

Crocus PI Zero

User Manual

V1.0



Crocus PI

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1. Introduction

1.1. What is Crocus PI Zero?

Crocus PI Zero is mini single board computer(SBC). Based on Linux Operating Systems. It has 64MB(512 Mbit) SDRAM.

1.2. What Can I do with Crocus PI Zero?

You can use Crocus PI Zero to build...

- A computer
- Wireless Server
- Game Console
- Muzik Player
- Programming
-





Smart Home Applications



Signal Processing

1.3. Whom is it for?

Crocus PI Zero, anyone who interest with technology. You can create with technology. You can realize your projects in your mind. You can use it in many fields such as robotics, IoT etc.



Hardware	
CPU	ARM Cortex-A7 CPU, 1.2GHz
RAM	64MB (512Mbit DDR2)
Storage	TF card (up to 32GB)
Ethernet	100M/10M
WIFI	ESP8266EX, IEEE 802.11 b/g/n
Antenna	Var (2.4 Ghz wifi)
USB	1x USB 2.0, OTG
Sound	No need extension board. Audio output can be taken directly.
Video	H.264, MPEG decoding
Power Supply	5V 1A, POE (need extension board)
GPIO	26 pin + 14 pin header
Peripherals	3 x UART(with console), 1 x SPI, 2x I2C, 2x PWM, 1x RS485
LED	Power Led & 2 x User LED
Operating Systems	Mainline Linux, Debian, Android, RT-Thread RTOS
Interface definition	
Dimensions	48,5 x 47mm
Weight	33 gr

1.4. Hardware Specifications

1.5. GPIO Specifications

26 pin GPIO header, compatible with Rasperry PI Model A, Model B, Orange PI Zero.





2. Setup

2.1. Accessories Needed



2.2. Running Crocus Pl

2.2.1. Preparing Operating System

You can download the appropriate operating system precompiled image file and applications for Crocus PI from the <u>link</u>. For detailed installation, you can review the developer installation guide.

- 1- Insert your microSD card into the microSD card reader and connect it to your computer..
- 2- Download image file.
- 3- Open W32DiskImager application.



Image File	_		2	Device
:/Users/user/D	Desktop/crocusp	pizero_buildroot_pr	ecompiled.img	[D:\] •
Hash				_ ∩
None 🔻	Generate (Сору		-
				10
Read Only A	llocated Partitio	ins		
Read Only A	llocated Partitio	ns		
Read Only A Progress	llocated Partitio	ins		
Read Only A Progress	llocated Partitio	ins		

In Ubuntu 22.04 LTS operating system, you can open the downloaded image file with the "Disks" software, select the microsd card drive as the target drive, and load it to your sd card with the "Start Restoring..." option.

Disks					- • ×
54 GB Hard Disk VBOX HARDDISK CD/DVD Drive VBOX CD-ROM Drive Generic SM/xD-Picture Drive Generic Compact Flash Drive Generic MS/MS-Pro 16 GB Drive	e		Restore Disk Image	×	
Generic SD/MMC		Image to Restore Image Size Destination	~/Desktop/crocuspizero_debian_apt.img 2,6 GB (2.640.314.368 bytes) (None) 54 GB Hard Disk — VBOX HARDDISK (/dev/sda) CD/DVD Drive — VBOX CD-ROM (/dev/sr0) Drive — Generic- SM/xD-Picture (/dev/sdd) Drive — Generic- Compact Flash (/dev/sdc) Drive — Generic- MS/MS-Pro (/dev/sde) 16 GB Drive — Generic- SD/MMC (/dev/sdb)		



Disks 📃		- • ×
Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks CD/DVD Disk CD/DVD Drive Generic SM/xD-Picture Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Concolor SM/xD-Picture Ceneric MS/MS-Pro Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Concolor SM/xD-Picture Ceneric MS/MS-Pro Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Disks Ceneric SM/xD-Picture Ceneric MS/MS-Pro Disks Disks Disks Disks Disks Disks Ceneric SD/MMC	Restore Disk Image × The disk image is 13 GB smaller than the target device Image to Restore ~/Desktop/crocuspizero_debian_apt.img Image to Restore ~/Desktop/crocuspizero_debian_apt.img Image Size 2,6 GB (2.640.314.368 bytes) Destination 16 GB Drive — Generic SD/MMC (/dev/sdb) ~ Cancel Start Restoring Select a device to manage.	X

4- Insert the image loaded Microsd card into CrocusPI.

