



Elegance

Third Party Protocol

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Overview

The ELEGANCE can communicate with a third-party device through two RS232 interfaces RS232-2 and RS232-3. For firmware versions 5.30 and lower, communications parameters for connector RS232-3 are 19.2 K baud (if DIP Switch 3 is OFF) or 9.6 K baud (if DIP Switch 3 is ON), 8 data bits, 1 stop bit and no parity. For firmware versions 5.30 and lower, communications parameters for connector RS232-2 are 19.2 K baud (if DIP Switch 4 is OFF) or 9.6 K baud (if DIP Switch 4 is ON), 8 data bits, 1 stop bit and no parity. For firmware versions 5.40 and higher, communications baud rate for connectors RS232-3 and RS232-2 are determined by Elegance Programming Software. These communications links may be used by third-party devices to either send some control commands, or receive some status information regarding both loads and scenes. The ELEGANCE always acts as a slave to a third-party device, i.e., the ELEGANCE always responds to commands from that third-party device.

In addition, the ELEGANCE can send an ASCII string to both third-party channels indicating when a switch is pressed and when that switch is released (if that switch is programmed to do so). The ASCII string format is "**Psnnn**" for a pressed switch, and "**Rsnnn**" for a released switch, where **s** is a 1-digit ASCII number specifying ELEGANCE board number (0 for a single-system, and from 1 to 4 for a multi-system), and **nnn** is a 3-digit ASCII number specifying that switch number (from 001 to 384). The ELEGANCE can also send an ASCII string to both third-party channels indicating when a load's level is changed (if that load is programmed to do so). The ASCII string format is "**^Knnnll**", where **nnn** is a 3-digit ASCII number specifying that load number (from 001 to 192 for a single-system, from 001 to 384 for a double-system, from 001 to 576 for a triple-system, or from 001 to 768 for a quadruple-system), and **ll** is the load level (from 00 to 99, where 00 is fully OFF, and 99 is fully ON). The ELEGANCE can also send all loads status (one load every second) to both third-party channels if DIP Switch 5 is ON. The ASCII string has the format "**^Knnnll**", where **nnn** and **ll** are as defined earlier.

In a single-system configuration (one ELEGANCE board), up to two third-party devices can be connected through connectors RS232-2 and RS232-3 on that ELEGANCE board. However, in a multi-system configuration (two, three or four ELEGANCE boards connected together), up to two third-party devices can be connected through connector RS232-2 on the first ELEGANCE board, and connector RS232-3 on the last ELEGANCE board in the chain.

Communications between a third-party device and the ELEGANCE in a single-system (one ELEGANCE board) or multi-system (two, three or four ELEGANCE boards connected together) configuration is always using ASCII code (both directions). All commands are started with ASCII "^" (ASCII code \$5E), followed by a 1-byte command code. For a single-system configuration, command codes are upper-case ASCII "A" - "M" only. However, for a multi-system configuration, command codes are lower-case ASCII "a" - "m" only. The command may be followed by a number of ASCII digits that varies according to the command used. The following table shows the currently supported commands in a single-system configuration, their formats as well as response expected if any. Note that each response may be followed (if enabled in Customer Options) by an ASCII carriage return byte (ASCII code \$0D).

| Command Code | Meaning | Response |
|-----------------|--|---------------|
| ^Annn | Activate load/relay number nnn . | None |
| ^Bnnn | De-activate load/relay number nnn . | None |
| ^Cnnn | Activate scene number nnn . | None |
| ^Dnnn | De-activate scene number nnn . | None |
| ^Ennnllrr | Activate load/relay number nnn to level ll at rate/pulse width rr . | None |
| ^Fnnn | Get level of load/relay number nnn . | ll |
| ^G | Get instant ON/OFF status of all loads/relays | ddd...d |
| ^H | Get instant ON/OFF status of all switches. | sss ... s |
| ^Innn | Press switch number nnn . | None |
| ^Jnnn | Release switch number nnn . | None |
| ^K | Get instant real-time clock settings. | ssmmhwwddmmyy |
| ^Lssmmhwwddmmyy | Set real-time clock settings. | None |
| ^M001 | Return to normal mode. | None |
| ^M002 | Set special mode for this board to disable all scans except communications channels. | None |
| ^M003 | Set special mode for this board echo all commands received from third-party ports to programming port. | None |

If enable sending a CR after data for third-party get commands option is chosen (bit #6 of 1st byte in the Customer Options is set), then a CR will be sent after data sent as a response to every get command (e.g., ^F, ^G, ^H, and ^K).

