AN14025

How to Set Up LPC860 Switch Matrix Demo

Rev. 1.0 — 13 October 2023

Application note

1   Introduction

The switch matrix is a feature, which assigns the internal signals to external pins in the LPC860 microcontroller. Figure 1 shows the block diagram for the switch matrix. The switch matrix demo is used to show its features. In this demo, a single UART signal can be switched to a different external port.
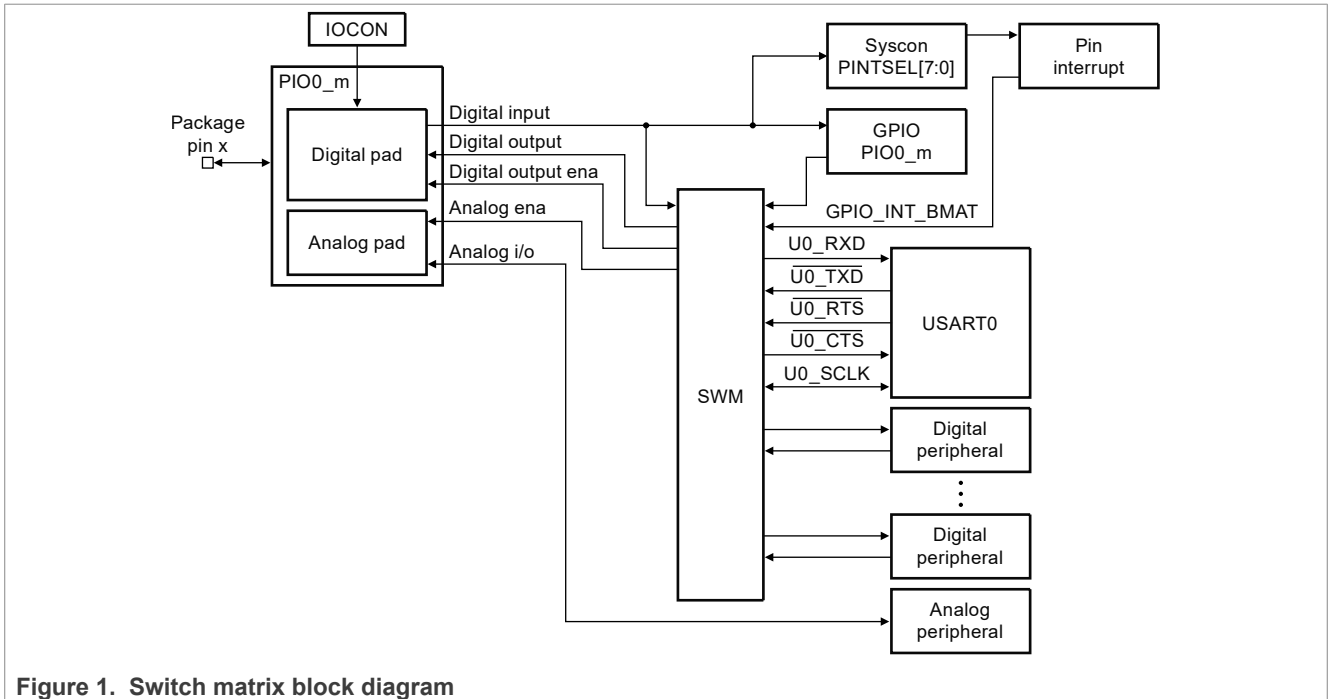

Figure 1. Switch matrix block diagram

2   Switch matrix demo setup

This section includes the hardware and software setup for the switch matrix demo.

2.1 Hardware setup

The switch matrix demo is implemented in the LPCXpresso860-MAX EVK board.

