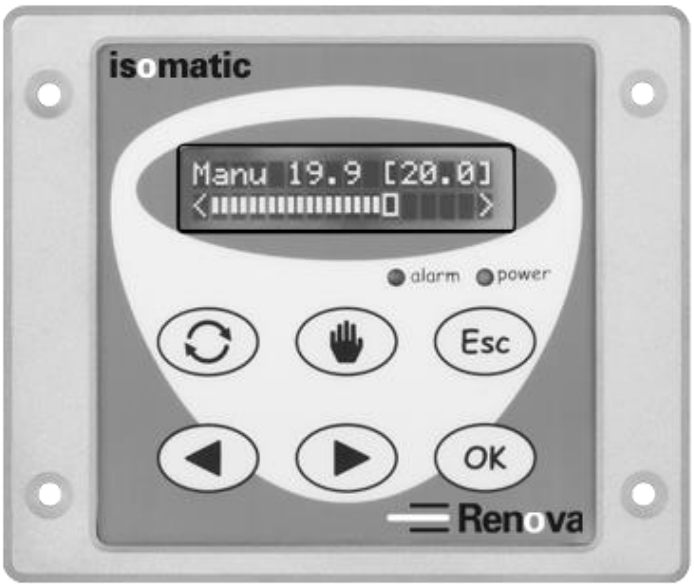
# isomatic

## tension control system

CE

# user manual




Renova
WE NEVER LOSE CONTROL

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MANISOENA4V0817

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# introduction

Dear customer,
Thank you for purchasing Renova's **isomatic** control system.
Renova's produts are designed in compliance to the highest quality and functional standards.
We are sure your new tension control system **isomatic** fully meets your expectations.
This user manual describes the steps to proper use the tension control system **isomatic**.
Please, read carefully this user manual before using the **isomatic** tension control system.

# support

Our technical department is on hand to help you and offer the right solution to overcome any problems.

Renova is also present in the world market with a detailed sales network.

In case of need please contact us at *support@renova-srl.it*. We will be happy to directly help you or address you to the right Renova's representative.

# general warnings

**CAREFULLY READ THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL AND KEEP THEM FOR FURTHER REFERENCE FOR ENTIRE PRODUCT LIFE. THEY SUPPLY IMPORTANT INSTRUCTIONS REGARDING OPERATIONS AND SAFETY FOR INSTALLING, USING AND MAINTAINING THE PRODUCT.**

**PLEASE TAKE THE TIME TO READ AND UNDERSTAND THE SAFE PRECAUTIONS TO BE RESPECTED FOR A SAFE AND PROPER USE OF THIS PRODUCT.**

**THIS COMPONENT IS DESIGN TO BE INCORPORATED IN A MACHINE AND IT CAN'T WORK INDIPENDENTLY. THE USE OF THIS COMPONTENT IS FORBIDDEN IF THE USE ON THE MACHINE ISN'T IN COMPLIANCE WITH THE LAW.**

# warnings and safety aspects

The control system has been designed in compliance to CE regulations. Additionally, the tension control system **isomatic** is designed to work in harsh industrial environments.

Before proceed to the installation and during the utilization of the system, check the following points:

- ! Danger: Disconnect all the power connections before installing the system and remember to provide a solid ground connection.
- ! Danger: Never open the cover of the tension control's electronic parts when the power is switched on or when the system is working. Do not manage or disassembly the system.
- ! Danger: Do not touch the electrical connections with wet hands
- ! Do not use the control system in a potentially explosive environment. Use this system only in fire-proof and explosion-proof environments.
- ! Danger: use only the power and connection cables supplied together with the system. Please, replace the eventual damaged cable immediately.
- ! Danger: use power cable that can deliver the required amount of current.
- ! Attention: in case of incorrect operations due to EMC interferences, separate the power cables from the signal cables.
- ! Attention: do not install the system in a position subjected to conductive powder or to corrosive gases. Do not expose the system to high temperature, wind, vibrations and environments subjected to bad weather.
- ! Attention: Renova is not responsible for any damage caused by repair, modifications or tampering of the system, done by a third party and not authorized by Renova.
- ! Attention: the above-mentioned directives are subjected to changes without prior notice.

# installation of the tension control system

## SUPPLIED MATERIAL

The **isomatic** tension control system includes:

- 1x LCD user interface with keyboard ( dim. 124x104x65mm – cut-out 90x90mm )
- 1x or 2x load cells
- 1x brake for tension correction with connection cables (optional)
- 1x power supply box with connection cables (optional)

## INSTALLATION DRAWINGS

The mechanical dimensions are reported on drawing **isomatic**/mechanical dimensions, **41M052E**

The electrical connections are reported on drawings **isomatic**/electrical connections, **42E004E**

# tension control system - isomatic

The **isomatic** is an automatic control system of the web tension. The system is studied for various application fields where measurement and control of tension of unwinding / rewinding reels are required.
Typical application areas include control of the tension of moving materials in printing and converting machines.
By programming the relevant parameters, the system can be adapted to various applications.
Thanks to the advanced programming features a wide range of optional functions and operations can be performed.
The system is designed for uninterrupted operations in harsh factory environments, with features for quick job setup.

The **isomatic** system is made of a display unit connected to one or two load cells, which assess the web tension. Alternatively, it is also possible to check the web tension by means of a potentiometer. The display unit can communicate with magnetic powder brakes, with electrovalves to control pneumatic brakes or with drivers to control motors.

The display unit **isomatic** can also communicate with a remote computer using and optional serial link.


The display unit is fitted with an alphanumeric LCD display and a programming keyboard.
The display unit is connected through cable connections to the other parts of the system.

