Intellitec

# iConnex

# USER MANUAL

V2.01 21/09/22


Technical Helpline
+44 (0) 151 482 8970
www.intellitecmv.com

E11 10R05/01 11558

# CONTENTS





The instructions within this booklet (User's Manual) must be read thoroughly before any installation work, testing or general use.
We recommend this booklet is kept in a safe place that can be easily retrieved for any future referral.

Installation must be carried out by competent personnel with adequate knowledge of electrical installations.

All necessary precautions must be taken to ensure this product is fitted correctly, securely and safely into the desired application.

This product must not interfere with road safety or OEM safety systems fitted to the vehicle
All necessary checks must be carried out by installer to ensure this device is used only in the intended application and also does not conflict with any road laws in all countries the vehicle may be driven within.

Intellitec MV Ltd reserves the right to update this document (User's Manual) without notification at any time.

You will find the latest documents for our products on our website:
www.intellitecmv.com

# PRODUCT SPECIFICATION

| | |
|---|---|
| Input Voltage (Volts DC) | 9-32 |
| Max Input Current (A) | 50 |
| Standby Current Consumption (mA) | 29 mA |
| Sleepmode Current Consumption (mA) | 19 mA |
| IP Rating of iConnex module | Ip20 |
| Weight (g) | 367g |
| Dimensions L x W x D (mm) | 135x165x49 |

## INPUTS

| |
|---|
| 6x Digital (Pos/Neg Configurable) |
| 2x Voltage Sense (Analog) |
| 1x Temperature Sense |
| 1x External CAN-Bus |

## OUTPUTS

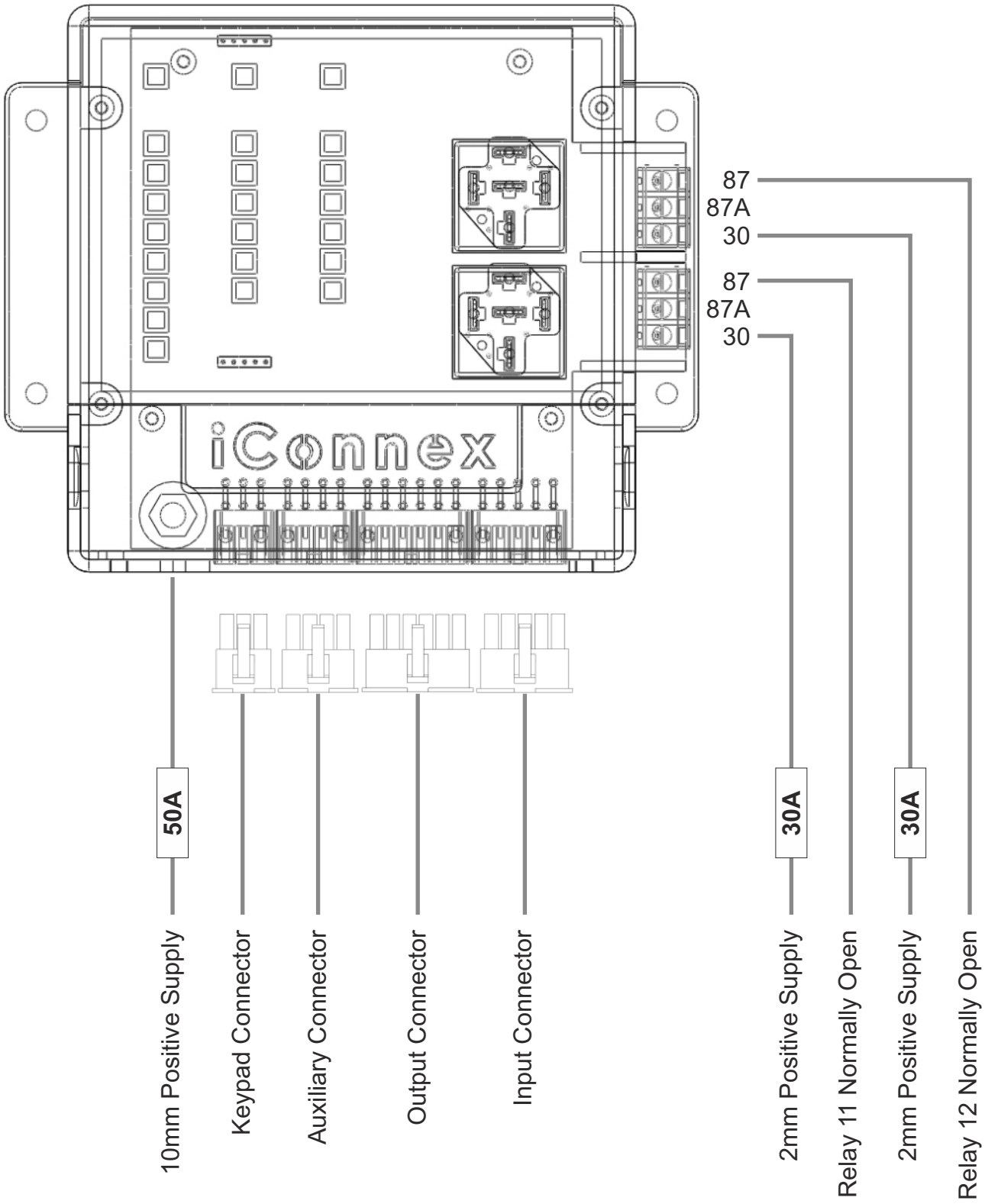
| |
|---|
| 9x 8A Positive FET w/auto shutdown |
| 1x 1A Negative FET w/auto shutdown |
| 2x 30A Relay Dry Contacts (COM/NC/NO) |