2.2.2. Power Up

You can energize and run the CrocusPI Zero in three ways.

- 1- Power Jack (if another device is to be energized with the board, then an adapter with a suitable capacity that can give higher current should be used).
- 2- Using PIN Header (J5 P02 and J5-P03)
- 3- Using the Ethernet port (PoE) (With an external voltage converter board using J5 -P02 ,J5 P03 , J5 -P04, J5 -P05, J5 -P06)

2.2.3. Console Connection

Connect the USB-Serial converter to CrocusPI as follows and connect the converter to your computer.





For Windows, you can find the corresponding COM port using Device Manager.

📇 Aygıt Yöneticisi	3.992	×
Dosya Eylem Görünüm Yardım		
 DESKTOP- Ağ bağdaştırıcıları Ağ bağdaştırıcıları Bağlantı noktaları (COM ve LPT) İletişim Bağlantı Noktası (COM1) USB Serial Port (COM3) Bilgisayar Depolama denetleyicileri Disk sürücüleri Disk sürücüleri Evrensel Seri Volu denetleyicileri Evrensel Seri Volu denetleyicileri Fare ve diğer işaret aygıtları Görüntü bağdaştırıcıları Görüntü bağdaştırıcıları IDE ATA/ATAPI denetleyiciler İnsan Arabirim Cihazları İlsemciler 		^
 Klavyeler Monitörler Ses girişleri ve çıkışları Ses, video ve oyun denetleyicileri Sistem aygıtları Taşınabilir Aygıtlar Üretici Yazılımı Yazdırma kuyrukları Yazılım bileşenleri Vazılım cihazları 		v

You can download Putty from the CrocusPI applications folder or from https://www.putty.org.

After selecting 115200 as the baudrate and specifying the relevant COM port, open the connection and energize the CrocusPI. You will start to see the opening messages on the console.

Session	Basic options for	your PuTTY session	
Logging ⊒ Terminal Kevboard	Specify the destination you Serial line 2	want to connect to Speer	3
Bell	ССОМЗ	11520	00
	Connection type:		
	O SSH O Serial O	Other: Telnet	~
	Default Settings		- 4
- Connection	Default Settings	Lo	ad
Proxy		Sa	ive
⊕- SSH Serial Telnet		De	lete
	Close window on exit:		

```
COM3 - PuTTY
                                                                                     ×
                                                                              9.593646] mmcl: queuing unknown CIS tuple 0x1a [01 01 00 02 07]
                                                                          (5 bytes)
     9.695347] mmcl: queuing unknown CIS tuple 0xlb [cl 41 30 30 ff ff ff ff] (8
 bytes)
    9.784161] mmcl: new high speed SDIO card at address 0001
    10.564913] random: crng init done
10.569756] random: 52 urandom warning(s) missed due to ratelimiting
    11.541592] esp_host:bdf5087c3deb
    11.541592] esp_target: e826c2b3c9fd 57 18202
    11.541592]
    17.886578] esp_op_add_interface STA
    19.185836] dwmac-sun8i 1c30000.ethernet eth0: PHY [0.1:01] driver [Generic P
HY] (irq=POLL)
    19.235256] dwmac-sun8i 1c30000.ethernet eth0: Register MEM TYPE PAGE POOL Rx
Q = 0
    19.246005] dwmac-sun8i 1c30000.ethernet eth0: No Safety Features support fou
nd
    19.255014] dwmac-sun8i 1c30000.ethernet eth0: No MAC Management Counters ava
ilable
    19.264323] dwmac-sun8i 1c30000.ethernet eth0: PTP not supported by HW
    19.273327] dwmac-sun8i 1c30000.ethernet eth0: configuring for phy/mii link m
ode
    19.402592] sip_parse_data_rx_info no mem for rskb
    20.510010] wlan0: authenticate with b8:69:f4:9e:2c:b9
20.516974] wlan0: send auth to b8:69:f4:9e:2c:b9 (try 1/3)
    20.527272] wlan0: authenticated
    20.544919] wlan0: associate with b8:69:f4:9e:2c:b9 (try 1/3)
    20.558899] wlan0: RX AssocResp from b8:69:f4:9e:2c:b9 (capab=0x431 status=0
aid=2)
    20.569043] wlan0: associated
Debian GNU/Linux 11 CrocusPI ttyS0
CrocusPI login:
```

