GRAFIK Systems
RS232 and Ethernet OMX Integration Protocol
Language Reference
Softswitch128® (XPS), LCP128™, and GRAFIK 5000, 6000®, 7000

Command Set to Communicate with GRAFIK Systems RS232 and Ethernet Interfaces

Contents

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General Information

In this document, values that are specified as hexadecimal are followed by a lowercase "h". In those cases, the "h" is not actually typed in a command string to indicate a hexadecimal number (see individual command string examples). If not follwed by "h", numbers are assumed to be decimal values, except hexadecimal command numbers and hexadecimal numbers shown in examples.

Note that "~11h", which precedes commands to clear the buffer, is not a hexadecimal value, and that lowercase "h" must be included in the command string (see Command String Formats, and indivdual command string examples).

System Maximums

System	System Scene	System Zone/Circuit	System Space
LCP128	32 total + Off 0 - 20h	128 total 0 - 7Fh	N/A
Softswitch	32 total + Off 0 - 20h	512 total 0 - 1FFh	N/A
GRAFIK 5000, 6000, 7000	16000 maximum 0 - 3E80h	512 maximum 0 - 1FFh	500 maximum 0 - 1F4h

Note: Some system zones may remain unused. Check your job drawings for details.
Unused scenes and zones must be accounted for when assigning system scene and zone numbers.

Intensity Level

Range	0 - 7Fh	0 - 99%
Set to Off	0h (0%)	Opens air gap relay
Set to Minimum	1h	Only for non-dim zones
Set to Maximum (full On)	7Fh (99%)	On for non-dim zones

Cycles

Cycles are important when working with fade times and delays. One cycle is 0.1 second. Ten (10) seconds = 100 (64h) cycles.

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General Information (continued)

COMMUNICATION SETTINGS

RS232 Settings

To configure your device to talk to the OMX-CI-RS232 Interface, use the data conventions listed below.

    9600/19200/38400/115200 BAUD
    8 DATA
    1 STOP
    NO PARITY
    NO FLOW CONTROL

If you wish to send these commands from a PC, run Microsoft Windows® Hyper Terminal or an equivalent program. Then, select Local Echo, Line Feed, and Carriage Return inbound and outbound. This allows you to see the characters that you are typing as well as keep the responses from overwriting typed characters. Refer to the table below for dipswitch settings to select baud rates.

BAUD	DIP SWITCH 7	DIP SWITCH 8
9600	ON	OFF
19200	OFF	ON
38400	ON	ON
115200	OFF	OFF

Ethernet Settings

To configure your device to talk to a *GRAFIK Eye* Ethernet Interface, open a Telnet session with the following default IP address, port, and login information.

ATTRIBUTE	DEFAULT VALUE
Default IP Address	192.168.250.1
Default Subnet Mask	255.255.255.0
Default Port	23 (Telnet Port)
Default Login for Connection 1	'nwk'
Default Login for Connection 2	'nwk2'

If you wish to send these commands from a PC, run the Microsoft Windows® Telnet program or an equivalent program. In most situations, the IP address should have the first three sets (192.168.250) equal to the first three sets on the machine to which it is connected (with the last different), and the subnet mask equal to 255.255.255.0. The device information may also be managed using Lutron's DeviceIP software program, which can be found on the enclosed CD.

General Information (continued)

Command Structure

All data values are 16 bits (0 - FFFFh) or (0 - 65,535) and are separated by spaces (20h). Leading zeros do not have to be entered.

COMMAND STRING FORMATS	
Syntax	[~11h] [command # in hexadecimal] [parameters in hexadecimal]<CR>
Allowed Values	~11h clears input buffer ("h" must be lowercase) command the command ID number, in hexadecimal parameters optional; a list of one or more items; either circuits/ zones or scenes that are to receive this command <CR> carriage return executes command
Example	~11h (command) (parameters in hexadecimal) FFFFh (command) (parameters in hexadecimal)(<CR>)
Additional Information	The execution of the command is stopped when an item encountered is higher than the maximum item defined in the system. More than one command can be specified in an input string by using a separator (FFFFh) For the OMX-RS232, the command string has a maximum length of 30 characters; other devices have a maximum string length of 128 characters.

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General Information (continued)

System Responses to Commands

After each command line is entered, the interface transmits a response to the command. This response always begins as follows:

ASCII	~
hexadecimal	7Eh

Response Strings

Event	LCP/XPS Response	GRAFIK 5000/6000/7000 Response

Command executed properly	#N OK
	N = number of commands executed properly
		#N OK
		N = number of commands executed properly

Error generated on the interface (error in command format)	ERROR #N
	N = error number
		ERROR #N
		N = error number

Error generated on the processor	~UI ERROR N N = error number	#0 OK UI ERROR N N = error number
Command has requested information from the processor (e.g., Time command)	~:<response string>	:<response string>#1 OK

Refer to the Error Codes in Appendix A for explanations of error codes.

End of Response

The response string will always end as follows:

ASCII	<CR>	<LF>
hexadecimal	0Dh	0Ah

System Responses to Status Requests

The system responds to a status request string with a response string that contains status information in the same order it was requested. The response takes the following form:

SYSTEM RESPONSES	
Syntax	~:xx [response] [response] ... N OK
Allowed Values	~: precedes most responses xx last 2 digits of the hex command that was sent response the status information requested; number of response substrings mirrors number of commands sent N OK N is the number of commands executed 0Dh sends a carriage return 0Ah sends a line feed
Example	~11h 805 101<CR> Request current intensity level of zone 257 :05 5F The intensity level of system zone 257 is 95 (out of 128 levels) (75%)
Additional Information	Spaces separate response substrings. Note: Not all commands generate a response.

