DKSE-5000

Scan Engine Developer Kit

Installation Guide

MN-003809-02EN Rev. A

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About This Guide

Introduction

The DKSE-5000-000R kit includes the hardware tools needed to design and test an embedded scan engine application before integration into a host device. To download the required software, and manuals follow these steps:

1. Go to www.zebra.com.
2. Search for Universal Scan Engine.
3. Select the link.

IMPORTANT: If you have a problem with your equipment, contact Zebra Global Customer Support for your region. Contact information is available at: www.zebra.com/support.

Chapter Descriptions

Topics covered in this guide are as follows:

- Getting Started provides an overview of the Developer Kit, including descriptions of SSI, engine mounting considerations, and general installation instructions.
- Electrical Considerations describes the components of the development board.

Related Documents and Software

- Simple Serial Interface (SSI) Software Developer's Kit Programmer Guide
- PL5000 Integration Guide
- SE655 Integration Guide
- SE965 Integration Guide
- SE2100 Integration Guide
- SE2707 Integration Guide
- SE3300 Integration Guide
- SE4100 Integration Guide
- SE4107 Integration Guide
- SE4710 Integration Guide

- SE4720/SE4770/SE4760 Integration Guide
- SE4750 Integration Guide
- SE4850 Integration Guide
- SE5500 Integration Guide

For the latest version of software and guides, go to www.zebra.com/support (see Introduction on page 7 for steps to download software).

NOTE: Integration Guides are not located on the Zebra Support site. To access the latest guide, contact your OEM account manager.

Notational Conventions

The following conventions are used in this document:

- The acronym SDK refers to the Scan Engine Developer Kit.
- **Bold** text is used to highlight the following:
  - Dialog box, window and screen names
  - Drop-down list and list box names
  - Check box and radio button names
  - Icons on a screen
  - Key names on a keypad
  - Button names on a screen.
- Bullets (•) indicate:
  - Action items
  - Lists of alternatives
  - Lists of required steps that are not necessarily sequential.
- Sequential lists (such as those that describe step-by-step procedures) appear as numbered lists.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following graphic icons are used throughout the documentation set. These icons and their associated meanings are described below.

NOTE: The text here indicates information that is supplemental for the user to know and that is not required to complete a task.

IMPORTANT: The text here indicates information that is important for the user to know.

CAUTION: If the precaution is not heeded, the user could receive minor or moderate injury.

WARNING: If danger is not avoided, the user CAN be seriously injured or killed.

Service Information

If you have a problem with your equipment, contact Zebra Global Customer Support for your region. Contact information is available at www.zebra.com/support.

When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software/firmware type or version number

Zebra responds to calls by email, telephone or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Customer Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

Getting Started

Introduction

The DKSE-5000 Scan Engine Developer Kit, p/n DKSE-5000-000R, provides the software and hardware tools needed to design and test an embedded laser or imaging scan engine application before integration into a host device.

This guide explains how to install and configure a laser or imaging scan engine. An undecoded scan engine can be communicated with through a PL5000 decoder using either a serial (SSI) or USB connection. The SSI Software Developer's Kit Programmer Guide (p/n 72E-59860-xx) explains how to use the Simple Serial Interface (SSI) SDK. This SDK is a complete package that enables users to communicate with an undecoded imaging engine via the PL5000 decoder. Supported undecoded imaging engines include SE2100, SE3300, SE4100, SE4710, SE4720, SE4750, SE4760, SE4770, SE4850, and SE5500. Decoded engines do not need to use a PL5000 decoder. Supported decoded engines include: SE2707, SE3307, SE4757, SE4107, SE655, and SE965.

The kit consists of a developer's board, interface cables, and a 12 V universal power supply. Use the link below to download the latest versions of the SSI Software Developer's Kit.

The DKSE-5000 Scan Engine Developer Kit offers many user-friendly features and allows developers to use one development platform to work with all Zebra's scan engines, so the development board can be re-used for all scan engine integration projects.

NOTE: Go to www.zebra.com/support for the latest documentation and downloads. See the steps under Introduction on page 7 to download software.

Unpacking

Remove the material from its packing and inspect for damage. If the material was damaged in transit, contact Zebra Support. See Service Information on page 9 for information. KEEP THE PACKING. It is the approved shipping container; use this to return the equipment for servicing.

DKSE-5000 Contents

NOTE: The DKSE-5000 Scan Engine Developer Kit does not include a PL5000 decoder but does require one for operation with an undecoded imaging engine. To purchase the PL5000 decoder contact your OEM account manager.

Table 1, Table 2, and Table 3 list the material included in the DKSE-5000 box. The materials are divided into three groups:

- Cables and Power Supplies
- Hardware
- Flexes.

Table 1 DKSE-5000-000R Cables and Power Supplies

Item	Part Number	Quantity
Power Supply Adapter Brick, AC-to-DC, 4.16 A, 12 V, 50 W	PWR-BGA12V50W0WW	1
Cable Assembly for Power Supply Adapter	CBL-DC-388A1-01	1
RS-232 Cable Assembly	25-154365-01	1
USB A to USB B Cable Assembly	25-154366-01	1

Table 2 DKSE-5000-000R Hardware

Item	Part Number	Quantity
Screw: #2-32 x 0.25 inch Long, Philips Head	50-12809-002	3
Screw: M1.4 x 3 mm Long, Torx T3 Head	FN000184A01	4
Screw: M1.6 x 4mm Long, Philips Head	50-12800-944	10
Screw: M2 x 4 mm Long, Philips Head	50-12854-0040L	4
Screw: M2.5 x 4.5 mm Long, Torx Plus T8 Head	FN000215A01	4
Jumpers for Berg Headers (Electrical)	50-02100-1105	27
Standoffs	50-01400-408	4

Table 3 DKSE-5000-000R Flex Cables

Item	Part Number	Quantity
DKSE to PL5000-B (short white)	50-16000-623	1
DKSE to PL5000-AM (long and tapered)	PF-001821-01	1
SE3300, SE4750 Parallel	15-171522-03	3
SE4710, SE4720 (Running in Parallel mode)	PF000062A02	3
SE4710, SE4720 (Running in MIPI mode), SE4100	PF001328A01	3
SE4500	PF000709A01	3
PL5000-AM to conn for SE-2100, SE4750 MIPI	PF001020A01	3
SE4770 MIPI	PF-001658-01	3
SE4770 Parallel	PF-001659-01	3
SE4850	PF001300A01	3
SE2707 USB, SE4107 USB	SCZ01-EM004-010	1
SE965, SE2707 Serial, SE4107 Serial	50-16000-134R	1
SE655	15-141354-01	1
SE5500	PA-001918-01	1

Development Board

The DKSE-5000 PCB accommodates multiple scope probes, debug aids, and provides a large work area for developers. The board also has many ground and VCC posts so users can easily probe and simulate logic levels on scanner lines.

Since the board supports all decoded engines, instructions for configuring the board to an engine is silk-screened on the board.

NOTE: Not all flex cables provided in the kit are used with every engine.

For every configuration of the DKSE-5000 set-up, first install the four white PCB standoffs (included in the hardware kit) by snapping them into the corresponding holes in the corners of the UDK board. See Figure 1, which shows a drawing of the top of the PCB and Figure 2, which shows a drawing of the bottom of the PCB. The standoffs should be inserted from the bottom of the PCB.

See the five different sections that follow for setting up the DKSE-5000 for your scan engine application.