## CAN-Bus Baud Rates

| |
|---|
| 50 Kbits/s |
| 83.33 Kbits/s |
| 100 Kbits/s |
| 125 Kbits/s |
| 250 Kbits/s |
| 500 Kbits/s |

# INSTALLATION

Schematic:



# INSTALLATION

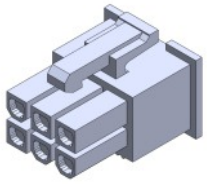
Intellitec iConnex

Connector Plug Wiring:

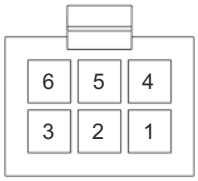
Automotive rated 1mm cable must be used with the Molex connectors:

| Connector | Description | Manufacturers Part Number |
|---|---|---|
| Power Connection | 10/6 CTT (Copper Tube Terminal) | 531021 |

| | | |
|---|---|---|
| Keypad Connector | Molex 6-Way Female Housing | 0469920610 |

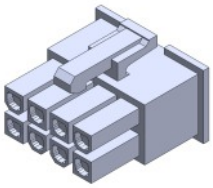


Cable Entry View

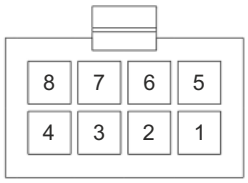



1. 0V (Ground) to keypad only.
2. Switch 1 negative return (System wake-up).
3. N/C
4. 5V (Supply) to keypad only.
5. Keypad CAN Hi.
6. Keypad CAN Lo.

| | | |
|---|---|---|
| Auxiliary Connector | Molex 8-Way Female Housing | 0469920810 |

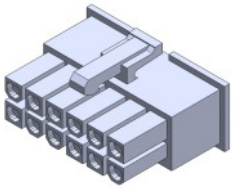


Cable Entry View

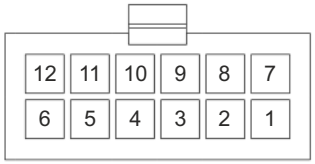



1. Temperature sensor ground.
2. Battery voltage sense 1.
3. Temperature sensor data 2.
4. Battery voltage sense 2.
5. Temperature sensor only 3V3.
6. Temperature sensor data 1.
7. External CAN-Hi (Vehicle Body).
8. External CAN-Lo (Vehicle Body).

| | | |
|---|---|---|
| Output Connector | Molex 12-Way Female Housing | 0469921210 |

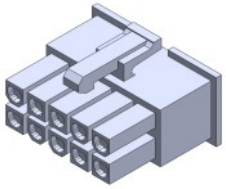


Cable Entry View

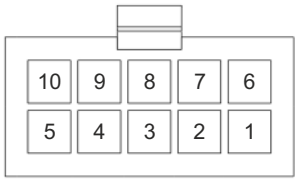



1. Output 10 Negative (1A max).
2. Output 9 Positive (8A max).
3. Speaker + Output (smart model only).
4. Output 8 Positive (8A max).
5. Speaker - Output (smart model only).
6. Output 7 Positive (8A max).
7. Output 1 Positive (8A max).
8. Output 2 Positive (8A max).
9. Output 3 Positive (8A max).
10. Output 4 Positive (8A max).
11. Output 5 Positive (8A max).
12. Output 6 Positive (8A max).

| | | |
|---|---|---|
| Input Connector | Molex 10-Way Female Housing | 0469921010 |

