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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.0_1	Preliminary Version	Feb 2002
0.0_2	Minor corrections to 0v0_1	May 2002
0.0_3 and 3a	Minor corrections to 0v0_2	Sep 2002
1.0_0	First Release - Original	Nov 2002
1.1	Updated VistaLINK section. General format clean up.	Sept 2009
1.2	Removed 'Optional Temperature Probe' from block diagram	July 2013

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1. OVERVIEW

The 7700GPI VistaLINK® General Purpose Interface module links third-party equipment and Evertz VistaLINK® Network Management System (NMS). Third-party equipment with fault alarming capabilities through General Purpose Interface outputs (GPOs) can communicate fault alarm conditions to the VistaLINK® application software through this GPO to SNMP translator, thereby extending fault monitoring capabilities across the broadcast network.

Equipped with a Linear Time Code (LTC) input, the 7700GPI module can synchronize logged fault alarms within the VistaLINK® application software with the facility clock for accurate alarm acknowledgement and record-keeping. In addition, it is possible to label each GPI input for easier notification. The label follows the fault message (trap) through to the VistaLINK® PRO server and onto email/pager notifications (if enabled).

The GPI module is also equipped with three NC/NO GPI outputs (GPO) and can be utilized to relay a "message" from the VistaLINK® system to connected gear. Configuration changes or additional fault alarming are possible through this interface.

VistaLINK® offers remote monitoring, control and configuration capabilities via Simple Network Management Protocol (SNMP) giving the flexibility to manage operations, including signal monitoring and module configuration from SNMP-capable control systems (Manager or NMS).

Features:

- 20 opto-isolated General Purpose Interface inputs (GPI)
- Enabled GPI inputs/alerts translated and reported to Network Management System (NMS) user interface via SNMP
- Selectable +5V or +12V supply for driving GPI over longer cable runs
- 3 relay closure General Purpose Interface outputs (GPO)
- GPI/GPO easily accessed through pin-headers (2x6 Phoenix Terminal Blocks) on rear plate
- 1 LTC input for module synchronization of fault alarms to facility clock
- Modular, conveniently fitting into 7700FR-C 3RU frame
- Module status LED and 20 GPI LEDs for simple GPI input diagnostics
- Frame status trigger
- Jumper-configurable RS-232/RS-422 input serial COM port
- VistaLINK®-enabled offering remote monitoring, control and configuration capabilities via SNMP. VistaLINK® is available when modules are used with the 3RU 7700FR-C frame and a 7700FC VistaLINK® Frame Controller module in slot 1 of the frame.