Figure 1 DKSE-5000 PCB as Delivered, Top Side

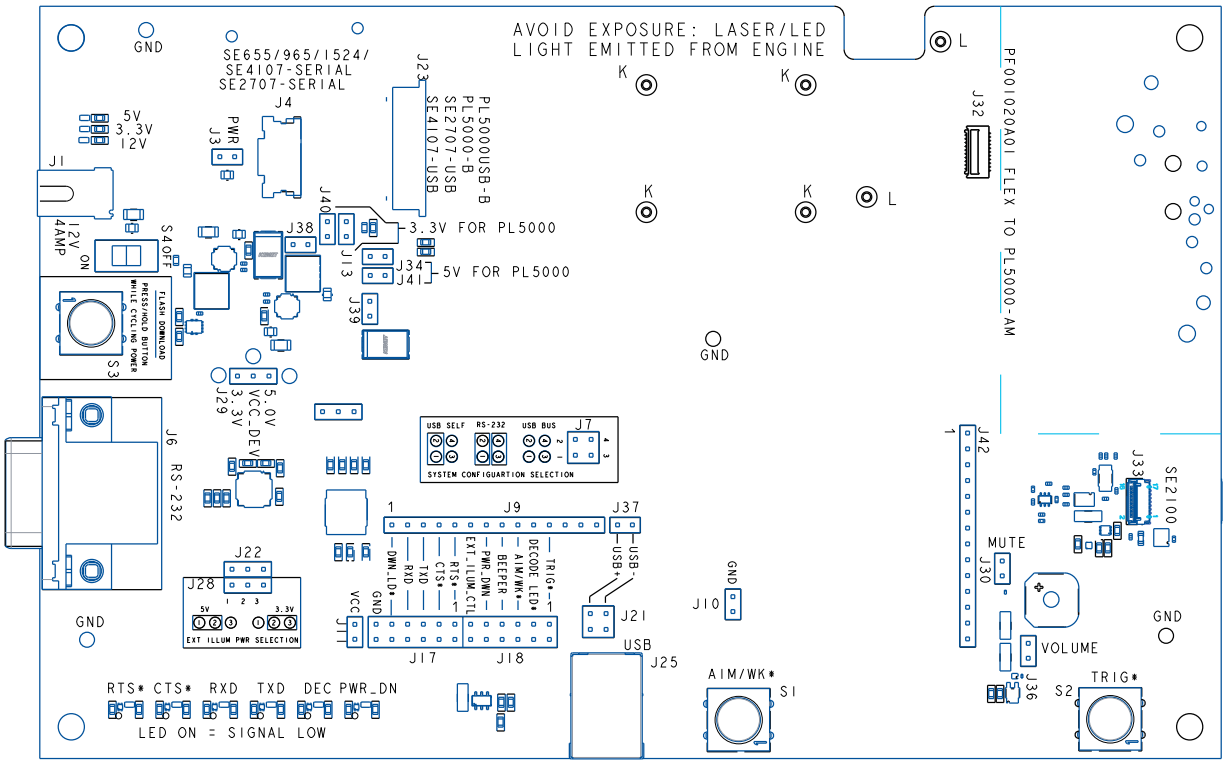
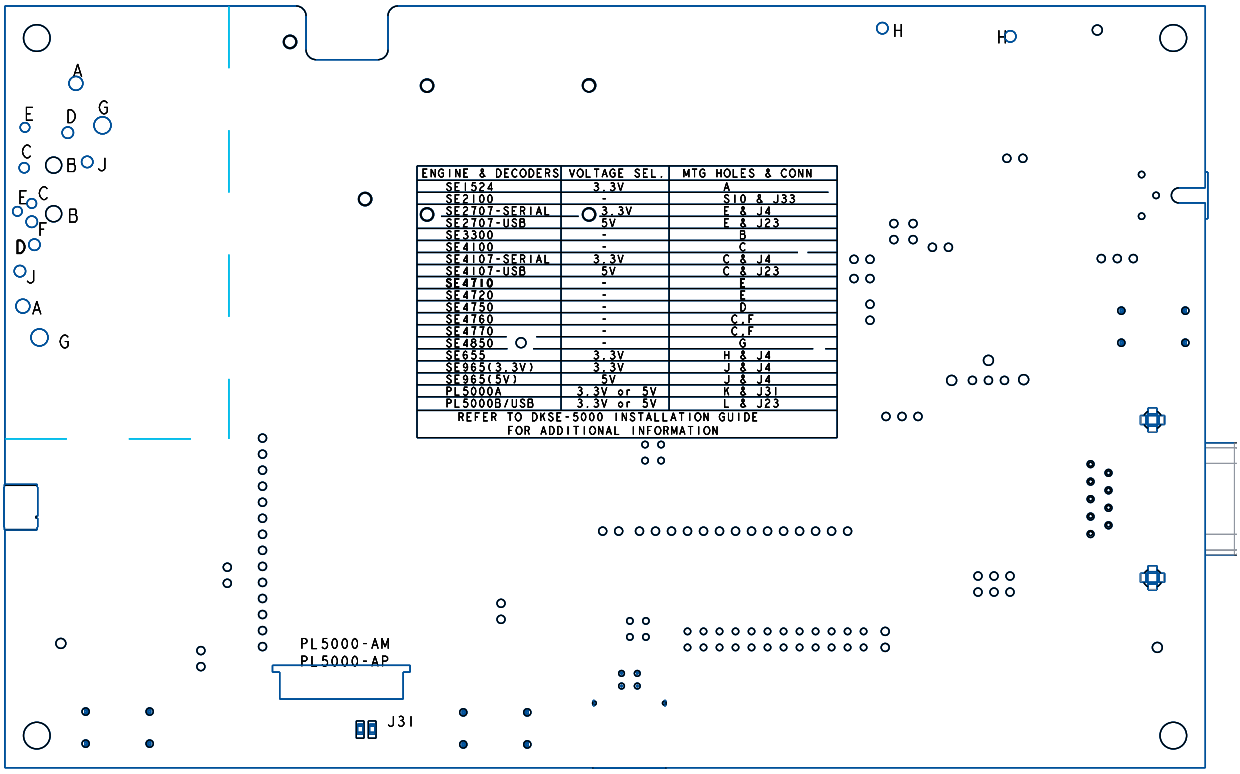


Figure 2 DKSE-5000 PCB as Delivered, Bottom Side

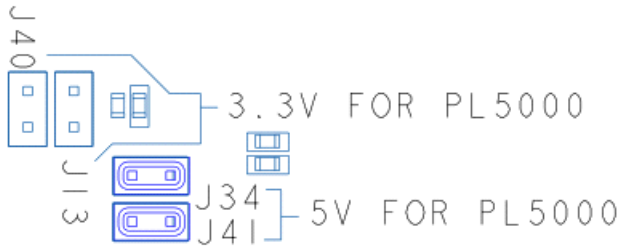


Imaging Scan Engines with Parallel Interface or Multi Interface Run as Parallel - SE3300, SE4710, SE4720, SE4750, SE4770 Only

For running a scan engine of this type, you need a PL5000-BP parallel decoder PCB to use with your DKSE-5000 kit (see Figure 5 on page 15, Imaging Scan Engine with Parallel Interface).

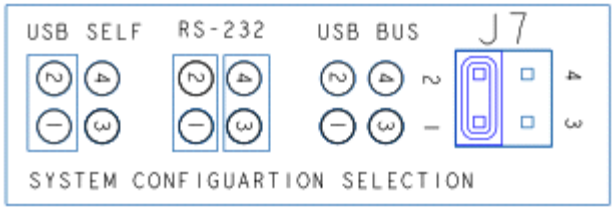
1. Mount the PL5000-BP to the four metal standoffs on the DKSE-5000 PCB using four M1.6 x 4mm long, Philips head screws provided in the hardware kit. See Figure 5 for the position and orientation of the PL5000-BP.
2. Connect the PL5000-BP to connector J23 on the DKSE-5000 PCB using the DKSE to DKSE to PL5000-B (short white) flex cable, 50-16000-623, as shown in Figure 5.
3. Mount the engine on the development board. As illustrated in Figure 5, the connector on the engine must line up with the connector on the PL5000-BP. See Table 4 on page 15 for a list of scan engines and their mounting screws.
4. Connect a flex cable between the PL5000-BP and the scan engine. See Table 3 on page 11 to identify the flex cable for your engine.
5. Duplicate the basic jumper configuration illustrated in Figure 3 (for supplying power to the PL5000, either use J40 and J13 to power the PL5000 with 3.3V, or use J34 and J41 to power the PL5000 with 5V) and Figure 5 (with the exception of J29, which should set VCC_DEV to 3.3V). Note that the PL5000-BP supplies power to the engines.

