ILC LightLEEDer
Protocol Open

Revision 1.0  29-Aug-2011

Data format: [csddccnn...n]  
- Start of command
  cs     - Check sum
  dd     - Destination node address (hex)
  cc     - Command code (hex)
  nnn...n - Data
  ]     - End of command

Check sum is a cylindrical redundancy check of bytes 4 through EOC.
Formula:
  cs starts with an $A5
  Each byte from 4 though EOC
    cs = cs rotated right 1 bit (bit 0 rolls to bit 7)
    cs = cs + next byte
  endif
  cs = lsbyte of cs

A controller will not respond if the data packet is bad.
Check sum is ignored if cs = “—” (Equates to $56)
Data returning from controllers contains the same type check sum.
All data is ignored until a [ is received.

Host USB/Ethernet port  Baud rate is 38,400, no parity, 8 data bits, 1 stop bit
Address 00 is global with response.  Panels process command and respond.
Address FF is global with no response.  Panels process command, but do not respond.
00 Send 32 bit panel run time (in seconds)
Command [csdd00]
Response <cs{32 bit run time}>
4-11 run time in seconds (32 bits/4 bytes/8 chars)

01 Set time/date (day of week is calculated from date)
Command [csdd01hhmmssMMDDYY]

8,9 hh hour (00h-17h)
10,11 mm minute (00h-3Bh)
12,13 ss second (00h-3Bh)
14,15 MM month (01h-0Ch)
16,17 DD date (01h-1Fh)
18,19 YY year (00h-63h)
Response <cs>

02 Send time/date
Command [csdd02]
Response <cshhmmssMMDDYYd>

4,5 hh hour (00h-17h)
6,7 mm minute (00h-3Bh)
8,9 ss second (00h-3Bh)
10,11 MM month (01h-0Ch)
12,13 DD date (01h-1Fh)
14,15 YY year (00h-63h)
16 d day of week (0h-6h)

10 Turn on/off relay(s)
Command [csdd10nna]

8,9 nn relay number (00h-3Fh = 01 to 64 or FFh = all)
10 a action (0=off 1=on)
Response <cs>

11 Turn on/off relay(s) (Off based on timer output type)
Command [csdd11nna]

8,9 nn relay number (00h-3Fh = 01 to 64 or FFh = all)
10 a action (0=off 1=on)
Response <cs>

12 Turn on/off a group (panel level)
Command [csdd12nna]

8,9 nn group number (00h-FFh = 001 to 256)
10 a action (0=off 1=on)
Response <cs>

13 Turn on/off a group (panel level) (Off based on timer output type)
Command [csdd13nna]

8,9 nn group number (00h-FFh = 001 to 256)
10 a action (0=off 1=on)
Response <cs>

14 Activate a preset (panel level)
Command [csdd14nn]

8,9 nn preset number (00h-FFh = 001 to 256)
Response <cs>
18 Send dimmer output status
Command  [csdd18dd]
8,9 dd device number (00-0f = device 01-10)
Response <css1a1s2a2s3a3s4a4>
4,5 s1 output 1 setpoint
6,7 a1 output 1 actual
8,9 s2 output 2 setpoint
10,11 a2 output 2 actual
12,13 s3 output 3 setpoint
14,15 a3 output 3 actual
16,17 s4 output 4 setpoint
18,19 a4 output 4 actual

19 Force dimmer output status
Command  [csdd19ddospf]
8,9 dd device number (00-0f = device 01-10)
10 o output number (0-3 = output 1-4)
11,12 sp setpoint (00-ff)
13 f 0=fade 1=jump
Response <cs>

1A Send motor output status
Command  [csdd1Add]
8,9 dd device number (00-07 = device 01-08)
Response <csss>
4,5 ss motor status bits
   bits 1,0 output 1 status (0-off 1-neg 2-pos)
   bits 3,2 output 2 status (0-off 1-neg 2-pos)
   bits 5,4 output 3 status (0-off 1-neg 2-pos)
   bits 7,6 output 4 status (0-off 1-neg 2-pos)

1B Force motor output status
Command  [csdd1Bddopttt]
8,9 dd device number (00-07 = device 01-08)
10 o output number (0-3 = output 1-4)
11 p 0=no change 1=pos 2=neg 4=stop
12-14 ttt time (000-fff) 0=latched >0=ttt x .1 sec
Response <cs>

1C Send relay(s) runtime
Command  [csdd1Crrnn]
8,9 rr relay number (00-3f) (First relay if nn>0)
10,11 nn number of relay runtimes to send (00-1f = 1-32(max))
Response <cstttt….>
4-7 tttt relay runtime in minutes
(8-?) tttt additional relay runtimes

1D Clear all relay runtimes
Command  [csdd1D]
Response <cs>
24  **Send device input status (hardware/program/current type)**  
    **Command**  
    \[\text{csdd24dd}\]  
    8,9  \(dd\)  device (00-ff)  
    **Response**  
    \(<\text{cshhhhqqqqtttttttttt}	ext{pc}>\)  
    4-7  \(hhhh\)  hardware off-on input status for 8 inputs (16 bits/4chars)  
    8-11  \(pppp\)  program off-on input status for 8 inputs (16 bits/4chars)  
    12-19  \(tttttt\)  input types (1 char 0-f for each input)  
    20-21  \(pc\)  raw pc level

25  **Send relay status and relay lock status**  
    **Command**  
    \[\text{csdd25}\]  
    **Response**  
    \(<\text{cs}\{16\text{ chars}\}\{16\text{ chars}\}>\)  
    4-19  relay status (64 bits/8 bytes/16chars)  
    20-35  relay lock status (64 bits/8 bytes/16chars)

26  **Send group status (panel level status)**  
    **Command**  
    \[\text{csdd26}\]  
    **Response**  
    \(<\text{cs}\{64\text{ chars}\}>\)  
    4-67  group status (256 bits/32 bytes/64chars)

27  **Send preset status (panel level status)**  
    **Command**  
    \[\text{csdd27}\]  
    **Response**  
    \(<\text{cs}\{64\text{ chars}\}>\)  
    4-67  preset status (256 bits/32 bytes/64chars)

28  **Send photocell levels**  
    **Command**  
    \[\text{csdd28}\]  
    **Response**  
    \(<\text{cs}\{128\text{ chars}\}>\)  
    4-131  raw photocell levels (64 bytes/128chars)

44  **Set external input disable bits**  
    **Command**  
    \[\text{csdd44ddbb}\]  
    8,9  \(dd\)  device 00-3f  
    10,11  \(bb\)  disable bits  
    **Response**  
    \(<\text{cs}>\)

45  **Pass command to network and wait up to 2.5 seconds for response (Network controller only)**  
    **Command**  
    \[\text{csdd45}\{\text{command}\}\]  
    \{\text{command}\} must be entire command without the [cs and ]  
    **Response**  
    \(<\text{cs}>\)

   **Note:** C45 is used for host PC commands going into the network from through the NC  
Example host communications command to get relay status (C25) from node E6 through NC:  
\[--0045nnE625\]  
The NC will wait up to 2.5 seconds for a response to the command from the panel.  
Any returned data will be sent to the host.

48  **Pass global command to network with no response (Network controller only)**  
    **Command**  
    \[\text{csdd48}\{\text{command}\}\]  
    \{\text{command}\} must be entire command without the [cs and ]
    **Response**  
    \(<\text{cs}>\)

   **Note:** C48 is used for global host PC commands going into the network from through the NC  
Example host communications command to get set preset 001 (C14) through NC:  
\[--0048FF1400\]  
No data is returned from the NC