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AnyWhere Interface Box

AIB-4

User Manual

TABLE OF CONTENTS

REVISIONS

1.0	10/19/15	Original draft.
1.1	10/21/15	Content corrects

1. GETTING STARTED

1. Go to Installation Section to install the AIB-4
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 AIB-4 will communicate with
4. Go to System Configuration section to set default settings
5. Go to Front Panel section to set Operating Mode

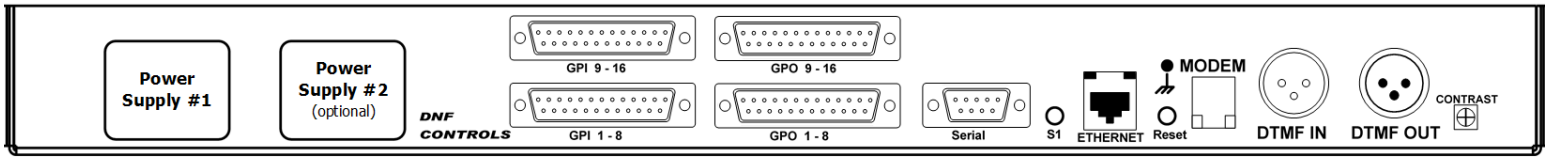
2. EQUIPMENT LIST

Qty	Component	DNF Part Number
1	AnyWhere Interface Box	AIB-4
1	AIB-4 POWER SUPPLY	included
1	POWER CORD	included

3. INSTALLATION

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

b. 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 AIB-4 is configured using a standard web browser (Internet Explorer, Firefox, and Chrome). Enter the AIB-4'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 AIB-4. Settings are retained when power is removed.

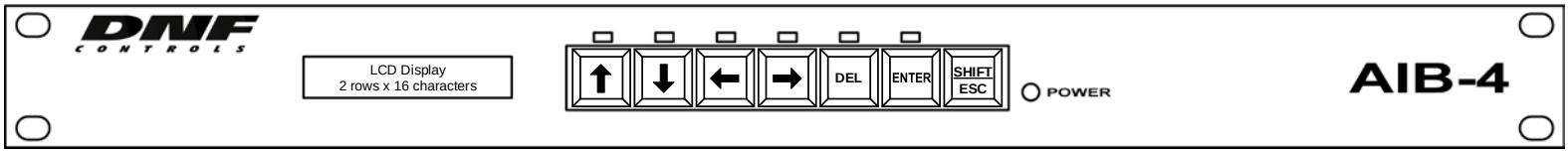
Settings may be uploaded to a computer as a configuration file (.dnf) for storage. Configuration files may be downloaded from a computer into the AIB-4 to restore a saved configuration. A configuration file contains all of the AIB-4's configurations except IP address, subnet mask, and gateway address. The AIB-4 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.

User name: dnfuser

Password: controls

4. FRONT PANEL



Front Panel Keys	Description
↑	Previous Menu Item In Edit mode, increment Modem telephone number digit
↓	Next Menu Item In Edit mode, decrement Modem telephone number digit
←	In Edit mode, move one character position to the left
→	In Edit mode, move one character position to the right
DEL	In Edit mode, delete whole entry
ENTER	Enter EDIT mode Exit EDIT mode and save entry
SHIFT/ESC	Abort EDIT mode without saving entry

Menu Item	Description
P1: AIB-4 V2.6C P2: V1.29	P1 processor software version P2 processor software version
Operating Mode:	Currently selected operating mode: Ethernet DTMF Modem Dial Modem Answer
Operating Mode Specific Screens	Mode specific state and configuration items
IP Address	Static IP Address of unit
Subnet Mask	Static Subnet Mask of unit
Gateway Address	Static Gateway Address of unit

Operating Mode

Use the UP and DOWN arrow keys to select the AIB-4's operating mode:
Ethernet, DTMF, Modem Dial, or Modem Answer

Only those receive events in the Event Action Table associated with the selected Operating Mode will be processed, all others will be ignored. For example, when DTMF mode is selected, DTMF receive events will be processed. Ethernet receive events will be ignored. The Modem will be on-hook.

All local events will be processed regardless of the Operating Mode and their ON / OFF actions executed.

ETHERNET Operating Mode

Only receive events from Remote Device 1 (Remote IP) will be processed.

Menu Items

Remote IP	Enter the IP address of the remote device to send data to and receive data from
Remote Connect	Connect state- Offline, not communicating with Remote Device 1 Online, communication with Remote Device 1

DTMF Operating Mode

Only receive events from the device connected to the DTMF IN connector will be processed.

Menu Items

DTMF Connection	Connect state- Offline, not communicating with device connected to the DTMF IN connector Online, successful communication with device connected to the DTMF IN connector

Modem Dial Mode

Only receive events from the device connected to the Modem RJ11 connector will be processed. The AIB-4 will go off-hook and dial the telephone number of the remote device. If no dial tone is detected the AIB will go on-hook, wait, and then re-attempt to dial.

If the remote device does not answer within approximately 1 minute, the AIB will go on-hook, wait, and then redial.

After remote device answers the call, the two units will negotiate a connection. If this process fails, the AIB-4 will hang up, wait, and then redial.

After a successful connection is negotiated, the AIB will send “are you there?” messages to the remote unit. If the remote unit does not respond within 15 seconds, the AIB will hang up, wait, and then redial.

To stop the AIB-4 from dialing, change the Operating Mode to Ethernet, DTMF, or Modem Answer. The Modem Dial telephone number will not be erased.

Menu Items

<table>
<tr><td>Telephone Number</td><td>Enter the telephone number of the remote unit. Use the UP and DOWN arrow keys to select a digit. Use the LEFT and RIGHT arrow keys to select a digit position.