Figure 3 Power Options for PL5000-BP: 3.3V or 5V



6. Connect the DC power cord between the power supply and connector J1 on the development board. Slide switch S4 is used to turn the power on or off to the board. The jumper configuration illustrated in Figure 5 shows the PCB using power from J1 and using USB communications, which is the USB Self-Powered mode. If you desire all power to be pulled from the USB cable, with no power supply connected to J1, then remove the jumper between pins 1 and 2 on J7, for USB Bus-Powered mode (see Figure 4). Note that not all engines support USB Bus-Powered mode. Refer to the Integration Guide to see if a particular engine supports USB Bus-Powered mode. If the host communication bus is RS-232 and not USB, use an RS-232 cable and external power supply connected to J1, and place one jumper between pins 1 and 2 and one jumper between pins 3 and 4 on J7 (see Figure 4).

Figure 4 J7 Jumper Positions for Setting Host Communication Type

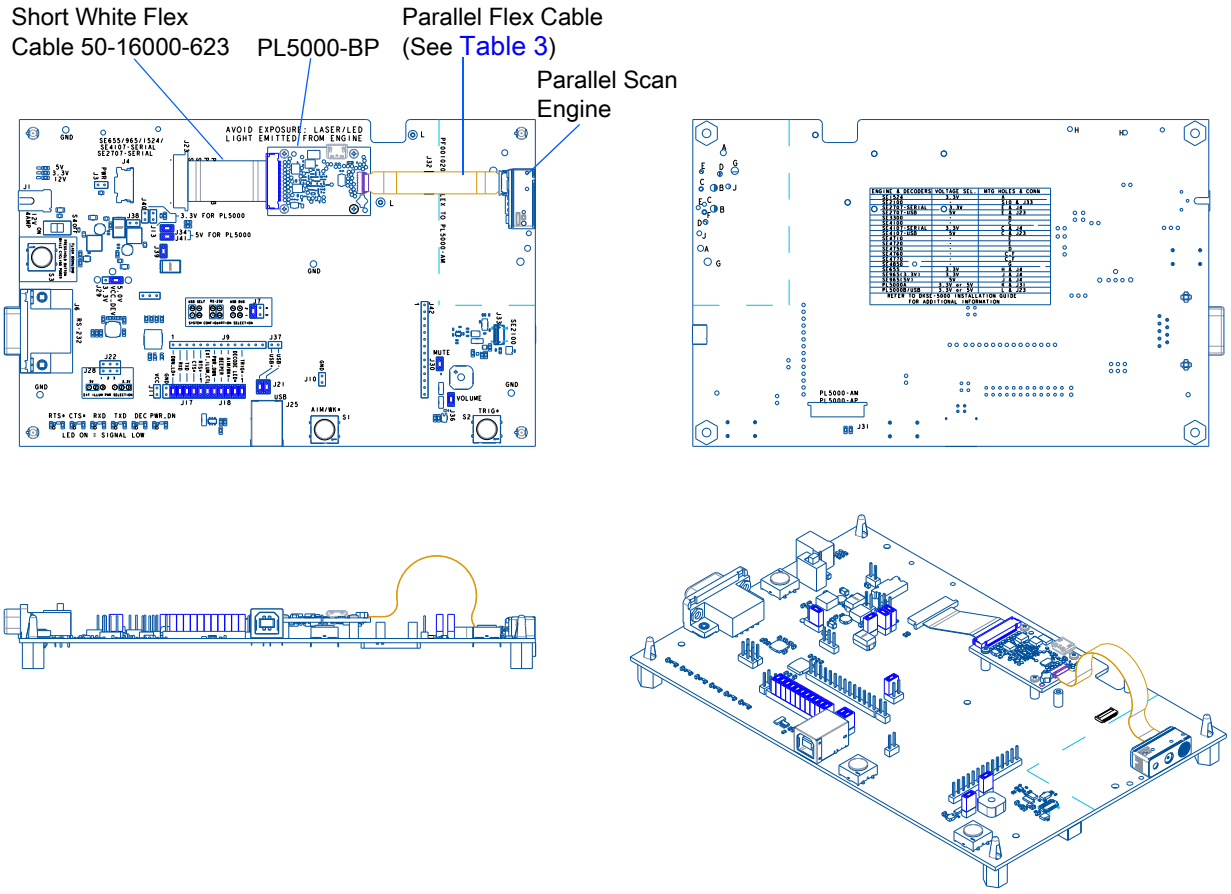


7. Connect the interface cable (USB or RS-232) between the development board and the host system.

Table 4 Screw Sizes for Imaging Scan Engines with Parallel Interface or Multi Interface Run as Parallel

Engine Model #	Screw Size	Screw Holes
SE3300	#2-32 x 0.25 inch	B, B
SE4710-XM…	M1.4	E, E
SE4750XX-XP…	M1.6	D, D
SE4720-XM…	M1.4	E, E
SE4770-XP…	M1.6	C, F

Figure 5 Imaging Scan Engine with Parallel Interface

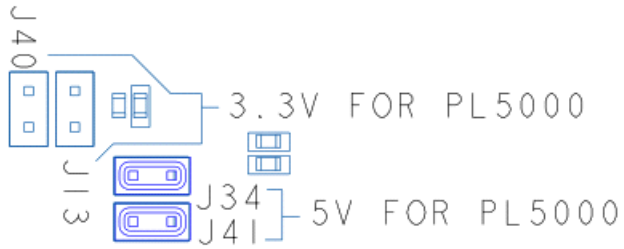


Imaging Scan Engines with MIPI Interface - SE4100, SE4710, SE4720, SE4750, SE4760, SE4770, SE4850, SE5500 Only

For running a scan engine of this type, you need a PL5000-AM MIPI decoder PCB to use with your DKSE-5000 kit. See Figure 8, Imaging Scan Engine with MIPI Interface on page 18.

1. Mount the PL5000-AM to the two metal standoffs on the DKSE-5000 PCB using two M1.6 x 4mm long, Philips head screws provided in the hardware kit. See Figure 8 for the position and orientation of the PL5000-AM.
2. Connect the PL5000-AM to connector J31 on the bottom of the DKSE-5000 PCB using the DKSE to PL5000-AM long tapered flex cable, PF-001821-01, as shown in Figure 8. The flex cable is routed on the bottom of the PCB (see Figure 9 on page 19 for specific SE5500 connections).
3. Mount the engine on the development board. As illustrated in Figure 8, the connector on the engine must line up with the connector on the PL5000-AM. See Table 5 for a list of scan engines and their mounting screws.
4. Connect a flex cable between the PL5000-AM and the scan engine. See Table 3 on page 11 to identify the flex cable for your engine.
5. Duplicate the basic jumper configuration illustrated in Figure 6 (for supplying power to the PL5000, either use J40 and J13 to power the PL5000 with 3.3V, or use J34 and J41 to power the PL5000 with 5V) and Figure 8. Note that the PL5000-AM supplies power to the engines.

Figure 6 Power Options for PL5000-AM: 3.3V or 5V



6. Connect the DC power cord between the power supply and connector J1 on the development board. Slide switch S4 is used to turn the power on or off to the board. The jumper configuration illustrated in Figure 8 shows the PCB using power from J1 and using USB communications, which is the USB Self-Powered mode. If you desire all power to be pulled from the USB cable, with no power supply connected to J1, then remove the jumper between pins 1 and 2 on J7, for USB Bus-Powered mode (see Figure 7). Instead, to run using a RS-232 cable and external power supply, place one jumper between pins 1 and 2 and one jumper between pins 3 and 4 on J7. Note that not all engines support USB Bus-Powered mode. Refer to the Integration Guide to see if a particular engine supports USB Bus-Powered mode. If the host communication bus is RS-232 and not USB, use an RS-232 cable and external power supply connected to J1, and place one jumper between pins 1 and 2 and one jumper between pins 3 and 4 on J7 (see Figure 7).
7. Connect the interface cable (USB or RS-232) between the development board and the host system.

