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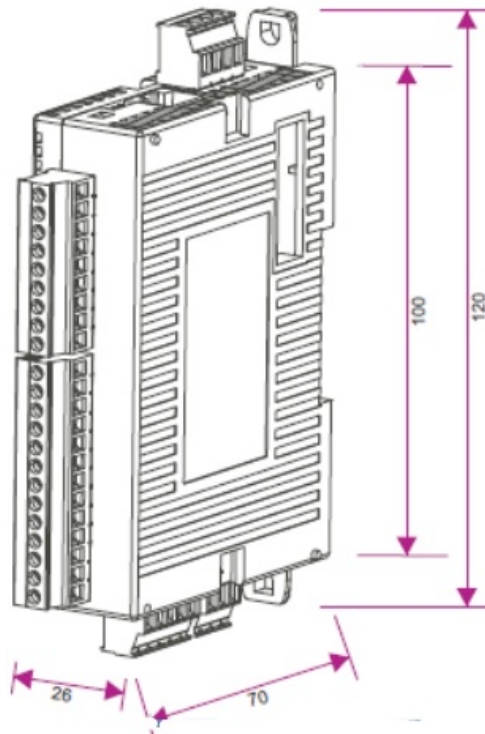


## **RENU FLA0402L-V2 Analog Expansion Module**



FLA0402L-V2: This is an analog expansion module, which work with FlexiLogics® base PLC. This module has 4 L inear Inputs (0-10V / 4-20mA / 0-20mA), 16 Bit, 2 Analog Outputs (0-10V / 4-20mA / 0-20mA), 12 Bit.

## Dimensional Details



## SPECIFICATIONS

|              |                          |
|--------------|--------------------------|
| Power Supply | 24VDC(±20%), 50mA , 1.2W |
|--------------|--------------------------|

|                                    |                                                                                                         |
|------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Analog Inputs</b>               | 4 Input channels Voltage: 0-10V<br>Current: 4-20mA & 0-20mA                                             |
| <b>Input Impedance</b>             | 470K $\Omega$ (Voltage mode) 51 $\Omega$ (Current mode)                                                 |
| <b>Analog Outputs</b>              | 2 Output channels Voltage 0-10V<br>Current 4-20mA & 0-20mA                                              |
| <b>Load Resistance</b>             | for Voltage $R > 5000\Omega$ (Greater than 5000 ohm)<br>For Current $R < 250\Omega$ (Less than 250 ohm) |
| <b>Isolation</b>                   | NO channel to channel isolation Supported .                                                             |
| <b>Connection Method</b>           | Removable terminals (3.81 mm pitch)                                                                     |
| <b>Resolution</b>                  | Input: 16 Bit, Output: 12 Bit                                                                           |
| <b>Accuracy</b>                    | $\pm 0.2\%$ of full scale @ 25°C                                                                        |
| <b>Linearity</b>                   | 0.5% of full scale                                                                                      |
| <b>Environment &amp; Approvals</b> |                                                                                                         |
| <b>Operating Temperature</b>       | 0 to 55°C                                                                                               |
| <b>Storage Temperature</b>         | -20 to 85°C                                                                                             |
| <b>Humidity</b>                    | 10 to 90% (Non-Condensing)                                                                              |
| <b>Product Dimensions</b>          | 100mm x 26mm x 70mm (H x W x D)                                                                         |
| <b>Weight</b>                      | 180 gm                                                                                                  |
| <b>Approvals</b>                   | CE, UKCA, UL, REACH, RoHS                                                                               |

In the Flexisoft, select FLA0402L or V2 for the FLA0402L-V2 unit.

