



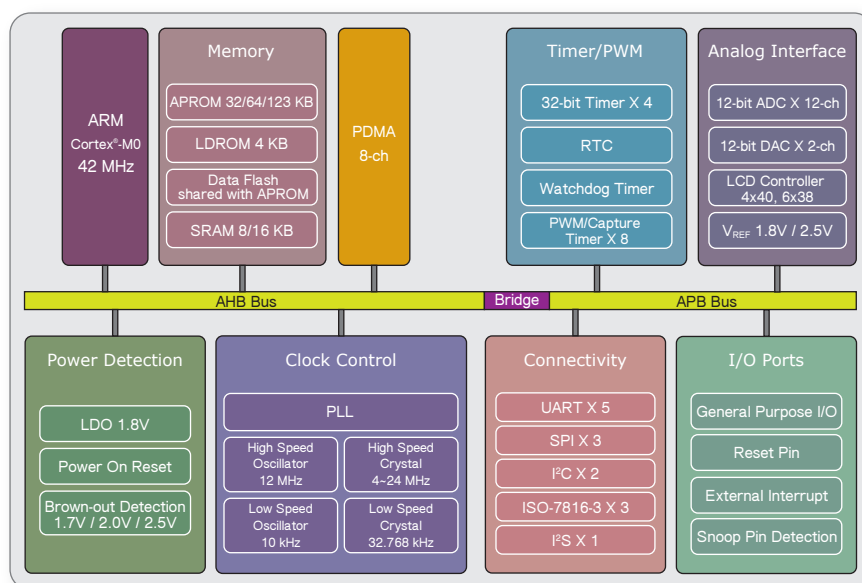
Nuvoton NuMicro™ Family

NuMicro™ Nano110 LCD Series

Ultra-Low Power ARM® Cortex®-M0 MCU for Battery-powered Devices Equipped With LCD

Applications

- ◆ Wearable Device
- ◆ Portable Medical Device
- ◆ Smart Home Appliances
- ◆ Thermometers Equipment
- ◆ Alarm and Security Monitoring
- ◆ Zigbee Smart Energy AMR
- ◆ Portable GPS Data Logger
- ◆ Test and Measurement Equipment
- ◆ Smart Heat / Water / Gas Meters
- ◆ IoT Device



Selection Guide

Part No.	Flash (Kbytes)	SRAM (Kbytes)	Data Flash (Kbytes)	ISP ROM (Kbytes)	I/O	Timer (32-bit)	Connectivity				I ² S	PWM (16-bit)	ADC (12-bit)	RTC	EBI	IRC 10 kHz 12 MHz	PDMA	LCD	DAC (12-bit)	ISO- 7816-3*	ICP ISP IAP	Package	Operating Temp. Range(°C)
							UART*	SPI	I ² C	USB													
NuMicro™ Nano110 LCD Series (Ultra-Low Power)																							
NANO110SC2BN	32	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64*	-40 to +85
NANO110SD2BN	64	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64*	-40 to +85
NANO110SD3BN	64	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64*	-40 to +85
NANO110SE3BN	128	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64*	-40 to +85
NANO110RC2BN	32	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64	-40 to +85
NANO110RD2BN	64	8	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64	-40 to +85
NANO110RD3BN	64	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64	-40 to +85
NANO110RE3BN	128	16	Configurable	4	51	4	2+3	3	2	-	1	7	7	√	-	√	8	4x31, 6x29	2	3	√	LQFP64	-40 to +85
NANO110KC2BN	32	8	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	√	LQFP128	-40 to +85
NANO110KD2BN	64	8	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	√	LQFP128	-40 to +85
NANO110KD3BN	64	16	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	√	LQFP128	-40 to +85
NANO110KE3BN	128	16	Configurable	4	86	4	2+3	3	2	-	1	8	12	√	√	√	8	4x40, 6x38	2	3	√	LQFP128	-40 to +85

*Marked in the table (2+3) means 2 UART+ 3 ISO-7816 UART

*ISO-7816 UART supports half duplex mode

LQFP64*: 7x7mm

Contact us: NuMicro@nuvoton.com

❖ Features of NuMicro™ Nano110 LCD Series

◆ Core

- ARM® Cortex®-M0 core running up to 42 MHz
- 24-bit system tick timer
- Single-cycle 32-bit hardware multiplier
- NVIC for 32 interrupt inputs, each with four levels of priority
- Serial Wire Debug (SWD) interface and two watch points/four breakpoints