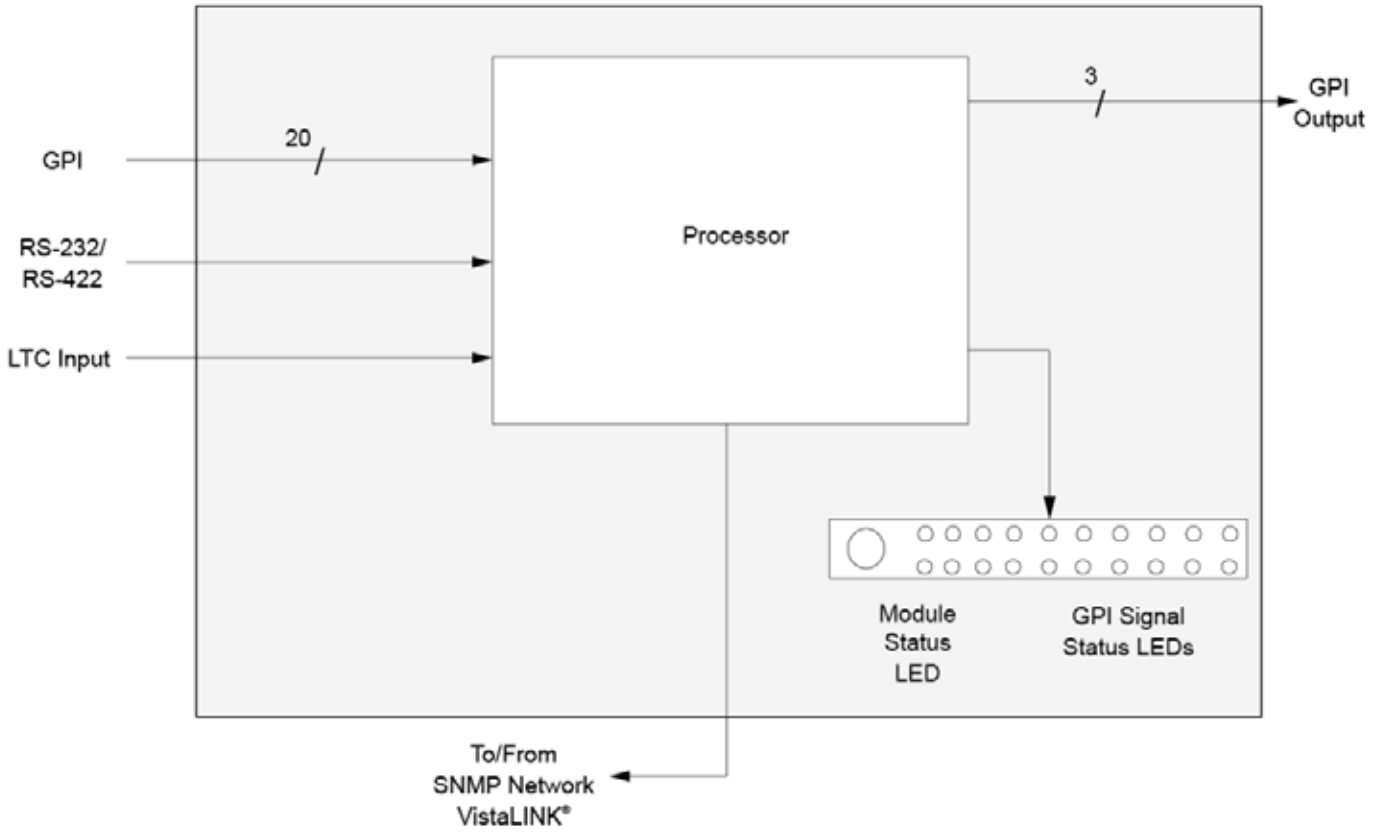

Figure 1-1: 7700GPI Block Diagram

2. INSTALLATION

The 7700GPI module comes with a companion rear plate that has terminal blocks for interfacing to GPI, GPO serial connections and LTC inputs. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR-C chapter. (Note: NC – Normally Closed; NO – Normally Open; COM – Common; LTC – Linear Time Code)

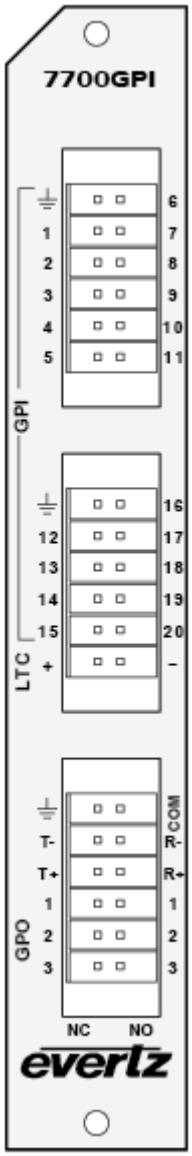

Figure 2-1: 7700GPI Rear Panel

2.1. CONNECTING GPI/GPO, LTC, RS232/422 INTERFACES

Three, 2x6 Phoenix Terminal Block connectors are used to interconnect GPI, GPO, LTC and serial communication lines to the 7700GPI module. The pins are identified and defined in Table 2-1. In general, the 7700GPI rear plate contains 20 GPI inputs and 3 GPO relay contact outputs, 1 LTC input and 1 jumper configurable RS232 or RS422 serial communications port.

Pin #	Name	Description
1	GPI1	General Purpose Input 1
2	GPI2	General Purpose Input 2
3	GPI3	General Purpose Input 3
4	GPI4	General Purpose Input 4
5	GPI5	General Purpose Input 5
6	GPI6	General Purpose Input 6
7	GPI7	General Purpose Input 7
8	GPI8	General Purpose Input 8
9	GPI9	General Purpose Input 9
10	GPI10	General Purpose Input 10
11	GPI11	General Purpose Input 11
12	GPI12	General Purpose Input 12
13	GPI13	General Purpose Input 13
14	GPI14	General Purpose Input 14
15	GPI15	General Purpose Input 15
16	GPI16	General Purpose Input 16
17	GPI17	General Purpose Input 17
18	GPI18	General Purpose Input 18
19	GPI19	General Purpose Input 19
20	GPI20	General Purpose Input 20
LTC+	LTC Input +	Linear time code input +
LTC-	LTC Input -	Linear time code input -
COM	GPO Common	General Purpose Output Common
T-	Tx-/Tx	RS232 Port Transmit out or RS422 Transmit - out
R-	Rx-/Rx	RS232 Port Receive In or RS422 Receive – in
T+	Tx+/RTS	RS-422 Transmit + out (RTS for RS-232 hardware flow control, if used)
R+	Rx+/CTS	RS-422 Receive + in (CTS for RS-232 hardware flow control, if used)
1 (NC)	GPO1 (NC)	General Purpose Output 1 Contact (Normally Closed)
2 (NC)	GPO2 (NC)	General Purpose Output 1 Contact (Normally Closed)
3 (NC)	GPO3 (NC)	General Purpose Output 1 Contact (Normally Closed)
1 (NO)	GPO1 (NO)	General Purpose Output 1 Contact (Normally Open)
2 (NO)	GPO2 (NO)	General Purpose Output 1 Contact (Normally Open)
3 (NO)	GPO3 (NO)	General Purpose Output 1 Contact (Normally Open)

