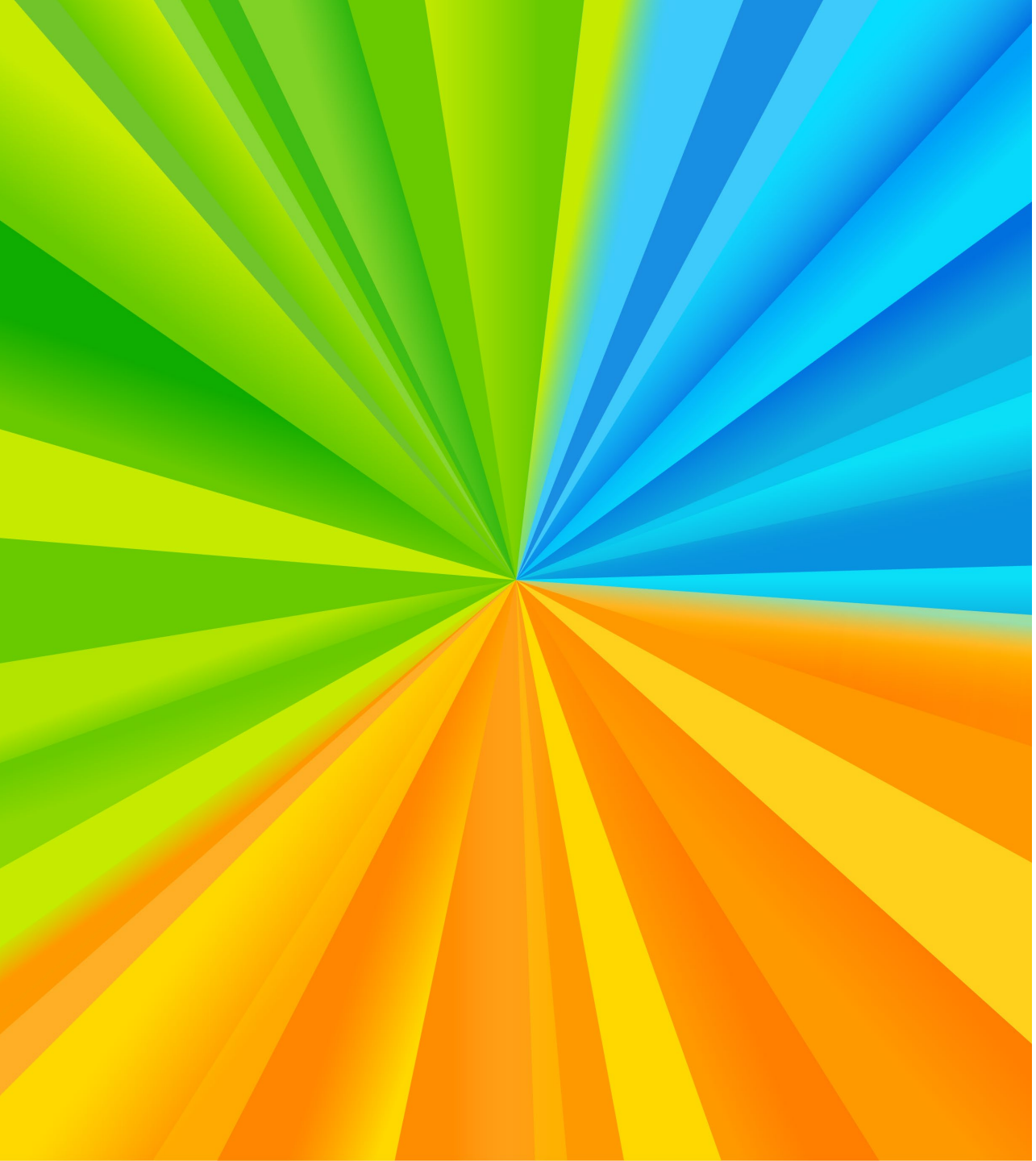
# FRDM Expansion Boards

## Flexible, Rapid Development with MCUXpresso

Business Line Advanced Analog | January 2025, V8



# Agenda

1. Advanced Analog Portfolio Summary
2. FRDM Expansion Boards Index
3. Technical support and Product Longevity
4. Summary Released FRDM Expansion Boards

# Advanced Analog Portfolio Summary

## Energy Network - Precision Analog - Data Network

Automotive | Industrial & IoT | Mobile | Comm. Infra

### Power Management

- AC/DC Converter
- DC/DC Converter
- Automotive PMIC & SBC
- Industrial & IoT PMIC
- Charging Solutions
- USB-C Load Switch & Protection

### Sensors

- Motion
- Temperature
- Pressure
- Tire Pressure Monitoring System (TPMS)

### Analog Front End

- 24-bit Industrial Input/Output AFE
- Li-Ion Battery Cell Controller
- Li-Ion Battery Current Sensor

### Networking

- CAN Trx: FD, Partial Networking, Signal Improved, Secure
- Ethernet T1 PHY: 10, 100, 1000M
- LIN Trx & commander /follower controller
- BMS Transceiver & CAN Gateway
- Ethernet xGigabit Switch
- Flexray Transceivers

### Human Machine Interface

- Display Port Solution
- LCD Controller
- LED Controller
- Audio Codec
- Switch I/O Interface

### Power Driver

- DC Motor Driver
- LED Driver Matrix Ctrl
- Gate Driver
- High/Low Side Smart Switch
- Valve Driver, Braking SoC
- Smart Fuel Injection

**Processor**

### Wireless Power & Connectivity

- UWB (Smart Car Access and Industry 4.0 Localization)
- Classic Car Access: RKE, PKE, NFC
- Sub-GHz Radio Solutions
- 5G RF Power Communication Infrastructure

### Signal Management Interface

- USB CC Logic/ PD controller
- GPIO Expander
- Analog Switch
- High Speed Signal Switch
- Signal Integrity, Redriver
- Real Time Clock
- I²C & I3C Bus Enablers
- PCIe Solutions
- Voltage Level Translator
- UART & Bridge IC

# FRDM Expansion Boards Index

Automotive & Transportation · Factory Automation · Healthcare · Power & Energy · Home & Building Controls · Communication & Computing

| Segment | Sub-segment | Device | Board | Link to the slide | Target Application |
|---|---|---|---|---|---|
| Power Network | Motor Driver | HB2002 SPI-Programmable H-Bridge Brushed DC Motor Driver | FRDM-HB2002ESEVM | Link | |
| | Motor Driver | MC33926 H-Bridge, Brushed DC Motor Driver | FRDM33926PNBEVM | Link | |
| | PMIC | PCA9420 Low-Power PMIC | PCA9420UK-EVM | Link | |
| | PMIC | PCA9421 Low-Power PMIC | PCA9421UK-EVM | Link | |
| Data Network | GPIO Expander | PCAL6416A Low-Voltage Translating 16-Bit I²C-Bus/SMBus I/O Expander | PCAL6416AEV-ARD | Link | |
| | GPIO Expander | PCAL9722 22-Bit SPI I/O Expander with Agile I/O Features | PCAL9722HN-ARD | Link | |
| | I²C-Bus Switch | PCA9846 Four-Channel Ultra-Low Voltage, Fm+ I²C-Bus Switch with Reset | PCA9846PW-ARD | Link | |
| | I3C-Bus Switch & VLT | P3S0210BQ Dual Bidirectional I3C 1:2 Switch and VLT | P3S0210BQ-ARD | Link | |
| | LIN Transceiver | SJA1124 Quad LIN Commander Transceiver with LIN Commander Controller | SJA1124EVB | Link | |
| | LED Controller | PCA9957 24-Channel SPI Serial Bus 32 MA/5.5 V Constant-Current LED Driver | PCA9957HN-ARD | Link | |
| | LED Controller | PCA9959 24-Channel SPI Serial Bus 63 mA/5.5 V Constant Current LED Driver | PCA9959HN-ARD | Link | |
| | Real Time Clock | PCF2131 Accurate RTC with Integrated TCXO for Industrial Applications<br>PCA2131 Accurate RTC with Integrated TCXO for Automotive Applications | PCF2131-ARD | Link | |
| | Real Time Clock | PCF85063A Tiny Real-Time Clock/Calendar with Alarm Function and I²C-Bus | PCF85063AT-ARD | Link | |
| | I3C-Bus Hub | P3H244x 4-CH I3C-Bus Hub | P3H2440HN-ARD | Link | |
| | | | P3H2441HN-ARD | Link | |
| | | P3H2840 8-CH I3C-Bus Hub | P3H2840HN-ARD | Link | |
| | | | P3H2841HN-ARD | Link | |
| | 4-Bit Translating Transceiver | NTS0304E 4-Bit Dual-Supply Translating Transceiver | NTS0304EUK-ARD | Link | |
| | Level Translating Fm+ I²C-Bus Repeater | PCA9617A Level Translating Fm+ I²C-Bus Repeater | PCA9617ADP-ARD | Link | |



