n-PRO-60

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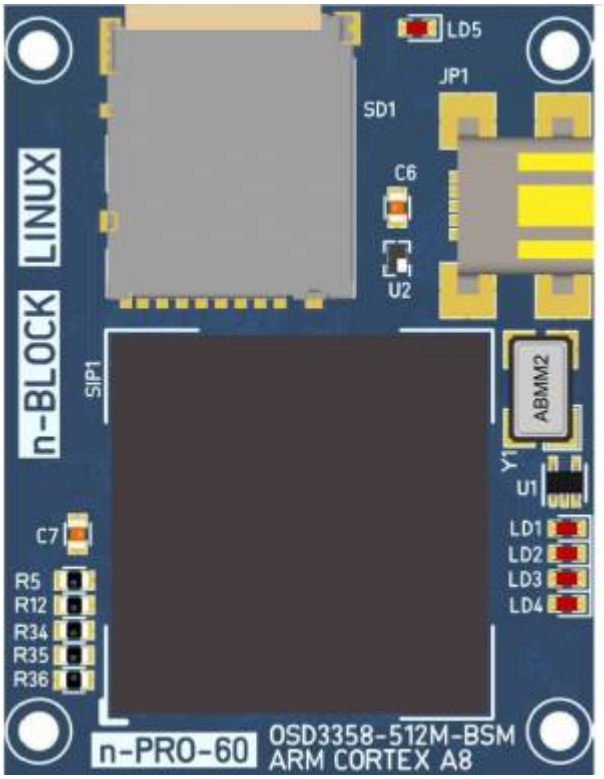
n-PRO-60

n-PRO-60 is a development board from the n-Blocks family designed for rapid prototyping, in the n-Blocks PRO form factor.



n-PRO-60

OSD3358 in n-PRO modular form factor

License	GPL 2.0
Status	Tested
Buy at:	
Categories	
Hardware repo	Bitbucket
Firmware repo	

Overview

n-PRO-60 board features Octavo Systems OSD3358 1GHz ARM® Cortex-A8 microcontroller. It integrates the AM335x, TPS65217C Power Management IC, TL5209 Low Voltage Dropout Regulator,1GB DDR3 Memory and 4KB EEPROM. The baord space is smartly used in n-PRO-60. It allows the user to get started quickly with the design without spending time on the complexity of PMIC or DDR3 interface and significantly reduces design time. It is compatible with AM335x development tools and software. The compact design also offers access to many of the interfaces and the 4 x 60 pins Hirose Connectors allows additional functionality.

OSD335x-SM Features

- Integrated into a single BGA Package:
  - Texas Instruments Sitara™ AM335x ARM® Cortex®-A8 Processor
  - Up to 1GB DDR3L Memory
  - TPS65217C Power Management IC
  - TL5209 LDO
  - 4KB EEPROM
- TI AM335x Features:
  - 8 Channel 12-bit SAR ADC
  - Ethernet 10/100/1000 x2
  - USB 2.0 HS OTG + PHY x2
  - MMC, SD and SDIO x3
  - LCD Controller
  - SGX 3D Graphics Engine
  - PRU Subsystem

- Peripherals: CAN, SPI, UART, I2C, GPIO, etc.
- Industrial Protocols: EtherNet/IP, PROFIBUS, PROFINET RT/IRT, SERCOS III
- Power In: AC Adapter, USB, or Single cell (1S) Li-Ion/Li-Po Battery
- Power Out: 1.8V, 3.3V and SYS (Switched VIN)
- Selectable AM335x I/O Voltage: 1.8V or 3.3V
- 256 Ball BGA (21mm x 21mm)
- 16 x 16 grid, 1.27mm Pitch
- Case Temp Range: 0° to 85°C, -40° to 85°C

