HomeWorks RS232 Protocol Guide

A Protocol Guide for the Lutron HomeWorks Processor

LUTRON®

HomeWorks Interactive RS-232 Command Set

Monitor Output Format

- Keypad button press
- Keypad button release
- Keypad button hold
- Keypad button double tap
- Keypad led states
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Requests

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- Keypad led monitoring off
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System Commands

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- Login to system
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- Set RS-232 port handshaking type

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- Request processor address
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- Request RS-232 port handshaking type
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- Request system processor O/S revisions
- Help

Revision History

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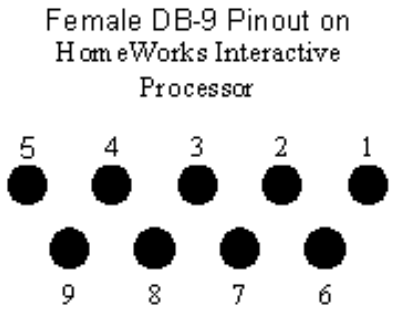
Technical Specifications

- HomeWorks Interactive processors require the use of a standard 9-pin DB9 serial cable for communications with external equipment. This cable must be a 9-wire, straight through cable, not a 3-wire cable.
- The available baud rates are 9600, 19200, 38400, 57600, and 115,200 baud. When dip switch #1 on S2 is up the baud rate is 9600 baud, and when it is down the baud rate is set to the user setting according to the SETBAUD command
- The HomeWorks Interactive processors use hardware handshaking for flow control by default. Software handshaking will not work. The hardware handshaking may be disabled using the SETHAND command. If hardware handshaking is disabled, Lutron recommends using a low baud rate to avoid buffer overflow problems.
- Other communication settings include, 8 data bits, 1 stop bit, and no parity bit



HWI Pin Number	HWI Pin Name	Description for HWI Processor	Required for Hardware Handshaking	Required for Simple Communications (hardware handshaking disabled)
1	DCD	Data Carrier Detect (input)		
2	TX	Transmit Data (output)	X	X
3	RX	Receive Data (input)	X	X
4	DSR	Data Set Ready (input)	X	
5	GND	Ground	X	X
6	DTR	Data Terminal Ready (output)	X	

7	CTS	Clear To Send (input)	X	
8	RTS	Request To Send (output)	X	
9	RI	Ring Indicate (input)		

General Specifications

- The HWI processor connects to the serial port on a laptop using a standard DB-9 serial cable (all pins straight through)
- The default configuration for the HWI processor is to use hardware handshaking, which requires the pin connections as shown in the table above. The SETHAND command can be used to disable hardware handshaking if needed.
- When hardware handshaking is used, communications with the HWI processor will be reliable up to 115200 bps. (Note: Some older laptops cannot communicate reliably at 115200 bps)
- The DTR output from the HWI processor is used by the HWI programming software. It indicates to the software that the processor is powered and ready for communications. This line is optional, and the DTR check can be disabled in the HWI programming software. Contact Lutron for more information.
- The DSR input to the HWI processor is used to determine if an external device is controlling the handshaking lines. The DSR line must be asserted for the hardware handshaking to work properly. If the DSR line is unasserted while hardware handshaking is enabled, the processor will ignore the CTS input and always transmit characters.
- All communications lines indicated in the Hardware Handshaking column are required when connecting a modem to an HWI processor.

Using Simple 3-Wire Communications

- If hardware handshaking communications lines are not available on the external serial device, it is possible to communicate to the HWI processor using a simple 3-wire interface. The pins required are shown in the table above.
- The hardware handshaking should be disabled on the processor using the SETHAND command.
- In this configuration, the HWI processor will be unable to tell the external equipment to stop sending data, and the external equipment will be unable to tell the HWI processor to stop sending data. This can result in buffer overruns if the communications rates are too high.
- Care must be taken to understand the amount of data being sent to/from the HWI processor using the 3-wire interface. Unnecessary monitoring messages should be disabled on the HWI processor to minimize communications.
- Lutron does not recommend using the simple 3-wire interface to connect to external equipment that may send continuous data at a high data rate, or if your external equipment cannot process a continuous stream of monitoring output from the HWI processor.
- The 3-wire interface cannot be used to connect a modem to an HWI processor.

SETBAUD — Set RS-232 port baud rate

Syntax
SETBAUD, <baud rate>

Processor Responds with one of the following
For this change to take effect, you must cycle the processor power.

For this change to take effect, you must first set dip switch #1 on S2 in the down position and then cycle the processor power.

Parameter	Description	Format
baud rate	new RS-232 port baud rate	you must select one of the following baud rates 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

Description
When dip switch #1 on S2 is in the up position, the processor RS232 port baud rate is fixed at 9600 baud. When dip switch #1 on S2 is in the down position, the processor RS232 port baud rate will be set to the user setting determined by the SETBAUD command. When the SETBAUD command is issued, the processor power must be cycled for the change to take effect. This will allow laptops that have problems communicating at 115200 baud to use an intermediate baud rate that is faster than 9600 baud in order to minimize download times. Also, with dip switch #1 on S2 set to the up position, the processor can be set to a known baud rate (9600 baud), ensuring reliable communications. This adjustable baud rate also provides greater flexibility when connecting to external A/V equipment.

Example
Set RS-232 port baud rate to 57600 bps

```
L232> SETBAUD, 57600
For this change to take effect, you must cycle the processor power.
```

See Also
GETBAUD - Request the RS-232 port baud rate

GETBAUD — Get RS-232 port baud rate

Syntax
GETBAUD, <port address>

Processor responds with the following
`RS232 port baud rate on port <port address> is <baud rate>`

Parameter	Description	Format
port address (optional)	the port address the request is for	pp:ll:aaa (see RS232 Port Addressing) This parameter is optional. If omitted, the request will default to the port that receives the command
baud rate	the RS-232 port baud rate	the processor will respond with one of the following 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

Description
Requests the RS-232 port baud rate setting for an RS232 port in the system.

Example
Get RS-232 port baud rate for the port you are connected to

```
L232> GETBAUD
RS232 port baud rate on port 01:03:001 is 115200
```

Example
Get RS-232 port baud rate for link 7 on processor 2

```
L232> GETBAUD, 2:7:1
RS232 port baud rate on port 02:07:001 is 115200
```

See Also
SETBAUD - Set RS-232 port baud rate

Device Address Formatting

- Every physical device in the system (RPM zone, D48 zone, GRAFIK Eye, etc) has a system device address.
- Each device address is separated into 3-5 elements as shown in the tables below
- Device address elements are listed in the order shown, separated by a period, colon, slash, backslash or dash.
- The entire device address may be enclosed in [brackets] if desired.
- All letters and spaces in the address are ignored and may be used to improve readability
- Examples of device address formats for Processor 1, Link 1, Module Interface Address 3, RPM Module 2, RPM zone 4

  [01:01:03:02:04]

  1:1:3:2:4

  1.1.3.2.4

  1/1/3/2/4

  [proc 1 : link 1 : mi 3 : module 2 : zone 4]

RPM Dimmer/Switch

Processor	Link	Router (MI)	Module	Output
1-16	1	0-15	1-8	1-4

D48 Dimmer/Switch

Processor	Link	Router (D48)	Bus	Dimmer

1-16	4-6	1-4	1-12	1-4

H48 Dimmer/Switch

Processor	Link	Router (H48)	Bus	Dimmer
1-16	4-6	1-4	1-6	1-8

RF Dimmer/Switch

Processor	Link	Device Type	Dimmer
1-16	8	1	1-64

RF Keypad

Processor	Link	Device Type	Keypad
1-16	8	2	1-32

RF Repeater

Processor	Link	Device Type	Repeater
1-16	8	3	1-4

Keypad/Sivoia Control/CCO/CCI/TEL-9

Processor	Link	Keypad
1-16	4-6	1-32

RS232 Port

Processor	Link	Port
1-16	3 or 7	1

GRAFIK Eye Main Unit

Processor	Link	GRAFIK Eye
1-16	4-6	1-8

GRAFIK Eye Main Unit Single Zone

Processor	Link	GRAFIK Eye	Output
1-16	4-6	1-8	1-8

SETHAND

Set RS-232 port handshaking type

Syntax
SETHAND, <handshaking>

Processor Responds with one of the following
```
No handshaking enabled
Hardware handshaking enabled
```

Parameter	Description	Format
handshaking	new RS-232 port handshaking type	you must select one of the following handshaking types NONE, HW (Hardware)

Description
This command is used to specify the 232 port handshaking method to be used. When set to NONE, the HWI processor will ignore the CTS input, and always transmit data. When set to HW (hardware), the HWI processor will only transmit characters if the CTS input is low.

Example
Set RS-232 port handshaking to NONE

```
L232> SETHAND, NONE
No handshaking enabled
```

See Also
GETHAND - Request RS-232 port handshaking type

GETHAND

Get RS-232 port handshaking type

Syntax
GETHAND, <port address>

Processor responds with the following
```
RS232 port handshaking on processor <port address> is <handshaking type>
```

Parameter	Description	Format
port address (optional)	the port address the request is for	pp:ll:aaa (see RS232 Port Addressing) This parameter is optional. If omitted, the request will default to the processor that receives the command
handshaking type	the RS-232 port handshaking type	The processor will respond with one of the following handshaking types None, Hardware Handshaking

Description
This command is used to request the handshaking method being used on an RS232 port.

Example
Get RS-232 port handshaking for the port you are connected to

```
L232> GETHAND
RS232 port handshaking on port 01:03:001 is Hardware Handshaking
```

Example
Get RS-232 port handshaking for link 7 on processor 2

```
L232> GETHAND, 2:7:1
RS232 port handshaking on port 02:06:001 is None
```

See Also

SETHAND - Set RS-232 port handshaking type

Command Formatting

- All commands are in ASCII characters.
- Each command is made up of fields, seperated by commas, and terminated with a carriage return <CR> = $0D Hex.
- Spaces are ignored, allowing for visual formatting of commands
- Where letters are used, case is ignored
- Some commands allow parameters to be omitted, and a default value will be used. In this case, the delimiting commas must still be used
- There is a limit of 255 characters per command.

