Little Red™

Owner's Manual

M114-1600-101
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Miranda

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LITTLE RED Basics

Basic connection
The basic functional connection for LITTLE RED consists of a Time Code input and a connection to a RS-232 communication port of a computer or other equipment. In addition a connector provides for connection of General Purpose Interface (GPI) (contact closure) inputs and outputs to the LITTLE RED.

LTC Input
The input accepts a Linear Time Code (LTC) signal from either a balanced or unbalanced source. The shell of the BNC input connector is floating above ground. For an unbalanced source connect the input using a standard BNC-BNC or a BNC-Phono cable. For a balanced source leave the cable shield unconnected at the LITTLE RED end and connect the balanced signal between the center pin and the shell of the BNC connector.

RS-232 Connections
The LITTLE RED is designed for direct connection to a PC computer's standard 9 pin communications port. A DB-25S to DE-9P adapter may be required for some computers. For a Macintosh or SGI computer a DE-9P to Mini-DIN-9P or 8P adapter is required.

Power is derived from the RTS, DTR and TX pins. The power conversion circuit functions whether the voltage on these pins is negative or positive. Internal to the LITTLE RED, DSR is connected to DTR and CTS is connected to RTS for compatibility with software and communication ports which expect these connections.

The LITTLE RED transmits on pin 2 and receives on pin 3. Data flow control between LITTLE RED and the host device is by an X-On/X-Off software handshake only. LITTLE RED does not use hardware handshaking.

General Purpose Interface (GPI) Connector
A 10 pin connector on the side of the LITTLE RED is used for both GPI inputs and outputs. A short cable with mating connector is supplied with the unit for termination by the customer. The mating

connector is a J.S.T. series PH (See 'Notes' for part numbers.), 2mm x 10 contacts, connector.

GPI Outputs
There are four opto-isolated outputs (2 groups of 2) on the LITTLE RED. Each output is a NPN transistor with the emitters connected to one of two isolated GPI output common pins. These four outputs may be expanded to 15 by the addition of external circuitry (See page 9.) and the use of a software driver.

The operation of each of the GPI outputs is software programmable to either operate on a set Time Code condition or to function under direct software control.

GPI Connector	
Pin	**Function**
1	Output Common 1,2
2	Output 1
3	Output 2
4	Output 3
5	Output 4
6	Output Common 3,4
7	Input Ground
8	Input 1
9	Input 2
10	Ground

GPI Inputs
There are two GPI inputs. These inputs are protected by clamping diodes and current limiting series resistors. The inputs are pulled up internally to logic Vcc and may be operated by a pull down to logic ground. The common logic ground is connected to the frame ground of the communications port.

Each of the GPI inputs may be programmed to transmit a serial report to the RS-232 port. This may be displayed by the host software on the computer or may be used to initiate another action.

Status LED
A bicolor LED on the side of the case indicates the operational status of the LITTLE RED.

Red	=	Power on.
Green	=	LTC input valid.

Serial communications protocol

Serial Communications Protocol
Control of the LITTLE RED is by a simple string of ISO characters. Control strings and User Group hexadecimal digits are case sensitive and <u>must</u> be entered as upper case characters. Commands, except control character commands, are terminated with a carriage return character (0D$_{hex}$).

LITTLE RED responds to valid commands that require a data response with a data report. All other commands are acknowledged by: 'OK>' for valid commands, 'NA>' for commands which are temporarily disabled by another function or 'NV>' for not valid commands. All responses are terminated with a carriage return character.

The serial port operates at 9600 baud, with 8 data bits, no parity and 1 stop bit. For continuous reporting of a maximum length report at 30 frames per second there is about 6% idle time left between reports.

Data Report Format for Time Address, User Groups & Status.
The output preset data report format may consist of up to three blocks of data. The Time Address, User Groups and Status blocks may be individually enabled or disabled. The blocks are separated by single space characters. The Time Address and User Groups may also be formatted without separator characters for faster transmission or with separator characters for legibility when sent directly to a screen or printer.

RF>1 PRINT format. **HH:MM:SS;FF hh.hh.hh.hh sfftt**

RF>0 Un formatted. **HHMMSSFF hhhhhhhh sfftt**

RT>0 Exclude Time Address from report.

RT>1 Include Time Address with report.

RU>0 Exclude User Groups from report.

RU>1 Include User Groups with report.

RS>0 Exclude Status data from report.

RS>1 Include Status data with report.

Time Address: 'HH:MM:SS:FF' or **'HHMMSSFF'**.
Eight decimal ISO characters with or without colon separators.
For 30fps Drop Frame Time Code the last colon separator is
changed to a semicolon.

Legend	Description	BCD Values
HH	Hours	00-23
MM	Minutes	00-59
SS	Seconds	00-59
FF	Frames	00-23, 24, 29

User Groups: 'hh.hh.hh.hh' or **'hhhhhhhh'**.
Eight hexadecimal ISO characters (0-9,A-F) with or without period
separators.