To access an outside line, enter the appropriate digit followed by ‘p’ followed by the telephone number. The pause digit, ‘p’, will cause the modem to pause before dialing the telephone number.</td></tr>
<tr><td>Modem Dial</td><td>The current state of the Modem:

<table><tr><td>Modem Failed</td><td>Could not initialize modem. Possible hardware failure</td></tr><tr><td>Dialing</td><td>Wait for Dial tone and then dial telephone number</td></tr><tr><td>No Dial Tone</td><td>No dial tone detected. Check telephone cable and connection</td></tr><tr><td>Busy</td><td>Dialed telephone number is busy</td></tr><tr><td>No Connection</td><td>Remote unit did not answer</td></tr><tr><td>Connected</td><td>Remote unit picked up and is communicating</td></tr></table></td></tr>
</table>

Modem Answer Mode

Only receive events from the device connected to the Modem RJ11 connector will be processed.

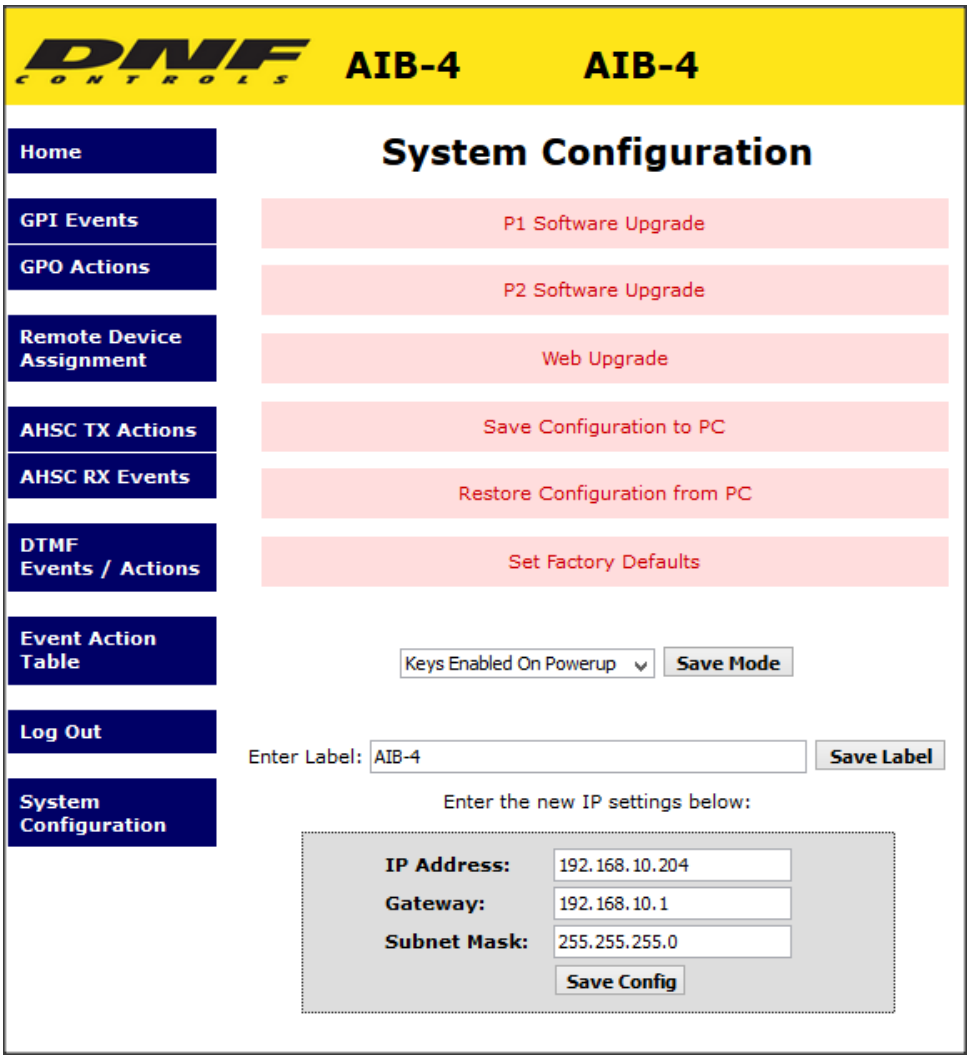
The AIB-4 will wait to receive a call. When a call is received, it will go off-hook attempt to negotiate a connection. If unsuccessful, it will hang up and wait to receive a call.

Menu Items

<table>
<tr><td>Modem Answer</td><td>The current state of the Modem:

