

# KIMAX I



**Installation and Instruction manual**

## Table of contents:

0. Introduction
1. Daily use
2. Quick guide
3. Calibration
4. Configuration
5. Protecting your setup
6. Electrical installation
7. Air-sensor installation
8. S
9. O
10. OBC serial output
11. Accessories
12. Frequently asked questions
13. Technical specifications

## Basic safety rules:

Before you start the installation procedure, make sure that the instruments have not suffered any damage during transport.

**Note that the Kimax I instruments must be installed and connected in accordance with the regulations valid for the vehicle and country in question.**

**The Kimax I instruments must be protected from gravel, water spray from wheels and other factors that may damage the instruments.**

**We recommend to mount the instruments in a position where it is protected from water jets and rinse water.**

Once you have decided where the instrument is to be mounted in the cabin, you have to consider the cable routing.

Special attention should be given to potential damaging factors such as e.g. hinging point for tilting the cab.

Once you have decided where the instrument is to be mounted on the chassis, you have to consider the cable routing. Special attention should be given to tensile forces, cuts and other factors that may damage the cables and hoses.

**Connection of compressed air.**  
**Before you carry out any installation work related to the air suspension, make sure that the suspension has been brought to the lowest possible position.**

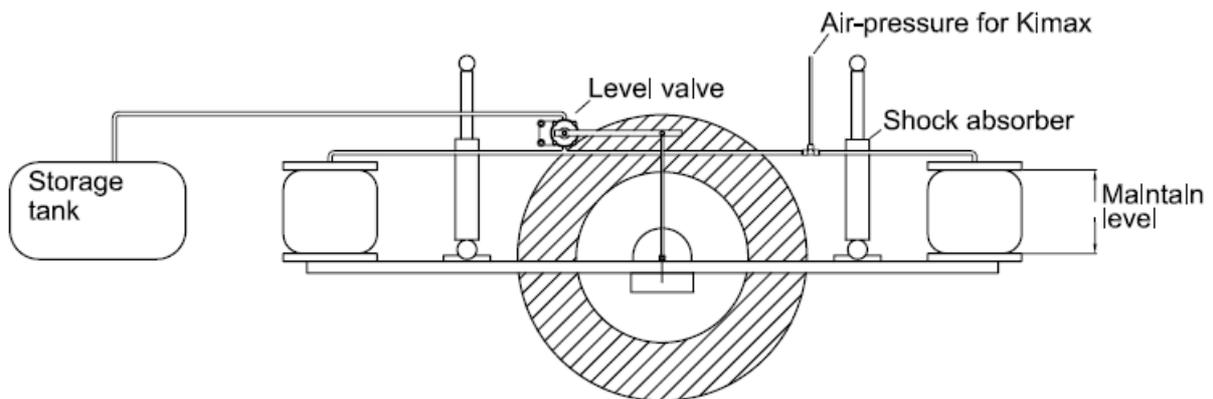
**Electrical connection**  
**Always disconnect the battery before you perform any installation work on the system of the vehicle.**

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## How does it work

The Kimax I on board scale is an axle pressure gauge that uses pressure gauging on the air suspension to indicate the load and to keep you informed at all times about the present load load situation. A mechanical system on the vehicle main-

tain a fixed level of the chassis above the terrain through a level valve which add or subtract compressed air to and from the bellows in relation to the actual load on the vehicle.



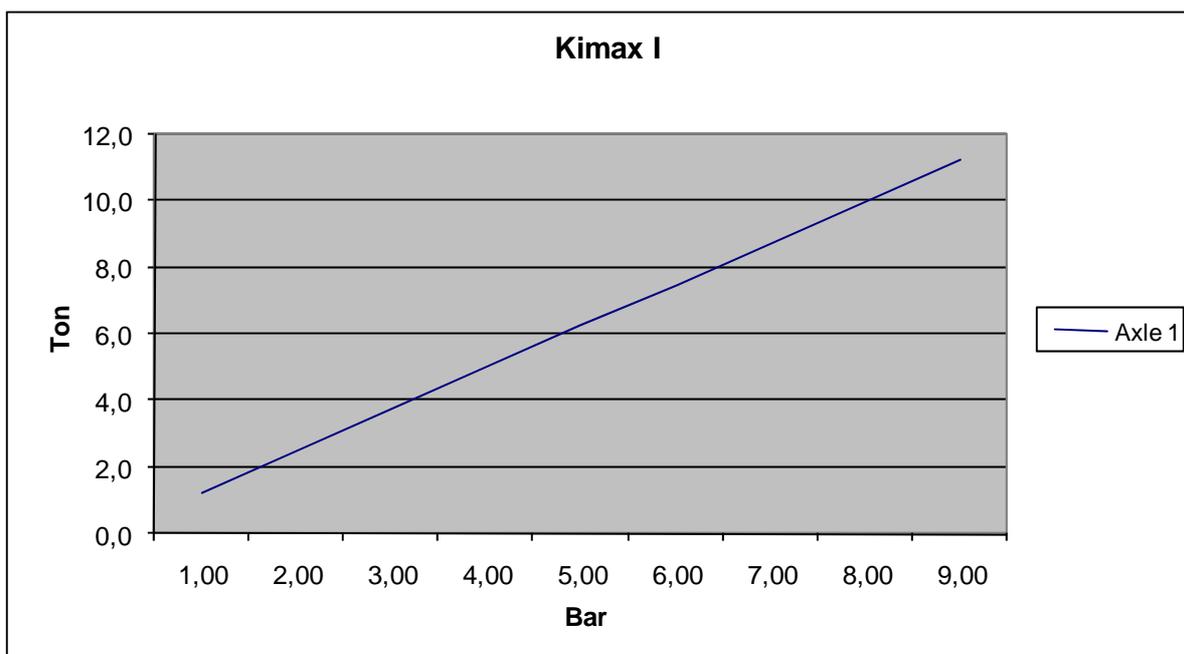
The pressure in the suspension system and in the bellows, represent the weight of the vehicle.

your vehicle by means of giving in the actual unloaded weight in tons when it is unloaded, - and giving in actual loaded weight in tons when it is loaded.

The weight of the vehicle is a linear function of the pressure in the suspension system, se diagram below.

System accuracy is affected by the mechanical condition of your vehicle, e.g. the condition of the shock absorbers.

The Kimax I instrument is customized to



## Overview:

Basically you get Kimax I instruments in two different models

- A cabin version intended for mounting inside the cabin of your vehicle.
- A trailer version intended for mounting outside on the chassis on your vehicle. The trailer version is splash-water proof and are designed to withstand the environmental conditions around a vehicle on the road all the year.



