

iNemo inertial module with embedded ISPU and temperature sensor expansion kit



Features

- Kit content:
 - a STEVAL-C34AT02 multisensing expansion board (25x25mm) with a 34-pin board-to-FPC connector
 - a 34-pin flex cable
- Ideal plug-in for the [STEVAL-STWINBX1](#) evaluation board
- iNEMO inertial module with embedded ISPU (ISM330IS):
 - 3-axis accelerometer with selectable full scale: $\pm 2/\pm 4/\pm 8/\pm 16$ g
 - 3-axis gyroscope with selectable full scale: $\pm 125/\pm 250/\pm 500/\pm 1000/\pm 2000$ dps
 - Embedded ISPU: ultra-low-power, high-performance programmable core to execute signal processing and AI algorithms in the edge for a seamless digital-life experience
 - Low-power consumption: 0.59 mA in high-performance mode, 0.46 mA in low-power mode (gyroscope + accelerometer only, ISPU not included)
- Low-voltage, ultra-low-power, 0.5°C accuracy I²C/SMBus 3.0 temperature sensor (STTS22H)
 - Programmable thresholds through an interrupt pin
 - Ultra-low current: 1.75 μ A in one-shot mode
 - Operating temperature -40 to +125°C
- Exposed pad on the bottom side to improve the thermal coupling for the temperature sensor
- 1.8 to 3.3 V power supply input

Description

The [STEVAL-C34KAT2](#) is a multisensing expansion kit that includes the [STEVAL-C34AT02](#) expansion board and a flex cable.

The [ISM330IS](#) sensor is soldered at the center of the small 25 x 25 mm board. The [STTS22H](#) temperature sensor is placed on the PCB side and is thermally coupled to the PCB bottom exposed pad through vias.

The [ISM330IS](#) is a system-in-package featuring a 3-axis digital accelerometer and a 3-axis digital gyroscope, boosting performance at 0.59 mA in high-performance mode and enabling always-on low-power features for optimal motion results in industrial and IoT solutions.

The [ISM330IS](#) embeds a new ST category of processing intelligent sensor processing unit (ISPU) to support real-time applications that rely on sensor data.

The ISPU is an ultra-low-power, high-performance programmable core, which can execute signal processing and AI algorithms in the edge. The main benefits of the ISPU are C programming and an enhanced ecosystem with libraries and third-party tools/IDE.

Its optimized ultra-low-power hardware circuitry for real-time execution of the algorithms is a state-of-the-art feature for any wireless sensor node from small equipment or accessories to enterprise solutions for industry 5.0 (anomaly detection, asset tracking, factory automation).

Product summary	
iNemo inertial module with embedded ISPU and temperature sensor expansion kit	STEVAL-C34KAT2
STM32Cube function pack for high speed datalogging and ultrasound processing	FP-SNS-DATALOG2
iNEMO inertial module: always-on 3D accelerometer and 3D gyroscope with embedded ISPU - intelligent sensor processing unit	ISM330ISNTR
Low-voltage, ultra-low-power, 0.5 °C accuracy I ² C/SMBus 3.0 temperature sensor	STTS22HTR
Applications	Factory automation Industrial sensors

The expansion board can be mounted on the equipment for the vibration analysis using the four holes or the double-sided adhesive tape. This board is compatible with the STWIN.box kit ([STEVAL-STWINBX1](#)).

