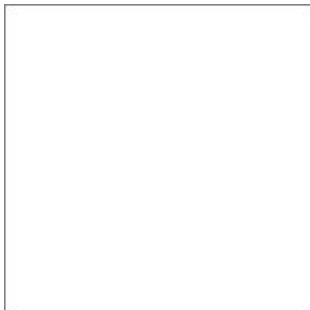




MANUAL

i·can

Preliminary version (09/2009)



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2 General

The INDILoad iCAN is a new generation of load limiter which integrates the most advanced technology in order to cope with the most complex applications. Fully digital, it has the advantage of being easy to install, to configure and to use. iCAN includes a lot of features which allows to cover a wide range of applications.

3 Overview

The product covered by this manual is the iCAN load limiter. This document provides an overview of the installation, configuration and use of this device.

The iCAN is available in two main models: master and slave. The slave model has as main purpose to extend the I/Os. For each system, at least one master is needed.

Basic

- 6 digital inputs
- 4 relay outputs
- 1 analogue input
- 1 analogue output
- 2 CAN interfaces
- display (only master model)
- keypad (only master model)
- USB interface

Options

- Wireless interface
- Mobile phone interface

By default, the iCAN is configured as a load limiter with 2 setpoints. Given the numerous variations of possibilities concerning the connections and software configurations, this document will handle the default application of the iCAN.

All other application configurations will be detailed in the production file of each custom made system.

3.1 View

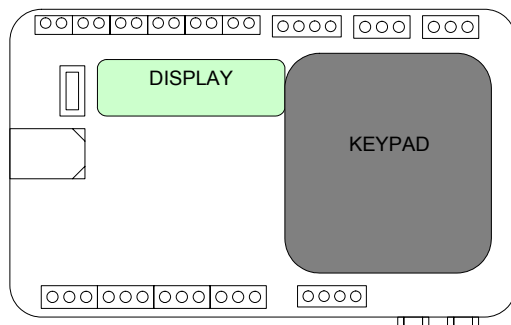


Figure 1: Master model

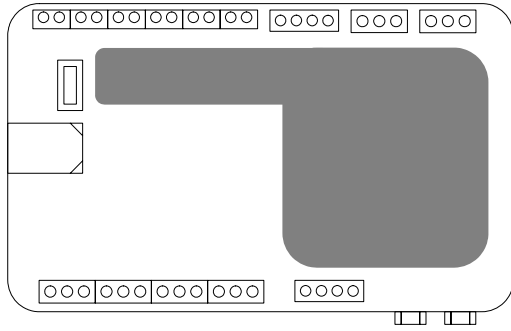
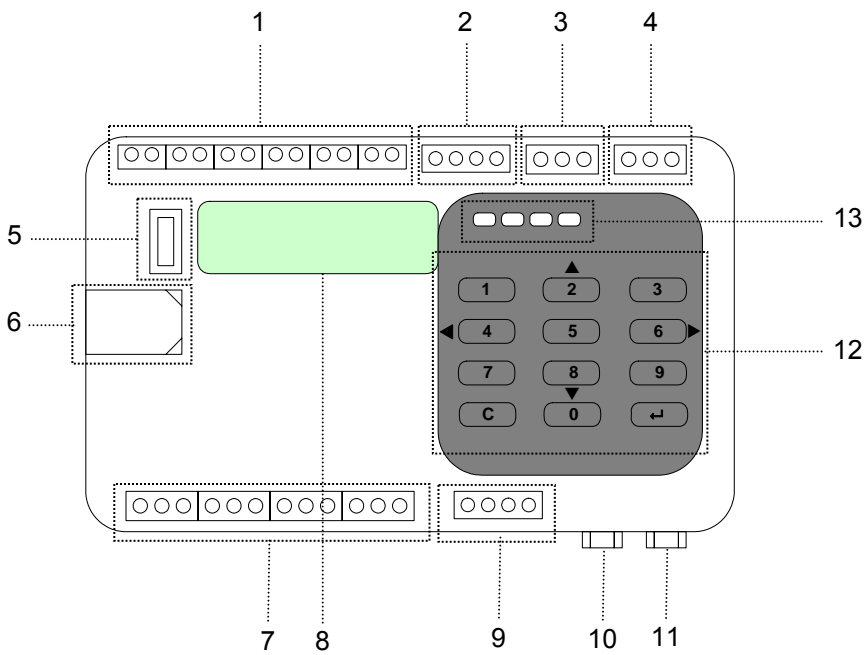