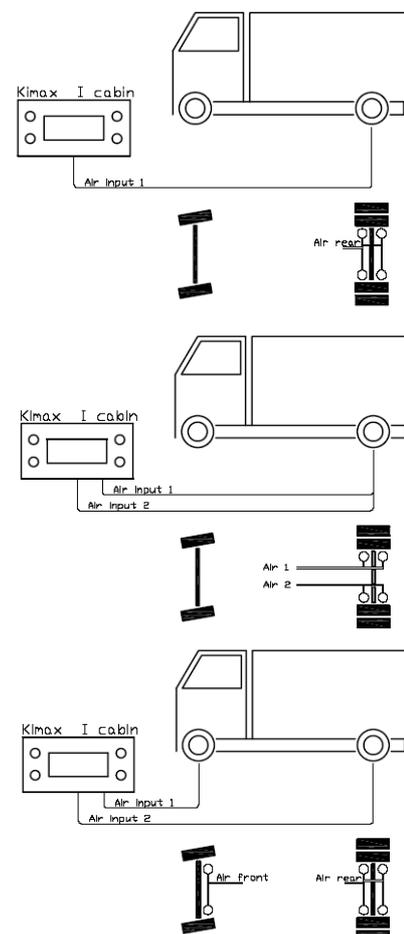
Each model you can get in a single or a dual air inlet version.

Single air inlet is used on vehicles with combined level control for one or more axles.

Dual air inlet is used either on vehicles with split level control for one or more axles.

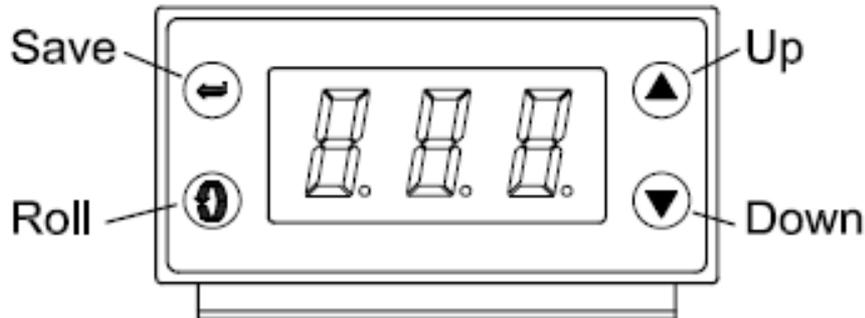
Or on vehicles with two or more individual axles arranged in a combined level control system.

Using Kimax I on two or more individual axles offer you a limited accuracy, - for better accuracy we recommend to use Kimax II for multiple axle purpose.



## Introduction:

Kimax I has a keypad with total of four keys and a display with three LED digits, which is easy to read even in a dark cabin or outside in sunshine.



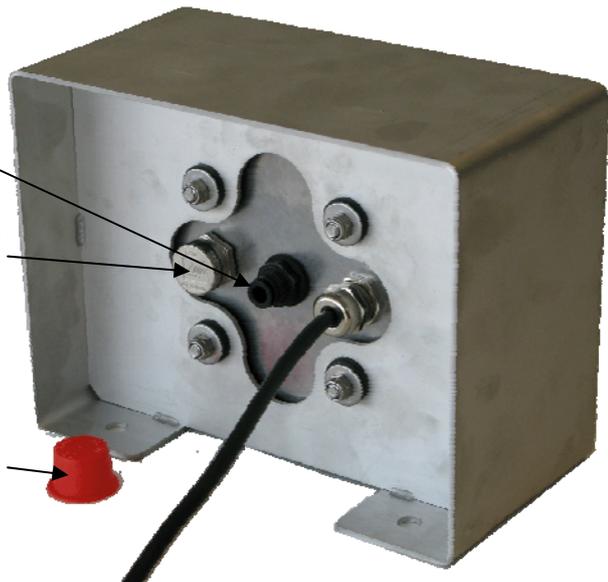
Air inlet 1 for 6 mm hose.

Gore-Tex membrane for venting the Kimax I housing, this means you don't get vacuum in the housing under shifting ambient temperatures.

Gore-Tex membrane is only present on the trailer versions of the Kimax I instruments.

Protecting cap, has to be removed from the Gore-Tex membrane before you calibrate your instrument.

When you paint the instrument in your own colours, make sure the venting openings in the Gore-Tex membrane is not covered by paint, - put on the protecting cap.



## Calibration:

Two reference values are needed in order to make a correct calibration, viz. one value for unloaded vehicle **LO**, and one for loaded vehicle **HI**. By means of these two

reference values the Kimax I Axle Load Indicator will generate a complete axle pressure curve and display the present load in the display.

### Setting the LO calibration point.

Go to a weighing bridge with your empty vehicle.

Enter the calibration menu by pressing the **Roll** button for 5 sec, and the display is reading **LO**.

Press the roll button once again shortly, and the display reads the last saved LO value in tonnes.

You can change the readout by Up and Down keys until you get a value equal to the actual empty weight you read on the weighing bridge.

You save the value by pressing **Save** button, then the display will go to read **HI**.

Note: If you enter the LO setting but you don't want to change it, press Roll and the display reads **HI** without saving the LO value.

