C1 PRO X18

Lightweight, USB powered, self sufficient 5.5~96mm motorized zoom lens camera kit for day/night operation

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Overview

Lightweight, USB powered, self sufficient 5.5~96mm motorized zoom lens camera kit for day/night operation. Kit is fully assembled and tested before shipping.

- Uses PCBA module used in C1 PRO camera.
- Controller SCF4-L087 (featuring SCF4-M module)



Lens specifications

Optics

Lens SKU	L087-MZFD-5.35Z96.3-DIRECT
Image sensor	1/2.7" Effective image area > 6.8mm
Focal distance	5.85±5% ~ 93.6±5%mm
Aperture	f/1.8~f/3.9
Focus range	• WIDE: 0.2m - infinity • TELE: 1.0m - infinity
Field of view (D=6.71mm)	• WIDE: 62.6° • TELE: 4.05°
Distortion	• WIDE: -6.40% • TELE: 2.92%

Mechanics

Lens length (image surface-top lens barrel)	79.74mm (in glass)
Mechanical back focus	-0.92 (in glass t=0.5 BK7)
Lens zoom structure	The stepper motor is directly connected to the screw
Lens focusing structure	The stepper motor is directly connected to the screw
Lens size	• Length: 80.7mm • Width: 39.7mm • Height: 42.2mm • Front end diameter: 32.1mm

Motor specifications

Screw pitch	0.4mm
Spiral rotation direction	Right
Rated voltage	5.0 VDC
Coil resistance	55Ω ± 10%
Phase count	2

Step angle	18° / step
Max start frequency	800 PPS/min @ at 5.0 VDC
Max operating frequency	1200 PPS/min @ 5.0 VDC
Pull torque	2.8 gf-cm min (at 480 PPS @ 5.0 VDC)
Push torque	3.8 gf-cm min (at 480 PPS @ 5.0 VDC)
Operating temperature range	-20°C ~ +70°C