Load cells are designed to control the tension of rewinding and unwinding machines. They are fixed at the end of the cylinder and detect the power applied to the cylinder during rewinding and unwinding process.

# control unit

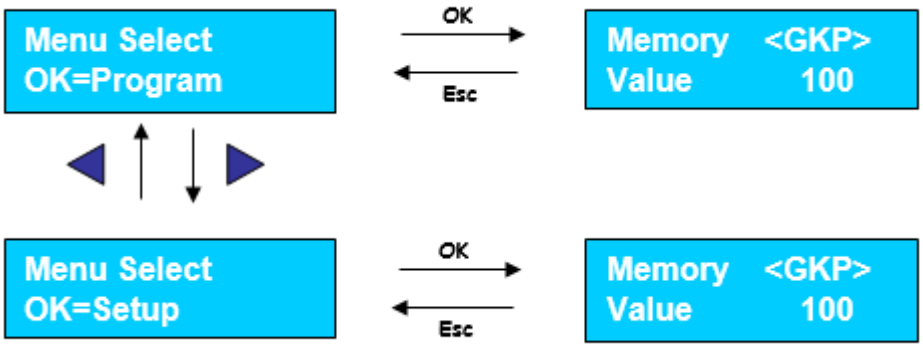
The control unit has small dimensions, it is light and easy to use. The LCD alphanumeric display shows the program values, the current operating conditions, the error messages and the values measured by **isomatic**.


**Figure 1 - display and keyboard**

## KEYBOARD

| | |
|---|---|
| OK | Used to confirm the selection. |
| Esc | Used to cancel an operation or to exit from menu pages. |
| ◀, ▶ | Used to change parameter values, scroll between parameters and to drive the actuator manually. |
| ✋ | Used to activate the Manual mode. |
| ↻ | Used to activate the Automatic mode. |

### MENU PAGES




To select the various menus use the ◀ and ▶ keys (arrow keys). Once the desired menu has been selected, press OK to enter the menu. After entering a menu, the display visualizes the parameters related to the selected menu. To change a parameter value or scroll among parameters press the ◀ and ▶ keys and the OK key to confirm.

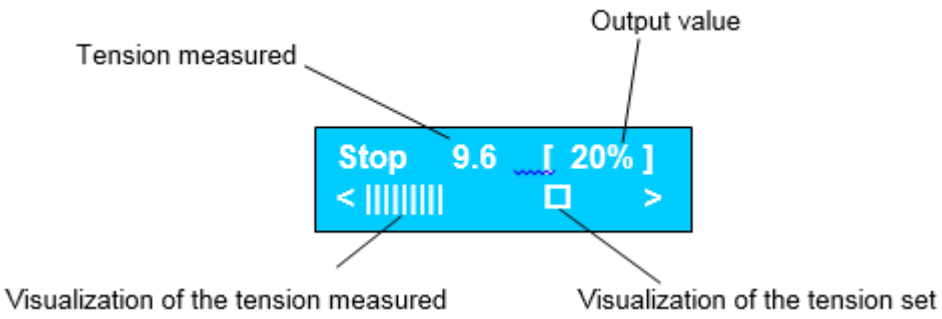
The tension control system ISOMATIC can operate in three different modes:

- **Manual Mode**: this mode allows the manual control of the reel tension. The display shows the measured tension level. The tension of the web can be modified manually using the keyboard. On certain conditions an alarm indicator is activated.
- **Automatic Mode**: this mode measures the error and regulates the braking using a PID automatic control algorithm. The display shows the measured web position error and, on certain conditions, an alarm indicator is activated.
- **Setting Mode**: this mode allows to set the values of the parameters that determine the behaviour of the ISOMATIC. It allows to set the parameters of the system (like the ones used by the PID algorithm to control the system).

# operating modes

### MANUAL (STOP MODE)

By Manual mode the user can manually correct the tension of the web. In Manual mode, the system visualizes the following data (the figure is an example):




By pressing the ◀ and ▶ keys (arrow keys) it is possible to modify the tension of the reel thus correcting the current

value.

By pressing **Esc** it returns to the menu from which it entered in Manual mode.

In case an alarm is active, the acknowledgement (shutdown) of the alarm occurs by simultaneously pressing the **OK** and **Esc** keys.

In manual mode are also available some quick procedures to perform operations that might be done in other ways (but with a greater number of steps). These quick procedures include:

- **Set point setting for the tension**: by pressing the OK key with the  key it sets the value of the measured tension as set point value.

## SYSTEM CALIBRATION

Through the calibration procedures the references for the desired tension measurements are provided to the system. It is worth noting that the calibration procedures are independent from your system of units adopted: the values entered by the user during the calibration procedures are handled by the system only as numbers, without any reference to their physical meaning (in other words, the calibration procedure is the same whether the tension is expressed in Kg, Pounds or whatever). Since the calibration is done on two points for any measured size you need to have at your disposal some known conditions of:

- low tension (no material is on the roller with load cells)
- high tension (a weight of known value is tied to the roller with load cells)

Due to these constraints and the fact that calibration is critical in relation to measured values, the tension control is released from the factory with a default calibration to be modified after the installation on the machine.

**Important**: to avoid losing the calibration values, before proceeding to a new calibration take note of the values of parameters TXL, TYL, TXH, TYH (see paragraph concerning the setting mode Parameters hereinafter in this manual).

**Low calibration**

1) Do not lean anything on the roller with load cells
2) Press simultaneously OK, Esc and  keys

**High calibration**

1) Tie a weight of known value to the roller with load cells
2) Press simultaneously OK, Esc and  keys
3) Tension high calibration: press  and  keys to decrease or increase the numeric value displayed; press OK key to confirm the figure that is going to be changed. When the last figure of high calibration is confirmed, the controller automatically goes to the visualization of the measured tension and set point.