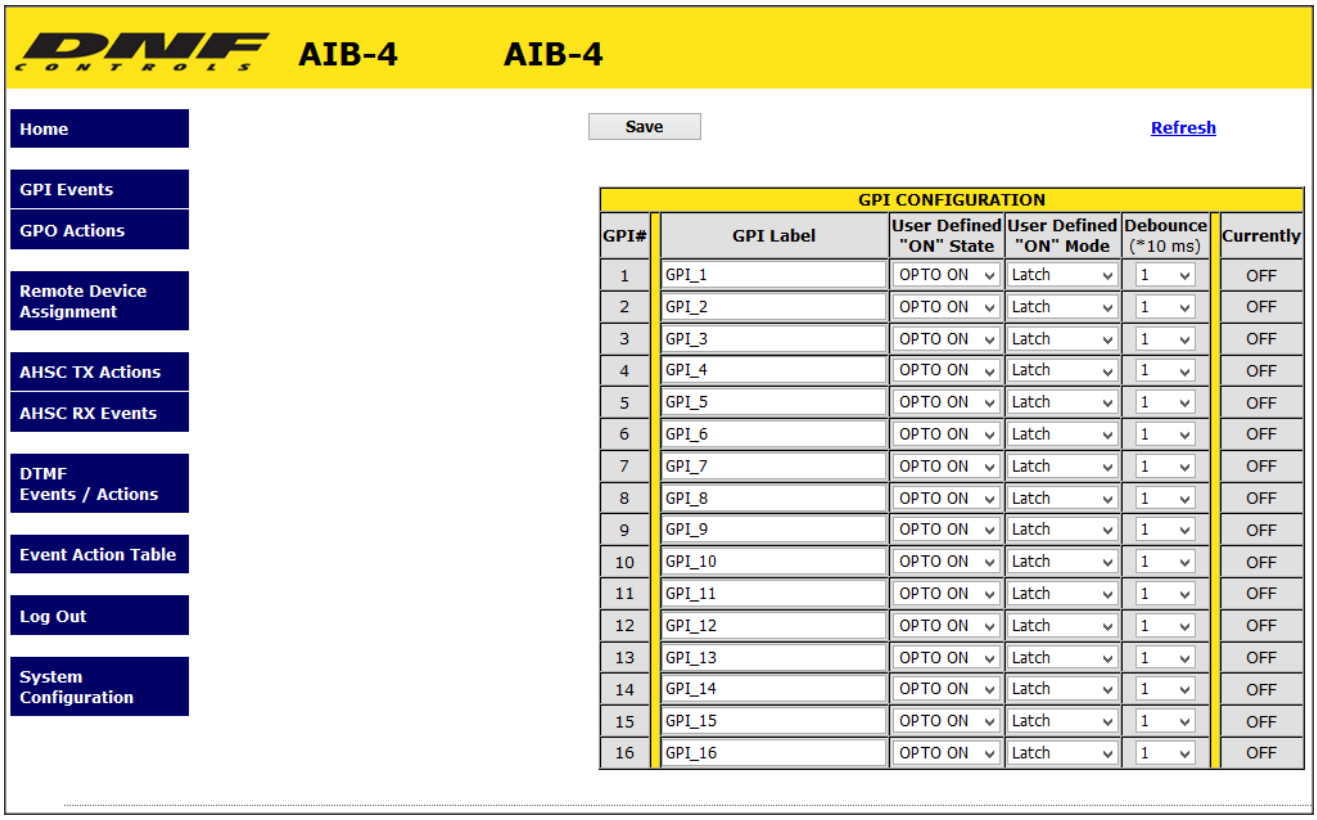
<table><tr><td>Waiting</td><td>Waiting to receive a call</td></tr><tr><td>Connecting…..</td><td>Attempting to negotiate connection</td></tr><tr><td>Connected</td><td>Communicating with remote unit</td></tr></table></td></tr>
</table>

5. SYSTEM CONFIGURATION WEB PAGE



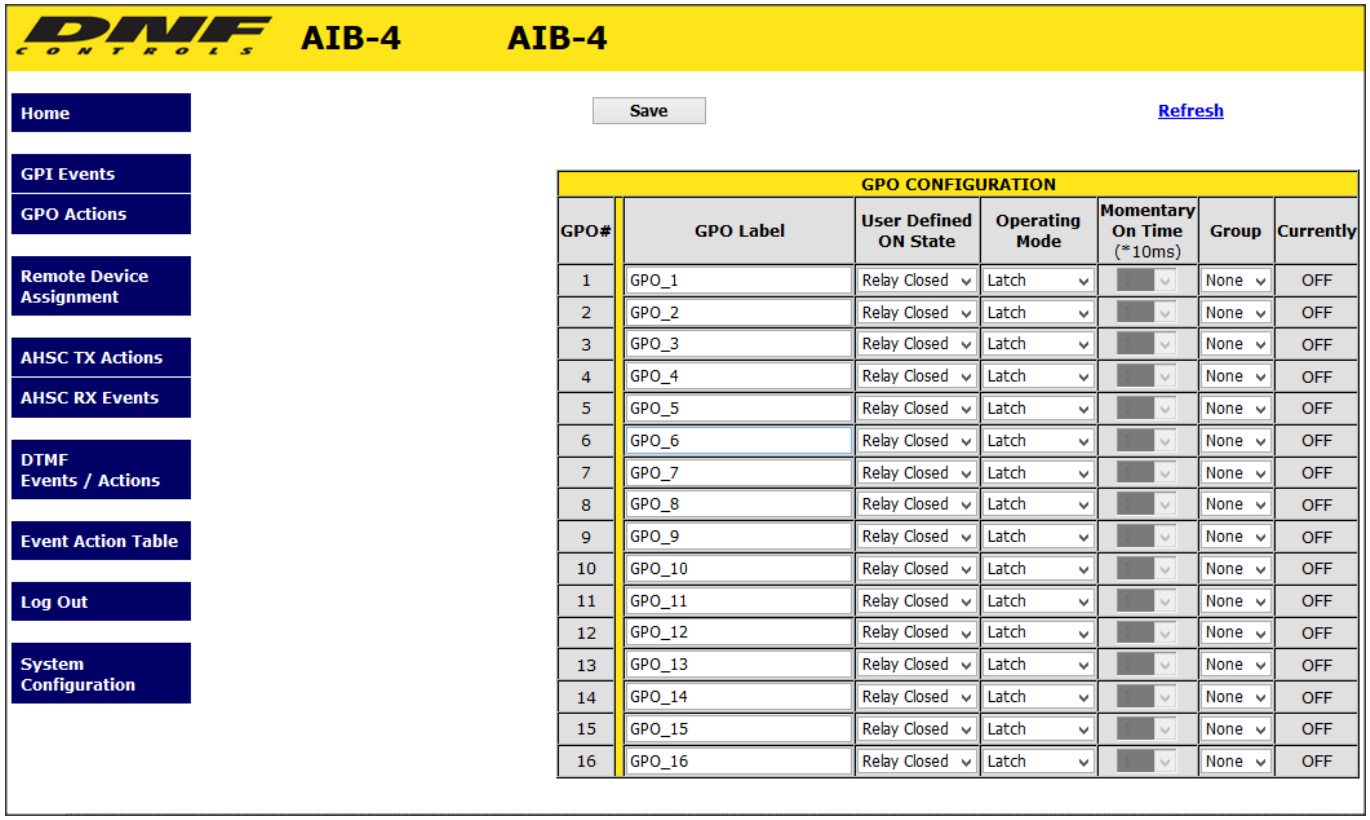
P1 Software Upgrade:	Use this link to install the P1 upgrade file provided by DNF Controls
P2 Software Upgrade:	Use this link to install the P2 upgrade file provided by DNF Controls
Web Upgrade:	Use this link to install the Web pages upgrade file provided by DNF Controls
Save Configuration to PC:	Use this link to save the AIB-4'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 AIB-4. 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 AIB-4 configuration settings to factory defaults. This will NOT change the IP address, subnet mask or gateway address. The AIB-4 will automatically reboot.
Enter Label	Enter label to be displayed on top right of all web pages
Enter the new IP settings below:	Enter the new IP address, Gateway, and Subnet Mask. Click on Save Config to save the new entries. The AIB will automatically reboot.

