

jr+ HARDWARE REVISION B

Installation & Operations Manual

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1

Overview: The ProTek *jr+*

The ProTek *jr+* provides status and control of critical equipment at unattended remote sites. Located with the equipment to be monitored and controlled, the *jr+* communicates with the technician over the Public Switched Telephone Network (PSTN) or by radio link.

The ProTek *jr+* can monitor up to four analog inputs, eight digital inputs, and two audio inputs. *A jr+ capable of monitoring eight analog inputs and/or two serial RS-232 devices is available upon special request.* Each analog input has user-defined upper and lower limits, time delay, qualifier, and scale factors and can measure voltages from 0 to 40 VDC. Each digital input has user-defined active level, time delay, and qualifier parameters and can accept from -12 to +12 VDC. The *jr+* automatically maintains a cumulative count of each digital input active time for the current day and for the previous 24 hours. In addition, all enabled digital input active times are logged in the `Event History Report` at the end of each day. The status of any input can be determined using a DTMF capable telephone and/or by modem. The *jr+* can be user-programmed to generate major or minor alarms upon failure of any monitored input.

There are eight relay-driver outputs, four of which may be optionally replaced with internal relays. Each output can be programmed to function as normal or latching, and can be remotely controlled or can respond as programmed by the user.

Additional features include input activity tests, logging of active times to the Local History, and a standard on-board thermometer.

The user can interact with the ProTek *jr+* locally by using the RS-232C port or remotely by modem or DTMF commands. A standardized sampled voice vocabulary provides appropriate verbal prompts and responses to commands entered via a pushbutton telephone, allowing the user to receive status reports, to control relay outputs, or to listen to the site-audio inputs by phone. The *jr+* will automatically generate an alert call to a person, VDT, printer, and voice, numeric, or alphanumeric pagers. The *jr+* can also make a daily status call at a time programmed by the user. This allows all ProTek's in a system to "report in" automatically if desired to meet FCC monitoring requirements.

The ProTek *jr+* can be powered by 115 VAC, 12 VDC, or 115 VAC with automatic fallback to 12 VDC backup. A trickle charge of this backup power source is standard.

System Features

Option: trunking version

Option: serial port

2

Installation

Unpacking the ProTek *jr+*

Carefully unpack and inspect your ProTek *jr+* for any damage. You should have one each of the following:

- ProTek *jr+*
- Interface connector
- Wall mount AC power supply
- DC power cable with connector
- This manual

Optionally you may receive one or more of the following:

- Internal backup battery
- Current (tower light) sensor and associated cable
- Telewave™ RF power sensor and associated connectors
- External temperature sensor and associated cable
- Type-66 punch block and bridging clips

Inspect your ProTek *jr+* for any physical damage. Unfasten the two screws on each side of the *jr+* and remove the top. Confirm that all socketed components are fully seated and that all jumpers and dipswitches are set in accordance with your particular installation needs.

The jumper and dipswitch factory defaults should be adequate for most users, but if any changes are necessary refer the “Pre-installation Setup” section for appropriate information to assist installers in locating and adjusting setup. For help with setting dip switches DSW1 through DSW8 refer to the tables on page 6 and the PCB layout in the appendix. For help with setting configuration jumpers refer to the table and diagrams on pages 4 & 5 in addition to the PCB layout in the appendix.

Pre-installation Inspection

Option: internal backup battery

See “PCB Layout” p.48

Pre-installation Setup

Jumper Switches

Note that when a jumper is bridged with a bridging clip it is considered installed. When no bridging clip is installed the jumper is considered open. See “PCB Layout” on page 48 for assistance in locating jumpers.

Jumper	Function	Default
JU1	Factory use	varies
JU2	If internal transient protection of relay drivers is desired then switch external relays of 12 VDC or less and bridge JU2. If any relay has coil voltage greater than 12 VDC then leave JU2 open and install external diodes for counter-EMF protection.	Open
JU3	Factory use	varies
JU4	If <i>jr+</i> initialization (reset) is desired then power down and move the JU4 bridging clip to the position nearest U17 and reapply power. The <i>jr+</i> will begin its internal diagnostics displaying the appropriate diagnostic codes via front panel LEDs. The alarm LED will go <i>out</i> after the diagnostic routine completes. Now return the JU4 bridging clip to its original position. Failure to clear memory after service or prior to programming can cause operational problems.	Toward U17
JU5-JU7	Factory use	varies
JU8	If disabling the leading * in numeric pages is desired then move the JU8 bridging clip toward U17.	Away from U17
JU9-JU10	Factory use	varies
JU11	If the auxiliary serial port option is installed then the wire JU11 jumper must be removed.	Installed
JU12	Non-existent	--
JU13-JU18	Factory use	varies
JU19	If D5 pull-up defeat is desired then remove the bridging clip to defeat the pull-up.	Installed
JU20	If D6 pull-up defeat is desired then remove the bridging clip to defeat the pull-up.	Installed
JU21	If D7 pull-up defeat is desired then remove the bridging clip to defeat the pull-up.	Installed
JU22	If D8 pull-up defeat is desired then remove the bridging clip to defeat the pull-up.	Installed
JU23-JU24	Factory use	varies
JUP	If AC power monitoring is desired then move the JUP bridging clip to the position nearest the front of the unit. In this position, D8 Input will not monitor any external voltage applied to the Site Interface Connector D8 Input.	Away from JUP
JS1	If analog input 1 scaling is desired then refer to instructions on page 5.	10V
JS2	If analog input 2 scaling is desired then refer to instructions on page 5.	10V
JS3	If analog input 3 scaling is desired then refer to instructions on page 5.	10V
JS4	If analog input 4 scaling is desired then refer to instructions on page 5.	10V

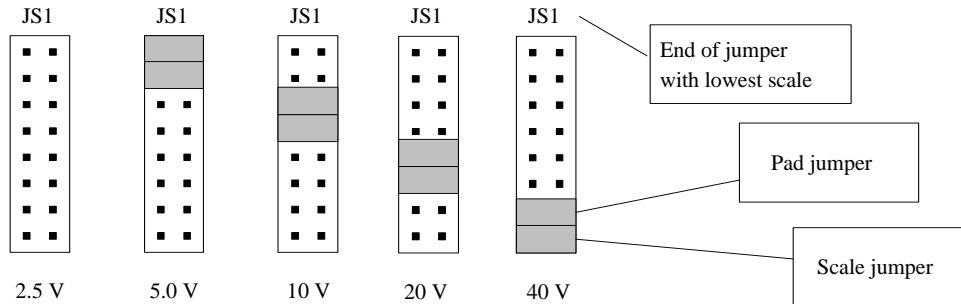
Analog Input Scaling Jumpers

Analog inputs A1 through A4 are scaled by jumpers JS1 through JS4 respectively. Each analog input can accept DC voltages in one of five ranges as determined by the jumper settings. The user may choose from maximum full-scale voltage inputs of 2.5, 5, 10, 20, and 40 VDC. If using the Telewave™ RF sensor the scaling must be set to 10V. Following is description of standard and nonstandard settings for the analog input jumpers.

Standard Analog Input Scaling Jumper Settings

Use silk-screened “JS” label as a reference to locate the end of the jumper with the lowest scale. (The label JS1 will represent all jumpers in these examples.)

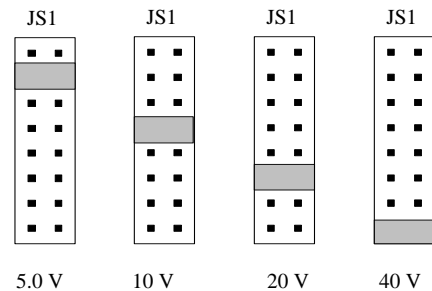
See “PCB Layout” p.48



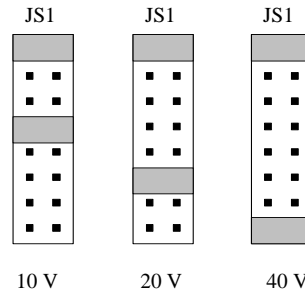
Nonstandard Analog Input Scaling Jumper Settings

Though it is rare, some applications may require that the analog input pad be set independently of the scaling displayed. Since the ProTek *jr+* allows use of the W (watts) unit only on the 10 V scale, splitting the pad and scale jumpers may sometimes be required if the standard Telewave™ RF power sensors are not used or if the RF sensors are monitoring low power transmitters. Remember that the scale must be equal to or greater than the input voltage or the input pad may result in a loss of resolution. The following four diagrams represent the jumper settings that achieve 2.5 V, 5 V, 10 V, and 20 V full-scaling sensitivity.

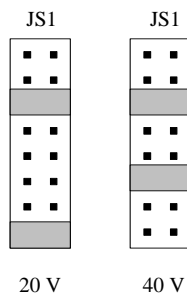
2.5 V full-scale sensitivity with indicated scaling of 5 V, 10 V, 20 V, and 40 V.



5 V full-scaling sensitivity with indicated scaling of 10 V, 20 V, and 40 V.



10 V full-scale sensitivity with indicated scaling of 20 V or 40 V.



20 V full-scale sensitivity with indicated scaling of 40 V.



Dip switches DSW1 through DSW8

The following switches are read only at power up. Any change to these switches must therefore be followed by cycling power.

See "PCB Layout" p.48

DSW1 and DSW2 set the baud rate for the Local VDT port. Set to match your local VDT. *Default: 9600 baud.*

DSW1	DSW2	VDT Baud Rate
OFF	OFF	38400
ON	OFF	19200
<i>OFF</i>	<i>ON</i>	<i>9600</i>
ON	ON	1200

The Local VDT port should be set to the highest speed possible for your situation. Set at 9600 baud to maintain compatibility with the ProTek Classic series. Set at 19200 baud for use with the ProTek Control System software.

DSW4 and DSW5 set the number of rings the *jr+* has to hear or sense before answering inbound calls. *Default: one ring.*

DSW4	DSW5	Rings
<i>OFF</i>	<i>OFF</i>	<i>1</i>
ON	OFF	3
OFF	ON	5
ON	ON	7

DSW6 controls parity for the internal modem only, *Default: off—no parity.*

DSW6	LOCAL VDT
<i>OFF</i>	<i>No Parity</i>
ON	Even Parity

DSW3, DSW7, and DSW8 are for factory use only. *Default: off*

On-Site Installation

Power Cable Installation

The ProTek *jr+* can operate from an AC or DC power source. AC power is provided by an external 12 VAC wall transformer that plugs into the AC POWER IN port on the rear of the *jr+*. The ProTek *jr+* may also be powered from an external 12 VDC source by connecting the supplied 10-ft DC power cable to the DC POWER IN port also at the rear of the *jr+*. (The **red** lead is positive.) The *jr+* will trickle charge the backup battery at approximately 80-mA maximum when AC power is present. If an external 12 VDC self-charging supply is used, disable the internal charger by removing the 130 ohm 2-Watt resistor PR1 from the main board. *Always externally fuse the 12 VDC supply with a 2-A fuse.*

Step: plug in AC or DC power

See "PCB Layout" p.48

Interface Connector Installation

All digital inputs, analog inputs, audio inputs, relay and relay-driver outputs are present at this connector. A 25-pair interface connector is provided with one end unterminated. Attach the terminated end of the interface connector to the I/O CONNECTOR port at the rear of the *jr+*. Please note that the *jr+* has 12 VDC on pin 25 for the powering of external low current devices. *A table showing the connector pin-out and connector color code can be found in Appendix B.* Note that each functional pair uses a standard Telco pair.