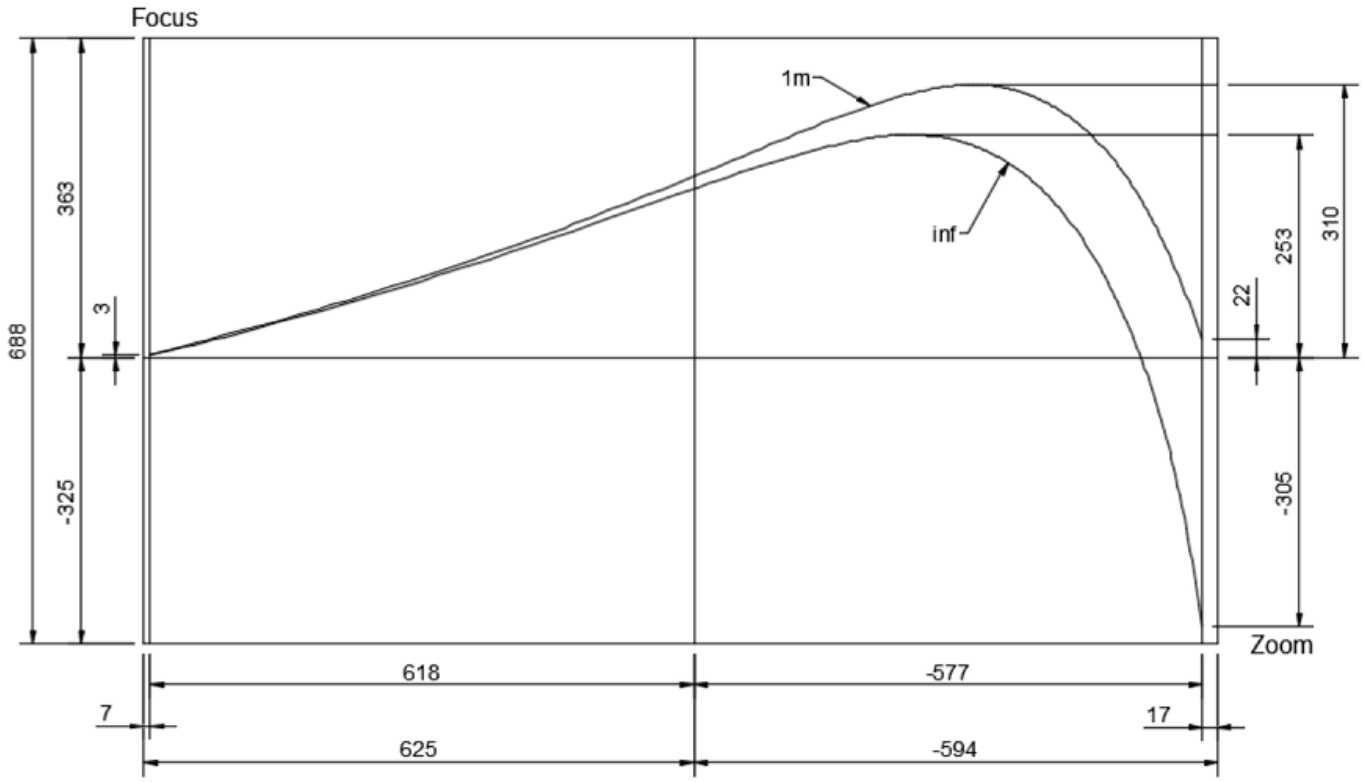
Position alignment sensor PI

Model number	RPI-222 / ROHM

IR switch

Coil resistance	25 ± 5Ω
Operation voltage	4.5V
Current consumption	144~200mA
Switching time	200-500ms
Filters	• Clear glass • 420 ~600nm Tavg >95%

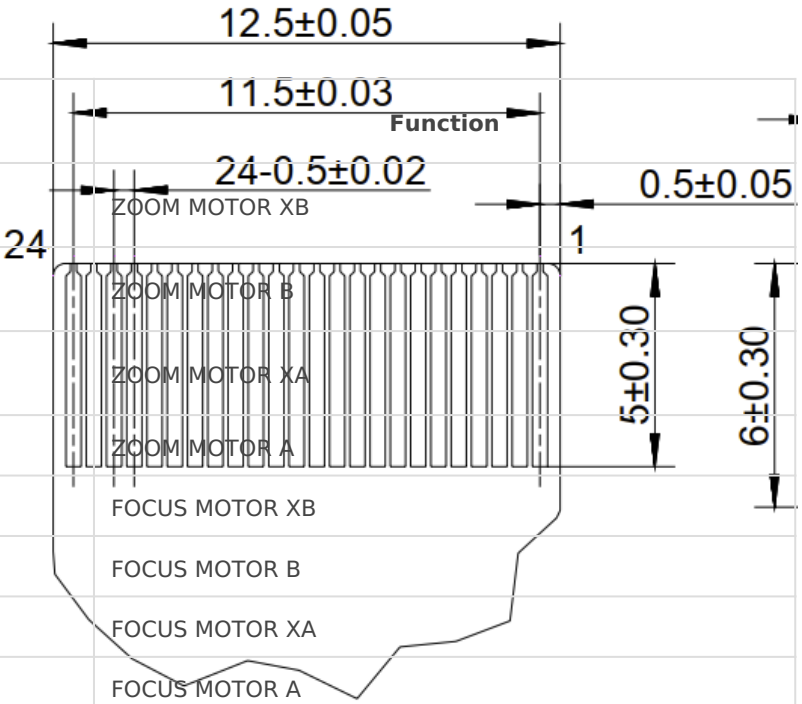
Zoom-Focus curve diagram


Focus
1m
inf
688
363
3
-325
22
253
310
-305
Zoom
618
-577
7
17
625
-594

Pinout

Pinout

Lens signals routed by 24 pin 0.5mm pitch FFC cable. Contacts facing bottom. Recommended connector Wurth Electronics 68712414522