Last Updated: January 7, 2025

# FRDM Expansion Boards Index

Automotive & Transportation · Factory Automation · Healthcare · Power & Energy · Home & Building Controls · Communication & Computing

| Segment | Sub-segment | Device | Board | Link to the slide | Target Application |
|---|---|---|---|---|---|
| Precision Analog | Magnetic Sensor | NMH1000 Ultra-Low Power and Low-Voltage Magnetic Switch | FRDMSTBI-NMH1000 | Link | |
| | Motion Sensor | FXLS8974CF ±2g/±4g/±8g/±16g, Low-Power 12-Bit Digital IoT Accelerometer | FRDM-STBI-A8974 | Link | |
| | Motion Sensor | FXLS8971CF ±2g/±4g/±8g/±16g, Low Power 12-Bit Digital Accelerometer | FRDM-STBI-A8971 | Link | |
| | Pressure Sensor | MPL3115 Absolute Digital Pressure Sensor (20 to 110 kPa) | FRDMSTBC-P3115 | Link | |
| | Temperature Sensor | P3T1085UK I3C/I²C-Bus ±0.5 °C Accurate Digital Temperature Sensor<br>P3T1084UK I3C/I²C-Bus ±0.4 °C Accurate Digital Temperature Sensor | P3T1085UK-ARD | Link | |
| | | P3T1755DP I3C/I²C-Bus ±0.5 °C Accurate Digital Temperature Sensor | P3T1755DP-ARD | Link | |
| | Analog Front End | NAFEx3388 8/4 Channel 24/16 bits ±25 V Universal Input Analog Front-End | NAFE13388-UIM | Link | |



Last Updated: January 7, 2025

## About Technical Support

1

If you have a question about NXP products, you can reach out NXP's Distributors or NXP sales, or NXP can support by online base too!

### Support Tickets
Confidential assistance with NXP support professional

Click → Submit a ticket

### Live Chat
How can we help?

Click → Live Chat: Online Now

### NXP Community
Open forum for technical discussions moderated by NXP experts

Click → Get answers

## About Product Longevity

2

- HERO+ are available for minimum of 10 years or 15 years since product launched date
- Extended periods may be available under certain circumstances
- About each product information, please check Product Longevity in NXP.com

# FRDM33926PNBEVM FRDM Kit for MC33926 H-Bridge Motor Driver

Enabling System Solutions with FRDM Platform

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## FRDM33926PNBEVM Highlights

### Supported Device

MC33926 H-bridge DC Motor Driver

### Target Applications

- Electronic throttle control (ETC)
- Exhaust gas recirculation (EGR)
- Turbo flap control
- Industrial and medical pumps and motor control

### Key Features

- Test points to allow signal probing
- Built-in reverse battery protection
- Built-in voltage regulator to supply logic level circuitry
- LEDs to indicate the supply status and direction of motor
- Transient voltage suppressor to handle system level transients

**Available Now**

2.5” x 3.25” (6.35 cm x 8.25 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| MC33926 | FRDM-MCXA153<br>FRDM-MCXN947 | MC33926 Driver | MC33926 Driver |

**Documents:**

FRDM33926PNBEVM User Guide

For pricing and availability, see the FRDM33926PNBEVM FRDM Expansion Board page.

# FRDM-HB2002ESEVM FRDM Kit for HB2002, Programmable Brushed DC Motor Control

Enabling System Solutions with FRDM Platform

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## FRDM-HB2002ESEVM Highlights

### Supported Device

HB2002 H-Bridge DC Motor Driver

### Target Applications

- Electronic throttle control
- Exhaust gas recirculation control (EGR)
- Turbo, swirl and whirl and waste flap control
- Electric pumps, motor control and auxiliaries

### Key Features

- Current feedback network for real-time load current monitoring by MCU ADC
- LEDs to indicate the supply status and the direction of the motor
- Low ESR capacitor to reduce ripple in the power supply
- TVS protection diode to handle system level transients

**Available Now**

2.5” x 3.2” (6.35 x 8.12 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| HB2002 | FRDM-MCXA153<br>FRDM-MCXN947 | HB2002 Driver | HB2002 Driver |

**Documents:**

UM11144 FRDM-HB2002ESEVM evaluation board - User Guide

For pricing and availability, see the FRDM-HB2002ESEVM Development Board page.

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# PCA9420UK-EVM FRDM Expansion Board

Enabling System Solutions with FRDM Platform

## PCA9420-EVB Highlights

### Supported Device

PCA9420 PMIC for Low Power Applications

### Target Applications

- Hearing Aids and Cochlear Implants
- Low-Power Microcontroller Application
- Vital Signs Monitors
- Audio Subsystems, hearables and smart watch

### Key Features

- Targeted to provide a full power management solution for low power microcontroller applications.
- It has I²C programmable Constant Current (CC) and Constant Voltage (CV) values for flexible configuration.
- It also features JEITA compliant charging. Linear battery charger for charging single-cell Li-ion battery
- The device integrates two step-down (buck) DC/DC converters which have I²C programmable output voltage.
- Other protection features such as overcurrent protection, under-voltage lockout (UVLO), etc. are also provided

**Available Now**


3.2” x 2.1” (8.12 x 5.33 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCA9420 | FRDM-MCXA153<br>FRDM-MCXN947 | In Development | In Development |

**Documents:**

UM11216, PCA9420UK-EVM Evaluation Board User Manual

For pricing and availability, see the PCA9420UK-EVM FRDM Expansion Board page.

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# PCA9421UK-EVM FRDM Expansion Board

Enabling System Solutions with FRDM Platform

## PCA9421UK-EVM Highlights

### Supported Device

PCA9421 PMIC for Low Power Applications

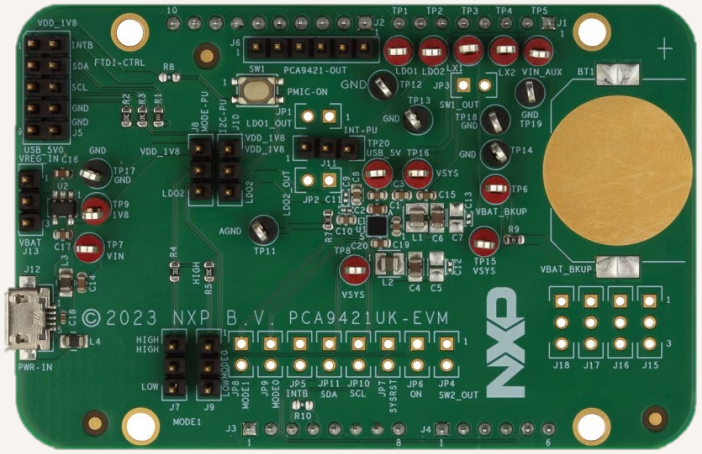
### Target Applications

- High-Voltage Battery Management Systems (> 800 V)
- Data Buses and Battery Management

### Key Features

- Two step-down DC-DC converters
- Very low quiescent current
- Programmable output voltage regulation
- -40 °C to +85 °C ambient temperature range
- Offered in 5 x 5 bump-array WLCSP and 24-pin QFN package

**Available Now**




3.2” x 2.1” (8.12 x 5.33 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCA9421 | MCXN9EVK | In Development | In Development |

**Documents:**
UM11987, PCA9421UK-EVM Evaluation Board User Manual

For pricing and availability, see the PCA9421UK-EVM FRDM Expansion Board page.