Time Formatting

- Times are used when entering fade or delay times, and for setting the internal processor clock
- When setting the system time, **24 hour format** must be used
- When entering times the following formats may be used:

HH:MM:SS	MM:SS	SS
HH = Hours		
MM = Minutes	MM = Minutes	
SS = Seconds	SS = Seconds	SS = Seconds

- Examples

  4:23 AM = 04:23:00

  3:15 PM = 15:15:00

  4 sec fade time = 00:00:04 or 00:04 or 4

  1 minute delay time = 00:01:00 or 1:00

Date Formatting

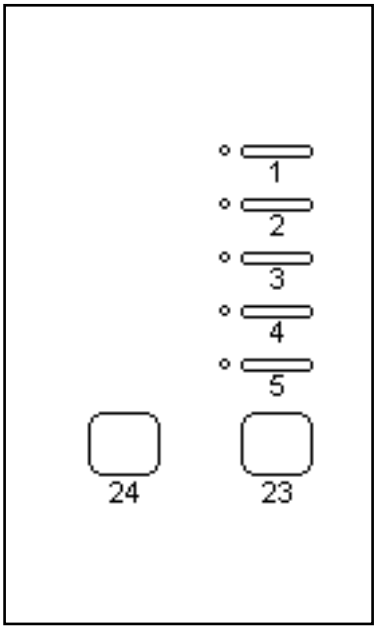
- Dates are used when setting the internal processor calendar
- The month and day must have 2 digits, and the year must have 4 digits
- HomeWorks Interactive is year 2000 compliant
- The following formats can be used for entering the date

MM / DD / YYYY	MM = Month
MM \ DD \ YYYY	DD = Day of month
MM - DD - YYYY	YYYY = Year