Figure 2: Slave model

4 Description



1	Digital inputs	
2	Power supply	+ supply + - supply - + supply+ - supply-
3	Can-bus1	H CAN bus line H L CAN bus line L - ground (shield)
4	Can-bus2	H CAN bus line H L CAN bus line L - ground (shield)
5	USB interface	
6	SIM card tray	
7	Digital outputs	
8	Display	
9	Analogue input/output	Ai 0 Ao 0
10	Wireless antenna connector	
11	Mobile antenna connector	
12	Keypad	
12	Indication LEDs	iCAN status LED mobile communication status LED CAN communication status LED wireless communication status LED

5 Installation

Follow the instructions as described in this manual for the installation of this product.

5.1 Dimensions

The following diagram shows the dimensions for the iCAN load limiter.

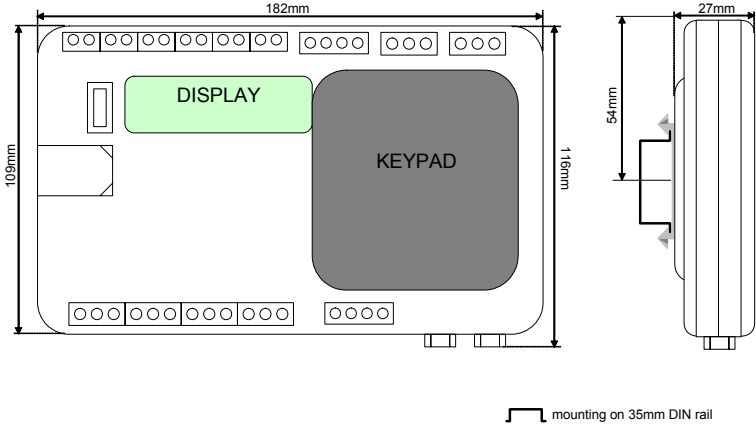


Figure 3: mounting dimensions iCAN on DIN rail

The following diagram shows the dimensions for the iCAN load limiter in box

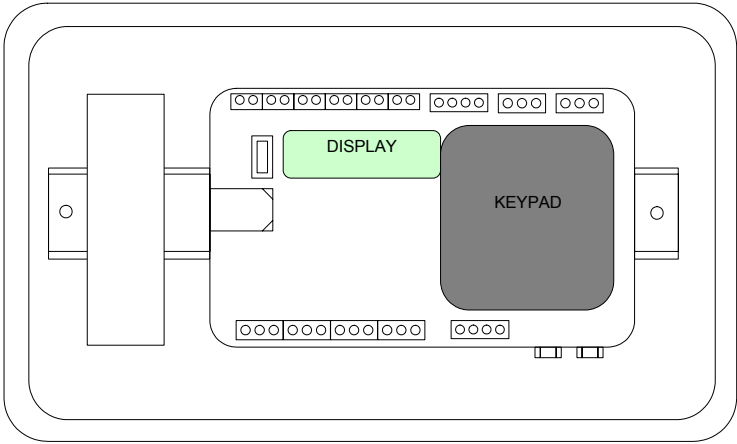


Figure 4: mounting dimensions iCAN in box

5.2 Instructions

- turn off the power supply
- locate a suitable and accessible place to install the iCAN, away from any devices that produces strong electro-magnetic fields
- connect the power supply cable to the iCAN
- connect the input and output cables to the corresponding connectors according the connection diagram.
- connect the CAN communication cable(s) to the corresponding CAN interfaces according the connection diagram
- install the cables (inputs, outputs, communication) away from power cables



It is advised to use shielded cables for the inputs, outputs and communication connections.

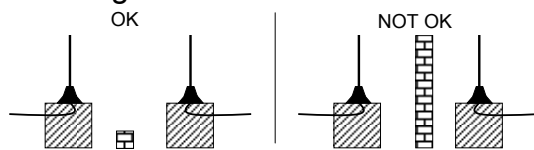


It is advised to respect a distance of at least 200mm between the iCAN cables (inputs, outputs, communication) and power cables 230Vac/380Vac 50/60Hz. A greater distance is indicated for larger power and/or high frequency.