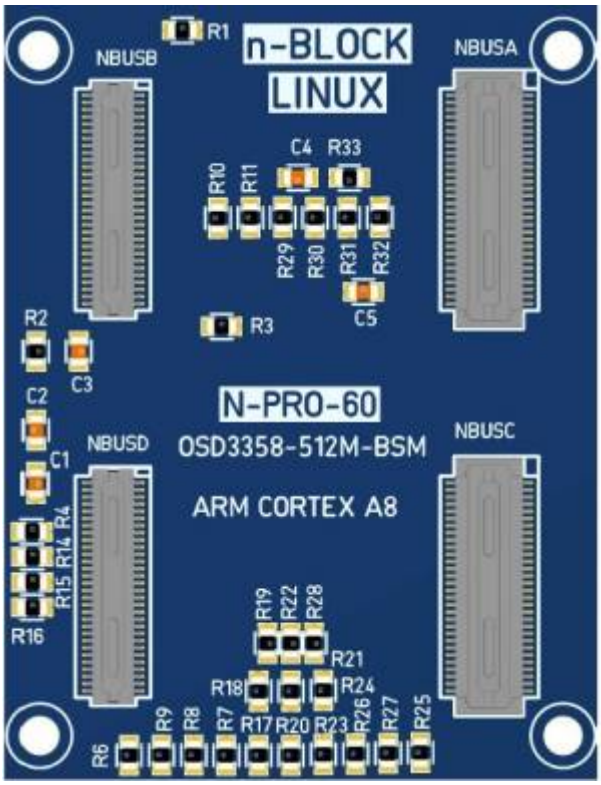
n-PRO-60 Features

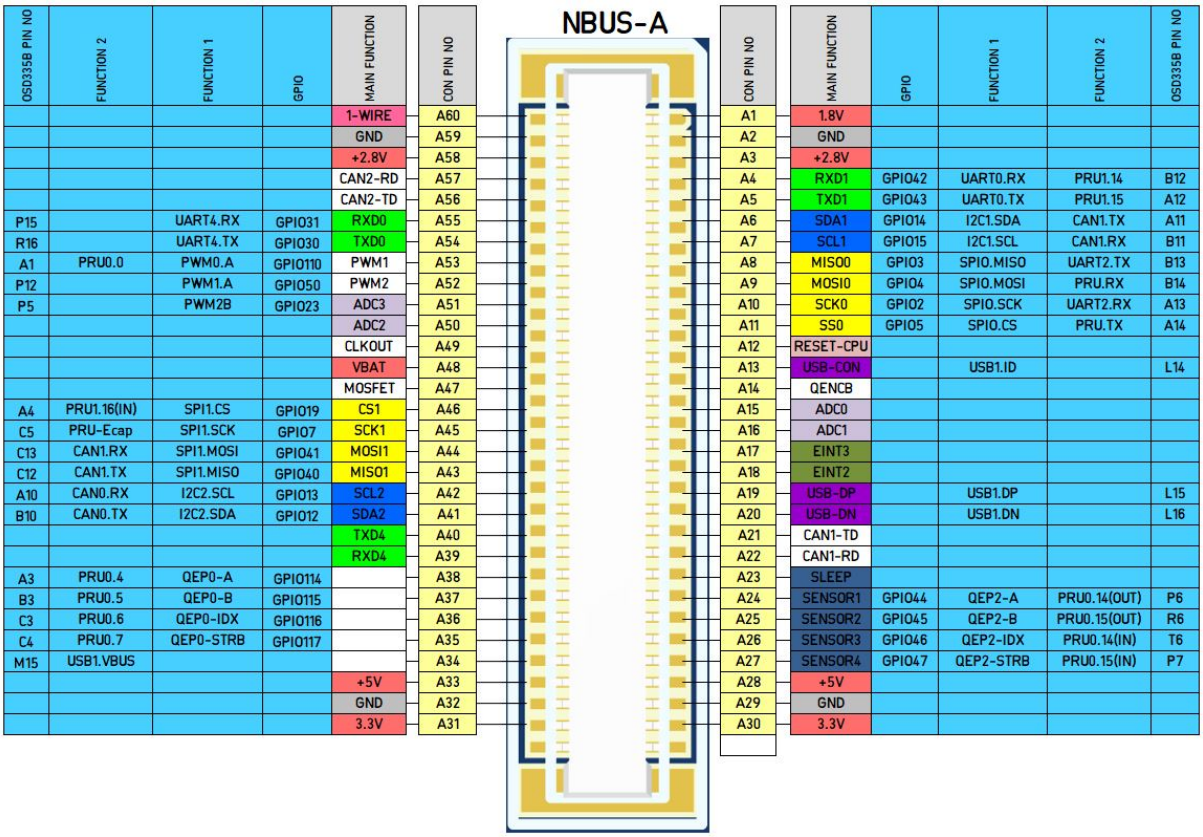
- Low cost Linux computer with tremendous expandibility
- Software compatibility with Debain GNU/Linux images
- Openness and flexibility tear-down limits on your imagination
- Storage– micro SD slot
- USB– 1x micro USB 2.0 port

