ISSI LC-2

Canon® Ethernet Lens Controller

Application Program Interface

Programmers Reference Manual

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Version 1.7.15

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Contact Information: Innovative Scientific Solutions Inc.

7610 McEwen Road Dayton, OH 45459 Ph.: (937) 630-3012 Fax: (937) 630-3015
Website: www.innssi.com, Email : issi-sales@innssi.com

ISSI LC-2 API

API based on UDP Protocol. Port 1339/UDP.

1. Commands

Action: Get controller f/w version
Command: "ver<*CR*>"
Returns: "*ISSI LCI-EF-232=4.x.y (s/n:19xxx)*"

Action: Initialize lens, and get current motors values and ranges (aperture ranges would change when zoom changed)
Command: "*ping<CR>*"
Returns: "*zRange=minZ,maxZ fRange=minF,maxF aRange=minA,maxA Current=ZZ,FF,AA AF=X IS=Y ISactive=S*"
where

- minZ– minimum zoom value, maxZ – maximum zoom value
- minF– minimum focus value, maxF – maximum focus value
- minA– minimum aperture value, maxA – maximum aperture value
- ZZ– current zoom value, FF– current focus value, AA - current aperture value
- X = **1** if the focus switch is in *AF* position on lens and **0** if in *MF*.
- Y = **1** if Image Stabilization(IS) switch on lens is enabled, and **0** if disabled or lens have no IS
- S = **1** if IS is activated and **0** if it deactivated

- "*nolensfound*" return in case no lens found

Action: Move Focus motor on X units
Command: "*moveFocus=X<CR>*" where X could be as positive as negative values.
Returns: "*Focus=Y*", where Y – current value of Focus motor or "*errorFocus*" when focus value is not reachable;

Action: Move Aperture motor on X step (one-quarter-stop f-number)
Command: "*moveAper=X<CR>*" where X could be as positive as negative values. **Returns**: "*Iris=Y*", where Y – current value of Aperture or "*errorAperLimits*" when aperture value is not reachable

Action: Set desired value for Focus motor
Command: "*setFocus=X<CR>*" where X is positive value
Returns: "*Focus =XXX*", where XXX is the current value (for non USM lens could take more time), "*errorFocus*" - indicate focus positioning problem

Action: alternative way to set lens focus: lens will move focus motor to minimum position, reset encoder counter and then position the focus. Helps to suppress the accumulative lens drift effect for some lenses.
Command: "*setFocus2=X<CR>*" where X is positive value
Returns: "*Focus =XXX*", where XXX is the current value (for non USM lens could take more time), "*errorFocus*" - indicate focus positioning problem

Action: Set desired value for aperture (in f-number)
Command: "*setAper=X<CR>*" where X is in quarter-stop f-number scale, please use pre-calculated f-stop numbers: *1.0, 1.1, 1.3, 1.4, 1.6, 1.8, 2.0, 2.2, 2.5, 2.8,*

3.2, 3.5, 4.0, 4.5, 5.0, 5.6, 6.3, 7.1, 8.0, 9.0, 10, 11, 13, 14, 16, 18, 20, 22, 25, 29, 32, 36, 40, 45, 51, 57, 64, 72 ,80, 90

Returns: "*Iris=Y*", where Y – current value of Aperture, if X is out of range will answer with "*errorAperLimits*" message

Action: detect IS (Image Stabilization) availability for for connected lens

Command: "*isIS<CR>*"

Returns: "*IS=Y*" where Y could be **0** or **1**, "**0**" - means lens does not have IS function, "**1**" - lens has IS function. Also will answer "**0**" if IS switch is in OFF position.

Action: activate IS (Image Stabilization) function for connected lens

Command: "*enableIS=X<CR>*"

Returns: "*ISactive=Y*" where X is the amount of seconds to keep IS active, from [0-3600]. "**0**" - disable IS, and Y is **0** or **1** - current IS status

Action: Set nickname for LC (stored in LC memory)

Command: "*setName=XXXXXXX<CR>*" where XXXXXXX is a 7-symbols name for this controller.

Returns: "*OK*"

Action: Get LC nickname (stored in non-volatile memory)

Command: "*getName<CR>*"

Returns: "*Name=XXXXXX*"

Action: soft restart LC-2
Command: "*Reboot<CR>*"
Returns: "*OK*"

Action: explore focus limits
Command: "*refRange<CR>*"
Returns: "*fRange=minY,maxY*" where minY– minimum focus value, maxY – maximum focus value

Action: get lens name
Command: "*getLens<CR>*"
Returns: "*Lens=XXXXXXX*", where *XXXXXXX* is the lens name stored in internal lens memory, the lens might not support this command.

Action: get distance range from internal lens encoder in meters
Command: "*getDist<CR>*"
Returns: " *Dist=XX,YY*", where *XX and YY means that current lens focus distance is in range of XX-YY meters*

Action: determine is any lens attached to LC
Command: "*isLens<CR>*"
Returns: " *LENS_HERE*" in case lens is attached, and "LENS_NONE" in case no lens attached

Action: set focus ring in minimum position
Command: "*goMIN<CR>*"
Returns: " *MIN_OK*"

Action: set focus ring in maximum (infinity) position

Command: "*goMAX<CR>*"

Returns: " *MAX_OK*"

Action: open aperture to maximum for that lens and current zoom position

Command: "*openAper<CR>*"

Returns: "*OK*"

Action: reset internal encoder counter

Command: "*setZero<CR>*"

Returns: "*OK*"

2. Examples

Python

```
-----------------------------------------------------------------
import time
import serial
import datetime

COM_PORT = 'COM44'
COM_BAUD_RATE = 115200

ser = serial.Serial(COM_PORT, COM_BAUD_RATE, timeout = 2)
readOut = 0   #chars waiting from LC
print ("ISSI Python3 Demo ISSI LCI-EF-232 Script")
MESSAGES = ["ver\r", "ping\r", "setFocus=100\r", "setAper=9\r"]
for i in range(len(MESSAGES)): # LC2 command loop
    now = datetime.datetime.now()
    print (now.strftime("%Y-%m-%d %H:%M:%S\n"), "Sent:", MESSAGES[i])
    ser.write(str(MESSAGES[i]).encode())
    ser.flush()
    readOut =  ser.readline().decode('ascii')
    print (" Answer: ", readOut)
    time.sleep(1)
-----------------------------------------------------------------
```

Output:

```
-----------------------------------------------------------------
ISSI Python3 Demo ISSI LCI-EF-232 Script
2020-01-15 12:29:22
 Sent: ver
 Answer: ISSI LCI-EF-232=4.7.15 (s/n:20002)
```

```
2020-01-15 12:29:23
 Sent: ping

 Answer: zRange=35,35 fRange=0,2508 aRange=1.4,22.0 Current=35,100,9.0 AF=1
IS=0 ISactive=0


2020-01-15 12:29:24
 Sent: setFocus=100
 Answer: Focus=100


2020-01-15 12:29:25
 Sent: setAper=9
 Answer: Iris=9.0


------------------------------------------------------------------
```