6. GPI EVENTS WEB PAGE



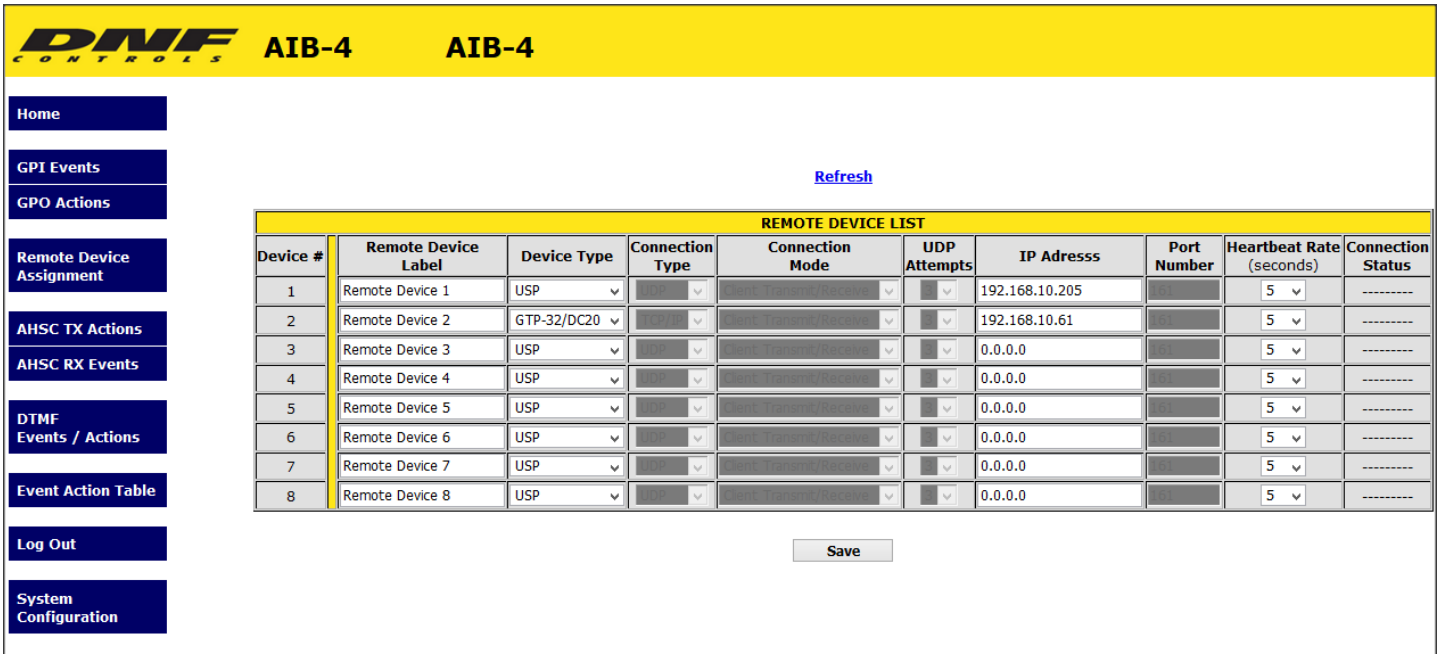
GPI Label	Enter any 15 characters or symbols. For convenience only. Used in Event Action Table
User Defined ON State	OPTO ON: The GPI is ON when the opto-isolator is energized (powered). The GPI is OFF when the opto-isolator is de-energized. OPTO OFF: The GPI is ON when the opto-isolator is de-energized. 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.

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.
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.