### Setting the HI calibration point.

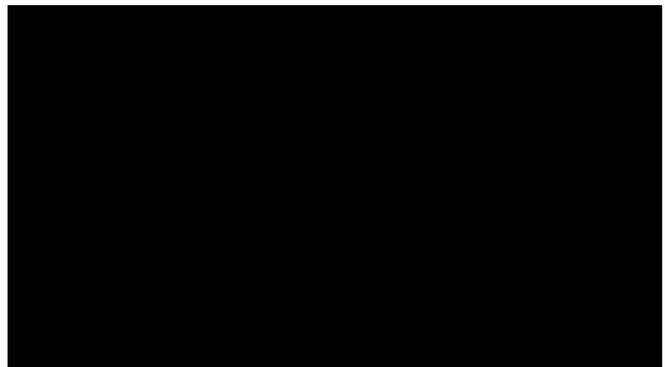
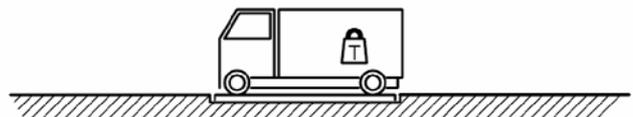
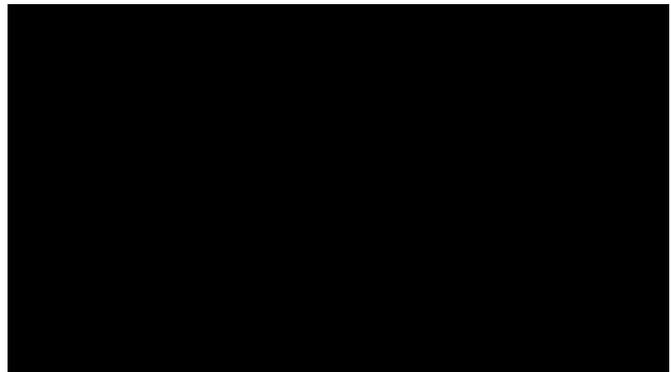
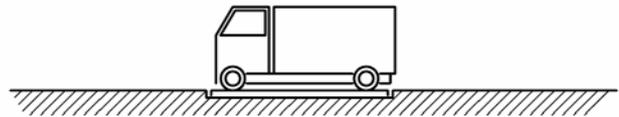
Go to a weighing bridge with your loaded vehicle.

Press the roll button once again shortly, and the display reads the last saved HI value in tonnes.

You can change the readout by **Up** and **Down** keys until you get a value equal to the actual loaded weight you read on the weighing bridge.

You save the value by pressing **Save** button, and the display reads **A1**.

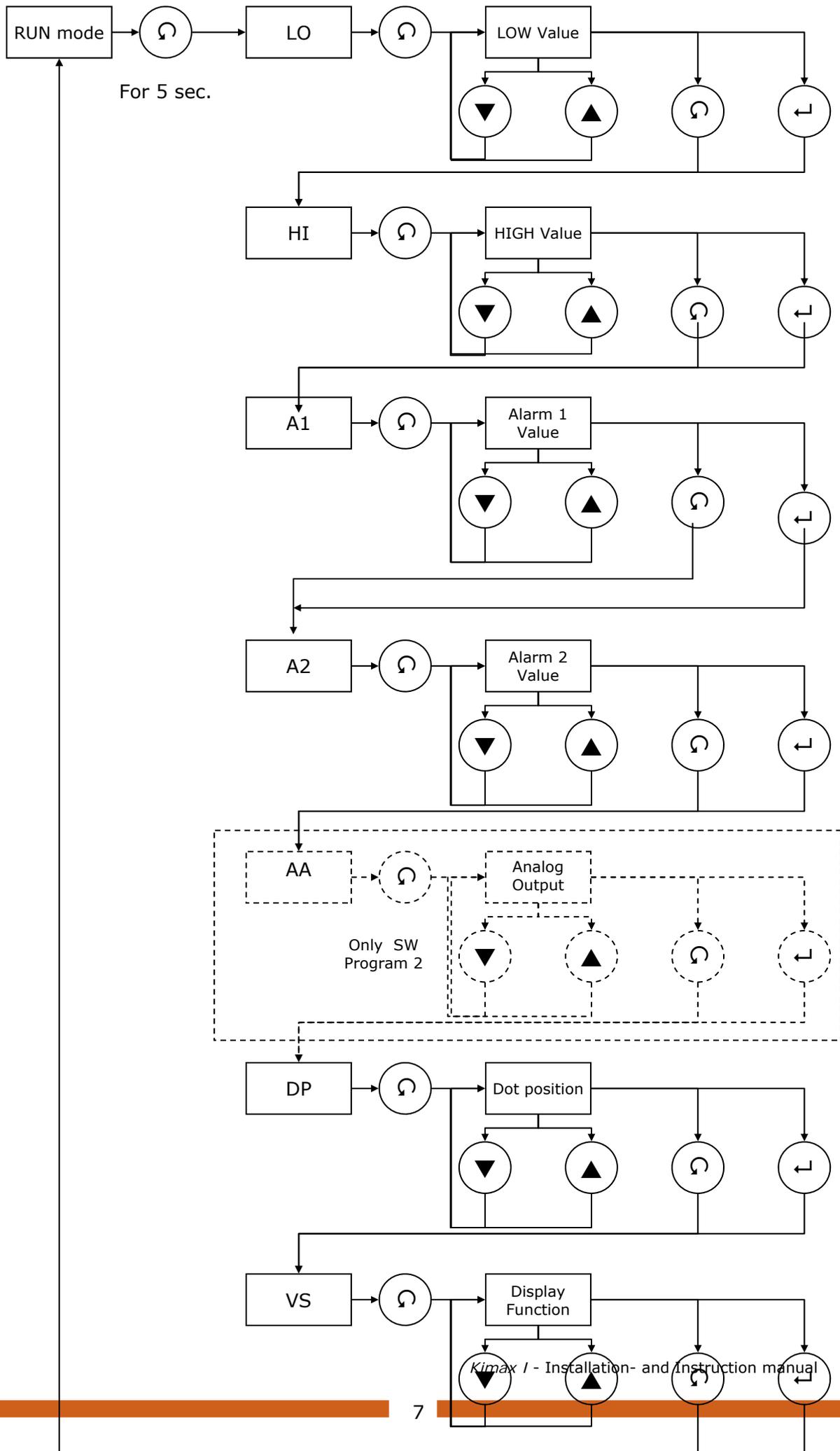
Note: In the case you want to maintain the previous value, press **Roll** and the display reads **A1** without saving the modified **HI** value.



During calibration you can modify **LO** and **HI** in a sequence as described above, or you can modify **LO** or **HI** individual, by bypassing parameter out of interest by pressing **Roll** several times until you read

the value you need, or you leave the menu and read 3 numeric digits on the display.

Under calibration you can't give in **LO** values higher than **HI**



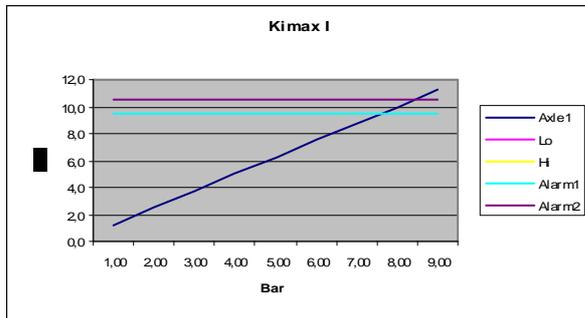
## Alarms:

Kimax I offer you two different alarm functions.