Status String: 'sfftt'.
   Special string consisting of 5 characters as follows:
   Time Code reading status 's' is indicated by the 1st character.

Code	Time Code Reading Status
+	Valid read, monotonic ascending Time Address.
X	No read or no input.
H	Valid code, **H**eld Time Address count.
B	Valid code **B**efore discontinuity
D	**D**iscontinuity in Time Address from previous reading.

Time Code flag bits 'ff' are displayed in the 2nd & 3rd characters.
Each Time Code flag bit is represented by a binary bit in the two
hexadecimal characters (00 - 3F).

Code	Flag bit	24, 30 fps	25 fps
01	Frame 40's bit	Drop Frame flag	not used
02	Frame 80's bit	Color Field flag	Color Field flag
04	Second 80's bit	Phase bit	User Group Usage 1
08	Minute 80's bit	User Group Usage 1	User Group Usage 2
10	Hour 40's bit	User Group Usage 3	User Group Usage 3
20	Hour 80's bit	User Group Usage 2	Phase bit

Trigger Source codes '**tt**' for the report are displayed in the 4th &
5th characters. The Trigger source is
represented by a binary bit in the two
hexadecimal characters (00 - 3F). If
there is no trigger source as in a
continuous report or a direct request
then these two characters will be zeros.
More than one GPI can be represented
simultaneously. (e.g. The code 25
represents GPI Input 2 and GPI Outputs
1 and 3 occurring simultaneously).

Code	Source
01	GPI Output 1
02	GPI Output 2
04	GPI Output 3
08	GPI Output 4
10	GPI Input 1
20	GPI Input 2

Search Points * = 1 to 4

There are four Search Point registers which may be individually
loaded with either a Time Address or User Groups value. The
Time Code is continuously being compared for a match with these
registers. The search results may be used to operate the GPI
Outputs or to initiate serial reports. The Time Address or User
Groups search values must be entered without separator
characters.

T*>'time'   Set Search Point register-* for a Time Address
search value. For the Time Address search point the '?' character
may be used as a wild card. For example:

   T2>12300000   The search point will be valid at 12:30:00:00
                 once per day.

   T3>????0000   The search point which will be true every hour.

   T4>??????02   The search point will be valid once per second.
                 This may be used in conjunction with instruction
                 04>S to output a GPI pulse every second.

   *Note: For Drop Frame Time Code the frame counts 00 & 01 are
   skipped for some minutes.*

U*>'UBs'   Set Search Point register-* for a User Groups search
              value.

Set Reporting Mode and Flow control.

   RM>1   Report for each Time Code frame.

   RM>0   Terminate continuous reporting.

   <ctrl>+Q   X-ON initiates continuous report.

<ctrl>+S   X-OFF terminates reporting.

<ctrl>+R   Report Time Address, User Groups and Status as selected.

<ctrl>+F   Report Status only.

<ctrl>+T   Report Time Address only.

<ctrl>+U   Report User Groups only.

Note: The command 'RM>1' is Not Available and will receive a 'NA>' response while a serial report is enabled from a Preset Search Point, from a GPI Input or from Report on Error.

Serial Report for Preset Search Points * = 1 to 4 or ? for all.

A serial report may be triggered when a portion of the Time Code matches the contents of the Search Point register.

R*>0   Disable serial report for Search Point * and for Report on Error.

R*>R   Enable formatted serial report for Search Point *.

R*>S   Enable Status only serial report for Search Point *.

R*>T   Enable Time Address only serial report for Search Point *.

R*>U   Enable User Groups only serial report for Search Point *.

Serial Report on Error

This report will be triggered by an abnormality in the Time Code and enables an analysis of the change. The report status indicates the reason for the report.

RE>R   Report on Error enabled.

RE>0   Report on Error disabled.

Note: Enabling a serial report from any Search Point or from Report on Error terminates continuous transmission of data reporting.

‡ The report format will be the selected preset report format.

GPI Outputs * = 1 to 4 or ? for all.

There are four GPI Outputs that may be controlled directly or that may be preset to output a pulse when the corresponding Search Point register value matches the contents of the Time Code.

    O*>0   Set GPI Output -* Off.

    O*>1   Set GPI Output -* On.

    O*>P   Pulse GPI Output -* (duration 1 frame).

    O*>S   Enable GPI Output -* to pulse @ Search Point match.

Note: The pulse will remain true as long as the recovered Time Code matches the search criteria.
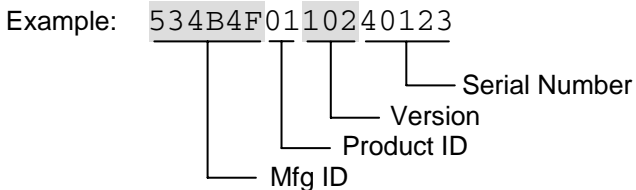
GPI Inputs * = 1, 2 or ? for all.