- Power Supply– 5V via micro USB port; via expansion headers for LiPo battery
- 8 analog inputs, 44 digital I/Os and numerous digital interface peripherals
- MicroUSB host/client and microSD connectors
- JTAG Debugging (gdb and other monitor-mode debug possible)

Board Pinout projected to Top side

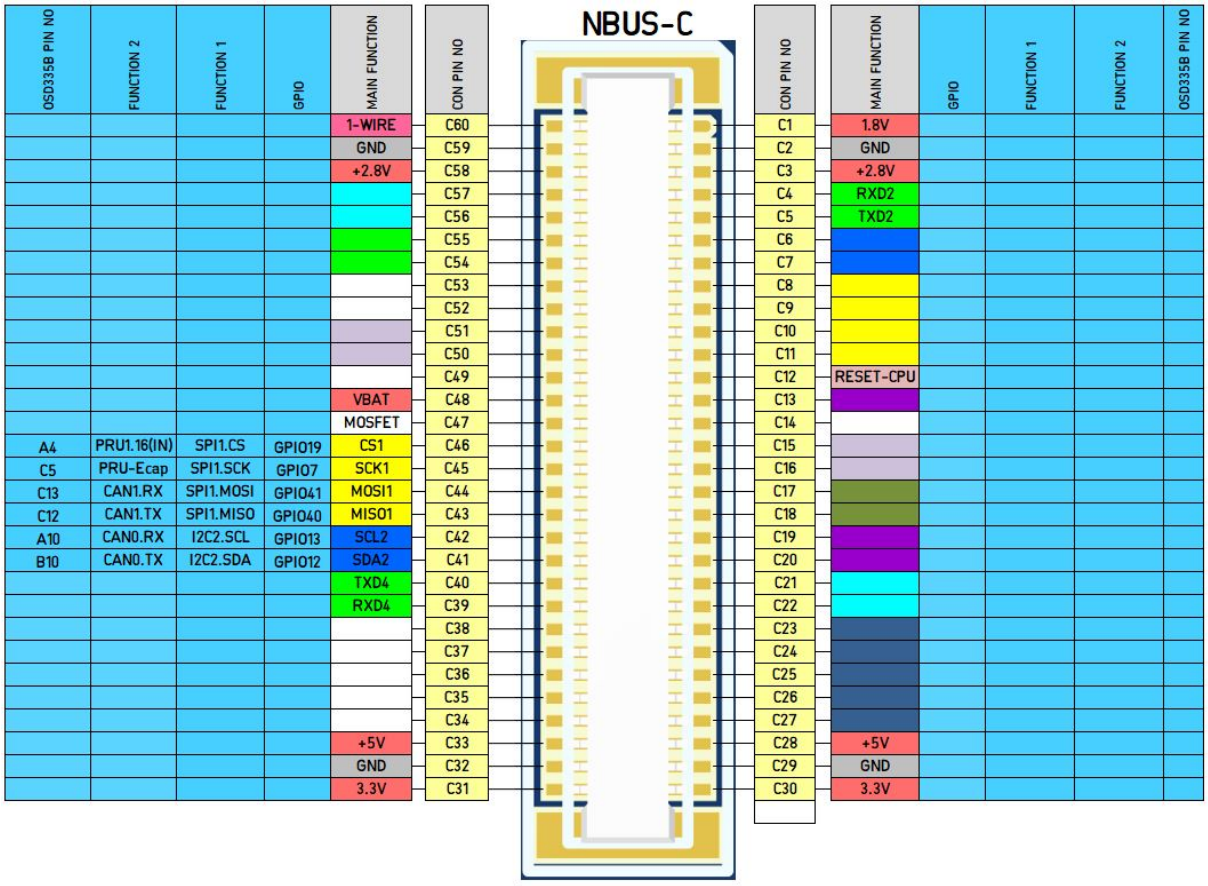
n-PRO-60 is a **HOST** board with four Hirose DF30-series 60-pin low profile connectors at bottom side, following the n-Blocks PRO form factor.