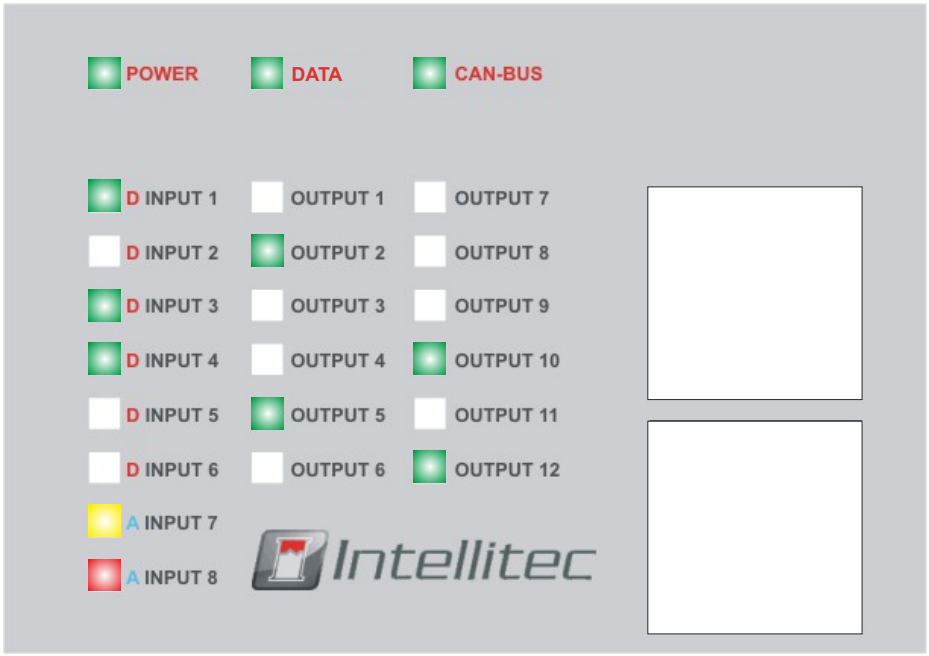


Cable Entry View




1. Input 6 (Hi/Lo configurable).
2. 0V (Ground) to chassis negative.
3. 0V (Ground) to chassis negative.
4. 0V (Ground) to chassis negative.
5. 0V (Ground) to chassis negative.
6. Input 5 (Hi/Lo configurable).
7. Input 4 (Hi/Lo configurable).
8. Input 3 (Hi/Lo configurable).
9. Input 2 (Hi/Lo configurable).
10. Input 1 (Hi/Lo configurable).

# DIAGNOSTIC
## DISPLAY 1




**POWER** The POWER diagnostic LED illuminates green when power is active at the module. It will illuminate red during fault conditions.

**DATA** The KEYPAD diagnostic LED illuminates green when a keypad is connected to the module. It will flash blue when any button is pressed on the keypad to show communications are present.

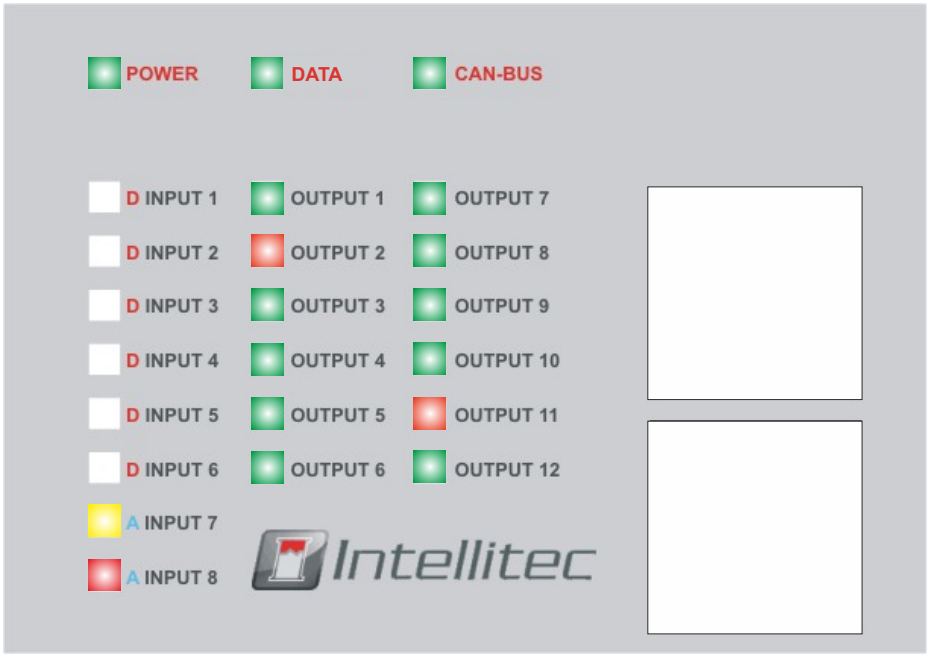
**CAN-BUS** The CAN-BUS diagnostic LED illuminates green when there are active communications to an external CAN-Bus. It will flash blue when it recognises a monitored message.

**INPUTS 1-6 (Digital)** The INPUT 1-6 diagnostic LEDs illuminate green when the corresponding input is present.

**INPUTS 7-8 (Analog)** The INPUT 7 & 8 diagnostic LEDs illuminate green, amber and red to signify the pre-programmed voltage thresholds of these inputs. This is set in the GUI.

**OUTPUTS** The OUTPUT diagnostic LEDs illuminate green when the output is active.
If there is a short-circuit on an output, the LED will flash off for 500ms and back on for 500ms continuously until a module power-cycle. The output will shut down completely and the green power LED will turn red to indicate a present fault.
If the output is in overload condition (>8A), the output will temporarily shut down and attempt to turn on 3 times. If the output is still in overload condition, the output will remain shut down until the logic to activate is cycled. During this period, the power LED will turn red and the output LED will flash fast.

# DIAGNOSTIC
## DISPLAY 2




## PROGRAMMING

When programming the iConnex, the LEDs on the diagnostic display will change function to show the status of the programming operation.