Sum up of the functions of keys in Manual mode:

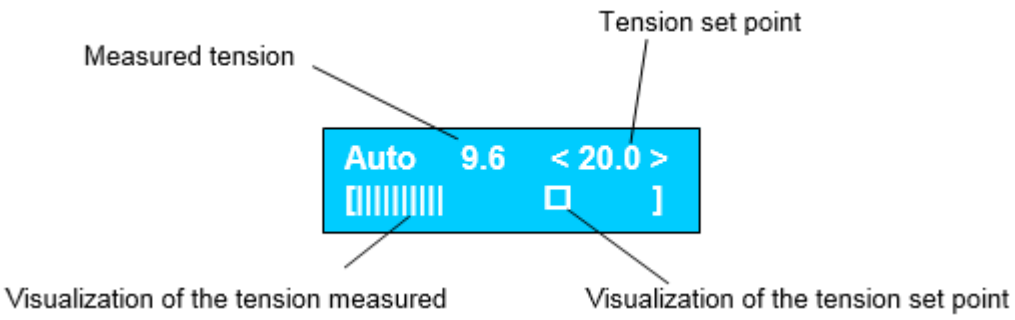
| | |
|---|---|
|  | Decrease the tension in the machine |

| | |
|---|---|
| ▶ | Increase the tension in the machine |
| **Esc** | Return to menu page |
| **OK + Esc** | Alarm acknowledgement |
| **OK +** ↻ | Setting of tension set point |
| **OK + Esc +** ◀ | Low calibration |
| **OK + Esc +** ▶ | High calibration |
| ◀ **+** ▶ | Setting of tension to SPS value (SPS=Set point in Manual mode) |

## AUTOMATIC

By selecting the automatic mode the system automatically corrects the current tension trying to get it to the setpoint values. In Automatic mode the controller modulates the output to the brake according to the PID parameters set. (See Picture 3).

The display looks like the following picture:

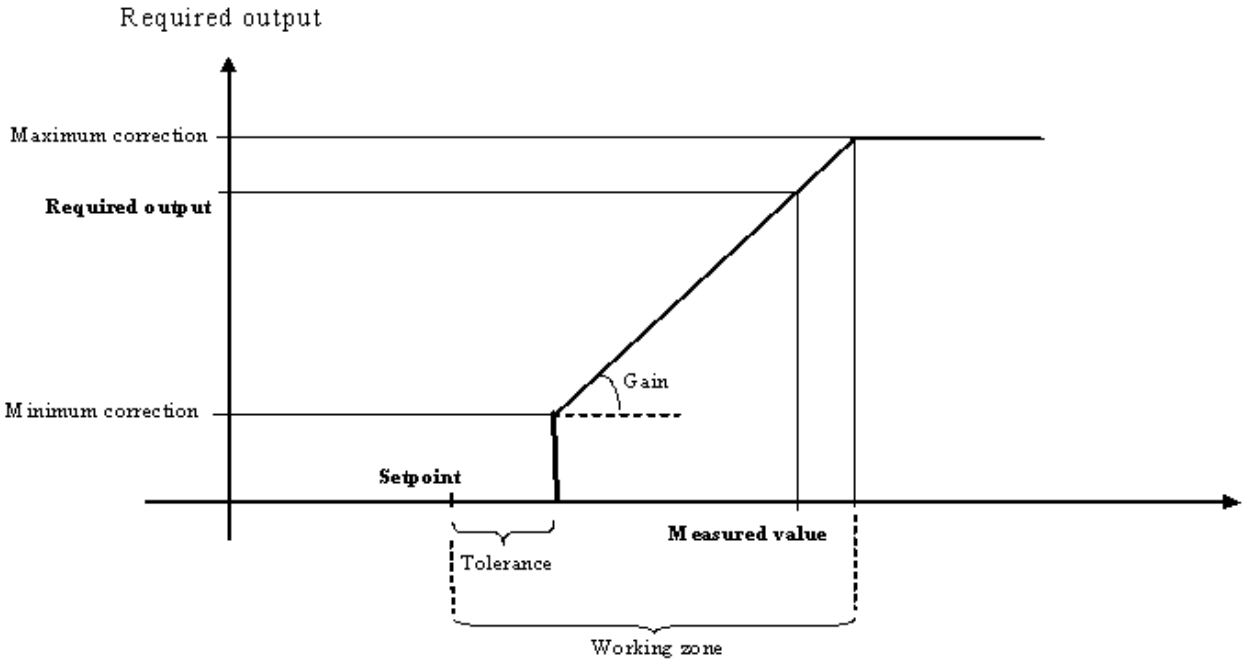



By pressing ◀ or ▶ keys (arrow keys) it is possible to change the tension set point.

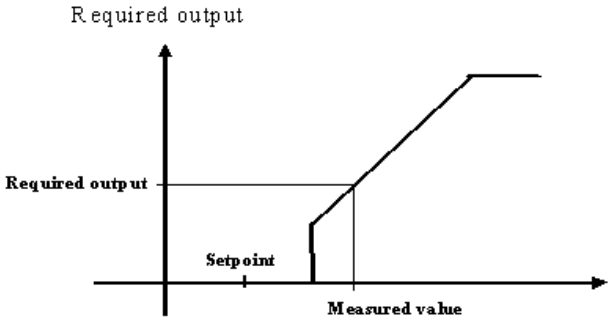
By pressing Esc it returns to the menu from which it entered in Automatic mode.

