**C1**
1 Digital Input
2 Analog inputs 0 - 10V
12v DC Output

**C2**
2 Digital Inputs
12v DC Output

**C3**
1 Load Cell input

**C4**
1 Thermocouple input

**C5**
1 x I2C / 3.3V Output

**Communication Options**



## Main

| | |
|---|---|
| Range of product | Model 1 |
| Product type | Programmable node |
| Rated supply voltage | Solar Input |
| Field of Application | Monitoring |
| Discrete Input Voltage | 18 - 24 V DC |
| Analog input range | 0 - 10V DC /  0 - 20 mA   (depending on model) |
| Communication | RS-485 (depending on model) |
| Battery | LiPo 1400mAh |
| Solar Input | 6V max |

## Complementary

| | |
|---|---|
| Local signalling | 1 LED green for PWR<br>1 LED Red for Indication |
| Electrical connection | Removable 8 pin connector / 3 meter cable supplied in standard package |
| Mounting support | Wall mount<br>Electrical Pole mount - accesory required |
| Height | 100.00 mm |
| Depth | 22.00 mm |
| Width | 75.00 mm |
| Product weight | 0.22 Kg |

## Environment

| | |
|---|---|
| Relative humidity | 10....95% without condensation in operation |
| IP degree of protection | IP20 |
| Operating altitude | 0...2000m |
| Storage altitude | 0...3000m |
| Shock resistance | 15 gn for 11 ms |
| Operating temperature | -40 to +85 'C |

## 8 Pin connector and wire harness



Tinned
20±5
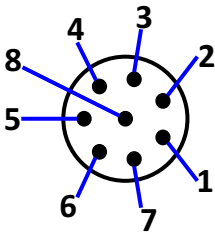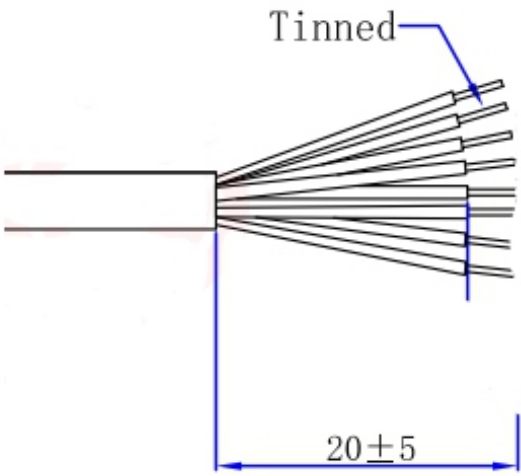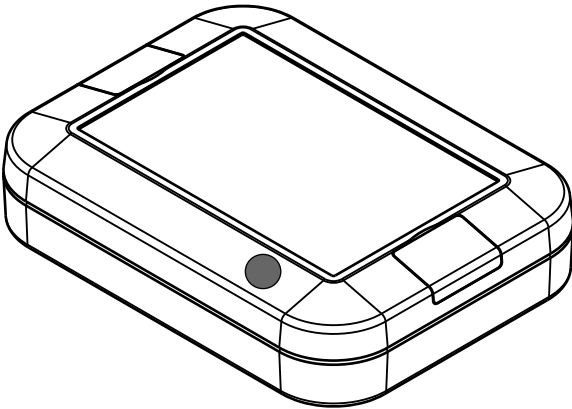
| 8P Male | Wire color |
|---|---|
| 1 | White |
| 2 | Brown |
| 3 | Green |
| 4 | Yellow |
| 5 | Gray |
| 6 | Pink |
| 7 | Blue |
| 8 | Red |

| 3P Male | Wire color |
|---|---|
| 1 | White |
| 2 | Black |
| 3 | Brown |
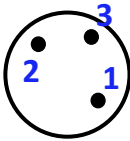
## Pin Description

Wire Harness | I/O Configuration - 1

| 8P Male | Wire color | CF1 | CF2 | CF3 | CF4 | CF5 |
|---|---|---|---|---|---|---|
| 1 | White | Digital IN A | Digital IN A | A + | Thermocouple + | SCL |
| 2 | Brown | Digital IN A - | Digital IN A | A - | Thermocouple - | SDA |
| 3 | Green | Analog IN 1 | Digital IN B | B + | --- | --- |
| 4 | Yellow | Analog IN 2 | Digital IN B | B - | --- | --- |
| 5 | Gray | 12V + | 12V + | --- | --- | 3.3V+ |
| 6 | Pink | 12V GND | 12V GND | --- | --- | GND |
| 7 | Blue | --- | --- | --- | --- | 5V+ |
| 8 | Red | — | --- - | --- | --- | --- |

