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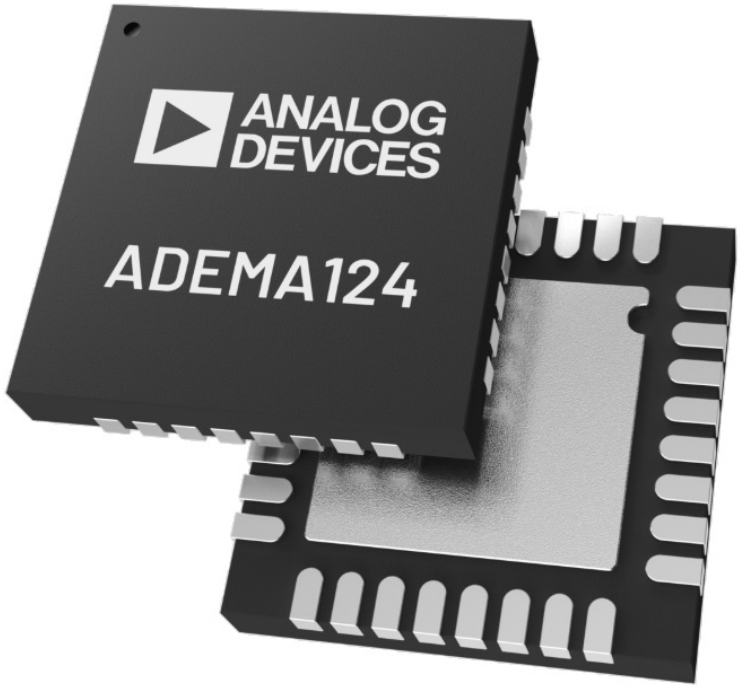
ANALOG DEVICES ADEMA124 Series Simultaneously Sampling



FEATURES

- Fully-featured evaluation board for the ADEMA124 and ADE-MA127
- 3-phase 4-wire, 3-phase 3-wire, or 3-wire single-phase measure-ments
- PC control in conjunction with the Analysis | Control | Evaluation (ACE) system demonstration platform
- Up to 240Vrms nominal line neutral voltage measurement EVALUATION KIT CONTENTS
- 2 board EVAL-ADEMA127KTZ evaluation kit
- Current transformers

EQUIPMENT NEEDED

- PC with USB 2.0 port, recommended
- USB Micro B cable

DOCUMENTS NEEDED

- ADEMA124/ADEMA127 data sheet

HAZARDOUS HIGH VOLTAGE

This equipment is connected to hazardous line voltages. Exercise proper caution when connecting the sensors and voltage leads. Ensure that the system is enclosed in a

protective casing.

GENERAL DESCRIPTION

The EVAL-ADEMA127KTZ is a two board evaluation kit for the si-multaneously sampling 4-channel ADEMA124 and 7-channel ADE-MA127 ΣΔ ADC. The EVAL-ADEMA127KTZ evaluation board is a configured as a 3-phase meter. The kit includes current transformers (CTs) for A-, B-, and C-phase and neutral current measurement. The application MCU board includes the STM32H573. The kit can be interfaced with via GUI available in the ACE software envi-ronment. The ADC driver library for the ADEMA124/ADEMA127 available on GitHub can also be uploaded to the application MCU board.
Full specifications on the ADEMA124/ADEMA127 are available in the ADEMA124/ADEMA127 data sheet available from Analog Devices, Inc. and must be consulted with this user guide when using the EVAL-ADEMA127KTZ evaluation board. For the current schematic, printed circuit board (PCB), and bill of material (BOM), refer to the EVAL-ADEMA127 product page.

