

RS-08

Rotary Shutter

Evaluation Kit

User Manual



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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; 12/517,261 (pending); 08702695.1 (pending); 10-
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About this Guide

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.

Reference Documentation

N/A.

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

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1 Safety



For safe usage of the Shutter Evaluation Kit, carefully read the following instructions:

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

2 Overview

The closed loop shutter evaluation kit allows the user to evaluate NM shutter technology.

The Shutter Evaluation Kit is provided as an autonomous unit, based on the RS08 NUC (Non-Uniformity Correction) Shutter series solution (read more information on www.nanomotion.com), allowing a simple interface to customer FPGA/PC. The kit supports two modes of operation: the GUI Mode, and the FPGA Mode. The GUI Mode, enables the user controlling the kit using the NanoCommander application, installed on user's PC. The FPGA Mode enables the user control the kit using the I²C communication.

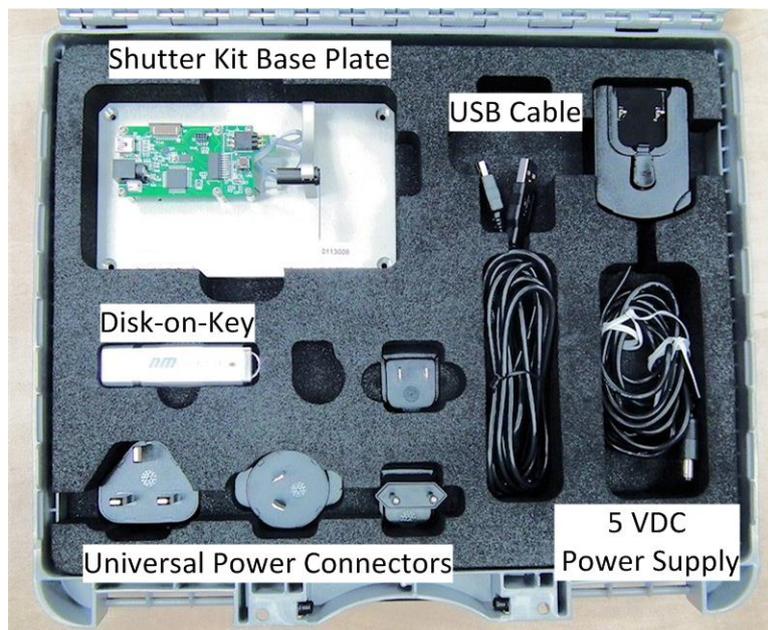
The RS08 NUC Shutter is designed to meet the most challenging operating conditions of infrared imaging systems (thermal sensors). The RS08 shutter operates with a direct drive EDGE motor (the smallest industrial motor of its kind available in the marketplace today), providing the lightest weight configuration while maintaining the closest proximity to the imaging detectors's Focal Plane Array (FPA) the imaging lens.

3 Main Components and Features

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

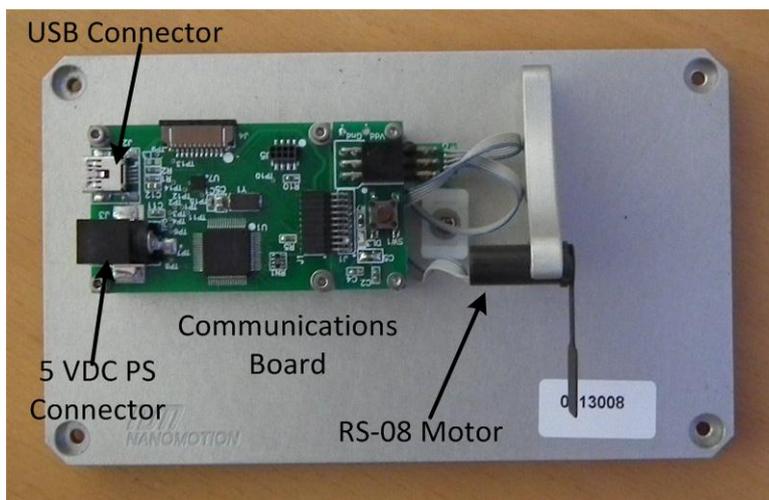
- Shutter Module
- Closed loop control allowing either PC or I²C input
- 5Vdc power supply
- NanoCommander application software
- Script with basic execution of open/close

The following elements are provided with the Shutter Evaluation Kit:



RS-08 Evaluation Kit Contents

5 Mechanical Interfaces



Evaluation Kit Board Layout

5.1 IDC Connector

Table 1: Shutter Module IDC Pinout

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

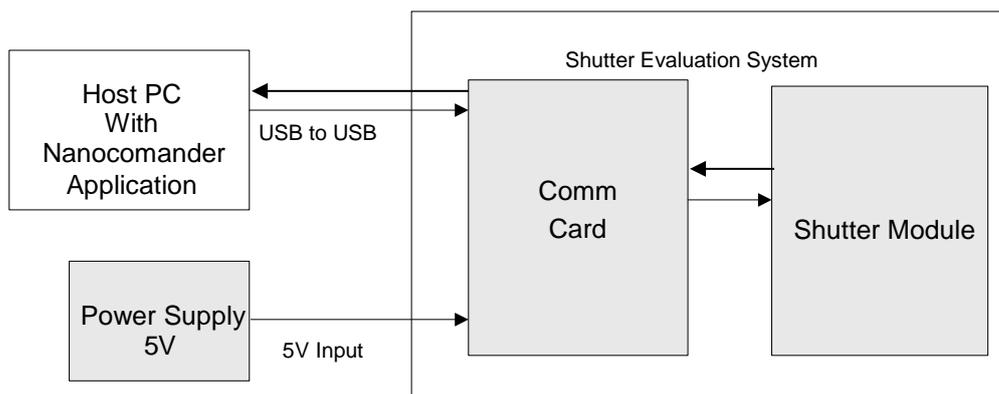
6 Connecting and Running the System

The connections are set according to the desired operation mode:

- GUI Mode – a configuration using the NanoCommander application.
- FPGA Mode – a configuration using I²C communication.

6.1 The GUI Mode Configuration

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.



6.1.1 Installing the NanoCommander Application

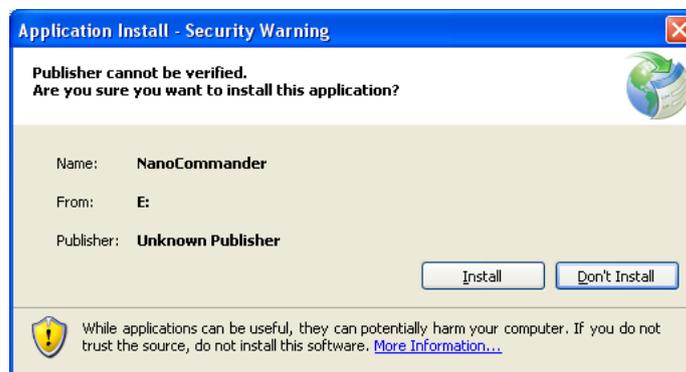
Install the NanoCommander application according to the following steps:

1. Insert the provided USB flash drive into your USB connection.
2. Drivers for the communications card are automatically installed.
3. Browse to the USB Flash Drive to ...\\RS08 DOCUMENTS\\InstallationDisk\\ and double-click setup.exe.
4. If Microsoft .NET is not installed on the computer a dialog asking to install is displayed. Click **Accept**.

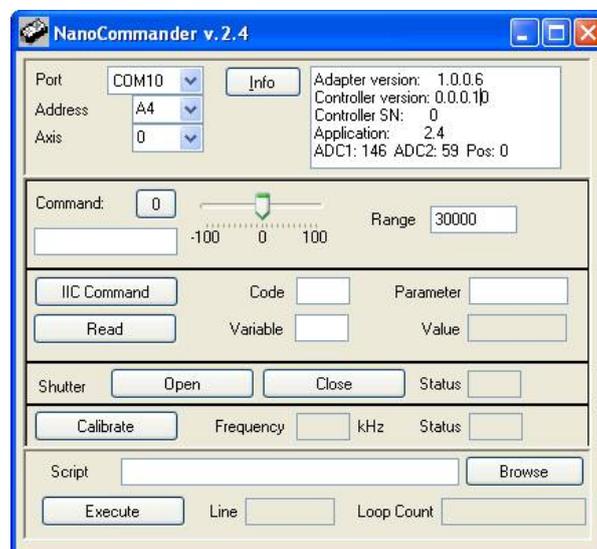
Note:

In case the NanoCommander dialog appears automatically at the end of the installation process, close the dialog and re-launch NanoCommander from the icon or from the Start menu.

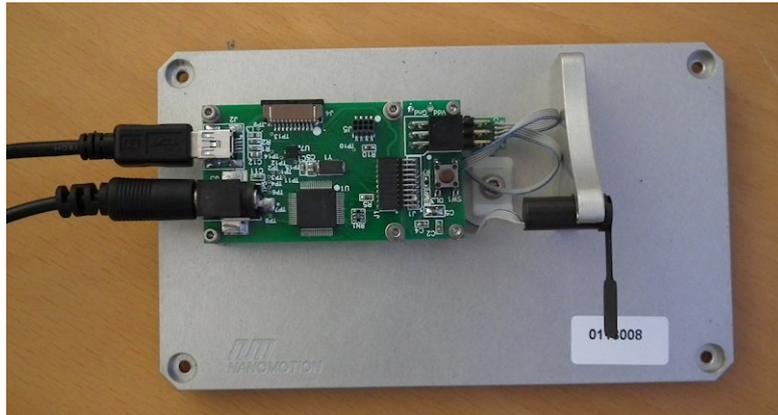
5. In the Application Install dialog click **Install**.