Table 2-1: GPIO/RS232/RS422 Connector Pin Definitions

2.1.1. RS-232/422 Serial Port Connections

The COM port signals are either standard RS-422 (no hardware flow control) or RS-232. The directions of the signals are indicated in Table 2-1. Four pins on the terminal block connector are used for a serial data port conforming to RS422 signal levels when the MODE jumper (J4) is set to the RS422 position. When the MODE jumper (J4) is set to the RS232 position two pins are used for one RS-232 serial data port.

3. SPECIFICATIONS

3.1. GENERAL PURPOSE INTERFACE INPUTS

Number of Inputs: 20
Type: Opto-isolated, active low with jumper selectable +5V or +12V supplied voltage
Connector: Phoenix Terminal Block (2x6)
Signal Level: Jumper selectable +5V or +12V

3.2. GENERAL PURPOSE INTERFACE OUTPUTS

Number of Outputs: 3
Type: "Dry Contact" relay closure
Connector: 2 pins per output on Phoenix Terminal Bock (2x6)
Signal Level: normally closed and normally open

3.3. LTC INPUT

Number of Inputs: 1 (+/- pair)
Type: Balanced
Level: 100 mVp-p
Connector: Phoenix Terminal Block (2x6)

3.4. DATA INPUT SERIAL PORT

Number of Ports: 1 RS-232 or 1 RS-422 (jumper selectable)
Connector: Phoenix Terminal Block pins (2x6)
Baud Rate: Up to 1 Mbaud

3.5. ELECTRICAL

Voltage: + 12VDC
Power: < 6W
EMI/RFI: Complies with FCC Part 15, class A and EU EMC directive.

3.6. PHYSICAL

Number of slots (7700FR-C frame): 1

4. STATUS LEDS

The location of the status LEDs is shown in Figure 6-1.

4.1. MODULE STATUS LEDS

MODULE OK: This Green LED will be On when the module is operating properly.

LOCAL FAULT: This Red LED makes it easy to identify one module in a frame that is missing an essential input or has another fault.

The LED will be on solid if the microprocessor is not running.

GPI SIGNAL PRESENT: 20 Green LEDs will be On when corresponding GPI is triggered.

5. 7700GPI CARD CONFIGURATION

5.1. CONNECTING GPI INPUTS AND GPO OUTPUTS

Twenty pins on two terminal block connectors are used for twenty General Purpose inputs (GPI). The GPIs are active low with an active pull up to +5V or +12V. The user can activate GPIs simply by connecting the GPI input pins to Ground. This can be done with a button, switch, relay or an open collector transistor.

Six pins on a terminal block connector are used for three General Purpose Outputs (GPO). Each GPO output can be used as normally open and normally closed relay contact pair. They can be used to pass simple contact closure information along with the video signal.

5.2. SELECTING THE DATA COMMUNICATIONS STANDARD (RS-232 OR RS-422)

The MODE jumper J4 (see Figure 5-1) is used to configure whether the serial data channel will operate in the RS-232 or RS-422 standard. The terminal block has a pair of inputs, a pair of outputs and a ground connection for the Serial Data Channel. To set the serial data inputs and outputs to operate in the RS-232 standard install the jumper in the RS-232 position. For RS-422 mode, the jumper is moved to the RS-422 position. In this mode the input and output pins will be configured as one RS-422 Rx/Tx port.

5.3. SELECTING THE DEFAULT BEHAVIOUR OF THE INPUTS WHEN THERE IS NO SIGNAL CONNECTED

The BIAS jumper J5 controls the behaviour of the RS-422 inputs when there is no signal connected. This is not critical for most applications, and the setting will not typically affect performance. Figure 5-1 shows a simple schematic of the receiver input. The RS-422 receiver device has a pulldown to ground on the Rx+ input and a pullup to +5v on the Rx- input.