In case an alarm is active, the acknowledgement (shutdown) of the alarm occurs by simultaneously pressing the OK and Esc keys.

The algorithm for the automatic control of the tension is a PID algorithm. The basic concepts of the control algorithm can be understood looking at the following drawings (Dwg. 3 and 4):




The difference between the measured value and the set point (desired value) determines the required correction (required output). The correction value depends on the output value required:




Summary of the functions of the keys in Automatic mode:

| | |
|---|---|
| ◀ | Decrease the tension set point |
| ▶ | Increase the tension set point |
| **Esc** | Return to menu page |
| ***OK* + Esc** | Alarm acknowledgement |

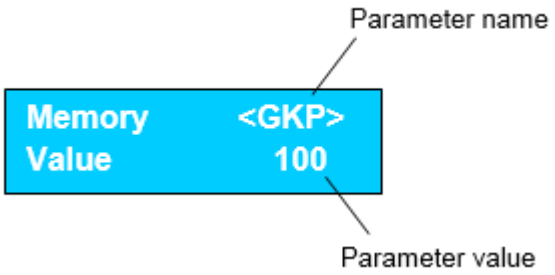
# parameter setup

The device parameters determine the system behaviour. They are numeric values used to program and configure the ISOMATIC system. The parameters values should be checked for each specific application. It is advised to write down the programmed parameter values after installing the system. Programming of these parameters requires a good knowledge of the system functionality and of the meaning of every single parameter.

The parameters have default values but they can be changed by an enabled operator.

By default the system is not password protected. If the password feature is enabled, the operator needs to enter the correct password to change the parameters.

Once the parameter programming mode has been entered, the display appears like the following picture:




The displayed parameter is selected by pressing the ◀ and ▶ keys. By pressing the **OK** key the cursor moves to the value field. Each digit of the value field can be changed using the ◀ and ▶ keys and confirmed by the **OK** key. When all digits have been changed (or confirmed), the **OK** key takes the cursor back to the parameter name field. To cancel the changes press the **Esc** key.
To quit from parameter setup press **Esc** key.

# list of parameters

## GKP – Proportional gain

Usage: Proportional gain factor in automatic mode.

Description: This gain factor is used to calculate the proportional part of the correction needed to compensate the measured error.

Range: 0 … 32767

Default: 100

## GKD – Derivative gain

Usage: Derivative gain factor in automatic mode.

Description: This gain factor is used to calculate the derivative part of the correction needed to compensate the measured error.

Range: 0 … 32767

Default: 0

## GKI – Integrative gain

Usage: Integrative gain factor in automatic mode.

Description: This gain factor is used to calculate the integrative part of the correction needed to compensate the measured error.

Range: 0 … 32767

Default: 0

## GIL – Integrative limit

Usage: Maximum limit of the integrative part of the correction.

Description: This value is used to limit the integrative part of the correction needed to compensate the measured error.

Range: 0 … 32767

Default: 0

## GKF – Tracking diameter gain

Usage: tracking diameter gain factor

Description: This gain factor is used to calculate the correction in relation to the diameter of coil.

Range: 0 … 255

Default: 0

## ACC – Acceleration

Usage: Acceleration of correction motor

Description: This value sets the acceleration of the brake or motor in automatic mode.

Range: 0 … 999

Default: 10

## DEC – Deceleration

Usage: Deceleration of correction motor.

Description: This value defines the deceleration of the brake or motor in automatic mode.

Range: 0 … 999

Default: 10

## VMI – Minimum correction speed

Usage: Minimum correction speed.

Description: This field specifies the minimum speed to apply to the correction motor. It permits to eliminate the inertia of the correction motor.

Range: 0 … 127

Default: 10

## VMA - Maximum correction speed

Usage: Maximum correction speed.

Description: This field specifies the maximum speed to apply to the correction motor. It permits to eliminate the over correction of the error.

Range: 0 … 127

Default: 127

## TYP – Type of sensor

Usage: Shows the type of sensor used

Description: This parameter allows to select the sensor you are using.

| Valore | Descrizione |
|---|---|
| 0 | Load cell |
| 1 | Dancer roll (potentiometer) |
| 2 | Ultrasonic sensor (detector diameter) |

Range: 0 … 2

Default: 0

## SPA – Set point in automatic mode

Usage: Set the desired value of tension (tension setpoint).

Description: This parameter stores the value of the desired tension.

Range: 0 … 199,9

Default: 10,0

## SPB – Set point dancer roll

Usage: Set the potentiometer setting.

Description: This parameter stores the default value of the potentiometer (dancer roll).

Range: 0 … 100%

Default: 20

## SPS – Set point in stop mode

Usage: Set the default value of the command output in stop mode.

Description: This parameter stores the default value of the command output in stop mode.

Range: 0 … 199

Default: 20,0

## SPF – Set point diameter

Usage: Defines the percentage of braking

Description: This parameter stores the percentage of braking for a specific diameter of coil.

Range: 0 … 100

Default: 50 %

## SPE – Set point in emergency mode

Usage: Set the default value of the command output in emergency mode.

Description: This parameter stores the default value of the command output in emergency mode.

Range: 0 … 100

Default: 40

## TXL –Tension X-Lo

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a low calibration procedure of the load cell).

Description:

Range: 0 … 2047

Default: 1024

## TYL –Tension Y-Lo

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a low calibration procedure of the load cell).

Description:

Range: 0,0 … 199,9

Default: 0,0

## TXH –Tension X-Hi

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a high calibration procedure of the load cell).

Description:

Range: 0 … 2047

Default: 1984

## TYH –Tension Y-Hi

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a high calibration procedure of the load cell).