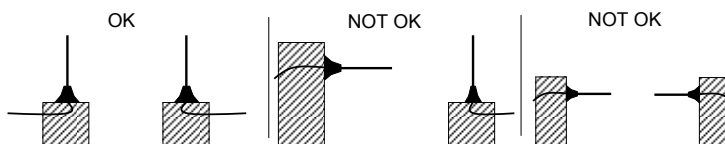
5.3 Wireless antenna

Optional, the iCAN can be configured for wireless communication. By means of the magnetic foot, the antenna can easily be installed on any magnetic metal surfaces. For optimal communication you need to locate the antennas of the wireless modules according these recommendations.

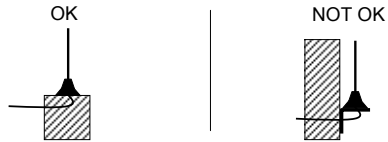
- line of sight



- pointing up



- free surrounding



- max range: 100m



6 Connections

There are several rules that must be followed when wiring the iCAN. Recommendations, when needed, are provided on how to comply with the rules.

DANGER

ELECTRIC SHOCK

- Be sure to remove ALL power from ALL devices before connecting or disconnecting inputs or outputs to any terminal or installing or removing any hardware.
- Be sure to connect the grounding wire to a proper ground.

Failure to follow this instruction will result in death, serious injury, or equipment damage.

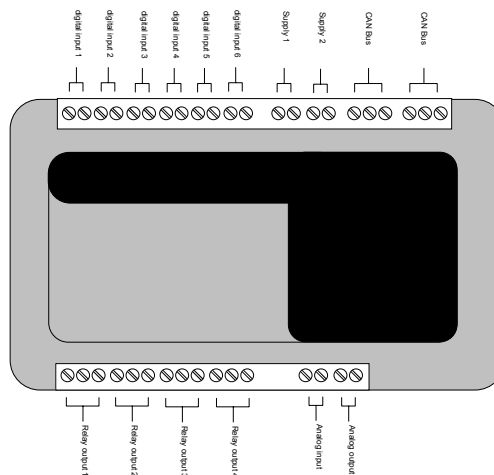
WARNING

FAILURE OF OUTPUTS

- If outputs should fail, outputs may remain on or off. Where personnel and or equipment hazards exist, use appropriate safety interlocks.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

- Each terminal accepts wires from 24 AWG (0,20mm²) up to 14 AWG (2.08 mm²) fitted with cable ends or tags.
- Depending on the load, a protection circuit may be needed for relay outputs on modules.
- The power supply wire should be between 24 AWG (0.20 mm²) and 14 AWG (2.08 mm²). Use the shortest wire length possible.
- Incorrect wiring can cause equipment damage.
- Make sure that the operating conditions and environments are within the specification values.
- Use proper wire size to meet voltage and current requirements.



6.1 **Supply**

The main supply of the iCAN is 12VDC. For other supply voltages, a power adaptor will be needed to convert the available supply voltage into 12Vdc.

6.1.1 **Standard power adaptor**

Mean Well MDR-20-12

- input voltage: 100-240Vac
- output voltage: 12Vdc
- rated power: 20W
- short circuit protection

Please refer to your dealer/retailer for appropriate power adaptor

7 Communication

Data communication (e.g. I/O's, values ...) between iCAN modules in a network configuration is achieved either by wire through CAN-bus or wireless through advance RF modules.

One wireless network can include max three iCAN devices. You can connect up to 16 devices in a wired network.

Communication between CAN modules can occur wired and wireless at the same time.

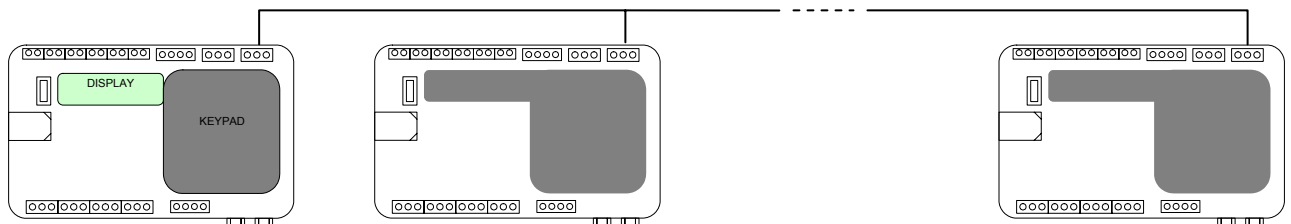
Note

The configuration of the wired and wireless network is set by the iCAN dealer.