Figure 7 J7 Jumper Positions for Setting Host Communication Type

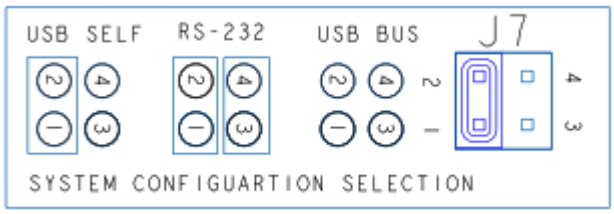


Table 5 Screw Sizes for Imaging Scan Engines with MIPI Interface

Engine Model#	Screw Size	Screw Holes
SE4100	M1.4 x 3 mm	C, C
SE4710-XM…	M1.4 x 3 mm	E, E
SE4750XX-XM…	M1.6 x 4 mm	D, D
SE4720-XM…	M1.4 x 3 mm	E, E
SE4760	M1.6 x 4 mm	C, F
SE4770-XM…	M1.6 x 4 mm	C, F
SE4850	M2.5 x 4.5 mm	G, G
SE5500	M1.6 x 4 mm	B, D[1]

[1]**See Figure 9 on page 19 for specific SE5500 B and D screw holes.**

Figure 8 Imaging Scan Engine with MIPI Interface

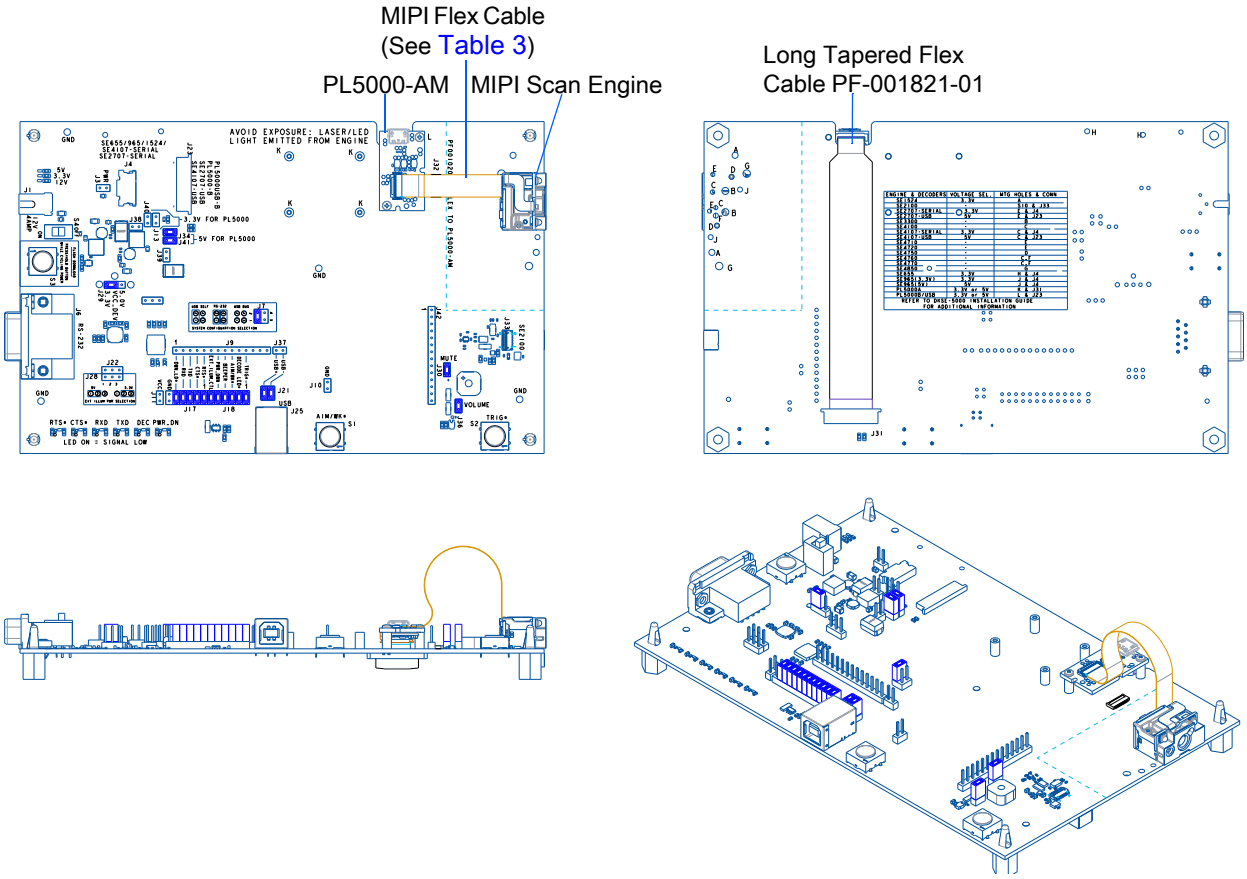
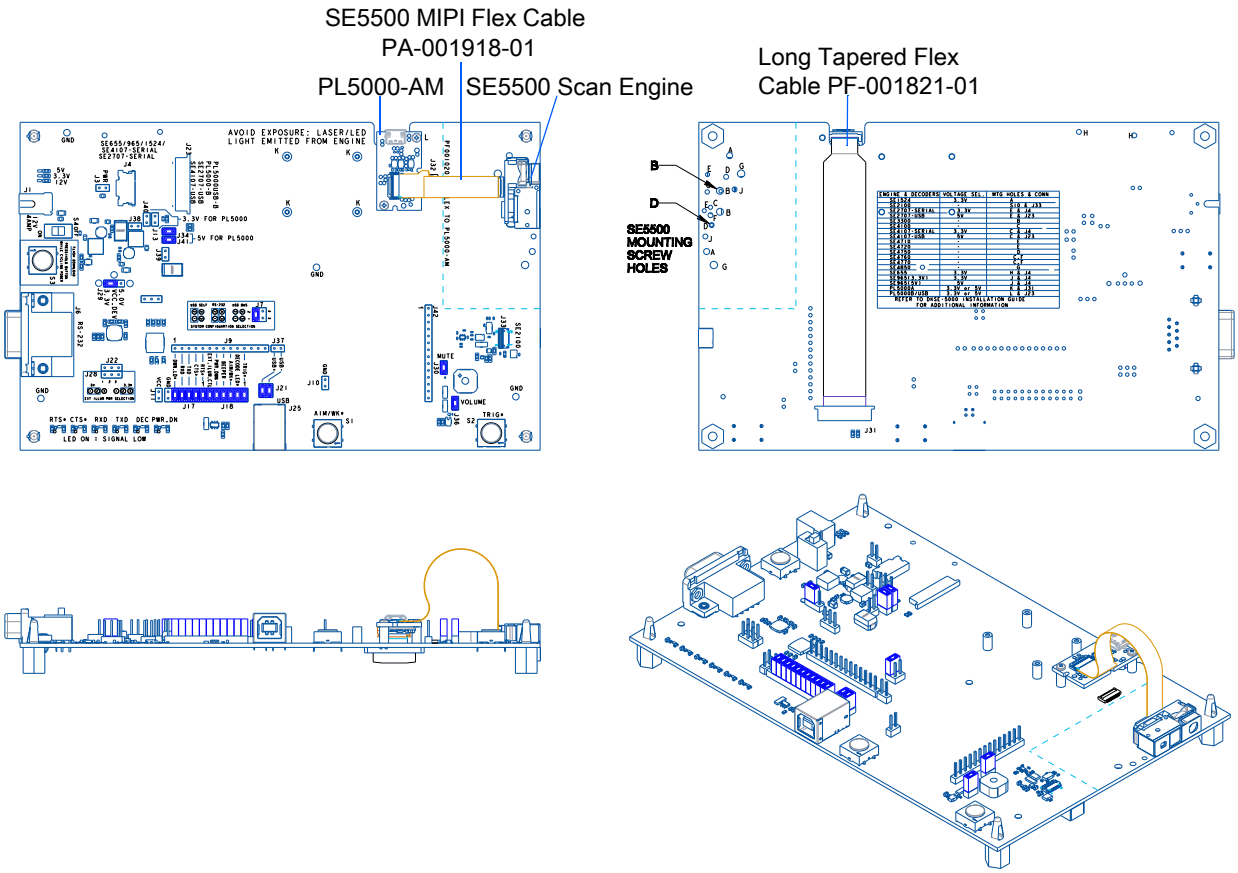