Ethernet Setup Commands (OMX-CI-NWK-E only)

Note: Before using the commands below to change the OMX-CI-NWK-E default network settings, you must first change your computer's IP address to 192.168.250.xxx (where xxx is not 1) in order to connect to the device. Ethernet setup commands will not take effect until after the device resets or completes a power cycle. The 'rst<CR>' command will close all connections and reset the device. If you use the Device IP program provided on the CD, you will not need to use the manual commands or change your computer's IP address.

Note: These commands begin with "~", not "~11h" as all other commands do.

SET IP ADDRESS	
Command Name	**sip**
Description	Sets the IP address of the device.
Syntax	~sip xxx.xxx.xxx.xxx<CR>
Allowed Values	xxx is a value from 0 - 255; each group is separated by a period (2Fh)
Example	~sip 192.168.250.1<CR> Sets IP device to address 192.168.250.1
Additional Information	The new value will not take effect until a power cycle or a reset occurs.

READ IP ADDRESS	
Command Name	**rip**
Description	Returns the IP address of the device.
Syntax	~rip<CR>
Response	:ip xxx.xxx.xxx.xxx

SET SUBNET MASK	
Command Name	**ssm**
Description	Sets the Subnet Mask of the device.
Syntax	~ssm xxx.xxx.xxx.xxx<CR>
Allowed Values	xxx is a value from 0 - 255; each group is separated by a period (2Fh)
Example	~ssm 255.255.255.0<CR> Sets Subnet Mask to 255.255.255.0
Additional Information	The new value will not take effect until a power cycle or a reset occurs.

READ SUBNET MASK	
Command Name	**rsm**
Description	Returns the Subnet mask of the device.
Syntax	~rsm<CR>
Response	:sm xxx.xxx.xxx.xxx

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Ethernet Setup Commands (continued)

SET GATEWAY	
Command Name	**sgw**
Description	Sets the gateway address of the device.
Syntax	~sgw xxx.xxx.xxx.xxx<CR>
Allowed Values	xxx is a value from 0 - 255; each group is separated by a period (2Fh)
Example	~sgw 192.168.250.100<CR> Sets gateway address to 192.168.250.100
Additional Information	The new value will not take effect until a power cycle or a reset occurs.

READ GATEWAY	
Command Name	**rgw**
Description	Returns the gateway address of the device.
Syntax	~rgw<CR>
Response	:gw xxx.xxx.xxx.xxx

SET LOGIN NAME	
Command Name	**sln**
Description	Sets the login name of the device.
Syntax	~sln [connection #] [existing login] [new login]<CR>
Allowed Values	Connection # can be 1 or 2 Login names can be a maximum of 8 characters and cannot include spaces
Example	~sln 2 nwk2 lutron<CR> Changes the password for connection 2 to lutron from nwk2.
Additional Information	The new value will not take effect until a power cycle or a reset occurs.

READ LOGIN NAME	
Command Name	**rln**
Description	Reads the login name of the device and returns it.
Syntax	~rgw [connection #]<CR>
Allowed Values	Connection # can be 1 or 2
Example	~rln 2<CR>
Response	:ln 2 lutron

DEVICE RESET	
Command Name	**rst**
Description	Resets the device. All connections are immediately closed and the device resets.
Syntax	~rst<CR>

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Circuit/Zone/Scene Commands

FADE TO LEVEL	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**7**
Description	All circuits/zones specified in the command will fade from their current intensity level to the new intensity level using the specified delay and fade times.
Syntax	~11h 7 [level] [fade] [delay] [zone(s)]<CR>

Allowed Values	Level 0 - 7Fh; 128 intensity levels available
	Fade number of cycles; 10 cycles = 1 second
	        maximum 6300 seconds (63000 or F618h cycles)
	Delay number of cycles; 10 cycles = 1 second
	        maximum 6300 seconds (63000 or F618h cycles)
	Zones LCP128: 0 - 7Fh (128 circuits)
	        XPS/Softswitch128: 0 - 1FFh (512 circuits)
	        GRAFIK 5000/6000/7000: 0 - 1FFh (512 zones)

Example	~11h 7 7F 32 0 A B<CR> Immediately sends zones 10 and 11 to 7Fh intensity level (full On), with a fade time of 0 seconds and a delay of 0 seconds.
Additional Information	The fade transition starts after the delay.