Wire Harness

| 3P Male | Wire color | CF1 |
|---|---|---|
| 1 | White | Solar Panel + |
| 2 | Black | Not In Use |
| 3 | Brown | Solar Panel - |

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**OFF**

**ON**
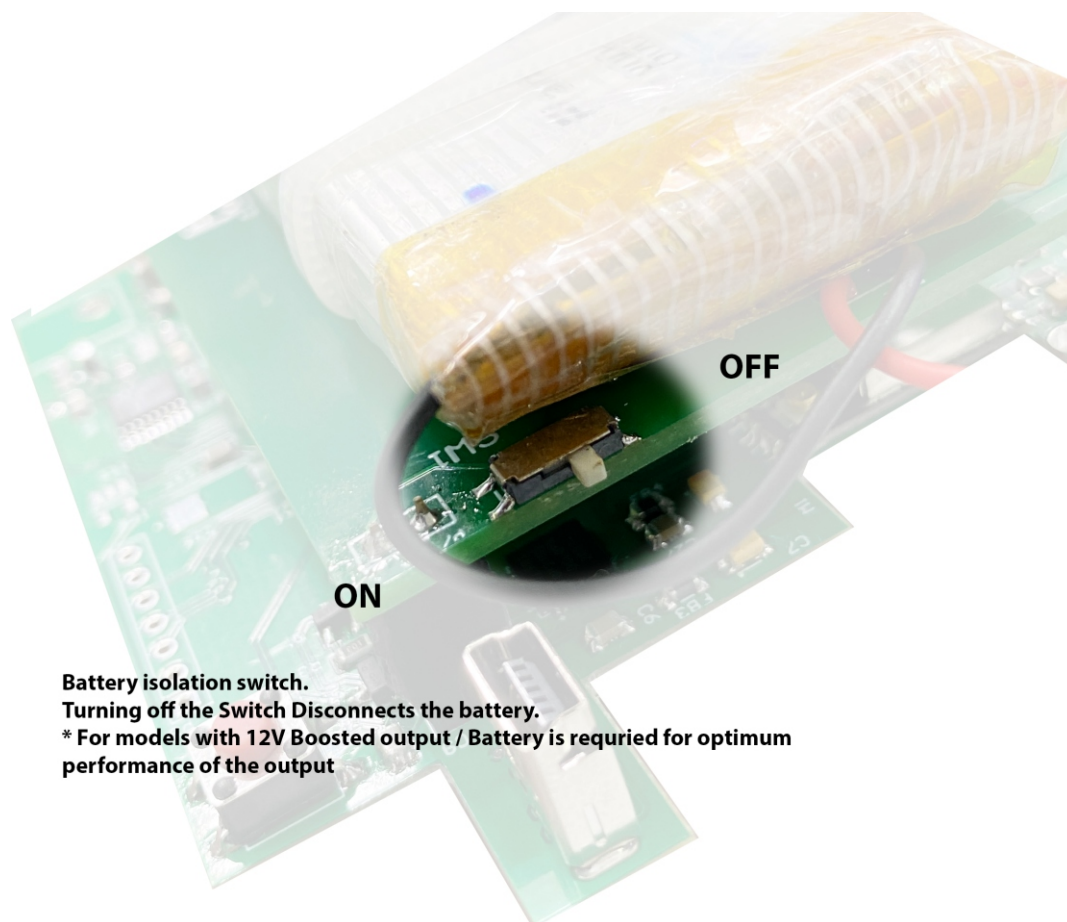
**Battery isolation switch.**
**Turning off the Switch Disconnects the battery.**
**\* For models with 12V Boosted output / Battery is requried for optimum performance of the output**
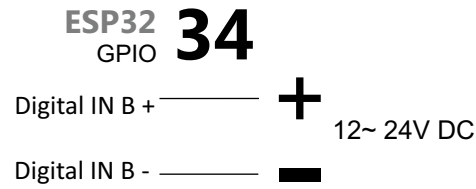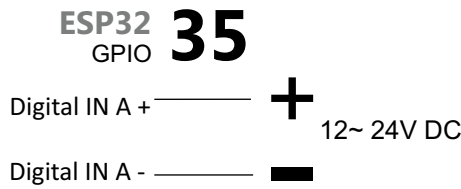