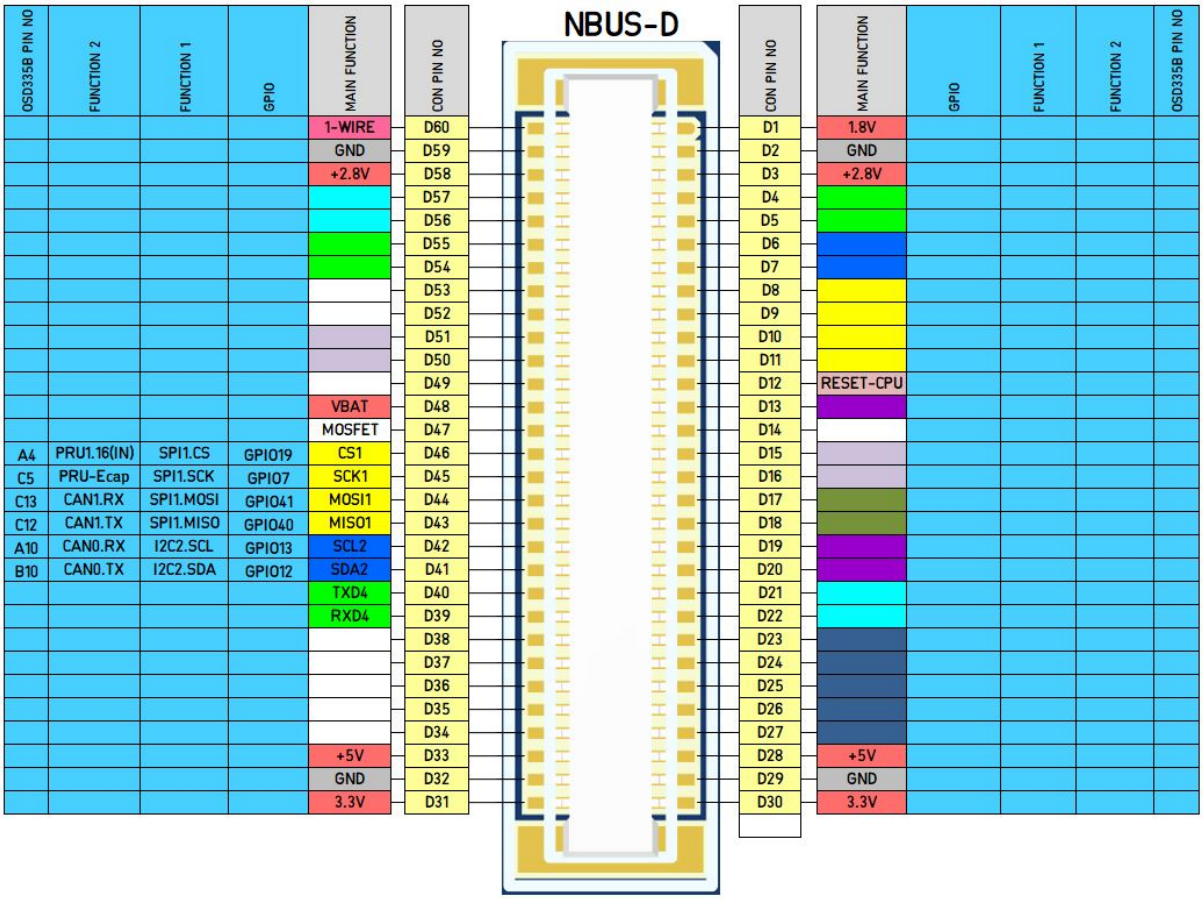




OSD335B PIN NO	FUNCTION 2	FUNCTION 1	GPIO	MAIN FUNCTION	CON PIN NO
				1-WIRE	A60
				GND	A59
				+2.8V	A58
				CAN2-RD	A57
				CAN2-TD	A56
P15		UART4.RX	GPIO31	RXD0	A55
R16		UART4.TX	GPIO30	TXD0	A54
A1	PRU0.0	PWM0.A	GPIO110	PWM1	A53
P12		PWM1.A	GPIO50	PWM2	A52
P5		PWM2B	GPIO23	ADC3	A51
				ADC2	A50
				CLKOUT	A49
				VBAT	A48
				MOSFET	A47
A4	PRU1.16(IN)	SPI1.CS	GPIO19	CS1	A46
C5	PRU-Ecap	SPI1.SCK	GPIO7	SCK1	A45
C13	CAN1.RX	SPI1.MOSI	GPIO41	MOSI1	A44
C12	CAN1.TX	SPI1.MISO	GPIO40	MISO1	A43
A10	CAN0.RX	I2C2.SCL	GPIO13	SCL2	A42
B10	CAN0.TX	I2C2.SDA	GPIO12	SDA2	A41
				TXD4	A40
				RXD4	A39
A3	PRU0.4	QEP0-A	GPIO114		A38
B3	PRU0.5	QEP0-B	GPIO115		A37
C3	PRU0.6	QEP0-IDX	GPIO116		A36
C4	PRU0.7	QEP0-STRB	GPIO117		A35
M15	USB1.VBUS				A34
				+5V	A33
				GND	A32
				3.3V	A31

