

RS-08

Rotary Shutter Evaluation Kit

User Manual



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69932359.5; 1186063; 7,211,929; 69941195.5; 1577961; 4813708; 6,879,085;
6,979,936; 7,439,652; 7061158 ;1800356; 1800356; 1800356; 2007-533057
(pending); 2011-093431 (pending); 7,876,509; 10-2007-7009928 (pending);
200780019448.6 ; 7713361.9 (pending); 12/294,926 (pending); GB2008000004178
(pending); GB2009000003796 (pending); 12/398,216 (pending); GB2446428;
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1 About this Guide

1.1 Scope

This user guide provides instructions for connecting and operating the Shutter Evaluation Kit. The document describes the Shutter Evaluation Kit components, functionalities, operation modes, hardware and electrical specifications, and NM proprietary software.

1.2 Reference Documentation

N/A.

1.3 Glossary

ASIC	Application-specific integrated circuit
D/N	Document Number
FPGA	Field-Programmable Gate Array
GUI	Graphical user interface
GPIO	General Purpose Input/Output
IDC	Insulation-displacement connector
I ² C (IIC)	Inter-Integrated Circuit Serial Communication Interface
NM	Nanomotion
PC	Personal Computer
P/N	Part Number
SW	Software

1.4 Safety



Turn off power before connecting or disconnecting any of the cables.

2 Overview

The Shutter Evaluation Kit, based on the RS08 NUC (Non-Uniformity Correction) Shutter series solution allowing a simple interface to customer FPGA/PC. The kit can be operated from a host computer running NanoCommander or from an FPGA over an IIC communication line.

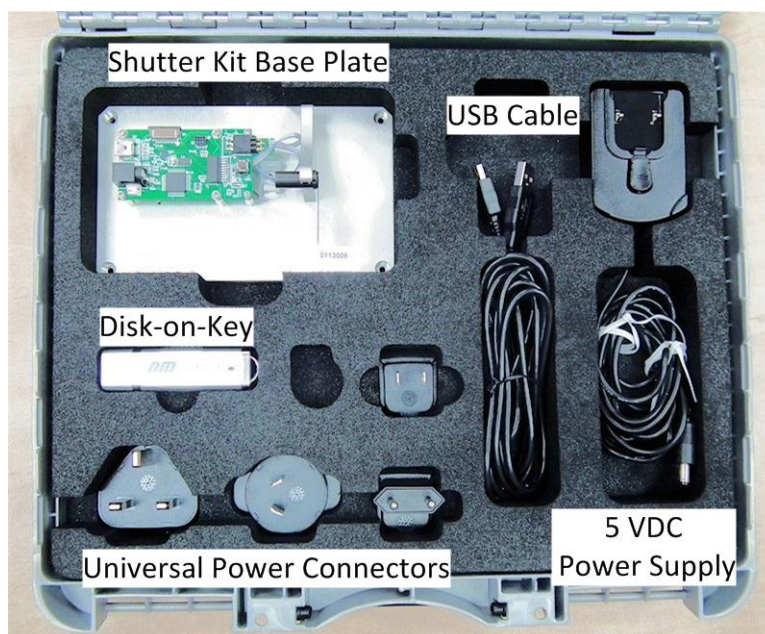
The RS08 Shutter is designed to meet the most challenging operating conditions of infrared imaging systems (thermal sensors). The Shutter operates with a direct drive EDGE motor. Nanomotion's EDGE motors are the smallest industrial motors available in the market. This provides the lightest weight configuration, while maintaining the closest proximity to the imaging detectors's Focal Plane Array (FPA) the imaging lens.