# PCAL6416AEV-ARD Arduino® Shield Evaluation Board for PCAL6416A 16-bit GPIO

Enabling System Solutions with FRDM Platform

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## PCAL6416AEV-ARD Highlights

### Supported Device

PCAL6416A Low-Voltage I²C-Bus/SMBus I/O Expander

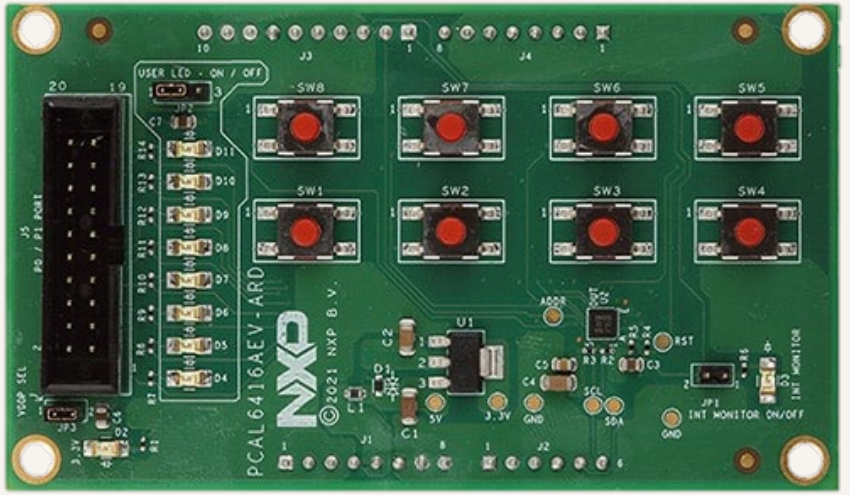
### Target Applications

- I/O Voltage Translating
- Keypad
- Push Buttons
- Home Sensor

### Key Features

- I/O connector for external access to IC input-output pins
- 8 user switches connected to I/O pins of the IC
- 8 user LEDs connected to I/O pins of the IC
- Equipped with Arduino Uno R3 port for direct connection with Arduino devices
- Fully compliant with IMXRT1050, LPCXpresso55S69 and i.MX Mini LPDDR4 EVK boards, including GUI (Windows 10)

**Available Now**




3.7” x 2.16” (9.39 x 5.48 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCAL6416A | FRDM-MCXA153<br>FRDM-MCXN947 | Planned | Planned |

**Documents:**

UM11704, PCAL6416AEV-ARD Evaluation Board - User Manual

UM11581 - Arduino Shields GUI and Firmware Installation - User Guide

For pricing and availability, see the PCAL6416AEV-ARD Development Board page.

# PCAL9722HN-ARD PCAL9722 Ultra Low-Voltage Translating 22-Bit SPI I/O Evaluation Board

Enabling System Solutions with FRDM Platform

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## PCAL9722HN-ARD Highlights

### Supported Device

PCAL9722 Ultra low-voltage 22-Bit SPI I/O Expander

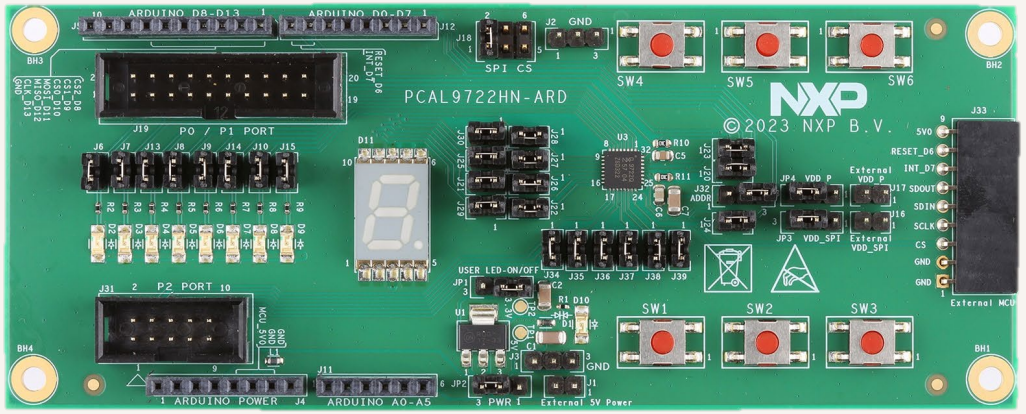
### Target Applications

- Battery-Powered Mobile
- Keypad

### Key Features

- A complete evaluation platform for the PCAL9722HN with Agile I/O features, interrupt output and reset
- Convenient test points for easy scope measurements and signal access
- Easy to use GUI based software demonstrates the capabilities of the PCAL9722HN
- On-board LEDs, 7 segment display and key switches for PCAL9722HN general purpose I/O evaluation.

**Available Now**




5.43” x 2.16” (13.79 x 5.48 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCAL9722 | FRDM-MCXA153<br>FRDM-MCXN947 | Planned | Planned |

**Documents:**

UM12075, PCAL9722HN-ARD Evaluation Board User Manual

For pricing and availability, see the PCAL9722HN-ARD Development Board page.

# PCA9957HN-ARD FRDM Expansion Board (Arduino® Shield) for PCA9957 LED Driver

Enabling System Solutions with FRDM Platform

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## PCA9957HN-ARD Highlights

### Supported Device

PCA9957 24-Channel SPI Serial Bus LED Driver

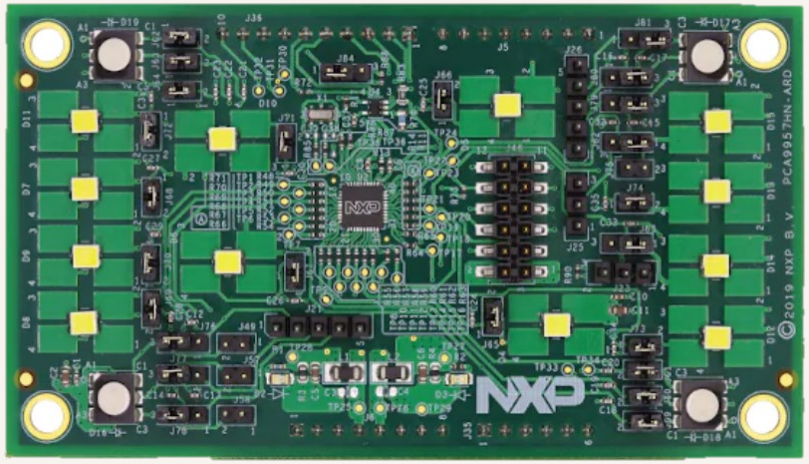
### Target Applications

- LED displays / LED status information / LCD backlights
- RGB or RGBA LED drivers
- Keyboard or keypad backlights
- Smart Assistance Response LED lighting
- Fade-in and fade-out for breathlight control

### Key Features

- Use Arduino connector for data and power
- Multiple board connection in stack architecture
- On-board connectors for external LEDs
- Fully compliant with IMXRT1050 EVK board, including GUI (Windows 10)

**Available Now**



4.0” x 2.4” (10.16 x 6.09 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCA9957 | FRDM-MCXA153<br>FRDM-MCXN947 | PCA9957HN-ARD Driver | PCA9957HN-ARD Driver |

**Documents:**

UM11579, PCA9957HN-ARD User Manual
UM11581, GUI User Manual

For pricing and availability, see the PCA9957HN-ARD FRDM Expansion Board page.