Figure 9 SE5500 Scan Engine with MIPI Interface

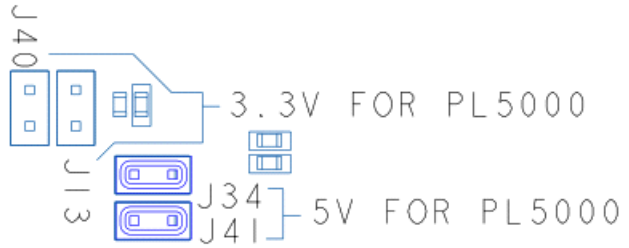


SE2100 Scan Engine Only

To run the SE2100 a PL5000-AM MIPI decoder PCB is required to use with your DKSE-5000 kit. See Figure 12 on page 21.

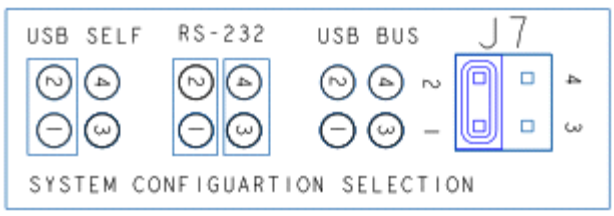
1. Mount the PL5000-AM to the two metal standoffs on the DKSE-5000 PCB using two M1.6 x 4mm long, Philips head screws provided in the hardware kit. See Figure 12 for the position and orientation of the PL5000-AM.
2. Connect the PL5000-AM to connector J31 on the bottom of the DKSE-5000 PCB using the DKSE to PL5000-AM long tapered flex cable, PF-001821-01, as shown in Figure 12. The flex cable is routed on the bottom of the PCB.
3. Connect the SE2100 to J33 on the development board. The adhesive backing on the SE2100 can be adhered to the metal support on the bottom side of the DKSE-5000 board. As illustrated in Figure 12, the connector J32 on the DKSE-5000 board must line up with the connector on the PL5000-AM.
4. Connect the PF001020A01 flex cable between the PL5000-AM and the connector J32 on the DKSE-5000 board.
5. Duplicate the basic jumper configuration illustrated in Figure 10 (for supplying power to the PL5000-AM, either use J40 and J13 to power the PL5000 with 3.3V, or use J34 and J41 to power the PL5000 with 5V) and Figure 12 (with the exception of J29, which should set VCC_DEV to 3.3V). Note that the PL5000-AM supplies power to the SE2100.

Figure 10 Power Options for PL5000-AM: 3.3V or 5V



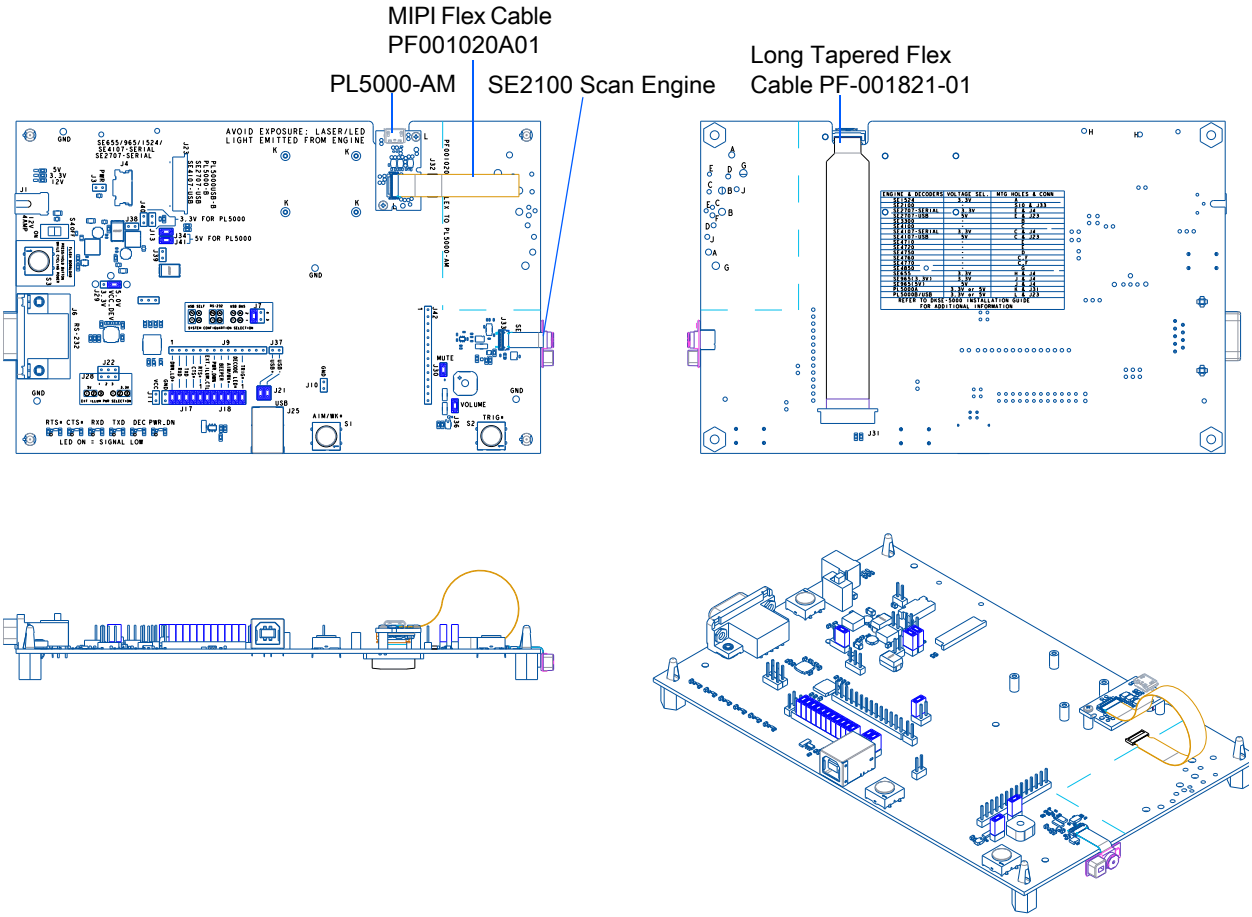
6. Connect the DC power cord between the power supply and connector J1 on the development board. Slide switch S4 is used to turn the power on or off to the board. The jumper configuration illustrated in Figure 12 shows the PCB using power from J1 and using USB communications, which is the USB Self-Powered mode. If you desire all power to be pulled from the USB cable, with no power supply connected to J1, then remove the jumper between pins 1 and 2 on J7, for USB Bus-Powered mode. Instead, to run using a RS-232 cable and external power supply connected to J1, place one jumper between pins 1 and 2 and one jumper between pins 3 and 4 on J7 (see Figure 11).

Figure 11 J7 Jumper Positions for Setting Host Communication Type



7. Connect the interface (USB or RS-232) cable between the development board and the host system.

Figure 12 SE2100 Scan Engine with MIPI Interface



Decoded Imaging Scan Engine - SE2707 (USB), SE4107 (USB), SE3307, SE4757 Only

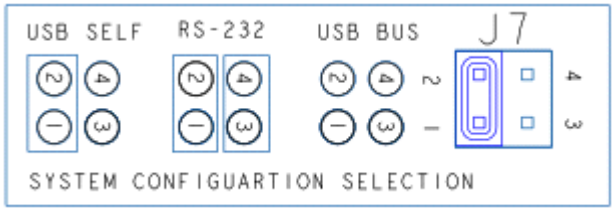
These engines connect to J23, but do not require an additional PL5000 decoder.