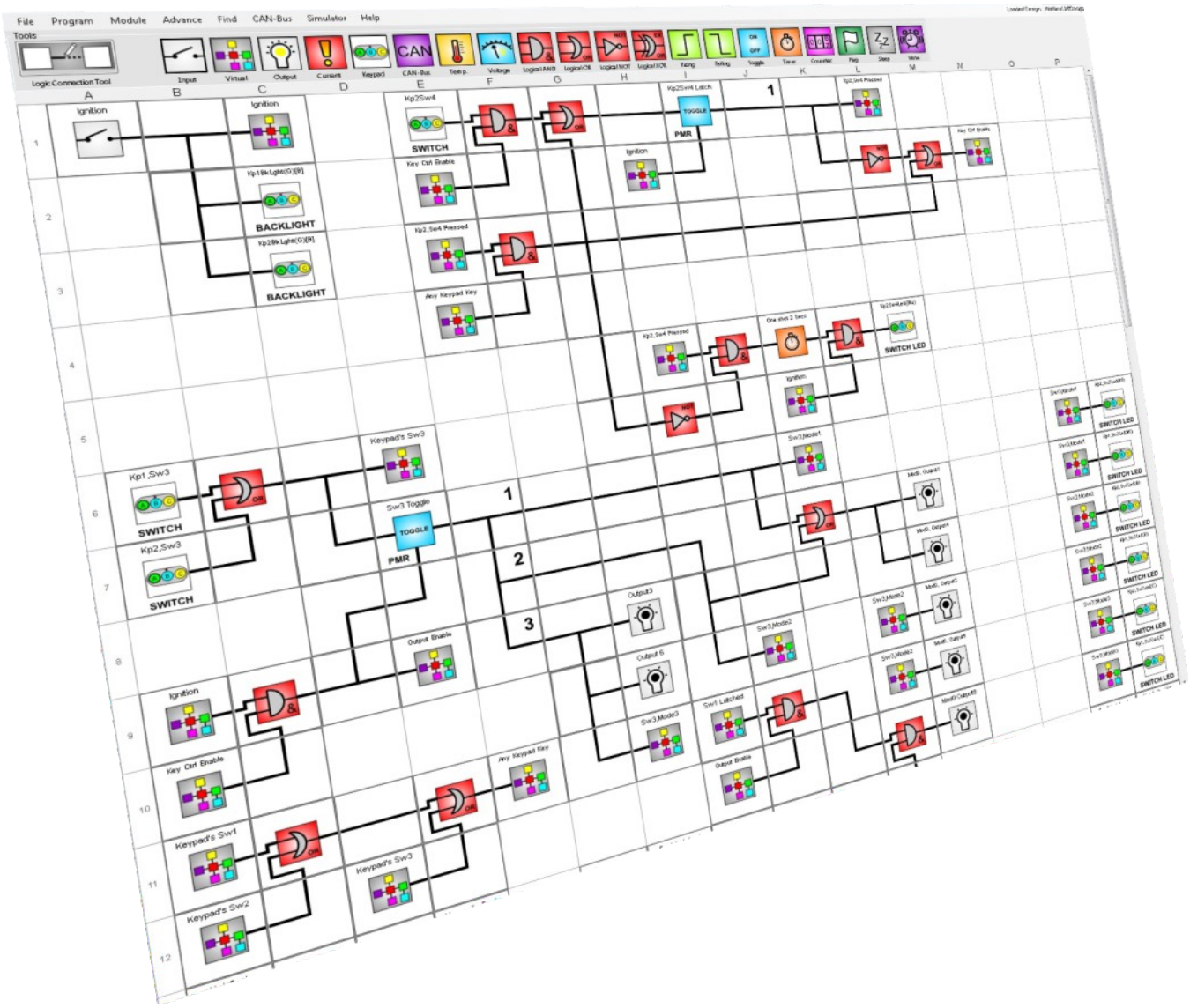
The column on output LEDs 1-6 will illuminate green with a single red LED that flashes vertically to indicate programming mode is active.

The column on output LEDs 7-12 will illuminate green with a single red LED that flashes vertically when data is being transferred.

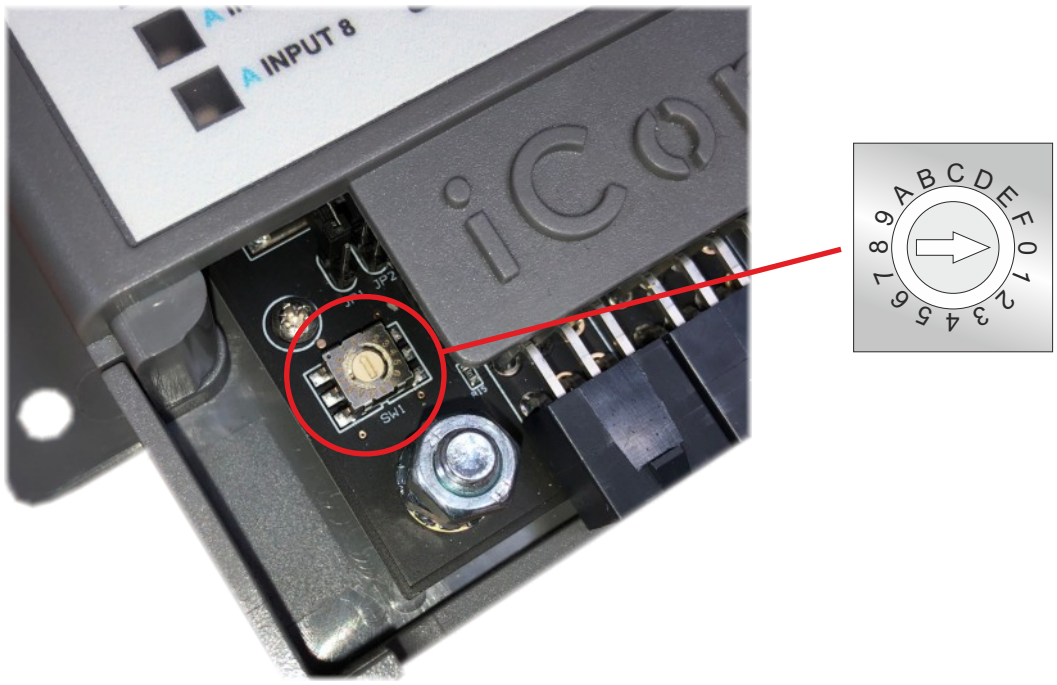
After programming is complete, the LEDs will return to normal functionality as described on page 6 (Diagnostic Display 1).