Two GPI Inputs can trigger a report to the serial port. The format of the report from each input may be independently selected

    I*>0   Disable GPI Input -*.

    I*>R   Enable GPI Input -* to trigger of report as formatted.

    I*>S   Enable GPI Input -* to trigger Status only report.

    I*>T   Enable GPI Input -* to trigger Time Address only report.

    I*>U   Enable GPI Input -* to trigger User Groups only report.
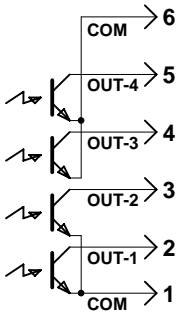
Note: Enabling any Input GPI to trigger a report terminates continuous transmission of data reporting.
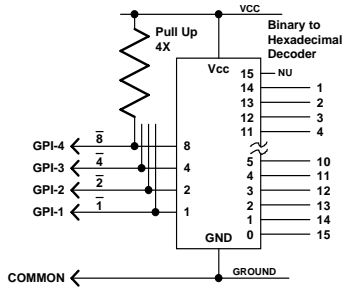
Miscellaneous

    SP>   Save settings to memory.

    RP>   Restore settings (executed automatically at power on).

    GS>   Get Product ID Number.
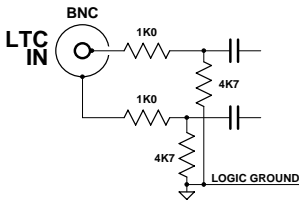
Example: 534B4F0110240123
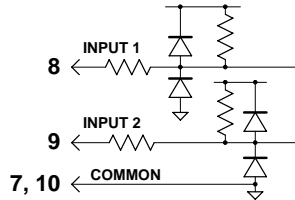
                                    — Serial Number

                            — Version

                    — Product ID

             — Mfg ID

Interface circuit information

GPI Output Circuit

Pin	Signal
6	COM
5	OUT-4
4	OUT-3
3	OUT-2
2	OUT-1
1	COM

GPI Expansion Circuit

Pull Up 4X

VCC

Binary to Hexadecimal Decoder

Vcc   15   NU
       14   1
       13   2
       12   3
       11   4

GPI-4   8̄   8
GPI-3   4̄   4
GPI-2   2̄   2
GPI-1   1̄   1

        5   10
        4   11
        3   12
        2   13
        1   14
        0   15

GND

COMMON   GROUND

LTC Input Circuit

BNC
LTC IN
1K0
4K7
1K0
4K7
LOGIC GROUND

GPI Input Circuit

INPUT 1   8
INPUT 2   9
COMMON   7, 10

DE-9S

NC 1	6 DTR
TX	CTS
RX	RTS
DSR	
GND 5	9 NC
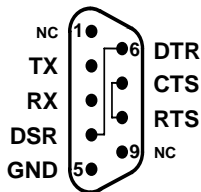
RS-232 Connection

Specifications

RS-232
- Connector: DE-9S.
- 9600 baud, no parity, 8 data bits, 1 stop bit.
- Internal RTS-CTS connection.
- Internal DTR-DSR connection.

LTC input
- Balanced or unbalanced.
- Impedance: > 10KΩ.
- Level: $100mV_{p-p}$ to $10V_{p-p.}$
- Speed: Nominal play @ 24, 25 30 frames per second.

Power
- From incoming RS-232, DTR, RTS and TX.
- Load: 10 mA @ 5V.

GPI Output
- Quantity 4.
- Drive: 10mA.
- Max. Reverse Voltage: 30V.
- True = transistor conducting.

GPI Input
- Quantity 2.
- Internal pull up to logic Vcc.
- True = pull down to ground.

Size/Weight
- 33mm x 16mm x 84mm.
- 60 grams.
- Shipping weight 0,5 Kg.

Notes

J.S.T. Connector
     Pins, for housing (10)   SPH-022T-PO.5S
     Housing, 10 contact   S10B-PH-SM

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Revision Notes

1. Version 111, S/N: 40020 and later.
    Time Code reading status code for 'No Read or No Input'
    changed from '-' to 'X'.

2. Version 112, S/N 40120 and later.
    This version changes the reporting procedure for the
    continuous reporting modes (RM>1) as follows:
    1   If Time Address and/or User Groups are reported without
        a Status Report, then reporting will stop if the input Time
        Code disappears or becomes unreadable. When Time
        Code returns then reporting will recommence.
    2. If the Status Report is included in the reports, then the 'X'
        character in the Status portion of the report will flag the
        absence of input Time Code.

Operational Hints

Little Red will be restored to its stored settings if there is a power
failure or momentary power drop out. It is advised that the desired
settings be saved (see save settings command 'SP>') to ensure
that Little Red is in the desired mode, even after a power failure.

To ensure that the commands RM>1 and RM>0 are operational
clear all other reporting modes by sending the following clearing
commands R?>0 I?>0 (note each command string is terminated
with a carriage return character).

How to contact us:

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