8. REMOTE DEVICE ASSIGNMENT WEB PAGE

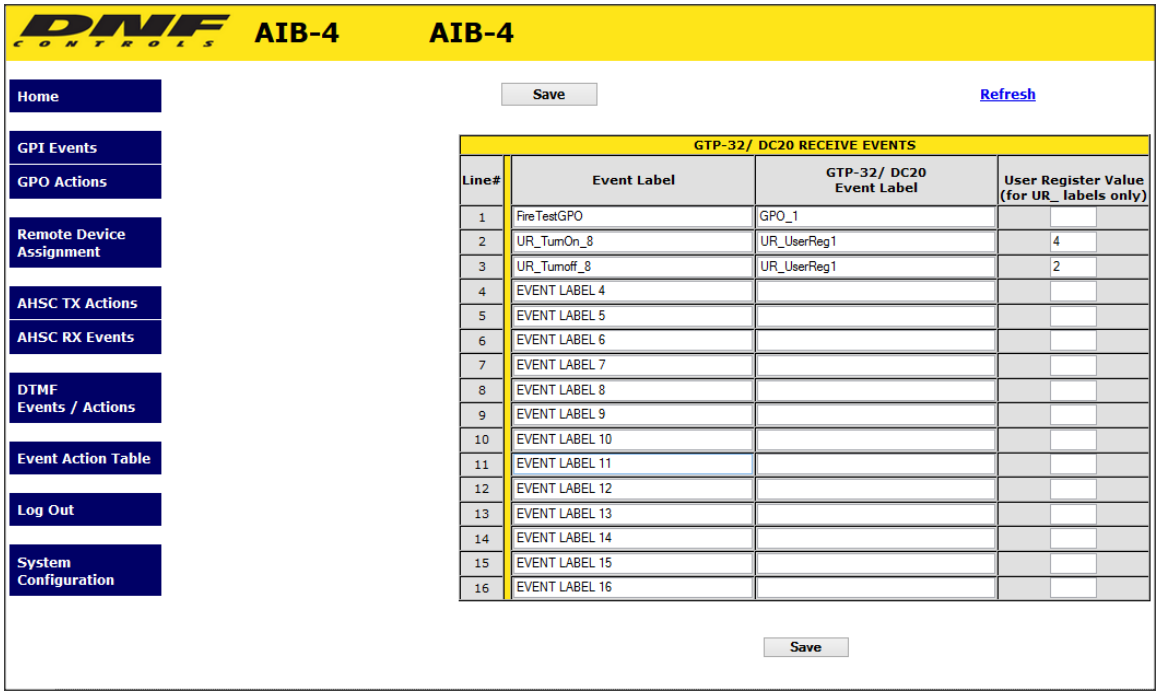


Remote Device Label	Enter up to 15 characters. The label will be used in the Event Action Table device drop down menu
Device Type	USP- Use to connect to other DNF Controls Universal Switch Panels and AnyWhere Interface Boxes GTP-32/DC20- Use to connect to DNF Controls GTP-32 and DC20/21 OTHER- Use to connect to other Ethernet devices
Connection Type	For OTHER Device Types only- Select UDP or TCP/IP
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, AIB-4 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	Enter IP address for remote device to be controlled or monitored
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, AIB, 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, AIB, 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

(Remainder of page is blank)

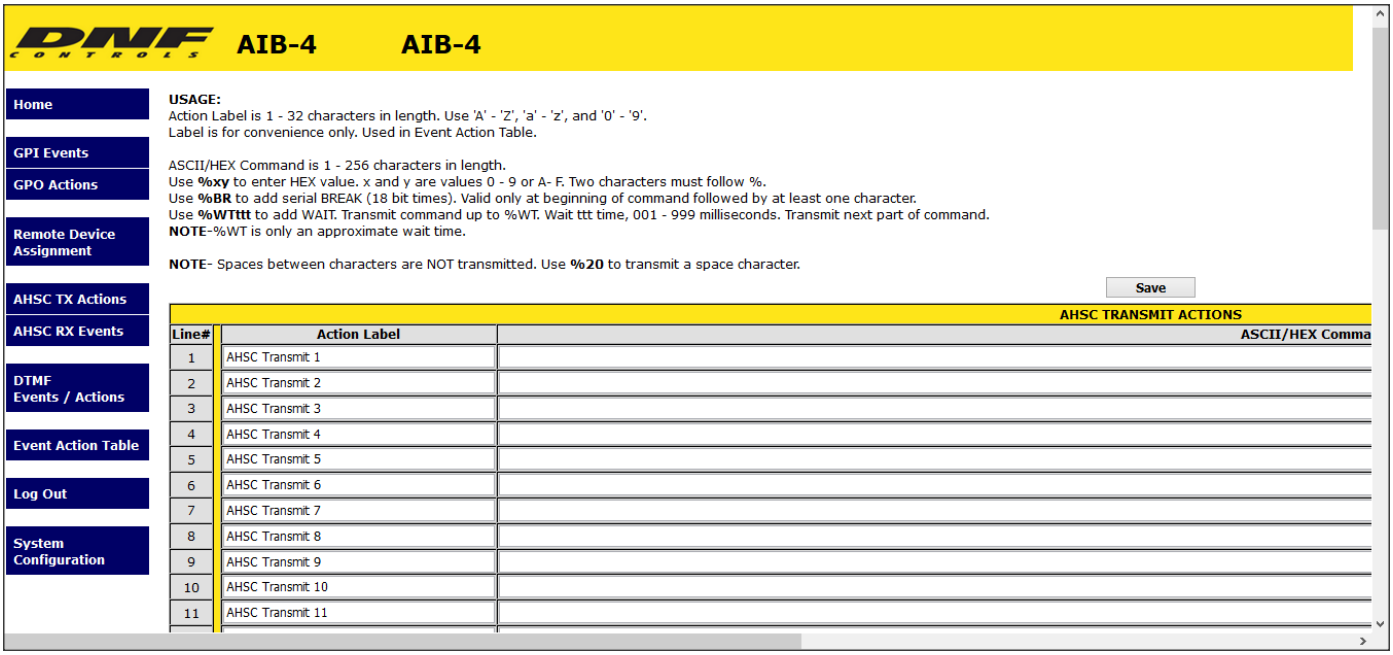
9. GTP-32 / DC20 RECEIVE EVENTS (Future Implementation)