FADE TO LEVELS AND REPEAT	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**D**
Description	After an initial delay time, the circuits/zones will go first to one setting, then to a second setting. Each setting allows the user to specify the delay time (which dictates how long the circuits/zones stay at that level), fade time, and intensity level. Then, the circuits/zones will repeat both intensity levels a specified number of times. If zero repeats are specified, circuits/zones fade to the original intensity level over the first fade time. If 255 (FFh) repeats are specified, only a new circuit/zone command will stop the progression.
Syntax	~11h D [delay] [level1] [fade1] [delay1] [level2] [fade2] [delay2] [repeat] [zone(s)]<CR>

Allowed Values	Delay number of cycles; 10 cycles = 1 second
	Level 0 - 7Fh; 128 intensity levels available
	Fade number of cycles; 10 cycles = 1 second
	               maximum 6300 seconds (63000 or F618h cycles)
	Repeat 0 - FFh (number of times to repeat after first cycle)
	Zones LCP128: 0 - 7Fh (128 circuits)
	               XPS/Softswitch128: 0 - 1FFh (512 circuits)
	               GRAFIK 5000/6000/7000: 0 - 1FFh (512 zones)

Example	~11h D 0 7F 0 5 0 0 5 4 10 11<CR> Immediately flash zones 16 and 17 5 times between Off and 100% at a 1-second frequency, and then return to their initial settings.
Additional Information	For *Softswitch128*, values greater than 0 are full On and 0 is Off.

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Circuit/Zone/Scene Commands (continued)

SELECT SYSTEM SCENE	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**12**
Description	This command selects a system scene using the previously stored set of intensity levels, fade times, and delay times. A scene selection will cancel any previous commands for the space and circuits/zones involved in the preset.
Syntax	~11h 12 [scene(s)] <CR>
Allowed Values	Scenes LCP128, XPS/Softswitch128: 0 - 20h (32 scenes + Off) GRAFIK 5000/6000/7000: 0 - 3E80h (16000 scenes)
Example	~11h 12 1 11 40<CR> Select system scenes 1, 17, and 64.
Additional Information	Scene selections in locked zones or zones being programmed are ignored. This command does not apply to GRAFIK 5000, 6000, or 7000 scene numbers within spaces.

HALT ZONE	
Applicable Systems	GRAFIK 5000™/6000®/7000™
Command Number (hex)	**1**
Description	Permanently stops all zone dynamics and freezes the zone's level until another command affects the zone.
Syntax	~11h 1 [zone(s)] <CR>
Allowed Values	Zones GRAFIK 5000/6000/7000: 0 - 200h (512 zones)
Example	~11h 1 7 8 B<CR> Freeze system zones 7, 8, and 11 at their current intensity levels.

TOGGLE ZONE	
Applicable Systems	GRAFIK 5000™/6000®/7000™
Command Number (hex)	**6**
Description	If the zone intensity level is at any intensity level between 1 - 7Fh, this command turns the zone Off (0). If the zone intensity level is Off, it turns the zone On to max (7Fh). The transition will take place over a period of fade cycles. After a toggle fade is complete, the zone is in steady state.
Syntax	~11h 6 [fade] [zone(s)] <CR>
Allowed Values	Fade number of cycles; 10 cycles = 1 second maximum 6300 seconds (63000 or F618h cycles) Zones GRAFIK 5000/6000/7000: 0 - 200h (512 zones)
Example	~11h 6 14 7 8 A<CR> Toggle system zones 7, 8, and 10 with a 2-second (20-cycle) fade time.

Circuit/Zone/Scene Commands (continued)

RAMP CIRCUITS UP	
Applicable Systems	LCP128™ XPS Softswitch128®
Command Number (hex)	**500 (switch press; start raise)** **600 (switch release; stop raise)**
Description	Ramps programmed circuits up. The wallstation (or virtual wallstation) button must be programmed as raise in the system. Only circuits programmed to the raise button are affected. Note: Wallstations need not be physically present in the system, but they must be programmed in the system.
Syntax	~11h [command number] [address] [button]<CR>

Allowed Values	Command 500 for switch press; 600 for switch release
	Address 0 - 5Fh
	              0 - 1Fh for *LCP128*/XPS with no XPS-E Link Expander
	              0 - 5Fh for XPS with XPS-E Link Expander
	Button Programmed button number on that wallstation

Example	~11h 500 010C<CR> Raise programmed circuits using the raise button on wallstation address 2 on link 0. Raise button is button 12. ~11h 600 010C<CR> Stop raising programmed circuits using the raise button on wallstation address 2 on link 0.
Additional Information	Convert button numbers and addresses to zero-based hexadecimal (e.g., button 1 = 0h).

RAMP CIRCUITS DOWN	
Applicable Systems	LCP128™ XPS Softswitch128®
Command Number (hex)	**500 (switch press; start lower)** **600 (switch release; stop lower)**
Description	Ramps programmed circuits down. The wallstation (or virtual wallstation) button must be programmed as lower in the system. Only circuits programmed to the lower button are affected. Note: Wallstations need not be physically present in the system, but they must be programmed in the system.
Syntax	~11h [command number] [address] [button]<CR>

Allowed Values	Command 500 for switch press; 600 for switch release
	Address 0 - 5Fh
	              0 - 1Fh for *LCP128*/XPS with no XPS-E Link Expander
	              0 - 5Fh for XPS with XPS-E Link Expander
	Button Programmed button number on that wallstation

Example	~11h 500 010B<CR> Lower programmed circuits using the raise button on wallstation address 2 on link 0. Lower button is button 11. 11h 600 010B<CR> Stop lowering programmed circuits using the raise button on wallstation address 2 on link 0.
Additional Information	Convert button numbers and addresses to zero-based hexadecimal (e.g., button 1 = 0h).