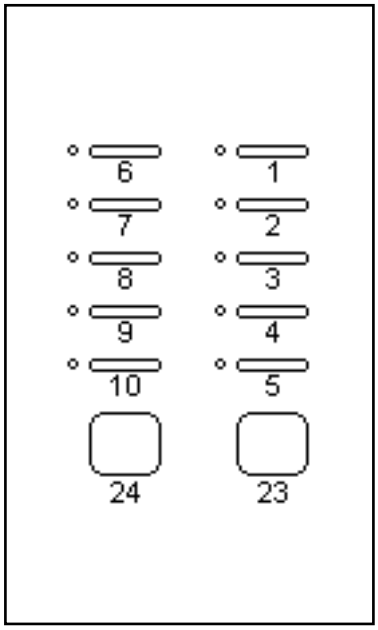
- Example

  January 10, 1999 = 01/10/1999

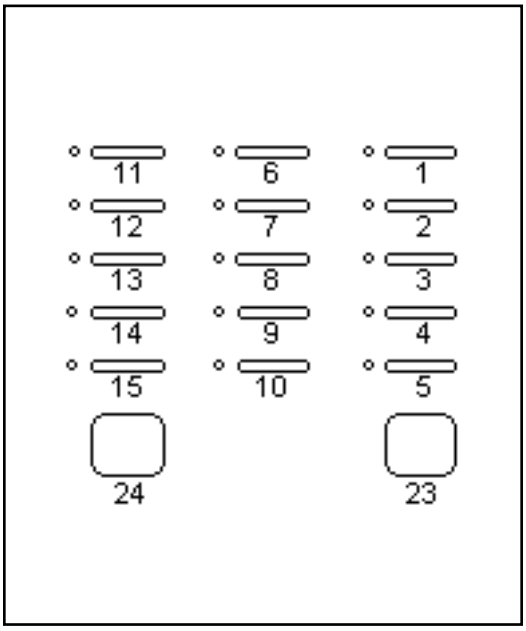
Keypad Button Numbering



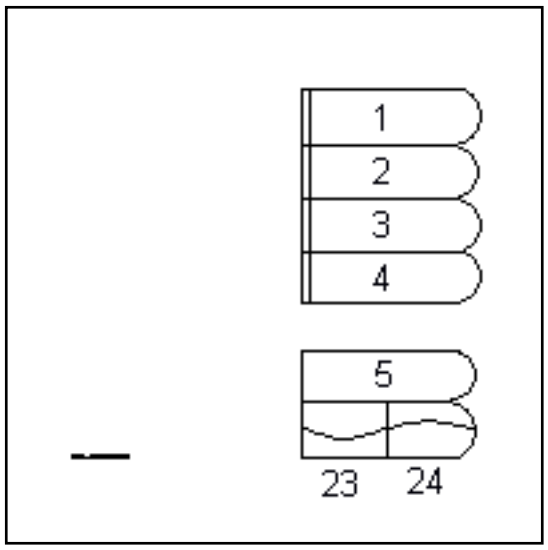
HWI-KP5



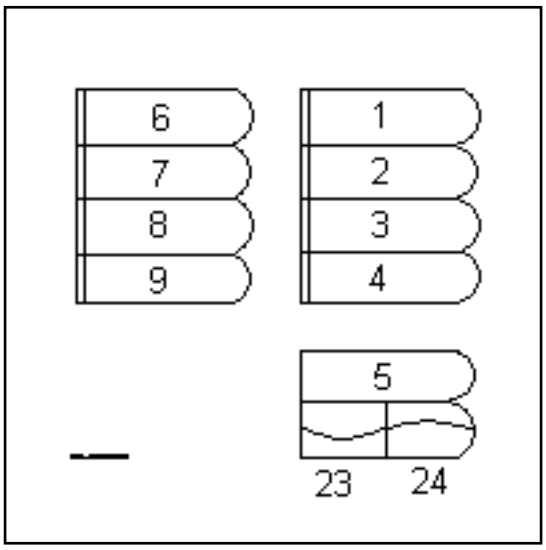
HWI-KP10



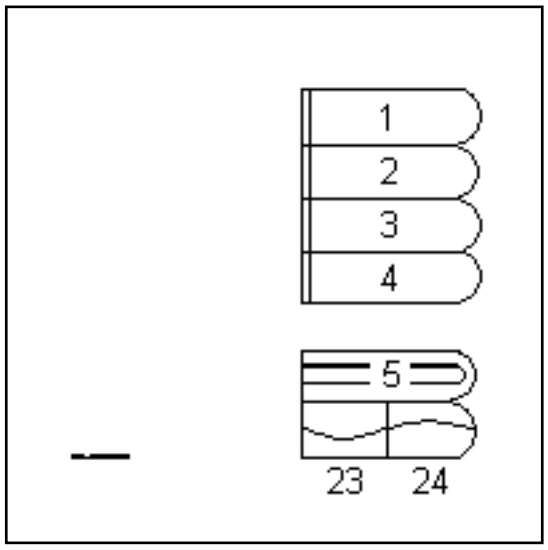
HWI-KP15



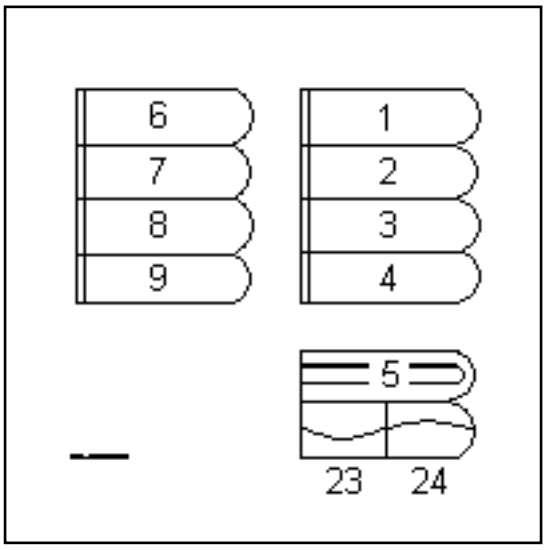
HWI-4SE-M



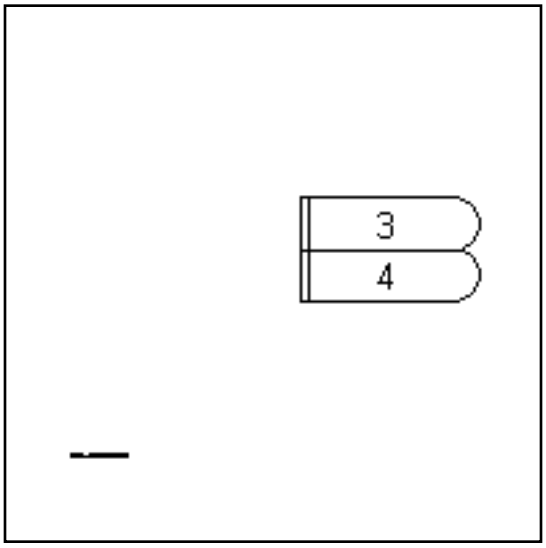
HWI-8SE-M



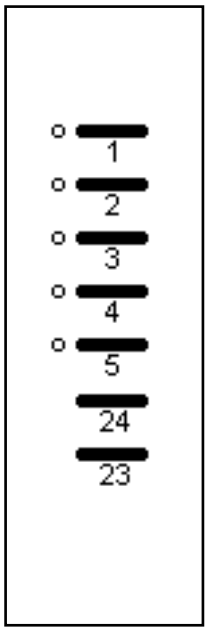
HWI-4SE-IR



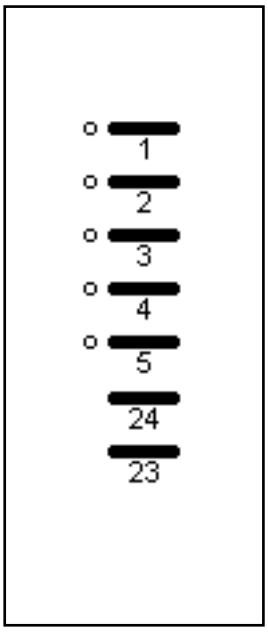
HWI-8SE-IR



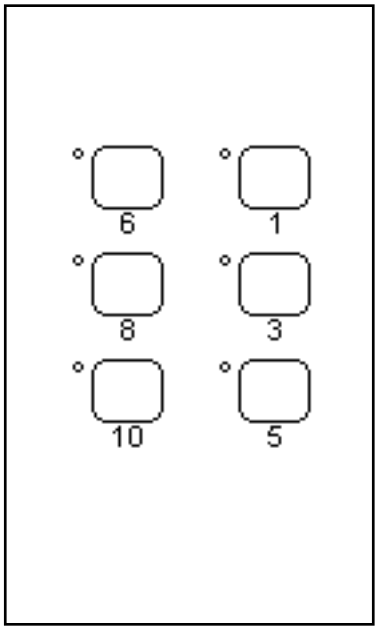
HWI-2SE



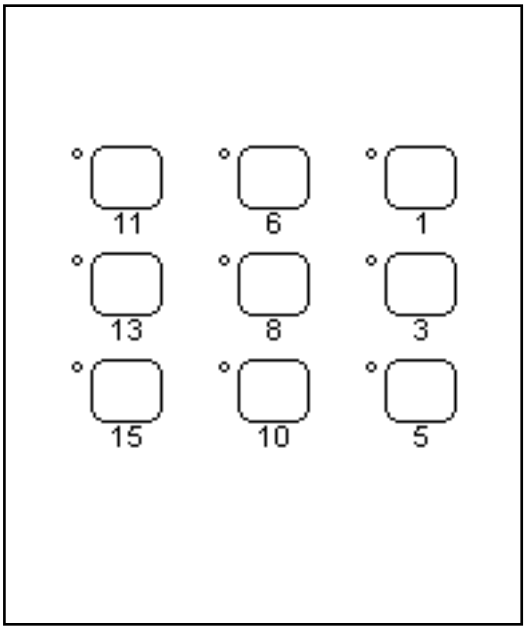
HWI-KP5-DN



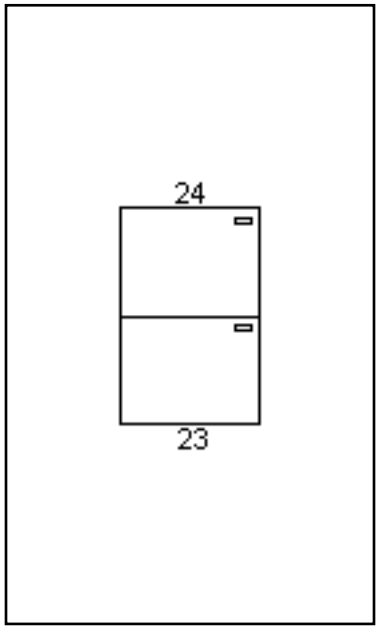
HWI-KP5-DW



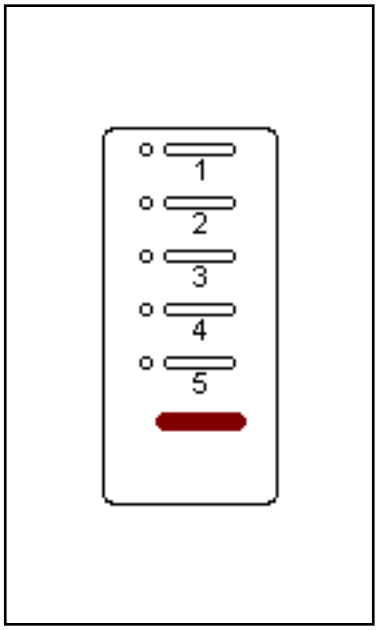
HWI-KP-LB6



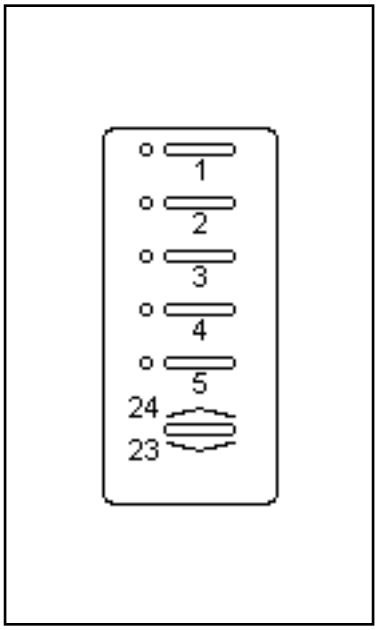
HWI-KP-LB9



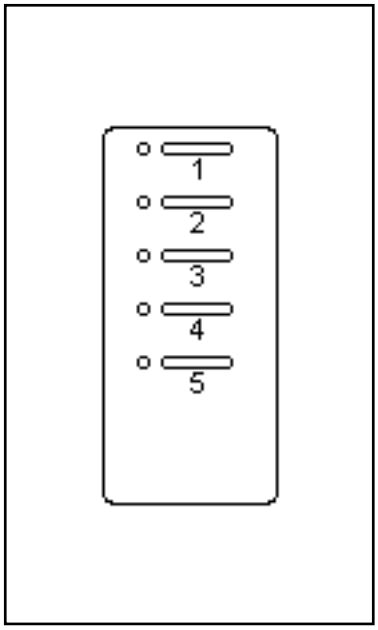
HWI-2B



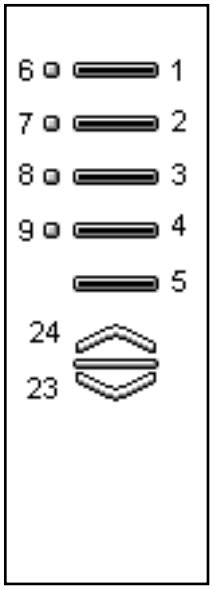
HWI-5S-IR



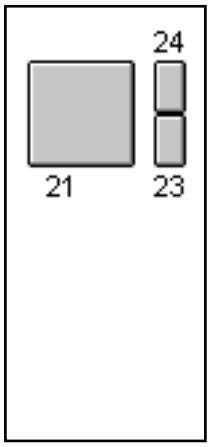
HWI-5S-M



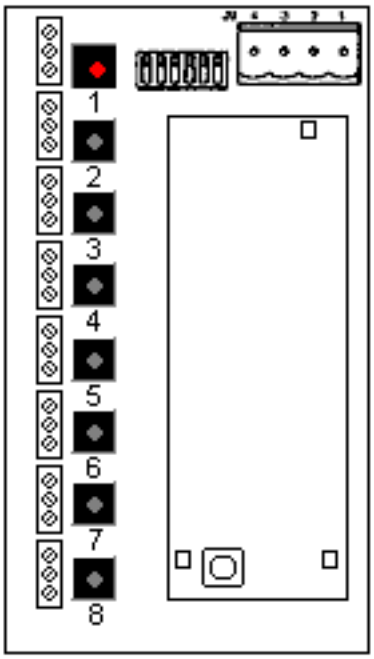
HWI-5S-NM



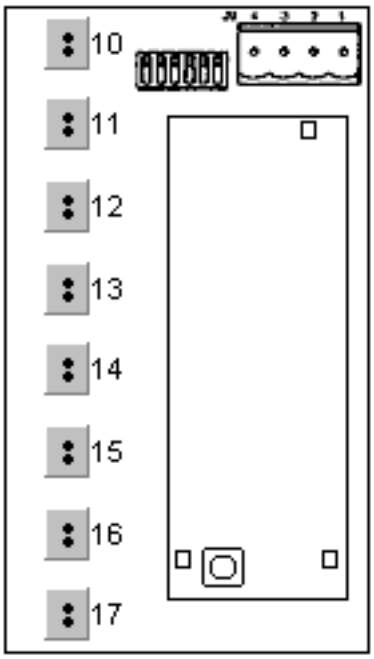
GRX-4/8-IT



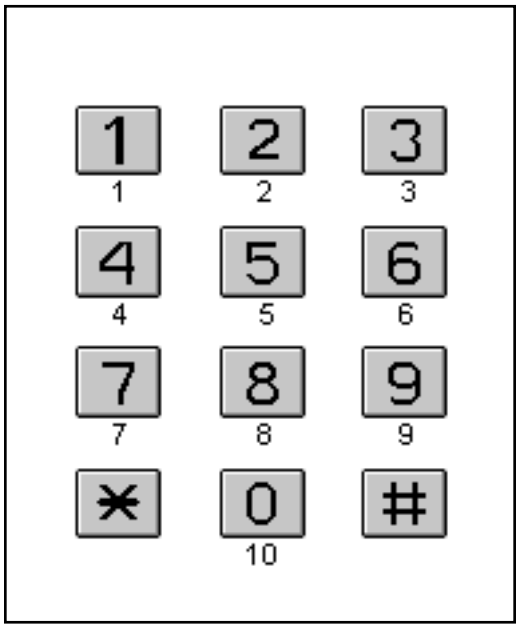
SPACER



HWI-CCO



HWI-CCI



HWI-TEL 9

KBP Monitor String

Keypad Button Press Monitor String

Syntax
KBP, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number that was pressed	1 - 24

Description
The KBP monitor string is output from a processor when a keypad button is pressed

Example
Someone presses button 1 on processor 1, link 4, keypad address 4

```
KBP, [01:04:04], 1
```

See Also
KBR Monitor String
KBH Monitor String
KBDT Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

KBR Monitor String

Keypad Button Release Monitor String

Syntax
KBR, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number that was released	1 - 24

Description
The KBR monitor string is output from a processor when a keypad button is released

Example
Someone releases button 1 on processor 1, link 4, keypad address 4

```
KBR, [01:04:04], 1
```

See Also
KBP Monitor String
KBH Monitor String
KBDT Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

KBH Monitor String

Keypad Button Hold Monitor String

Syntax
KBH, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number that was held	1 - 24

Description
The KBH monitor string is output from a processor when a keypad button is held

Example
Someone holds button 1 on processor 1, link 4, keypad address 4

```
KBH, [01:04:04], 1
```

See Also
KBP Monitor String
KBR Monitor String
KBDT Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

KBDT Monitor String

Keypad Button Double Tap Monitor String

Syntax
KBDT, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number that was double tapped	1 - 24

Description
The KBDT monitor string is output from a processor when a keypad button is double tapped

Example
Someone double taps button 1 on processor 1, link 4, keypad address 4

```
KBDT, [01:04:04], 1
```

See Also
KBP Monitor String
KBR Monitor String
KBH Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

KBMON

Keypad/Dimmer/Sivoia Control Button Monitoring On

Syntax
KBMON

Processor Responds
Keypad button monitoring enabled

Description
Enables keypad button monitoring on this processor. When any keypad button in the system is pressed, a monitoring message will be output from this processor indicating which processor, link, keypad address and button was activated.