Description:

Range: 0,0 … 199,9

Default: 50,0

## DXL -Diameter X-Lo

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a low calibration procedure of diameter sensor of coil).

Description:

Range: 0 … 2047

Default: 0

## DYL –Diameter Y-Lo

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a low calibration procedure of diameter sensor of coil).

Description:

Range: 0,0 … 3,999

Default: 0

## DXH –Diameter X-Hi

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a high calibration procedure of diameter sensor of coil).

Description:

Range: 0 … 2047

Default: 2047

## DYH –Diameter Y-Hi

Usage: The operator MUST NOT change the value of this parameter (this parameter is set by the logic part after a high calibration procedure of diameter sensor of coil).

Description:

Range: 0,0 … 3,999

Default: 1,000

## ALR – Alarm level

Usage: Maximum level of tension tolerated

Description: This parameter allows to set a maximum level measurable beyond which the system will enter the alarm mode.

Range: 0 … 199,9

Default: 199,9

## DIS – Average display

Usage: Displays the average of the display.

Description: This parameter makes the average of the indication noted on the display

Range: 0..8

Default: 4

## DIG – Digits number

Usage: Change the position of comma within the tension display digits

Description: This parameter allows to move the position of comma to calibrate the load cell with any unit of measurement of weight.

Range: 0..3

Default: 1

## INP – Selection of input signals

Usage: Allow to select input signals.

Description: This parameter selects the input signal applied to inputs Di4-Di3-Di2-Di1. This value is made of 3 figures, each figure specifies the input signal of the respective pin in the connector CN102.

| Value | Signal (enable +24Vdc) |
|---|---|
| 0 | Inactive |
| 1 | Emergency (rapid braking) |
| 2 | Free brake (brake at zero) |
| 3 | Selection Auto/Man (enable automatic) |

Range: 0000 … 3333

Default: 0000

## OUT – Selection of output signals

Usage: Allow to select output signals.

Description: This parameter selects the output signal applied to outputs Do2-Do1. This value is made of 3 figures, each figure specifies the output signal of the respective pin in connector CN102.

| Value | Signal (enable +24Vdc) |
|---|---|
| 0 | Inactive |
| 1 | Active |
| 2 | Alarm Out |

Range: 00 … 22

Default: 02

## ADR – Address

Usage: RS-485 serial line address.

Description: This parameter sets the address of the tension system to communicate with a serial device. Different addresses permit to install many devices on the same line.

Note: Protected parameter, press Esc during the start up screen to enable the changes.

Range: 0...31

Default: 0

## INI – Initial screen

Usage: Set the screen to be displayed at power up.

Description: Define the screen displayed at system power up.

Note: Protected parameter for remote function (INI = 9), press Esc during the start up screen to enable the changes.

Range: 0 … 9

0 = Main menu

1 = Program

4 = Setup

7 = Stop mode

8 = Automatic mode

9 = Remote Display

Default: 0

### LNG – Language

Usage: Language of menu.

Description: This field sets the preferred language in the text menu.

Range: 0 … 3

0 = Italian

1 = English

2 = French

3 = Spanish

Default: 1

### PWD – Password

Usage: To protect the setting of parameters.

Description: When this parameter is set to a value (different to zero), the operator is asked a (fixed) password to enter to parameters. Value 0 means no password required.

Range: 0 … 32767

Default: 0

### TXT – Text on initialisation

Usage: Text shown on the initialisation screen.

Description: This parameter lets the operator to enter a specific string of characters to be shown during the system initialisation screen.

Range: Fourteen characters

Default: “Renova.it”

# remote interactions of a single unit

The RS-485 serial communication allows to control a second unit ISOMATIC from a remote location, using another ISOMATIC.

By connecting a Isomatic to another Isomatic, the device can operate like an additional user interface. Let’ s explain this application by an example. Let’ s consider a Isomatic, called “1”, connected to load cells and brake; consider then another Isomatic, called “2”, to be used as a remote interface. By setting the INI parameter of the Isomatic “2” to 9 (INI = 9) and connecting the two devices like on the following figure, it is possible to use the keyboard and the display of the Isomatic “2” like if they were the keyboard and the display of the Isomatic “1” (in other words, the user can use either the keyboard and the display of the Isomatic “1” or “2”).

Note: in this type of application the Isomatic “2” works only like a clone of the Isomatic “1”. Example: if the GKP parameter is changed from the Isomatic “2”, the parameter that is actually changed is the GKP parameter stored into the Isomatic “1”.


**Note**: to have back the Isomatic "2" working as a tension control system (and not like a remote display), it is necessary to set INI = 0. To enter in local parameters (of "Isomatic 9000 number 2") it is necessary to press the **Esc** key during the initialization phase (welcome screen).


Welcome screen

## MULTIPLE REMOTE CONTROL (MAX 31 UNITS)

To work with remote control, it is necessary to link all the units with a RS-485 net (CN 105) and to connect one external switch (button) to the terminals 1 and 2 of the CN 102 of the command unit.

To work like Isomatic command unit it's necessary to set the following parameters:

- INI = 9 (Remote display)
- ADR = 1…31 (Max number of external units)
- INP = 1 (External button enabled)

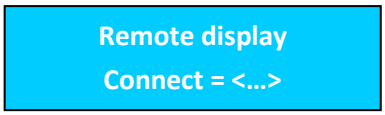
To enter local parameter press ESC during the start up screen.

To work like Isomatic remote slave unit it is necessary to set the following parameters:

- INI = 0…8 (according to the desired starting screen)
- ADR = 1…31 (for each connected Isomatic a different sequence number must be entered).