When you exceed the A1 alarm level, the three digits in the display starts flashing.

When you exceed the A2 alarm level, a relay internal in the Kimax I switch on.

The A2 switch function is available for external use only through separate wires in the supply cable.



### Setting the A1 alarm level.

Enter the Kimax menu by pressing the **Roll** button for 5 sec. (se flowchart on page 7)

Press the **Roll** button shortly 4 times until the display reads **A1**.

Press the **Roll** button once again shortly, and the display reads the last saved **A1** value in tonnes.

You can change the readout by **Up** and **Down** keys until you get a value equal to the alarm level you want.

You save the value by pressing **Save** button, and the display reads **A2**.

In the case you want to maintain the previous value, press **Roll** and the display reads **A2** without saving the modified **A1** value.

You can leave the menu by pressing Roll shortly several times until you read 3 digit on the display.

### Setting the A2 alarm level.

Enter the Kimax menu by pressing the **Roll** button for 5 sec. (se flowchart on page 7)

Press the **Roll** button shortly 6 times until the display reads **A2**.

Press the **Roll** button once again shortly, and the display reads the last saved **A2** value in tonnes.

You can change the readout by **Up** and **Down** keys until you get a value equal to the alarm level you want.

You save the value by pressing **Save** button, and the display reads **DP** or **AA** depending on software version.

In the case you want to maintain the previous value, press **Roll** and the display reads **DP** or **AA** without saving the modified **A2** value.

You can leave the menu by pressing Roll shortly several times until you read 3 digit on the display.

## Configuration:

Kimax I offer you some different configuration settings.

In the **AA** menu you set the ton value which equals the 5 volt analog output, only available in optional article numbers.

In the **DP** menu you set the position of decimal point in the display. Valid positions are: XXX - XX.X - X.XX

In the **VS** menu you select the 3-digit LED display to auto off 2 minutes after last Roll keystroke or set the display to be instant on all the time (factory setting for trailer versions).

### Setting the AA analog level.

(Optional feature which only is available in separate articles).

Enter the Kimax menu by pressing the **Roll** button for 5 sec. (se flowchart on page 7)

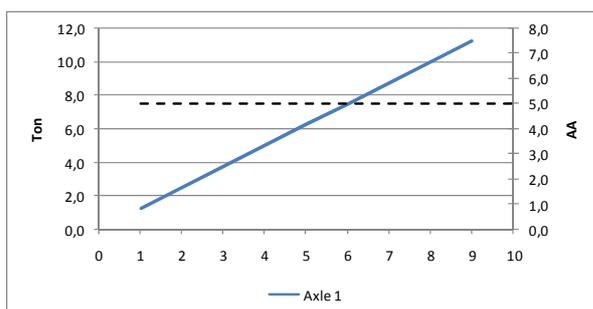
Press the **Roll** button shortly several times until the display reads **AA**.

Press the **Roll** button once again shortly, and the display reads the last saved **AA** value in tonnes.

You can change the readout by **Up** and **Down** keys until you get a value equal to the value you want to equals 5,0 V DC out, fore example 18 tonnes + 10% for a 2-axle vehicle (lowest possible value is 10.0).

You save the value by pressing **Save** button, and the display reads **DP**.

In the case you want to maintain the previous value, press **Roll** and the display reads **DP** without saving the modified **AA** value.



You can leave the menu by pressing Roll shortly several times until you read 3 digit on the display.

### Setting the DP position.

Enter the Kimax menu by pressing the **Roll** button for 5 sec. (se flowchart on page 7)

Press the **Roll** button shortly several times until the display reads **DP**.

Press the **Roll** button once again shortly, and the display reads the last saved **DP** position.

You can change the readout by **Up** and **Down** keys until you get the position you want. Valid positions are: XXX - XX.X - X.XX

You save the value by pressing **Save** button, and the display reads **VS**.

In the case you want to maintain the previous value, press **Roll** and the display reads **VS** without saving the modified **DP** value.

You can leave the menu by pressing Roll shortly several times until you read 3 digit on the display.

### Setting the VS.

Enter the Kimax menu by pressing the **Roll** button for 5 sec. (se flowchart on page 7)

Press the **Roll** button shortly several times until the display reads **VS**.

Press the **Roll** button once again shortly, and the display reads the last saved **VS**.

You can change the readout by **Up** and **Down** keys until you get the value you want. Valid positions are: 000 = auto OFF and 111 = instant ON.

You save the value by pressing **Save** button, and the display leaves menu.

In the case you want to maintain the previous value, press **Roll** and the display leaves menu without saving the modified **VS** value.

You can leave the menu by pressing Roll shortly several times until you read 3 digit on the display.

## OBC serial output

Some of the Kimax I instruments offer you a RS-232 serial output, displaying the measured values you can read on the display.

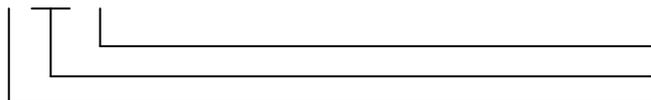
The string of data is broadcasted every 6 second and can be picked up by a GPRS unit or as an example a FM 200 unit.

For test you can set up a "HyperTerminal" on your laptop with the below parameters,

Bit pr sec 9.600  
 Data bit 8  
 Parity N  
 Stopbit 1  
 Flowcontrol N

### Protocol:

A XX.X S



S end of message  
 XX.X actual value  
 A start of message

and you can read the broadcasted values as numeric characters.

You need to set up your GPRS or FM200 for receiving on the above parameters too.

Due to retransmit the Kimax values through your GPRS unit, or receive the data in a FM200, you can set up a mask:

"**AXX.XS**" .

## Printer serial output

Some of the Kimax I instruments offer you a RS-232 serial output, for printers.

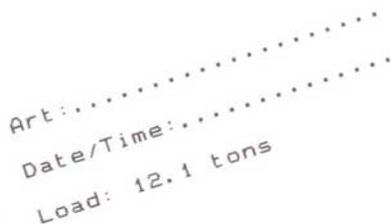
The string of data is broadcasted every time you access the printer function on the instrument, by pressing **SAVE** for 3 seconds.

For test you can set up a "HyperTerminal" on your labtop with the below parameters,

Bit pr sec 4.800  
 Data bit 8  
 Parity N  
 Stopbit 1  
 Flowcontrol N

You need to set up your printer for receiving on the above parameters too.

Most common printer with serial input can be used with Kimax I.



and you can read the broadcasted values as numeric characters.