Also enables dimmer button monitoring on this processor. When an H48 or RF dimmer/switch in the system is pressed, a monitoring message will be output from this processor indicating which processor, link, and dimmer was activated.

Also enables Sivoia control button monitoring on this processor. When any keypad button in the system is pressed, a monitoring message will be output from this processor indicating which processor, link, Sivoia control address and button was activated.

Example
Enable keypad/dimmer/Sivoia control button monitoring

```
L232> KBMON
Keypad button monitoring enabled
```

See Also
KBMOFF - Keypad/Sivoia Control Button Monitoring Off
Keypad Button Press Monitoring Output Format
Keypad Button Release Monitoring Output Format
Keypad Button Hold Monitoring Output Format
Keypad Button Double Tap Monitoring Output Format
Dimmer Button Press Monitoring Output Format
Dimmer Button Release Monitoring Output Format
Dimmer Button Hold Monitoring Output Format

Dimmer Button Double Tap Monitoring Output Format
Sivoia Control Button Press Monitoring Output Format
Sivoia Control Button Release Monitoring Output Format
Sivoia Control Button Hold Monitoring Output Format
Sivoia Control Button Double Tap Monitoring Output Format

KBMOFF

Keypad/Dimmer/Sivoia Control Button Monitoring Off

Syntax
KBMOFF

Processor Responds
Keypad button monitoring disabled

Description
Disables keypad button monitoring on this processor. When a keypad button in the system is pressed, this processor will not send a monitor output string.

Also disables dimmer button monitoring on this processor. When an H48 or RF dimmer/switch in the system is pressed, this processor will not send a monitor output string.

Also disables Sivoia control monitoring on this processor. When a Sivoia control button in the system is pressed, this processor will not send a monitor output string.

Example
Disable keypad/dimmer/Sivoia control button monitoring

```
L232> KBMOFF
Keypad button monitoring disabled
```

See Also
KBMON - Keypad/Sivoia Control Button Monitoring On
Keypad Button Press Monitoring Output Format
Keypad Button Release Monitoring Output Format
Keypad Button Hold Monitoring Output Format
Keypad Button Double Tap Monitoring Output Format
Dimmer Button Press Monitoring Output Format
Dimmer Button Release Monitoring Output Format
Dimmer Button Hold Monitoring Output Format
Dimmer Button Double Tap Monitoring Output Format
Sivoia Control Button Press Monitoring Output Format
Sivoia Control Button Release Monitoring Output Format

Sivoia Control Button Hold Monitoring Output Format
Sivoia Control Button Double Tap Monitoring Output Format

DBP Monitor String

Dimmer Button Press Monitor String

Syntax
DBP, <address>, <button number>

Parameter	Description	Format
address	system address of the H48 or RF dimmer/switch	see device address formatting description
button number	button number that was pressed	1

Description
The DBP monitor string is output from a processor when the tap switch for an H48 or RF dimmer/switch is pressed. This string is not generated when the tap switch for a D48 dimmer/switch is pressed nor when the raise/lower rocker for any dimmer is pressed.

Example
Someone presses the H48 tap switch on processor 1, link 4, router 1, bus 3, dimmer 2.

```
DBP, [01:04:01:03:02], 1
```

Someone presses the RF tap switch on processor 1, link 8, dimmer 54. (The device type is 1 for all RF dimmers/switches.)

```
DBP, [01:08:01:54], 1
```

See Also
DBR Monitor String
DBH Monitor String
DBDT Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

DBR Monitor String

Dimmer Button Release Monitor String

Syntax
DBR, <address>, <button number>

Parameter	Description	Format
address	system address of the H48 dimmer/switch	see device address formatting description
button number	button number that was released	1

Description
The DBP monitor string is output from a processor when the tap switch for an H48 dimmer/switch is released. This string is not generated when the tap switch for a D48 or RF dimmer/switch is released nor when the raise/lower rocker for any dimmer is released.

Example
Someone releases the H48 tap switch on processor 1, link 4, router 1, bus 3, dimmer 2.

```
DBP, [01:04:01:03:02], 1
```

See Also
DBP Monitor String
DBH Monitor String
DBDT Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

DBH Monitor String

Dimmer Button Hold Monitor String

Syntax
DBH, <address>, <button number>

Parameter	Description	Format
address	system address of the H48 dimmer/switch	see device address formatting description
button number	button number that was held	1

Description
The DBH monitor string is output from a processor when the tap switch for an H48 dimmer/switch is held. This string is not generated when the tap switch for a D48 or RF dimmer/switch is held.

Example
Someone holds the H48 tap switch on processor 1, link 4, router 1, bus 3, dimmer 2.

```
DBH, [01:04:01:03:02], 1
```

See Also
DBP Monitor String
DBR Monitor String
DBDT Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

DBDT Monitor String

Dimmer Button Double Tap Monitor String

Syntax
DBDT, <address>, <button number>

Parameter	Description	Format
address	system address of the H48 or RF dimmer/switch	see device address formatting description
button number	button number that was double tapped	1

Description
The DBP monitor string is output from a processor when the tap switch for an H48 dimmer/switch is double tapped. It is output from a processor when the tap switch for an RF dimmer/switch is double tapped only if the dimmer has keypad-like programming. This string is not generated when the tap switch for a D48 dimmer/switch is double tapped.

Example
Someone double taps the H48 tap switch on processor 1, link 4, router 1, bus 3, dimmer 2.

```
DBDT, [01:04:01:03:02], 1
```

Someone double taps the programmed RF tap switch on processor 1, link 8, dimmer 54. (The device type is 1 for all RF dimmers/switches.)

```
DBDT, [01:08:01:54], 1
```

See Also
DBP Monitor String
DBR Monitor String
DBH Monitor String
KBMON - Keypad button monitoring on
KBMOFF - Keypad button monitoring off

SVBP Monitor String

Sivoia Control Button Press Monitor String

Syntax
SVBP, <address>, <button number>

Parameter	Description	Format
address	system address of the Sivoia control	[processor : link : address] see device address formatting description
button number	button number that was pressed	1 - 24

Description
The SVBP monitor string is output from a processor when a Sivoia control button is pressed

Example
Someone presses button 1 on processor 1, link 4, Sivoia control address 4

```
SVBP, [01:04:04], 1
```

See Also
SVBR Monitor String
SVBH Monitor String
SVBDT Monitor String
SVS Monitor String
KBMON - Keypad/Sivoia control button monitoring on
KBMOFF - Keypad/Sivoia control button monitoring off

SVBR Monitor String

Sivoia Control Button Release Monitor String

Syntax
SVBR, <address>, <button number>

Parameter	Description	Format
address	system address of the Sivoia control	[processor : link : address] see device address formatting description
button number	button number that was released	1 - 24

Description
The SVBR monitor string is output from a processor when a Sivoia control button is released.

Example
Someone releases button 1 on processor 1, link 4, Sivoia control address 4

```
SVBR, [01:04:04], 1
```

See Also
SVBP Monitor String
SVBH Monitor String
SVBDT Monitor String
SVS Monitor String
KBMON - Keypad/Sivoia control button monitoring on
KBMOFF - Keypad/Sivoia control button monitoring off

SVBH Monitor String

Sivoia Control Button Hold Monitor String

Syntax
SVBH, <address>, <button number>

Parameter	Description	Format
address	system address of the Sivoia control	[processor : link : address] see device address formatting description
button number	button number that was held	1 - 24

Description
The SVBH monitor string is output from a processor when a Sivoia control button is held

Example
Someone holds button 1 on processor 1, link 4, Sivoia control address 4

```
SVBH, [01:04:04], 1
```

See Also
SVBP Monitor String
SVBR Monitor String
SVBDT Monitor String
SVS Monitor String
KBMON - Keypad/Sivoia control button monitoring on
KBMOFF - Keypad/Sivoia control button monitoring off

SVBDT Monitor String

Sivoia Control Button Double Tap Monitor String

Syntax
SVBDT, <address>, <button number>

Parameter	Description	Format
address	system address of the Sivoia control	[processor : link : address] see device address formatting description
button number	button number that was double tapped	1 - 24

Description
The SVBDT monitor string is output from a processor when a Sivoia control button is double tapped.

Example
Someone double taps button 1 on processor 1, link 4, Sivoia control address 4

```
SVBDT, [01:04:04], 1
```

See Also
SVBP Monitor String
SVBR Monitor String
SVBH Monitor String
SVS Monitor String
KBMON - Keypad/Sivoia control button monitoring on
KBMOFF - Keypad/Sivoia control button monitoring off

SVS Monitor String

Sivoia Scene Command Monitor Output String

Syntax
SVS, <address>, <scene command>, <status>

Parameter	Description	Format
address	system address of Sivoia control that changed	[processor : link : address] see device address formatting description
scene command	Sivoia scene command	1 = Preset 1 2 = Preset 2 3 = Preset 3 R = Raise L = Lower C = Close o = Open S = Stop
status	current status of the scene command	STOPPED or MOVING

Description
The SVS monitor string is output from a processor when a Sivoia changes scene commands.