Step: install the interface connector

Reference p.46-47

Also note that the site interface pin-out will vary somewhat if your ProTek *jr+* has either the internal relay option or the trunking option. *Refer to Appendix B for the table showing the connector pin-out and color code for the internal relay and trunking options.*

Reference p.46-47

Optional Equipment Installation

Internal Backup Battery

An optional sealed lead-acid battery can be optionally supplied by the factory. Rated at approximately 2 AH, the battery is trickle charged by the internal *jr+* power supply when connected to the two-pin Molex™ connector found at P12. A small PCB mounted on the battery provides low voltage shutdown and a constant charging voltage. The internal battery is disconnected for shipping or storage and should be reconnected prior to installation.

Current (Tower Light) Sensor

An optional tower light sensor is an AC current sensing loop through which the supply line to the lights must be passed. Although available in a range of values, 10 and 15 ampere sensors are most commonly used. If a common feed is used, connecting the sensor to an analog input and programming for voltage allows the technician to determine if all lights are *out* or if it is only a single lamp. Generally, the sensor input should be qualified by a photocell on digital input 1 or 3. The sensors can also be used for general purpose AC current measuring.

Telewave™ RF Power Sensor

Optional Telewave™ RF power sensors are used for measuring the forward and reflected RF power. Three models provide for various frequency ranges. Call the factory regarding additional sensor needs.

Model	Frequency Range
PM-2A-50	30 to 88 MHz
PM-2A-300	118 to 512 MHz
PM-2A-900	806 to 960 MHz

The Telewave™ sensor is installed in the transmission line at the point where power is to be measured. This may be the output of the transmitter or the output of any isolators or resonant cavities. It is strongly recommended that the shielded cable is used to reduce jitter or instability caused by induced RF interference. Phono plugs are also included with each sensor and may be connected by the installer to the interface connector as follows:

RF Power	Analog Input	Wire Color	Phono Plug
XMTR 1 Forward	Input 1	Yellow/Green	Red Center Pin
XMTR 1 Forward	Return1	Green/Yellow	Red Outer Shell
XMTR 1 Reflected	Input 2	Yellow/Brown	Black Center Pin
XMTR 1 Reflected	Return 2	Brown/Yellow	Black Outer Shell
XMTR 2 Forward	Input 3	Yellow/Gray	Red Center Pin
XMTR 2 Forward	Return 3	Gray/Yellow	Red Outer Shell
XMTR 2 Reflected	Input 4	Purple/Blue	Black Center Pin
XMTR 2 Reflected	Return 4	Blue/Purple	Black Outer Shell

Temperature Sensor

An optional external temperature sensor may be connected to the analog input of your choice. Program the limits using the *C* character after the numeric value. Negative temperatures are designated with a minus sign preceding the value while positive temperatures are implied. This sensor requires 12 V, which like the humidity sensor may be supplied by the *jr+* at pin 25 of the interface connector. Remember that the *jr+* has on-board temperature monitoring standard. Due to sensor technology, the temperature reading is recorded in degrees Centigrade.

Type-66 Punch Block

An optional 50-row connectorized punch block and a 25-pair Telco cable terminated at each end with RJ-21M connectors is available as an option. The punch block has four columns of punch-down stakes, divided into two pairs of circuits, connected with bridging clips. The bridging clips can be removed to isolate any circuit to or from the *jr+*.

The left-most column of the punch block (oriented with the 50-pin connector in the lower right) is reserved for external connections to the *jr+*. The center two columns are reserved for connecting external signals to the *jr+*. The right-most column is reserved for connections to the 50-pin connector attached to the punch block. Do not punch down any wires on the right-most column.

Auxiliary Serial Port Option

An optional auxiliary serial port version allows passthrough communications with external serial devices via two DB-9 serial ports located on the rear panel of the *jr+*. Depending upon the firmware, these connectors provide interface capabilities for the optional GateKeeper Site Access Control System or other serial devices. The most frequent interfacing uses are to access embedded diagnostics and/or to control transmitters or other devices having a local serial port for access. The physical ports may be hardware-configured as DTE or DCE and software-configured for varying baud rates, character size, and parity. The user may access either of these ports while connected to the *jr+* via the PSTN or local port. The ports may be independently configured to communicate with most devices. Occasionally, characteristics of the client devices, such as local echo, line feeds, etc. may require adjustment. The auxiliary serial port option may be retrofitted in those monitors not shipped with serial ports installed. Call the factory for further information.

NOTE: serial ports P1 and P2 may be independently configured as either DTE (Data Terminal Equipment) or DCE (Data Communications Equipment) using DTE2 and DTE3 configuration plugs. Rotate the appropriate configuration plug 180 degrees to switch between DTE and DCE.

See "PCB Layout" p.48

Trunking Option

An optional trunking version is available upon special request from the factory, but not generally as an upgrade kit. Operation of the trunking *jr+* differs from that of the standard in that audio monitoring is not supported and analog inputs A5 through A8 support only 10 V scaling. Since the Telewave™ RF sensors require 10 V scaling, it is suggested that RF sensors are installed on A5 through A8 before inputs A1 through A4. Site interface conductors normally used by the site-audio monitor are reassigned to the new analog inputs A5 through A8. The internal temperature sensor previously assigned to A5 on the *jr+* Rev A has been moved to A9. *A pin-out table for the interface connector may be found in Appendix B.*

Reference p.46-47

Internal Relay Option

An optional internal relay version is available upon special request from the factory, but not generally as an upgrade kit. Operation of the internal relay option differs only in that it is more flexible than the standard version, since both *normally open* or *normally closed* contacts are available. *The site interconnection and installation is slightly different as indicated by the tables in Appendix B.*

Reference p.46-47

Post Installation Adjustments

When the interface connector installation is complete, any audio levels and RF power sensors must be calibrated. The beep tone detector may also require adjustment. The remaining adjustments do not normally need attention at installation.

See "PCB Layout" p.48

Audio Port Level Adjustments

Audio level potentiometers R61 and R62 control Port 1 and Port 2 audio respectively. Test points TP1 and TP2 are provided for each input level adjustment. While monitoring the appropriate testpoint with an audio voltmeter, adjust the corresponding audio level potentiometer for a level approximately -20 dB down with a one kHz tone connected to the station-audio input at the desired amplitude. Should the level be insufficient for your installation, remove CR50 and CR51 (Audio 1) and CR52 and CR53 (Audio 2) to increase the gain to 0 dB. When so modified, it may be possible to set the audio level too high, which will prevent the *jr+* from decoding a 88# (Cancel) command. The audio monitor function will, however, time out in three minutes and restore command to the user. *Note that the audio ports are not available if the trunking option has been installed.*

Reference p.5

RF Power Sensor Calibration

Each RF power sensor must be calibrated. Program two analog inputs to measure station forward and reflected power. (Make sure you have set the appropriate jumpers to provide a scale factor of 10 V.) Insert a wattmeter in line with the power sensor. With the station keyed, adjust the forward power potentiometer located on the sensor to obtain the same reading as the wattmeter. Dekey the station and reverse the coax cables connected to the sensor (not the sensor phono plugs) and key the station. Adjust the sensor reflected power potentiometer so that the value displayed by the *jr+* matches the wattmeter reading. Refer to the "Operation" section of this manual for use of the I/O Status Report screens if necessary. Dekey the station and restore the coax cables to normal. This completes the sensor calibration.

Reference Ch.4, p.25-42

Paging Terminal Beep Tone Detect Adjustment

If the *jr+* is programmed to send alert calls to a voice or numeric pager and go-ahead beep tone control is desired, the *jr+* tone detector must be adjusted to match the tone given by the paging terminal. Adjust R29 so that the frequency of the square wave at U5 pin 5 is equal to that of the paging terminal beep tone. The range of adjustment is approximately from 900 to 1500 Hz. If other beep tone frequencies are required for your specific applications, contact the factory for instructions on changing the detector range. *The beep tone detector is factory adjusted to detect 1000 Hz.* Please note that the detector may not reliably detect a series of short beeps as used by some terminals. It is recommended that the Terminal answer detect field should be set to 2 for a timed dump if the detector proves unreliable.

See "PCB Layout" p.48

Voltage Reference for Analog to Digital Conversion

This value is set at the factory and should not need adjustment. However, if voltage and wattage are inaccurately reported by the *jr+*, adjust R7 for 2.56 VDC +/- 0.01 at U36 pin 7.

See "PCB Layout" p.48

Local VDT Set Up

Connect the VDT to the Local VDT port on the front panel. The port may be configured as either Data Terminal Equipment (DTE) or Data Communication Equipment (DCE). This flexibility allows all interface equipment to use a standard one-to-one RS-232C interconnecting cable. Since the *jr+* is shipped configured for DCE operation, a VDT or laptop computer should not require re-configuration. The Local VDT port may also communicate with RF modems, terminal servers, or other data devices. If a modem or other DCE device is to be connected to the local port, the configuration plug DTE1 must be rotated 180° to the DTE position

Step: connect VDT

When the configuration plug is inserted such that the soldered plug pins are to the front of the *jr+*, then the configuration is DCE. If rotated 180°, the configuration is DTE.

Set the communications port parameters of the terminal or terminal emulation to match those of the ProTek *jr+*:

Step: set parameters

- 1 Start Bit
- 8 Data Bits
- 1 Stop Bit
- 1 Mark Parity (or Parity-None)
- XON-XOFF Flow Control

The Local VDT baud rate is set with switches DSW1 and DSW2. *Default: 9600 baud.*

See "PCB Layout" p.48 and instructions p.6

Switch	1200	9600	19200	38400
DSW-1	ON	OFF	ON	OFF
DSW-2	ON	ON	OFF	OFF

The physical pin-out of the RS-232C connector for DTE and DCE configurations is as follows:

Signal Name	Pin #	DTE	DCE
Frame Ground	1		
Transmit Data (TD)	2	Output	Input
Receive Data (RD)	3	Input	Output
Clear To Send (CTS)	5	Input ¹	Output
Signal Ground	7		
Data Carrier Detect (DCD)	8	Input ²	Output
Data Terminal Ready (DTR)	20	Output	Input ²

¹ CTS has an internal pull-up and is normally asserted.

² DCD and DTR have internal pull-down resistors and are normally negated.

3

Programming

Login

With the VDT properly configured, enter the <return> key.

After “YOUR PASSWORD PLEASE” appears, enter the digits 0000 (four zeros) followed by <return>.

After the “Enter type of terminal...” prompt appears, enter the appropriate choice. Generally, 7 ANSI will give the best results with modern communications software running on a laptop.

The *jr+* is generally shipped with test programming installed. You may wish to look over this programming if you have not programmed a *jr+* before. It is suggested, however, that you clear the memory with a JU4 reset prior to programming of your specifications. This will restore all memory contents to default states and ready the unit for programming.

After the memory has been cleared with JU4, the System Parameters Menu screen will appear on the screen in single line mode.

During subsequent logons, the full-screen Main Menu will be displayed automatically after the VDT Type selection is completed.

The following section covers the basic set up in preparation for installing the unit. *Use the worksheets provided in the appendix to document system programming.*

Step: login

Reference p.4 for
resetting instructions

Next Step: set system parameters

System Initialization

See “System Initialization
Worksheets” Appendix E
p.51-57

System Parameters Menu screen

This menu will automatically appear after the type of VDT is selected during the initial login procedure. During this sequence only, the cursor will automatically sequence through the parameter fields in single line mode. Each system parameter is described below. While in the single line mode you can not return to a previously edited field. If a erroneous entry is made while you are programming the *jr+* in single line mode, you will have an opportunity to correct the entry later. *Use the worksheets provided in the appendix of this manual to document system parameters programming.*

Record programmed
parameters in the "System
Parameters Worksheet" p.51
Appendix E

PASSWORD

This parameter is the user's protection against unauthorized access to the ProTek *jr+*. Login using 0000 (four zeros) as the password when programming the *jr+* for the first time. If a password is forgotten or corrupted, the *jr+* must be reset using JU4, and first time programming must be repeated. A valid password must be four to eight digits long.