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Circuit/Zone/Scene Commands (continued)

RAMP UP SYSTEM ZONE	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**B**
Description	Increase the intensity level of the specified zone(s) at a specified rate, and repeat as specified. The actual step sizes are divided by 256 (100h), then added to the zone's intensity level (from 0 - 7Fh) every 0.1 second. For example, a step size of 200h causes an intensity change of about 15% a second.
Syntax	~11h B [initial rate] [repeat rate] [zone(s)] <CR>
Allowed Values	Initial rate step size ÷ 256 Repeat rate step size ÷ 256 Zones 0 - 200h (512 zones)
Example	~11h B 200 200 0 1<CR> 200h ÷ 100h = increment intensity by 2 every 0.1 second, or 20 per second. Zone intensity levels range from 0 - 7Fh; 20h ÷ 7Fh = 15%. Ramp up system zones 0 and 1 at a rate of about 15% per second.

RAMP DOWN SYSTEM ZONE	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**C**
Description	Decrease the intensity level of the specified zone(s) at a specified rate, and repeat as specified. The actual step sizes are divided by 256 (100h), then subtracted from the zone's intensity level (from 0 - 7Fh) every 0.1 second. For example, a step size of 500h causes an intensity change of about 40% a second.
Syntax	~11h C [initial rate] [repeat rate] [zone(s)] <CR>
Allowed Values	Initial rate step size ÷ 256 Repeat rate step size ÷ 256 Zones 0 - 200h (512 zones)
Example	~11h C 500 500 FF 100 101<CR> 500h ÷ 100h = increment intensity by 5 every 0.1 second, or 50 per second. Zone intensity levels range from 0 - 7Fh; 50h ÷ 7Fh = 40%. Ramp down system zones 255, 256, and 257 at a rate of about 40% per second.

Circuit/Zone/Scene Commands (continued)

RAMP UP ALL ZONES IN LAST SCENE SELECTED

Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**20**
Description	This command looks at the zones within the specified space. If any zones are at the specified unaffected intensity level, those zones do not change. All other zones increase at the specified rate. If the specified unaffected intensity level is 80h, all zones will ramp up. To stop this ramp up, use the Stop Scene Ramp Up command (22). See Ramp Up System Zone command (B) above for details on the step size values.
Syntax	~11h 20 [unaffected level] [initial rate] [repeat rate] [space(s)]<CR>
Allowed Values	Unaffected level 0 - 80h; 80h = all zones in space will ramp up Initial rate step size ÷ 256 Repeat rate step size ÷ 256 Zones 0 - 200h (512 zones)
Example	~11h 20 0 200 200 7 A<CR> Ramp up all zones in the current space than are On (at any intensity level other than 0) in system spaces 7 and 10
Additional Information	The preset profile will *not* be preserved. Zone intensity levels will become equal (full) after a full ramp up.

RAMP DOWN ALL ZONES IN LAST SCENE SELECTED

Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**21**
Description	This command looks at the zones within the specified space. If any zones are at the specified unaffected intensity level, those zones do not change. All other zones decrease at the specified rate. If the specified unaffected intensity level is 80h, all zones will ramp down. To stop this ramp down, use the Stop Scene Ramp Down command (23). See Ramp Down System Zone command (C) above for details on the step size values.
Syntax	~11h 21 [unaffected level] [initial rate] [repeat rate] [space(s)]<CR>
Allowed Values	Unaffected level 0 - 80h; 80h = all zones in space will ramp down Initial rate step size ÷ 256 Repeat rate step size ÷ 256 Zones 0 - 200h (512 zones)
Example	~11h 21 80 200 200 0<CR> Ramp down all zones in the current space in system space 0
Additional Information	The preset profile will *not* be preserved. Zone intensity levels will be 0 (Off) after a full ramp down.

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Circuit/Zone/Scene Commands (continued)

STOP RAMP UP ALL ZONES IN LAST SCENE SELECTED	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**22**
Description	This command looks at the zones within the specified space and determines which system scene is currently selected in each space. It then halts those zones in the space that are currently in Ramp Up mode.
Syntax	~11h 22 [space(s)]<CR>
Allowed Values	Zones 0 - 200h (512 zones)
Example	~11h 22 0 10<CR> Stop ramping up zones in spaces 0 and 16

STOP RAMP DOWN ALL ZONES IN LAST SCENE SELECTED	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**23**
Description	This command looks at the zones within the specified space and determines which system scene is currently selected in each space. It then halts those zones in the space that are currently in Ramp Down mode.
Syntax	~11h 23 [space(s)]<CR>
Allowed Values	Zones 0 - 200h (512 zones)
Example	~11h 23 0 10<CR> Stop ramping down zones in spaces 0 and 16

SELECT SYSTEM SCENE USING OVERRIDE TIMES	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**13**
Description	This command selects a system scene using the previously stored set of intensity levels. It overrides the stored fade and delay times for each zone involved, and uses the specified fade and delay times.
Syntax	~11h 13 [fade] [delay] [scene(s)]<CR>
Allowed Values	Fade number of cycles; 10 cycles = 1 second Delay number of cycles; 10 cycles = 1 second Scenes 0 - 3E80h (16000 scenes)
Example	~11h 13 A 19 1 11 40<CR> Select system scenes 1, 17, and 64 using a 1-second fade time and a 2.5-second delay time.