**OFF** **ON**
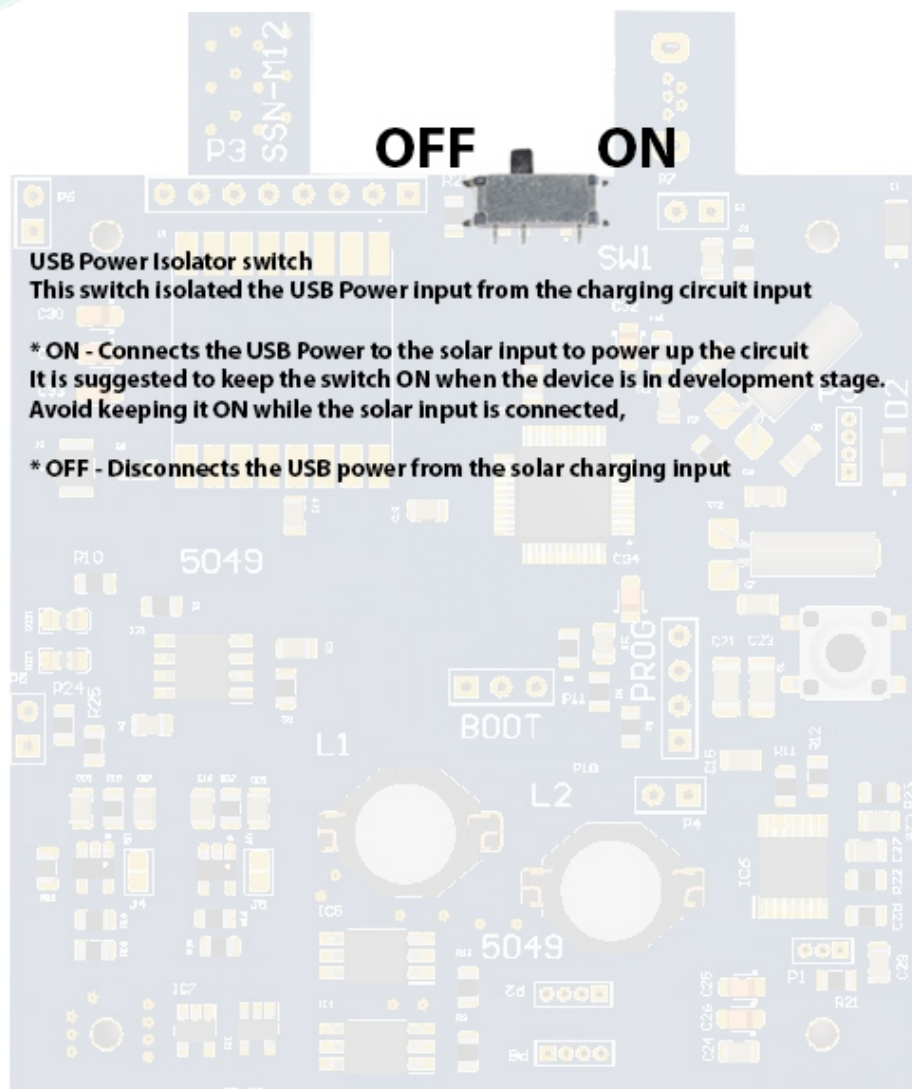
**USB Power Isolator switch**
**This switch isolated the USB Power input from the charging circuit input**

**\* ON - Connects the USB Power to the solar input to power up the circuit**
**It is suggested to keep the switch ON when the device is in development stage.**
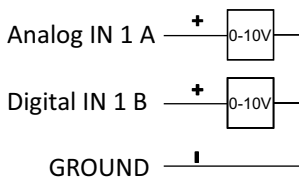**Avoid keeping it ON while the solar input is connected,**

**\* OFF - Disconnects the USB power from the solar charging input**

## Digital Inputs Wiring

**ESP32** **35**
GPIO

Digital IN A + ——————— **+**
12~ 24V DC
Digital IN A - ———————

**ESP32** **34**
GPIO

Digital IN B + ——————— **+**
12~ 24V DC
Digital IN B - ———————

** Only available on models C2 with 2 x Digital Inputs

## Analog Wiring

Analog IN 1 A — **+** [0-10V]

Digital IN 1 B — **+** [0-10V]

GROUND — **|**

0 -10 V input to 0 - 4V

A0.0

3.3k

2.2k

ADS1115
I2C1
Address : 0x48

COM

## ADS1115 Connections

| IC Type | ADS1115 |
|---|---|
| Communication | I2C    SCL-IO17 / SDA-IO16 |
| Module Address | 0x48 |
| Resolution | 16 bit |