SITE NAME

This parameter will appear in the header section of all screens and will identify the site during alphanumeric and VDT alert calls. This field accepts up to 16 characters, including spaces.

SITE ID

This parameter appears in the header section of all screens and will identify the site on all alert calls. This ID is the only means of identifying the site when alert calls are sent to numeric pagers. If no value is entered, the ProTek *jr+* defaults to 0000 (four zeros). Voice alerts will identify the site by enunciating these four digits or pagers will display the four digit ID. This field accepts a four-digit numeric value, but should not begin with a leading zero since this may be interpreted as a command on some telephone systems.

TIME

This parameter sets the time in a 24-hour format and is displayed in the header section of all screens. Enter the current time as HH:MM (00:00-23:59) where leading zeros need not be entered, but will be accepted. The colon must be entered as indicated in the example above.

DATE

This parameter sets the date that is displayed in the header section of all screens. Enter the current date as MM/DD/YY where leading zeros are not necessary, but will be accepted if entered. The slashes must be entered as indicated above.

ALERT CALL SEQ

This parameter designates the order in which an alert call will sequence through the telephone list programmed in the Alert Call Telephone Numbers screen. Program up to four telephone number entries in the order they are to be called, and delimit them by commas. The first telephone number will be used for the daily status report. If a zero is entered, no alert call will be made, even if there are numbers programmed. *The jr+ will default to 0 if no entry is made.*

ALERT CALL ATTEMPTS PER TYPE

This parameter defines the number of call attempts to a given telephone number before sequencing to the next entry. For example, if a person and a VDT were specified, and two attempts was selected, the *jr+* would make two unanswered or busy attempts to alert the person before making two attempts to contact the VDT. The *jr+* will continue to cycle through the sequence until someone acknowledges the alert call with the alert call acknowledge (ACK) command. Only digits from 1 to 4 are accepted as entries in this field. *The jr+ will default to two attempts if no entry is made.*

ALERT CALL ATTEMPT INTERVAL

This parameter defines the amount of time in minutes from 1 to 9 that the *jr+* will wait between alert call attempts. *The jr+ will default to a value of 5 minutes if no entry is made.*

STATUS REPORT TIME

This parameter sets the time of day that the *jr+* will make a status report. Ensure that the time is entered with the colon to delimit hours and minutes. The time will be accepted without a colon but may be incorrectly processed. The status report is sent to the telephone number in position one of the `Alert Call Telephone Numbers` screen. This telephone number may be programmed for person (type = 1), VDT/printer (type = 2), or alpha (type = 5) devices. The spoken daily status report is identical to the report verbalized in response to telephone entry of a 10# (Status Report) command. To unprogram a previously programmed status call, enter CTRL Y while in this field. *The field will blank and the status call will be disabled. The jr+ will default to no status report if no entry is made.*

See next section for directions on programming telephone numbers

STATUS REPORT INTERVAL

This parameter defines the length of time between each status report in days. An interval from 1 to 9 days can be specified. If a weekly report on a specific day is desired, the status call must be programmed on that day. Remember that a failure to connect successfully to a data device, or a call to a wrong number will continue indefinitely. For this reason, an infinite "0" entry is not recommended especially when the call is long distance or cellular.

TERMINAL ANSWER DETECT

This parameter adjusts the manner in which numeric and voice pagers interact with the paging terminal. Pagers will send the message to a terminal in three ways: option 1 = with detection of the go-ahead beep tone, option 2 = blindly send a page after a delay, or option 3 = either way. If option 2 or 3 is chosen, an entry in the `TIMED VALUE` field is required. The terminal go-ahead tone detector is set to a default of 1000 Hz and may require adjustment for correct operation with your terminal. If in doubt, set to option 3. *The jr+ will default to 3 if no entry is made.*

TIMED VALUE

This parameter determines how long after the last detected ringback the *jr+* waits before sending the numeric page. Since the *jr+* cannot detect the paging terminal answer, it waits for seven seconds after ringing ends to see if another ring is detected. If another ring is detected the *jr+* waits seven more seconds. If no ring is detected, then the *jr+* waits the timed value before sending the numeric page. (Typically a value of 0 or 1 works on most paging terminals, where a value of 1 equals approximately 2.5 seconds, a value of 2 equals approximately 5.0 seconds, and so on.) *The jr+ defaults to a value of 0 if no entry is made.*

ALERT CALL LIMIT

This parameter defines any limit placed on the number of alert calls generated for each major alarm. If zero is entered, alert calls will continue until an alert call acknowledge (ACK) command is received. The *jr+* will automatically halt the alert call sequence after sending 1 to 9 calls as programmed by the user. *The jr+ defaults to a value of 0 if no entry is made.*

Upon completion of the single line mode programming the `Main Menu` will appear. From this menu proceed to the `Alert Call Telephone Numbers` screen and follow the procedures for programming.

Next Step: enter 5 rtn, N rtn

Alert Call Telephone Numbers screen

The Alert Call Telephone Numbers screen provides for entry of up to four telephone numbers that the ProTek jr+ will call during a major alarm. Telephone number one may be used for the daily status report, and if so used, must be programmed as either a type 2 (VDT) or type 5 (Alpha). *Note: as there is no <backspace> function available, once a value is entered followed by <return>, cycle through the remaining fields of the line being edited and re-select the line to correct the error.*

```

Site Name: Test                               Time: 23:17
Site ID: 1111                                 Date: 12/08/99

                          Alert Call Telephone Numbers

Type  Telephone number  Alpha-pager number  Alpha-password
-----
1     2     5551111
2     1     5552222
3     1     5553333,,,
4     5     5554444          5553333

-----

Types:  1 = person,      2 = VDT/printer
Pager types:  3 = voice,  4 = digital,  5 = alpha
-----
Return key = Main Menu, Z = repaint, N = next scrn, or parameter number:

```

Record programmed parameters in the "Alert Call Worksheet" p.53 Appendix E

TYPE

This field defines the type of alert call to be sent by the jr+, where the type is designated by a single digit. Valid entries are:

1. Person
2. VDT / printer
3. Voice pager
4. Digital pager
5. Alphanumeric pager

TELEPHONE NUMBER

This field defines the number to be alerted. Enter up to 16 characters, but it is not necessary to enter dashes to delimit the exchange or area code. Commas may be entered to generate a two-second delay per comma. Remember to precede the number with a "1" if the number is long distance.

ALPHA-PAGER NUMBER

This field allows a pager ID of up to eight digits to be sent to the paging terminal in the TAP protocol.

ALPHA-PASSWORD

This field allows up to six alphanumeric characters to be sent to the terminal in the TAP protocol. Note that the entire field may be cleared by positioning the cursor in the TYPE field and entering CTRL Y. This function is rarely if ever required.

Next Step: enter N rtn

System Logging Configuration

The System Logging Configuration screen allows the user to specify what events are logged in the Event History. The state of any particular event type may be toggled by entering the appropriate menu #. When finished, enter <return> and the Main Menu will appear.

Site Name: Test	Time: 23:17	
Site ID: 1111	Date: 12/08/99	
System Logging Configuration		
#	EVENT TYPE	STATE

1	Major alarm	ON
2	Minor alarm	ON
3	Input enable/disable/unprogram	ON
4	Relay force/release	ON
5	AC Power on/off	ON
6	Alert call enable/disable/ack	ON
7	Alert call fail/retry	ON
8	Time log	ON
9	Reset, history clear	ON

Return key = Main Menu, Z = repaint, N = next scrn, or parameter number:		

Record programmed
parameters in the
"System Logging
Configuration Worksheet"
p.53 Appendix E

I/O Parameters Menu - Analog inputs

The I/O Parameters Menu actually consists of three screens displayed in the following order: Analog inputs, Digital inputs, and Input activity. Move between these screens by using the commands N = next screen or L = last screen. The first I/O Parameters Menu provides initialization of each of the four analog inputs. Input A5 has a default INPUT DESCRIPTION of "PROTEK TEMP," but may be overwritten if desired. The input itself however is dedicated to the internal temperature sensor.

INP #	INPUT DESCRIPTION	LOWER LIMIT	UPPER LIMIT	VLT SCL	QLFD BY	TIME DELY	ALRM TYPE	PGM STAT	CONTROLLED RELAYS
A1	XMTR FWD PWR	200W	256W	10	D1	0.1	MAJ	ENB	1
A2	XMTR RVS PWR	0W	10W	10	D1	0.1	MIN	ENB	
A3	TOWER LIGHTS	3.4V	4.4V	5.0	D3	0.1	MAJ	ENB	
A4	12VDC SUPPLY	12.0V	4.0V	20	D8	0.1	MAJ	ENB	2
A5	PROTEK TEMP	0C	50C				MIN	ENB	

Return key = Main Menu, N = next screen, Z = repaint, or inp # (1-5):

Record programmed parameters in the "Analog Input Worksheet" p.55 Appendix E

Reference p.5

INP

This field identifies the specific inputs from A1 to A4. Input A5 is dedicated to the internal thermometer and cannot be used to monitor an external input.

INPUT DESCRIPTION

This field is used to enter a 16 character maximum alphanumeric description of the analog input. Since this string will be reported in any text alarm, the user may wish to describe the failure rather than the input in this field.

UPPER and LOWER LIMIT

These two fields are used to specify the nominal range for this input. If the input level varies outside this range, the input becomes *active*. Spaces are accepted between characters but ignored. The upper limit when entered as volts cannot exceed the value of the VLT SCL factor. Note that the lower limit value must be smaller than (or equal to) the upper limit value or the input will always be in the alarm state. *All numeric entries must be followed by a valid unit designator, i.e. V, (for volts) C, (for °C) or W (for RF Watts).*

VLT SCL

This field is for display purposes only. The user selects the desired voltage scale with jumpers on the motherboard. The jr+ automatically scans all of these jumpers and displays them in this field. Allowable scales are 2.5, 5, 10, 20, and 40 V. Invalid jumper settings are indicated as INV.

The upper limit can not exceed the value displayed in this field and if it does the cursor will return to the beginning of the field to await a correct entry overwriting the previous error.

QLFD BY

This field qualifies inputs where any analog input can be qualified by any other analog or digital input. The qualifying input must be *active* (outside its normal range if analog, or at its active level if digital) before the analog input being qualified can be *active*. Thus even though the analog input is outside its range it will not be *active* itself until the qualifier is also *active*. No entry means this input is not qualified. An incorrect entry can be cleared by entering two spaces (two space bars) and <return>.

TIME DELY

This field qualifies any analog input by a time delay. The input must vary outside its specified range continuously for longer than the specified time delay before becoming *active*. No entry is the same as 0.0 seconds. Valid values range from 0.1 to 999 seconds.

ALARM TYPE (event type)

This field allows the designation of each input to one of six alarm types. Alarm types determine what action is taken by the *jr+* when that input is *active*. Any input may qualify another input(s) regardless of its alarm type. However, if an input is meant only to qualify another input and is not required to make a log entry or generate an alarm independently then it should be programmed as a qualifier or QLF alarm type. The six alarm types and their functionality are as follows:

- MIN A minor alarm will be logged in the Event History Report and the MINOR ALARM front panel indicator will light. The input may qualify other inputs. However, an alert call sequence will not be generated from this alarm.
- MAJ A major alarm will be logged in the Event History Report and the MAJOR ALARM front panel indicator will light. The alert call sequence is also initiated, if so programmed. The input remains in the alarm state until its level returns to within the programmed limits or the qualifier (if programmed) goes *inactive*.
- MAQ A major alarm will be logged in the Event History Report and the MAJOR ALARM front panel indicator will light. An alert call sequence is also initiated, if so programmed. The input remains in an alarm state until its level is within the programmed limits while the qualifier (if programmed) is *active*. Note that the alarm remains in effect even if the qualifier returns to an *inactive* state. Essentially this is a latching alarm type and is only rarely used.
- MA2 This alarm is equivalent to a major alarm except that a return-to-normal alert call sequence is initiated when the input returns to normal if no alert call is already *active*. The MA3 is generally recommended over the MA2 since a return-to-normal alert will be generated when the inputs qualifier returns to normal. The operation is identical to the MA3 type on an input that has no qualifier.