Circuit/Zone/Scene Commands (continued)

SELECT TEMP SCENE	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**1C**
Description	This command selects the defined temporary preset.
Syntax	~11h 1C [zone] [intensity level] [fade] [delay] [repeat all variables for additional zones]<CR>

Allowed Values	Zones 0 - 200h (512 zones)
	Intensity level 0 - 7Fh
	Fade number of cycles; 10 cycles = 1 second
	                  maximum 6300 seconds (63000 or F618h cycles)
	Delay number of cycles; 10 cycles = 1 second
	                  maximum 6300 seconds (63000 or F618h cycles)

Example	~11h 1C 1 7F 32 0 2 0 A 32<CR> Send system zone 1 immediately to full using a 5-second fade time, while sending zone 2 to Off using a 1-second fade time after a 5-second delay.
Additional Information	The temporary scene remains until another scene is selected. Wallstation LEDs are not affected by this command.

SELECT SCENE OF SPACE	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**1E**
Description	This command selects the scene number in the given space (not the system scene number). Scene selection in multiple spaces may be accomplished by adding space/scene pairs.
Syntax	~11h 1E [sys space] [space scene] [repeat variables for additional spaces]<CR>
Allowed Values	Spaces 0 - 200h (512 zones) Scene 0 - 3E80h (16000 scenes)
Example	~11h 1E 0 7 1 7<CR> Select the eighth scene of system spaces 0 and 1. (The first scene in each space is scene 0.)

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Circuit/Zone/Scene Commands (continued)

GET CIRCUIT/ZONE INTENSITY LEVEL	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**805**
Description	Requests the current intensity level (0 - 7Fh) of the specified circuit/zone
Syntax	~11h [zone]<CR>

Allowed Values	Zones LCP128: 0 - 7Fh (128 circuits)
	                   XPS/Softswitch128: 0 - 1FFh (512 circuits)
	                   GRAFIK 5000/6000/7000: 0 - 1FFh (512 zones)

Response	:05 [intensity level] Values 0 - 7Fh
Example	~11h 805 101<CR> Request current intensity level of zone 257 :05 5F The intensity level of system zone 257 is 95 (out of 128 levels) (75%)

GET STATUS OF SPACE	
Applicable Systems	GRAFIK 5000™/6000®/7000™
Command Number (hex)	**801**
Description	This command requests information about a space, such as the last scene selected and if a sequence is currently running.
Syntax	~11h 801 [sys space]<CR>
Allowed Values	System space 0 - 7FFFh
Response	:01 [space] [system scene on] [system sequence running] FFFFh =no sequence running
Example	~11h 801 0<CR> Get status of system space 0. :01 0 7 FFFFh System space 0 is running system scene 7 with no sequence running.
Additional Information	This command returns the system scene number. See Get Status of Scenes in Space (command 830) for the command that returns space scene numbers.

Circuit/Zone/Scene Commands (continued)

GET STATUS OF SCENES IN SPACE	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**830**
Description	This command requests information about a space, such as whether a current scene is On or whether a timed sequence is running.
Syntax	~11h 830 [sys space]<CR>
Allowed Values	System space 0 - 7FFFh
Response	:01 [space] [system scene on] [system sequence running] FFFFh =no sequence running
Example	~11h 830 0<CR> Get scene status of system space 0. :01 0 2 FFFFh System space 0 is running scene 2 with no sequence running.
Additional Information	This command returns the space scene number. See Get Status of Space (Command 801) for the command that returns system scene numbers.

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Time/Date/Timeclock Commands

SET SYSTEM TIME AND DATE

Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**207**
Description	This command sets the system clock to the specified time and date. The system clock begins running with the specified time (seconds = 0) upon completing the command.
Syntax	~11h 207 [hour] [min] [month] [date] [year] [day]<CR>
Allowed Values	Hour 0 - 17h (24-hour format) Min 0 - 3Bh (0 - 59 minutes after the hour) Month 1 - Ch (1 = January) Date 1 - 1Fh (1 - 31) Year 0 - 63h Day 1 - 7h (1 = Sunday)
Example	~11h 207 11 00 1 19 61 7<CR> Set the system clock to 5:00 p.m. on Saturday, January 25, 1997.

GET SYSTEM TIME

Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**808**
Description	This command requests the current system time, and returns it formatted as the number of minutes past midnight.
Syntax	~11h 808<CR>
Response	:08 [minutes past midnight, in hexadecimal]
Example	~11h 808<CR> :08 398 The current time is 920 minutes past midnight (3:20 p.m.).

GET SYSTEM DATE

Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**80A**
Description	This command requests the current system date
Syntax	~11h 80A<CR>
Response	:0A [month] [date] [year] [day]
Example	~11h 80A<CR> :0A 9 11 2 3 The month is 9 (September), the date is 17, the year is 2 (2002), and the day is 3 (Tuesday).
Additional Information	See Set System Time and Date, above, for specific date value information.

Time/Date/Timeclock Commands (continued)

GET SUNRISE/SUNSET TIMES	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**809**
Description	This command requests today's sunrise and sunset times, and returns them formatted as the number of minutes past midnight.
Syntax	~11h 809<CR>
Response	:09 [sunrise, in minutes past midnight, in hexadecimal] [sunset, in minutes past midnight, in hexadecimal]
Example	~11h 809<CR> :09 18B 47D Today's sunrise is 395 minutes past minutes (6:35 a.m.), and today's sunset is 1149 minutes past midnight (7:09 p.m.).