# PCA9959HN-ARD Arduino® Shield Evaluation Board for PCA9959 LED Driver

Enabling System Solutions with FRDM Platform

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## PCA9959HN-ARD Highlights

### Supported Device

PCA9959 24-Channel SPI Serial Bus LED Driver

### Target Applications

- Keypad backlights
- LED displays
- RGB or RGBA LED drivers
- Smart Assistance Response LED lighting

### Key Features

- Combined Arduino port/Fuji connector for data and power
- Onboard LEDs for all 24 outputs of the DUT IC
- Onboard jumpers for LED connection, and short tests
- Onboard connectors for external LEDs
- Compliant with IMXRT1050 , LPCXpresso55S69 , 8MMINILPD4-EVK boards, including GUI for Windows 10

**Available Now**

3.2” x 2.3” (8.12 x 5.84 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCA9959 | FRDM-MCXA153<br>FRDM-MCXN947 | PCA9959HN-ARD SDK | PCA9959HN-ARD ACH |

**Documents:**

UM11623, PCA9959HN-ARD evaluation board - User manual

UM11581 - Arduino Shields GUI and Firmware Installation - User Guide

For pricing and availability, see the PCA9959HN-ARD Development Board page.

# PCA9846PW-ARD Arduino® Shield board for PCA9846 Ultra-low voltage, I²C-Bus Switch

Enabling System Solutions with FRDM Platform

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## PCA9846PW-ARD Highlights

### Supported Device

PCA9846 Four-Channel Ultra-Low Voltage I²C-Bus Switch

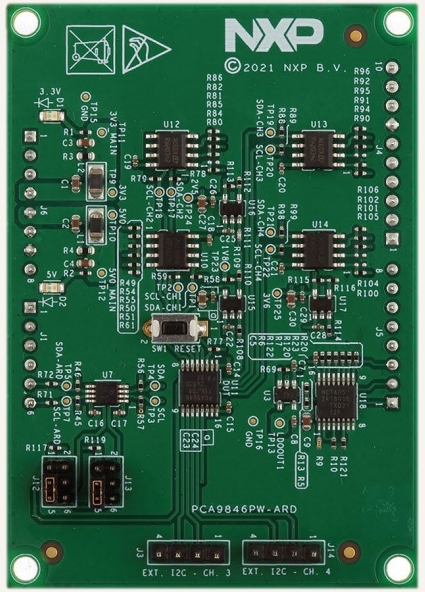
### Target Applications

- I²C Bus Multiplexer
- I²C Bus Voltage Level Translator

### Key Features

- Onboard I²C-bus external connector (channel 3 and 4)
- Equipped with four I²C EEPROMs for rapid test and measurements
- Equipped with programmable power supply for logic level combination
- Equipped with Arduino Uno R3 port for direct connection with Arduino devices
- Compliant with IMXRT1050, LPCXpresso55S69 and i.MX Mini LPDDR4 boards, including GUI (Windows 10)

**Available Now**




3.3” x 2.3” (8.38 x 5.84 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCA9846 | FRDM-MCXA153<br>FRDM-MCXN947 | Planned | Planned |

**Documents:**

UM11759, PCA9846PW-ARD Evaluation Board User Manual

For pricing and availability, see the PCA9846PW-ARD Development Board page.

# P3S0210BQ-ARD Dual Bidirectional I3C Switch and Voltage Level Translator Evaluation Board

Enabling System Solutions with FRDM Platform

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## P3S0210BQ-ARD Highlights

### Supported Device

P3S0210BQ Dual Bidirectional I3C 1:2 Switch and VLT

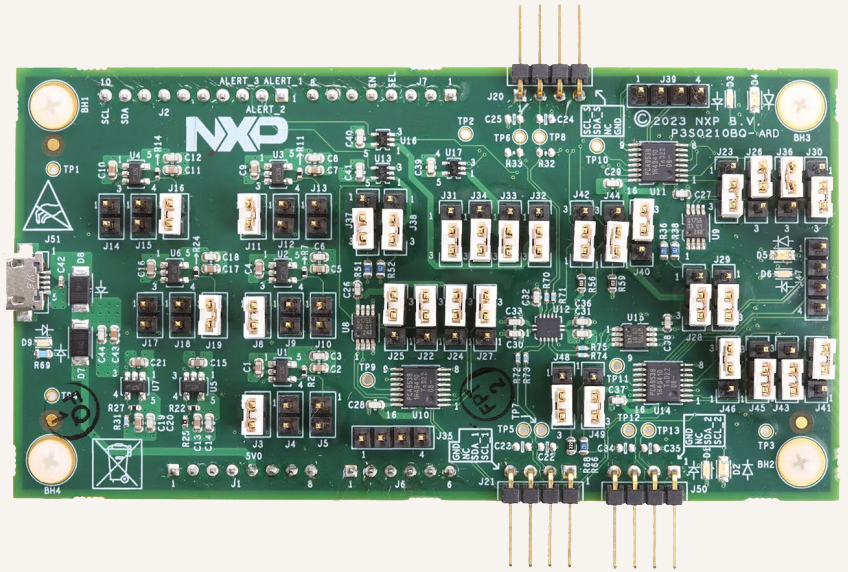
### Target Applications

- Smart Phone and Mobile Devices
- Networking, server and data center
- Desktop and Laptop Computers

### Key Features

- Evaluation board is USB powered so external power supply is not required.
- Evaluation board can be connected to a standard NXP microcontroller board via Arduino interface headers.
- Off the board I²C and I3C target devices can be conveniently connected to the P3S0210 via on-board headers.

**Available Now**



4.2" x 2.2" (10.6 x 5.58 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3S0210BQ | FRDM-MCXA153<br>FRDM-MCXN947 | Planned | Planned |

**Documents:**

UM11909 P3S0210BQ-ARD User Manual

For pricing and availability, see the P3S0210BQ-ARD Development Board page.

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# PCF2131-ARD FRDM Expansion Board (Arduino® Shield) for PCF2131/PCA2131 Real Time Clock

Enabling System Solutions with FRDM Platform

## PCF2131-ARD Highlights

### Supported Devices

PCF2131 Accurate RTC for Industrial Applications
PCA2131 Accurate RTC for Automotive Applications

### Target Applications

- Electronic metering for electricity, water, and gas
- GPS equipment
- POS terminal
- Major home appliances

### Key Features

- On-board header for direct connection to Aardvark I²C/SPI Host Adapter
- Adjustable power supply for complex tests and verification
- On-board battery holder for battery switch-over circuit test
- On-board jumpers for I²C-bus or SPI-bus selection
- On-board connector and switches for timestamp function tests
- Fully compliant with IMXRT1050, LPCXpresso55S69 and i.MX Mini LPDDR4 EVK boards including GUI (Windows 10)

**Available Now**


3.5” x 2.0” (8.89 x 5.08 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCF2131<br>PCA2131 | FRDM-MCXA153<br>FRDM-MCXN947 | PCF2131 Driver | PCF2131 Driver |

**Documents:**
UM11597, PCF2131-ARD User Manual
UM11581, Arduino Shields GUI and firmware installation

For pricing and availability, see the PCF2131-ARD FRDM Expansion Board page.

# PCF85063AT-ARD Arduino® Shield board for PCF85063A Tiny Real-Time Clock

Enabling System Solutions with FRDM Platform

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## PCF85063AT-ARD Highlights

### Supported Device

PCF85063A Tiny Real-Time Clock/Calendar

### Target Applications

- Digital still camera and video camera
- Printers and copy machines
- Mobile equipment
- Battery powered devices

### Key Features

- Connector for external access to I²C-bus
- Onboard user switch for oscillator stop test
- Onboard LED for interrupt pin monitoring
- Equipped with Arduino Uno R3 port for direct connection with Arduino devices
- Fully compliant with MIMXRT1050-EVK, LPC55S69-EVK and 8MMINILPD4-EVK, including GUI software control (Windows 10)

**Available Now**


2.15” x 2.17” (5.46 x 5.51 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCF85063A | FRDM-MCXA153<br>FRDM-MCXN947 | PCF85063A Driver | PCF85063A Driver |

**Documents:**

UM11578, PCF85063AT-ARD evaluation board - User guide

UM11581 - Arduino Shields GUI and Firmware Installation - User Guide

For pricing and availability, see the PCF85063AT-ARD FRDM Expansion Board page.