By pressing the external contact of the command unit it can be selected the element to control. Alternatively the

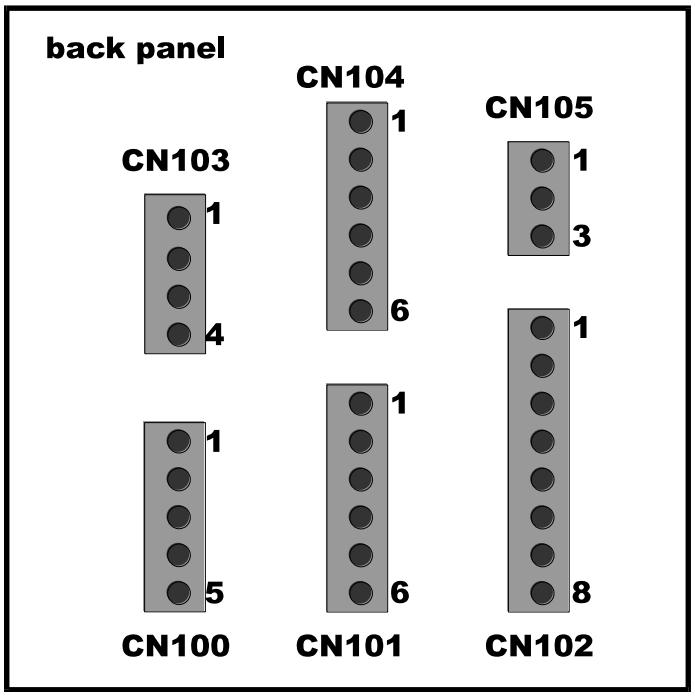
master unit can control all of the remote units. By pressing the external contact the Isomatic will show the following menu screen:




By setting 0 on the master unit all of the remote devices are controlled at the same time.

By setting the corresponding remote unit number (ADR of each unit) on the master unit, the selected device is controlled independently.

# connections




| Pin | Name | Description |
|---|---|---|
| 1 | Commad | Powder Brake command (output) |
| 2 | Commad | Powder Brake command (output) |
| 3 | AO1 | Analog Output1 (0-10V) |
| 4 | AO2 | Analog Output2 (0-10V) |
| 5 | 0 Vdc | 0 Vdc |

Connector CN100 (Motor)

| Pin | Name | Description |
|---|---|---|
| 1 | +5 Vdc | +5 Vdc (output) |
| 2 | SetP | Set Potentiometer |
| 3 | EXC - | 0 Vdc |
| 4 | SGN- | Load cell signal - |
| 5 | EXC+ | +5Vdc |
| 6 | SGN+ | Load cell signal + |

Connector CN101 (Load Cell Sensor)

| Pin | Name | Description |
|---|---|---|
| 1 | +24 Vdc | +24 Vdc (output) |
| 2 | Di-1 | Input type PNP (24V @ 1mA) |
| 3 | Di-2 | Input type PNP (24V @ 1mA) |
| 4 | Di-3 | Input type PNP (24V @ 1mA) |
| 5 | Di-4 | Input type PNP (24V @ 1mA) |
| 6 | Do-1 | Output type PNP (24V @ 0,1A) |
| 7 | Do-2 | Output type PNP (24V @ 0,1A) |
| 8 | 0 Vdc | 0 Vdc |

Connector CN102 (I/O external signals)

| Pin | Name | Description |
|---|---|---|
| 1 | +24 Vdc | +24 Vdc input |
| 2 | 0 Vdc | GND |
| 3 | +24 Vdc | +24 Vdc input |
| 4 | 0 Vdc | 0 Vdc |

Connector CN103 (Power Supply 24 Vdc)

| Pin | Name | Description |
|---|---|---|
| 1 | +24 Vdc | +24 Vdc (output) |
| 2 | DM | Analog input diameter (0-10V) |
| 3 | 0 Vdc | 0 Vdc |
| 4 | +24Vdc | +24 Vdc (output) |
| 5 | TC | Analog input tacho (0-10V) |
| 6 | 0 Vdc | 0 Vdc |

Connector CN104 (Diameter Sensor)

| Pin | Name | Description |
|---|---|---|
| 1 | TXA | Transmit –receive A |
| 2 | TXB | Transmit–receive B |
| 3 | 0 Vdc | 0 Vdc |

Connector CN105 (Serial RS-485)