To set up this demo, one USB to TTL module is required. Figure 2 shows the following connections:

• Connect the J2 pin2 to the USB to the TTL RX pin.
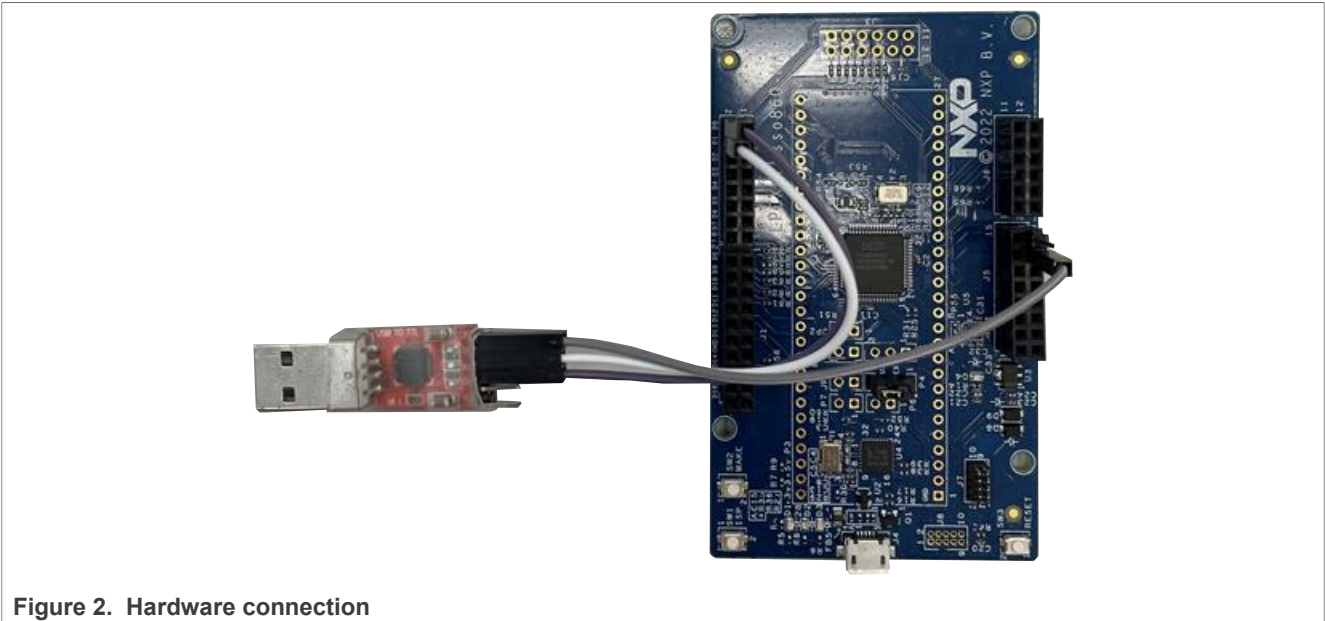• Connect the J2 pin4 to the USB to the TTL TX pin.

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Figure 2. Hardware connection