User name : root password: root

Crocus PI

2.2.4. Access Without Console (via Network)

While Ethernet is connected, start your device and get IP automatically. Scan your network with an IP scanning software on the network. You can download the IP scanner from <u>https://www.advanced-ip-scanner.com/</u>.

Tara II II II III III IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	×		(<u>83</u>)					varlar Vardum	IP Scanner e Görüntüle Av	Advanced
192.168.88.1-254,192.168.2.1-254 Omegin: 192.168.0.1-100, 192.168.0.200 Arama Sonuç listesi Sik Kullanlanlar Ortetici MAC adresi Yorumlar > Ip NetBIOS grubu Üretici MAC adresi Yorumlar > Ip2.168.88.1 192.168.88.1 Routerboard.com Ip2.168.88.1 Yorumlar Ipp 192.168.88.1 192.168.88.1 Routerboard.com Ipp. Ipp. Ipp 192.168.88.5 192.168.88.5 Ipp. Ipp. Ipp. Ipp Ipp. 192.168.88.65 Ipp. Ipp. Ipp. Ipp. Ipp Ipp. Ipp. Ipp. Ipp. Ipp. Ipp. Ipp. Ipp Ipp. Ipp. Ipp. Ipp. Ipp. Ipp. Ipp. Ipp. </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>11 🗜</td> <td>Tara</td>									11 🗜	Tara
Sonuç listesi Sık Kullanılanlar Durum Ad IP NetBIOS grubu Üretici MAC adresi Yorumlar Ig2.168.88.1 192.168.88.1 Routerboard.com Immodel C:B5 Immodel C:B5 Ig2 192.168.88.65 192.168.88.65 Immodel C:B5 Ig2 192.168.88.65 Immodel C:B5 Ig2 192.168.88.65 Immodel C:B5	Q		Arama	168.0.1-100, 192.168.0.200	Örneğin: 192			254,192.168.2.1-2	254,192.168.1.1-2	192.168.88.1-
Durum Ad IP NetBIOS grubu Üretici MAC adresi Yorumlar > 192.168.88.1 192.168.88.1 Routerboard.com Image: C:B5 Image: C:B5 Image: Imag									Sik Kullanılarlar	Sonuç listesi
192.168.88.65 192.168.88.65 > -			Yorumlar	MAC adresi	Üretici Routerboard.com	NetBIOS grubu	IP 192.168.88.1	Ad	192.168.88.1	Durum
]		FF:F7:03			192.168.88.65	5	192.168.88.65	■ > ■ > ■ > ■



Make an SSH connection over the detected ip.

⊒- Session	Basic options for your PuTTY :	session		
Logging Terminal Keyboard Bell	Specify the destination you want to conr Host Name (or IP address) 192.168.88.65	Port		
Features Window Appearance	Connection type: SSH Serial Other: Tel	net ~		
Behaviour Translation Selection	Load, save or delete a stored session Saved Sessions]		
⊡ Connection	Default Settings	Load		
Data Proxy		Save		
⊡ SSH Serial Telnet		Delete		
Rlogin SUPDUP	Close window on exit: Always Never Only on clean exit			





2.3. Shutdown Crocus PI

You can turn off CrocusPI by entering the "halt" command.