# technical specs

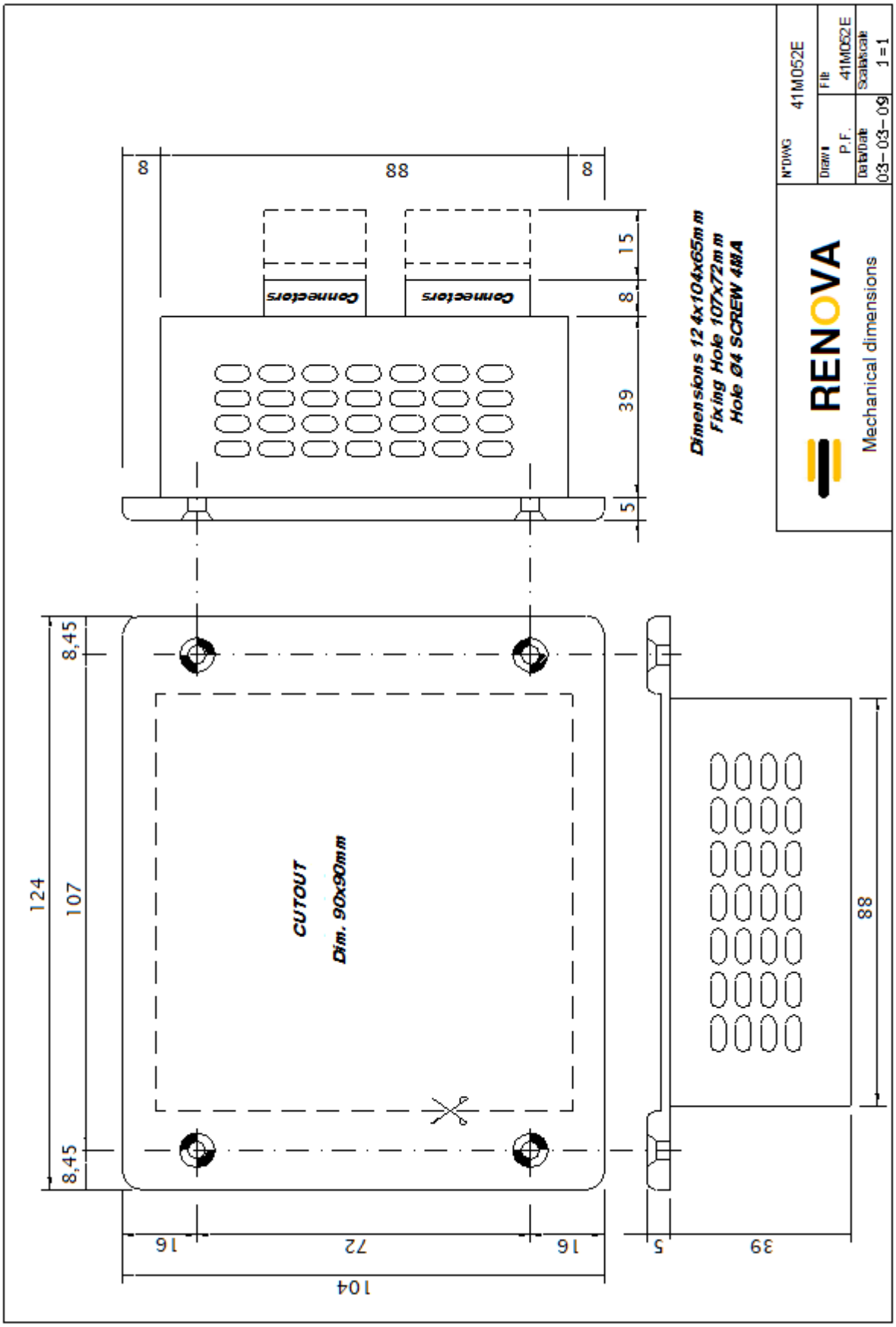
**Control Unit**

| | |
|---|---|
| Size: | 124 x 104 x 65 mm (LxHxP) |
| Weight: | 0,4 Kg |
| Power: | 24V Vdc / 10A |
| Cable length: | 5 m standard (10 m optional). |
| Operating conditions: | Temperature 10 … 70°C, max. humidity 80% |

**Load cell**

| | |
|---|---|
| Size: | Dia 83 x 63mm (LxH) |
| Weigth: | 50 Kg |
| Power: | 24V Vdc / 0,1A |
| Sensibility: | 2.0 mV/V |

# drawings


N°DWG
41M052E
Drawn
P.F.
Date
03-03-09
File
41M052E
Scale
1=1
RENOVA
Mechanical dimensions
Dimensions 124x104x65mm
Fixing Hole 107x72mm
Hole Ø4 SCREW 4MA
CUTOUT
Dim. 90x90mm
Connectors
Connectors
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15
8
39
5
124
107
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16
72
16
104
5
39
88

