

ISL81601DEMO2Z

User's Manual: MCU Part and GUI

Industrial Analog and Power

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ISL81601DEMO2Z

MCU Part and GUI Software

The RL78/G14 MCU outputs four channels of PWM to control the input voltage, input current, output voltage, and output current of the ISL81601DEMO2Z demonstration board and uses two channels of A/D sampling to monitor the output voltage and the input voltage to realize the overvoltage and undervoltage protections. It gets the measured values in high-precision of the input voltage, input current, output voltage, and output current from two ISL28022 chips by IIC. The RL78/G14 also provides the communication with the GUI.

The GUI named "ISL81601DEMO2Z.exe" helps you control and monitor the ISL81601DEMO2Z board intuitively.

Specifications

Table 1. MCU Rating

Parameter	Rating
PWM Frequency	100kHz
MCU Voltage	3.3V

Related Literature

For a full list of related documents, visit our website:

- [ISL81601](#) device page

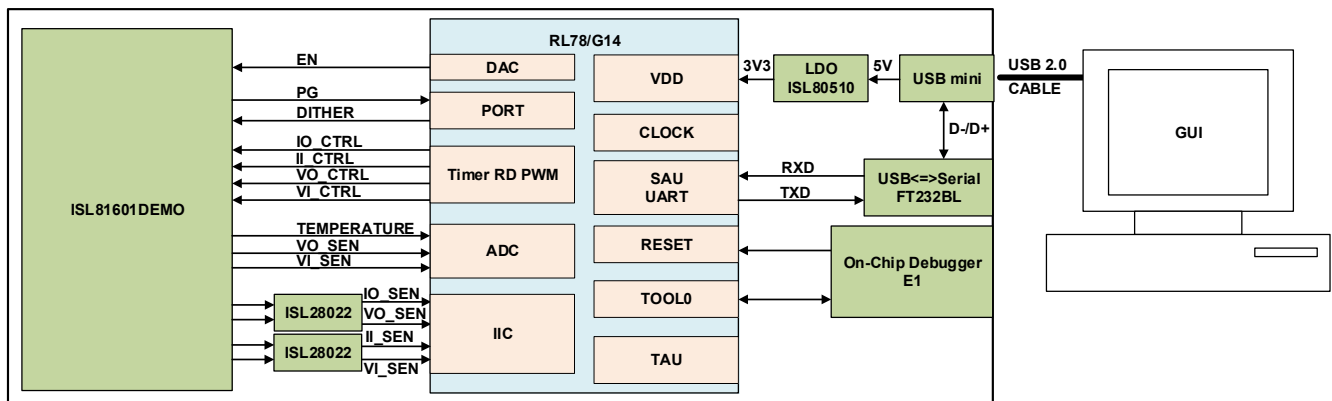


Figure 1. Block Diagram

1. Quick GUI Setup Guide

1. Set up the hardware as shown in [Figure 2](#).

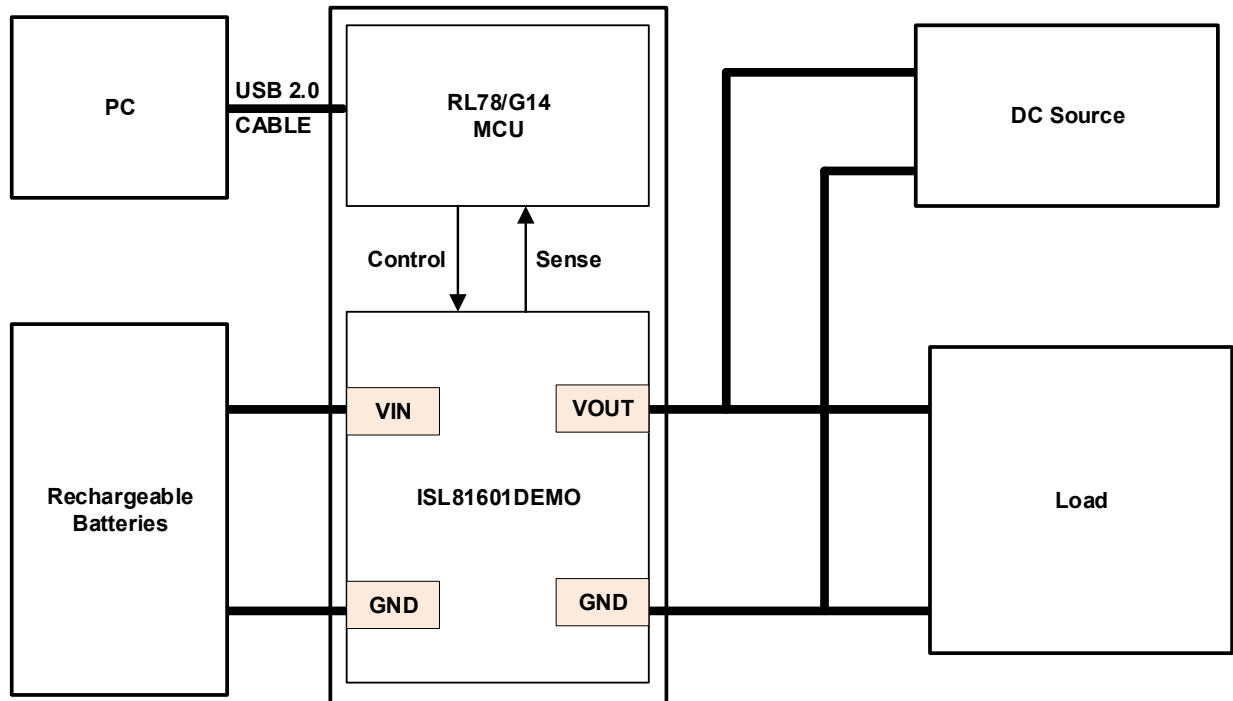


Figure 2. Hardware Connection

2. When the board is connected to the PC through the USB cable, start the GUI program.
3. Click on **CONNECT**.

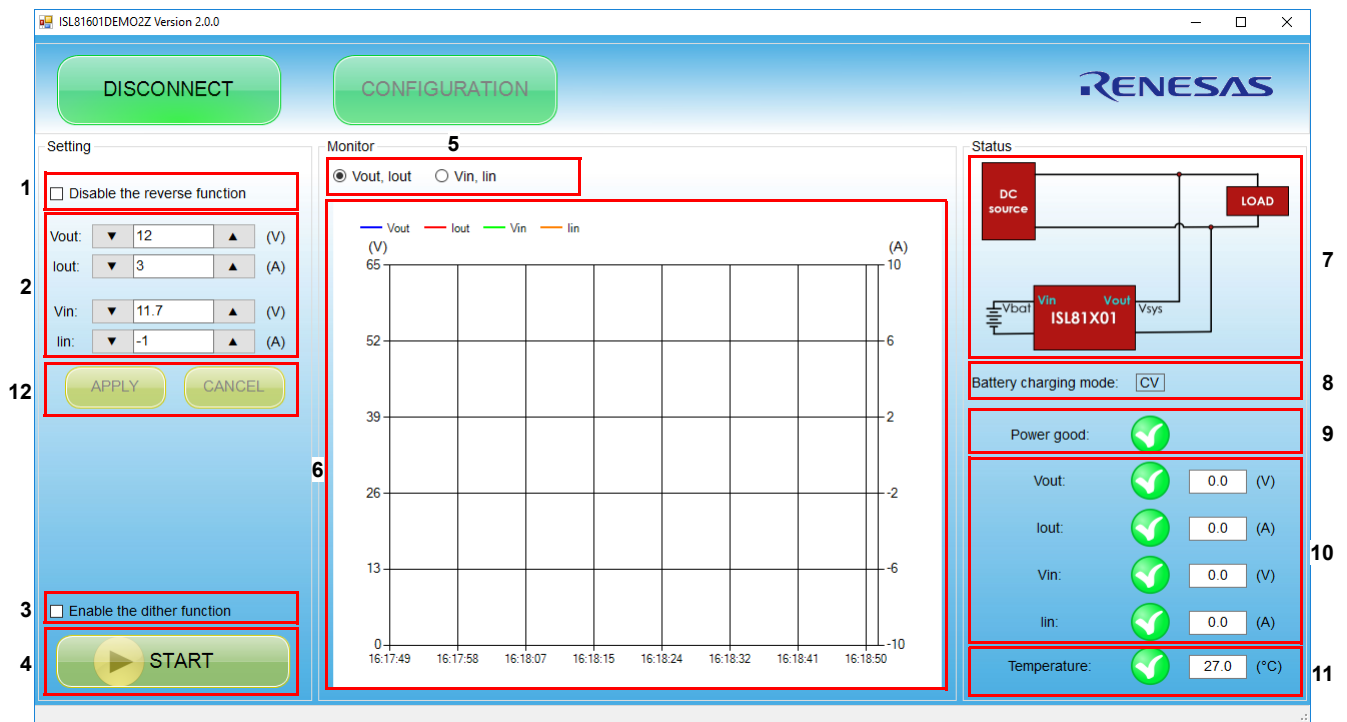
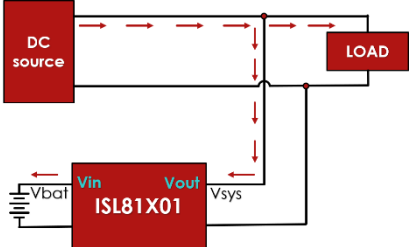
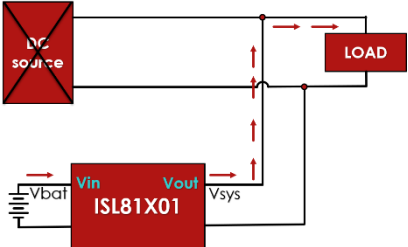