## Protecting your calibration and configuration:

### Locking your Kimax I

To lock your Kimax I and hereby prevent unintended change in calibration, - activate Roll and Save at the same time, while the instrument is on, and you read LO on the display.

If you want to maintain your previous calibration, power off Kimax once again for 10 seconds or more, when it is newly unlocked, nest time you power your Kimax up it is unlocked and returns the reading you are familiar with.

### Checking your software lock

Press either UP or Down while you have entered the menu and are reading the LO value on the display.

Unlocking your software without changing software version, maintain your previous calibration.

When the display returns --, the instrument is safely locked, when it returns a 3-digit number on the display, it is unlocked.

You can select a new software by pressing Up and Down.

### Unlocking your Kimax I

Pressing the UP, Down and Roll at the same time, while you power up the Kimax, it returns a number 1–4 indicating the Kimax I has been unlocked.

Select your software version by pressing SAVE while the version number 1–4 you want is present in the display.

**Changing software version means you have to recalibrate the instrument.**

	Printer	OBC	5V analog		cable
Version 1					4-wire
Version 2		•	•		6-wire
Version 3					4 wire
Version 4	•				5-wire

## Electrical installation:

### Electrical connection

Always disconnect the battery before you perform any installation work on the system of the vehicle.

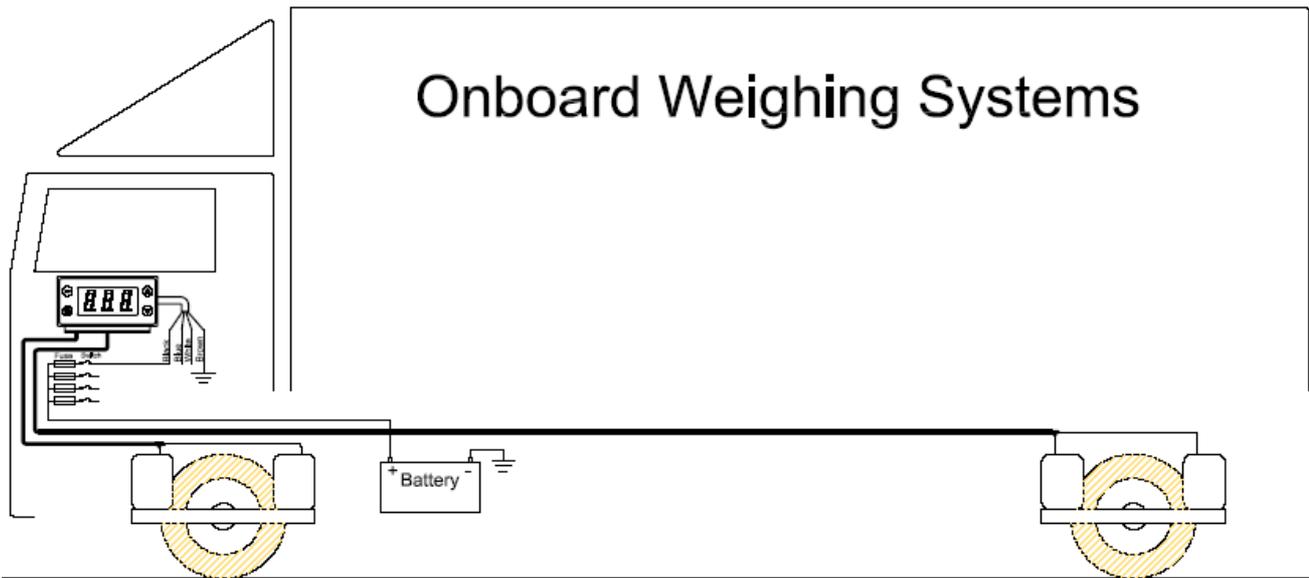
Do not route the cables next to ignition cables or other cables carrying large current.

Make sure that the cables are not exposed to tensile or shearing forces. Protect the cables with rubber grommet if you route the cables through holes.

For connecting cables use crimp connectors or another approved method. Avoid short-circuiting the system by faulty connections or squeezed cables.

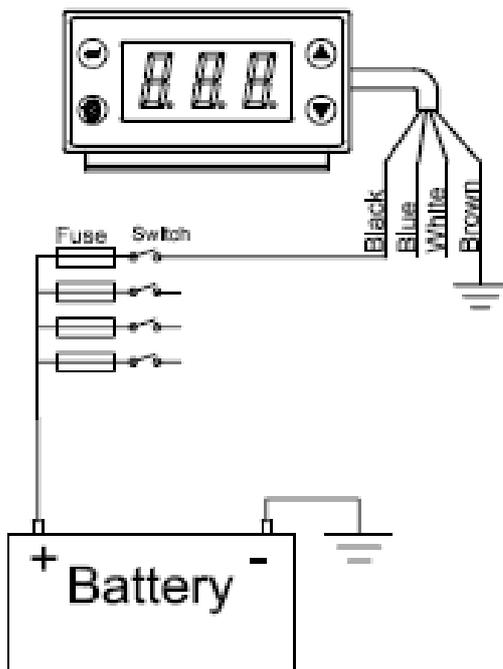
Fasten the cables at suitable intervals.

Make sure all Kimax I instruments are protected by use of fuses in supply cables.



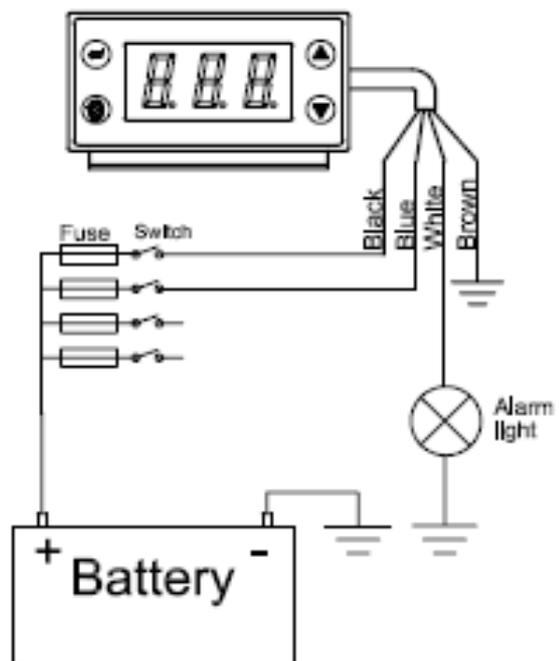
### Basic cabling

Standard versions of Kimax I is supplied through a 4 x 0,75 mm<sup>2</sup> cable.