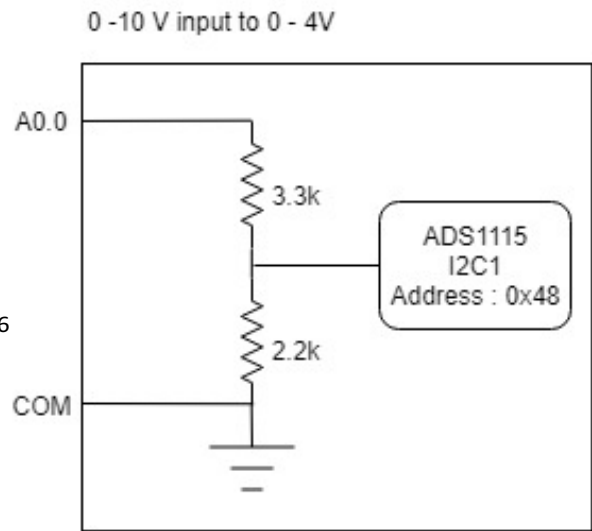## Programming

| Library | Adafruit ADS1115 |
|---|---|

Edit to the library
File: Adafruit_ADS1015.cpp
Function Adafruit_ADS1015::begin()
Change :
Wire.begin() to Wire.begin(16,17);

## Power Output

### Power Output Ratings

| Voltage | 12V DC |
|---|---|
| Current | 500mA |
| Enable Pin | IO18 |

The power output can be used to power sensors or external devices by the internal battery of the NORVI IoT Node.
The maximum current consumption of the external sensor or device must not exceed 500mA.
HIGH/LOW levels of the GPIO18 of the IoT node, switches the power output on and off, which can be used to save energy.
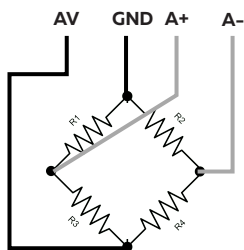
## Thermocouple Wiring
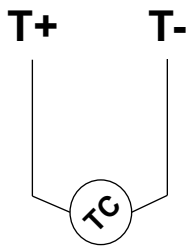


## MAX31855 connections

| IC Type | MAX31855 | | |
|---|---|---|---|
| Communication | SPI | SCK | IO18 |
| | | MISO | IO19 |
| | | CS | IO5 |

## Load cell Wiring



## Interface connections

| Module Type | HX711 |
|---|---|
| PD_SCK | IO32 |
| DOUT | IO33 |

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## RTC parameters

| | |
|---|---|
| Display driver | DS3231 |
| Communication | I2C     IO16(SDA) - IO17(SCL) |
| Module Address | 0x68 |
| Battery Backup | YES |

## NB-IoT Module communication

| | |
|---|---|
| Module Type | QUECTEL BC95-G |
| Communication | UART |
| Module Address | NA |
| Command set | AT |
| Connection | UART1 (IO25, IO26) |

## LoRa Module communication

| | |
|---|---|
| Module Type | RLYR894 \| RLYR406     (Order depending on regional regulations) |
| Communication | UART |
| Module Address | NA |
| Command set | AT |
| Connection | UART1 (IO25, IO26) |

## 4G LTE Module communication

| | | | |
|---|---|---|---|
| Module Type | SIM7500 | | |
| Communication | UART | | |
| Module Address | NA | | |
| Command set | AT | | |
| Connection | UART RX | GPIO26 | - |
| | UART TX | GPIO25 | - |
| | MODEM PWR | GPIO22 | HOLD THIS PIN HIGH TO POWER UP |
| | MODEM RESET | GPIO32 | PULL DOWN TO RESET |

## mini-USB



| Board | ESP32 WROOM Module |
|---|---|
| Flash Mode | QIO |
| Flash Size | 4MB |
| Flash Frequency | 10MHz |
| PSRAM | Enabled |
| Upload Speed | 115200 |

After successful uploading of program following message appears.



esp32 Boards must be installed under board manager, it is recommended to use the latest version of esp32 board driver for Arduino.