GET TIMECLOCK STATUS	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**802**
Description	This command requests the status of the system timeclock, including the current schedule running, the next scheduled event's type and time, and the next event script.
Syntax	~11h 802 [space]<CR>
Response	:02 [space] [schedule] [next event] [next time] [next script]

Allowed Values	Space Where the timeclock is
	Schedule Current schedule running
	Next event N = no more event is schedule
	     D = timeclock is disabled
	     A = astronomic event
	     R = real-time event
	Next time Specified in minutes past midnight
	Next script

Example	~11h 802 7<CR> Request timeclock status in system space 7 :02 7 48 R 3FC 23B The timeclock in system space 7 is running schedule 73; the next scheduled event is a real-time event that will occur at 1020 minutes past midnight (5:00 p.m.) and will run system script 572.
Additional Information	If bit 15 is set in the next event time (event time is greater than 8000h), the event is a "catch-up" event.

Time/Date/Timeclock Commands (continued)

DISABLE TIMECLOCK UNTIL AN ENABLE IS ISSUED	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**201**
Description	This command stops any timeclock events from occurring in the selected spaces until an Enable Timeclock command is issued for those spaces.
Syntax	~11h 201 [space timeclock(s)]<CR>
Allowed Values	Timeclocks 0 - 1F4h
Example	~11h 201 0 1 2 3<CR> Disable the timeclocks in spaces 0, 1, 2, and 3.

DISABLE TIMECLOCK UNTIL END OF DAY OR UNTIL AN ENABLE IS ISSUED	
Applicable Systems	GRAFIK 5000™/6000®/7000™
Command Number (hex)	**202**
Description	This command stops any timeclock events from occurring in the selected spaces until an Enable Timeclock command is issued for those spaces, or for the duration of the current day (whichever occurs first).
Syntax	~11h 202 [space timeclock(s)]<CR>
Allowed Values	Timeclocks 0 - 1F4h
Example	~11h 202 0 1 2 3<CR> Disable the timeclocks in spaces 0, 1, 2, and 3.

Time/Date/Timeclock Commands (continued)

ENABLE TIMECLOCK	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**205**
Description	This command enables the listed timeclocks (if they are currently disabled). The next event to occur will be the next scheduled event in that space.
Syntax	~11h 205 [space timeclock(s)]<CR>
Allowed Values	Timeclocks 0 - 1F4h
Example	~11h 205 0 11<CR> Enable the timeclocks in spaces 0 and 17.

ENABLE TIMECLOCK AND EXECUTE MISSED COMMANDS	
Applicable Systems	GRAFIK 5000™/6000®/7000™
Command Number (hex)	**203**
Description	This command enables the listed timeclocks (if they are currently disabled). It will then execute all events that were missed since the previous midnight. The next event to then occur will be the next scheduled event in that space.
Syntax	~11h 203 [space timeclock(s)]<CR>
Allowed Values	Timeclocks 0 - h
Example	~11h 203 15 16<CR> Enable the timeclocks in spaces 21 and 22, and execute all timeclock events that were missed after midnight.

ENABLE TIMECLOCK AND EXECUTE PREVIOUS COMMAND	
Applicable Systems	GRAFIK 5000™/6000®/7000™
Command Number (hex)	**204**
Description	This command enables the listed timeclocks (if they are currently disabled). It will then execute all events that were scheduled to run at the time this command was executed. The next event to then occur will be the next scheduled event in that space.
Syntax	~11h 204 [space timeclock(s)]<CR>
Allowed Values	Timeclocks 0 - h
Example	~11h 204 7<CR> Enable the timeclock in space 7, and execute all timeclock events that were to occur at the time of enabling.

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Wallstation Commands

ENABLE WALLSTATION	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**300**
Description	This command enables all inputs on the listed wallstations.
Syntax	~11h 300 [wallstation(s)]<CR>
Allowed Values	Link number 0 - Bh (only Link 0 for *LCP128*/XPS) Wallstation on link 0 - 1Fh
Example	~11h 300 14<CR> Enable the 21st wallstation on the first link (Link A).
Additional Information	The wallstation value changes to indicate both the link number and the wallstation number on the link. The first digit is the hexadecimal link number; the last two digits are the hexidecimal wallstation number on that link.

DISABLE WALLSTATION	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**301**
Description	This command disables all inputs on the listed wallstations.
Syntax	~11h 301 [wallstation(s)]<CR>
Allowed Values	Link number 0 - Bh (only Link 0 for *LCP128*/XPS) Wallstation on link 0 - 1Fh
Example	~11h 301 207<CR> Disable the 8th wallstation on the third link (Link C).
Additional Information	The wallstation value changes to indicate both the link number and the wallstation number on the link. The first digit is the hexadecimal link number; the last two digits are the hexidecimal wallstation number on that link.

Wallstation Commands (continued)

SIMULATE WALLSTATION SWITCH PRESS	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**500 - 50B** (note: *LCP128*/XPS use only 500)
Description	This command simulates a switch press from any system wallstation. The system runs the programmed script response for the "pressed" switch.
Syntax	~11h 50x [switch(es)]<CR> The third digit of the command (the "x" in 50x) is the hexadecimal equivalent of the number of the wallstation link. Link number 0 - Bh
Allowed Values	Wallstation on link 0 - 1Fh Switch on wallstation 0 - 1Fh
Example	~11h 501 F04<CR> Simulate a switch press of the fifth switch (switch 4) on the 16th wallstation (wallstation 15) on the second link (link 1).
Additional Information	For *Softswitch* systems that include a link expander, use command 500 for links B and C. Wallstation addresses are 0 - 5Fh. The switch value changes to indicate both the wallstation number and the Switch number on the wallstation. The first two digits are the hexadecimal wallstation number; the last two digits are the hexidecimal switch number on that wallstation.