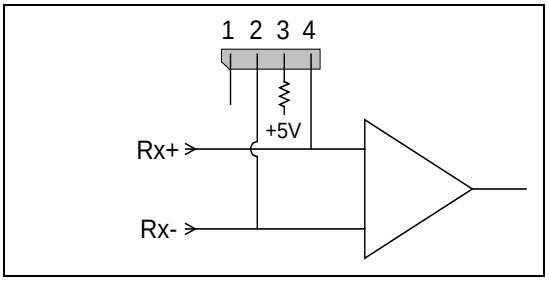

Figure 5-1: Receiver Input Pull-up Configuration

If you want to override the default pull-ups set the appropriate jumper as shown in the chart below.

Label	Jumper on Pins	Function
None	1 & 2	Default pull-ups (Rx+ low, Rx- high)
HI	2 & 3	Rx- pulled up to +5 volts, Rx+ default (low)
LOW	3 & 4	Rx+ pulled up to + 5 volts, Rx- default (high)

5.4. SELECTING THE GPI PULLUP VOLTAGE

The GPI jumper J14, located at the rear of the module, selects whether the general purpose inputs will be pulled up to +5 volts or +12 Volts. Figure 5-2 shows the jumper configuration and the GPI input schematic. To set the pull-up voltage to +5 volts set the jumper to the +5 position and to set the pull-up voltage to +12 volts set the jumper to the +12 position.

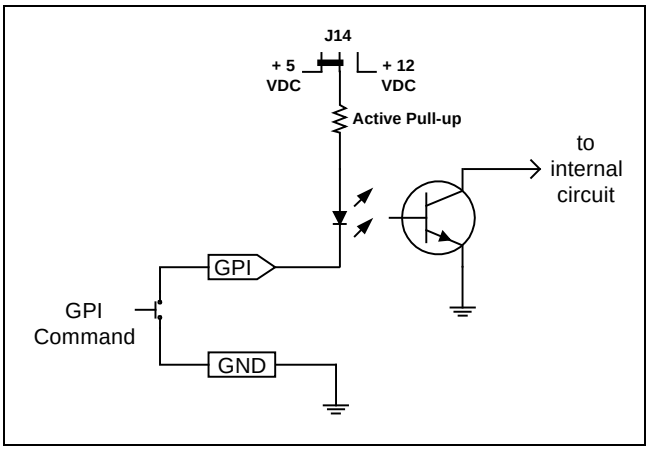

Figure 5-2: GPI Input Circuitry

5.5. NORMALLY OPEN OR CLOSED GPOS

The GPOs of the 7700GPI provide both Normally Open (NO) and Normally Closed (NC) output relay contacts. Therefore, the GPO can be either open or closed when they are active, depending on which pins are connected.

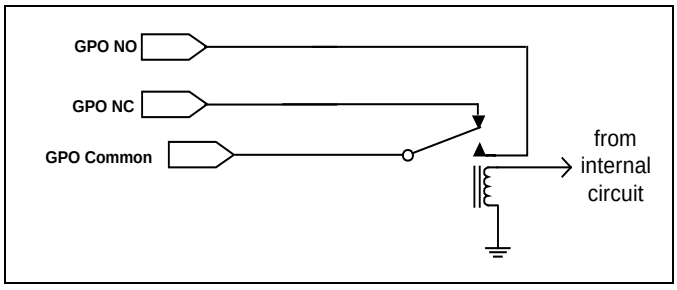

Figure 5-3: Selecting Normally Open or Closed GPO Configuration

		GPO Connection	
Status	**Meaning**	**NC**	**NO**
ON	GPO is Active	Open	Closed
OFF	GPO is Inactive	Closed	Open