1. Mount the engine on the development board. See Table 7 for a list of scan engines and their mounting screws.
2. Connect a flex cable between J23 and the scan engine. See Table 3 to identify the flex cable for your engine.
3. Duplicate the basic jumper configuration illustrated in Figure 5. However, check the voltage requirements of your engine before continuing.

CAUTION: Be sure to set the voltage on the board to the proper voltage for the engine. Applying incorrect voltage can destroy the engine.

4. Determine the voltage requirements for the engine from its Integration Guide. For the SE2707 (USB), SE4107 (USB), SE3307, and SE4757 engines, set the VCC_DEV domain to 3.3V using J29. Set the VCC_IN domain to 3.3V by adding jumpers to J13 and J40. Do not install jumpers to J34 and J41.
5. Connect the DC power cord between the power supply and connector J1 on the development board. For SE3307 and SE4757, the jumper configuration illustrated in Figure 13 shows the PCB using power from J1 and using USB communications, which is the USB Self-Powered mode. If you desire all power to be pulled from the USB cable, with no power supply connected to J1, then remove the jumper between pins 1 and 2 on J7, for USB Bus-Powered mode. Instead, to run using a RS-232 cable and external power supply, place one jumper between pins 1 and 2 and one jumper between pins 3 and 4 on J7. For SE2707 (USB) and SE4107 (USB), the header J7 does not apply.

Figure 13 J7 Jumper Positions for Setting Host Communication Type for SE3307 and SE4757



6. Connect the interface cable (USB or RS-232 for SE3307 and SE4507, or just the USB cable for the USB versions of the SE2707 and SE4107) between the development board and the host system.

Table 6 Screw Sizes and Voltages for Decoded Imaging Scan Engines

Engine Model #	Screw Size	Screw Holes	Voltage
SE2707 (USB)	M1.4 x 3 mm	E, E	5V
SE4107 (USB)	M1.4 x 3 mm	C, C	5V
SE3307	#2-32 x 0.25 inch	B, B	3.3V or 5V
SE4757	M1.6 x 4 mm	D, D	3.3V or 5V

Decoded Laser Scan Engine or Serial Imaging Scan Engine - SE2707 (Serial), SE4107 (Serial), SE655, SE965 Only

These engines connect to J4, and do not need a PL5000 decoder. See Figure 14 on page 24 and Figure 15 on page 25.

1. Mount the engine on the development board. See Table 7, below for a list of scan engines and their mounting screws.
2. Connect a flex cable between the J4 and the scan engine. See Table 3 on page 11 to identify the flex cable for your engine.
3. Duplicate the basic jumper configuration illustrated in Figure 15. However, check the voltage requirements of your engine before continuing.

CAUTION: Be sure to set the voltage on the board to the proper voltage for the engine. Applying incorrect voltage can destroy the engine. For these engines, the voltage is set by VCC_DEV with Jumper J29. For most cases, this will be set to 3.3V. Refer to the engine Integration Guide for more information

4. Determine the voltage requirements for the engine. See Table 7 for a list of scan engines and their voltages. In addition, engine voltages are silk-screened on the back of the DKSE-5000 PCB.
5. Connect the DC power cord between the power supply and connector J1 on the development board.
6. Connect the RS-232 interface cable between the development board and the host system.

Table 7 Screw Sizes and Voltages for Scan Engines Connected to J4

Engine Model #	Screw Size	Screw Holes	Voltage
SE2707 (Serial)	M1.4 x 3 mm	E, E	3.3V
SE4107 (Serial)	M1.4 x 3 mm	C, C	3.3V
SE655	M1.6 x 4 mm	H, H	3.3V
SE965 (3.3V)	M1.6 x 4 mm	J, J	3.3V
SE965 (5V)	M1.6 x 4 mm	J, J	5V

Figure 14 Decoded Imaging Scan Engine: SE655

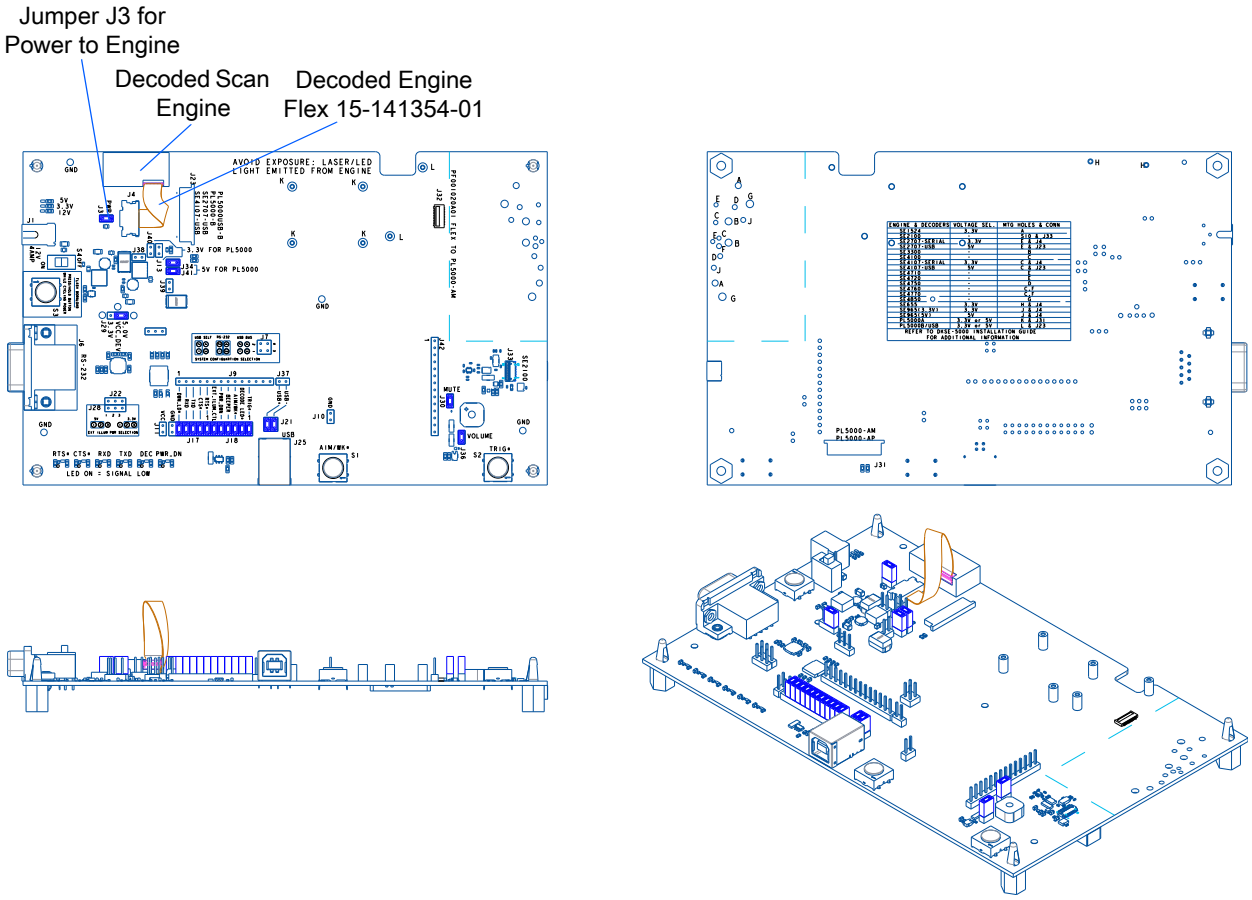
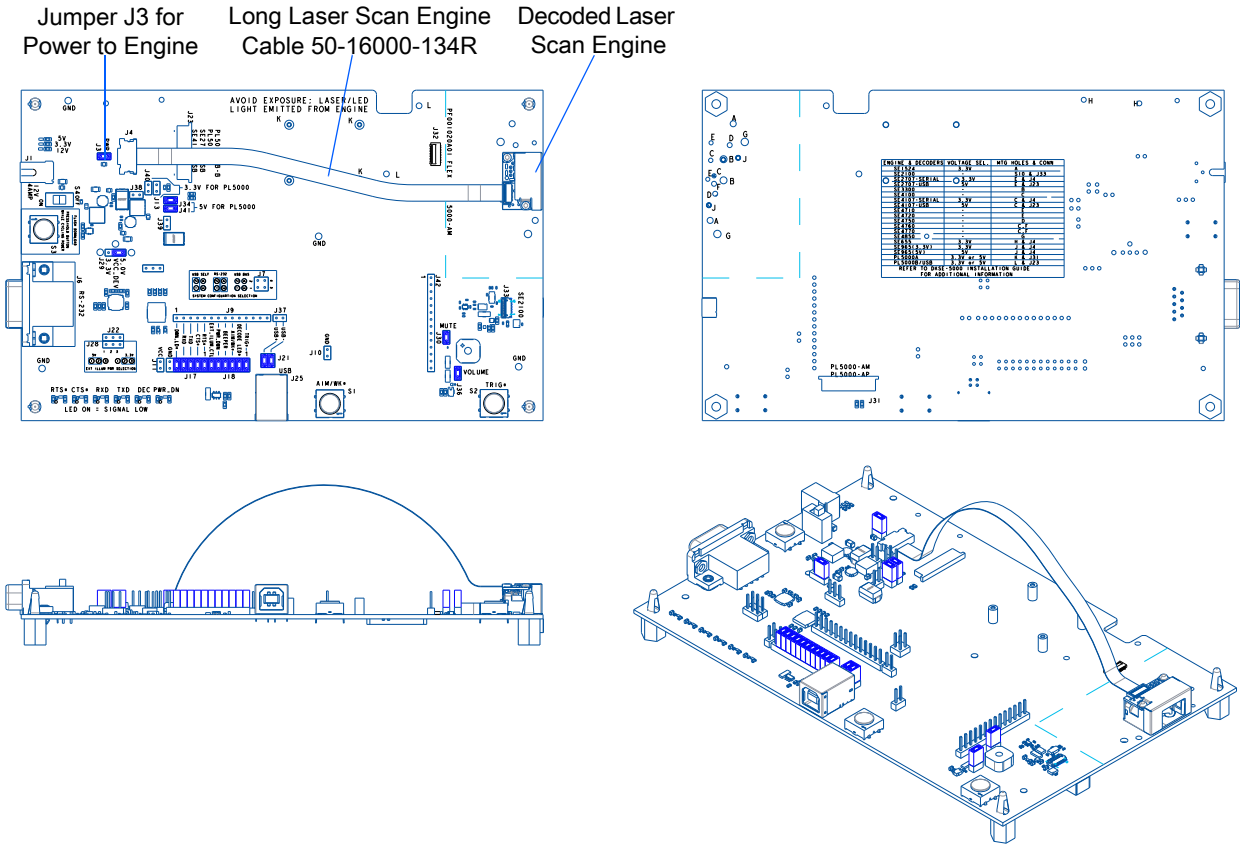