### Cabling with A2 alarm output

Standard versions of Kimax I is offer you a alarm switch through blue and white wire.

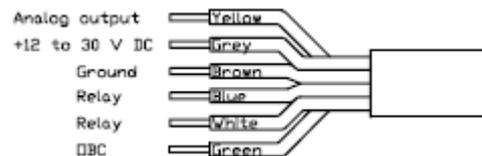
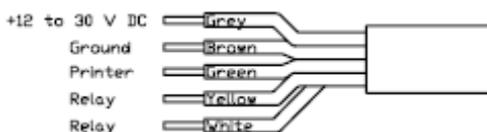
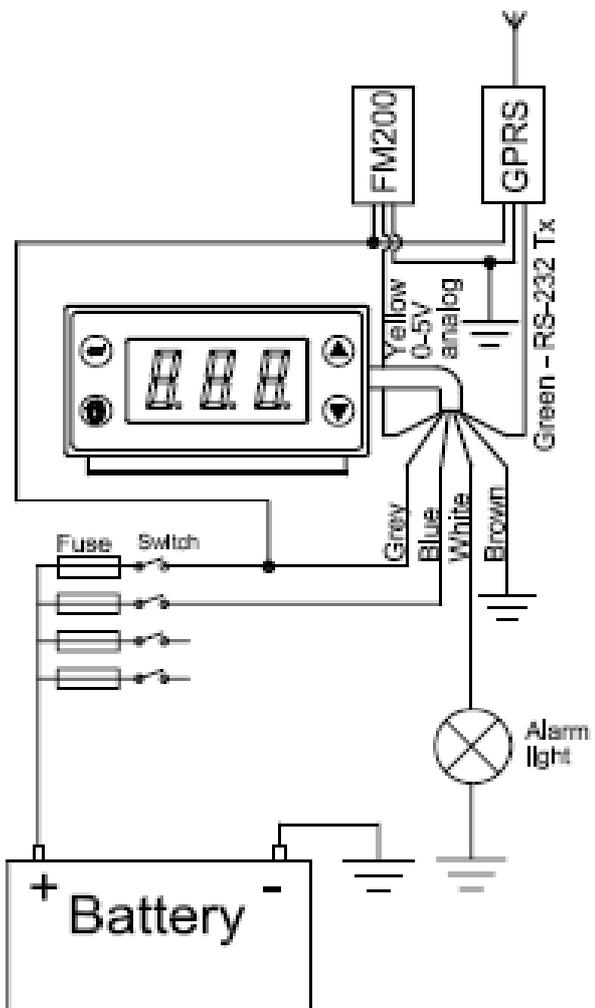
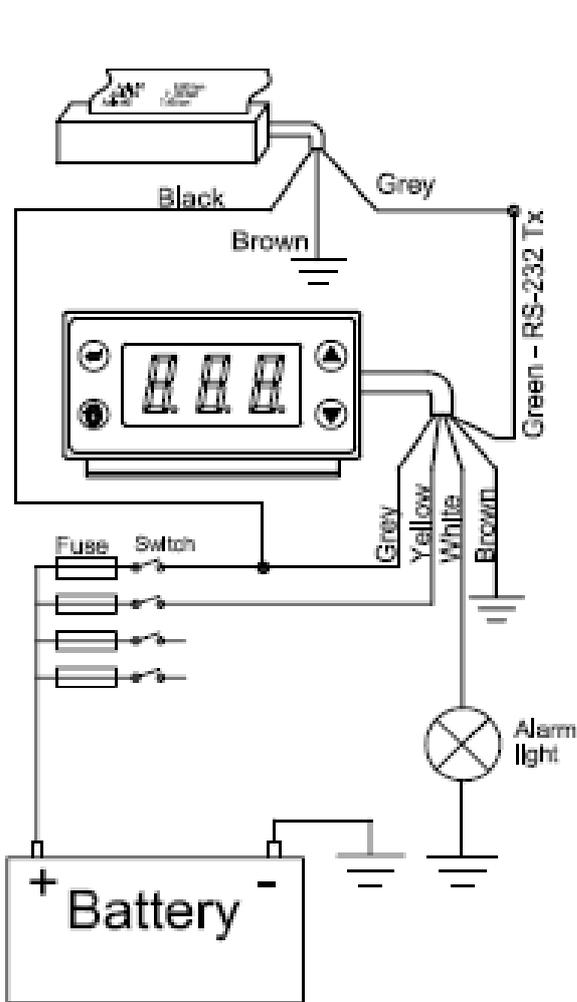


**Optional cabling with printer and alam**

Optional versions of Kimax I is supplied through a 5 x 0,34 mm<sup>2</sup> cable.

**Cabling with A2 alarm output**

Optional versions of Kimax I is offer you a alarm switch through blue and white wire, RS-232 output through green wire and 0-5 V analog through yellow wire.



## Air sensor installation:

### Connection of compressed air.

Before you carry out any installation work related to the air suspension, make sure that the suspension has been brought to the lowest possible position and all compressed air is released.

It is important to install the hoses in such a way that they are not affected by other components. The hoses must be fixed at suitable intervals

Route the hoses in such a way that they are not exposed to exhaust heat and other

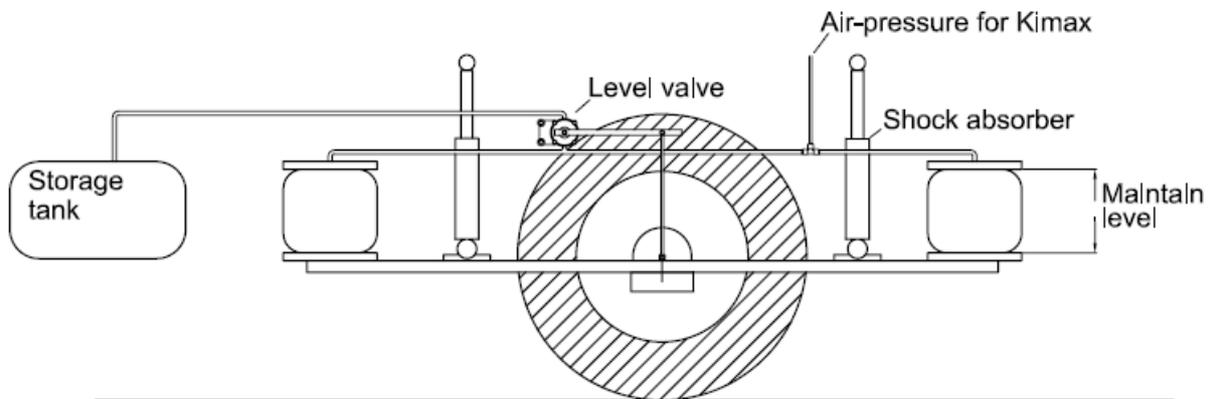
heating sources that may lead to the permissible temperature being exceeded.