- MA3 This alarm is equivalent to a MAQ except that a return-to-normal alert call sequence is initiated when the input returns to normal if no alert call is already *active*. Use the MA3 to prevent a false return-to-normal alert when a PTT qualifying an abnormal RF level goes *inactive*. If the analog input monitoring the RF sensor were to be designated as an MA2, a failing transmitter would falsely generate a return-to-normal alert whenever the PTT qualifying is returned to an inactive level.
- QLF This input, when *active*, will be used only to qualify other inputs. While it will not generate an alarm, it may be used to control relays. The qualifier may be thought of as a Bool command in that both the input qualified and the qualifier must be *active* for an alert to be generated.

PGM STAT

This field is used to display the program status and to change program states. This field will initially display UPG for unprogrammed. Three entries are possible in this field:

- UPG This state designates the input as not programmed. If UPG is entered for a previously programmed input, all input fields are automatically cleared whether the data in those fields was displayed or not. The LOWER and UPPER LIMIT and ALARM TYPE fields must be set before the input can be removed from the UPG state. If the user makes no entry when initializing input, the other field entries will be stored but not displayed. Subsequent entry of ENB or DIS will cause this previously entered data to be displayed.
- ENB This state designates the input as enabled; in a normal state.
- DIS This state designates the input as disabled. In this state the input level can still be read, but if out of range, will not be *active*.

Note: if any input field currently being programmed is incorrect, i.e. outside of the configured volt scale, without correct units (V,W,C) the input cannot be enabled. The user must enter UPG in the PGM STAT field and reprogram the input correctly.

CONTROLLED RELAYS

This field is also used to enter any relay outputs that this input will control. Up to three relay output numbers can be entered (delimited by a space, comma, period, or slash). Relay numbers followed by the letter "L" will latch *on* and stay *on* until released by the user with the 07# (Release Relay) command. Any combination of three relay outputs can be programmed as latched (L). Care must be taken to enter the delimiter between relay numbers. The Relay Configuration screen shows all controlled relays. If a relay output is *on*, it will stay *on* until all controlling inputs leave their active state or until the inputs are disabled (unless latched).

Next Step: N rtn

During the initial programming the installer should now proceed to the Digital inputs configuration screen by entering N <return>.

I/O Parameters Menu - Digital inputs

The Digital inputs screen is used to initialize each of the eight digital inputs. This screen is similar to the Analog inputs screen and only the differences will be described in this section.

```

Site Name: Test                               Time: 23:17
Site ID: 1111                                 Date: 12/08/99

                                I/O Parameters Menu - Digital inputs

INP   INPUT          ACT      QLFD  TIME  ALRM  PGM   CONTROLLED
#     DESCRIPTION    LVL      BY    DELY  TYPE  STAT  RELAYS
-----
D1    DIGITAL KEY    L                QLF   ENB
D2                                UPG
D3    TOWER LTS ON  L                0.1   QLF   ENB
D4                                UPG
D5                                UPG
D6    SITE SECURITY  L                1.0   MAJ   ENB   3
D7    FIRE           L                MAJ   ENB   3
D8    PROTEK AC     L                MIN

-----
Return key = Main Menu, N = next screen, Z = repaint, or inp # (1-8):

```

INP

This field identifies the specific inputs. Enter 1-8 to select the input.

Record programmed parameters in the "Digital Input Worksheet" p.55 Appendix E

ACT LVL

This field replaces analog input LOWER and UPPER LIMIT fields and defines the digital input state that the *jr+* is to treat as *active*.

H (high) Open input or +2.4 to +12 VDC

L (low) Contact closure to digital ground or -12 to +0.8 VDC

The remaining fields have the same use as the analog inputs in the previous screen.

To get a digital input out of the UPG (unprogrammed) state, the field's ACT LVL (active level) and ALRM TYPE (alarm type) must be initialized and either ENB or DIS must be entered in the PGM STAT field. Note that if a digital input is *disabled*, its level can still be read and the active state time count continues. The time active and previous day counts are cleared when a digital input is unprogrammed.

If jumper JUP is set to reserve input D8 for the onboard ProTek *jr+* AC power loss detection, this input should not be used for external device monitoring. The user may record the loss and return of AC power by entering either MIN or MAJ in the ALRM TYPE field and ENB in the PGM STAT field.

During the initial programming the installer should now proceed to the Input activity configuration screen by entering N <return>. If no activity test programming is required return to the Main Menu by entering <return>.

Next Step: N rtn

jr+ Operator's Manual

I/O Parameters Menu - Input activity

The `Input activity` screen is used to enter the required parameters for the ProTek *jr+* to execute the no activity test and the stuck active test. The standard *jr+* has two activity tests and the *jr+* with trunking option has eight activity tests, but the programming is identical in both builds.

```

Site Name: Test                               Time: 23:17
Site ID: 1111                                 Date: 12/08/99

                                I/O Parameters Menu - Input activity

INP   TELEPHONE   INACT   WAIT   MAXACT   ALRM   PGM   CTLD
#     NUMBER     TIME    TIME  TIME     TYPE  STAT  RELAYS
      (OR RELAY) (MIN)   (MIN)  (MIN)
-----
I1    5550000    30      5     55      MIN   ENB
I2                                     UPG
I3                                     UPG
I4                                     UPG
I5                                     UPG
I6                                     UPG
I7                                     UPG
I8                                     UPG

-----
Return key = Main Menu, N = next screen, Z = repaint, or stn # (1-8):

```

Record programmed parameters in the "Input Activity Worksheet" p.57 Appendix E

INP

This field identifies the specific input test (I1-I8 for the trunking option or I1-I2 for the standard build). Enter 1-8 to select the desired station. Users of the ProTek Classic will notice that the *jr+* performs activity testing on all digital inputs.

TELEPHONE NUMBER (OR RELAY)

This field is used to enter up to a 21-digit telephone number or a relay output number that the *jr+* will use to activate the input for test purposes. For paging systems, this number could be a tone-only pager number. Do not enter dashes between the exchange and the area code. To delete the contents of the field, enter the CTRL Y command. To allow the *jr+* to dial through a PBX/PABX, commas are used to delimit the access code from the telephone number. Each comma provides a two second delay. Multiple commas may be used to achieve longer delays, but the field is limited to 21 characters, including commas. While alphanumeric characters are accepted some characters may impair modem functionality.

INACT TIME

This field defines how long the *jr+* will wait without seeing input activity before attempting to force the input *active*. The *jr+* attempts to force activity by calling the telephone number or activating the relay output number specified in the TELEPHONE NUMBER field. The time is entered in minutes (1-9999). Entering a zero will disable both input activity tests. Note that if no phone number or relay output number is programmed in the TELEPHONE NUMBER field, the *jr+* will alarm once this time has elapsed with no activity.

WAIT TIME

This field defines the additional time (in minutes from 1 to 9) the *jr+* will wait for activity after dialing out the specified telephone number or activating the relay output before an alarm condition is recorded. This value should exceed all system delays expected from the time of the call to the time at which the input is forced *active*. If a zero is entered in this field, no dial out is attempted nor is any relay output activated.

MAXACT TIME

This field is used to enter the maximum amount of time (in minutes from 1 to 9999) that the input must be continuously *active* before the *jr+* alarms. Entering a zero will disable the stuck active test.

ALRM TYPE

This field determines whether the failure of either the no activity test or the stuck active test generates a major or a minor alarm. QLF is not a valid entry.

PGM STAT

This field performs the same function as the PGM STAT field in the Analog and Digital input screens. To remove an input test from the UPG (un-programmed) state, the INACT TIME, and ALRM TYPE fields must be programmed, and either ENB or DIS must be entered in the PGM STAT field.

CONTROLLED RELAYS

This field is used to enter any relay output numbers that this input test will control in its active state. Up to three relay or relay-driver outputs can be entered delimited by a space, comma, period, or slash. Relay numbers followed by the letter "L" will latch *on* and stay *on* until released by the user with the 07# (Release Relay) command. Any combination of three relay outputs can be programmed as *latched*. Note that other inputs can be programmed to control these same relay outputs. The failure of either activity test will cause any controlled relays to turn *on*. If optional internal relays are supplied, they will be installed in positions R1 through R4. Positions R5 through R8 will be standard open collector relay drivers.

Option: Aux Serial Port

Next Step: enter N, rtn

I/O Parameters Menu - Serial ports

The Serial ports screen will be available only on units with the serial port option installed. In practice, the serial configuration works in a similar manner to all other configuration screens. After an entry is made the cursor will move to the next field. An erroneous entry will result in a terminal beep and the return of the cursor to the beginning of the field.

```
Site Name: Test                               Time: 23:17
Site ID: 1111                                 Date: 12/08/99

                                I/O Parameters Menu - Serial ports

PORT  FUNCTION      SPEED      CHARSIZE/PARITY
-----
1     1              38400     8N
2     1              38400     8N

Function 1 = Passthrough

-----
Return key = Main Menu, N = next screen, Z = repaint, or port # (1-2):
```

FUNCTION

This field allows for a default to 1 for serial passthrough and cannot be changed. Other functions, including multiple local VDTs, may be supported in alternative firmware builds.

SPEED

This field defaults to a baud rate of 38400 bps. This value refers to the auxiliary port only. Valid entries are 38400, 19200, 9600, 2400, 1200, and 300. The modem connection baud rate is 14400 BPS or less, as determined by automatic negotiation with the client modem. The Local VDT port baud rate is set by DSW1-1 and DSW1-2 as detailed in "Installation" section of the manual. A combination of widely disparate input and output baud rates and long messages may drop characters if the data backlog exceeds 64 bytes. Since long messages are more likely to come from the client on an auxiliary port, the best performance will occur with the highest possible connection speed on the modem or local VDT.

CHARSIZE/PARITY

This field is used to designate the character size in bits and parity (N = None, E = Even, or O = Odd). Generally, 8N or 7E is expected here.

Programming Complete!

4

Operation

Telephone Control

Any standard tone-capable telephone may be used to control the ProTek *jr+*. Since the * and # keys are required for communications with the *jr+*, make sure these characters are transmitted to the Public Switched Telephone Network (PSTN). Some PBXs may use these characters for internal functions and may not forward them to the PSTN.

The ProTek *jr+* will immediately answer all incoming calls with a modem answer tone. The caller should enter the # key within two seconds of hearing this tone. If no # entry is detected or modem communications established within 20 seconds, the *jr+* will disconnect. Upon hearing the # key, the *jr+* will prompt "Password please." If an incorrect entry is made the *jr+* will give the prompt "Error, try again." If three consecutive incorrect passwords are entered, the *jr+* will disconnect. Once the correct password is entered the *jr+* will respond with "Ready" and will await further commands. If no commands are given for 30 seconds, and the *jr+* is in the Ready state, disconnect will occur. The user may clear any erroneous digits entered prior to the # key with the * key.

The table on the following two pages provides a list of DTMF commands along with the associated *jr+* action, system prompt, and required user action.