2.1 Main Components and Features

Following is a list of the main components and features of the Shutter Evaluation Kit:

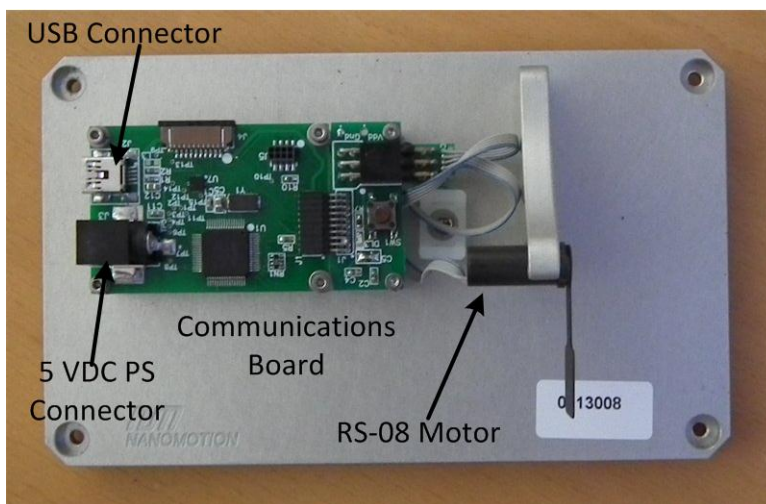
- Shutter Module
- Closed loop control allowing either PC or I²C input
- 5Vdc power supply
- NanoCommander application software
- Script with basic execution of open/close

The following elements are provided with the Shutter Evaluation Kit:



RS-08 Evaluation Kit Contents

3 Mechanical Interfaces



Evaluation Kit Board Layout

3.1 IDC Connector

Shutter Module IDC Pinout		
Pin #	Pin Name	Description
1	SDA	IIC -Data
2	SCL	IIC -Clock
3	RESET_SH	External ASIC reset
4	GND	System ground
5	+3.3V	Power IN 3.3Vdc
6	GND	System ground

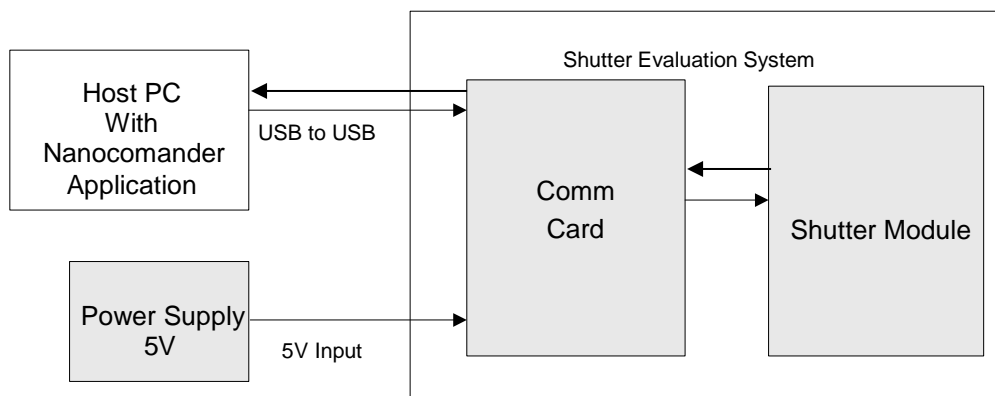
4 Connecting and Running the System

The connections are set according to the desired operation mode:

- Host computer –uses the NanoCommander application.
- FPGA – use IIC communication.

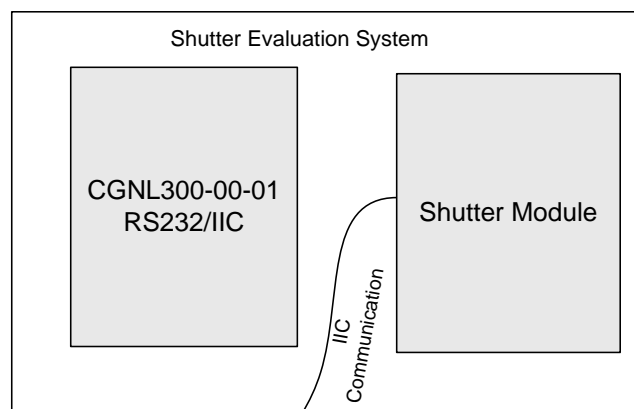
4.1 Connecting to Host Computer

When using the GUI Mode configuration, the Shutter-Eval-CL system is connected to the user's PC and the Shutter Module ASIC is controlled via the NanoCommander application.