Figure 15 Decoded Laser Scan Engine or Serial Imaging Scan Engine



Electrical Considerations

Introduction

The DKSE-5000 is a development board for undecoded and decoded Imaging engines, and for decoded laser engines. When testing undecoded imaging engines, the board requires the use of a PL5000 decoder, not included in the DKSE-5000 kit. The board includes a detailed silk screen to assist in installation and use of the engines during development. The following section describes each part of the board.

Board Functional Descriptions

The following sections detail the specific components on the board. Figure 1 on page 12 illustrates the board, with silk screen text indicating the functionality.

Power Configuration

The DKSE-5000 board supports multiple engines. Each engine has one or more power domains.

Decoded engines connected to J4 are powered by VCC_DEV. Ensure that VCC_DEV is set appropriately, either to 3.3V or to 5V using J29. Most engines, with the exception of the 5V version of the SE965, will have VCC_DEV set to 3.3V. Using a current probe, current can be measured into the decoded system connected to J4 by replacing J3 with a wire loop.

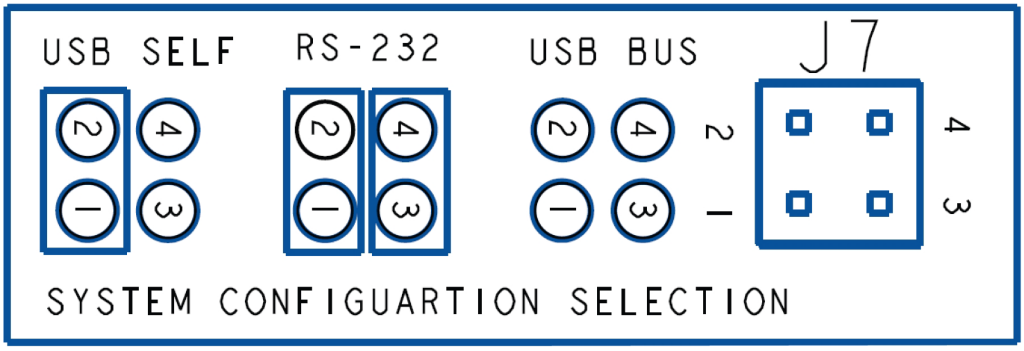
Decoded engines connected to J23 or J31, or undecoded imaging engines using a PL5000 also connected to J23 or J31, will be powered by 3.3V (using J13 and J40), or will be powered by 5V (using J34 and J41). Note that if a PL5000 is used, if both 3.3V and 5V are supplied, the PL5000 will draw power only from the 3.3V power rail. Note that when using a PL5000 with an undecoded imaging engine, the PL5000 supplies power to the engine, and the engine's VCC_ILLUM power input is controlled by the PL5000, and not influenced by which power domain is used to power the PL5000. Refer to the PL5000 Integration Guide for more detail. Using a current probe, current can be measured into the decoded system by replacing the jumpers (J13 and J40, or J34 and J41) with wires.

An external power supply connected to J1 supplies power to the DKSE-5000, regardless of whether or not the USB connection is used. If no power supply is connected to J1, all power is supplied to the DKSE-5000 board and scan engine through the USB connection. Note that not all scan engines support USB Bus Power mode. Ensure the power switch (S4) located near the power jack (J1) is in the ON position to enable power to the DKSE-5000 board and scan engine. Indicator LEDs indicate the power status of the various voltage domains.

Host Communication Configuration

The decoding functionality of the DKSE-5000 kit is provided either: by a decoded engine, or in the case of undecoded imaging engines by the PL5000 decoder PCB, which is available separately from the DKSE-5000 kit. The PL5000 supports USB and RS-232 host communications. If RS-232 host communication to the PL5000 is intended, then the Jumper J7, as seen on Figure 1 on page 12, gets set for RS-232 per the silkscreen table next to the header, and the RS-232 host cable gets connected to J6. Alternatively, if USB host communication to the PL5000 is intended, then the Jumper J7 gets set for USB per the silkscreen table next to the header, and the USB host cable gets connected to J25. For more information on the PL5000 host communication, refer to PL5000 Decoder Integration Guide, p/n MN-003455-xx. Other PL5000 host signals, if needed to be monitored by oscilloscope or protocol analyzer, are available on test headers J17, J18 and J21, as seen on Figure 1 on page 12. Note that the PL5000 SYS_CONFIGx signals are set by Jumpers settings on J7. For more information on the PL5000 signals, refer to PL5000 Decoder Integration Guide, p/n MN-003455-xx.

Figure 16 J7 Jumper Positions for Setting Host Communication Type

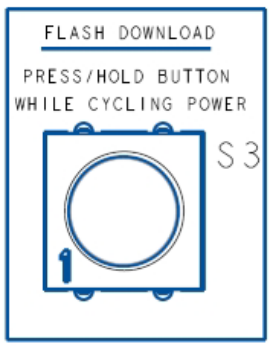


Download Button

The DKSE-5000 board supports the re-flashing of decoder and engine software, either through USB or RS-232. If re-flashing over RS-232, the button S3, as seen on Figure 1 on page 12, controls the state of the decoder's download signal. When using RS-232, to place the device in download mode, press the S3 button during a power cycle until the device beeps. Jumper J30 must be in place to hear a beep. In download mode, the device's bootloader communicates over the RS-232 connection through J6. For more information on how to re-flash a decoder or engine, contact your OEM Technical Architect who may provide you with a utility to assist with re-flashing software.