ß	COM3 - PuTTY		-		×
					\sim
\mathbf{r} o	ot@CrocusPI:	~# halt			
[398.697725]	wlan0: deauthenticating from b8:69:f4:9e:2c:b9 by local choice (R			
ea	son: 3=DEAUT	H_LEAVING)			
[400.997290]	dwmac-sun8i 1c30000.ethernet eth0: Link is Down			
[401.456991]	systemd-shutdown[1]: Syncing filesystems and block devices.			
[401.679145]	systemd-shutdown[1]: Sending SIGTERM to remaining processes			
[401.701602]	systemd-journald[100]: Received SIGTERM from PID 1 (systemd-shutdo	w).		
[401.760917]	systemd-shutdown[1]: Sending SIGKILL to remaining processes			
[401.781412]	systemd-shutdown[1]: Unmounting file systems.			
[401.793011]	[731]: Remounting '/' read-only in with options '(null)'.			
[401.827617]	EXT4-fs (mmcblk0p2): re-mounted. Opts: (null). Quota mode: disable	d.		
[401.843436]	systemd-shutdown[1]: All filesystems unmounted.			
[401.851574]	systemd-shutdown[1]: Deactivating swaps.			
[401.858949]	systemd-shutdown[1]: All swaps deactivated.			
[401.866010]	systemd-shutdown[1]: Detaching loop devices.			
[401.874157]	systemd-shutdown[1]: All loop devices detached.			
[401.882373]	systemd-shutdown[1]: Stopping MD devices.			
[401.889964]	systemd-shutdown[1]: All MD devices stopped.			
[401.897124]	systemd-shutdown[1]: Detaching DM devices.			
[401.904748]	systemd-shutdown[1]: All DM devices detached.			
[401.912281]	systemd-shutdown[1]: All filesystems, swaps, loop devices, MD devi	ces ar	nd DM	dev
ic	es detached.				
[401.942678]	systemd-shutdown[1]: Syncing filesystems and block devices.			
[401.954116]	systemd-shutdown[l]: Halting system.			
]	401.964039]	reboot: System halted			

2.4. Other Configurations

2.4.1. Ethernet Connection

When your ethernet cable is plugged in, it will automatically get an ip. You can use "dhclient eth0" or "udhcpcd -i eth0" to get ip from dhcp server manually.

```
root@CrocusPI:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.88.65    netmask 255.255.255.0    broadcast 192.168.88.255
    ether 86:3a:b5:ff:f7:03    txqueuelen 1000 (Ethernet)
    RX packets 71    bytes 8789 (8.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 83    bytes 12232 (11.9 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 47
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    wlan0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.88.45    netmask 255.255.255.0 broadcast 192.168.88.255
    ether 18:fe:34:60:26:20 txqueuelen 1000 (Ethernet)
    RX packets 138 bytes 15922 (15.5 KiB)
    RX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    TX packets 6 bytes 1438 (1.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    TX packets 6 bytes 1438 (1.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    TX packets 6 bytes 1438 (1.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    TX packets 6 bytes 1438 (1.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```



2.4.2. Wifi Connection

For wifi connection, wifi ssid and password information must be entered in the file "/etc/wpa_supplicant.conf". Open the editing screen with the command "nano /etc/wpa_supplicant.conf".

PuTTY CrocusPI login: root Password: Linux CrocusPI 5.15.85 #3 SMP Sat Jan 7 11:55:20 PST 2023 armv71 The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright. Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law. Last login: Sun Jan 15 20:17:49 UTC 2023 from 192.168.88.200 on pts/0 root@CrocusPI:~# nano /etc/wpa_supplicant.conf PuTTY COM3 - PuTTY GNU nano 5.4 /etc/wpa_supplicant.conf * #ctrl interface=/var/run/wpa_supplicant ap_scan=1 network={ ssid="wifiadi" psk="sifresi" Write Out ^W Where Is $^{\rm K}$ Cut ^C Location Help <u>^0</u> Execute Paste ^R Read File ^U Exit Replace ٠J Justify Go To Line

After the information is entered, you can save (Ctrl+O) and exit (Ctrl+X). When CrocusPI restarts, it will automatically connect to your wifi network.