2.2 Software setup

The switch matrix demo development environment is MCUXpresso IDE.
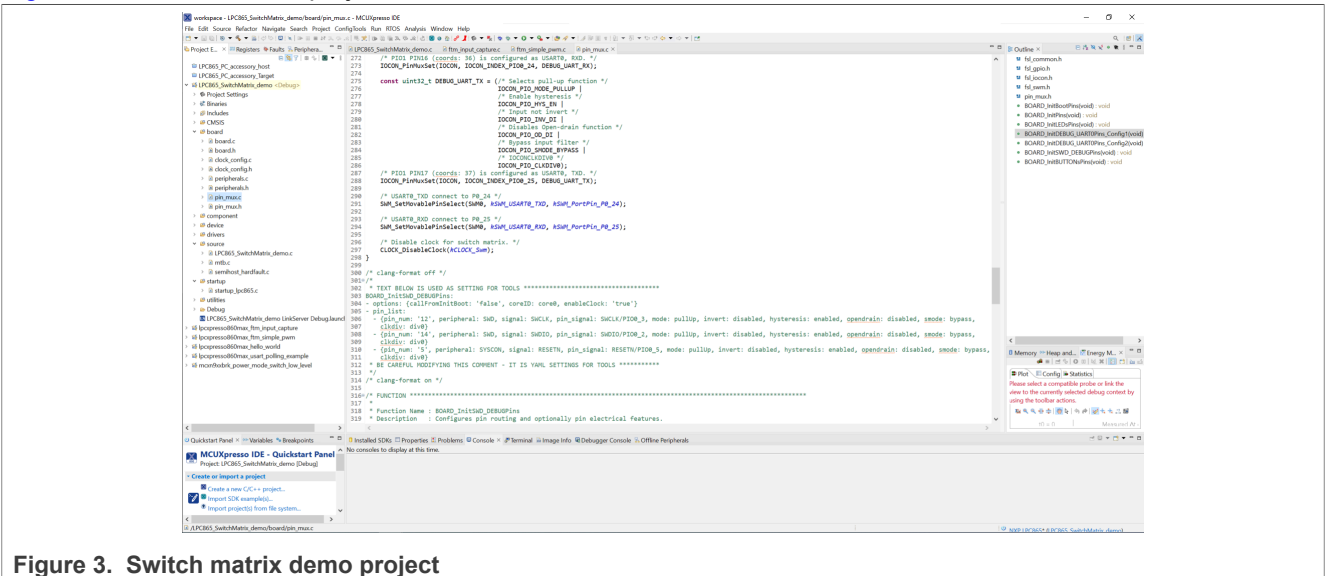
Figure 3 shows the demo project.

Figure 3. Switch matrix demo project

In this switch matrix demo, perform the following steps:

- Attach the UART0 to different external ports by the switch matrix.
- Use PIO1_16/PIO0_25 as RX signal and PIO1_17/PIO0_24 as TX signal separately.
- Switch the attach selection by the UART terminal.

COM7 represents the UART0 attached to PIO1_16/PIO1_17 and COM6 represents the UART0 attached to PIO0_24/PIO0_25, as shown in Figure 4.
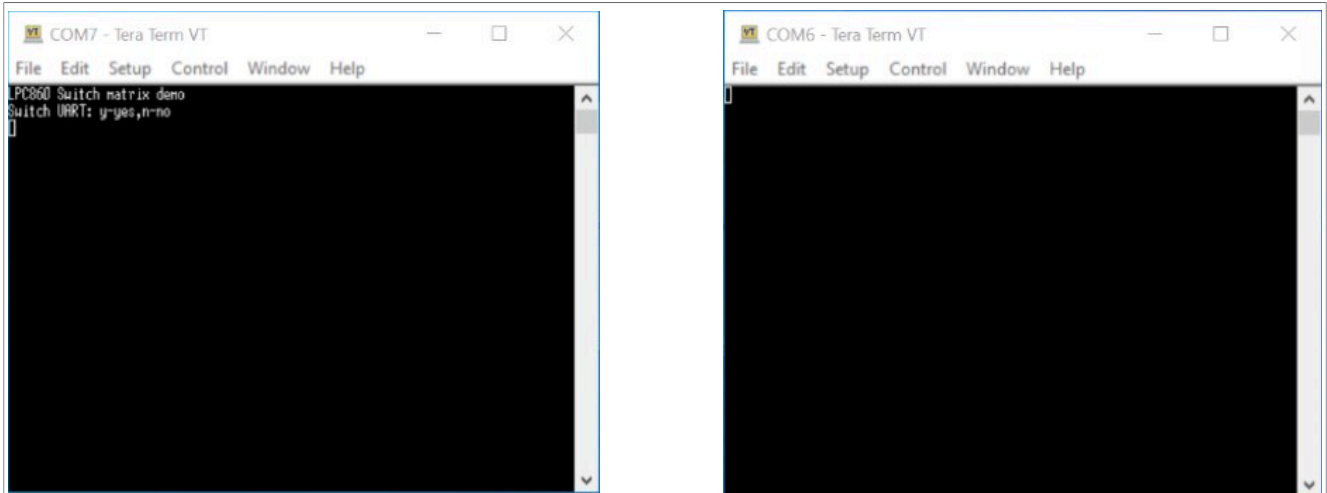
Figure 4. Tera Term communication