Nr	Function
1	ZOOM MOTOR XB
2	ZOOM MOTOR B
3	ZOOM MOTOR XA
4	ZOOM MOTOR A
5	FOCUS MOTOR XB
6	FOCUS MOTOR B
7	FOCUS MOTOR XA
8	FOCUS MOTOR A
9	IR Drive +
10	IR Drive -
11	FOCUS PI(Anode, Collector)
12	FOCUS PI(Emitter)
13	FOCUS PI(Cathode)
14	
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21	

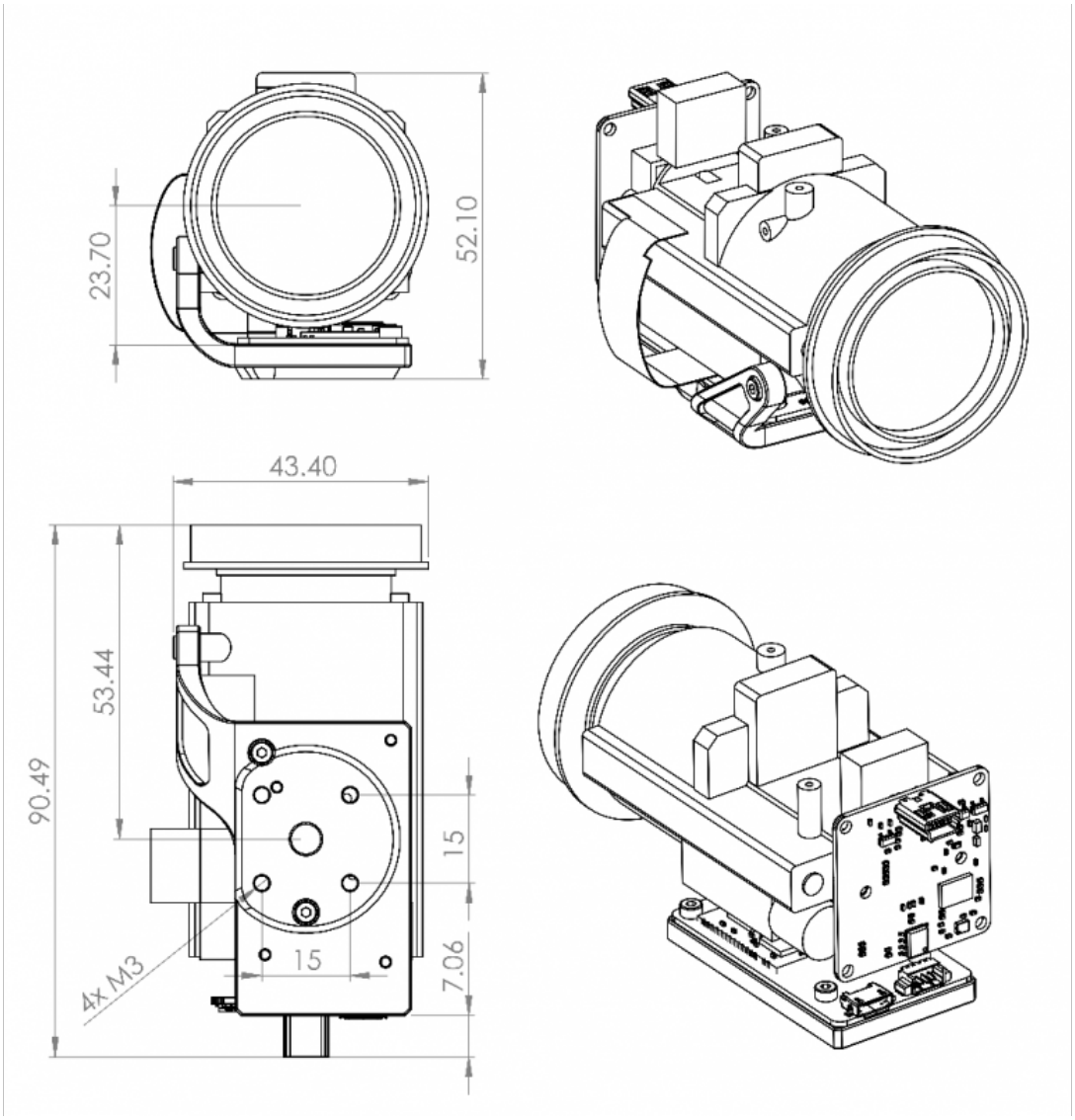
22	ZOOM PI(Emitter)
23	ZOOM PI(Cathode)
24	ZOOM PI(Anode, Collector)