Due to installation of different drivers and older versions of libraries, Arduino fails to upload the program to the controller. In most cases it is due to failure to enter boot mode of the device.
The device can be forced to boot mode by connecting the BOOT IO0 of the expansion port to the GND pin with a jumper wire. Arduino is able to upload the program to controller while the controller is in boot mode.
After uploading the program , the connection between the BOOT IO0  and GND must be removed to run the uploaded program.
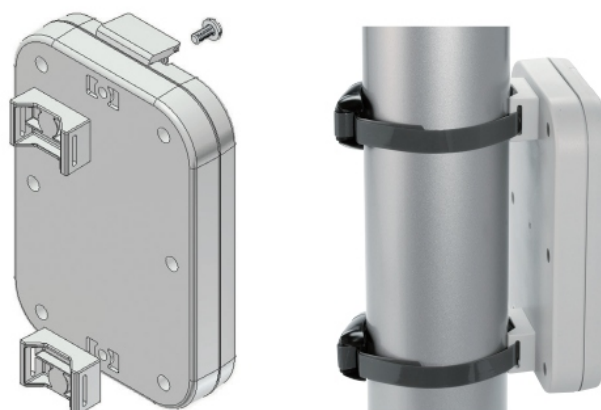
iCONic
**Devices**
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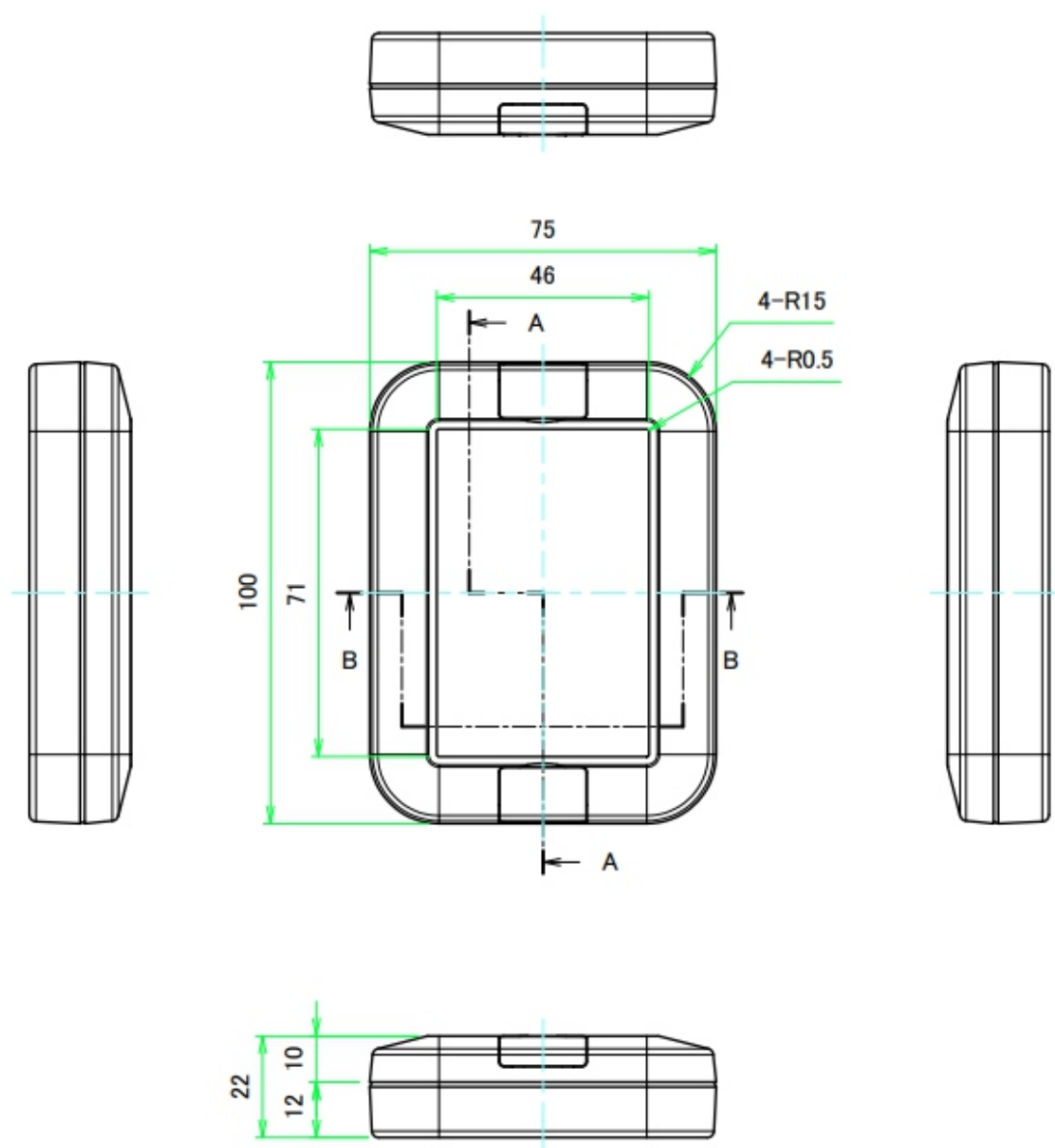
**Standard Accesories**
**1 x Main Unit**
**2 x 3 meter 8 core cable**

**Pole mount Bracket (Optional)**

# Reach-Us

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