SIMULATE WALLSTATION SWITCH RELEASE	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**600 - 60B** (note: *LCP128*/XPS use only 600)
Description	This command simulates a switch release from any system wallstation. The system runs the programmed script response for the "released" switch.
Syntax	~11h 60x [switch(es)]<CR> The third digit of the command (the "x" in 60x) is the hexadecimal equivalent of the number of the wallstation link. Link number 0 - Bh
Allowed Values	Wallstation on link 0 - 1Fh Switch on wallstation 0 - 1Fh
Example	~11h 602 300<CR> Simulate a switch release of the first switch (switch 0) on the fourth wallstation (wallstation 5) on the third link (link 2).
Additional Information	For *Softswitch* systems that include a link expander, use command 600 for links B and C. Wallstation addresses are 0 - 5Fh. The switch value changes to indicate both the wallstation number and the Switch number on the wallstation. The first two digits are the hexadecimal wallstation number; the last two digits are the hexidecimal switch number on that wallstation.

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Wallstation Commands (continued)

SET SYSTEM VARIABLE	
Applicable Systems	**GRAFIK** 5000TM/6000®/7000TM
Command Number (hex)	**40D**
Description	This command sets the state of the system variables specified to the specified value.
Syntax	~11h 40D [value] [variable(s)]<CR>
Allowed Values	Value 0 - FFh (256 decimal) Variable 0 - 400h (1024 decimal)
Example	~11h 40D 0 0 6<CR> Set the first and seventh system variables to the value of 0.

GET VARIABLE VALUE	
Applicable Systems	**GRAFIK** 5000TM/6000®/7000TM
Command Number (hex)	**815**
Description	This command requests the value of a system variable.
Syntax	~11h 815 [variable(s)]<CR>
Response	:15 [variable value]
Allowed Values	Variable 0 - 400h (1024 decimal)
Example	~11h 815 0<CR> Get the value of the first system variable. :15 FF The value of the first system variable is 255.

Wallstation Commands (continued)

GET WALLSTATION/CONTROL STATION DEVICE STATUS	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**803**
Description	This command requests the priority and the enable/disable status of all switches on the specified wallstation.
Syntax	~11h 803 [wallstation]<CR>
Allowed Values	Wallstation on link 0 - 1Fh
Response	:03 [wallstation] [switches and status] Priority value in lower four bits (0 - F). If disabled, bit 7 is set in priority value (80 - 8F).
Example	~11h 803 207<CR> Check the status of the wallstation at the 8th address on the third link. :03 7 5 5 5 5 5 5 5 On link 3, wallstation 8, all switches are priority 5 (enabled).
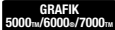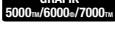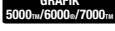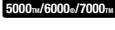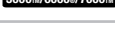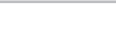
GET SWITCH/BUTTON STATUS	
Applicable Systems	**GRAFIK** 5000™/6000®/7000™
Command Number (hex)	**804**
Description	This command requests the priority of the given wallstation button.
Syntax	~11h 804 [wallstation] [switch]<CR>
Allowed Values	Wallstation on link 0 - 1Fh Switch on wallstation 0 - 1Fh
Response	:04 [switch] [priority] Priority value in lower four bits (0 - F). If disabled, bit 7 is set in priority value (80 - 8F).
Example	~11h 804 207 0<CR> Get the status of the first switch on the 8th wallstation on the third link. :04 207 0 On link 3, wallstation 8, switch 1 is priority 0 (enabled).

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Diagnostic Commands

GET OPERATING SYSTEM REV LEVEL	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**811**
Description	This command requests the revision level of the embedded operating software. It is used for diagnostic purposes.
Syntax	~11h 811<CR>
Response	:11 [rev level]
Example	~11h 811<CR> :11 300 The current operating software is revision 300h.

GET BOOT CODE REV LEVEL	
Applicable Systems	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™
Command Number (hex)	**812**
Description	This command requests the revision level of the embedded system boot software. It is used for diagnostic purposes.
Syntax	~11h 812<CR>
Response	:12 [boot rev level]
Example	~11h 812<CR> :12 114 The current boot software is revision 114h.