DTMF Commands

DTMF Commands

Entry	Command	<i>jr</i> + Action	Prompt	User Action
00#	Command Summary	This command will prompt the <i>jr</i> + to recite each command code and a brief description of its function.	NONE	Listen to command summary and input next command.
01#	Disable Input	This command blocks any programmed response to an active input, but the input level can still be monitored.	"To disable input, enter input number."	Enter a two digit number and # to identify the specific input desired.
02#	Enable Input	This command allows the specified input to respond to an event as previously programmed.	"To enable input, enter input number."	Enter a two digit number and # to identify the specific input desired.
03#	Disable Input Activity Test	This command disables activity testing on the specified input.	"To disable activity test, enter input number."	Enter the input number (1 or 2) followed by #.
04#	Enable Input Activity Test	This command re-enables a previous Disable Input Activity Test command.	"To enable activity test, enter input number."	Enter the input number (1 or 2) followed by #.
05#	Force Relay On	This command causes the specified relay output to turn <i>on</i> (thereby overriding any controlling inputs).	"To force relay <i>on</i> , enter relay number."	Enter the relay output number as one digit from 1 to 8 followed by #.
06#	Force Relay Off	This command causes the specified relay output to turn <i>off</i> (thereby overriding any controlling inputs).	"To force relay <i>off</i> , enter relay number."	The user enters the relay output number as one digit from 1 to 8 followed by #
07#	Release Relay	This command releases the specified relay output from user control (or from the <i>latched</i> state) and returns control to the programmed controlling inputs.	"To release relay, enter relay number."	Enter the relay output number as one digit from 1 to 8 followed by #.
08#	Disable Alert Call	This command prevents the <i>jr</i> + from making an alert call or halts any such call in progress.	"Alert call disabled."	Input next command.

DTMF Commands Cont.

Entry	Command	<i>jr+</i> Action	Prompt	User Action
09#	Enable Alert Call	This command cancels a previously entered 08# (Disable Alert Call) command.	"Alert call enabled."	Input next command.
10#	Status Report	<p>This command prompts a list of the following anomalies:</p> <ul style="list-style-type: none"> <i>Any input in an alarm state as a result of no activity test or stuck active test</i> <i>Any 3 most recent unacknowledged major or minor alarms</i> <i>Any input presently in a minor or major alarm state</i> <i>Any input activity test disabled by the user</i> <i>Any input disabled by the user</i> <i>Alert Call Disabled or Alert Call Active</i> <p>If none of these events has occurred, the <i>jr+</i> responds with: <i>"Site xxx, Status O.K. - Ready."</i></p>		
11#	Monitor Input	This command enables the user to monitor any input level.	"To monitor input, enter input number."	Enter the input number A1 through A5, or D1 through D8.
12#	Monitor Audio	This command enables the user to listen to either of the two audio inputs for 5 minutes or until a 99# (Cancel) command is entered. After 5 minutes, the ProTek will again prompt "To monitor audio. . .".	"To monitor audio, enter input number."	Enter the input number 1 or 2 followed by #.
13#	Report Relay Status	--	NONE	--
22#	Acknowledge Alert	This command, entered in response to an alert call caused by a major alarm, resets the lights on the front panel, clears the prior alarms on the status report, and aborts any alert call sequence.	"Alert call acknowledged, ready."	Input next command.
88#	Terminate Call	This command causes the <i>jr+</i> to immediately disconnect.	"End call."	Hang up phone.
99#	Cancel	This command cancels any incomplete command or halts the monitor input or monitor audio processes.	"Ready."	Input next command.

Operation-VDT

Password screen

This screen is automatically displayed first during the login procedure. A four-digit number is required (0000-9999). If the incorrect password is entered, the screen is repeated. After three unsuccessful attempts, the *jr+* disconnects. Prior to system parameter password initialization, the *jr+* accepts the password 0000.

Terminal Type Select screen

The Terminal Type screen is used to select the type of VDT used. This screen is automatically displayed following a successful password entry. A single digit (2, 5, 6, or 7) is required to specify the type, and once selected the Main Menu screen will follow. Note if this is the first entry following a JU4 reset, the System Parameters Menu will appear.

```
Enter type of terminal . . .
2 = Dumb
5 = QUME-QVT102, Televideo-TV910 / TV950, ADDS-3A+
6 = ADDS-VP1 / VP2
7 = ANSI / VT100
```

Main Menu

The Main Menu screen is normally displayed after password entry and VDT type selection is complete. This screen is used to access all other screens by entering the desired screen number followed by <return>. To terminate the connection, enter TC.

```
Site Name: Test                               Time: 23:17
Site ID: 1111                                 Date: 12/08/99

                ProTek jr+ Alarm and Monitoring System
                PageTek   Version 2.085

                Main Menu

1      System status report
2      I/O status report
3      Event history report
4      Commands menu
5      System parameters menu
6      System relay configuration
7      I/O parameters menu

TC     Terminate call

-----
Enter desired screen number (or Z to repaint):
```

System Status Report

The System Status Report screen displays a summary of the ProTek *jr+* operational status at time of request.

```
Site Name: Test                               Time: 23:17
Site ID: 1111                                Date: 12/08/99

                                System Status Report

** Alert Call Sequence Active **

Prior alarms:
  I1 Maj 5550000

Major alarms:
  I1      5550000

Minor alarms:      ** NONE **

Disabled:          ** NONE **

Relays on:
  R2 Backup 12vdc

Relays forced:    ** NONE **

-----
Return key = Main Menu, N = I/O Status, Z = repaint:
```

Alert Call Sequence *active*

This field displays messages according to the system status. If the alert call sequence is *active* the system displays “Alert Call Sequence Active.” If the user has disabled the alert call sequence, the system displays “Alert Call Disabled.” If the sequence is not enabled, or if the sequence is enabled but not in an alarm state, no message will be displayed.

Prior Alarms

This field displays the input number and the alphanumeric descriptor of the three most recent inputs in an unacknowledged major or minor alarm state. The input is identified as follows:

- 1st character: A (Analog), D (Digital), or I (Inactivity)
- 2nd character: 1-8 represents the specific input identifier
- Alarm Level: MAJ, MAQ, MA2, MA3, or MIN represents the user programmed alarm level
- Descriptor: User programmed alphanumeric description of this input

Reference p.19 for more detail on alarm types

Once the alarm is acknowledged it no longer appears on this list.

Major Alarms

This field displays the input number and the alphanumeric descriptor of any input currently in a major alarm state. The input is identified as follows:

1st character:	A (Analog), D (Digital), or I (Inactivity)
2nd character:	1-8 represents the specific input identifier
Descriptor:	User programmed alphanumeric description of this input

For input activity tests, the activity test telephone number or the relay output number is displayed instead of an alphanumeric descriptor.

Minor Alarms

This field displays the input number and the alphanumeric descriptor of any input in a minor alarm state. The input is identified the same as above.

Input Disabled

This field displays the input number and the alphanumeric descriptor of any input that has been disabled by the user via the 01# (Disable Input) command.

Relays on

This field displays the relay output numbers (R1-R8) and the alphanumeric descriptor of any relay or relay-drivers outputs that are *on*.

Relays Forced

This field displays the relay output number and the alphanumeric descriptor of any relay output that has been forced *on* or *off* by the user with the force relay commands. The data displayed is current when requested, but the screen is not automatically updated. The user can view the most recent data by entering Z <return>.

If it is impossible to display all data on one screen, the bottom line of a “smart” terminal screen will display “MORE TO COME, ENTER RETURN TO CONTINUE, CTRL C TO EXIT:” If a “dumb” VDT is being used, CTRL S and CTRL Q can be used to stop and start display scrolling.

I/O Status Report - Analog inputs

Site Name: Test		Time: 23:17						
Site ID: 1111		Date: 12/08/99						
I/O Status Report - Analog inputs								
ANALOG INPUTS		CURRENT STATUS	CUR LVL	LOWER LIMIT	UPPER LIMIT	QLFD BY	TIME DELY	ALRM TYPE

A1	XMTR FWD PWR	NORMAL	00W	200W	256W	D1	0.1	MAJ
A2	XMTR RVS PWR	NORMAL	00W	0W	10W	D1	0.1	MIN
A3	TOWER LIGHTS	NORMAL	0.00V	3.4V	4.4V	D3	0.1	MAJ
A4	12VDC SUPPLY	NORMAL	00.0V	12.0V	14.0V	D8	0.1	MAJ
A5	PROTEK TEMP	NORMAL	26C					MIN

Return key = Main Menu, N = next screen, or Z = repaint:								

ANALOG INPUTS

This field displays the analog input number and the alphanumeric descriptor assigned by the user.

CURRENT STATUS

This field displays the input status on the last scan by the ProTek *jr+* prior to screen display.

NORMAL	Indicates an input is enabled and not in an alarm or active state.
ACTIVE	Indicates a qualifier input is enabled and in an active state.
MINOR	Indicates an input is enabled and in a minor alarm state.
MAJOR	Indicates an input is enabled and in a major alarm state.
DISABLE	Indicates an input has been disabled by the user.

CUR LVL

This field displays the value of the input in volts (V), watts (W), or degrees Celsius (C). Note that the input is read even when disabled.

LOWER LIMIT

This field displays the lower limit in volts (V), watts (W), degrees Celsius (C), or percent humidity programmed by the user in the I/O Parameters screen. An input falling below this level will go *active*.

UPPER LIMIT

This field displays the upper limit in volts (V), watts (W), degrees Celsius (C), or percent humidity programmed by the user in the I/O Parameters screen. An input rising above this level will go *active*.

QLFD BY

This field displays an indication that the input will go *active* only when the qualifier specified is also *active*.

TIME DELY

This field displays the time delay assigned by the user. The input must fall outside of nominal value at least this period before an alert call is generated.

ALARM TYPE

This field displays the alarm type assigned by the user (MAJ = major, MA3 = major with a return-to-normal alert, MIN = minor, and QLF = qualifier).

Reference pp.19-20 for more
detail on alarm type

I/O Status Report - Digital inputs

Site Name: Test									Time: 23:17
Site ID: 1111									Date: 12/08/99
I/O Status Report - Digital inputs									
DIGITAL INPUTS	CURRENT STATUS	CUR LVL	ACT LVL	QLFD BY	TIME DELY	ALRM TYPE	TIME ACTIVE	PREVIOUS DAY	

D1	DIGITAL KEY	NORMAL	H	L		QLF	00:00:00	02:12:23	
D3	TOWER LIGHTS ON	NORMAL	H	L	0.1	QLF	00:00:00	00:00:05	
D6	SITE SECURITY	NORMAL	H	L	1.0	MAJ	00:00:00	00:00:00	
D7	FIRE	NORMAL	H	L		MAJ	00:00:00	00:00:00	
D8	PROTEK AC	NORMAL	H	L		MIN	00:00:00	00:00:00	

Return key = Main Menu, N = next screen, or Z = repaint:									

DIGITAL INPUTS

This field displays the input number and the 16 character alphanumeric descriptor assigned by the user.

CURRENT STATUS

This field displays the status of the input. The possible states are the same as for the analog inputs described before.

Reference p.31

CUR LVL

This field displays the current level of the input. L = Low (-12 to +0.8 VDC) and H = High (+2.4 to +12 VDC). Note that this level is read by the *jr+* even if the input is disabled.

ACT LVL

This field displays the user assigned active levels as high (H) or low (L).

QLFD BY

This field displays any qualifying input linked to this input by the user. This qualifier must also be *active* for an alarm to be generated for this input.

TIME DELY

This field displays any time delay assigned by the user.

ALRM TYPE

This field displays the alarm type assigned by the user.

Reference pp.19-20 for more detail on alarm type

TIME ACTIVE

This field displays the input's active time since midnight of the current day.

PREVIOUS DAY

This field displays the input's active time for the previous 24 hours.