Dimensions

Camera dimensions

Length	90.5mm
Width	45mm
Height	52.1mm

Camera drawings



3D models

3D models can be downloaded from GitHub

Control software

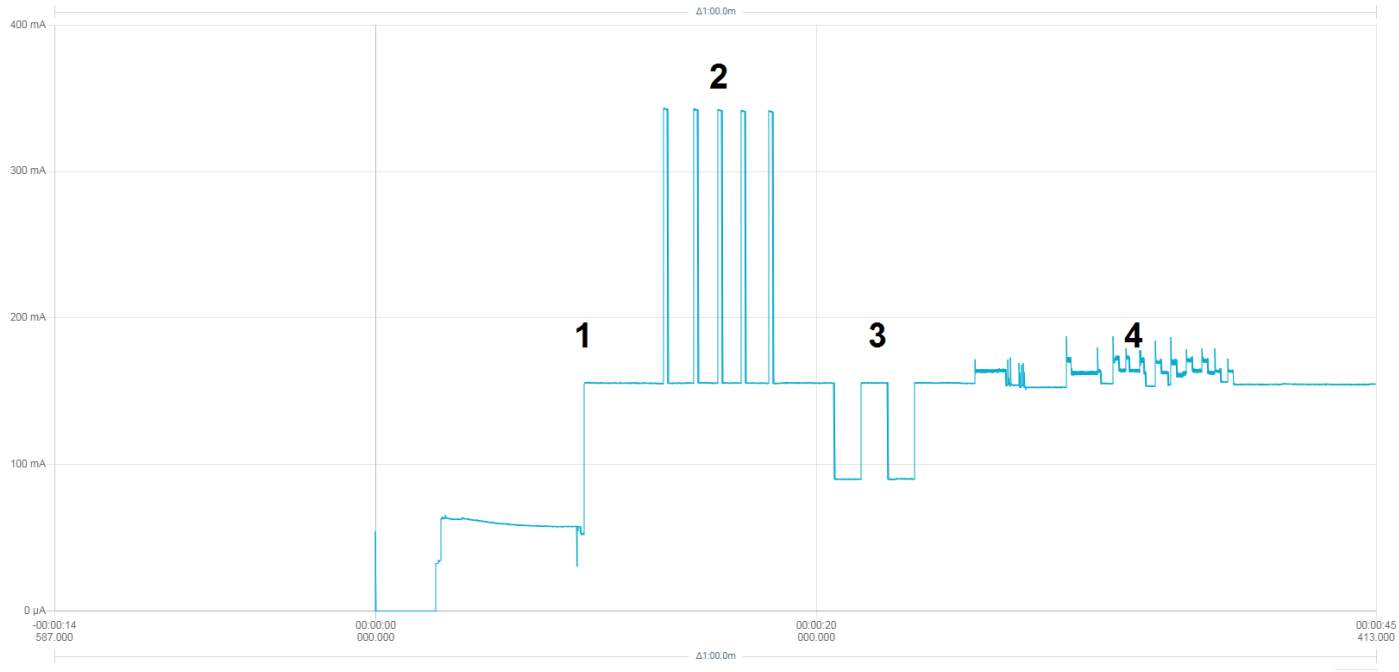
SCF4-SDK comes with open-sourced command line and GUI sample programs for rapid controller evaluation. A simple control software example is provided for testing and demonstration. Software is given "as is" to help with getting started and testing.