The Tera Term generates the following outputs:

- When "y" is printed in Tera Term COM7, the UART0 switches to PIO0_24/PIO0_25. Tera Term COM6 prints "UART switch successfully", as shown in Figure 5.
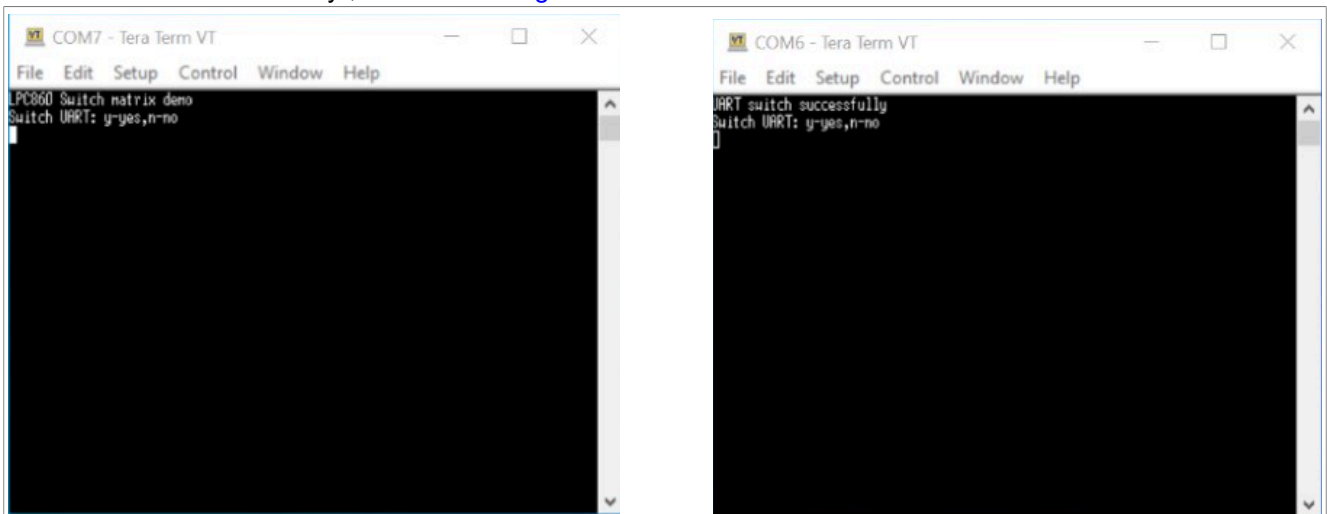

Figure 5. Tera Term communication

- When "y" is printed in Tera Term COM6, the UART0 switches back to PIO1_16/PIO1_17, as shown in Figure 6.