# SJA1124EVB FRDM Expansion Board (Arduino® Shield) for Quad LIN commander SJA1124

Enabling System Solutions with FRDM Platform

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## SJA1124EVB Highlights

### Supported Device

SJA1124 Quad LIN Commander Transceiver

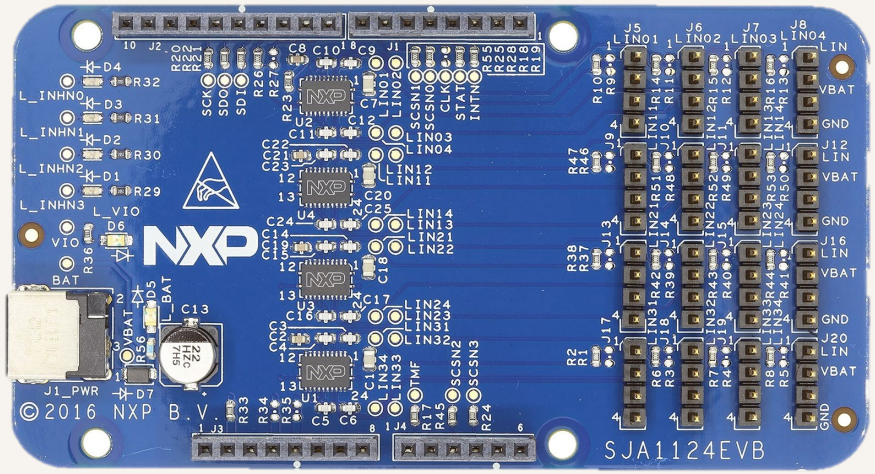
### Target Applications

- Body control
- HVAC
- Ambient mood lighting
- Park assist

### Key Features

- SJA1124 is a quad LIN commander IC that supports highly integrated multi-LIN communication.
- For easy LIN channel extension to the available microcontroller, this board features 16 LIN leader channels.
- The EVB is a hardware plug-in board (shield) with standards-based form factor compatible with Arduino® UNO pin layout.
- Power LED indicator, VIO LED indicator, INHN LED indicators

**Available Now**




3.90” x 2.10” (9.9 x 5.3 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| SJA1124 | FRDM-MCXA153<br>FRDM-MCXN947 | SJA1124 Driver | SJA1124 Driver |

**Documents:**

SJA1124EVB User Guide

SJA1124EVB Schematics

For pricing and availability, see the SJA1124EVB FRDM Expansion Board page.

# NTS0304EUK-ARD

## Level Shifter Evaluation Board

Enabling System Solutions with FRDM Platform

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**Available Now**

### NTS0304EUK-ARD Highlights

#### Supported Device

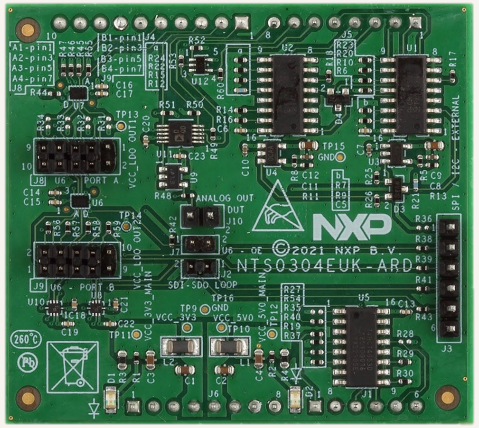
NTS0304E 4-Bit Dual-Supply Translating Transceiver

#### Target Applications

- Smartphone
- Digital Cameras
- Tablet PCs
- Motherboards

#### Key Features

- Equipped with SPI / I²C digital potentiometer for rapid test and measurements
- Equipped with Arduino Uno R3 port for direct connection with Arduino devices
- Low Voltage, Dual Supply 4-Bit Bidirectional Level Shifter
- Device automatically switches direction from A to B or from B to A without requiring a direction control pin.
- Fully compliant with IMXRT1050 EVK board, LPCXpresso55S69 dev. board and i.MX Mini LPDDR4 EVK board, including GUI (Windows 10)




2.32” x 2.1” (5.89 x 5.33 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| NTS0304E | Not applicable | Not applicable | Not applicable |

**Documents:**
UM11762, NTS0304EUK-ARD evaluation board - User Manual

For pricing and availability, see the NTS0304EUK-ARD FRDM Expansion Board page.

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# PCA9617ADP-ARD Arduino Shield Level Translating Fm+ I²C-Bus Repeater Evaluation Board

Enabling System Solutions with FRDM Platform

## PCA9617ADP-ARD Highlights

### Supported Device

PCA9617A Level Translating Fm+ I²C-Bus Repeater

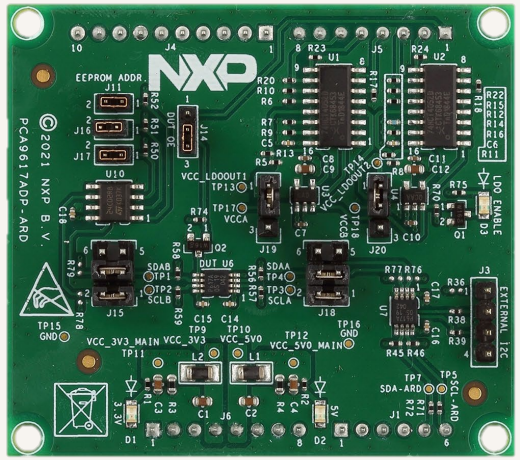
### Target Applications

- I²C-bus and SMBus applications

### Key Features

- Equipped with I²C EEPROM for rapid test and measurements
- Equipped with Arduino Uno R3 port for direct connection with Arduino devices
- Allows bidirectional voltage-level translation and I²C-bus repeater
- Supply voltage: Vcc(A) 0.8 V to 5.5 V, Vcc(B) 2.2 V to 5.5 V
- Icc(A): 50 uA(max)
- Fully compliant with IMXRT1050 EVK board, LPCXpresso55S69 dev. board and i.MX Mini LPDDR4 EVK board, including GUI (Windows 10)

**Available Now**



2.44” x 2.16” (6.19 x 5.4 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| PCA9617A | Not applicable | Not applicable | Not applicable |

**Documents:**
UM11763 PCA9617ADP-ARD - User Manual

For pricing and availability, see the PCA9617ADP-ARD FRDM Expansion Board page.

# P3H2840HN-ARD (In Development)

## I3C Hub Arduino® Shield Evaluation Board

Enabling System Solutions with FRDM Platform

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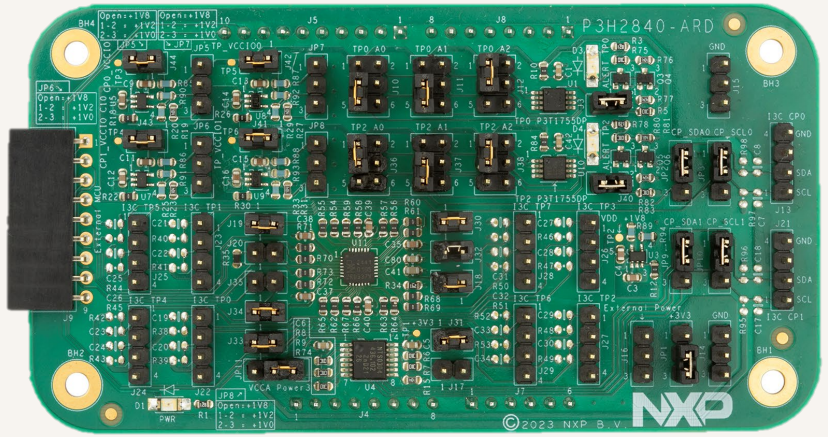


4” x 2.2” (10.16 x 5.58 cm)

## P3H2840HN-ARD Highlights

### Supported Device

P3H2840HN (In Development)

### Target Applications

- Intel / AMD server platforms
- ARM based SoC for AI and datacenter equipment

### Key Features

- 2x I3C hub controller with eight target ports
- Eight target ports configurable to I3C/I²C/SMBus or GPIO
- Integrated LDO
  - Controller port operating at 1.0 V, 1.2 V, or 1.8 V
  - Target port operating at 1.0, 1.2 V, 1.8 V, or 3.3 V
- 4 x 4 mm QFN28 package with 0.4 mm lead pitch

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3H2840HN | In Development | In Development | In Development |

