Lumidox Controller II – Serial Commands

All numeric values are in hexadecimal format
Use lowercase ASCII characters
Baud Rate=19200, No Parity, 1 Start Bit, 1 Stop Bit, TTL Levels

(stx)	Start of text character (*) 2a hex.
(etx)	End of text character (carriage return) or 0d hex.
(ack)	Acknowledge character (^) 5e hex.
CC	Command characters are ASCII characters from 0 - 9 or a - f.
DDDD	Hex "two's complement" return or send value.
	e.g. decimal value 1= 0001
	e.g. decimal value -1=ffff
SS	8 bit (modulo 256) checksum of characters sent represented as two ASCII hex characters "excludes (stx),(etx)".

Controlling Computer will send: (stx)CCDDDDSS(etx)

If the checksum is correct the Lumidox II Controller will respond with: (stx)DDDDSS (ack)

If the checksum is not correct Lumidox II Controller will respond with: (stx)XXXX60 (ack)

Communication Example:

Send a command to the controller to read the Input Voltage

Locate the Command Character in the table below: Voltage Input Read = 04 (hex)

Voltage Input is to be divided by 100 for Read: 1000 = 03e8 (hex) = (1000 / 100) = 10.00 (decimal)

Checksum is calculated as the sum of the ASCII values of each digit modulus 256, then converted to hex

> ASCII values for reference:
> 0 = 48 1 = 49 2 = 50 3 = 51 4 = 52 5 = 53 6 = 54 7 = 55 8 = 56 9 = 57
> a = 97 b = 98 c = 99 d = 100 e = 101 f = 102

The Checksum will be calculated as follows for CCDDDD:
'0' '4' '0' '0' '0' '0'
48+52+48+48+48+48 = 292
292mod256 is 36 (decimal), convert 36 (decimal) to 24 (hex)

Complete Send Command from Computer:
(stx) = *
CC   = 04
DDDD = 0000
SS   = 24
(etx) = carriage return

Complete Response from Controller: *03e800^

Remote Control:
Use function 'Remote Go' first. Then read from EEPROM data on which stage to use then write this data to the controller with functions 'ARM Current', ''FIRE Current', 'Volt Max', 'Power Total Selection', 'Power Per Selection', 'Time', and 'LEDs Selection'. Do not write to data locations other than listed in this documentation or strange controller behavior might occur.

COMMAND		FUNCTION	EXPLANATION	xMULT	VALUE RANGE
WRITE	READ				
	0x00	Model Number	Controller Identifier	1	7529
	0x01	RS Number	Firmware Number	1	2965
	0x02	Revision	Firmware Revision Value	1	0 to 9999
	0x07	State	0= OFF 1= ARM 2= FIRE	1	0 to 3
	0x08	Current Set Value	System Output Set Current	1	0 to 10000
	0x0e	Time	Time Elapsed	1	0 to 9999
	0x0f	Mode	0 = Normal Mode 1 = Countdown Mode	1	0 to 1

COMMAND		FUNCTION	EXPLANATION	xMULT	VALUE RANGE
WRITE	READ				
	0x10	STAGE	Selected Stage Program	1	1 to 5
0x17	0x12	S22 LED COLOR	0 = OFF 1 = RED 2 = GREEN 3 = YELLOW 4 = BLUE 5 = MAGENTA 6 = CYAN 7 = WHITE	1	0 to 7
0x15	0x13	Remote GO	0 = REMOTE OFF 1 = REMOTE ON, Output OFF 2 = REMOTE ON, Output ARM 3 = REMOTE ON, Output FIRE	1	0 to 3

COMMAND		FUNCTION	EXPLANATION	xMULT	VALUE RANGE
WRITE	READ				
0x40	0x20	ARM Current	Ex. 1000 is 1.000	1000	0 to 10000
0x41	0x21	FIRE Current	Ex. 1000 is 1.000	1000	0 to 10000
0x42	0x22	Volt Max	Ex. 1000 is 10.00	100	0 to 6000
0x43	0x23	Power Total Selection	Power Total	10	0 to 9999
0x44	0x24	Power Per Selection	Power Per	10	0 to 9999
0x45	0x25	Time	Time in Seconds	1	0 to 1000
0x46	0x26	LEDs Selection	0 = OFF 1 = RED 2 = GREEN 3 = YELLOW 4 = BLUE 5 = MAGENTA 6 = CYAN 7 = WHITE	1	0 to 7