6. JUMPERS AND USER ADJUSTMENTS

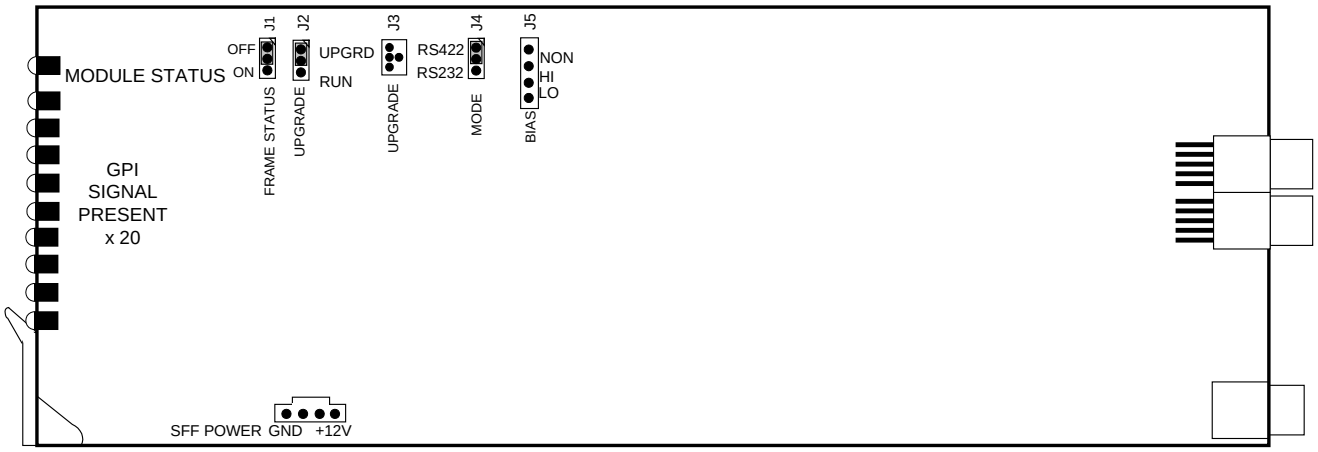

Figure 6-1: Location of Jumpers and LEDs

6.1. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

FRAME STATUS: The FRAME STATUS jumper located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR-C frame's global status bus.

To monitor faults on this module with the frame status indicators (on the PS FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position. (Default)

When this jumper is installed in the Off position, local faults on this module will not be monitored.

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE jumper J23 located at the front of the module is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section of this manual for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J23 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J24 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* section of this manual. Once the upgrade is completed, remove the module from the frame, move J23 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

7. VistaLINK® REMOTE MONITORING/CONTROL

7.1. What is VistaLINK®?

VistaLINK® is Evertz's remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. VistaLINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through VistaLINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, VistaLINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz VistaLINK® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz VistaLINK® enabled products.

2. Managed devices (such as 7700GPI), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK® enabled 7700 series modules reside in the 3RU 7700FR-C Multi-Frame and communicate with the manager via the 7700FC VistaLINK® frame controller module, which serves as the Agent.

3. A virtual database, known as the Management Information Base (MIB), lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

For more information on connecting and configuring the *Vista*LINK® network, see the 7700FC Frame Controller chapter.

7.2. VistaLINK® MONITORED PARAMETERS

The following parameters can be remotely monitored through the VistaLINK® interface.

Parameter	Description
GPI1 State	Indicates the state of the GPI1 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI2 State	Indicates the state of the GPI2 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI3 State	Indicates the state of the GPI3 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI4 State	Indicates the state of the GPI4 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI5 State	Indicates the state of the GPI5 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI6 State	Indicates the state of the GPI6 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI7 State	Indicates the state of the GPI7 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI8 State	Indicates the state of the GPI8 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI9 State	Indicates the state of the GPI9 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI10 State	Indicates the state of the GPI10 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI11 State	Indicates the state of the GPI11 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)

GPI12 State	Indicates the state of the GPI12 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI13 State	Indicates the state of the GPI13 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI14 State	Indicates the state of the GPI14 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI15 State	Indicates the state of the GPI15 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI16 State	Indicates the state of the GPI16 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI17 State	Indicates the state of the GPI17 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI18 State	Indicates the state of the GPI18 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI19 State	Indicates the state of the GPI19 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPI20 State	Indicates the state of the GPI20 input **Off** - the GPI input is open or pulled up to the GPI pullup voltage (inactive) **On** - the GPI input is closed to ground (active)
GPO1 State	Indicates the state of the GPO1 output – On or Off
GPO2 State	Indicates the state of the GPO2 output – On or Off
GPO3 State	Indicates the state of the GPO3 output – On or Off
LTC Present	LTC input present or absent (Coming Soon)

Table 7-1: VistaLINK® Monitored Parameters

7.3. VistaLINK® CONTROLLED PARAMETERS

Parameter	Description
GPO1 On	Set to enable GPO1 for Normally Closed option (NC open, NO closed)
GPO1 Off	Set to enable GPO1 for Normally Open option (GPO inactive, NC closed, NO open)
GPO2 On	Set to enable GPO2 for Normally Closed option (NC open, NO closed)
GPO2 Off	Set to enable GPO2 for Normally Open option (GPO inactive, NC closed, NO open)
GPO3 On	Set to enable GPO3 for Normally Closed option (NC open, NO closed)
GPO3 Off	Set to enable GPO3 for Normally Open option (GPO inactive, NC closed, NO open)

Table 7-2: VistaLINK® Controlled Parameters

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