**Documents:**
In Development

# P3H2841HN-ARD (In Development)

## I3C Hub Arduino® Shield Evaluation Board

Enabling System Solutions with FRDM Platform

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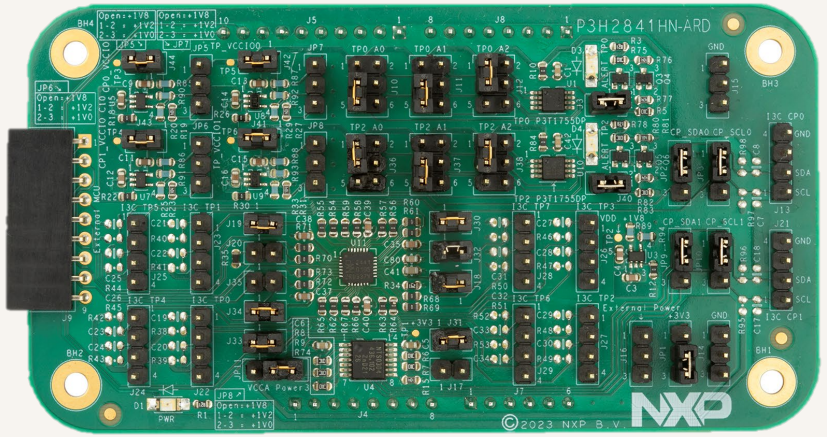
**In Development**




4” x 2.2” (10.16 x 5.58 cm)

## P3H2841HN-ARD Highlights

### Supported Device

P3H2841HN (In Development)

### Target Applications

- Intel / AMD server platforms
- ARM based SoC for AI and datacenter equipment
- Network Cards and Industrial Systems

### Key Features

- 2x I3C hub controller with eight target ports
- Eight target ports configurable to I3C/I²C/SMBus or GPIO
- Integrated LDO
  - Controller port operating at 1.0 V, 1.2 V, or 1.8 V
  - Target port operating at 1.0, 1.2 V, 1.8 V, or 3.3 V
- 4 x 4 mm QFN28 package with 0.4 mm lead pitch

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3H2841HN | In Development | In Development | In Development |

**Documents:**
In Development

# P3H2440HN-ARD (In Development)

## I3C Hub Arduino® Shield Evaluation Board

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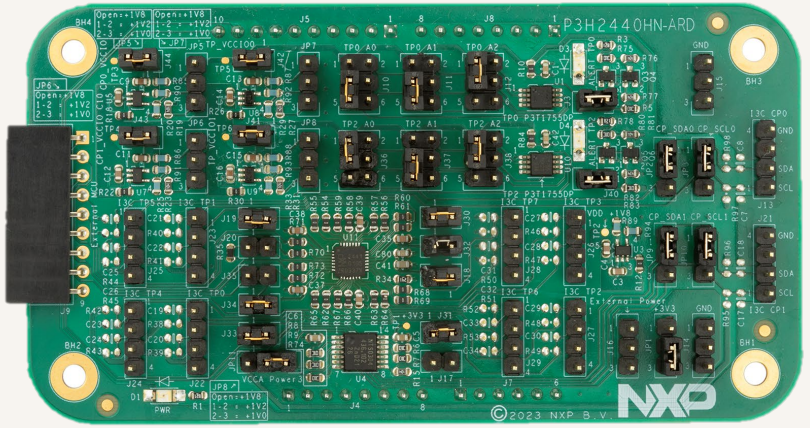


4” x 2.2” (10.16 x 5.58 cm)

## P3H2440HN-ARD Highlights

### Supported Device

P3H2440HN (In Development)

### Target Applications

- Intel / AMD server platforms
- ARM based SoC for AI and datacenter equipment

### Key Features

- Two controller ports to connect to I3C or I²C/SMBus controller devices: Controller Port 0 (CP0) and Controller Port 1 (CP1).
- 2x I3C hub controller with eight target ports
- Four target ports configurable to I3C/I²C/SMBus or GPIO
- Integrated LDO
  - Controller port operating at 1.0 V, 1.2 V, or 1.8 V
  - Target port operating at 1.0, 1.2 V, 1.8 V, or 3.3 V
- 4 x 4 mm QFN28 package with 0.4 mm lead pitch

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3H2440HN | In Development | In Development | In Development |

**Documents:**
In Development

# P3H2441HN-ARD (In Development)

## I3C Hub Arduino® Shield Evaluation Board

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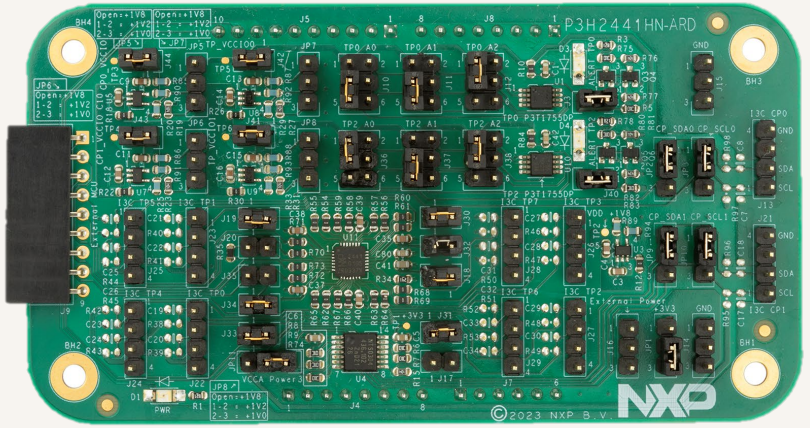


4” x 2.2” (10.16 x 5.58 cm)

## P3H2441HN-ARD Highlights

### Supported Device

P3H2441HN (In Development)

### Target Applications

- Intel / AMD server platforms
- ARM based SoC for AI and datacenter equipment

### Key Features

- Two controller ports to connect to I3C or I²C/SMBus controller devices: Controller Port 0 (CP0) and Controller Port 1 (CP1). Pre-configured I3C mode only by default.
- 2x I3C hub controller with eight target ports
- Four target ports configurable to I3C/I²C/SMBus or GPIO
- Integrated LDO
  - Controller port operating at 1.0V, 1.2V, or 1.8V
  - Target port operating at 1.0, 1.2V, 1.8V, or 3.3V
- 4 x 4 mm QFN28 package with 0.4 mm lead pitch

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3H2441HN | In Development | In Development | In Development |

**Documents:**
In Development

# FRDMSTBC-P3115 Freedom Shield Evaluation Board for MPL3115 Pressure Sensor

Enabling System Solutions with FRDM Platform

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## FRDMSTBC-P3115 Highlights

### Supported Device

MPL3115 Absolute Digital Pressure Sensor (20 to 110 kPa)

### Target Applications

- High-accuracy altimetry and barometry
- Smartphones, tablets, and wearable devices
- GPS applications
- Weather station equipment

### Key Features

- Compatible with Arduino®® and most NXP® Freedom development boards
- Enables detailed sensor evaluation and development using the Sensor Toolbox – CE software
- Allows Register level analysis, computation of key sensor parameters like Current Consumption, debugging communication protocols like I²C and SPI, data logging etc.

**Available Now**


2.1” x 2.3” (5.3 x 5.84 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| MPL3115 | FRDM-KL27Z<br>FRDM-MCXA153<br>FRDM-MCXN947 | MPL3115 Driver | MPL3115 Driver |

**Documents:**

FRDMSTBC-P3115 Quick Start Guide

For pricing and availability, see the FRDMSTBC-P3115 Sensor Toolbox Development Platform page.