COMMANDS LISTED BY NUMBER

Command Number	Command Name	Applicable Systems	Page #
1	Halt Zone	GRAFIK 5000™/6000®/7000™	9
6	Toggle Zone	GRAFIK 5000™/6000®/7000™	9
7	Fade to Level	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	8
B	Ramp Up System Zone	GRAFIK 5000™/6000®/7000™	11
C	Ramp Down System Zone	GRAFIK 5000™/6000®/7000™	11
D	Fade to Levels and Repeat	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	8
12	Select System Scene	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	9
13	Select System Scene Using Override Times	GRAFIK 5000™/6000®/7000™	13
1C	Select Temp Scene	GRAFIK 5000™/6000®/7000™	14
1E	Select Scene of Space	GRAFIK 5000™/6000®/7000™	14
20	Ramp Up All Zones in Last Scene Selected	GRAFIK 5000™/6000®/7000™	12
21	Ramp Down All Zones in Last Scene Selected	GRAFIK 5000™/6000®/7000™	12
22	Stop Ramp Up All Zones in Last Scene Selected	GRAFIK 5000™/6000®/7000™	13
23	Stop Ramp Down in Last Scene Selected	GRAFIK 5000™/6000®/7000™	13
201	Disable Timeclock Until an Enable is Issued	GRAFIK 5000™/6000®/7000™	19
202	Disable Timeclock Until End of Day or Until an Enable is Issued	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	19
203	Enable Timeclock and Execute Missed Commands	GRAFIK 5000™/6000®/7000™	20
204	Enable Timeclock and Execute Previous Command	GRAFIK 5000™/6000®/7000™	20
205	Enable Timeclock	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	20
207	Set System Time and Date	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	17
300	Enable Wallstation	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	21
301	Disable Wallstation	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	21
40D	Set System Variable	GRAFIK 5000™/6000®/7000™	23
500, 600	Ramp Circuits Up/Down	LCP128™ XPS Softswitch128®	10
500-50B	Simulate Wallstation Switch Press	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	22
600-60B	Simulate Wallstation Switch Release	LCP128™ XPS Softswitch128® GRAFIK 5000™/6000®/7000™	22

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Command Number	Command Name	Applicable Systems	Page #
801	Get Status of Space	GRAFIK 5000™/6000®/7000™	15
802	Get Timeclock Status	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	18
803	Get Wallstation/Control Station Device Status	GRAFIK 5000™/6000®/7000™	24
804	Get Switch/Button Status	GRAFIK 5000™/6000®/7000™	24
805	Get Zone Intensity	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	15
808	Get System Time	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	17
809	Get Sunrise/Sunset Times	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	18
80A	Get System Date	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	17
811	Get Operating System Rev Level	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	25
812	Get Boot Code Rev Level	LCP128™ · XPS Softswitch128® · GRAFIK 5000™/6000®/7000™	25
815	Get Variable Value	GRAFIK 5000™/6000®/7000™	23
830	Get Status of Scenes in Space	GRAFIK 5000™/6000®/7000™	16

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Appendix A: ASCII Character Lookup

Chart for Allowable Characters

ASCII	Hex Value	Decimal Value	ASCII	Hex Value	Decimal Value
:	3A	58	S	53	83
space	20	32	T	54	84
#	23	35	U	55	85
~	7E	126	V	56	86
<CR>	0D	13	W	57	87
<lf>	0A	10	X	58	88
			Y	59	89
0	30	48	Z	5A	90
1	31	49	a	61	97
2	32	50	b	62	98
3	33	51	c	63	99
4	34	52	d	64	100
5	35	53	e	65	101
6	36	54	f	66	102
7	37	55	g	67	103
8	38	56	h	68	104
9	39	57	i	69	105
A	41	65	j	6A	106
B	42	66	k	6B	107
C	43	67	l	6C	108
D	44	68	m	6D	109
E	45	69	n	6E	110
F	46	70	o	6F	111
G	47	71	p	70	112
H	48	72	q	71	113
I	49	73	r	72	114
J	4A	74	s	73	115
K	4B	75	t	74	116
L	4C	76	u	75	117
M	4D	77	v	76	118
N	4E	78	w	77	119
O	4F	79	x	78	120
P	50	80	y	79	121
Q	51	81	z	7A	122
R	52	82			

Error Codes

Error	Description
1	232 string framing or overrun error Wrong baud rate selected by sender or receiver, or sender is sending too fast
2	232 string buffer error Input string was longer than 36 characters total (including ~11h)
4	No response from the processor (occurs if the interface address is disabled)
5	No tilde (~) sent
6	No ~11h sent
8	232 string check is wrong when using ~11h
31	Network address illegally formatted. 4 octets required (xxx.xxx.xxx.xxx)
100	Invalid Telnet login number
101	Invalid Telnet login
102	Login name exceeds 8 characters
103	Invalid number of arguments

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Appendix B: Conversion Chart for Intensities

Intensity (0 - 127)	Percentage (0 - 100)	Intensity (0 - 127)	Percentage (0 - 100)
0	0	65	51
1	1	66	52
2	2	67	53
3	3	68	54
4	4	69	55
5	4	70	56
6	5	71	56
7	6	72	57
8	7	73	58
9	8	74	59
10	8	75	60
11	9	76	60
12	10	77	61
13	11	78	62
14	12	79	63
15	12	80	63
16	13	81	64
17	14	82	65
18	15	83	66
19	15	84	67
20	16	85	67
21	17	86	68
22	18	87	69
23	19	88	70
24	19	89	71
25	20	90	71
26	21	91	72
27	22	92	73
28	23	93	74
29	23	94	75
30	24	95	75
31	25	96	76
32	26	97	77
33	26	98	77
34	27	99	78
35	28	100	79
36	29	101	80
37	30	102	81
38	30	103	82
39	31	104	82
40	32	105	83
41	33	106	84
42	34	107	85
43	34	108	85
44	35	109	86
45	36	110	87
46	37	111	88
47	38	112	89
48	38	113	89
49	39	114	90
50	40	115	90
51	41	116	91
52	41	117	92
53	42	118	93
54	43	119	93
55	44	120	94
56	45	121	95
57	45	122	96
58	46	123	97
59	47	124	98
60	48	125	98
61	49	126	99
62	49	127	100
63	50		
64	51		

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