# GUI

iConnex GUI is the utility used to write and upload programs to the module.
It can be downloaded, along with programming device drivers, from our website:
www.intellitecmv.com/pages/downloads



# Addressing



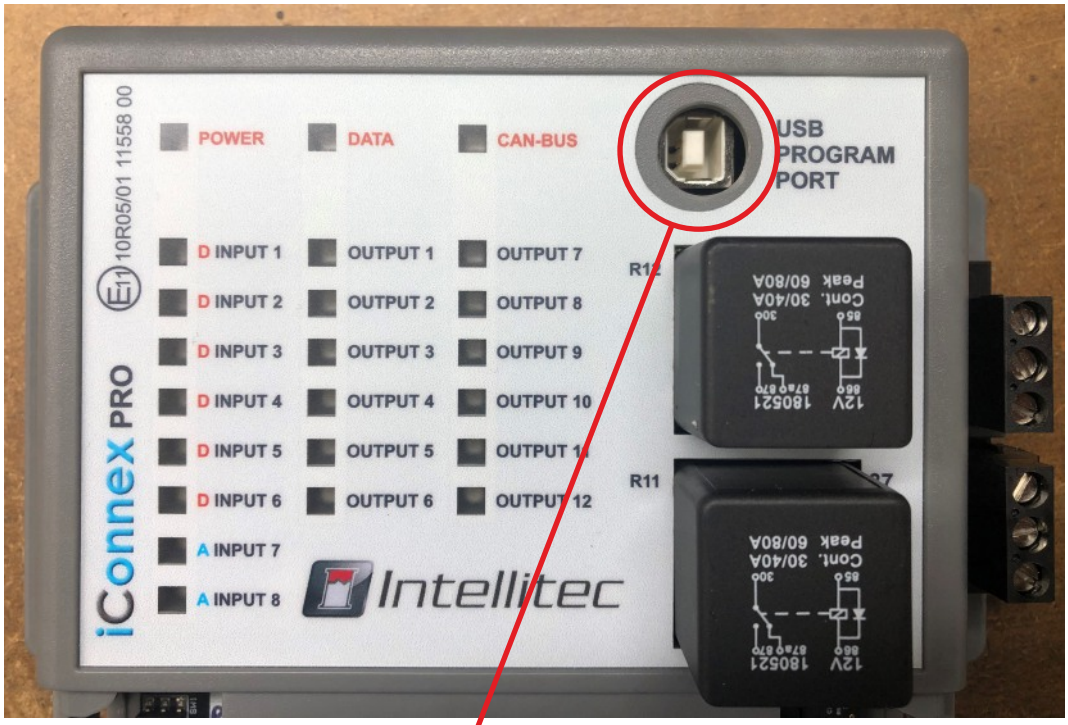

The module can be put into ‘slave’ mode by turning the dial to 1,2,3 or 4. A power cycle is required to activate these modes.

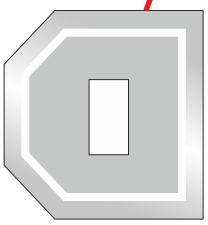
See below table for active modes:

| | |
|---|---|
| 0 | Master Module |
| 1 | Slave Module 1 |
| 2 | Slave Module 2 |
| 3 | Slave Module 3 |
| 4 | Slave Module 4 |
| 5 | Slave Module 5 |
| 6 | Slave Module 6 |
| 7 | Slave Module 7 |
| 8 | Slave Module 8 |
| 9 | Slave Module 9 |
| A | Slave Module 10 |
| B | Slave Module 11 |
| C | Slave Module 12 |
| D | Slave Module 13 |
| E | Slave Module 14 |
| F | Reserved For Future Use |

# PROGRAMMING

The module can be programmed using the new USB-B connector. The module will automatically enter programming mode when the GUI attempts to program the module via this USB connection.