## PANEL MOUNTING

### Steps to lock the expansion module with base module:

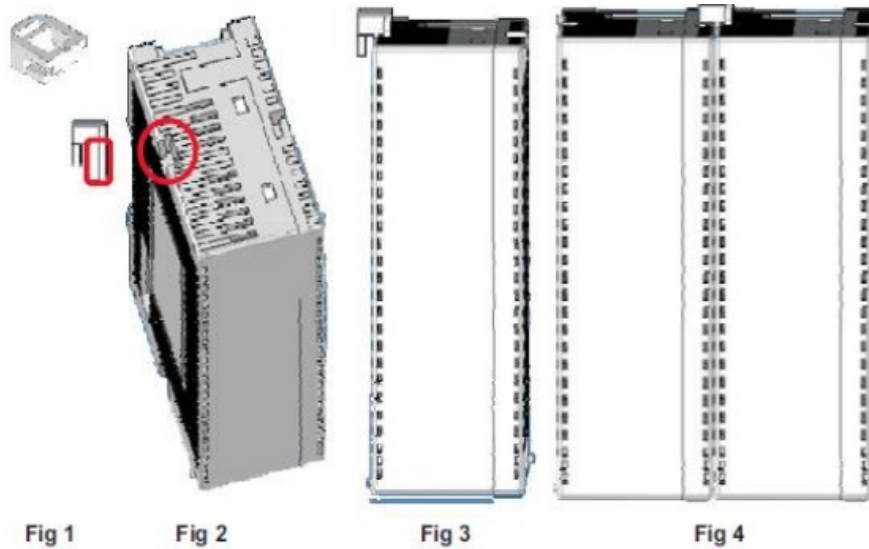


FIG-1 Lock connector provided with base PLC unit

FIG-2 Two slots to grip the locking connector are provided on the case highlighted by RED circle. Insert a big leg of locking connector highlighted by RED rectangle.

FIG-3 Single base PLC unit with locking connector

FIG-4 Locking connector helps the two units (PLC base &/or PLC expansion) to hold each other properly on the DIN rail plate along with DIN rail slider.

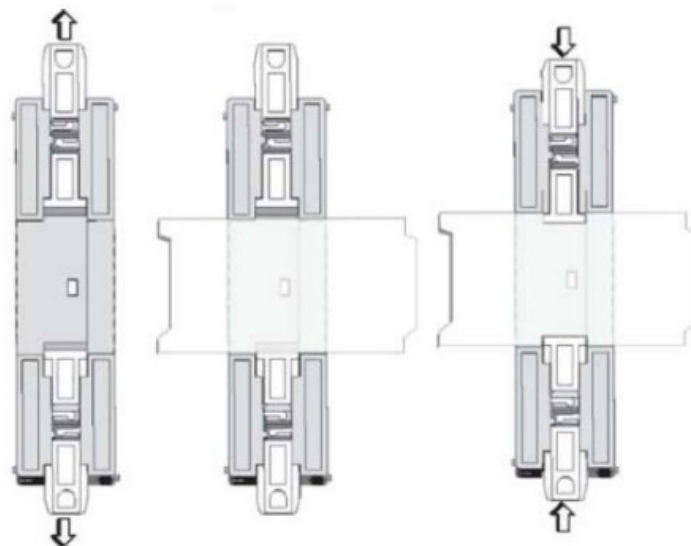


FIG-1 Pull up the sliders provided with the unit towards outward direction.

FIG-2 Rest the unit on the DIN rail plate

FIG-3 Pull down the slider again so that unit can fix up with the DIN rail plate.

## Functions

- These devices scan all the inputs/outputs continuously and store this information in the input/output register.
- Input (XW), output (YW) and configuration (MW) Register allocation:
- Analog Inputs in the Analog Expansion models are accessed using XW registers.
- The type of input channel is configured from the configuration registers
- MW. The analog inputs in the unit are updated in the (Input) XW registers..

| Sr.<br>No. | Description              | Register | Type      |
|------------|--------------------------|----------|-----------|
| 1          | Analog_Input_Data_CH1    | XWxx00   | Read only |
| 2          | Analog_Input_Data_CH2    | XWxx02   | Read only |
| 3          | Analog_Input_Data_CH3    | XWxx04   | Read only |
| 4          | Analog_Input_Data_CH4    | XWxx06   | Read only |
| 5          | Analog_Input_Type_CH1    | MWxx00   | R/W       |
| 6          | Analog_Input_Type_CH2    | MWxx01   | R/W       |
| 7          | Analog_Input_Type_CH3    | MWxx02   | R/W       |
| 8          | Analog_Input_Type_CH4    | MWxx03   | R/W       |
| 9          | CH1_Normalisation Factor | MWxx04   | R/W       |
| 10         | CH2_Normalisation Factor | MWxx05   | R/W       |
| 11         | CH3_Normalisation Factor | MWxx06   | R/W       |
| 12         | CH4_Normalisation Factor | MWxx07   | R/W       |