# FRDM-STBI-A8974 Freedom Shield Evaluation Board for FXLS8974 Digital IoT Accelerometer

Enabling System Solutions with FRDM Platform

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## FRDM-STBI-A8974 Highlights

### Supported Device

FXLS8974CF Low-Power 12-Bit Digital IoT Accelerometer

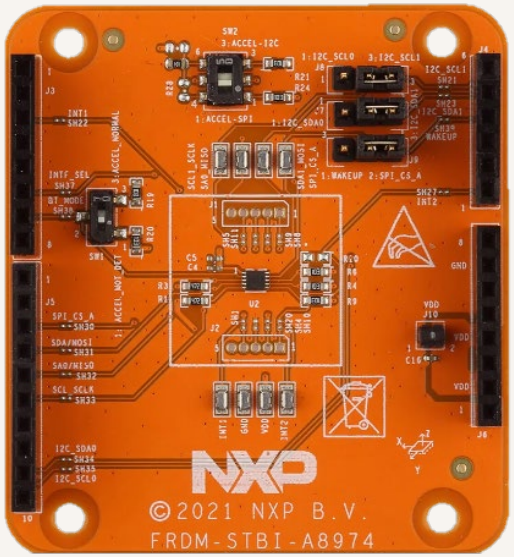
### Target Applications

- Asset tracking and equipment monitoring
- Smart metering / tamper detection
- Patient activity monitors and other medical appliances
- Smart home and mobile consumer devices

### Key Features

- Compatible with Arduino®® and most NXP Freedom development boards
- Supports I²C and SPI communication interface with host MCU
- Supports hardware configurability to switch accelerometer mode and I²C/SPI interface mode

**Available Now**




2.1" x 2.3" (5.3 x 5.84 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| FXLS8974CF | FRDM-MCXA153<br>FRDM-MCXN947<br>FRDM-K22F | FRDM-K22F-A8974<br>LPCXpresso55S16-A8974 | FXLS897xCF ACH Project |

**Documents:**

UM11736, FRDM-STBI-A8974 User Manual

For pricing and availability, see the FRDM-STBI-A8974 Sensor Toolbox Development Platform page.

# FRDMSTBI-NMH1000 Freedom Shield Evaluation Board for NMH1000 Magnetic Switch

Enabling System Solutions with FRDM Platform

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## FRDMSTBI-NMH1000 Highlights

### Supported Device

NMH1000 Ultra-Low Power and Low-Voltage Magnetic Switch

### Target Applications

- Electronic system wake-up
- Tamper detection
- Laptop lid open / closed
- Door or window open / closed

### Key Features

- Compatible with Arduino®® and most NXP® Freedom development boards
- The FRDMSTBI-NMH1000 can be paired with NXP MCU boards of your choice

**Available Now**


2.1” x 2.3” (5.3 x 5.84 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| NMH1000 | FRDM-KE15Z<br>FRDM-MCXA153<br>FRDM-MCXN947 | FRDMKE15-NMH1000 | NMH1000 ACH Project |

**Documents:**

UM11835, FRDMSTBI-NMH1000 User Manual

For pricing and availability, see the FRDMSTBI-NMH1000 Freedom Shield Evaluation Board page.

# FRDM-STBI-A8971 Freedom Shield Evaluation Board for FXLS8971 Digital Accelerometer

Enabling System Solutions with FRDM Platform

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## FRDM-STBI-A8971 Highlights

### Supported Device

FXLS8971CF Low Power 12-Bit Digital Accelerometer

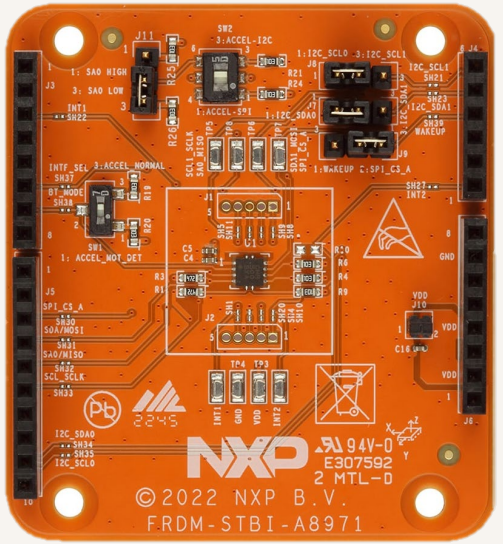
### Target Applications

- Precision Inclinometer, Tilt Sensing
- Camera Stabilization
- Remote Patient Monitoring
- Equipment Monitoring and Asset Tracking

### Key Features

- Compatible with Arduino®® and most NXP Freedom development boards
- Supports I²C and SPI communication interface with host MCU
- Supports hardware configurability to switch accelerometer mode and I²C/SPI interface mode
- Support multiple test points on the board

**Available Now**




2.1” x 2.3” (5.3 x 5.84 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| FXLS8971CF | FRDM-MCXA153<br>FRDM-MCXN947 | LPCXPRESSO55S16-A8971 | FXLS897xCF ACH Project |

**Documents:**

UM11910, FRDM-STBI-A8971 User Manual

For pricing and availability, see the FRDM-STBI-A8971 Sensor ToolBox Development Board page.

# P3T1085UK-ARD FRDM Expansion Board (Arduino® Shield) for P3T1085/P3T1084 Temperature Sensor

Enabling System Solutions with FRDM Platform

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## P3T1085UK-ARD Highlights

### Supported Devices

P3T1085UK I3C/I²C-Bus Accurate Digital Temperature Sensor
P3T1084UK I3C/I²C-Bus Accurate Digital Temperature Sensor

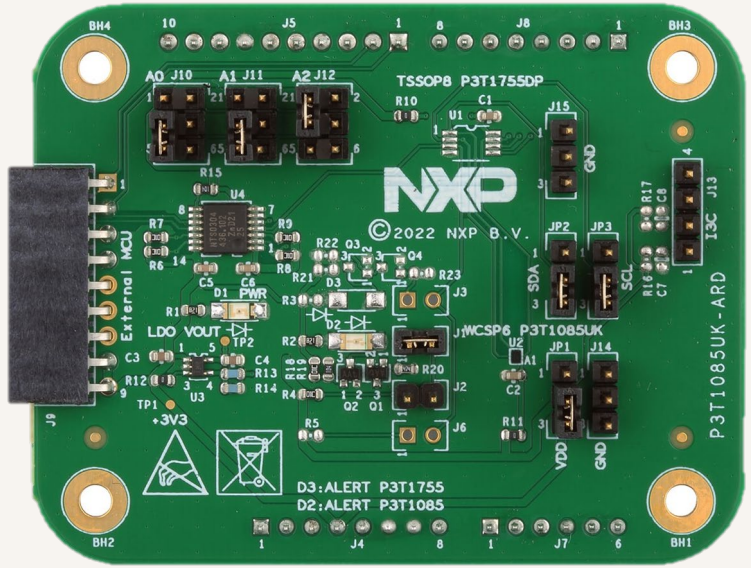
### Target Applications

- Portable devices
- System thermal management
- Industrial controllers
- PC/Notebook/Servers/SSD

### Key Features

- Use Arduino connector for data and power
- Easy to use GUI based software demonstrates the capabilities of the P3T1085UK/P3T1084UK
- On-board temperature sensor for system thermal management experiments
- Convenient test points for easy scope measurements and signal access

**Available Now**




3.0” x 2.4” (7.62 x 6.0 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3T1085UK<br>P3T1084UK | FRDM-MCXA153<br>FRDM-MCXN947 | P3T1085 Driver | P3T1085 ACH |

**Documents:**
UM11766, P3T1085UK-ARD User Manual

For pricing and availability, see the P3T1085UK-ARD FRDM Expansion Board page.