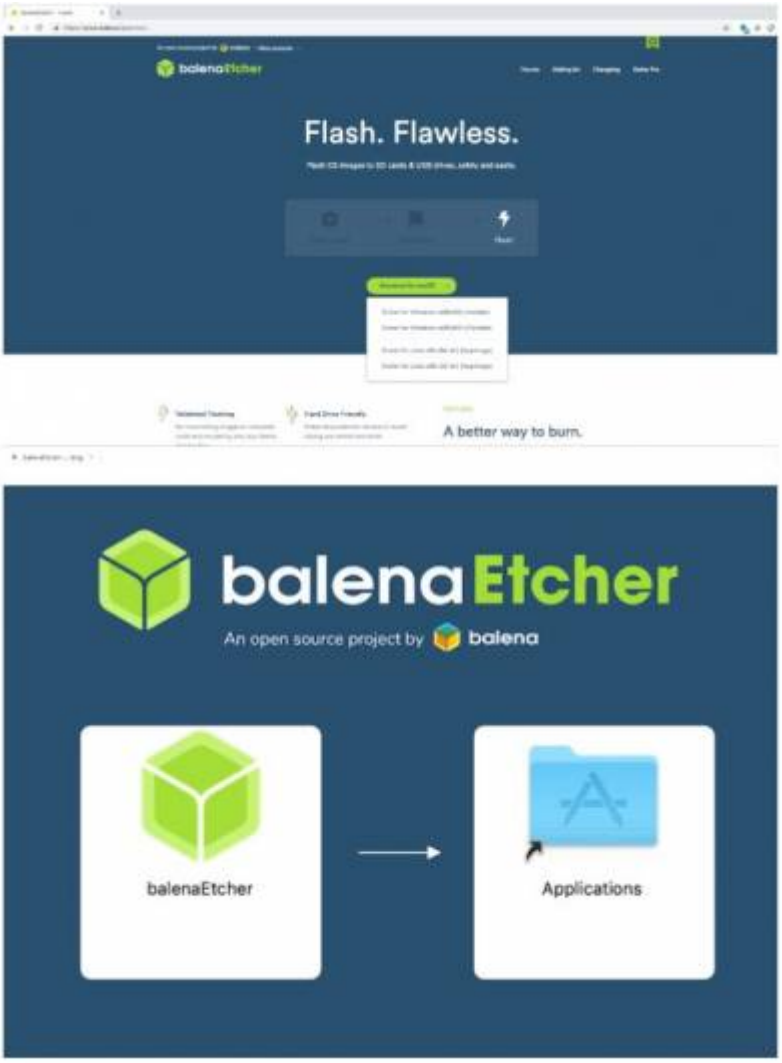
CON PIN NO	MAIN FUNCTION	GPIO	FUNCTION 1	FUNCTION 2	OSD335B PIN NO
A1	1.8V				
A2	GND				
A3	+2.8V				
A4	RXD1	GPIO42	UART0.RX	PRU1.14	B12
A5	TXD1	GPIO43	UART0.TX	PRU1.15	A12
A6	SDA1	GPIO14	I2C1.SDA	CAN1.TX	A11
A7	SCL1	GPIO15	I2C1.SCL	CAN1.RX	B11
A8	MISO0	GPIO3	SPI0.MISO	UART2.TX	B13
A9	MOSI0	GPIO4	SPI0.MOSI	PRU.RX	B14
A10	SCK0	GPIO2	SPI0.SCK	UART2.RX	A13
A11	SS0	GPIO5	SPI0.CS	PRU.TX	A14
A12	RESET-CPU				
A13	USB-CON		USB1.ID		L14
A14	QENCB				
A15	ADC0				
A16	ADC1				
A17	EINT3				
A18	EINT2				
A19	USB-DP		USB1.DP		L15
A20	USB-DN		USB1.DN		L16
A21	CAN1-TD				
A22	CAN1-RD				
A23	SLEEP				
A24	SENSOR1	GPIO44	QEP2-A	PRU0.14(OUT)	P6
A25	SENSOR2	GPIO45	QEP2-B	PRU0.15(OUT)	R6
A26	SENSOR3	GPIO46	QEP2-IDX	PRU0.14(IN)	T6
A27	SENSOR4	GPIO47	QEP2-STRB	PRU0.15(IN)	P7
A28	+5V				
A29	GND				
A30	3.3V				


NBUS-C
OSD335B PIN NO
FUNCTION 2
FUNCTION 1
GPIO
MAIN FUNCTION
CON PIN NO
1-WIRE
GND
+2.8V
VBAT
MOSFET
A4 PRU1.16(IN) SPI1.CS GPIO19 CS1
C5 PRU-Ecap SPI1.SCK GPIO7 SCK1
C13 CAN1.RX SPI1.MOSI GPIO41 MOSI1
C12 CAN1.TX SPI1.MISO GPIO40 MISO1
A10 CAN0.RX I2C2.SCL GPIO13 SCL2
B10 CAN0.TX I2C2.SDA GPIO12 SDA2
TXD4
RXD4
+5V
GND
3.3V
C60 C59 C58 C57 C56 C55 C54 C53 C52 C51 C50 C49 C48 C47 C46 C45 C44 C43 C42 C41 C40 C39 C38 C37 C36 C35 C34 C33 C32 C31
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30
1.8V
GND
+2.8V
RXD2
TXD2
RESET-CPU
+5V
GND
3.3V



Getting started

- Download the lastest Debian image from beagleboard.org/latest-images. The “IoT” images provide more free disk space if you don't need to use a graphical user interface (GUI).
- The file you download will have an .img.xz extension. This is a compressed sector-by-sector image of the SD card.
- Install SD card programming utility Balena Etcher



- Connect SD card to your PC.
- Write the image to SD card using Etcher.

- Eject the SD card.

- Insert SD card into your (powered-down) board, hold down the USER/BOOT button (if using Black) and apply power, either by the USB cable or 5V adapter.

Related articles in this Wiki

- n-PRO-60

RF, CPU, nblock, BLE, nsensorRF

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