6. Double-click the icon to launch NanoCommander.



6.1.3 Connecting the System



1. Connect the USB cable between the PC USB and the J2 on the Comm board.
2. Connect the 5V power supply cable to J3 (inner pin is +). DL3 lights.

Note:

The Eval Kit is supplied with a universal power supply plug kit. Choose the power supply connector corresponding to the local standard.

6.1.4 Running the System

Setting up Communication with the Comm Card

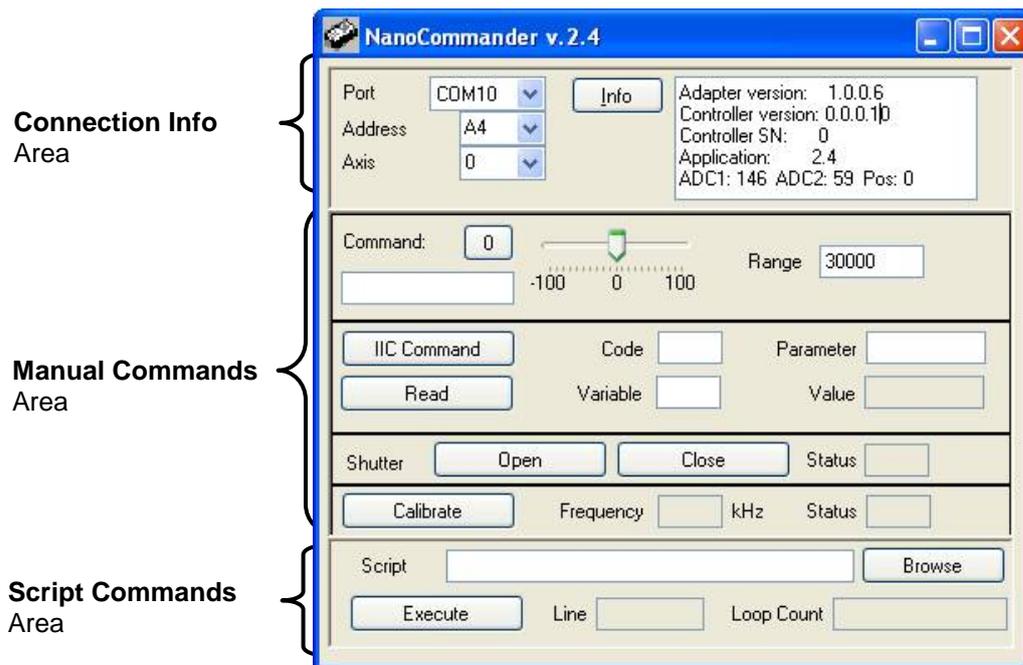
Set the following parameters in the NanoCommander dialog:

- **Address:** choose A4. This sets the controller's I²C address
- **Port:** Select the computer's USB-port (COM) connected to the Comm card.

Port	<input type="text"/>
Address	COM3
Axis	COM1
	COM4

- **Axis:** choose Axis 0

The Info panel displays the Comm cards program information.



6.2 Operating the RS-08 from the NanoCommander

The NanoComander SW allows running comands using the following methods:

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

6.2.1 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.

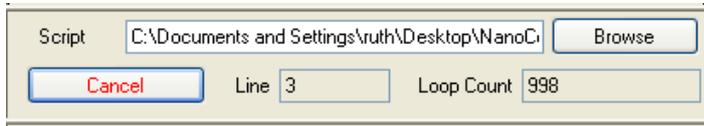
6.2.2 Running Scripts

The system is provided with predefined scripts, allowing the user to quickly and easily operate the shutter. The Eval Kit has a standard test script in ... \ RS08 DOCUMENTS \ Scripts

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.

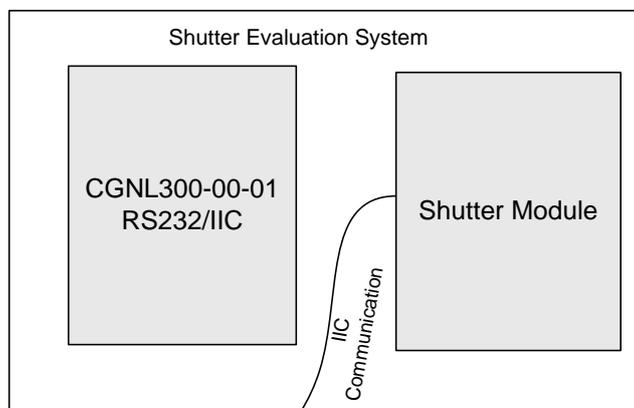


Verify that the desired action is performed.

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

6.3 The FPGA Mode Configuration

When using the FPGA Mode, the Shutter-Eval-CL system is connected to the user's FPGA, and the Shutter Module ASIC is controlled via I²C communication.



Towards customer's FPGA ←