Pin #	Description
1	Common Bus	14	GP0 16 N.O
2	GPO 16 Common	15	Common Bus
3	Common Bus	16	GPO 15 N.O.
4	GPO 15 Common	17	GPO 14 N.O.
5	GPO 14 Common	18	Common Bus
6	Common Bus	19	GPO 13 N.O.
7	GPO 13 Common	20	GPO 12 N.O.
8	GPO 12 Common	21	Common Bus
9	Common Bus	22	GPIO 11 N.O.
10	GPO 11 Common	23	GPO 10 N.O.
11	GPO 10 Common	24	Common Bus
12	Common Bus	25	GPO 9 N.O.
13	GPO 9 Common		

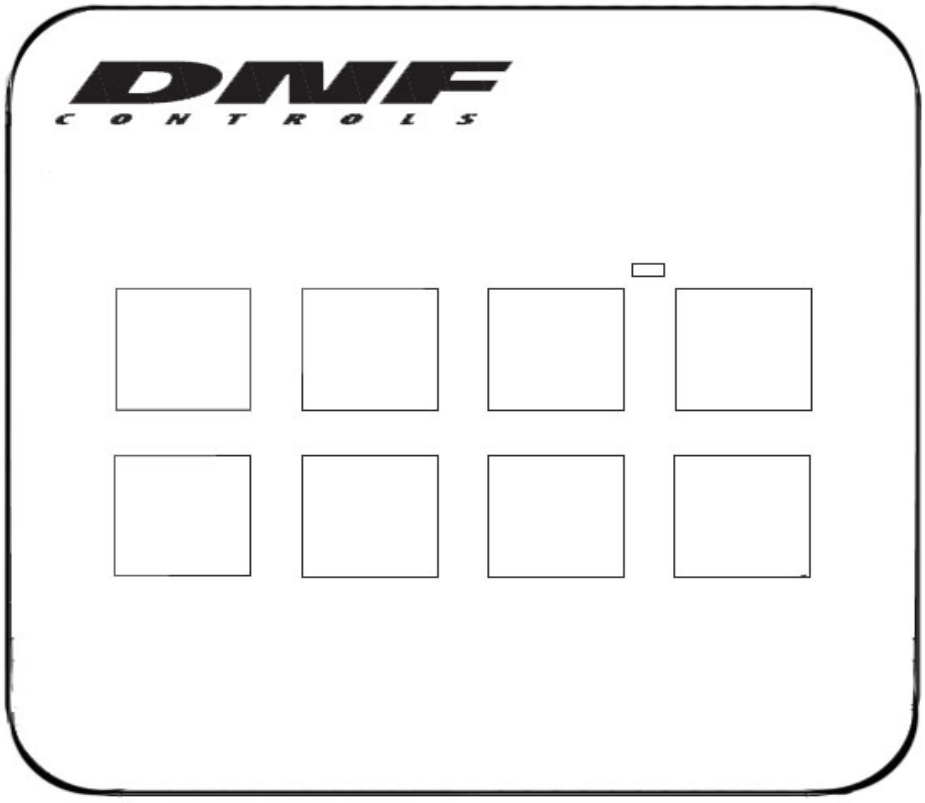
25. USP-S24 Key Layout & Rear Panel



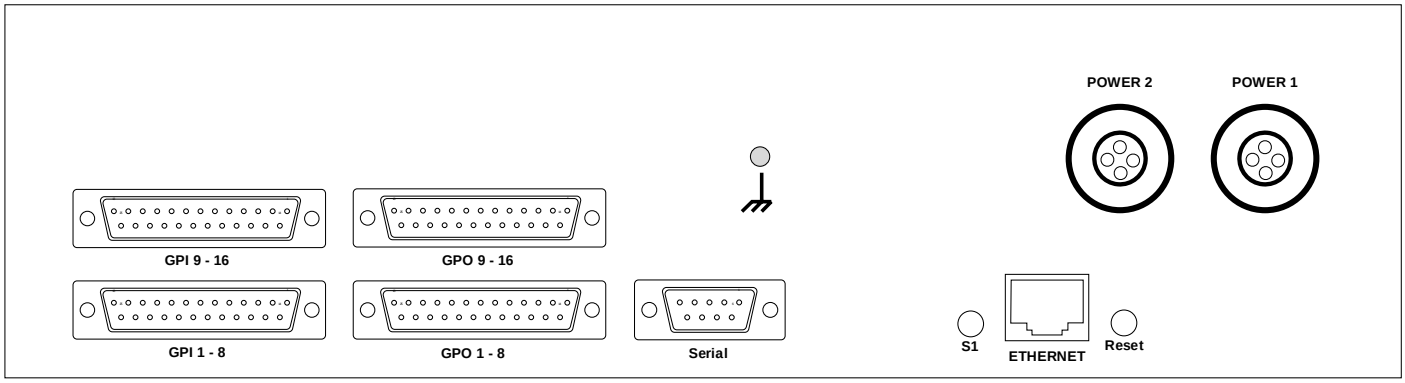


26. USP3-8D Key Layout & Rear Panel

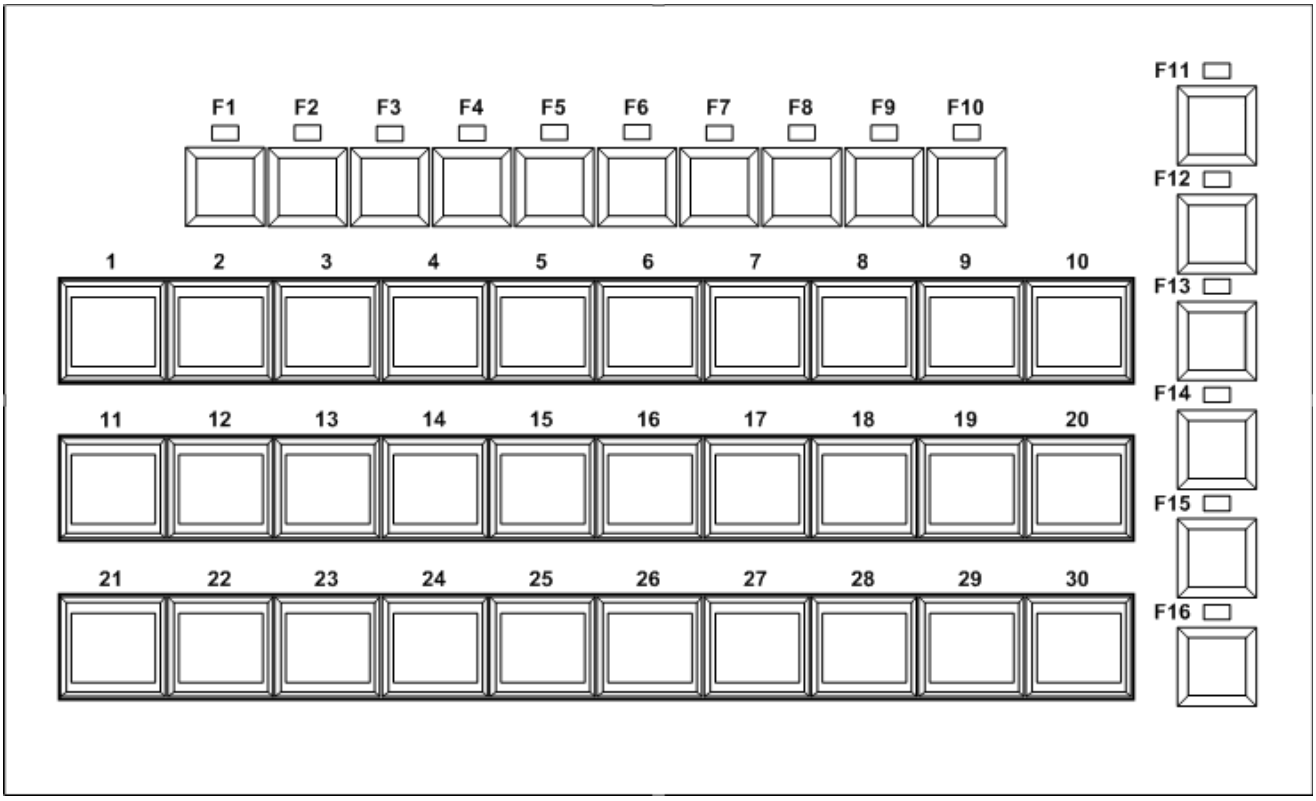




27. USP3-SHOTBOX Key Layout & Rear Panel



Rear View



28. DNF CONTROLS LIMITED WARRANTY

DNF Controls warrants its product to be free from defects in material and workmanship for a period of one (1) year from the date of sale to the original purchaser from DNF Controls.

In order to enforce the rights under this warranty, the customer must first contact DNF's Customer Support Department to afford the opportunity of identifying and fixing the problem without sending the unit in for repair. If DNF's Customer Support Department cannot fix the problem, the customer will be issued a Returned Merchandise Authorization number (RMA). The customer will then ship the defective product prepaid to DNF Controls with the RMA number clearly indicated on the customer's shipping document. The merchandise is to be shipped to:

DNF Controls
19770 Bahama St.
Northridge, CA. 91324
USA

Failure to obtain a proper RMA number prior to returning the product may result in the return not being accepted, or in a charge for the required repair.

DNF Controls, at its option, will repair or replace the defective unit. DNF Controls will return the unit prepaid to the customer. The method of shipment is at the discretion of DNF Controls, principally UPS Ground for shipments within the United States of America. Shipments to international customers will be sent via air. Should a customer require the product to be returned in a more expeditious manner, the return shipment will be billed to their freight account.

This warranty will be considered null and void if accident, misuse, abuse, improper line voltage, fire, water, lightning or other acts of God damaged the product. All repair parts are to be supplied by DNF Controls, either directly or through its authorized dealer network. Similarly, any repair work not performed by either DNF Controls or its authorized dealer may void the warranty.

After the warranty period has expired, DNF Controls offers repair services at prices listed in the DNF Controls Price List. DNF Controls reserves the right to refuse repair of any unit outside the warranty period that is deemed non-repairable.

DNF Controls shall not be liable for direct, indirect, incidental, consequential or other types of damage resulting from the use of the product.

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