Example 1
Someone selects Preset 1 on the Sivoia controlled by processor 1, link 6, Sivoia control address 3.

```
SVS, [01:06:03], 1, MOVING
```

When the same Sivoia stops at Preset 1.

```
SVS, [01:06:03], 1, STOPPED
```

Example 2
Someone selects the raise command on the Sivoia controlled by processor 1, link 6, Sivoia control address 3.

```
SVS, [01:06:03], R, MOVING
```

When the same Sivoia stops raising.

```
SVS, [01:06:03], S, STOPPED
```

See Also

SVBP Monitor String
SVBR Monitor String
SVBH Monitor String
SVBDT Monitor String
KBMON - Keypad/Sivoia control button monitoring on
KBMOFF - Keypad/Sivoia control button monitoring off

KLS Monitor String Keypad LED Monitor String

Syntax
KLS, <address>, <led states>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
led states	the current state of the keypad's LEDs	The first digit is LED 1, the last digit is LED 24 0 = Off 1 = On 2 = Flash 1 3 = Flash 2

Description
The KLS monitor string is output from a processor when any led on a keypad changes state

Example
An led on processor 1, link 4, keypad address 10 changes state

```
KLS, [01:04:10], 100000000000000000000000
```

See Also
KLMON - Keypad button monitoring on
KLMOFF - Keypad button monitoring off

KLMON

Keypad LED Monitoring On

Syntax
KLMON

Processor Responds
Keypad led monitoring enabled

Description
Enables keypad led monitoring on this processor. When any keypad led in the system changes state, a monitoring message will be output from this processor indicating which processor, link, interface, address, and its new led state

Example
Enable keypad led monitoring

```
L232> KLMON
Keypad led monitoring enabled
```

See Also
KLMOFF - Keypad Led Monitoring Off
Keypad Led Monitoring Output Format

KLMOFF

Keypad LED Monitoring Off

Syntax
KLMOFF

Processor Responds
Keypad led monitoring disabled

Description
Disables keypad led monitoring on this processor. When any keypad led in the system changes state, this processor will not send an led monitor output string.

Example
Disable keypad led monitoring

```
L232> KLMOFF
Keypad led monitoring disabled
```

See Also
KLMON - Keypad Led Monitoring On
Keypad Led Monitoring Output Format

DL Monitor Output

Dimmer Level Monitor String

Syntax
DL, <address>, <level>

Parameter	Description	Format
address	system address of zone that changed	[processor : link : interface : module or bus : zone] see device address formatting description
level	new level of the zone	0 - 100 (percent)

Description
The DL monitor string is output from a processor when any zone in the system changes level

Example
Processor 1, link 1, MI address 0, RPM module 2, zone 4 changes level to 50%

```
DL, [01:01:00:02:04], 50
```

See Also
DLMON - Dimmer level monitoring on
DLMOFF - Dimmer level monitoring off

DLMON

Dimmer Level/Sivoia Scene Monitoring On

Syntax
DLMON

Processor Responds
Dimmer level monitoring enabled

Description
Enables dimmer level monitoring on this processor. When any dimmer in the system changes level, a monitoring message will be output from this processor indicating which processor, link, interface and address.

Also enables Sivoia scene selection monitoring on this processor. When any Sivoia MDU in the system changes scene, a monitoring message will be output from this processor indicating which processor, link and Sivoia control address.

Example
Enable dimmer level/Sivoia scene monitoring

```
L232> DLMON
Dimmer level monitoring enabled
```

See Also
DLMOFF - Dimmer Level/Sivoia Scene Monitoring Off
Dimmer Level Monitoring Output Format
Sivoia Scene Monitoring Output Format

DLMOFF

Dimmer Level/Sivoia Scene Monitoring Off

Syntax
DLMOFF

Processor Responds
Dimmer level monitoring disabled

Description
Disables dimmer level monitoring on this processor. When a zone in the system changes levels, this processor will not send a monitor output string.

Also disables Sivoia scene monitoring on this processor. When a Sivoia MDU in the system changes scenes, this processor will not send a monitor output string.

Example
Disable dimmer level/Sivoia scene monitoring

```
L232> DLMOFF
Dimmer level monitoring disabled
```

See Also
DLMON - Dimmer Level/Sivoia Scene Monitoring On
Dimmer Level Monitoring Output Format
Sivoia Scene Monitoring Output Format

GSS Monitor String

GRAFIK Eye Scene Select Monitor Output String

Syntax
GSS, <address>, <scene number>

Parameter	Description	Format
address	system address of GRAFIK Eye that changed	[processor : link : address] see device address formatting description
scene number	scene number selected	0 - 16 0 = Off 1 - 16 = scene 1 - scene 16

Description
The GSS monitor string is output from a processor when a GRAFIK Eye changes scenes

Example
Someone selects scene 1 on processor 1, link 4, GRAFIK Eye address 3

```
GSS, [01:04:03], 1
```

See Also
GSMON - GRAFIK Eye scene monitoring on
GSMOFF - GRAFIK Eye scene monitoring off

GSMON

GRAFIK Eye Scene Monitoring On

Syntax
GSMON

Processor Responds
GRAFIK Eye scene monitoring enabled

Description
Enables GRAFIK Eye scene monitoring on this processor. When any GRAFIK Eye in the system changes scenes, a monitoring message will be output from this processor indicating which processor, link, address and scene.

Example
Enable GRAFIK Eye scene monitoring

```
L232> GSMON
GRAFIK Eye scene monitoring enabled
```

See Also
GSMOFF - GRAFIK Eye Scene Monitoring Off
GRAFIK Eye Scene Monitoring Output Format

GSMOFF

GRAFIK Eye Scene Monitoring Off

Syntax
GSMOFF

Processor Responds
GRAFIK Eye scene monitoring disabled

Description
Disables GRAFIK Eye scene monitoring on this processor. When any GRAFIK Eye in the system changes scenes, this processor will not send a GRAFIK Eye scene monitoring output string.

Example
Disable GRAFIK Eye scene monitoring

```
L232> GSMOFF
GRAFIK Eye scene monitoring disabled
```

See Also
GSMON - GRAFIK Eye Scene Monitoring On
GRAFIK Eye Scene Monitoring Output Format

FADEDIM

Fade a dimmer

Syntax
FADEDIM, <intensity>, <fade time>, <delay time>, <address 1>, ..., <address n>

Parameter	Description	Format
intensity	target intensity for specified dimmer	0 - 100 (percent)
fade time	time for dimmers to fade from current intensity to target intensity	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds
delay time	time for dimmers to delay before starting to fade	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds
address	system address of dimmer to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Fades one or more system dimmers to a target intensity using a specified fade time and after a specified delay time.

Example
Fade processor 1, link1, MI address 0, RPM module 2, zone 3 and processor 2, link 4, D48 address 1, Vareo Bus 4, Vareo address 1 to 100% with a 1 second fade time and a 2 second delay time

```
L232> FADEDIM, 100, 1, 2, [1.1.0.2.3], [2.4.1.4.1]
```

See Also
FLASHDIM - Flash a system dimmer
STOPFLASH - Stop flashing a system dimmer
RAISEDIM - Raise a system dimmer
LOWERDIM - Lower a system dimmer

STOPDIM - Stop a dimmer raise/lower

FLASHDIM

Flash a dimmer

Syntax
FLASHDIM, <intensity>, <flash rate>, <address 1>, ..., <address n>

Parameter	Description	Format
intensity	Intensity to flash the dimmers to	0 - 100 (percent)
flash rate	The amount of time the dimmers are on/off	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, flash rate defaults to 2 seconds
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Starts flashing one or more system zones at a specified rate. The dimmer is flashed between the specified intensity and Off.

Example
Start flashing processor 1, link1, MI address 0, RPM module 2, zone 3 once a second

```
L232> FLASHDIM, 100, 1, [1:1:0:2:3]
```

See Also
STOPFLASH - Stop flashing a system dimmer
FADEDIM - Fade a system dimmer
RAISEDIM - Raise a system dimmer
LOWERDIM - Lower a system dimmer
STOPDIM - Stop a dimmer raise/lower

STOPFLASH

Stop flashing a dimmer

Syntax
STOPFLASH, <address 1>, ..., <address n>

Parameter	Description	Format
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Stops flashing one or more system zones

Example
Stop flashing processor 1, link1, MI address 0, RPM module 2, zone 3

```
L232> STOPFLASH, [1:1:0:2:3]
```

See Also
FLASHDIM - Flash a system dimmer
FADEDIM - Fade a system dimmer
RAISEDIM - Raise a system dimmer
LOWERDIM - Lower a system dimmer
STOPDIM - Stop a dimmer raise/lower

RAISEDIM

Raise a dimmer

Syntax
RAISEDIM, <address 1>, ..., <address n>

Parameter	Description	Format
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Starts raising one or more system dimmers

Example
Start raising processor 1, link1, MI address 0, RPM module 2, zone 3

```
L232> RAISEDIM, [1:1:0:2:3]
```

See Also
LOWERDIM - Lower a system dimmer
STOPDIM - Stop a dimmer raise/lower
FADEDIM - Fade a system dimmer
FLASHDIM - Flash a system dimmer
STOPFLASH - Stop flashing a system dimmer

LOWERDIM

Lower a dimmer

Syntax
LOWERDIM, <address 1>, ..., <address n>

Parameter	Description	Format
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Starts lowering one or more system dimmers

Example
Start lowering processor 1, link1, MI address 0, RPM module 2, zone 3

```
L232> LOWERDIM, [1:1:0:2:3]
```

See Also
RAISEDIM - Raise a system dimmer
STOPDIM - Stop a dimmer raise/lower
FADEDIM - Fade a system dimmer
FLASHDIM - Flash a system dimmer
STOPFLASH - Stop flashing a system dimmer

STOPDIM — Stop a dimmer raise/lower

Syntax
STOPDIM, <address 1>, ..., <address n>

Parameter	Description	Format
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Stops raising/lowering one or more system dimmers

Example
Stop raising/lowering processor 1, link1, MI address 0, RPM module 2, zone 3

```
L232> STOPDIM, [1:1:0:2:3]
```

See Also
RAISEDIM - Raise a system dimmer
LOWERDIM - Lower a system dimmer
FADEDIM - Fade a system dimmer
FLASHDIM - Flash a system dimmer
STOPFLASH - Stop flashing a system dimmer

DBP Dimmer Button Press

Syntax
DBP, <address>, <button number>

Parameter	Description	Format
address	system address of the H48 or RF dimmer/switch	see device address formatting description
button number	button number to press	1

Description
Simulates the press action of the tap switch for an H48 or RF dimmer/switch. This will affect the local load and activate any keypad-like press programming. This does not simulate a true keypad button press that is followed by an immediate release or a delayed hold and release. This does not simulate the press action of the tap switch for a D48 dimmer/switch. This does not simulate the press action of the raise/lower rocker for any dimmer.