More details and control explanation in SCF4 documentation. Source code is maintained on GitHub

Power consumption

SCF4 controller

Typical power consumption looks like in diagram below

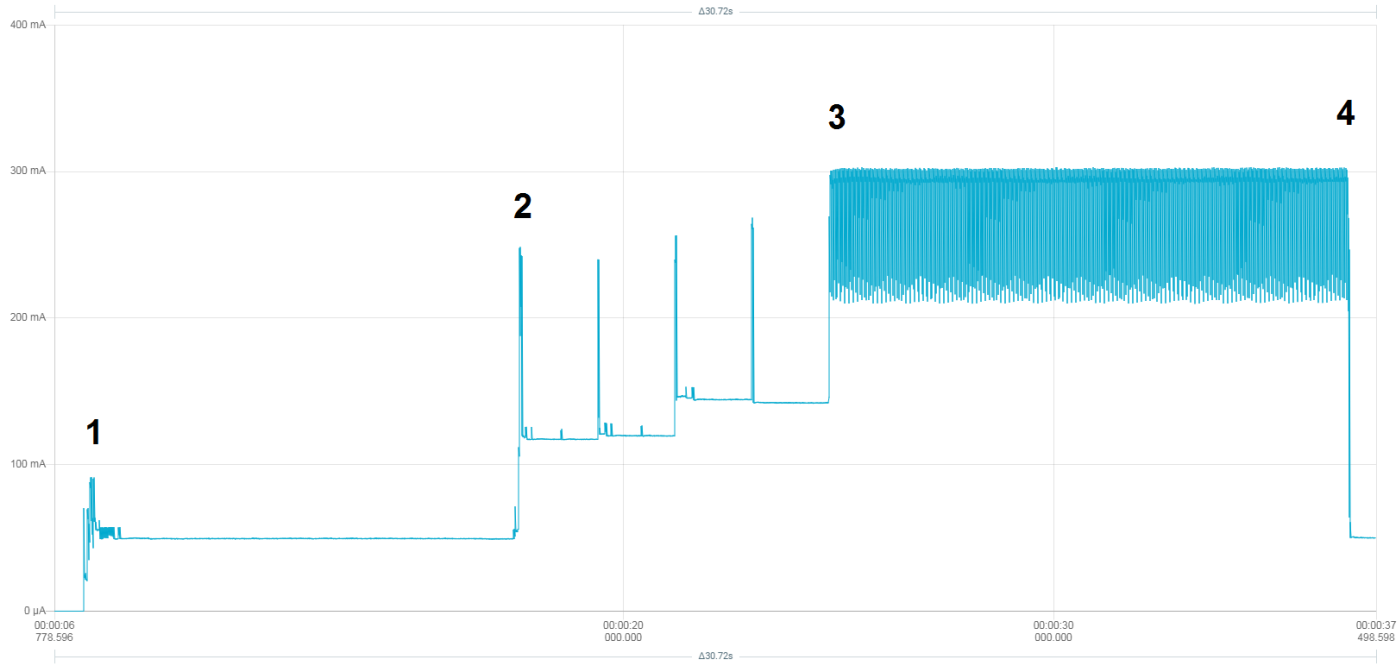


Where:

1. Com port is open and controller initialized
2. IR filter switched on and off several times
3. IR light switched off and on two times
4. Regular motor operation. Homing and toggle between few presets

C1 PRO camera

Camera typical power consumption looks like in diagram below



Where:

1. Camera powered on
2. Software requests to open camera
3. Actual data transfer starts
4. Camera preview closed, camera switched off