The following table shows the currently supported commands in a multi-system configuration, their formats as well as response expected if any.

| Command Code | Meaning | Response |
|-----------------|---|---------------|
| ^asnnn | Activate load/relay number nnn on system s . | None |
| ^bsnnn | De-activate load/relay number nnn on system s . | None |
| ^csnnn | Activate scene number nnn on system s . | None |
| ^dsnnn | De-activate scene number nnn on system s . | None |
| ^esnnnllrr | Activate load/relay number nnn to level ll at rate/pulse width rr on system s . | None |
| ^fsnnn | Get level of load/relay number nnn on system s . | ll |
| ^gs | Get instant ON/OFF status of all loads/relays on system s . | ddd...d |
| ^hs | Get instant ON/OFF status of all switches on system s . | sss...s |
| ^isnnn | Press switch number nnn on system s . | None |
| ^jsnnn | Release switch number nnn on system s . | None |
| ^ks | Get instant real-time clock settings on system s . | ssmmhwwddmmyy |
| ^lssmmhwwddmmyy | Set real-time clock settings on system s . | None |
| ^ms001 | Return to normal mode. | None |
| ^ms002 | Set special mode for all boards to disable all scans except communications channels. | None |

s is a 1-digit ASCII number specifying ELEGANCE board number (from 1 to 4).
nnn is a 3-digit ASCII number specifying either a load/relay number (from 001 to 192), a scene number (from 001 to 256), or a switch number (from 001 to 384).
 Note that, since an LVRB has only 16 relays, relay numbers range from 001 to 016 (1st LVRB), 025 to 040 (2nd LVRB), 049 to 064 (3rd LVRB), 073 to 088 (4th LVRB), 097 to 112 (5th LVRB), 121 to 136 (6th LVRB), 145 to 160 (7th LVRB), and 169 to 184 (8th LVRB).

ll is a 2-digit ASCII number specifying load/relay level value (from 00 to 99, where 00 is fully OFF, and 99 is fully ON). For a relay in an LVRB, only levels allowed are 00 (OFF) or 99 (ON).

rr is a 2-digit number specifying a code for rate (from 00 to 31) at which a load in an RLYDRVR board is activated to the specified level, according to the following table.

| "rr" | Value | "rr" | Value | "rr" | Value | "rr" | Value |
|-------------|-----------|-------------|------------|-------------|-------------|-------------|-------------|
| 00 | Immediate | 08 | 9 seconds | 16 | 41 seconds | 24 | 210 seconds |
| 01 | 1 second | 09 | 11 seconds | 17 | 49 seconds | 25 | 250 seconds |
| 02 | 2 seconds | 10 | 13 seconds | 18 | 60 seconds | 26 | 300seconds |
| 03 | 3 seconds | 11 | 16 seconds | 19 | 75 seconds | 27 | 380 seconds |
| 04 | 4 seconds | 12 | 19 seconds | 20 | 90 seconds | 28 | 450 seconds |
| 05 | 5 seconds | 13 | 23 seconds | 21 | 110 seconds | 29 | 550 seconds |
| 06 | 6 seconds | 14 | 28 seconds | 22 | 140 seconds | 30 | 675 seconds |
| 07 | 7 seconds | 15 | 34 seconds | 23 | 175 seconds | 31 | 800 seconds |

rr is a 2-digit number specifying a code for rate (from 00 to 31) at which a relay in an LVRB board is activated for a specified pulse width, according to the following table.