4.2 Connecting to FPCA

When using an FPCA, the Shutter-Eval-CL system is connected directly to the user's system, and the Shutter Module ASIC is controlled via IIC communication.



Towards customer's FPGA

The RS08 User Manual (Disk-on-Key ...\Documentation\ contains commands and parameters for controlling the Shutter.

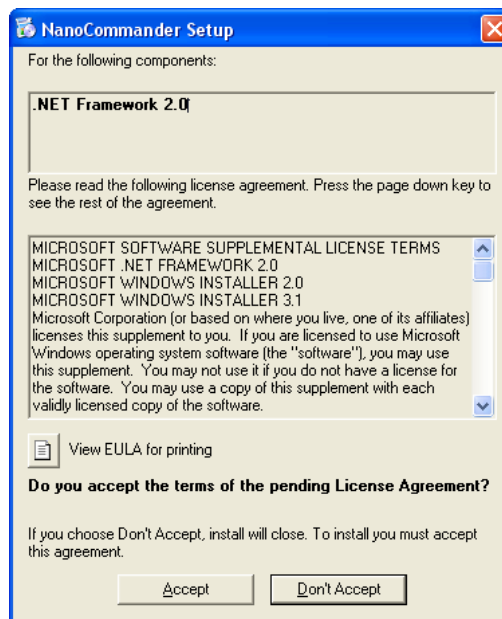
4.3 Installing NanoCommander

1. Insert the provided USB flash drive into your USB connection. The Comm Card Drivers should automatically install. The Drivers are on the Disk-on-Key under ...\\Drivers\\Comm Board Driver. Repeat for all listed devices.

NOTE:

If the drivers do not install automatically select **Start>Control Panel>Device Manager**. Expand **Portable Devices** and check for USB connections. Right-click on the Device with the Disk-on-Key and select **Update Driver Software**.

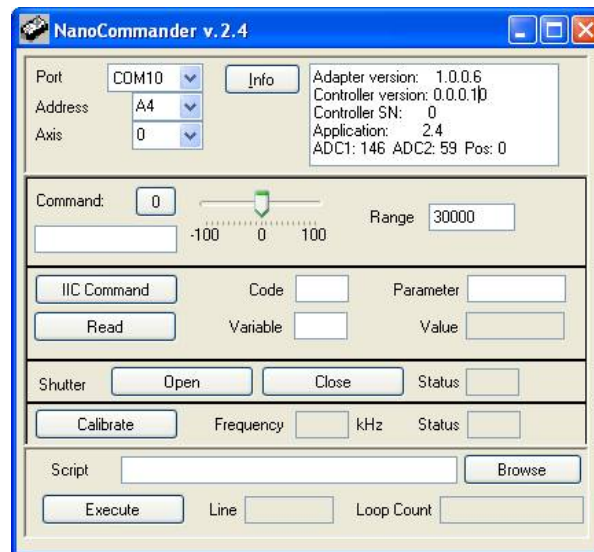
2. Navigate to the USB flash drive location on the computer.
3. Double-click on ..\\InstallationDisk\\setup.exe to start the installation.
4. If .NET Framework is not installed on the computer a dialog appears. Click Accept to approve .NET installation. Otherwise, continue to the next step.



5. Click **Install** to approve the NanoCommander installation:



6. The NanoCommander application and its icon are now installed on the computer (**Start>All Programs>Nanomotion>NanoCommander**), and the NanoCommander main screen appears:



Note:

In case the NanoCommander does not launch and display the main window, select **Start>All Programs** and locate the newly installed NanoCommander.