COMMAND		FUNCTION	EXPLANATION	xMULT	VALUE RANGE
WRITE	READ				
	0x60	Smart Card Serial [0]	Smart Card Serial Name Character [0]	1	0 to 255
	0x61	Smart Card Serial [1]	Smart Card Serial Name Character [1]	1	0 to 255
	0x62	Smart Card Serial [2]	Smart Card Serial Name Character [2]	1	0 to 255
	0x63	Smart Card Serial [3]	Smart Card Serial Name Character [3]	1	0 to 255
	0x64	Smart Card Serial [4]	Smart Card Serial Name Character [4]	1	0 to 255
	0x65	Smart Card Serial [5]	Smart Card Serial Name Character [5]	1	0 to 255
	0x66	Smart Card Serial [6]	Smart Card Serial Name Character [6]	1	0 to 255
	0x67	Smart Card Serial [7]	Smart Card Serial Name Character [7]	1	0 to 255
	0x68	Smart Card Serial [8]	Smart Card Serial Name Character [8]	1	0 to 255
	0x69	Smart Card Serial [9]	Smart Card Serial Name Character [9]	1	0 to 255
	0x6a	Smart Card Serial [a]	Smart Card Serial Name Character [a]	1	0 to 255
	0x6b	Smart Card Serial [b]	Smart Card Serial Name Character [b]	1	0 to 255
	0x6c	Smart Card Model [0]	Smart Card Model Name Character [0]	1	0 to 255
	0x6d	Smart Card Model [1]	Smart Card Model Name Character [1]	1	0 to 255
	0x6e	Smart Card Model [2]	Smart Card Model Name Character [2]	1	0 to 255
	0x6f	Smart Card Model [3]	Smart Card Model Name Character [3]	1	0 to 255
	0x70	Smart Card Model [4]	Smart Card Model Name Character [4]	1	0 to 255
	0x71	Smart Card Model [5]	Smart Card Model Name Character [5]	1	0 to 255
	0x72	Smart Card Model [6]	Smart Card Model Name Character [6]	1	0 to 255
	0x73	Smart Card Model [7]	Smart Card Model Name Character [7]	1	0 to 255
	0x74	Smart Card S22 Color Select	Smart Card LED Color Select	1	0 to 7
	0x75	Smart Card Stage Select	Smart Card Stage Select	1	1 to 5

COMMAND		FUNCTION	EXPLANATION	xMULT	VALUE RANGE
WRITE	READ				
	0x76	Smart Card Lambda [0]	Smart Card Wavelength [0]	1	0 to 255
	0x81	Smart Card Lambda [1]	Smart Card Wavelength [1]	1	0 to 255
	0x82	Smart Card Lambda [2]	Smart Card Wavelength [2]	1	0 to 255
	0x89	Smart Card Lambda [3]	Smart Card Wavelength [3]	1	0 to 255
	0x8a	Smart Card Lambda [4]	Smart Card Wavelength [4]	1	0 to 255
	0x77	Smart Card Serial [5]	Smart Card ARM Current	1	0 to 10000
	0x78	Smart FIRE Current [1]	Smart Card FIRE Current [1]	1	0 to 1000
	0x79	Smart VOLT Limit [1]	Smart Card VOLT Limit [1]	100	0 to 6000
	0x7a	Smart VOLT Start [1]	Smart Card VOLT Start [1]	100	0 to 6000
	0x7b	Smart POWER TOTAL[1]	Smart Card POWER TOTAL[1]	10	0 to 9999
	0x7c	Smart POWER PER LED [1]	Smart Card POWER PER LED [1]	10	0 to 9999
	0x7d	SC TOTAL UNITS [1]	0 = W TOTAL RADIANT POWER 1 = mW TOTAL RADIANT POWER 2 = W/cm² TOTAL IRRADIANCE 3 = mW/cm² TOTAL IRRADIANCE 4 = BLANK 5 = A TOTAL CURRENT 6 = mA TOTAL CURRENT	1	0 to 6
	0x7e	SC PER LED UNITS [1]	0 = W PER WELL 1 = m W PER WELL 2 = W TOTAL RADIANT POWER 3 = mW TOTAL RADIANT POWER 4 = mW/cm² PER WELL 5 = mW/cm² 6 = J/s 7 = BLANK 8 = A PER WELL 9 = mA PER WELL	1	0 to 9