# NAFE13388-UIM 8 -Channel Universal Input AFE Arduino® Shield Board (In Development)

Enabling System Solutions with FRDM Platform

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## NAFE13388-UIM Highlights

### Supported Device

NAFEx3388 Highly Configurable 8/4 Channel 24/16 bits ±25 V Universal Input Analog Front-End
NAFEx1388 Highly Configurable 8 Channel ±25 V Universal Input Analog Front-End

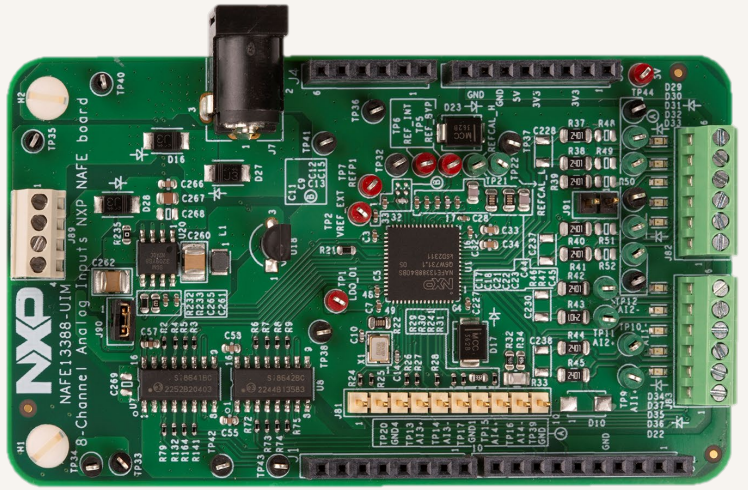
### Target Applications

- PLC or remote I/O
- Data Acquisition
- Industrial Instruments
- Servo Control

### Key Features

- Compact Design
- Arduino UNO connector connects to any NXP FRDM MCU platform
- FRDM compatible

**Available Now**




3.5” x 1.96” (8.9 x 5 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| NAFEx3388<br>NAFEx1388 | FRDM-MCXN947 | NAFE13388 Driver | NAFE13388 Driver |

**Documents:**
N-AFE Software-Configurable Analog Front-End Family With Universal Analog Inputs Fact Sheet

For pricing and availability, see the NAFE13388-UIM FRDM Expansion Board page.

# P3T1755DP-ARD

## Arduino® Shield Evaluation Board

Enabling System Solutions with FRDM Platform

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**Available Now**

## P3T1755DP-ARD Highlights

### Supported Device

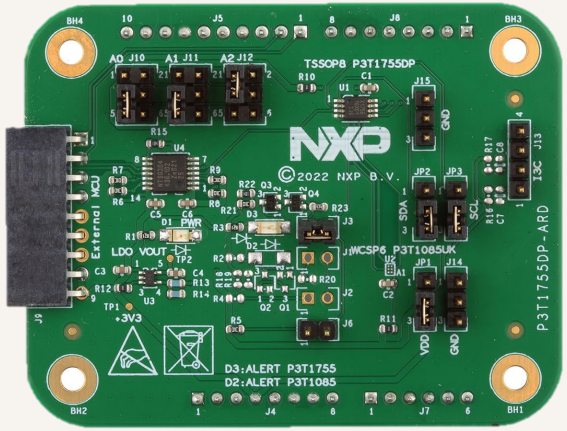
P3T1755DP I3C/I²C-Bus ±0.5 °C Accurate Digital Temperature Sensor

### Target Applications

- Automotive: Audio Solutions, High Performance Compute, EV Traction Inverter, HVAC, etc.
- Industrial: Building Energy Management Controller, Safety Detectors, Industrial HMI, ESS, EVSE, etc.
- Communication Infrastructure: Interface ICs for Servers
- Major Home Appliances

### Key Features

- A complete evaluation platform for the P3T1755DP I3C, I²C-bus, 0.5 °C accuracy, digital temperature sensor
- Easy to use GUI-based software demonstrates the capabilities of the P3T1755DP
- On-board temperature sensor for system thermal management experiments
- Convenient test points for easy scope measurements and signal access
- USB interface to the host PC
- Power supply from USB port (x2) or external power supply can be used to power P3T1755DP-ARD evaluation board




2.80” x 2.20” (7.11 x 5.58 cm)

| Device | Compatible Processor Boards | SDK | ACH (Example Project) |
|---|---|---|---|
| P3T1755DP | FRDM-MCXA153<br>FRDM-MCXN947 | P3T1755DP Driver | P3T1755DP Driver |

**Documents:**

P3T1755DP-ARD Evaluation Board User Manual

For pricing and availability, see the P3T1755DP-ARD FRDM Expansion Board page.

# Completed and Available Drivers

## Summary Released FRDM Expansion Boards

Automotive & Transportation | Factory Automation | Healthcare | Power & Energy | Home & Building Controls | Communication & Computing

| Segment | Device | Board(s) | | Driver | ACH (Example Project) | Target Application |
|---|---|---|---|---|---|---|
| Real Time Clock | PCF2131 Accurate RTC with Integrated TCXO for Industrial Applications<br>PCA2131 Accurate RTC with Integrated TCXO for Automotive Applications | PCF2131-ARD | FRDM-MCXA153 \| MCXN947 | PCF2131 Driver | PCF2131 Driver | |
| | PCF85063A Real Time Clock | PCF85063AT-ARD | FRDM-MCXA153 \| MCXN947 | PCF85063A Driver | PCF85063A Driver | |
| Temperature Sensor | P3T1085 I3C/I²C-Bus Temperature Sensor with ±0.5 °C Accuracy | P3T1085UK-ARD | FRDM-MCXA153 \| MCXN947 | P3T1085 Driver | P3T1085 Driver | |
| LED Controller | PCA9957 24-CH SPI LED Controller with 32 mA Constant Current Driver | PCA9957HN-ARD | FRDM-MCXA153 \| MCXN947 | PCA9957 Driver | PCA9957 Driver | |
| | | LED Driver 8 Click | | | | |
| | PCA9959 24-CH SPI LED Controller with 63 mA Constant Current Driver | PCA9959HN-ARD | FRDM-MCXA153 \| MCXN947 | PCA9959 Driver | PCA9959 Driver | |
| I3C-Bus Hub | P3H244x 4-CH I3C-Bus Hub | P3H2440HN-ARD<br>P3H2441HN-ARD | | In Development | In Development | |
| | P3H2840 8-CH I3C-Bus Hub | P3H2840HN-ARD<br>P3H2841HN-ARD | | In Development | In Development | |
| Analog Front End | NAFEx1388 Analog Front End<br>NAFEx3388 Analog Front End | NAFE13388-UIM | FRDM-MCXN947 | NAFE13388 Driver | NAFE13388 Driver | |
| Motion Sensor | FXLS8974CF 3-Axis Low-g Accelerometer | FRDM-STBI-A8974 | FRDM-K22F \| FRDM-MCXA153 \| MCXN947 | FRDM-K22F-A8974<br>LPCXpresso55S16-A8974 | FXLS897xCF ACH Project | |
| | | Accel 4 Click | FRDM-MCXA153 \| MCXN947 | | | |
| | FXLS8971CF 3-Axis Low-g Accelerometer with Improved TCO Performance | FRDM-STBI-A8971 | FRDM-MCXA153 \| MCXN947 | LPCXPRESSO55S16-A8971 | | |
| Pressure Sensor | MPL3115 Precision Pressure Sensor with Altimetry | FRDMSTBC-P3115 | FRDM-KL27Z \| FRDM-MCXA153 \| MCXN947 | FRDMKL27-P3115 | MPL3115 ACH Project | |
| | | Altitude Click | FRDM-MCXA153 \| MCXN947 | | | |
| Magnetic Sensor | NMH1000 Magnetic Switch | FRDMSTBI-NMH1000 | FRDM-KE15Z \| FRDM-MCXA153 \| MCXN947 | FRDMKE15-NMH1000 | NMH1000 ACH Project | |
| | | Hall Switch 3 click | FRDM-MCXA153 \| MCXN947 | | | |
| Motor Driver | MC33926 H-Bridge Driver | FRDM33926PNBEVM | FRDM-MCXA153 \| MCXN947 | MC33926 Driver | MC33926 Driver | |
| | HB2002 Brushed DC Motor Driver | FRDM-HB2002ESEVM | FRDM-MCXA153 \| MCXN947 | HB2002 Driver | HB2002 Driver | |
| LIN Transceiver | SJA1124 SPI-to-Quad LIN Bridge | SJA1124EVB | FRDM-MCXA153 \| MCXN947 | SJA1124 Driver | SJA1124 Driver | |
| PMIC | PCA9420 PMIC for Low-Power MCU Applications | PCA9420UK-EVM | FRDM-MCXA153 \| MCXN947 | PCA9420 Driver | PCA9420 Driver | |
| | PCA9421 PMIC for Low-Power MCU Applications | PCA9421UK-EVM | FRDM-MCXA153 \| MCXN947 | PCA9421 In Development | PCA9421 In Development | |



Last Updated: January 3, 2025

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