7.1 Architecture

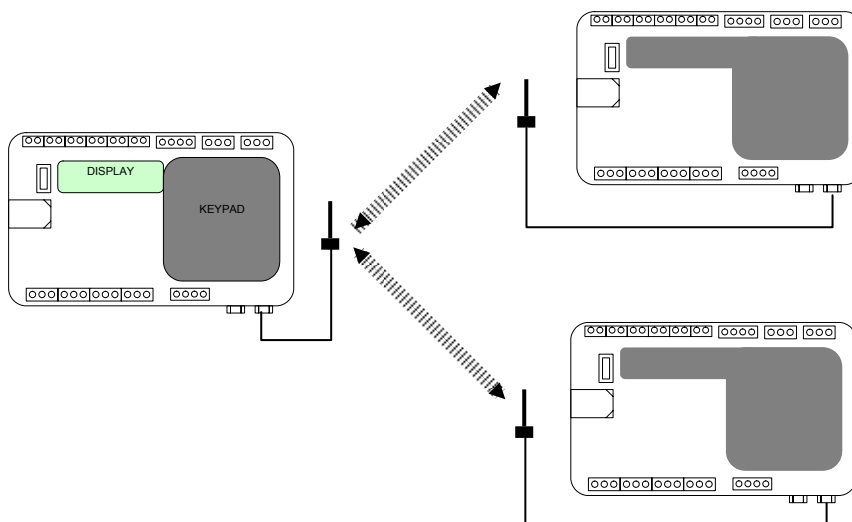
7.1.1 Wired (CAN)

The topology of the CAN-interface bus is flexible. It can be perfectly adapted to meet the user's needs. In every case, the total length of all the branches of the bus must not exceed 200 meters (650 ft).



7.1.2 Wireless

iCAN use a point to multipoint architecture for wireless communication. One master device can communicate with maximum two slave devices. The typical range between two devices is 100m. Actual range varies based on environmental conditions (indoor, outdoor, line of sight, etc).



8 Setup

Depending of the application, you can set up some parameters of the program with the help of the keypad and display of an iCAN master module.



Follow this procedure to modify your application parameters:

- 1) press ←key to enter the menu
- 2) with the arrow keys ▲ or ▼, scroll to item **Update config**
- 3) press ←key
- 4) with the arrow keys ▲ or ▼, scroll to the proper parameter: parameter and current value will be displayed
- 5) press **C** to clear
- 6) enter the new value with the numerical keys
- 7) press ← key to confirm the new value en return to the previous menu
- 8) press a few times the **C** key to return to the main menu

9 Operations

9.1 Using iCAN

To ensure correct use of the equipment, follow the instructions below

- 1) before powering the iCAN module(s), check the connections of the IOs and the power supply according the connection diagram.
- 2) Connect the power supply
- 3) the green LED  will blink at first during the start up and the message “Starting up...” appears on the display
- 4) after a few seconds the green LED  will be on continuously and following message will appear on the display:
ICAN vx.xx
ENTER FOR MENU
- 5) test the functionalities of the iCAN module(s) according your application requirements

9.2 Backup-Restore-Update

With a USB stick you can backup, restore or update the files of each iCAN module.

Each iCAN module contains 3 types of files:

- 1) **firmware**
 - a. software that performs the basic operations of the device
 - b. filename: “*application.hex*”
 - c. version of the firmware can be read on the display of the iCAN module, e.g. “ICAN v1.4”
- 2) **configuration**
 - a. contains the custom made project program
 - b. filename: “*config_XXXX-xx-xxx.bin*”, where XXXX-xx-xxx is the serial number of the iCAN module
- 3) **flash parameters**
 - a. contains parameter for wireless, CAN and mobile communication
 - b. filename: “*flashparams_XXXX-xx-xxx.bin*”, where XXXX-xx-xxx is the serial number of the iCAN module

In order to use a USB memory stick (min. capacity 128Mb) for backup, restore or update the iCAN modules, you need to prepare it as followed:

- 1) format the USB stick as FAT32
- 2) create a map X:\main\ (where “X” is the device name of the USB stick)



9.2.1 Backup iCAN

The iCAN files can be backed up from the iCAN module to a USB memory stick. In order to do this, you need to follow these instructions:

- 1) check there is no file in the map *X:\main* (where “X” is the device name of the USB stick); delete the files if any present.
- 2) plug the USB stick into USB interface of the iCAN module
- 3) the light indicator of the USB stick will start blinking indicating the transfer of data
- 4) after about 20s the transfer will be done
(for master iCANs “*Safe to remove USB stick*” appears on the display)
- 5) before removing the USB stick from the iCAN, check if the light indicator of the USB stick is off
- 6) copy the 3 iCAN files from the USB to a backup station or map on your PC or server.