- Analog Outputs in the Analog Expansion models are accessed using YW registers.
- The type of output channel is configured from the configuration registers MW. The analog outputs in the unit are updated in the (Output) YW registers.

| Sr. No. | Description                        | Register | Type |
|---------|------------------------------------|----------|------|
| 1       | Analog_Output_CH1_Type             | MWxx04   | R/W  |
| 2       | Analog_Output_CH2_Type             | MWxx05   | R/W  |
| 3       | Analog_Output_CH1_Voltage_Register | YWxx00   | R/W  |
| 4       | Analog_Output_CH1_Current_Register | YWxx01   | R/W  |
| 5       | Analog_Output_CH2_Voltage_Register | YWxx02   | R/W  |
| 6       | Analog_Output_CH2_Current_Register | YWxx03   | R/W  |

- Above said configuration can be achieved with the help of Configuration wizard also.
- Note: Normalization Factor\*: This is a software filter used to average out analog input signal. The range is 1-65535
- Channel Type Selection Values Table:
- Use the following values in the output channel type select register to configure the corresponding channel to particular type.

| Input Channel Type  | Value |
|---------------------|-------|
| mA( 0 - 20mA )      | 3     |
| mA( 4 - 20mA )      | 2     |
| Voltage ( 0 - 10V ) | 1     |

- Use the following values in the output channel type select register to configure the corresponding channel to particular type.

| Output Channel Type | Value |
|---------------------|-------|
| mA( 0 – 20mA )      | 6     |
| mA( 4 – 20mA )      | 5     |
| Voltage ( 0 – 10V ) | 2     |

## Data Output Format for Analog Input

For, Voltage Input (0 to 10V)

| Voltage input | Count |
|---------------|-------|
| 0             | 0     |
| 2.5V          | 16383 |
| 5V            | 32767 |
| 7.5V          | 49150 |
| 10V           | 65535 |

#### For, Current Input (0 to 20mA)

| Current input | Count |
|---------------|-------|
| 0             | 0     |
| 5mA           | 16383 |
| 10mA          | 32767 |
| 15mA          | 49150 |
| 20mA          | 65535 |

#### Current Input (4 to 20mA)

| Current input | Count |
|---------------|-------|
| 4mA           | 0     |
| 8mA           | 16383 |
| 12mA          | 32767 |
| 16mA          | 49150 |

|      |       |
|------|-------|
| 20mA | 65535 |
|------|-------|

### Data output format for Analog Outputs:

For Voltage (0 to 10 V)

| Voltage Output | Count |
|----------------|-------|
| 0V             | 0     |
| 2.5V           | 1024  |
| 5V             | 2048  |
| 7.5V           | 3072  |
| 10V            | 4095  |

For Current (4 to 20 mA),

| Current Output | Count |
|----------------|-------|
| 4mA            | 0     |
| 8mA            | 1024  |
| 12mA           | 2048  |
| 16mA           | 3072  |
| 20mA           | 4095  |

Current (0 to 20 mA)

| Current Output | Count |
|----------------|-------|
| 0mA            | 0     |

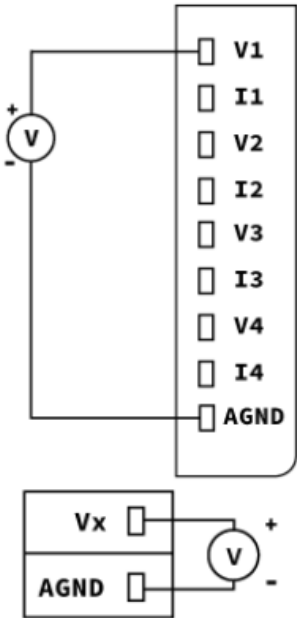


|      |      |
|------|------|
| 5mA  | 1024 |
| 10mA | 2048 |
| 15mA | 3072 |
| 20mA | 4095 |