Example
Press H48 tap switch on processor 1, link 4, router 1, bus 3, dimmer 2.

```
L232> DBP, [1:4:1:3:2], 1
```

Press RF tap switch on processor 1, link 8, dimmer address 54. (The device type is 1 for all RF dimmers/switches.)

```
L232> DBP, [1:8:1:54], 1
```

See Also
DBDT - Dimmer button double tap

DBDT Dimmer Button Double Tap

Syntax
DBDT, <address>, <button number>

Parameter	Description	Format
address	system address of the H48 or RF dimmer/switch	see device address formatting description
button number	button number to double tap	1

Description
Simulates the double tap action of the tap switch for an H48 or RF dimmer/switch. This will affect the local load and activate any keypad-like double tap programming. This does not simulate a true keypad button double tap that is preceded by a press and release and followed by a second release. This does not simulate the double tap action of the tap switch for a D48 dimmer/switch.

Example
Double tap H48 tap switch on processor 1, link 4, router 1, bus 3, dimmer 2.

```
L232> DBDT, [1:4:1:3:2], 1
```

Double tap RF tap switch on processor 1, link 8, dimmer address 54. (The device type is 1 for all RF dimmers/switches.)

```
L232> DBDT, [1:8:1:54], 1
```

See Also
DBP - Dimmer button press

RDL — Request a Dimmer Level

Syntax
RDL, <address>

Processor responds with
`DL, <address>, <level>`

Parameter	Description	Format
address	system address of zone to query	[processor : link : interface : module or bus : zone] see device address formatting description
level	current level of the queried zone	0 - 100 (percent)

Description
Returns the current or target level for any zone in the sysyem

Example
Request the current intensity of processor 1, link 1, MI address 0, RPM module 2, zone 4

```
L232> RDL, [1:1:0:2:4]
DL, [01:01:00:02:04], 50
```

See Also
FRPM - Fade an RPM Dimmer
FV - Fade Vareo Dimmer

FRPM

Fade an RPM zone

Syntax
FRPM, <intensity>, <fade time>, <delay time>, <address 1>, ..., <address n>

Parameter	Description	Format
intensity	target intensity for specified zones	0 - 100 (percent)
fade time	time for zones to fade from current intensity to target intensity	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds
delay time	time for zones to delay before starting to fade	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Fades one or more RPM zones to a target intensity using a specified fade time and after a specified delay time

Example
Fade processor 1, link1, MI address 0, RPM module 2, zone 3 to 100% with a 1 second fade time and a 2 second delay time

```
L232> FRPM, 100, 00:00:01, 00:00:02, [1:1:0:2:3]
```

See Also
FV - Fade Vareo Dimmer

FV

Fade a Vareo zone

Syntax
FV, <intensity>, <fade time>, <delay time>, <address 1>, ..., <address n>

Parameter	Description	Format
intensity	target intensity for specified zones	0 - 100 (percent)
fade time	time for zones to fade from current intensity to target intensity	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds
delay time	time for zones to delay before starting to fade	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds
address	system address of zones to fade	[processor : link : address] maximum of 10 address per command see device address formatting description

Description
Fades one or more Vareo zones to a target intensity using a specified fade time and after a specified delay time

Example
Fade processor 1, link1, D48 dimmer interface address 1, Vareo bus 2, Vareo control 3 to 100% with a 1 second fade time and a 2 second delay time

```
L232> FV, 100, 00:00:01, 00:00:02, [1:1:1:2:3]
```

See Also
FRPM - Fade RPM dimmer

GSS GRAFIK Eye Scene Select

Syntax
GSS, <address>, <scene number>

Parameter	Description	Format
address	system address of GRAFIK Eye to control	[processor : link : address] see device address formatting description
scene number	scene number to select	0 - 16 0 = Off 1 - 16 = scene 1 - scene 16

Description
Selects a scene on any GRAFIK Eye in the system

Example
Select scene 2 on processor 1, link 5, GRAFIK Eye address 1

```
L232> GSS, [1:5:1], 2
```

See Also
RGS - Request current GRAFIK Eye scene

RGS

Request a GRAFIK Eye's current scene

Syntax
RGS, <address>

Processor responds with
GSS, <address>, <scene number>

Parameter	Description	Format
address	system address of GRAFIK Eye to query	[processor : link : address] see device address formatting description
scene number	scene number selected on the GRAFIK Eye	0 - 16 0 = Off 1 - 16 = scene 1 - scene 16

Description
Returns the current scene on the specified GRAFIK Eye

Example
Request the current scene for processor 1, link 6, GRAFIK Eye address 4

```
L232> RGS, [1:6:4]
GSS, [01:06:04], 2
```

See Also
GSS -Select a GRAFIK Eye scene

KBP Keypad Button Press

Syntax
KBP, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number to press	1 - 24

Description
Simulates the press action of a keypad button. This does not simulate a true keypad button press that might include an immediate release.

Example
Press button 1 on processor 1, link 4, keypad address 10

```
L232> KBP, [1:4:10], 1
```

See Also
KBR - Keypad button release
KBH - Keypad button hold
KBDT - Keypad button double tap

KBR Keypad Button Release

Syntax
KBR, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number to release	1 - 24

Description
Simulates the release action of a keypad button.

Example
Release button 1 on processor 1, link 4, keypad address 10

```
L232> KBR, [1:4:10], 1
```

See Also
KBP - Keypad button press
KBH - Keypad button hold
KBDT - Keypad button double tap

KBH Keypad Button Hold

Syntax
KBH, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number to hold	1 - 24

Description
Simulates the hold action of a keypad button. This does not simulate a true keypad button hold that will include a preceeding press

Example
Hold button 1 on processor 1, link 4, keypad address 10

```
L232> KBH, [1:4:10], 1
```

See Also
KBP - Keypad button press
KBR - Keypad button release
KBDT - Keypad button double tap

KBDT Keypad Button Double Tap

Syntax
KBDT, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number to double tap	1 - 24

Description
Simulates the double tap action of a keypad button. This does not simulate a true keypad button double tap that is preceeded by a press and release, and followed by a release

Example
Double tap button 1 on processor 1, link 4, keypad address 10

```
L232> KBDT, [1:4:10], 1
```

See Also
KBP - Keypad button press
KBR - Keypad button release
KBH - Keypad button hold

KE — Keypad Enable

Syntax
KE, <address>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description

Description
Enable a keypad

Example
Enable processor 1, link 6, keypad 21

```
L232> KE, [1:6:21]
```

See Also
KD - Keypad disable
RKES -Request keypad enabled state

KD Keypad Disable

Syntax
KD, <address>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description

Description
Disables a keypad

Example
Disable processor 1, link 6, keypad 21

```
L232> KD, [1:6:21]
```

See Also
KE - Keypad enable
RKES -Request keypad enabled state

RKES

Request Keypad Enabled State

Syntax
RKES, <address>

Processor responds with
`KES, <address>, <state>`

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
state	the enabled/disabled state of the keypad	

Description
Queries the system for the enabled/disabled state of a keypad

Example
Query processor 1, link 4, keypad address 10

```
L232> RKES, [1:4:10]
KES, [01:04:10], enabled
```

See Also
KD - Keypad disable
KE - Keypad enable

SETLED — Set an LED State

Syntax
SETLED, <address>, <led number>, <led state>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
led number	led number on the keypad	1 - 24 The led number is the corresponding button number
led state	state to set the LED to	0 = Off 1 = On 2 = Flash 1 3 = Flash 2

Description
Sets the state of a keypad led. If the designated led is already programmed to indicate the status of something else in the system, this command will have no effect on the led state.

Example
Turn on LED 3 on processor 2, link 5, keypad address 7

```
L232> SETLED, [2:5:7], 3, 1
```

See Also
RKLS - Request keypad led states

RKLS

Request a Keypad's LED States

Syntax
RKLS, <address>

Processor Response
KLS, <address>, <led states>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
led states	the current state of the keypad's LEDs	The first digit is LED 1, the last digit is LED 24 0 = Off 1 = On 2 = Flash 1 3 = Flash 2

Description
Queries the system for the state of the LEDs on a specified keypad. 24 led digits will be returned regardlessof the number of physical leds on the keypad.

Example
Query processor 4, link 6, keypad 1

```
L232> RKLS, [4:6:1]
KLS, [04:06:01], 000001000010000010000000
```

See Also
SETLED - Set keypad LED state

SETLEDS

Set the LED States for a Whole Keypad

Syntax
SETLEDS, <address>, <led states>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
led states	states to set some or all the LEDs LED #1 is the left most LED in the string	0 = Off 1 = On 2 = Flash 1 3 = Flash 2 x = Don't change

Description
Sets the states of several keypad leds. If the designated leds are already programmed to indicate the status of something else in the system, this command will have no effect on the led state.