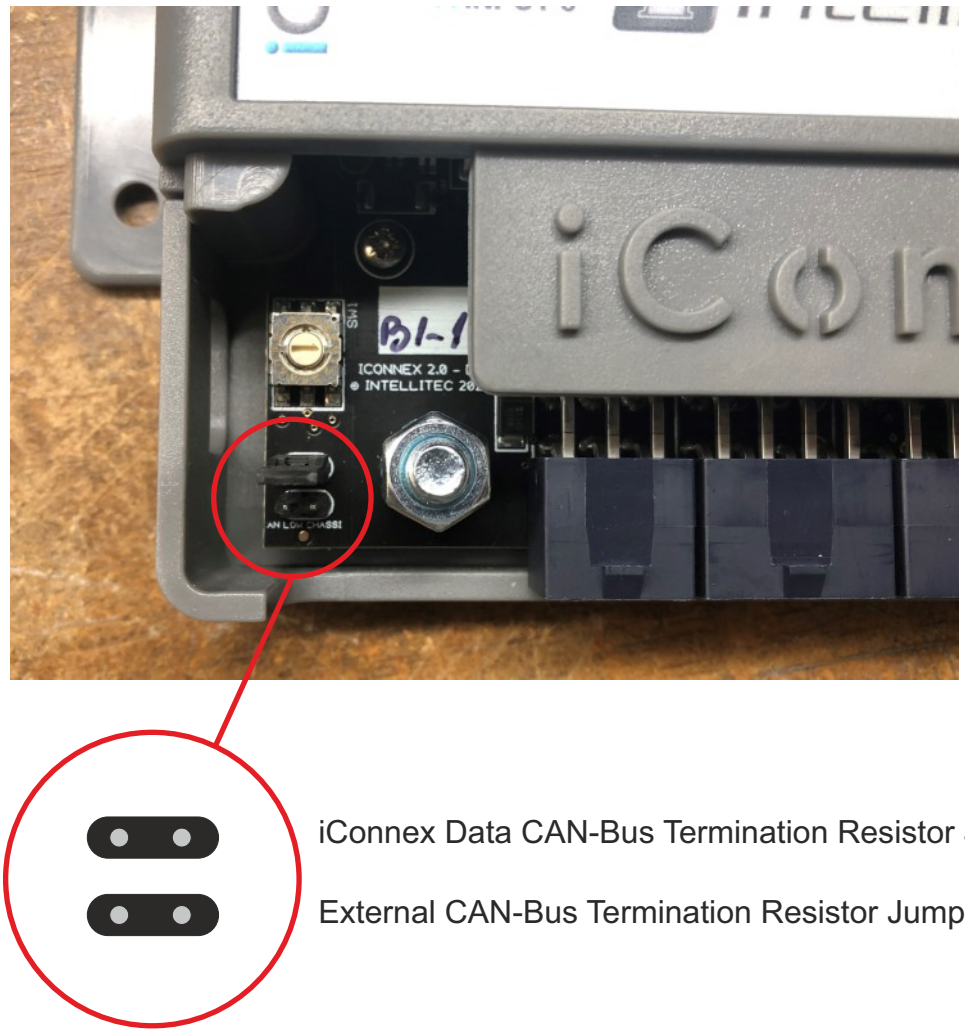


USB-B

# CAN-Bus Termination Resistor Jumpers

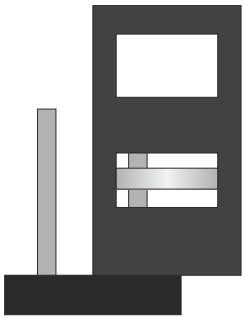
The module has two CAN-Bus data line connections. If the line demands a termination resistor at the iConnex module location, these can be enabled by selecting the jumper position accordingly.