Event Label	Enter any 15 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 AIB-4. 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 '0' to '255'. When the received User Register value matches the entered value, the event turns ON momentarily

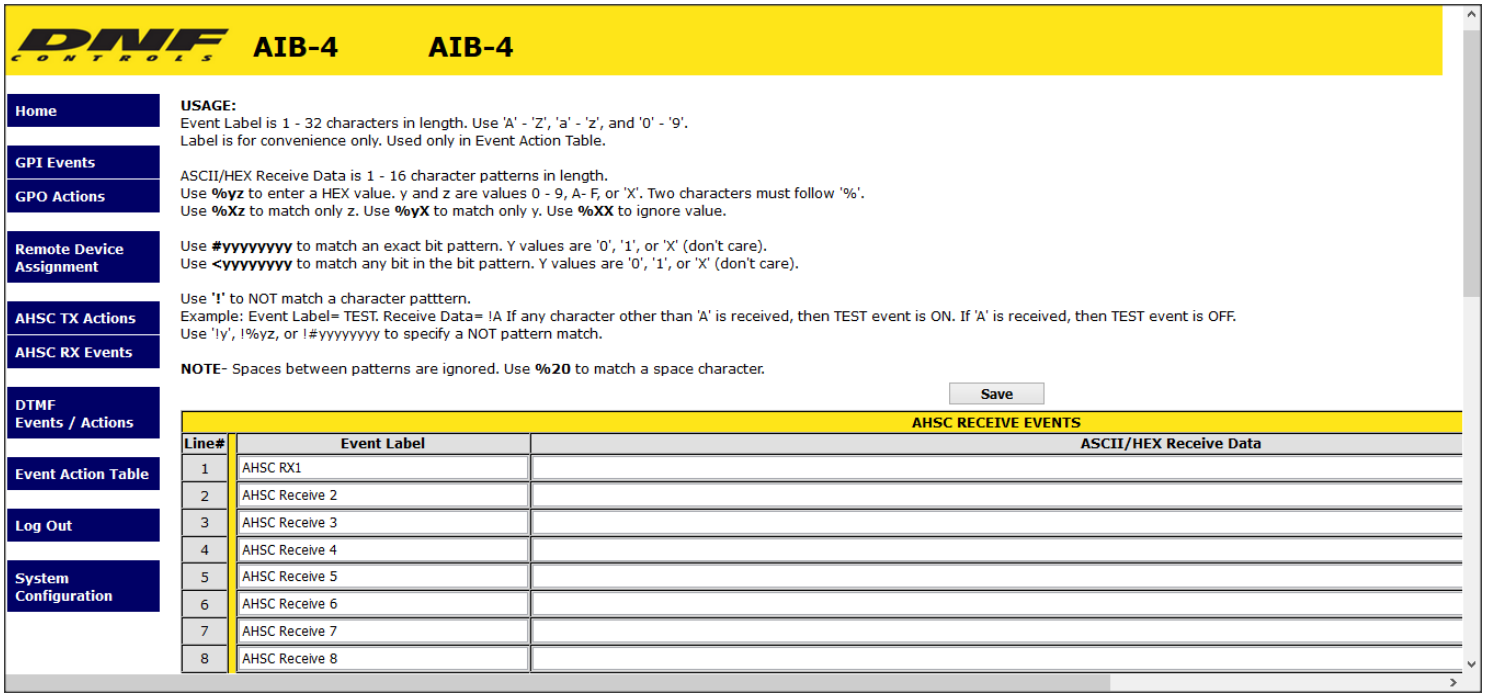
NOTE- The GTP-32/ DC20 Receive Event type event is only displayed in the Event Action Table for Remote Devices of Device Type "GTP-32/ DC20".

10. 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.