I/O Status Report - Input activity

Site Name: Test								Time: 23:17
Site ID: 1111								Date: 12/08/99
I/O Status Report - Input activity								
INP #	TEL/RELAY NUMBER	CURRENT STATUS	ALRM TYPE	EVENT TYPE	INACT TIME	WAIT TIME	MAXACT TIME	

I1	5550000	MAJOR	MAJ	NO ACTIVITY	0030	2	0060	
I2		NORMAL	MAJ		0600	1	0900	
I3								
I4								
I5								
I6								
I7								
I8								

Return key = Main Menu, N = next screen, or Z = repaint:								

INP

This field displays digital input identifiers I1 through I8.

TEL/RELAY NUMBER

This field displays the telephone number or relay output number assigned by the user to activate the input.

CURRENT STATUS

This field displays input states of the last scan by the *jr+* prior to screen display:

NORMAL	Indicates that the test is enabled and not in an alarm state.
MINOR	Indicates that the test is enabled and in a minor alarm state.
MAJOR	Indicates that the test is enabled and in a major alarm state.
DISABLE	Indicates that the test has been disabled by the user.

ALRM TYPE

This field displays the alarm type (MAJ or MIN only).

EVENT TYPE

This field displays either NO ACTIVITY or INPUT STUCK if either test has failed.

INACT TIME

This field displays the number of minutes the ProTek *jr+* will wait with no input activity before attempting to force the input *active*. The input is forced *active* with an activity call or by turning *on* the relay output. The telephone number to be called and the relay output to be turned *on* are defined in the TEL/RELAY NUMBER field.

WAIT TIME

This field displays the number of minutes the ProTek *jr+* will wait after the activity call before checking the input's status. If this value is 0 and no parameter is programmed in the TEL/RELAY NUMBER field, an immediate alarm will occur upon test failure.

MAXACT TIME

This field displays the number of minutes the input can stay *on* continuously without generating a MAJ stuck alarm.

I/O Status Report - Relay outputs

The Relay outputs screen summarizes any relays controlled by inputs as follows:

Site Name: Test			Time: 23:17
Site ID: 1111			Date: 12/08/99
I/O Status Report - Relay outputs			
Relay outputs	Status	Controlling inputs	

R1	RELAY 1	OFF	D1
R2		OFF	A2
R3		OFF	A3
R4		OFF	A4
R5		OFF	D5
R6		OFF	D6
R7		OFF	D7
R8		OFF	D8

Return key = Main Menu, N = next screen, or Z = repaint:			

Relay outputs

This field displays the relay output number and the 16 character alphanumeric description assigned by the user.

Status

This field displays the current status of each output as follows:

OFF	Indicates output in a normal <i>off</i> state.
ON	Indicates output has been turned <i>on</i> by a controlling input.
FCD-OFF	Indicates user forced the output <i>off</i> with the 06# (Force Relay Off) command.
FCD-ON	Indicates user forced the output <i>on</i> with the 05# (Force Relay On) command.
LTCH-ON	Indicates relay is latched <i>on</i> and will stay <i>on</i> until released by the user.

Controlling inputs

This field displays the associated controlling input.

Event History Report

The Event History Report lists all significant events in their order of occurrence. The *jr+* records the 511 most recent events in nonvolatile memory and lists the most recent event first. When the log is full, the oldest event is overwritten. If the number of events exceeds the screen's capacity, and the VDT is "smart," the message "MORE TO COME, ENTER RETURN TO CONTINUE, CTRL-C TO EXIT:" will be displayed at the bottom of the screen. If a "dumb" VDT is being used, CTRL S and CTRL Q can be used to stop and start display scrolling.

Site Name: Test				Time: 23:17
Site ID: 1111				Date: 12/08/99
Event History Report				
Date-time	ID	Name	Event	Level

12/08/99-00:36:38	D3	DIGITAL INPUT 3	MAJ ALARM	L
12/08/99-00:36:37	D1	DIGITAL INPUT 1	MAJ ALARM	L
12/08/99-00:36:36	D2	DIGITAL INPUT 2	MAJ ALARM	L
12/08/99-00:36:33	SYS	SYSTEM MESSAGE	RESET UNIT	
12/08/99-00:36:33	SYS	SYSTEM MESSAGE	AC PWR ON	
12/08/99-00:36:27	SYS	SYSTEM MESSAGE	AC PWR OFF	
12/08/99-00:36:24	D3	DIGITAL INPUT 3	RTN TO NRM	H
12/08/99-00:36:24	D2	DIGITAL INPUT 2	RTN TO NRM	H
12/08/99-00:36:23	D1	DIGITAL INPUT 1	RTN TO NRM	H
12/08/99-00:36:21	D2	DIGITAL INPUT 2	MAJ ALARM	L
12/08/99-00:34:38	D3	DIGITAL INPUT 3	MAJ ALARM	L
12/08/99-00:34:32	USR	COMMAND	ALERT ACK	
12/08/99-00:34:29	D3	DIGITAL INPUT 3	RTN TO NRM	H
12/08/99-00:34:28	USR	COMMAND	ALERT ACK	
12/08/99-00:34:02	D3	DIGITAL INPUT 3	MAJ ALARM	L
12/08/99-00:33:58	D1	DIGITAL INPUT 1	RTN TO NRM	H

Return = Main Menu, Z = repaint, CTRL-C = exit, or CLR = clear log:				

Date-time

This field displays the event date and time in 24-hour format to the nearest second.

ID

This field displays the cause of the event. There are five classes of cause identifiers:

Inputs	A1 – A4 and/or D1 – D8
Outputs	R1 – R8
Input activity tests	I1 – I8
User	USR
System	SYS

Name

This field displays the alphanumeric descriptor for inputs and outputs. If the event is caused by input inactivity, the telephone number or relay output number for that input activity test is displayed. If the event is caused by the user, the field contains COMMAND. If the event is caused by the system, the field shows SYSTEM MESSAGE. Events that may be reported by the system message are RESET UNIT, AC-PWR-ON, AC-PWR-OFF, CALL RETRY, CALL FAIL, and TIME LOG. A unit reset is performed following a loss of AC power in all ProTeks without DC back up.

Event

This field displays the actual event that occurred as follows:

MAJ ALARM	Indicates a major alarm.
MIN ALARM	Indicates a minor alarm.
RTN-TO-NRM	Indicates the input described has returned to normal from an alarm state.
DISABLED	Indicates the input described has been disabled by the user.
ENABLED	Indicates the input described has been enabled by the user.
UNPROGRAM	Indicates the input described has been unprogrammed by the user.
FORCED ON	Indicates the relay output described has been forced <i>on</i> by the user.
FORCED OFF	Indicates the relay output described has been forced <i>off</i> by the user.
RELEASED	Indicates the relay output has been released from user control or unlatched.
ALERT-DIS	Indicates the alert call sequence has been disabled by the user.
ALERT-ENB	Indicates the 08# (Disable Alert Call) command has been canceled by the user.
ALERT ACK	Indicates the alert call sequence has been acknowledged by the user.
RESET UNIT	Indicates the system has been reset.
HIST CLRD	Indicates the Event History Report has been cleared by the user.
MAJ-NO ACT	Indicates the input activity test failed and is in major alarm.
MAJ-STUCK	Indicates the input stuck active test failed and is in major alarm.
MIN-NO ACT	Indicates the Input activity test failed and is in minor alarm.
MIN-STUCK	Indicates the input stuck active test failed and is in minor alarm.
AC-PWR-ON	Indicates the AC Power has gone from <i>off</i> to <i>on</i> .
AC-PWR-OFF	Indicates the AC Power has been lost.
CALL RETRY	Indicates the outbound call did not complete and was re-attempted.
CALL FAIL	Indicates the outbound call and its retry did not complete.
TIME LOG	Indicates the digital input active time count was placed in the Event History Report at midnight.

Level

This field displays the input level at the time the event was logged. Digital inputs are shown as either H (High) or L (Low) levels. Note that events are logged regardless of their consequences. Some events may cause no action; for example, forcing a relay *off* that is already *off*.

To clear the log of all events, you may either enter the command CLR from the Command Menu screen or while in this screen via the CLR command .

Command Menu

The Command Menu screen allows the user to control the ProTek *jr+* remotely. The commands and the required entries are listed on the screen. Execution of these commands is logged in the Event History Report. Note that inputs and input activity tests can not be enabled or disabled if they are in the UPG (unprogrammed) state.

```
Site Name: Test                               Time: 23:17
Site ID: 1111                                 Date: 12/08/99

                                Command Menu

1XX  Disable input XX (XX = A1-A5, D1-D8)
2XX  Enable input XX (XX = A1-A5, D1-D8)

3X   Disable inp activity test (X = 1 or 2)
4X   Enable inp activity test (X = 1 or 2)

5RX  Force relay on where X = relay output number (1-8)
6RX  Force relay off where X = relay output number (1-8)
7RX  Release relay where X = relay output number (1-8)

8    Disable alert call
9    Enable alert call

Px   Terminal passthrough to port X
ACK  Acknowledge alert call
CLR  Clear the event history log
DLY  Delay answering next call for 3 minutes

-----
Return key = Main Menu or enter command:
```

Disable Input

The “1XX” command disables any activity that may be caused by that input. The input level out of limits (or at an active level, if digital) will not cause an alarm, turn *on* a controlled relay, or qualify another input if it is a qualifier. Note that an unprogrammed input cannot be disabled. When an input or Input activity test is disabled, the *jr+* resets its status to *normal*. If the input is *active* when it is subsequently enabled, it must go through a full qualification cycle before the *jr+* will put it in the active state.

Enable Input

The “2XX” command cancels the 01# (Disable Input) command.

Disable Input Activity Test

The “3X” command disables the no activity test and the stuck input test.

Enable Input Activity Test

The “4X” command cancels the 03# (Disable Input Activity Test) command.

Force Relay

The “5RX and 6RX” commands will override any controlling input and force the relay to the state commanded.

Release Relay

The “7RX” command returns control of the relay to its programmed controlling input(s). This is the only way to clear a previously latched relay.

Disable alert call

The “8” command aborts any alert calls in progress and prevents any future alarms from causing such calls.

Enable alert call

The “9” command cancels the 08# (Disable Alert Call) command. If an alert call was in progress when the command was issued, it will be resumed following the 09# (Enable Alert Call) command.

Option: command seen only with auxiliary serial port option installed

Px

The “Px” command initiates terminal passthrough to port X and is used to connect to the rear-panel serial port number x (x=1 or 2). In the “connected” mode, all characters from the user’s terminal (with the exception of certain control commands) are passed through to the rear panel, and all characters from the rear panel are passed to the user’s terminal. If parity is enabled for the rear panel port, the parity bits are stripped before the characters are passed to the user’s terminal.

All *jr+* serial port commands start with a tilde character at the beginning of a line, as in the Unix “tip” utility. The following commands are presently available:

- ~~ Send a tilde out the back panel
- ~. Disconnect
- ~# Send a 500ms break

ACK

The “ACK” command is entered in response to an alert call, and causes the *jr+* to halt the alert call sequence. This command also resets the front panel MAJOR and MINOR ALARM LED indicators.

CLR

The “CLR” command causes the Event History to be cleared of all previously stored events. The log is cleared of all events except the CLR command just executed. This command may also be executed from the Event History Report screen.

DLY

The “DLY” command inhibits the auto-answer function of the *jr+* for a three-minute period. This allows a user to log onto the *jr+* by modem, inhibit the *jr+* Telco auto-answer, quickly disconnect, and connect to a secondary device on the same site POTS line. This does not inhibit outbound alert calls occurring during the three-minute period and auto-answer will automatically be restored after three minutes. Any secondary device on the POTS line must be set to answer upon receipt of a greater number of rings than the *jr+*. For example, with the ProTek *jr+* set to answer after one ring, a secondary device would be set to answer after two or more rings.