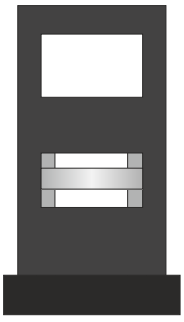



iConnex Data CAN-Bus Termination Resistor Jumper

External CAN-Bus Termination Resistor Jumper



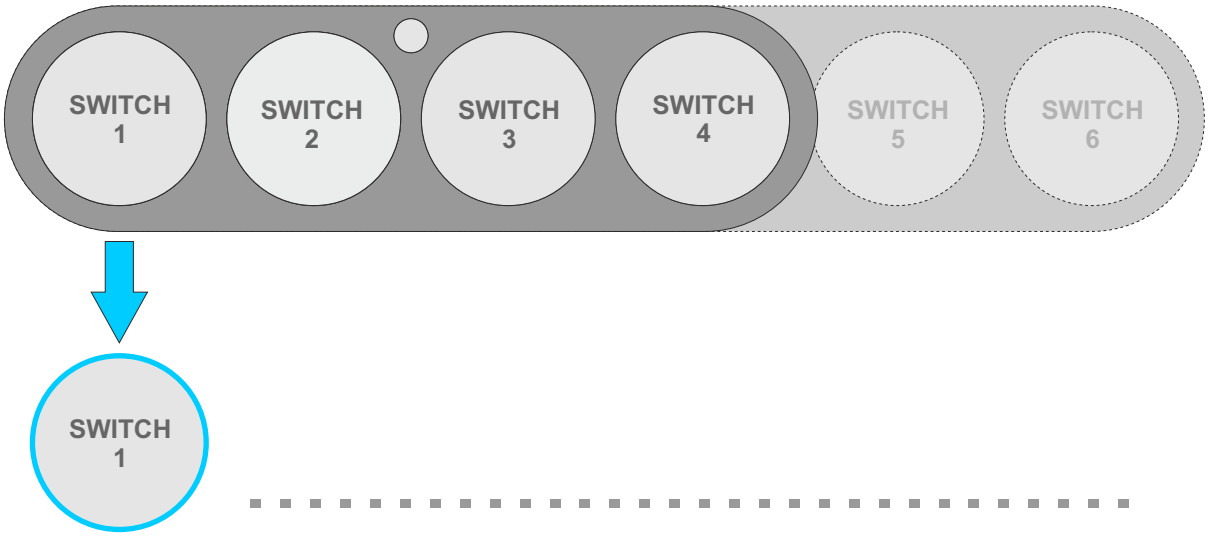
One Leg = Jumper off
Resistor Disabled



Two Legs = Jumper on
Resistor Enabled

# KEYPAD
## Addressing

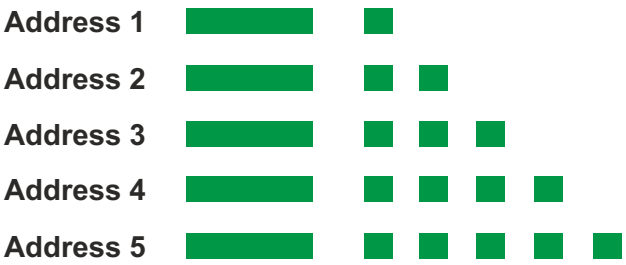
The iConnex keypads are addressed to number **1,2,3,4,5,6,7,8,9,10,11,12,13&14.**
In any one system setup, each keypad must have its own unique address number.
The process below instructs how to change the address number, activate/deactivate the termination resistor and how to view if you are unsure.




To change the address of an iConnex keypad, start with the keypad powered **off**.

Press and hold **switch 1** and power up the keypad (through the module).
All buttons will go RED. You can let go of the switches at this point. (At this point, the RED LEDs will turn off.

Switch 1 LED will flash in the following pattern to indicate which address is selected:




Press **switch 1** to move to the next address pattern.
The number of times the switch 1 LED flashes for a short burst indicates the address number selected.
When on address 5, pressing the switch 1 button again will revert the address number selected to address 1.

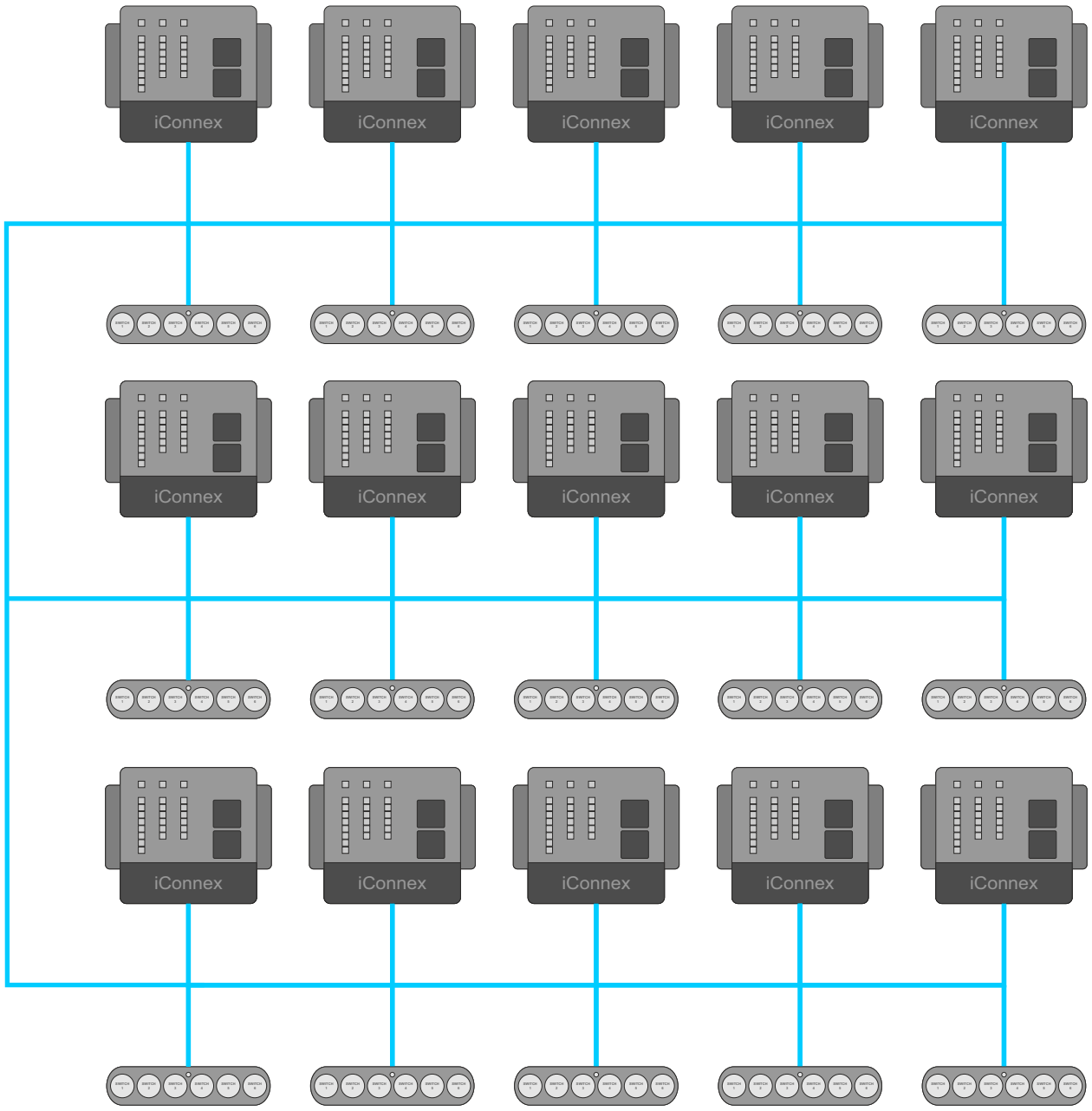
The 120ohm termination resistor for the keypad CAN network can be enabled or disabled by pressing switch 3. If the switch LED is illuminated blue, the termination resistor is active. If the switch LED is off, the termination resistor is inactive.