Example
Turn on LED #3 & LED #10 on processor 2, link 5, keypad address 7

```
L232> SETLEDS, [2:5:7], xx1xxxxxx1
```

Example
Turn off LED #1 and flash LEDs #11 to #15 on processor 1, link 6, keypad address 4

```
L232> SETLEDS, [1:6:4], 0xxxxxxxxx22222
```

See Also
RKLS - Request keypad led states

CCOPULSE

CCO Relay Pulse

Syntax
CCOPULSE, <address>, <relay number>, <pulse time>

Parameter	Description	Format
address	system address of the CCO	[processor : link : address] see device address formatting description
relay number	relay number to pulse	1 - 8
pulse time	pulse duration in 0.5 second increments	1 - 245 1 = 0.5 seconds 2 = 1.0 seconds 3 = 1.5 seconds . . 245 = 122.5 seconds

Description
Pulses a specific CCO relay for a specified duration.

Example
Pulse relay 3 on processor 2, link 4, CCO address 6, for 2 seconds

```
L232> CCOPULSE, [2:4:6], 3, 4
```

See Also
CCOCLOSE - Close a CCO relay
CCOOPEN - Open a CCO relay

CCOCLOSE

CCO Relay Close

Syntax
CCOCLOSE, <address>, <relay number>

Parameter	Description	Format
address	system address of the CCO	[processor : link : address] see device address formatting description
relay number	relay number to close	1 - 8

Description
Closes a specific CCO relay

Note - The processor does not verify that the given address is ACTUALLY a CCO address. If the address is a normal keypad, the command may temporarily change the state of the leds on that keypad.

Example
Close relay 3 on processor 2, link 4, CCO address 6

```
L232> CCOCLOSE, [2:4:6], 3
```

See Also
CCOOPEN - Open a CCO relay
CCOPULSE - Pulse a CCO relay

CCOOPEN

CCO Relay Open

Syntax
CCOOPEN, <address>, <relay number>

Parameter	Description	Format
address	system address of the CCO	[processor : link : address] see device address formatting description
relay number	relay number to open	1 - 8

Description
Opens a specific CCO relay

Note - The processor does not verify that the given address is ACTUALLY a CCO address. If the address is a normal keypad, the command may temporarily change the state of the leds on that keypad.

Example
Open relay 3 on processor 2, link 4, CCO address 6

```
L232> CCOOPEN, [2:4:6], 3
```

See Also
CCOCLOSE - CLOSE a CCO relay
CCOPULSE - Pulse a CCO relay

RKLBP

Request Keypad Last Button Press

Syntax
RKLBP, <address>

Processor responds
KLBP, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	the last button pressed on the specified keypad	1-24

Description
Queries the system for the last button pressed on a keypad

Example
Query for the last button pressed on processor 1, link 4, keypad address 10

```
L232> RKLBP, [1:4:10]
KLBP, [01:04:10], 4
```

SVSS

Sivoia Scene Command Select

Syntax
SVSS, <address>, <scene command>, <delay time>

Parameter	Description	Format
address	system address of Sivoia control	[processor : link : address] see device address formatting description
scene command	Sivoia scene command to select	1 = Preset 1 2 = Preset 2 3 = Preset 3 R or r = Raise L or l = Lower C or c = Close O or o = Open S or s = Stop
delay time	time for Sivoia to delay before activating a scene command	HH:MM:SS example: 00:00:05 for 5 seconds see time formatting description if omitted, time defaults to 0 seconds

Description
Selects a scene command on any Sivoia control in the system.

Example
Select Preset 2 on processor 1, link 6, Sivoia control address 1.

```
L232> SVSS, [1:6:1], 2
```

See Also
RSVS - Request current Sivoia scene command

RSVS

Request a Sivoia's Current Scene Command

Syntax
RSVS, <address>

Processor responds with
SVS, <address>, <scene command>, <status>

Parameter	Description	Format
address	system address of Sivoia control to query	[processor : link : address] see device address formatting description
scene command	Sivoia scene command currently selected on the Sivoia	1 = Preset 1 2 = Preset 2 3 = Preset 3 R = Raise L = Lower C = Close o = Open S = Stop
status	current status of the scene command	STOPPED or MOVING

Description
Returns the current scene command and status on the specified Sivoia

Example
Request the current scene command for processor 1, link 6, Sivoia control address 4
Response is stopped at Preset 2

```
L232> RSVS, [1:6:4]
SVS, [01:06:04], 2, STOPPED
```

See Also
SVSS -Select a Sivoia scene command

ST Set Time

Syntax
ST, <time>

Processor Responds
Processor Time: <time>

Parameter	Description	Format
time	current time of day in 24 hour format	HH:MM:SS in 24 Hour format see time address formatting description the seconds must be specified

Description
Sets the system time. This will update the time on all processors in the system.

Example
Set the time to 2:34 PM

```
L232> ST, 14:34:00
Processor Time: 14:34
```

See Also
RST - Request system time
SD - Set system date
RSD - Request system date

RST

Request System Time

Syntax
RST

Processor Responds
Processor Time: <time>

Description
Queries the current system time

Example
Request the system time

```
L232> RST
Processor Time: 12:00
```

See Also
ST - Set system time
SD - Set system date
RSD - Request system date

SD Set Date

Syntax
SD, <date>

Processor Responds
Processor Date: <date>

Parameter	Description	Format
date	current date	MM/DD/YYYY see date formatting description

Description
Sets the system date. This will update the date on all processors in the system.

Example
Set the date to March 10, 1999

```
L232> SD, 03/10/1999
Processor Date: Wednesday 03/10/1999
```

See Also
RSD - Request system date
ST - Set system time
RST - Request system time

RSD — Request System Date

Syntax
RSD

Processor Responds
Processor Date: <day of week> <date>

Description
Queries the current system date

Example
Request the system date

```
L232> RSD
Processor Date: Wednesday 03/10/1999
```

See Also
SD - Set system date
ST - Set system time
RST - Request system time

TCE Timeclock Enable

Syntax
TCE

Processor Responds
TCE: Timeclock Enabled

Description
Enables the system timeclock

Example
Enable the system timeclock

```
L232> TCE
TCE: Timeclock Enabled
```

See Also
TCD - Timeclock disable
TCS - Timeclock state

TCD Timeclock Disable

Syntax
TCD

Processor Responds
```
TCD: Timeclock Disabled
```

Description
Disables the system timeclock

Example
Disable the system timeclock

```
L232> TCD
TCD: Timeclock Disabled
```

See Also
TCE - Timeclock enable
TCS - Timeclock state

TCS Timeclock State

Syntax
TCS

Processor Responds with one of the following
TCS: Timeclock Enabled
TCS: Timeclock Disabled

Description
Queries the system for the timeclock state

Example
Query the system timeclock state

```
L232> TCS
TCS: Timeclock Enabled
```

See Also
TCE - Timeclock enable
TCD - Timeclock disable

RST2

Request System Time with seconds

Syntax
RST2

Processor Responds
Processor Time: <time>

Description
Queries the current system time (including seconds)

Example
Request the system time

```
L232> RST
Processor Time: 12:00:00
```

See Also
ST - Set system time
SD - Set system date
RST - Request system time
RSD - Request system date

SUNRISE

Today's sunrise time

Syntax
SUNRISE

Processor Responds with
Today's Sunrise: <time>

Description
Returns the sunrise time for the current day. This can be useful when testing astronomic timeclock events.

Example
Request today's sunrise time

```
L232> SUNRISE
Today's Sunrise: 06:52
```

See Also
SUNSET - Today's sunset time
ST - Set system time

SUNSET

Today's sunset time

Syntax
SUNSET

Processor Responds with
Today's Sunset: <time>

Description
Returns the sunset time for the current day. This can be useful when testing astronomic timeclock events.

Example
Request today's sunset time

```
L232> SUNSET
Today's Sunset: 06:52
```

See Also
SUNRISE - Today's sunrise time
ST - Set system time

SSB Scene Saver Mode Begin

Syntax
SSB, <timeout>

Parameter	Description	Format
timeout	number of minutes scene saver mode will be running	CONT = continuous (no timeout) 0 = 1 minute 1-1440

Processor Responds
Scene Saver Mode Begin

Description
Begins scene saver mode with the specified timeout

Example
Begin scene saver mode without a timeout

```
L232> SSB, CONT
Scene Saver Mode Begin
```

See Also
SST - Scene saver mode terminate
SSS - Request scene saver mode state
KBSS - Keypad button scene save
KBSR - Keypad button scene restore

SST

Scene Saver Mode Terminate

Syntax
SST

Processor Responds
Scene Saver Mode Terminated

Description
Terminates scene saver mode

Example
Terminate scene saver mode

```
L232> SST
Scene Saver Mode Terminated
```

See Also
SSB - Scene saver mode begin
SSS - Request scene saver mode state
KBSS - Keypad button scene save
KBSR - Keypad button scene restore

SSS Scene Saver Mode State

Syntax
SSS

Processor Responds with one of the following
Scene Saver Mode is Running
Scene Saver Mode is Stopped

Description
Queries the system for the scene saver mode state

Example
Query the scene saver mode state

```
L232> SSS
Scene Saver Mode is Running
```

See Also
SSB - Scene saver mode begin
SST - Scene saver mode terminate
KBSS - Keypad button scene save
KBSR - Keypad button scene restore

KBSS

Keypad Button Scene Save

Syntax
KBSS, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number to scene save	1 - 24

Processor Responds
Preset Saved

Description
Scene save the current levels of the preset on the button that has scene saver option checked.

Example
Scene save the preset on button 1 on processor 1, link 6, keypad address 10.

```
L232> KBSS, [1:6:10], 1
Preset Saved
```

See Also
SSB - Scene saver mode begin
SST - Scene saver mode terminate
SSS - Request scene saver mode state
KBSR - Keypad button scene restore

KBSR

Keypad Button Scene Restore

Syntax
KBSR, <address>, <button number>

Parameter	Description	Format
address	system address of the keypad	[processor : link : address] see device address formatting description
button number	button number to scene save	1 - 24

Processor Responds
Preset Restored

Description
Restore the preset on the button that has scene saver option checked back to the levels of the uploaded preset.