Option: this command seen only with auxiliary serial port option installed

System Relay Configuration

The System Relay Configuration screen allows the user to enter descriptor of up to 16 alphanumeric characters for each of the eight relay outputs as part of the system initialization. Note that only the Description field can be edited on this screen. Controlling inputs are programmed on the appropriate I/O Parameters screen.

Site Name: Test	Time: 23:17		
Site ID: 1111	Date: 12/08/99		
System Relay Configuration			
#	Description	Controlling inputs	

R1	BACK UP XMTR	A1	
R2	BACKUP 12VDC	A4	
R3	SITE ALARM	D6	D7
R4			I2L
R5			
R6			
R7			

Return key = Main Menu, Z = repaint, or the desired relay # (1-8):			

Relay

This field displays the relay identifier R1 through R7.

Description

This field displays the relay identifier as programmed by the user.

Controlling Inputs

This field displays input status as reported from the last scan by the *jr+* prior to screen displays:

1st character: A (Analog), D (Digital), or I (Inactivity)

2nd character: 1-7 represents the specific input identifier

Appendix

A

General VDT Guidelines

The Video Display Terminal (VDT) provides the user the primary means of controlling the ProTek *jr+* operation. While the *jr+* supports several types of VDTs, the following general guidelines should be noted:

- All data entries must be terminated by entering the <return> key. Throughout the manual, this key is always implied if not specifically stated.
- The ProTek *jr+* responds to entry errors by sending the BEL code to the VDT, which usually will result in a beep. An error message will be displayed on the bottom line of the screen for some entry errors.
- All information screens represent the state of the ProTek *jr+* at the time the screen is requested, but may be updated by entering Z <return> while the cursor is on the last line of the screen.
- The user can return to the Main Menu from any screen at any place on the screen by entering CTRL C.
- When a major alarm occurs a BEL code will be sent to the VDT every minute until the VDT operator acknowledges the alarm. Acknowledging by telephone will stop alert calls to the person, but not the BEL code to connected and active VDTs'.

Smart Terminal Operation

The cursor is positioned in the field of interest and the user enters data directly in this field. The <return> key is used to skip fields. The <backspace> key can be used to correct entry errors prior to entering the <return> key.

The Status Report(s) and Event History Report are presented a full screen at a time. If more data is available for display the last line will display the message: "MORE TO COME, ENTER RETURN TO CONTINUE." On some terminals, the user can enter CTRL S to temporarily stop the data flow to the screen. The data flow can be restarted by CTRL Q.

Whenever the ProTek *jr+* detects an entry error in a data field the BEL code is sent to the VDT, the erroneous entry is erased, the cursor is repositioned to the end of the field to accept entry of new data.

Terminal Operation

Dumb Terminal Operation

For Analog, Digital and Input activity I/O Parameters screens the cursor is positioned on the last line of the screen where the field descriptor and field contents are displayed. As data is entered in each field, that line is scrolled up and the next field appears on the last line. The <return> key is used to skip fields. The <backspace> key can be used to correct entry errors prior to entering the <return> key.

The Status Report and Event History Report may require multiple screens to display all the information. In this case, the data will scroll off the screen until all information has been sent by the *jr+*. Entering CTRL S will temporarily stop the data scrolling. CTRL Q will resume the scrolling. When changing from one screen to another, some of the last lines of the previous screen may be displayed at the top of the screen along with the new screen.

When the ProTek *jr+* detects an entry error in a data field, the BEL code is sent to the VDT. The entry is not accepted but still displayed. The user may now enter the correct data; however, the invalid data will remain until the screen is refreshed.

Alert Call Message Structure

The following alert calls are representative of the formats possible for the five types of reporting devices supported by the *jr+*. The following examples were sent by Site 1111, site name Raleigh, NC and are reporting a low on the D7 and D8 inputs or a stuck *on* activity input I1. Exact formatting may vary depending upon the characteristics of your devices, especially when using an alphanumeric pager.

Type 1 = Voice

This is the format of alert calls sent to a voice telephone number. The messages are spoken by the ProTek *jr+* as follows:

Alert Call - Site 1111, Input D8, Major Alarm,
Present Status: Input D8 Major Alarm

Alert Call - Site 1111, Activity Test 1, Off, Major Alarm

Alert Call - Site 1111, Activity Test 1, On, Major Alarm

Type 2 = VDT / Printer

This is the format of alert calls sent to VDT or printer. The messages are displayed or printed as follows:

*Alert Call – Site: 1111 Raleigh, NC
**Call Time: 07/19/97-12:23:22 07/19/97-12:20:22
D8 ProTek AC Power Major L MAJOR ALARM = D8

*Alert Call – Site: 1111 Raleigh, NC
**Call Time: 07/19/97-12:23:22 07/19/97-12:20:22
555-0000 Major Stuck

Type 3 = Voice pager

Identical to the type 1 above.

Type 4 = Numeric pager

This is the format of alert calls sent to a numeric pager. The messages are displayed as follows:

1111-21 *means Site 1111 analog input A1*
1111-32 *means Site 1111 digital input D1*
1111-71 *means Site 1111 Activity Test I1*

The first four digits are the numeric Site ID. The two-digit number following the hyphen indicates the failed input where the leading digit is either 2 (analog input), 3 (digital input), or 7 (input activity) and the next digit identifies the input number.

No notification of a return-to-normal is possible in the numeric pager format. The alert call generated will simply indicate an alarm on the input that returned to normal.

Type 5 = Alphanumeric pager

This is the format of alert calls sent to an alphanumeric pager. The messages are displayed as follows:

*Alert-Site: 1111 - Raleigh, NC * D8 PROTEK AC
* MAJ ALARM * L MAJ=D78

This alert call indicates major alarms occurring on D7 and D8. Notice that only the first input to alarm, in this case D8 PROTEK AC, is designated in the main body of the message. Notice that the final field indicates any additional alarm states at the time of the alert call. If D8 was programmed as a MA2 type, and the input returned to normal before the above alert call was acknowledged the following alert would be generated:

*Alert-Site: 1111 - Raleigh, NC * D8 PROTEK AC
* MAJ ALARM * L MAJ=D7

This message indicates the time of the alert call only D7 was in a major alarm state. One can therefore infer that D8 has returned to its nominal state. If D7 and D8 had both returned to normal the final tag would read "MAJ = None".

If the first alert call had been acknowledged or had completed its calling sequence as dictated by the system parameters programming, and D8 returned to its nominal state, the following alert call would be sent instead.

*Alert-Site: 1111 - Raleigh, NC * D8 PROTEK AC
* RTN - TO - NRM * H MAJ=D7

This message indicates that D8 has returned to normal, but that D7 is still in an alarm state.

*Alert-Site: 1111 - Raleigh, NC * I1 5550000 * MAJ-Stuck

The following alert is in response to excessive activity *on* activity input I1:

B

Interface Connector Function by Pin-out

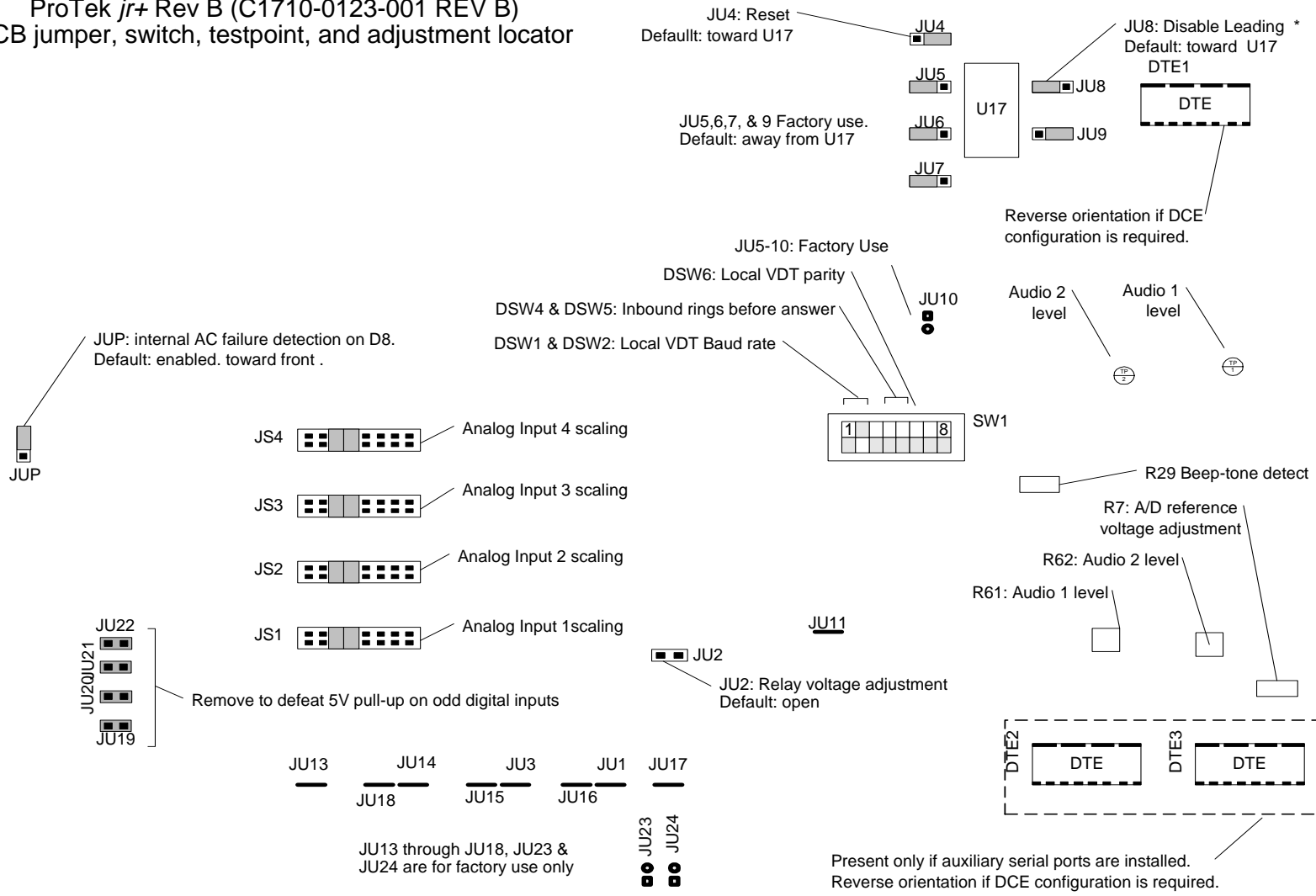
PIN	Color Code	Standard jr+	jr+ Trunking	jr+ Internal Relays
01	Blue/White	Relay Return 1	Driver Return 1	Relay Return 1
02	Orange/White	Relay Return 2	Driver Return 2	Relay Return 2
03	Green/White	Relay Return 3	Driver Return 3	Relay Return 3
04	Brown/White	Relay Return 4	Driver Return 4	Relay Return 4
05	Gray/White	Relay Return 5	Driver Return 5	Driver Return 5
06	Blue/Red	Relay Return 6	Driver Return 6	Driver Return 6
07	Orange/Red	Relay Return 7	Driver Return 7	Driver Return 7
08	Green/Red	Relay Return 8	Driver Return 8	Driver Return 8
09	Brown/Red	Unused	Analog Return 8	Unused
10	Gray/Red	Digital Return 1	Digital Return 1	Digital Return 1
11	Blue/Black	Digital Return 2	Digital Return 2	Digital Return 2
12	Orange/Black	Digital Return 3	Digital Return 3	Digital Return 3
13	Green/Black	Digital Return 4	Digital Return 4	Digital Return 4
14	Brown/Black	Digital Return 5	Digital Return 5	Digital Return 5
15	Gray/Black	Digital Return 6	Digital Return 6	Digital Return 6
16	Blue/Yellow	Digital Return 7	Digital Return 7	Digital Return 7
17	Orange./Yellow	Digital Return 8	Digital Return 8	Digital Return 8
18	Green/Yellow	Analog Return 1	Analog Return 1	Analog Return 1
19	Brown/Yellow	Analog Return 2	Analog Return 2	Analog Return 2
20	Gray/Yellow	Analog Return 3	Analog Return 3	Analog Return 3
21	Blue/Purple	Analog Return 4	Analog Return 4	Analog Return 4
22	Orange/Purple	Audio Input 1-	Analog Return 5	Audio Input 1-
23	Green/Purple	Audio Input 2-	Analog Return 6	Audio Input 2-
24	Brown/Purple	Unused	Analog Return 7	Unused
25	Gray/Purple	12 VDC	12 VDC	12 VDC
26	White/Blue	Relay Driver 1	Relay Driver 1	Relay 1
27	White/Orange	Relay Driver 2	Relay Driver 2	Relay 2
28	White/Green	Relay Driver 3	Relay Driver 3	Relay 3
29	White/Brown	Relay Driver 4	Relay Driver 4	Relay 4
30	White/Gray	Relay Driver 5	Relay Driver 5	Relay Driver 5
31	Red/Blue	Relay Driver 6	Relay Driver 6	Relay Driver 6
32	Red/Orange	Relay Driver 7	Relay Driver 7	Relay Driver 7
33	Red/Green	Relay Driver 8	Relay Driver 8	Relay Driver 8
34	Red/Brown	Unused	Analog Input 8	Unused
35	Red/Gray	Digital Input 1	Digital Input 1	Digital Input 1
36	Black/Blue	Digital Input 2	Digital Input 2	Digital Input 2
37	Black/Orange	Digital Input 3	Digital Input 3	Digital Input 3
38	Black/Green	Digital Input 4	Digital Input 4	Digital Input 4
39	Black/Brown	Digital Input 5	Digital Input 5	Digital Input 5
40	Black/Gray	Digital Input 6	Digital Input 6	Digital Input 6
41	Yellow/Blue	Digital Input 7	Digital Input 7	Digital Input 7
42	Yellow/Orange	Digital Input 8	Digital Input 8	Digital Input 8
43	Yellow/Green	Analog Input 1	Analog Input 1	Analog Input 1
44	Yellow/Brown	Analog Input 2	Analog Input 2	Analog Input 2
45	Yellow/Gray	Analog Input 3	Analog Input 3	Analog Input 3
46	Purple/Blue	Analog Input 4	Analog Input 4	Analog Input 4
47	Purple/Orange	Audio Input 1+	Analog Input 5	Audio Input 1+
48	Purple/Green	Audio Input 2+	Analog Input 6	Audio Input 2+
49	Purple/Brown	Unused	Analog Input 7	Unused
50	Purple/Gray	12 VDC Return	12 VDC Return	12 VDC Return