Avoid damages from gravel, friction and contact with sharp edges.

Avoid excessive tension of the hoses.

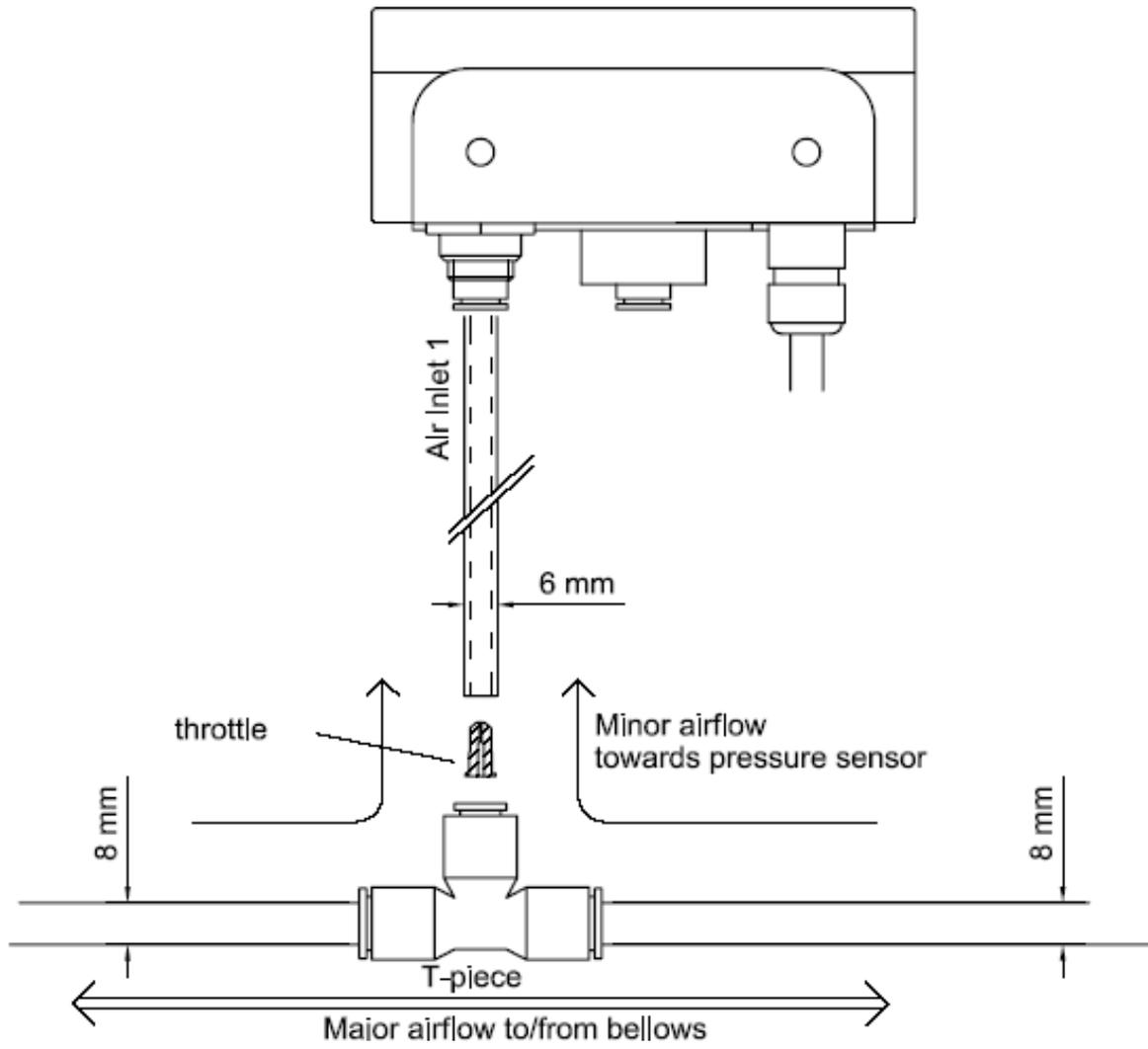
Make sure that the smallest bending radius is not exceeded.

Make sure there is no leakage at the fittings, it will affect the accuracy of the measurement.



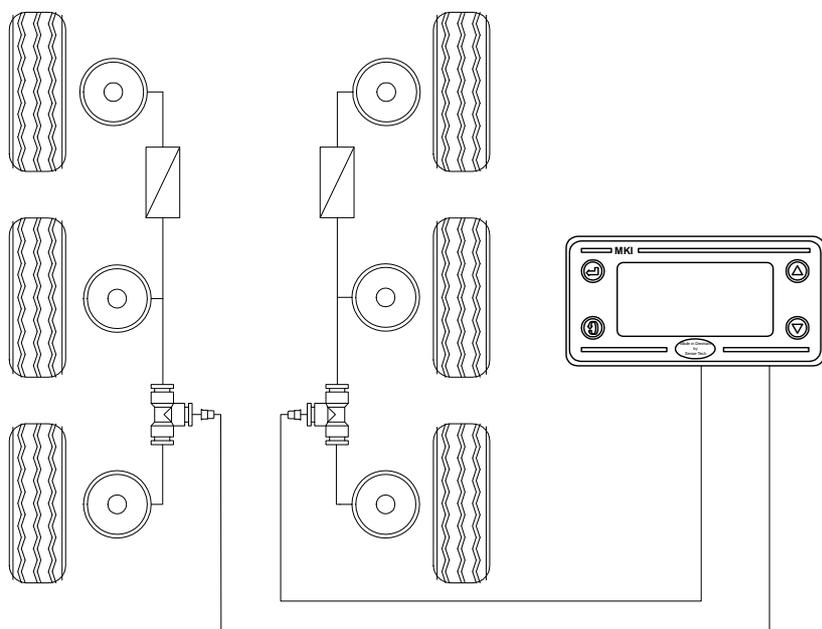
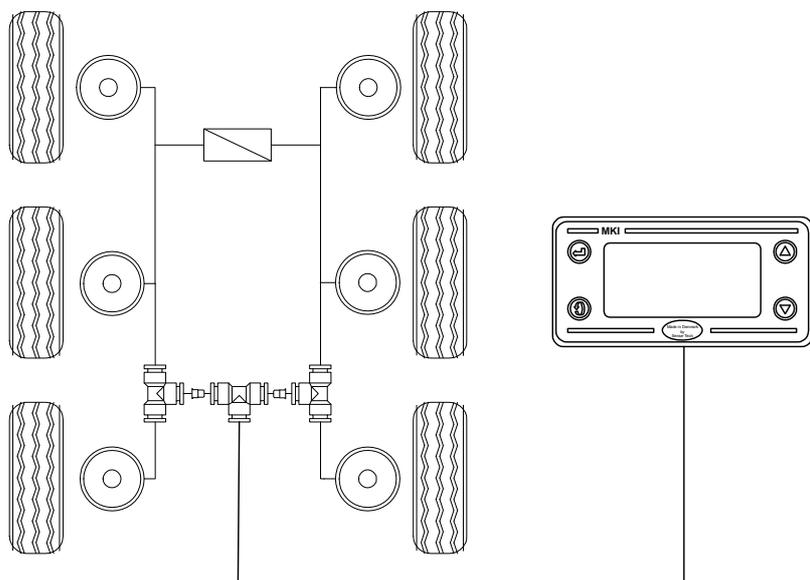
First step in the installation is to identify the hose supplying compressed air to the bellows. This hose, typically 8 mm outer diameter, has to be cut through and assembled once again with the T-piece supplied with the Kimax instrument.