Example
Restore the preset on button 1 on processor 1, link 6, keypad address 10.

```
L232> KBSR, [1:6:10], 1
Preset Restored
```

See Also
SSB - Scene saver mode begin
SST - Scene saver mode terminate
SSS - Request scene saver mode state
KBSS - Keypad button scene save

VMR Vacation Mode Record

Syntax
VMR

Processor Responds
Vacation mode recording

Description
Begins recording vacation mode data

Example
Begin vacation mode recording

```
L232> VMR
Vacation mode recording
```

See Also
VMP - Vacation mode playback
VMD - Vacation mode disable
VMS - Vacation mode state

VMP

Vacation Mode Playback

Syntax
VMP

Processor Responds
Vacation mode playing

Description
Begins playback of vacation mode data

Example
Begin vacation mode playback

```
L232> VMP
Vacation mode playing
```

See Also
VMR - Vacation mode record
VMD - Vacation mode disable
VMS - Vacation mode state

VMD

Vacation Mode Disable

Syntax
VMD

Processor Responds
Vacation mode disabled

Description
Stops vacation mode recording or playback

Example
Stop vacation mode recording or playback

```
L232> VMD
Vacation mode disabled
```

See Also
VMP - Vacation mode playback
VMR - Vacation mode record
VMS - Vacation mode state

VMS — Vacation Mode State

Syntax
VMS

Processor Responds with one of the following
Vacation mode recording
Vacation mode playing
Vacation mode disabled

Description
Queries the system for the vacation mode state

Example
Query the vacation mode state

```
L232> VMS
Vacation mode recording
```

See Also
VMR - Vacation mode record
VMP - Vacation mode playback
VMD - Vacation mode disable

SMB

Security Mode Begin

Syntax
SMB

Processor Responds
Security mode begin

Description
Begins security mode

Example
Begin security mode

```
L232> SMB
Security mode begin
```

See Also
SMT - Security mode terminate
SMS - Security mode state

SMT Security Mode Terminate

Syntax
SMT

Processor Responds
Security mode terminated

Description
Terminates security mode

Example
Terminate security mode

```
L232> SMT
Security mode terminated
```

See Also
SMB - Security mode begin
SMS - Security mode status

SMS

Security Mode State

Syntax
SMS

Processor Responds with one of the following
Security mode active
Security mode terminated

Description
Queries the system for the security mode state

Example
Query the security mode state

```
L232> SMS
Security mode active
```

See Also
SMB - Security mode begin
SMT - Security mode terminate

LOGIN

Login to the system

Syntax
LOGIN, <password>, <port address>

Processor Responds with one of the following
Processor <processor address> logging in RS232 ports
Processor <processor address> RS232 ports logged in
Logging in RS232 port <port address>
RS232 port <port address> already logged in
Missing or incorrect password. Login denied.

Parameter	Description	Format
password	system password defined in the programming software	maximum 32 characters, case-insensitive, spaces and commas not allowed
port address	the specific port to login.	pp:ll:aaa (see RS232 Port Addressing) This parameter is optional. If omitted, the system will perform a systemwide login (all RS232 ports) allowed
processor address	Reply from a processor	1-16

Description
Used to gain access to a system that has not been successfully logged into. The login/logout feature can be used to add a layer of protection against other people gaining access to the system. When logged-out of the system, only two L232 commands are recognized, LOGIN and HELP. This means that database changes and L232 control of the processor cannot be done until after a successful login. This feature is typically used on systems that utilize a modem for remote programming.

Example
Do a systemwide login to a system with password "lutron" and processors 1, 2 and 3 present

```
L232> LOGIN, lutron
Processor 1 logging in RS232 ports
Processor 2 RS232 ports logged in
```

```
Processor 3 logging in RS232 ports
```

Example
Login port 7 of processor 2 in a system with password "lutron"

```
L232> LOGIN, lutron, 2:7:1
Logging in RS232 port 02:07:001
```

See Also
LOGOUT - Logout of the system

LOGOUT

Logout of the system

Syntax
LOGOUT, <port address>

Processor Responds with one of the following
Processor <processor address> logging out RS232 ports
Processor <processor address> lRS232 ports logged out
Logging out RS232 port <port address>
RS232 port <port address> logged out

Parameter	Description	Format
port address	the specific port to login.	pp:ll:aaa (see RS232 Port Addressing) This parameter is optional. If omitted, the request will default to the port that receives the command allowed
processor address	Reply from a processor	1-16

Description
Used to logout of the system. The login/logout feature can be used to add a layer of protection against other people gaining access to the system. When logged-out of the system, only two L232 commands are recognized, LOGIN and HELP. This means that database changes and L232 control of the processor cannot be done until after a successful login. This feature is typically used on systems that utilize a modem for remote programming.

Example
Logout of the port connected to

```
L232> LOGOUT
Logging out RS232 port 01:03:001
```

Example
Logout of RS232 port 7 on processor 2

```
L232> LOGOUT, 2:7:1
```

```
Logging out RS232 port 02:07:001
```

Example
Logout all RS232 ports on processor connected to

```
L232> LOGOUT, PROC
Processor 1 logging out RS232 ports
```

Example
Logout all RS232 ports in the system with processors 1, 2 and 3 present

```
L232> LOGOUT, ALL
Processor 1 logging out RS232 ports
Processor 2 logging out RS232 ports
Processor 3 logging out RS232 ports
```

See Also
LOGIN - Login to the system

PROMPTOFF Turn off the L232> Prompt

Syntax
PROMPTOFF

Description
When the L232> prompt is turned off, a new L232> will not be printed after each command execution. This can be useful when communicating with external A/V systems that would just ignore the prompt.

Example
Turn the L232> prompt off

```
L232> PROMPTOFF
```

See Also
PROMPTON - Turn the L232> prompt on

PROMPTON — Turn on the L232> Prompt

Syntax
PROMPTON

Description
Re-enables the L232> prompt. After every command execution, a new L232> prompt will be issued.

Example
Turn the L232> prompt on.

```
PROMPTON
L232>
```

See Also
PROMPTOFF - Turn the L232> prompt off

EPRINT — Event Log Print

Syntax
EPRINT

Processor Responds by print the log in the following format
<log entry number><operating system time><event time><event date><operating system task identifier><event description>

Description
This log can be used to determine the date and times of the following types of events:

- Keypad button activity
- Database downloads to the processor
- Timeclock events
- Vacation recording and playback

When the terminal screen is active in the programming tool, all terminal screen activity is logged to a file called cpu.log located in the /log directory under the HomeWorks Interactive directory. To access this file you must exit the programming screen (go to the floorplan for example); this will close the cpu.log file and make it accessible to an editor. You may use notepad or wordpad (if the file is too large for notepad) to view and/or print the file.

Example
Print the event log

```
L232> EPRINT
0723 8022978 01:12:11 04/21/99 EVPP Keypad [01:03:01], Button 01
Pressed
0724 8023040 01:12:11 04/21/99 EVPP Keypad [01:03:01], Button 01
Released
0725 8023369 01:12:12 04/21/99 EVPP Keypad [01:03:00], Button 02
Pressed
0726 8023414 01:12:12 04/21/99 EVPP Keypad [01:03:00], Button 02
Released
```

PROCADDR Processor Address

Syntax
PROCADDR

Processor Responds with
Processor Addresss : <address>

Parameter	Description	Format
address	the address of the processor that received the command	1 - 16

Description
Returns the address of the processor that received the command

Example
Request the processor address

```
L232> PROCADDR
Processor Addresss : 01
```

RESET232 Reset RS-232 port settings

Syntax
RESET232

Processor responds with one of the following
```
For the new RS-232 port parameters to take effect for this port, you
must cycle the processor power.
```

Description
This command is used to reset all RS-232 port settings to the serial driver settings assigned to that port using the HomeWorks Interactive software. The settings effected are baud rate, handshaking type, number of data bits, parity type, number of stop bits, and the status of HomeWorks monitoring messages.
All ports will immediately switch to the driver settings except the port connected to.

Example
Reset all RS-232 ports settings for all processors.

```
L232> RESET232
For the new RS-232 port parameters to take effect for this port, you
must cycle the processor power.
```

OSREV

Request O/S revision

Syntax
OSREV

Processor responds with the following for each processor in the system
`Processor <processor address> O/S Rev = <O/S Rev>`

Parameter	Description	Format
processor address	The processor address	1-16
O/S Rev	Revision number of the currently installed O/S	1-100

Description
Returns the O/S revision for all processors in the system

Example
Request the O/S revisions of a system with 3 processors

```
L232> OSREV
Processor 01 O/S Rev : 22
Processor 02 O/S Rev : 22
Processor 03 O/S Rev : 22
```

HELP

L232 Command Help

Syntax
HELP
HELP,<command name>

Description
Typing HELP by itself will print a list of the currently available L232 commands with brief descriptions. To get command specific help, use the HELP,<command name> syntax

Example
Request help for the Keypad Button Press command

```
L232> HELP,KBP
Keypad button press
Usage: KBP,<address>,<button number>
```

L232 Help Revision History

v5 5-07-99 OS Rev 18

- Added the following conmmands to this help document: SMB, SMT, SMS
- Added the keypad button numbering page

v4 4-15-99 OS Rev 18

- Added the following conmmands FADEDIM, RAISEDIM, LOWERDIM, STOPDIM, FLASHDIM, STOPFLASH, SETHAND
- Made the time formatting more flexible
- Updated HELP command page
- Added the RS-232 specs to the technical specs page
- Converted files for better integration with online help

v3 3-15-99 OS Rev 16

- Fixed a typo in the FV command example
- Added the technical specs section
- Added the following cmds, PROMPTON, PROMPTOFF, PROCADDR
- Fixed incorrect link ranges in the device address section
- Added the following commands, RDL, RKLS, RGS
- Added the following commands, SETBAUD, KBH, RKES, CCOPULSE, CCOCLOSE, CCOOPEN, RKLBP
- Fixed incorrect address designator in RKLS command
- Converted to this HTML document

v2 1-11-99 OS Rev 8

- Added SUNRISE and SUNSET commands

v1 1-4-99 OS Rev 7

- Initial revision