| "rr" | Value | "rr" | Value | "rr" | Value | "rr" | Value |
|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|
| 00 | Indefinite | 08 | 3.00 seconds | 16 | 14.0 seconds | 24 | 90.0 seconds |
| 01 | 0.25 seconds | 09 | 4.00 seconds | 17 | 16.0 seconds | 25 | 120 seconds |
| 02 | 0.50 seconds | 10 | 5.00 seconds | 18 | 18.0 seconds | 26 | 300 seconds |
| 03 | 0.75 second | 11 | 6.00 seconds | 19 | 20.0 seconds | 27 | 600 seconds |
| 04 | 1.00 seconds | 12 | 7.00 seconds | 20 | 25.0 seconds | 28 | 900 seconds |
| 05 | 1.50 seconds | 13 | 8.00 seconds | 21 | 30.0 seconds | 29 | 1200 seconds |
| 06 | 2.00 seconds | 14 | 10.0 seconds | 22 | 45.0 seconds | 30 | 1800 seconds |
| 07 | 2.50 seconds | 15 | 12.0 seconds | 23 | 60.0 seconds | 31 | 2700 seconds |

ddd ... d is a 48-digit ASCII hex number, where every 6-digit entry holds the ON/OFF state of 24 loads or 16 relays (0 for OFF and 1 for ON), as follows.

| | | | |
|-----------------------------------|-----|---|---------|
| 1st 2 digits (least significant) | bit | 0 | Load 1 |
| | bit | 1 | Load 2 |
| | ... | | |
| 2nd 2 digits (middle significant) | bit | 7 | Load 8 |
| | bit | 0 | Load 9 |
| | bit | 1 | Load 10 |
| 3rd 2 digits (most significant) | ... | | |
| | bit | 7 | Load 16 |
| | bit | 0 | Load 17 |
| | bit | 1 | Load 18 |
| | ... | | |
| | bit | 7 | Load 24 |

The order of the 8 load entries is as follows:

LD1, LD2, LD3, ... , LD24 for RLYDRVR/LVRB 1 (6 digits)

LD1, LD2, LD3, ... , LD24 for RLYDRVR/LVRB 2 (6 digits)

...

LD1, LD2, LD3, ... , LD24 for RLYDRVR/LVRB 8 (6 digits)

Note that for an LVRB, the last 8 bits (most significant 2 digits) are meaningless, since an LVRB board has only 16 relays.

sss ... s is a 96-digit ASCII hex number, where every 4-digit entry holds the ON/OFF state of 16 switches (0 for OFF and 1 for ON), as follows.

| | | | |
|----------------------------------|-----|---|----------|
| 1st 2 digits (least significant) | bit | 0 | STARS 1A |
| | bit | 1 | STARS 1B |
| | bit | 2 | STARS 1C |
| | bit | 3 | STARS 1D |
| | bit | 4 | STARS 2A |
| | bit | 5 | STARS 2B |
| | bit | 6 | STARS 2C |
| | bit | 7 | STARS 2D |
| 2nd 2 digits (most significant) | bit | 0 | STARS 3A |
| | bit | 1 | STARS 3B |
| | bit | 2 | STARS 3C |
| | bit | 3 | STARS 3D |
| | bit | 4 | STARS 4A |
| | bit | 5 | STARS 4B |

bit 6 STARS 4C
bit 7 STARS 4D

The order of the 24 switch entries is as follows:

SW1 for STARS 1A,1B,1C,1D, 2A,2B,2C,2D, 3A,3B,3C,3D, 4A,4B,4C,4D (4 digits)

SW2 for STARS 1A,1B,1C,1D, 2A,2B,2C,2D, 3A,3B,3C,3D, 4A,4B,4C,4D (4 digits)

...

SW24 for STARS 1A,1B,1C,1D, 2A,2B,2C,2D, 3A,3B,3C,3D, 4A,4B,4C,4D (4 digits)

Note that any combination for **nnn**, **ll** and **rr** outside the specified ranges will cause the command to be ignored. In addition, command **^Ennnllrr** will be ignored if it specifies a level other than 00 or 99, or a transition rate other than 00 for non-dimmer loads.

ssmmhhwwddmmyy are the real-time clock settings consisting of 14 bytes (BCD format) as follows.

| Two Bytes | Contents | BCD Format |
|-----------|---|------------|
| ss | Seconds | 00 - 59 |
| mm | Minutes | 00 - 59 |
| hh | Hours (24 hour format) | 00 - 23 |
| ww | Day of Week (1:Sunday, 2:Monday, .. , 7:Saturday) | 01 - 07 |
| dd | Date (Day of Month) | 01 - 31 |
| mm | Month | 01 - 12 |
| yy | Year | 00 - 99 |