Interface Connector Pin-out by Function

Function	Connector Pin	Wire Color Code
12 VDC	25	Gray/Purple
12 VDC Return	50	Purple/Gray
Analog Input 1	43	Yellow/Green
Analog Input 2	44	Yellow/Brown
Analog Input 3	45	Yellow/Gray
Analog Input 4	46	Purple/Blue
Analog Return 1	18	Green/Yellow
Analog Return 2	19	Brown/Yellow
Analog Return 3	20	Gray/Yellow
Analog Return 4	21	Blue/Purple
Audio Input 1-	22	Orange/Purple
Audio Input 1+	47	Purple/Orange
Audio Input 2-	23	Green/Purple
Audio Input 2+	48	Purple/Green
Digital Input 1	35	Red/Gray
Digital Input 2	36	Black/Blue
Digital Input 3	37	Black/Orange
Digital Input 4	38	Black/Green
Digital Input 5	39	Black/Brown
Digital Input 6	40	Black/Gray
Digital Input 7	41	Yellow/Blue
Digital Input 8	42	Yellow/Orange
Digital Return 1	10	Gray/Red
Digital Return 2	11	Blue/Black
Digital Return 3	12	Orange/Black
Digital Return 4	13	Green/Black
Digital Return 5	14	Brown/Black
Digital Return 6	15	Gray/Black
Digital Return 7	16	Blue/Yellow
Digital Return 8	17	Orange,/Yellow
Relay Driver 1	26	White/Blue
Relay Driver 2	27	White/Orange
Relay Driver 3	28	White/Green
Relay Driver 4	29	White/Brown
Relay Driver 5	30	White/Gray
Relay Driver 6	31	Red/Blue
Relay Driver 7	32	Red/Orange
Relay Driver 8	33	Red/Green
Relay Return 1	1	Blue/White
Relay Return 2	2	Orange/White
Relay Return 3	3	Green/White
Relay Return 4	4	Brown/White
Relay Return 5	5	Gray/White
Relay Return 6	6	Blue/Red
Relay Return 7	7	Orange/Red
Relay Return 8	8	Green/Red
Unused	34	Red/Brown
Unused	9	Brown/Red
Unused	49	Purple/Brown
Unused	24	Brown/Purple

Front of the ProTek *jr+*

ProTek *jr+* Rev B (C1710-0123-001 REV B)
 PCB jumper, switch, testpoint, and adjustment locator



Rear



SPECIFICATIONS

Mechanical

Cabinet Dimensions: 19" Wide x 1.75" High x 12" Deep

Weight: 4 lbs.

Mounting: 19 inch rack or tabletop

Operating Temperature: -30° to 60° Celsius

Electrical

Interface Connectors.

50-pin RJ-21 connector for analog inputs, digital inputs, audio inputs, and relay-driver outputs

DB-25 connector for local port RS232C communications

RJ-11 modular telephone jack

2-Pin Molex™ connector for DC Power Input

3-Pin Molex™ connector for AC Power Input.

DB-9 (2) for optional 2nd and 3rd serial I/O ports

Power:

AC Power Input: 115 VAC Wall Mount Transformer, 12 VAC output

DC Power input: 12 VDC nominal (10.5 - 18 V)

Power Consumption: 3 W maximum

Benching Marq NVRAM, 10 year lifespan

VDTs Supported:

ANSI / VT-100, Qume QVT102, Televideo TV910/950, ADDS 3 A+, ADDS VP1/VP2. Any 'dumb' VDT (one with no cursor positioning capability).

Interface Specifications

Analog inputs:

Each input has 5 selectable voltage ranges: 0-2.5, 0-5, 0-10, 0-20, and 0-40 VDC.

Input impedance: 100K ohms

Maximum input voltage: ±50 VDC

Resolution is ± 0.4% of full scale

Accuracy for DCV

Accuracy for Watts: ±5%

SPECIFICATIONS cont.

Digital inputs:

Each input accepts TTL or EIA levels

Low level -12 to +0.8 VDC

High level +2.4 to +12 VDC

Undriven state is high (pulled up through an internal resistor to +12 VDC)

The input is diode protected internally against negative voltages

Active level is user programmable

Audio inputs:

Input level: from -20 dBm to + 11 dBm for 300-3000 Hz

Input impedance: 10K ohms

Relay Drivers:

Standard jr+

Eight relay drivers designated R1-R8. Each driver is an open collector capable of sinking 100 mA @ 32 VDC maximum

jr+ Relays Option

Four DPDT relays designated R1-R4. Each is capable of 1 A at 120 VAC

Four relay drivers designated R5-R8. Each driver is an open collector capable of sinking 100 mA @ 32 VDC maximum. (An internal diode must be removed for voltages greater than 12 V.)

RS-232C Ports:

Standard jr+

Asynchronous Serial RS-232C interface, DCE or DTE

1 Start, 8 Data, 1 Stop Bits (No parity)

XON-XOFF Flow Control

Internal Modem Port baud rate: 14.4 KBPS V.32 bits

baud rate: 1200, 9600, 19200, 38400

Standard jr+ with auxiliary port option

The auxiliary port option provides two additional serial ports that may be configured independently of the local VDT and modem.

Asynchronous Serial RS-232C interface, DCE or DTE.

1 Start, 8 Data, 1 Stop Bits (Odd, even, or no parity).

XON-XOFF Flow Control.

baud rate: 1200, 9600, 19200, 38400

Telco Coupler:

Standard Loop Start Interface with Tone Signal (Meets Part 68 of FCC Requirements for Network Interface)

Ringer Equivalence Number: 0.2



System Initialization Worksheets

System Parameters Worksheet (single line mode)

Use this table to record parameters programmed on pp. 14-15.

FIELD	DESCRIPTION	VALUE	NOTES
A	Password		Any four digit combination
B	Site Name		Up to 16 Alphanumeric Characters
C	Site ID		Any four digits combination
D	Time		Use 24 hour format: HH:MM (use colon)
E	Date		Use the MM/DD/YY (use fwd slash)
F	Alert Call Sequence		Up to 4 entries separated by commas
G	Alert Call Attempts Per Type		Acceptable entry: 0-4, <i>default 2</i>
H	Alert Call Attempt Interval		Acceptable entry: 1-9 minutes, <i>default 5</i>
I	Status Report Time		Use 24 hour format, <i>default none</i>
J	Status Interval		Acceptable entry: 1-9 days, <i>default none</i>
K	Terminal Answer Detect		Suggested entry: 3, <i>default 3</i>
L	Timed Value		Suggested entry: 0-9 2.5 seconds units, <i>default 0</i>
M	Number of Alert Calls		Suggested entry: 0-9, <i>default 0 (for unlimited calls)</i>

Alert Call Worksheet

Use this table to record parameters programmed on p. 16.

	TYPE	TELEPHONE #	ALPHA PAGER #	ALPHA PASSWORD
1				
2				
3				
4				

1 = Voice, 2 = VDT/Printer, 3 = Voice Pager, 4 = Numeric Pager, 5 = Alphanumeric Pager

System Logging Configuration Worksheet

Use this table to record parameters programmed on p. 17.

#	EVENT TYPE	STATE (ON/OFF)
1	MAJOR ALARM	
2	MINOR ALARM	
3	INPUT ENABLE/DISABLE/UNPROGRAM	
4	RELAY FORCE/RELEASE	
5	AC POWER ON/OFF	
6	ALERT CALL ENABLE/DISABLE/ACK	
7	ALERT CALL FAIL/RETRY	
8	TIME LOG	
9	RESET, HISTORY CLEAR	

Analog Input Worksheet

Use this table to record parameters programmed on pp. 18-20.

INP #	INPUT DESCRIPTION	LOWER LIMIT	UPPER LIMIT	VLT SCL	QLFD BY	TIME DELY	ALRM TYPE	PGM STAT	CONTROLLED RELAYS
A1									
A2									
A3									
A4									
A5	<i>PROTEK TEMP</i>	<i>0C</i>	<i>50C</i>					<i>MIN</i>	<i>DES</i>

Digital Input Worksheet

Use this table to record parameters programmed on p. 21.

INP #	INPUT DESCRIPTION	ACT LVL	QLFD BY	TIME DELY	ALRM TYPE	PGM STAT	CONTROLLED RELAYS
D1							
D2							
D3							
D4							
D5							
D6							
D7							
D8							

Input Activity Worksheet

Use this table to record parameters programmed on pp. 22-23.

INP #	TELEPHONE NUMBER (OR RELAY)	INACT TIME (MIN)	WAIT TIME (MIN)	MAXACT TIME (MIN)	ALRM TYPE	PGM STAT	CTLD RELAYS
I1							
I2							

System Relay Configuration Worksheet

Use this table to record parameters programmed on p. 24.

#	DESCRIPTION	CONTROLLING INPUT*
R1		
R2		
R3		
R4		
R5		
R6		
R7		
R8		