EVAL-ADEMA127KTZ EVALUATION BOARD PHOTOGRAPH

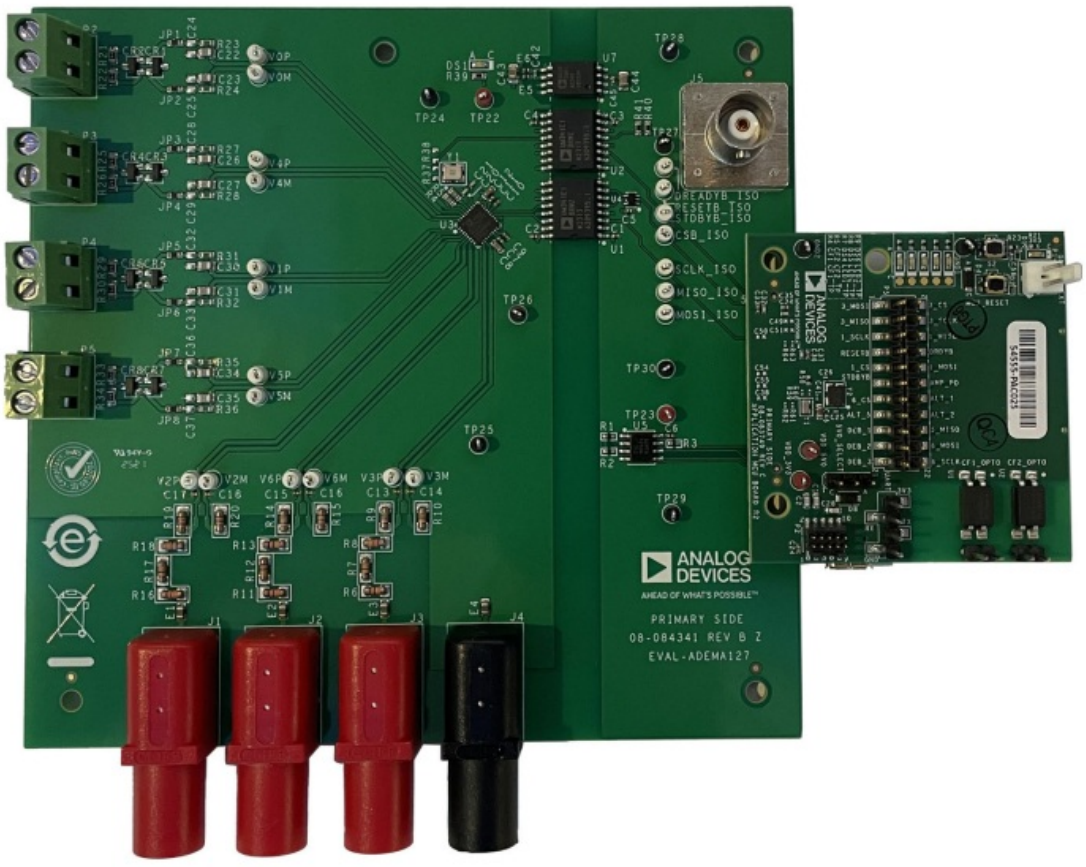


Figure 1. EVAL-ADEMA127KTZ Evaluation Board Photograph

EVALUATION BOARD HARDWARE

CURRENT SENSORS

The EVAL-ADEMA127KTZ is designed to work directly with the provided current output CTs. Connect the CT leads to the P2, P3, P4, and P5 terminal blocks.
The EVAL-ADEMA127KTZ has on-board burden resistors in the differential configuration to allow direct connection with current output CTs. The burden resistors may be modified for different current ranges.

VOLTAGE SENSORS

The EVAL-ADEMA127KTZ has on-board resistor dividers to attenu-ate the incoming input voltage. Do not exceed the 240Vrms nominal line to neutral voltage in the 3-phase, 4-wire (3P4W) wye configura-tion. In the 3-wire delta configuration, when Phase B is used as the reference, do not exceed 250Vrms line-to-line voltage.
There are 4mm banana jacks on board to connect the voltage inputs. Use TPI A079 or equivalent leads with alligator clips to connect the voltage inputs.

POWERING THE EVAL-ADEMA127KTZ

The EVAL-ADEMA127KTZ is powered by default via USB through the P7 micro-USB port. Power is distributed through the application MCU board to the daughter board below.
The EVAL-ADEMA127KTZ may alternatively be powered via 6V to 15V supply via P1 connector. The position of the jumper on the 5V0_SELECT connector must also be adjusted.

EVALUATION BOARD SOFTWARE

- The evaluation board is compatible with ACE software.
- The EVAL-ADEMA127KTZ used the CP2102N-A02 USB-to-UART bridge for communication with the Windows® PC. Download and install the CP2102N-A02 driver from the Silicon Labs website.
  Once the Silicon Labs drivers are installed, plug in the EVAL-ADE-MA127KTZ and open Device Manager on the PC. Note the COM number assigned to the Silicon Labs CP210x USB-to-UART Bridge. The example shown in Figure 2 is assigned to COM5.
- Install the ACE software from here.