The 6 mm output port of the T-piece has to be connected to the Kimax instrument according to the drawing on next page.





**A:**

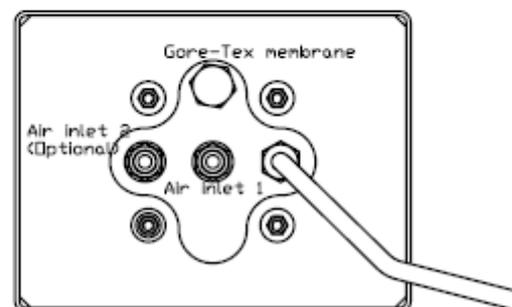
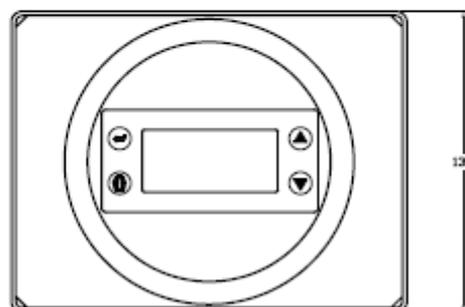
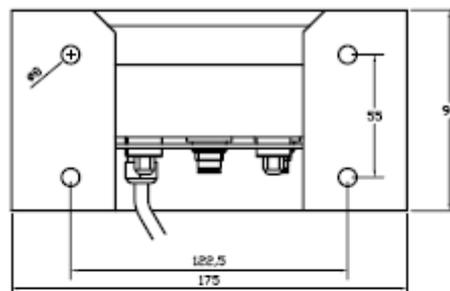
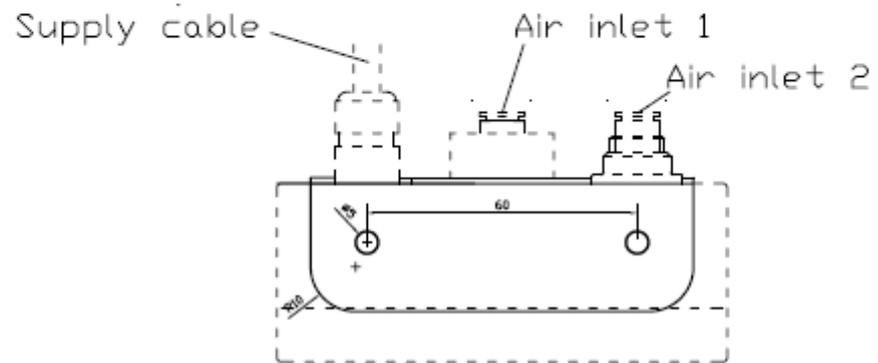
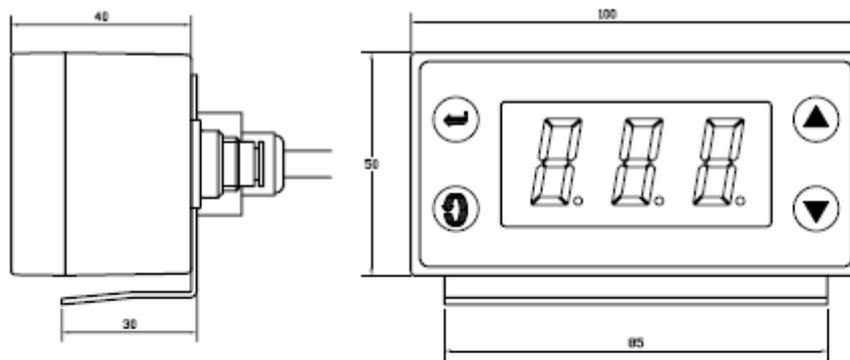




## FAQ:

Troubleshooting  
Hose leakage  
No power on instrument  
No pressure on suspension system  
Moisture inside on instrument glass  
Display flashing all the time  
Display is blanked  
No alarms  
Lo can't be set below Hi

## Dimension:



View from near side

# Technical specifications

## *Axle Load Indicator Mki*

Dimensions	100 x 50 x 40 mm
Weight	180 g (cabin version) 1.850 g (trailer version)
Cable	1.5 m, four-core, five-core or six-core (depending on model)
Power supply	12 – 30 V DC
Consumption	Max. 100 mA (active relay)
Air connection	Outer diameter for air hose 6 mm
Storage temperature	-40 to +70 °C
Operating temperature	-25 to +70 °C
Display	1 x 3 digits, character height 20.3 mm
Display range	000 to 999
Decimal point position	000 / 00.0 / 0.00
Display over max.	000
Maximum pressure	15.5 bar
Operating pressure range	0 – 10.5 bar
Accuracy	±2 % of maximum load at 0 – 50 °C
Linearity	0.2 % of maximum load
Alarm 1	Display flashes 1 Hz
Alarm 2	Relay signal
Relay output load	Max 0.5 / 30 V DC
Imperviousness	IP64
Approvals	e1

**Sense-Tech** Distributed by:  
Weighing Systems ApS

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