**Figure 2 - 41M052E**

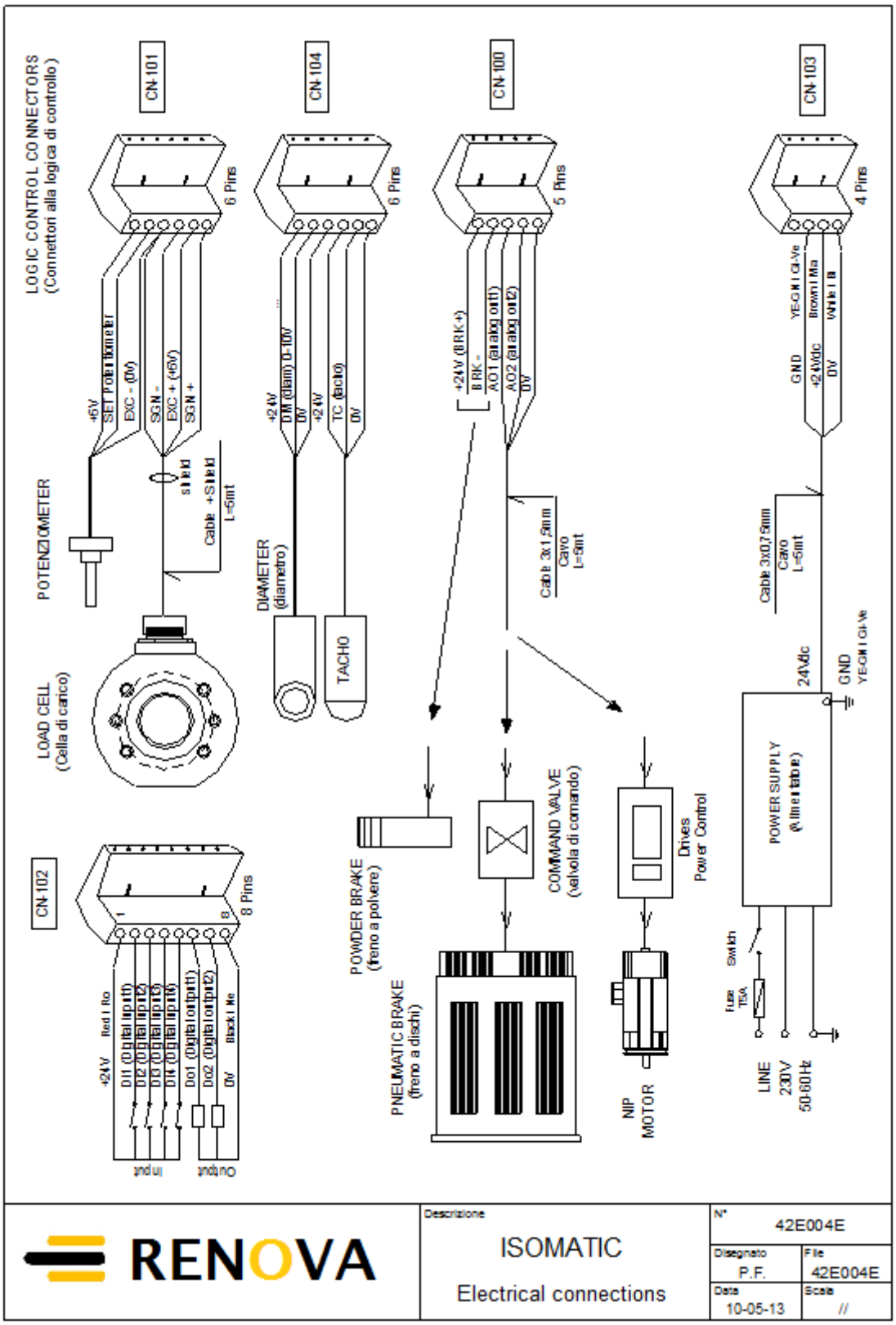


**Figure 3 - 42E004E**

# declaration of conformity

**CERTIFICATE OF CONFORMITY**

The Company RENOVA S.r.l. - whose offices and works are in MILANO, Via Pompeo Mariani 16 – **DECLARES** that the product below:

**ISOMATIC N°……..**

has been designed and manufactured in compliance with safety regulations foreseen by the following CE directives:

- MACCHINES DIRECTIVE 2006/42/CE (corresponding to Italian D.Lgs. 17/2010).
- LOW TENSION DIRECTIVE 2006/95/CEE (ricodifica della Dir. 73/23/CE e s.m.i. recepita in Italia dalla Legge 791/77) ,
- ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004/108/CE (received in Italy by the italian Dlgs 194/2007)

Moreover RENOVA S.r.l. declares that the machine, as to its own pertinence, is in compliance with regulations of 98/37/CE (EX 89/392/CEE) directive denominated “Machines directive” (completed and modified by 91/368, 93/34, 93/68) corresponding to Italian DPR 459/96.

It is declared that the equipment is provided with CE marking.

This equipment has been manufactured in order to be combined into a more complicated machine. The machine which our equipment is assigned to, shall abide to the regulations in force in the country of manufacturing when manufactured.

Moreover, the above mentioned machines are in conformity with the following integrated standards:

UNI EN ISO 12100:2010 machinery security: general principles of planning-evaluation of risk and reduction of risk
EN 60204-1, mark safety, electric equipment of machinery
EN 50082-2, electromagnetic compatibility, general standard about immunity
EN 292-1-2, machine safety, general principles of conception for parts pertaining to the machine itself and not depending on the principal machine.
EN 50081-2, electromagnetic compatibility, general standard about electromagnetic fields

Data ____/____/_____

RENOVA srl

(signature)

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# parameters and defaults

| Numero | Nome | Descrizione | Default | User |
|---|---|---|---|---|
| **1** | GKP | Proportional gain | 100 | |
| **2** | GKD | Derivative gain | 0 | |
| **3** | GKI | Integrative gain | 0 | |
| **4** | GIL | Integrative limit | 0 | |
| **5** | GKF | Tracking diameter gain | 0 | |
| **6** | ACC | Acceleration stop-auto | 10 | |
| **7** | DEC | Deceleration auto-stop | 10 | |
| **8** | VMI | Minimum correction speed | 10 | |
| **9** | VMA | Maximum correction speed | 127 | |
| **10** | TYP | Sensor type | 0 | |
| **11** | SPA | Set point in automatic mode | 10 | |
| **12** | SPB | Set point dancer roll | 50% | |
| **13** | SPS | Set point in manual mode | 20 | |
| **14** | SPF | Set point diameter | 50% | |
| **15** | SPE | Set point in emergency mode | 40 | |
| **16** | TXL | X-Lo tension | 0 (*) | |
| **17** | TYL | Y-Lo tension | 0,0 (*) | |
| **18** | TXH | X-Hi tension | 223 (*) | |
| **19** | TYH | Y-Hi tension | 100,0 (*) | |
| **20** | DXL | X-Lo diameter | 280 (*) | |
| **21** | DYL | Y-Lo diameter | 0,460 (*) | |
| **22** | DXH | X-Hi diameter | 589 (*) | |
| **23** | DYH | Y-Hi diameter | 1,840 (*) | |
| **24** | ALR | Alarm level | 199,9 | |
| **25** | DIS | Avg. Display | 4 | |
| **26** | DIG | Digits number | 1 | |
| **27** | INP | Input selection | 0000 | |
| **28** | OUT | Output selection | 02 | |
| **29** | ADR | RS-485 address | 0 | |
| **30** | INI | Initial screen | 0 | |
| **31** | LNG | Language | 1 | |
| **32** | PWD | Password | 0 | |
| **33** | TXT | Text on initialisation | Renova-srl.it | |

**NOTE**

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