- Install the Chip.ADEMA127 package from the ADC Plug-In Manag-er.
- Once installation completes, configure the EVAL-ADEMA127KTZ. From the ACE Home tab, click Add Hardware. The EVAL-ADE-MA127KTZ is configured as a serial ports. The Number field is the COM port number attained from the Windows Device Manager for the Silicon Labs CP210x USB-to-UART Bridge. The required Baudrate is 921600, the Buffer Size 64, and the Protocol is IIO, as shown in Figure 3.

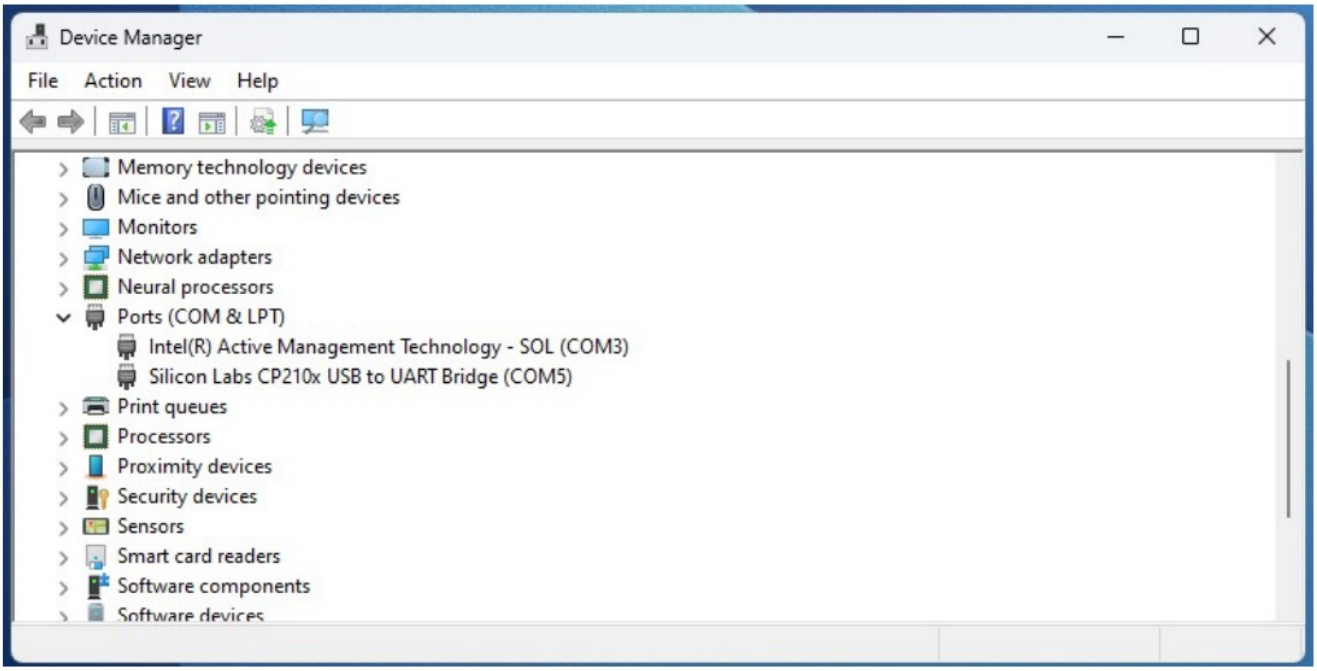


Figure 2. Device Manager

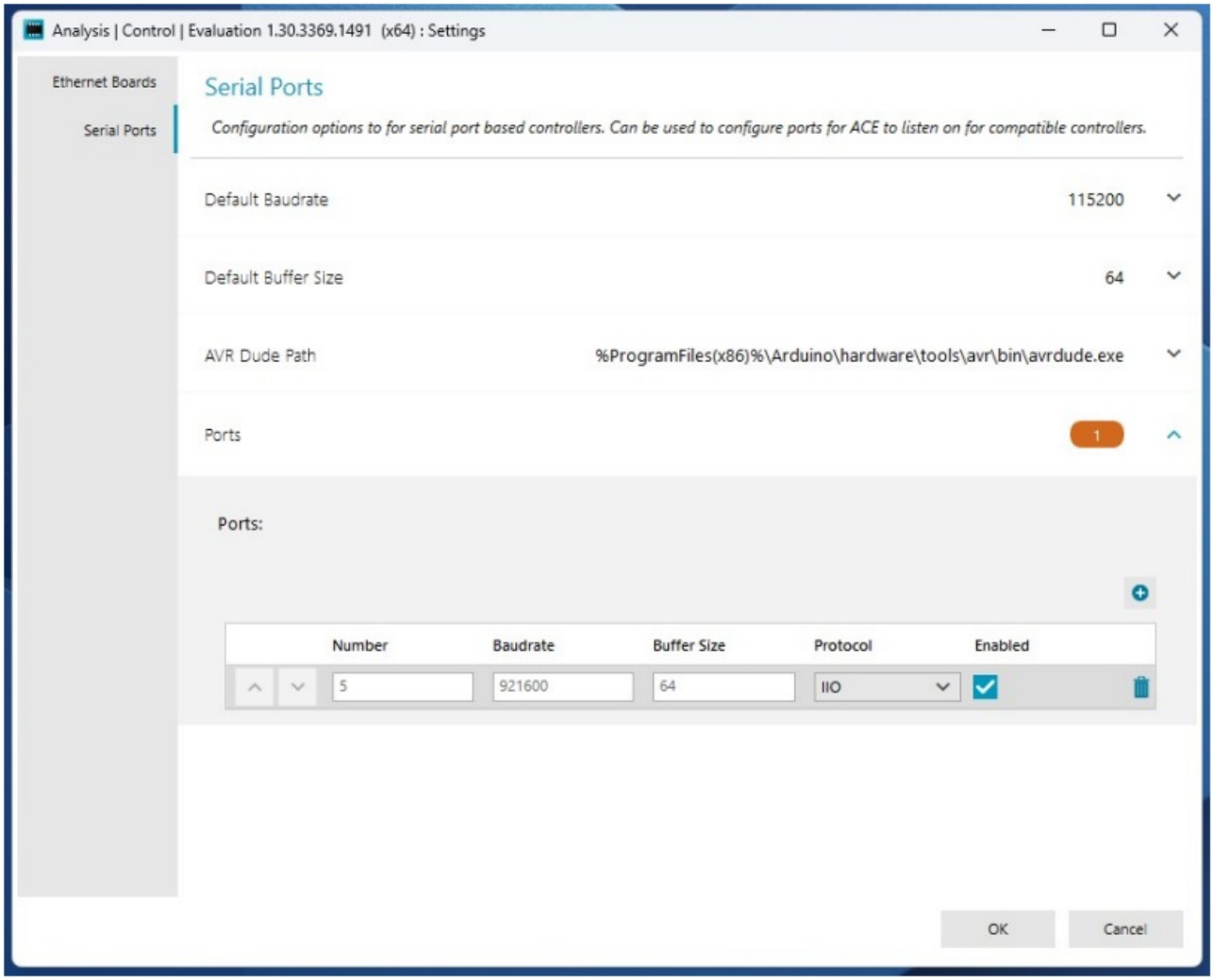


Figure 3. ACE Configuration of EVAL-ADEMA127KTZ

EVALUATION BOARD SOFTWARE

ADC SERVICE

For more details on the ADC drivers for the ADEMA124/ADE-MA127 and specific information related the applications MCU board, refer to the App MCU Board: Build and Run Instructions.

GETTING STARTED

For instructions on getting started with both the EVAL-ADE-MA127KTZ evaluation kit and the ACE software plug-in, refer to the ADEMA127 ACE Plug-In User's Guide.

ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD.

Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

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FAQ

Can the EVAL-ADEMA127KTZ be used for single-phase measurements?

Yes, the board supports 3-wire single-phase measurements.

What is the maximum voltage that can be measured with this evaluation board?

The board supports up to 240Vrms nominal line neutral voltage measurement.

Documents / Resources

	ANALOG DEVICES ADEMA124 Series Simultaneously Sampling [pdf] User Guide ADEMA124 Series Simultaneously Sampling, ADEMA124 Series, Simultaneously Sampling, Sampling

References

- User Manual

Analog Devices

ADEMA124 Series, ADEMA124 Series Simultaneously Sampling, Analog Devices, Sampling, Simultaneously Sampling

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