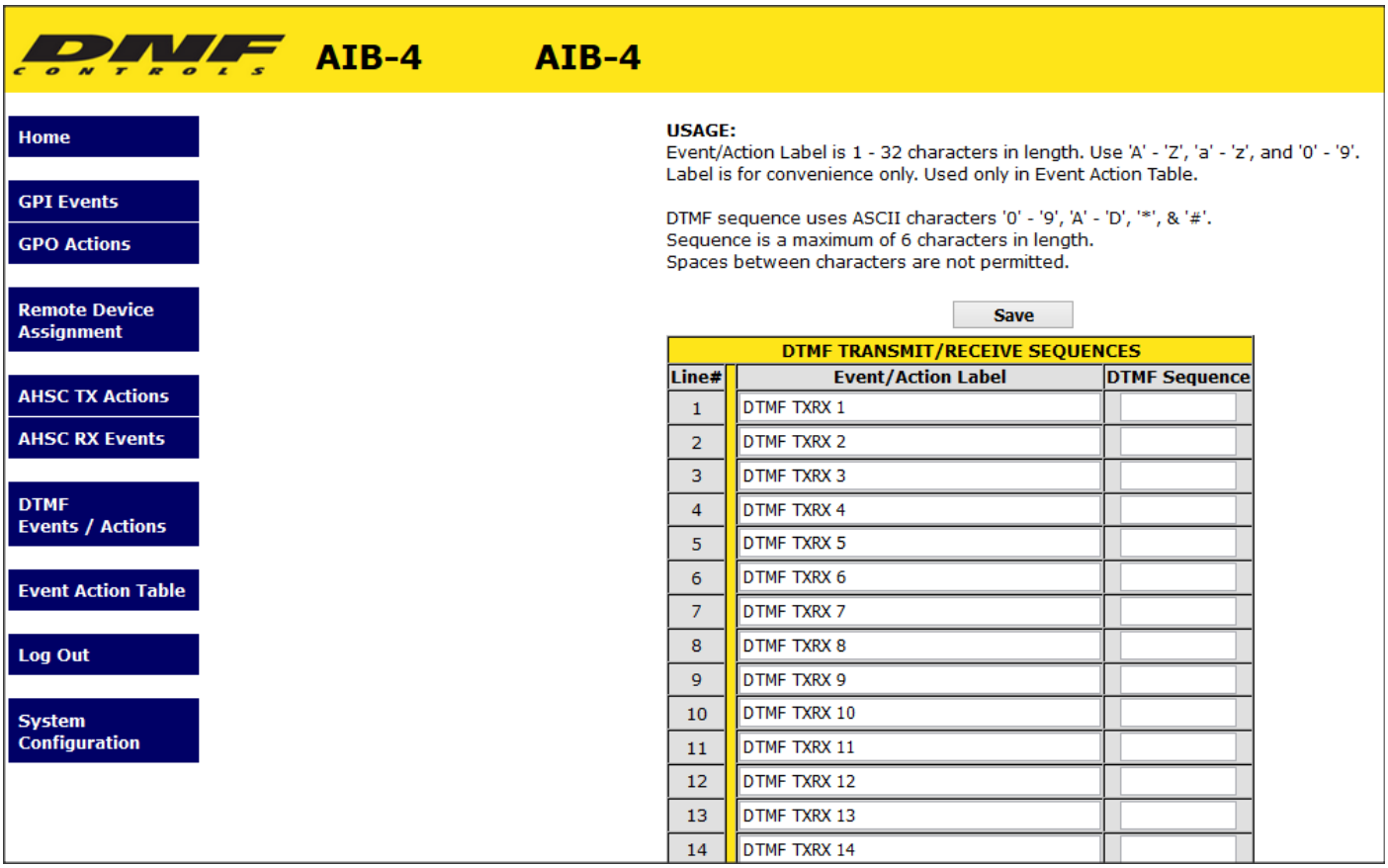
11. AHSC RECEIVE EVENT



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.

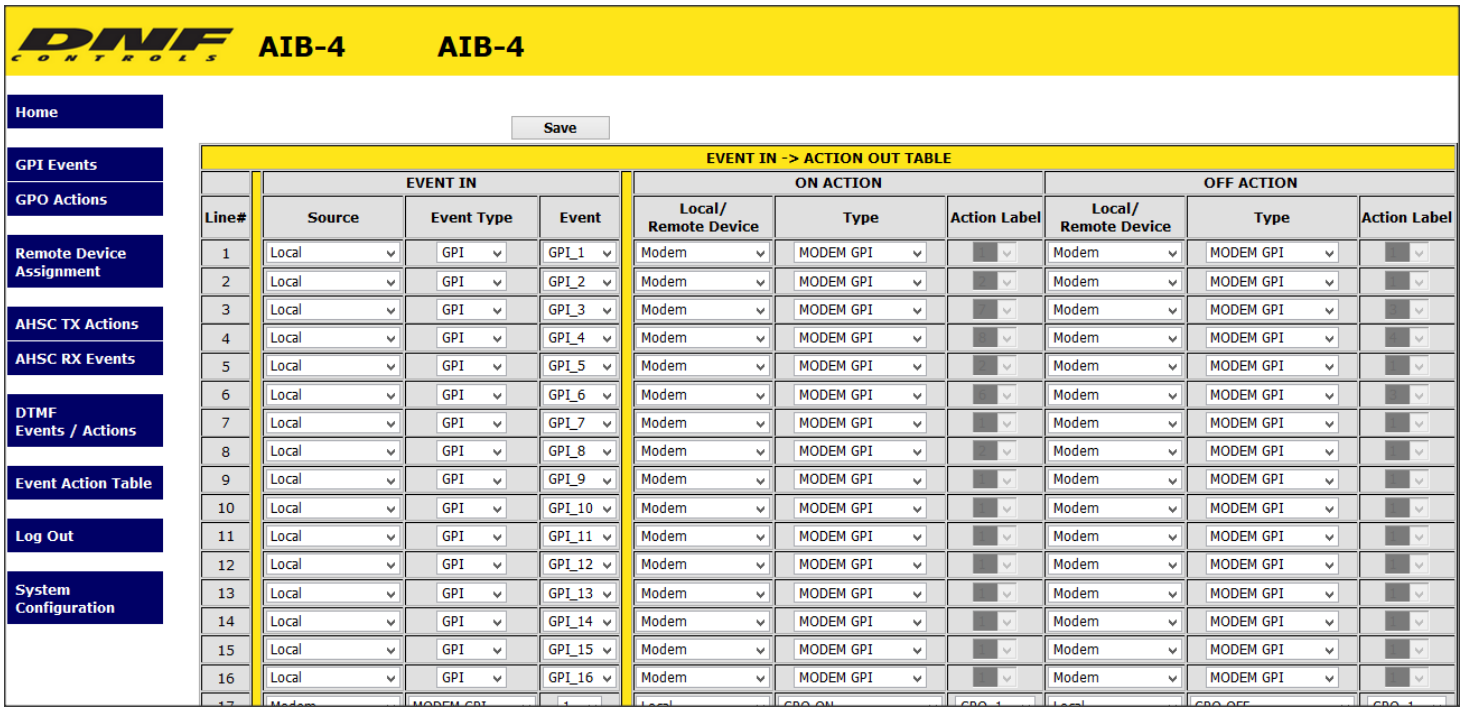
Pattern matching examples can be found in the back of this manual.

12. DTMF EVENTS / ACTIONS



Event Action Label	Enter any 32 characters. This label is used in the Event Action Table.
DTMF Sequence	DTMF sequence uses ASCII characters '0' - '9', 'A' - 'D', '*', & '#'. Sequence is a maximum of 6 characters in length. Spaces between characters are not permitted.