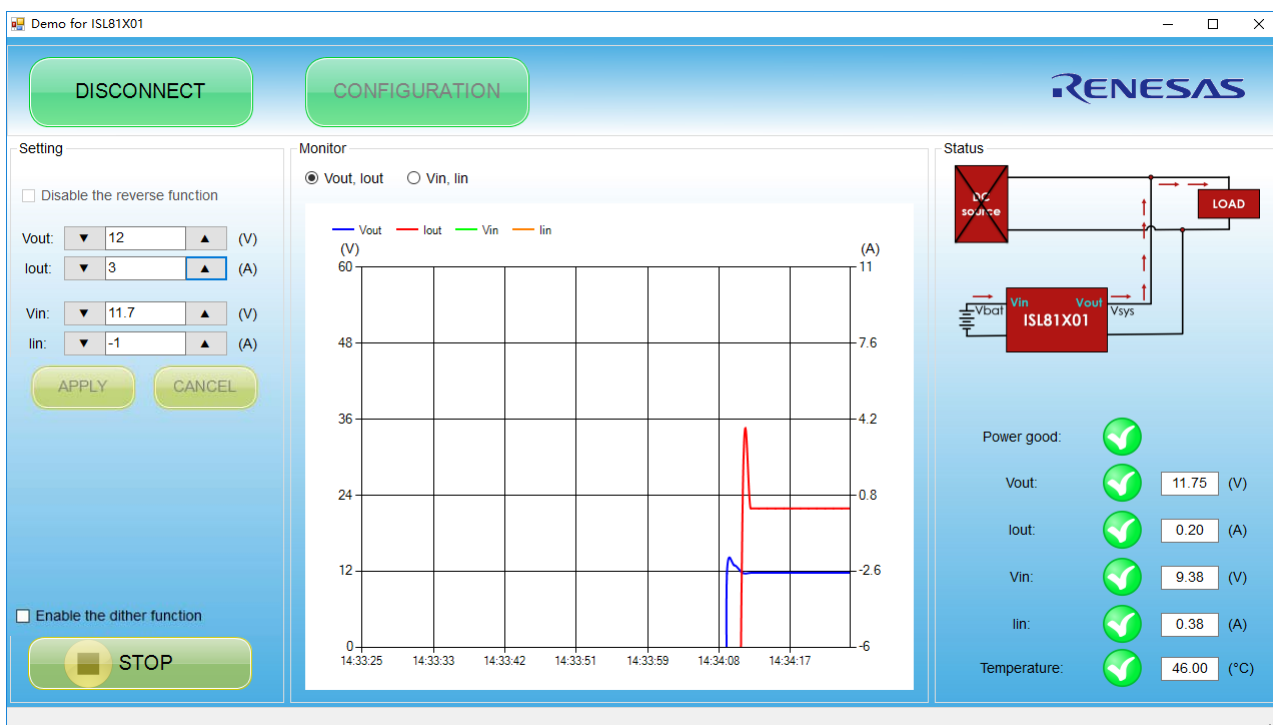


Figure 3.

Number	Description
1	Unchecked: Enables the reverse function. Checked: Disables the reverse function. Note: This function only can be changed when the ISL81601DEMO2Z is disabled.
2	The setting values. Vout: Sets the object value for the constant-voltage regulator on terminal J4 (Vout). Iout: Sets the threshold for the constant-current OCP on terminal J4 (Vout). Vin: Sets the threshold for the constant-voltage OVP on terminal J1 (Vin). Iin: Sets the threshold for the constant-current OCP on terminal J1 (Vin).
3	Checked: Enable the frequency dither function. Unchecked: Disable the frequency dither function.
4	Click START to enable the ISL81601DEMO2Z board. Then the button turns to STOP . Click STOP to disable the ISL81601DEMO2Z board. Then the button turns to START .
5	Vout, Iout checked: Displays the output voltage and output current waveforms in the chart. Vin, Iin checked: Displays the input voltage and input current waveforms in the chart.
6	Displays the voltage and current waveforms.
7	Show the current direction. <div style="display: flex; justify-content: space-around; align-items: center;">  or  </div>
8	Displays the charging status of the batteries: "CC" or "CV".
9	 : Power good  : Power fail
10	Displays the real-time output voltage, output current, input voltage, and input current values.  : The detection value is within the setting range.  : The detection value is out of the setting range.
11	Displays the real-time temperature value.  : The temperature is within the range from -40°C to +85°C.  : The temperature is out of the range from -40°C to +85°C.
12	During the start operation, change the setting value with the keyboard and click the APPLY button, the control value is changed by step automatically.

4. After configuring the settings, click **START**.



5. Click **STOP**. A file named *ISL81601DEMO2Z_yyyymmddhhmmss.csv* is created in the directory where this program is located. This file logs the run time information.

Time	Set Vout (V)	Actual Vout (V)	Set Iout (A)	Actual Iout (A)	Set Vin (V)	Actual Vin (V)	Set Iin (A)	Actual Iin (A)	Temp (degC)
2018/9/5 14:34:09	12	11.65	3	-96.41	11.7	9.45	-1	-69.69	247
2018/9/5 14:34:10	12	12.94	3	-48.39	11.7	9.18	-1	-34.69	46
2018/9/5 14:34:11	12	11.73	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:12	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:13	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:14	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:15	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:16	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:17	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:18	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:19	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:20	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:21	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:22	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:23	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:24	12	11.75	3	0.2	11.7	9.38	-1	0.38	46
2018/9/5 14:34:25	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:26	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:27	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:28	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:29	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:30	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:31	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:32	12	11.75	3	0.2	11.7	9.38	-1	0.3	46
2018/9/5 14:34:33	12	11.75	3	0.2	11.7	9.38	-1	0.3	46

2. Revision History

Rev.	Date	Description
1.00	Oct.7.19	Initial release

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins

Handle unused pins in accordance with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

Before changing from one product to another, i.e. to a product with a different part number, confirm that the change will not lead to problems.

- The characteristics of Microprocessing unit or Microcontroller unit products in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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