COMMAND		FUNCTION	EXPLANATION	xMULT	VALUE RANGE
WRITE	READ				
	0x80	Smart FIRE Current [2]	Smart Card FIRE Current [2]	1	0 to 1000
	0x83	Smart POWER TOTAL[2]	Smart Card POWER TOTAL[2]	10	0 to 9999
	0x84	Smart POWER PER LED [2]	Smart Card POWER PER LED [2]	10	0 to 9999
	0x85	SC TOTAL UNITS [2]	0 = W TOTAL RADIANT POWER 1 = mW TOTAL RADIANT POWER 2 = W/cm² TOTAL IRRADIANCE 3 = mW/cm² TOTAL IRRADIANCE 4 = BLANK 5 = A TOTAL CURRENT 6 = mA TOTAL CURRENT	1	0 to 6
	0x86	SC PER LED UNITS [2]	0 = W PER WELL 1 = m W PER WELL 2 = W TOTAL RADIANT POWER 3 = mW TOTAL RADIANT POWER 4 = mW/cm² PER WELL 5 = mW/cm² 6 = J/s 7 = BLANK 8 = A PER WELL 9 = mA PER WELL	1	0 to 9
	0x88	Smart FIRE Current [3]	Smart Card FIRE Current [3]	1	0 to 1000
	0x8b	Smart POWER TOTAL[3]	Smart Card POWER TOTAL[3]	10	0 to 9999
	0x8c	Smart POWER PER LED [3]	Smart Card POWER PER LED [3]	10	0 to 9999
	0x8d	SC TOTAL UNITS [3]	0 = W TOTAL RADIANT POWER 1 = mW TOTAL RADIANT POWER 2 = W/cm² TOTAL IRRADIANCE 3 = mW/cm² TOTAL IRRADIANCE 4 = BLANK 5 = A TOTAL CURRENT 6 = mA TOTAL CURRENT	1	0 to 6
	0x8e	SC PER LED UNITS [3]	0 = W PER WELL 1 = m W PER WELL 2 = W TOTAL RADIANT POWER 3 = mW TOTAL RADIANT POWER 4 = mW/cm² PER WELL 5 = mW/cm² 6 = J/s 7 = BLANK 8 = A PER WELL 9 = mA PER WELL	1	0 to 9

COMMAND WRITE	READ	FUNCTION	EXPLANATION	xMULT	VALUE RANGE
	0x90	Smart FIRE Current [4]	Smart Card FIRE Current [4]	1	0 to 1000
	0x93	Smart POWER TOTAL[4]	Smart Card POWER TOTAL[4]	10	0 to 9999
	0x94	Smart POWER PER LED [4]	Smart Card POWER PER LED [4]	10	0 to 9999
	0x95	SC TOTAL UNITS [4]	0 = W TOTAL RADIANT POWER 1 = mW TOTAL RADIANT POWER 2 = W/cm² TOTAL IRRADIANCE 3 = mW/cm² TOTAL IRRADIANCE 4 = BLANK 5 = A TOTAL CURRENT 6 = mA TOTAL CURRENT	1	0 to 6
	0x96	SC PER LED UNITS [4]	0 = W PER WELL 1 = m W PER WELL 2 = W TOTAL RADIANT POWER 3 = mW TOTAL RADIANT POWER 4 = mW/cm² PER WELL 5 = mW/cm² 6 = J/s 7 = BLANK 8 = A PER WELL 9 = mA PER WELL	1	0 to 9
	0x98	Smart FIRE Current [5]	Smart Card FIRE Current [5]	1	0 to 1000
	0x9b	Smart POWER TOTAL[5]	Smart Card POWER TOTAL[5]	10	0 to 9999
	0x9c	Smart POWER PER LED [5]	Smart Card POWER PER LED [5]	10	0 to 9999
	0x9d	SC TOTAL UNITS [5]	0 = W TOTAL RADIANT POWER 1 = mW TOTAL RADIANT POWER 2 = W/cm² TOTAL IRRADIANCE 3 = mW/cm² TOTAL IRRADIANCE 4 = BLANK 5 = A TOTAL CURRENT 6 = mA TOTAL CURRENT	1	0 to 6
	0x9e	SC PER LED UNITS [5]	0 = W PER WELL 1 = m W PER WELL 2 = W TOTAL RADIANT POWER 3 = mW TOTAL RADIANT POWER 4 = mW/cm² PER WELL 5 = mW/cm² 6 = J/s 7 = BLANK 8 = A PER WELL 9 = mA PER WELL	1	0 to 9