S3, shown in Figure 17 controls the state of the download signal. To place the device in download mode, press this button during a power cycle until the device beeps.

Figure 17 Download Button



RS-232 Circuitry

The DKSE-5000 board supports a host RS-232 connection for the decoded engines, and for the undecoded engines using the PL5000 decoder. The RS-232 cable provided in the kit is used to connect the host PC to the connector J6 on the DKSE-5000 PCB, as seen on Figure 1 on page 12. A 1 Mbps RS-232 transceiver conditions the signals between the decoder and the host.

User Interface Circuitry

The DKSE-5000 board supports user interface circuitry, for controlling the aim and trigger functionality of the engines connected to the DKSE-5000. Table 8 on page 28 details each of these components. The buttons referenced in Figure 18 on page 28 are labeled in silkscreen, also seen in Figure 1 on page 12.

Figure 18 User Interface

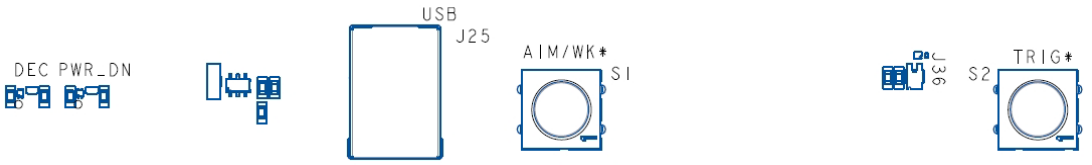


Table 8 User Interface Components

Component	Description
Trigger Button (S2)	This button controls the trigger signal to the PL5000 on either J23 or J31, and to the decoded engine on J4. When pressed, for the case of an undecoded imaging engine, the PL5000 commands the engine to trigger, initiating a decode session. In the case of a decoded engine not using a PL5000, then engine will initiate a decode session. This button also wakes the engine from low power mode.
Aim/Wake Button (S1)	This dual-purpose button drives the AIM/WAKE* signal for decoded engines, or for undecoded engines using a PL5000 decoder, which commands the engine to aim. When the engine is in low power mode, the button drives the wake signal to the engine to force it into normal power mode. If the engine is in normal power mode, the button drives the aim signal which turns on the aiming pattern when the engine is in the correct mode. Refer to the appropriate Integration Guides for more details.
Power Down LED	This LED is tied to the PWRDWN* signal for the decoded engines, or for the undecoded engines using a PL5000 decoder. This LED illuminates to indicate that the decoder is in low power mode.
Decode LED	This LED is tied to the DLED* signal for the decoded engines, or for the undecoded engines using the PL5000 decoder. This LED illuminates to indicate a good decode.

Engine Mounting Holes

The DKSE-5000 supports various engines. Each engine has its own respective mounting screws and flex cables, as listed in Table 2 on page 11 and Table 3 on page 11, as well as mounting holes, as listed in the silkscreen shown in Figure 2 on page 13.

Jumpers

The DKSE-5000 provides numerous options for adjusting voltages, beeper volume, etc., and for probing important signals. Table 9 provides a guide to use of jumpers with the Berg headers on the board. In Figure 5 through Figure 15, the most common arrangements of jumpers are illustrated. Note that in some sections there are warnings to check the voltage for your engine and to set the jumpers accordingly. Note that the columns in Table 9 indicate pins on a header that get connected with a jumper. For example, 2-3 indicates to connect pin 2 to pin 3 with a jumper.

CAUTION: Be sure to set the voltage on the board to the proper voltage for the engine. Applying incorrect voltage can destroy the engine.

Table 9 provides a complete explanation of all the jumpers. This table can be used to understand how to turn off or reduce beeper volume, insert bulk capacitance, etc. Refer to Figure 1 for the location of each of the Berg headers that can receive jumpers.

Table 9 Installation of Jumpers for Various Scan Engine Configurations

Jumper	Imaging Scan Engine with Parallel Interface	Imaging Scan Engine with MIPI Interface	SE2100 Scan Engine	Decoded Imaging Scan Engine	Decoded Laser Scan Engine	Description
J29	2-3	2-3	2-3	2-3	2-3	VCC_DEV: sets DKSE VCC to 3.3V or 5V. Jump 1-2 ONLY for 5V 12-pin decoded engines (Pin 1 is labeled "5.0V")
J30	1-2	1-2	1-2	1-2	1-2	Mute: populating this allows the beeper to beep. Remove to mute.
J36	x	x	x	x	x	Volume: populating this reduces beeper volume.
J38	x	x	x	x	x	3.3V Bulk Capacitance: Typically not needed. Use only if needed for high current systems using a PL5000.
J39	x	x	x	x	x	5.0V Bulk Capacitance: Typically not needed. Use only if needed for high current systems using a PL5000.

Legend:
x This means no jumper installed.
*** Where there are options, the description clarifies.**
1-2 This means jump pin 1 to pin 2 with a jumper.

Table 9 Installation of Jumpers for Various Scan Engine Configurations (Continued)

Jumper	Imaging Scan Engine with Parallel Interface	Imaging Scan Engine with MIPI Interface	SE2100 Scan Engine	Decoded Imaging Scan Engine	Decoded Laser Scan Engine	Description
J13 & J40	*	*	*	x	x	* To run a PL5000 at 3.3V, populate J13 & J40, and do not populate J34 & J41.
J34 & J41	**	**	**	**	**	** To run a PL5000 at 5.0V, populate J34 & J41, and do not populate J13 & J40.
J3	x	x	x	1-2	1-2	This connects power to the 12-pin ZIF (J4).
J18	1-2 3-4 5-6 7-8 9-10 11-12	1-2 3-4 5-6 7-8 9-10 11-12	1-2 3-4 5-6 7-8 9-10 11-12	1-2 3-4 5-6 7-8 9-10 11-12	1-2 3-4 5-6 7-8 9-10 11-12	J18 is a signal break out header. Jumpers are typically populated.
J17	1-2 3-4 5-6 7-8 9-10	1-2 3-4 5-6 7-8 9-10	1-2 3-4 5-6 7-8 9-10	1-2 3-4 5-6 7-8 9-10	1-2 3-4 5-6 7-8 9-10	J17 is a signal break out header. Specified jumpers are typically populated.
J21	1-2 3-4	1-2 3-4	1-2 3-4	1-2 3-4	1-2 3-4	J21 is a USB signal break-out header. Jumpers are typically populated.
J7	***	***	***	x	x	*** Jumper 1-2 for USB with self power from a power brick. Jumper 1-2 & 3-4 for RS-232. No jumpers for power only from the USB Bus (if the engine supports that). J7 defines SYS_CONFIGx bits for systems using PL5000.

Legend:
x This means no jumper installed.
*** Where there are options, the description clarifies.**
1-2 This means jump pin 1 to pin 2 with a jumper.

Table 9 Installation of Jumpers for Various Scan Engine Configurations (Continued)

Jumper	Imaging Scan Engine with Parallel Interface	Imaging Scan Engine with MIPI Interface	SE2100 Scan Engine	Decoded Imaging Scan Engine	Decoded Laser Scan Engine	Description
J22	x	x	x	x	x	J22 is for using an off-board illumination system, to augment the illumination on the engine. It provides power and a timing control signal.
J28	x	x	x	x	x	J28 is for using an off-board illumination system, to augment the illumination on the engine. It sets the voltage for J22 as either 3.3V or 5V.
J42	x	x	x	x	x	J42 is a test header to probe SE2100 signals, and is not meant to be used with jumpers.

Legend:
x This means no jumper installed.
*** Where there are options, the description clarifies.**
1-2 This means jump pin 1 to pin 2 with a jumper.

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