9.2.2 Restore iCAN

You can restore the backed up files of an iCAN as followed:

- 1) plug the USB memory stick into the PC with the backup files
- 2) check there is no file in the map *X:\main* (where “X” is the device name of the USB stick); delete the files if any present.
- 3) copy the three corresponding iCAN files (check the serial number) to the map *X:\main* (where “X” is the device name of the USB stick)
- 4) plug the USB stick into USB interface of the iCAN module
- 5) the light indicator of the USB stick will start blinking indicating the transfer of data; the iCAN status led  will start blinking; for master iCANs “*Starting up..*” will appear on the display
- 6) after about 90s the transfer will be done; the iCAN status led  will be steady on; for master iCANs “*Safe to remove USB stick*” will appear on the display
- 7) before removing the USB stick from the iCAN, check if the light indicator of the USB stick is off.





If the original iCAN module has been replaced by a new one, rename the configuration and flash parameter files according the new serial number before the restore operation.

9.2.3 Update iCAN

Due to new requirements or extension of the application, the firmware, the configuration or the flash parameters file of the iCAN module(s) may need to be updated

You can update one or more iCAN files as followed

- 1) plug the USB memory stick into the PC with the updated files received from your dealer
- 2) check there is no file in the map *X:\main* (where "X" is the device name of the USB stick); delete the files if any present.
- 3) copy the updated file(s) of corresponding iCAN module (check the serial number) to the map *X:\main* (where "X" is the device name of the USB stick)
- 4) plug the USB stick into USB interface of the iCAN module
- 5) the light indicator of the USB stick will start blinking indicating the transfer of data; if the firmware needs to be updated, the iCAN status led  will start blinking; for master iCANs "*Starting up..*" will appear on the display
- 6) after max 90s the transfer will be done; the iCAN status led  will be steady on; for master iCANs "*Safe to remove USB stick*" will appear on the display
- 7) before removing the USB stick from the iCAN, check if the light indicator of the USB stick is off.

10 Technical specifications

10.1 General data

Function	Description
Human interface	<ul style="list-style-type: none">• display 2 x 16 characters (master model only)• numerical keypad (master model only)• status LEDs<ul style="list-style-type: none">○ system○ mobile○ CAN○ wireless
Field of application	<ul style="list-style-type: none">• load limiter• summation• signal transmission (digital/analogue)

10.2 *Electrics/electronics*

Function	Description
Digital inputs	<ul style="list-style-type: none">• 6 optical isolated inputs• suitable for potential free contacts
Digital outputs	<ul style="list-style-type: none">• 4 change-over relays• galvanic insulated• max 250Vac - 3A
Analogue inputs	<ul style="list-style-type: none">• 1 analogue 0-10Vdc• resolution: 8 bits
Analogue outputs	<ul style="list-style-type: none">• 1 analogue 0-10Vdc• resolution: 8 bits• max 10mA
Interfaces	<ul style="list-style-type: none">• 2 CANOpen field bus, 125kbits/s, 250kbits/s• 1 USB• 1 wireless PAN (optional)• 1 Mobile phone (optional)
Supply	<ul style="list-style-type: none">• 12Vdc \pm 10%• optional 100-240Vac
Power consumption	<ul style="list-style-type: none">• max 7W

10.3 *Mechanical data*

Function	Description
Dimensions	<ul style="list-style-type: none">• 182 x 109 x 27 mm (width x height x depth)
Mounting	<ul style="list-style-type: none">• DIN rail 35mm
Weight	<ul style="list-style-type: none">• 0,5kg
Housing	<ul style="list-style-type: none">• PC/ABS

10.4 *Ambient data*

Function	Description
Temperature range	<ul style="list-style-type: none">• operational : -10°C to +60°C• storage : -40°C to +85°C