1 Schematic diagrams

Figure 1. STEVAL-C34KAT2 circuit schematic: STEVAL-C34AT02

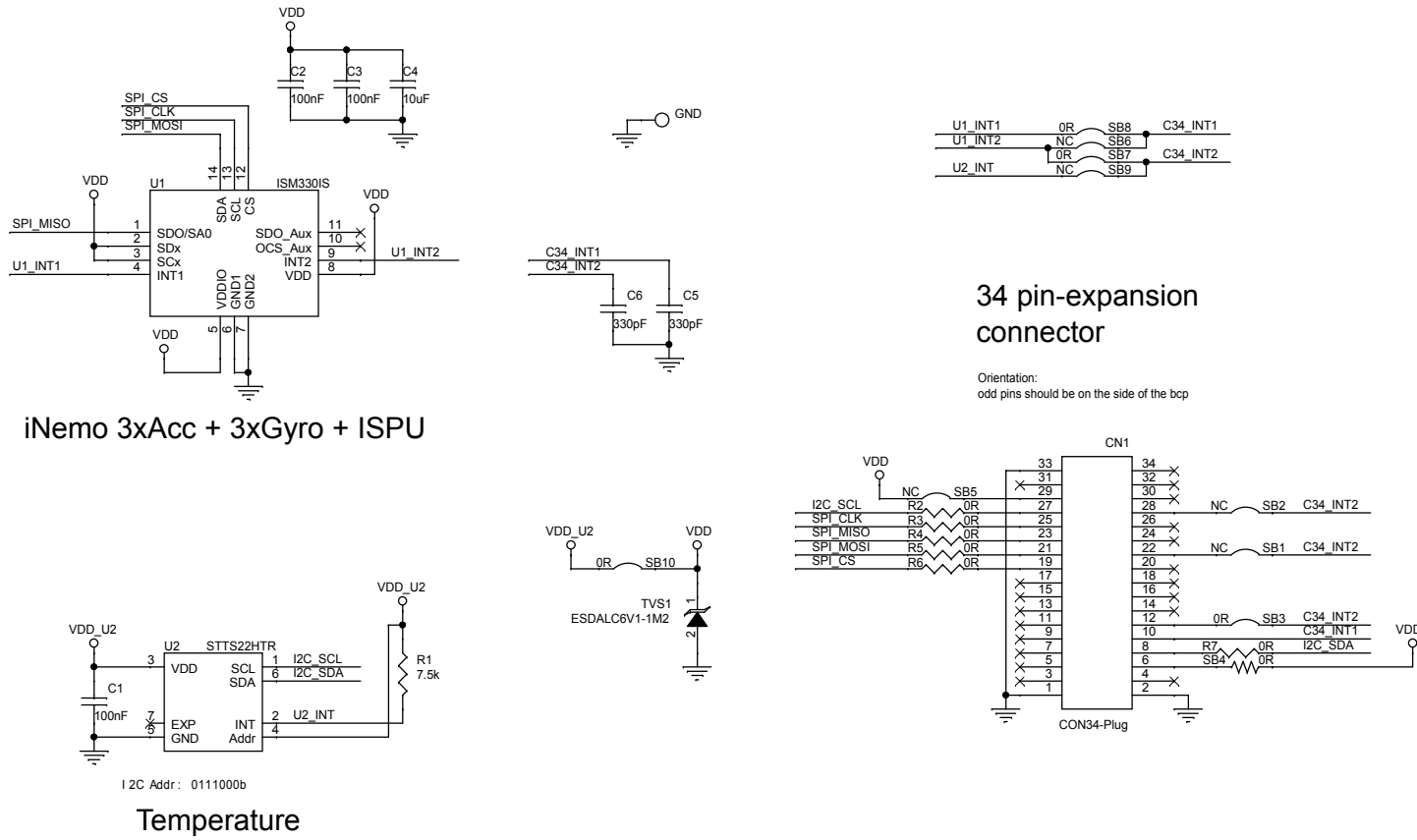
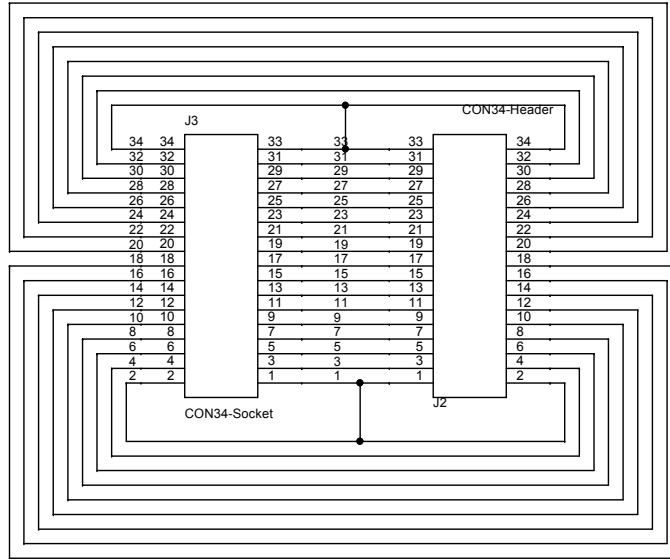
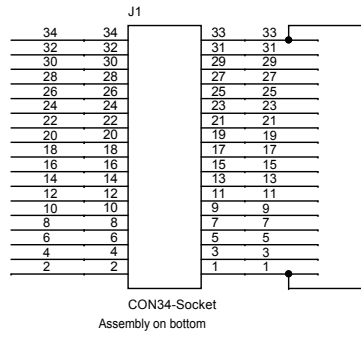


Figure 2. STEVAL-C34KAT2 circuit schematic: STEVAL-FLTCB02



2 Kit versions

Table 1. STEVAL-C34KAT2 versions

PCB version	Schematic diagrams	Bill of materials
STEVAL\$C34KAT2A ⁽¹⁾	STEVAL\$C34KAT2A schematic diagrams	STEVAL\$C34KAT2A bill of materials

1. This code identifies the STEVAL-C34KAT2 evaluation kit first version. The kit consists of the STEVAL\$C34AT02A expansion board and the STEVAL\$FLTCB02A flex cable. The STEVAL\$C34AT02A code is printed on the expansion board PCB. The STEVAL\$FLTCB02A code is printed on the flex cable.

Revision history

Table 2. Document revision history

Date	Revision	Changes
13-Sep-2023	1	Initial release.

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