4.3.1 Connecting the System

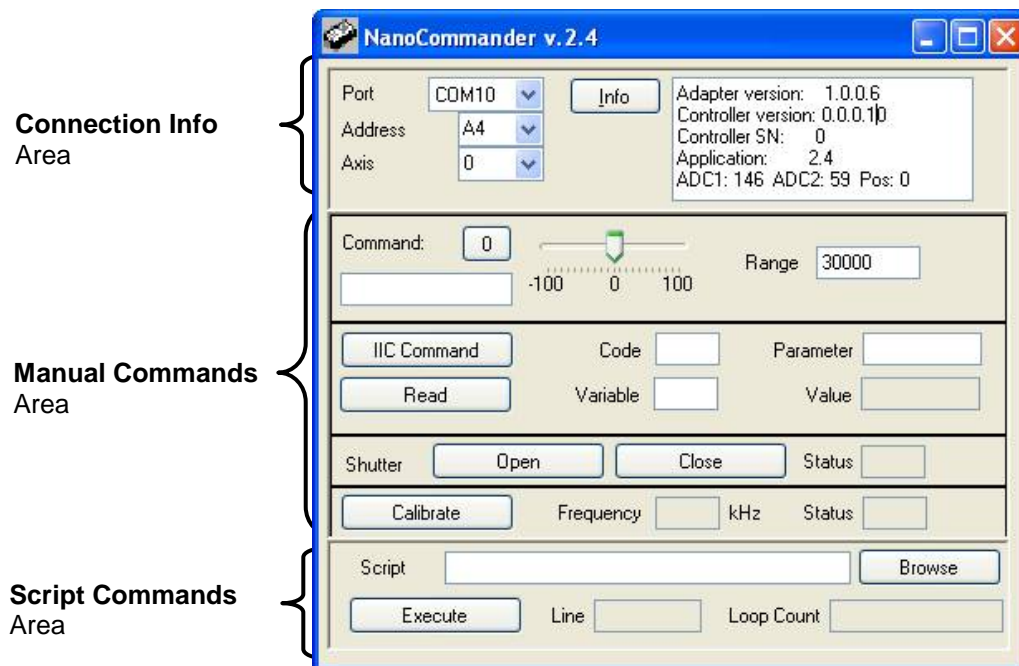


1. Connect the USB cable between the PC USB and the USB connector on the Comm board.
2. Connect the 5V power supply cable to the power IN connector (inner pin is +) .
Note: choose the power supply connector corresponding to your local electricity inlets.

4.4 Using NanoCommander to Operate the RS08

The NanoComander can be used in the following modes:

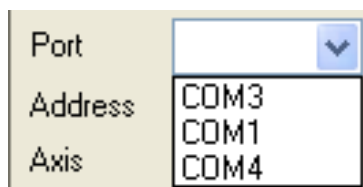
- Direct command-initiating buttons
- Running command **scripts** (script examples provided with the application)
- Running **manual commands** (I²C commands)



4.4.1 Connection Info Area

Determine and select the following information parameters:

- **Port:** Select the USB-port (COM) in which the shutter evaluation kit is connected to your PC.



NOTE:

Any error message may appear during the port selection process. Click OK on the dialog and select a different port. This process may have to be repeated until the correct port is identified.

- **Address:** choose A4, to indicate the controller's I²C address
- **Axis:** choose Axis 0

4.4.2 Manual Commands

The Manual Commands area allows running direct commands by either pressing on a command button (i.e. **Calibrate**), moving a slider, or by entering an I²C command code and parameters.

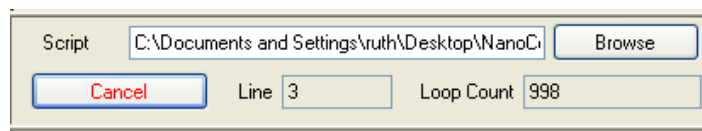
4.4.3 Running Scripts

The system is provided with predefined scripts, allowing the user to quickly and easily operate the shutter.

To execute a script:

In the **Script Command area**, perform the following:

- Press on the **Browse** button and select the desired script.
- Press on the **Execute** button. The button toggles to **Cancel**, when a script is running.



Verify that the desired action is performed.

Note: you may stop the script execution at any time, by pressing on the Cancel button.