13. 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.

	Source	None (Greys out line) Local Event Remote Device Event DTMF Event Modem Event
	Event Type	**Local: 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 **GPO** For Remote Device Actions only GPO changed from OFF to ON. The selected ON ACTION will execute. GPO changed from ON to OFF. The selected OFF ACTION will execute **MEM** Memory Location 1 - 8 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 sequence automatically stops.
		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.
		DTMF: DTMF GPI- Received data identifying remote GPI state Remote GPI changed to ON. The selected ON Action will execute. Remote GPI changed to OFF. The selected OFF Action will execute. **DTMF Receive**- Received DTMF sequence matched entry in DTMF TXRX table. Only ON ACTION is executed.
		Modem: Modem GPI- Received data identifying remote GPI state Remote GPI changed to ON. The selected ON Action will execute. Remote GPI changed to OFF. The selected OFF Action will execute. **Modem Receive**- Received data sequence matched entry in AHSC RX table. Only ON ACTION is executed.
	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 AIB-4 Remote Device Remote Device using DTMF Remote Device using Modem
	Type	Local: **GPO** Do Nothing Turn GPO ON, Turn GPO OFF, Toggle GPO state **MEM** Do Nothing Turn MEM ON, Turn MEM OFF, Toggle MEM state **Sequence Start** Start identified sequence at its first line in the Event Action Table. **Sequence Stop / Reset** Immediately stop sequence.
		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 WAIT. **GTP-32/ DC20** (Only available for Device Type "GTP-32/DC20") Transmit GPI ON, GPI OFF, GPO ON, and GPO OFF messages
		DTMF: **DTMF GPI Transmit Actions** Transmit data identifying state of all GPIs to remote device **DTMF Transmit Action** Transmit DTMF sequence in DTMF TX/RX Table
		MODEM: **Modem GPI Transmit Actions** Transmit data identifying state of all GPIs to remote device **Modem Transmit Action** Transmit AHSC entry from AHSC TX Table
	Action Label	GPI Number GPO Number AHSC Transmit Action DTMF Transmit Sequence

OFF ACTION	**Local / Remote**	Execute Action on: Local AIB-4 Remote Device Remote Device using DTMF Remote Device using Modem
	Type	Local: **GPO** Do Nothing Turn GPO ON, Turn GPO OFF, Toggle GPO state **MEM** Do Nothing Turn MEM ON, Turn MEM OFF, Toggle MEM state **Sequence Start** Start identified sequence at its first line in the Event Action Table. **Sequence Stop / Reset** Immediately stop sequence.
		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 WAIT. **GTP-32/ DC20** (Only available for Device Type "GTP-32/DC20") Transmit GPI ON, GPI OFF, GPO ON, and GPO OFF messages
	Type	DTMF: **DTMF GPI Transmit Actions** Transmit data identifying state of all GPIs to remote device **DTMF Transmit Action** Transmit DTMF sequence in DTMF TX/RX Table
		MODEM: **Modem GPI Transmit Actions** Transmit data identifying state of all GPIs to remote device **Modem Transmit Action** Transmit AHSC entry from AHSC TX Table
	Action Label	GPI Number GPO Number AHSC Transmit Action DTMF Transmit Sequence

14. 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

15. 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.

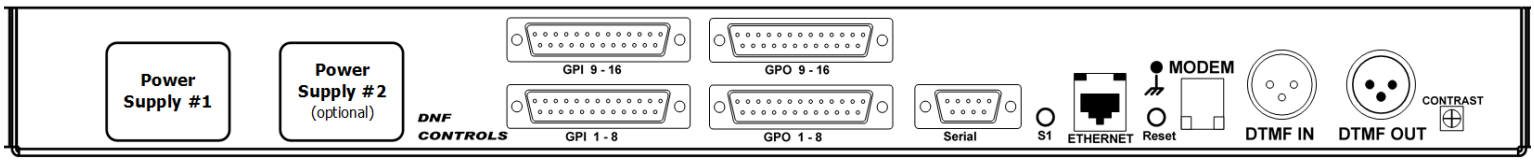
Upon receipt of a Sequence Stop action, the sequence will immediately stop. The sequence entry in progress will halt without executing. The next Start action will cause the sequence to start at its first entry in the Event Action Table.

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

16. SPECIFICATIONS



REAR PANEL CONNECTORS	
POWER 1:	+12V DC, 3.0Amps power supply (included)
POWER 2:	Optional power supply for redundant power
RESET Switch:	Press to reset AIB-4
ETHERNET:	RJ45 100baseT, Full Duplex
S1 Switch:	Press and hold 10 seconds to reset IP address to 192.168.10.217 and configuration to factory default
SERIAL CONNECTOR: Female DB9	
DTMF IN Female XLR	Pin 1 Ground Pin 2 IN + Pin 3 IN -
DTMF OUT Male XLR	Pin 1 Ground Pin 2 Output Pin 3 Not Connected
Modem RJ11	Two Wire Pin 3 Tip Pin 4 Ring

Pin	RS232 DTE	RS422 Controller	RS422 Device
1	N/C	Frame Ground	Frame Ground
2	RxD	Receive A (-)	Transmit A (-)
3	TxD	Transmit B (+)	Receive B (+)
4	Tied to 6	Receive Common	Receive Common
5	Ground	N/C	N/C
6	Tied to 4	Transmit Common	Transmit Common
7	N/C	Receive B (+)	Transmit B (+)
8	N/C	Transmit A (-)	Receive A (-)
9	N/C	Frame Ground	Frame Ground

REAR PANEL CONNECTORS

GPI CONNECTOR 1-8:
Female DB25

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:
Female DB25

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:
Female DB25

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:
Female DB25

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		

17. 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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