Switch 2 LED will be illuminated white, press this switch to confirm changes.

At this point, all the buttons of the keypad will flash green for the address pattern selected.

# INSTALLATION
## Expansion

## 15 Modules & 15 Keypads




The iConnex system installation can be expanded to up to 15 modules and 15 keypads. That's a total of 120 inputs, 180 outputs and 90 keypad buttons!

The modules and keypads communicate on the same data network by wiring the 'keypad connector' wiring in parallel.

The additional iConnex modules need to be addressed to their own unique number. Please see page 8 on how to do this.

The additional iConnex keypads also need to be addressed to their own unique number. Please see page 9 on how to do this.

# KEYPAD
## Features

3 Button Keypad (3x1 Orientation)

4 Button Keypad (4x1 Orientation)

6 Button Keypad (6x1 Orientation)

6 Button Keypad (3x2 Orientation)

RED

Dark Grey

GREEN

YELLOW

All keypads are equipped with RGB LED momentary push button switches which have dual intensity capability. They also have a programmable RGB status LED in the centre. All keypads aremade from robust, hard-wearing silicon.

All iConnex keypads are IP66 and can be mounted externally.

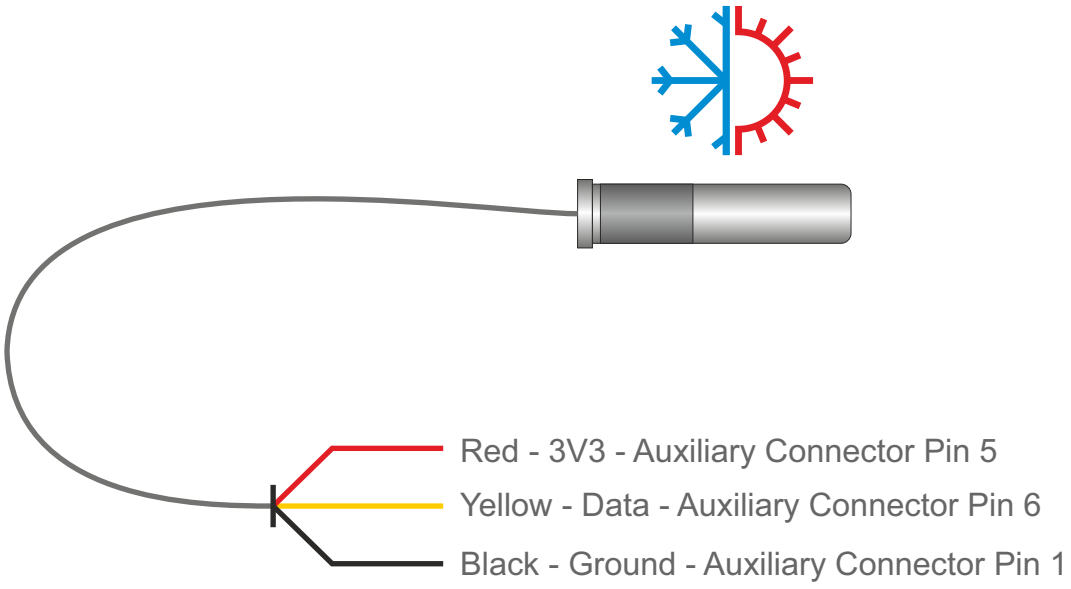
Customer logos can be requested on order for the dome inserts on the keypads for a small additional cost.

# KEYPAD
## OLED Series

## OLED DIN ENG-166-0000


## OLED X12 ENG-199-0000

# TEMPERATURE SENSOR




The iConnex temperature sensor is an optional extra component, enhancing the PLC capability and user experience.

Easy to wire into the iConnex system using the 3-wire colour code as shown in the above diagram. The temperature sensor connects to the auxiliary connector on the iConnex module. (The pin out is shown on page 5)

The iConnex temperature sensor is waterproof and can be mounted internally or externally in vehicle applications.

Ranging from -55 to +125 degrees celsius, the temperature sensor is suitable for most ambient temperature monitoring.

The temperature sensor comes with 1000mm cable.

**Part Number: DS18B20**