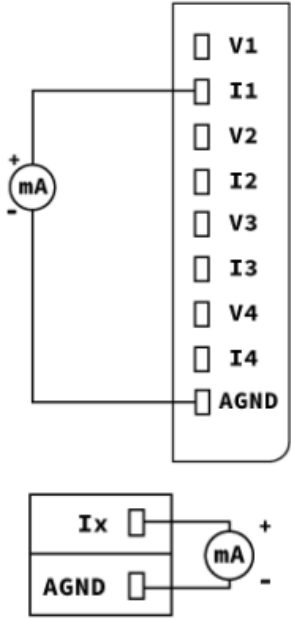
**Wiring Diagram:**

Analog Input Wiring Diagram

**Voltage Mode**

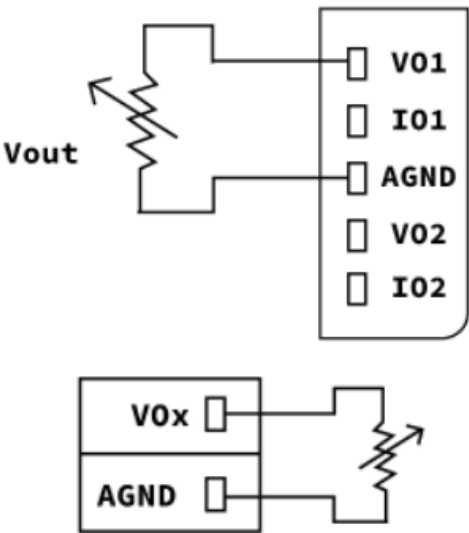


**Current Mode**

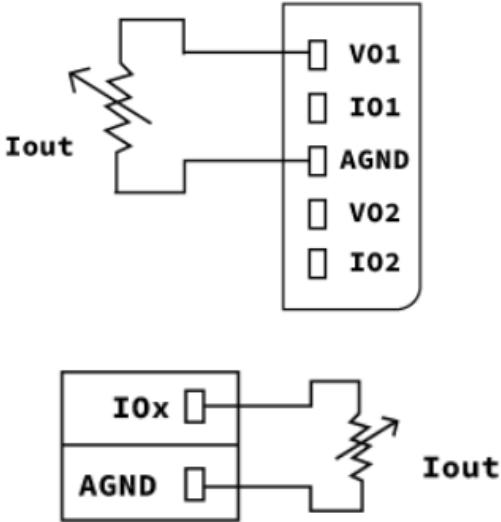


Analog Output Wiring Diagram

**Voltage Mode**

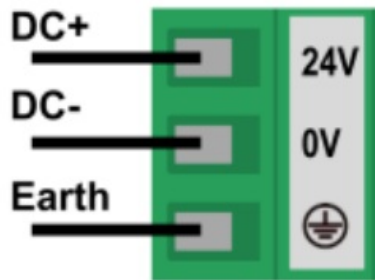


**Current Mode**



## Power Connection

Connect the power supply as shown below. The optimum method for grounding electronic equipment is to ground it separately from other high-power systems, to ground more than one unit of electronic equipment with a single-point ground. The grounding marked terminal (see below) is provided on the unit.



[Note: Do not use a ground that has an unstable impedance, such as painted screws or ground subject to vibration.]

## WARNING

- WARNING: DO NOT REMOVE OR REPLACE WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS OF FLAMMABLE SUBSTANCES.
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.
- WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.
- WARNING – EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2.
- A recommendation for the user to inspect the sealed devices used periodically, for any degradation of properties and replace if degradation is found.

## Technical Support

For Technical support, please contact factory. Note the model number, serial number and H/W revision number written on the unit label. Also, provide information of the PLC or other device if used in the application.

Website: [renuelectronics.com](http://renuelectronics.com)

## REVISION HISTORY

| Rev. | Description                | Date       |
|------|----------------------------|------------|
| 1.2  | Specification updated      | 18/07/2025 |
| 1.1  | Data Output Format updated | 01/11/2023 |
| 1.0  | First Draft                | 24/07/2023 |

## FAQ

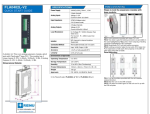
What is a Normalization Factor?

The Normalization Factor is a software filter used to average out analog input signals. It has a range of 1-65535.

How can I configure the channel type selection values?

You can use the values provided in the output channel type select register to configure the corresponding channel to a particular type.

## Documents / Resources

|                                                                                     |                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <a href="#">RENU FLA0402L-V2 Analog Expansion Module [pdf]</a> User Guide<br>FLA0402L-V2 Analog Expansion Module, FLA0402L-V2, Analog Expansion Module, Expansion Module |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## References

- [User Manual](#)

💎 Analog Expansion Module, Expansion Module, FLA0402L-V2, FLA0402L-V2 Analog Expansion Module,

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