◆ Ultra-low Power

- Single power supply: 1.8V ~ 3.6V
- Normal mode: 200 uA/MHz at 12 MHz
- Idle mode: 75 uA/MHz at 12 MHz
- Power-down mode:
 - 2.5 uA (RTC on, RAM retention)
 - 1 uA (RTC off, RAM retention)
- Wake-up time: less than 3.5 us

◆ Memory

- 32/64/123 Kbytes Flash memory for program memory (APROM)
- 4 Kbytes Flash memory for loader memory (LDROM)
- 512 bytes page erase for Flash memory
- 8/16 Kbytes embedded SRAM
- Configurable Data Flash (shared with APROM)

◆ Clock Control

- 12 MHz internal RC oscillator
 - ±1% deviation at - 40°C ~ +85°C, 1.8V ~ 3.6V
 - ±0.25% deviation at - 40°C ~ +85°C, 1.8V ~ 3.6V by 32.768 kHz oscillator auto calibration
- 10 kHz internal RC oscillator for Watchdog timer and Wake-up
- 4 ~ 24 MHz external crystal oscillator input for precise timing operation
- 32.768 kHz external crystal oscillator input for RTC function and low power system operation
- On-chip PLL, up to 120 MHz for high performance system operation

◆ Timers

- Four sets of 32-bit timers with 24-bit up-timer and one 8-bit pre-scale counter
- Counter auto reload
- Watchdog timer with 8-bit selectable time-out period
- Supports event counter and pulse width capture mode

◆ Peripheral DMA

- 8 channels PDMA for peripheral timer, UARTs, SPIs, I²C, ADC, DAC, VDMA, CRC

◆ CRC

- CRC-CCITT, CRC-8, CRC-16, and CRC-32

◆ RTC

- Supports software compensation
- RTC counter, calendar counter and alarm
- 80 bytes backup register with snoop pin detection

◆ PWM/Capture

- 8 channels 16-bit PWM and 16-bit digital capture timers
- Dead-zone generator for complementary paired PWM

◆ ADC/DAC

- 12 channels 12-bit SAR ADC up to 2 MSPS
- 2 channels 12-bit DAC up to 400 KSPS
- 1.8V/2.5V internal voltage reference
- On-chip temperature sensor

◆ LCD Driver

- Up to 160 dots (4 Com x 40 Segment), 228 dots (6 Com x 38 Segment)
- Built-in voltage boost
- Adjustable contrast
- Supports 1/2, 1/3, 1/4, 1/6 duty and 1/2, 1/3 bias voltage
- Supports blinking
- Supports R-type/C-type

◆ Communication Interfaces

- Five UARTs, (two UARTs up to 1 Mbit/s with flow control)
- Three SPIs, up to 32 MHz (Master), 16 MHz (Slave)
- Two I²Cs, up to 1 Mbit/s
- Three ISO7816-3 (Smart card interface) and UARTs function
- RS485, LIN, IrDA (SIR) function

◆ I²S

- Interface with external audio CODEC
- Operates as either Master or Slave mode
- Capable of handling 8, 16, 24 and 32-bit word sizes
- Mono and stereo audio data

◆ Wake-up Sources

- RTC, WDT, I²C, Timer, UARTs, SPIs, BOD, GPIOs

◆ Brown-out Detector

- Three levels: 1.7V/2.0V/2.5V
- Brown-out interrupt and reset option

◆ GPIOs

- Up to 86 general-purpose GPIO pins
- Three I/O modes: Push-Pull output, Open-Drain output, Input only with high impedance
- All inputs with Schmitt trigger
- All I/O pins can be configured as interrupt source with edge/level setting
- Input 5V tolerance

◆ Built-in LDO for Wide Operating Voltage Range

- 1.8V to 3.6V

◆ Operating Temperature

- - 40°C ~ +85°C

◆ Reliability

- ESD HBM pass 8kV, EFT > ± 4kV

◆ Code Security and Series number

- 96-bit unique ID
- 128-bit unique customer ID

◆ Packages (RoHS)

- LQFP64 (7x7mm)
- LQFP64 (10x10mm)
- LQFP128 (14x14mm)