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Figure 6. Tera Term communication
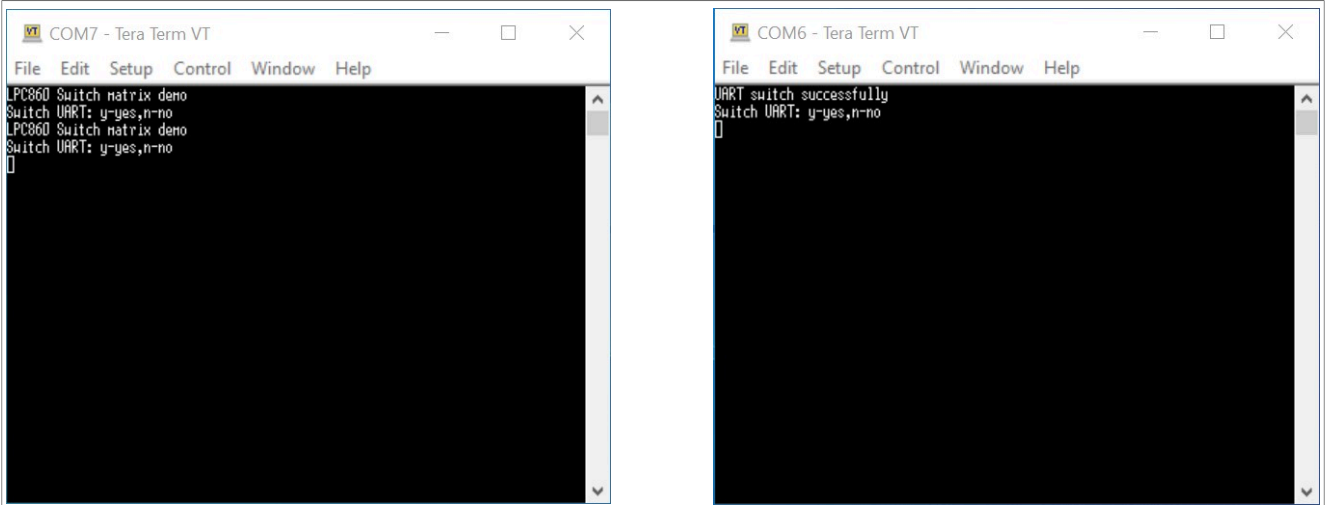
• When "n" is printed in Tera Term COM7/COM6, the UART port does not switch and prints "DO NOT SWITCH UART", as shown in Figure 7.

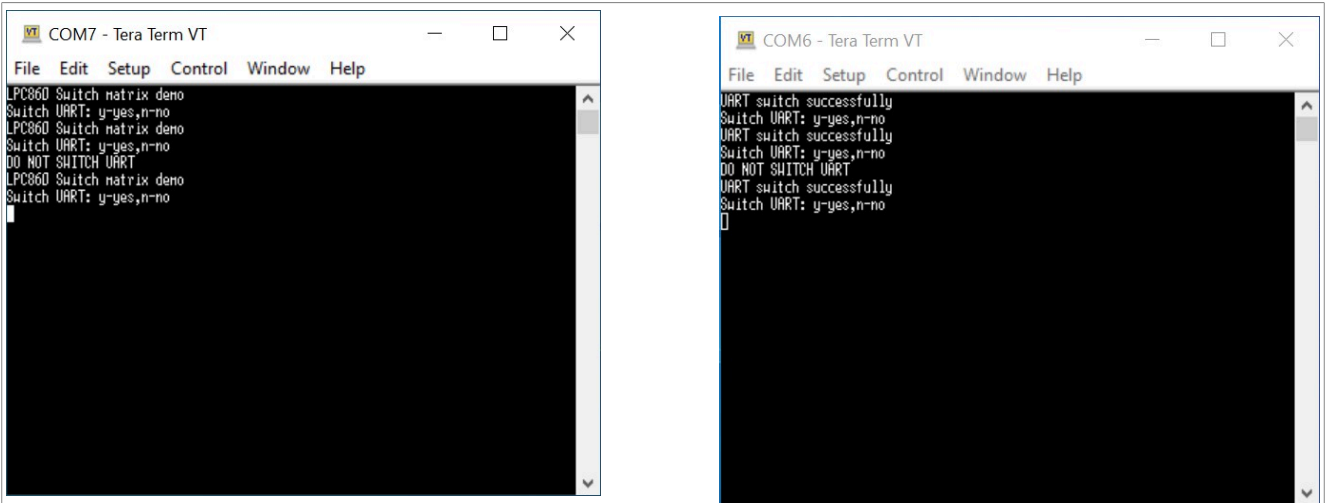Figure 7. Tera Term communication

3   Revision history

Table 1 summarizes revisions to this document.

Table 1. Revision history

Revision history	Release date	Description
1	13 October 2023	Initial public release

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