OMEGA-RT^{NG}

ROPE TENSION BALANCING DEVICE

User manual

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1. DESCRIPTION AND MAIN FEATURES

OMEGA-RT^{NG} Unit control is a Load Weighing device of the (NG) New Generation units from Dinacell Electronic.

The Main features of this unit are:

- **Measures and monitors load in elevators.**
- **Up to 12 Individual Rope Tension monitoring.**
- **Wire Rope Tension adjustment.**
- **5 Digits display with 2 LEDs for Unit and sensors Status.**

And the new features of Our NG devices

- **Remote WIFI Programming(NG)**
- **USB connection for firmware upgrading.**

2. DISPLAY AND CONTROL BUTTONS

Functions of control buttons:

The unit is equipped with a menu by which the individual setting parameters can be displayed or modified.

M	a. By Pressing this key for 2 Seconds Enter/exit the menu b. By Pressing this key inside the menus will navigate through parameters. c. Accept and save modified values when modifications are on progress.
➡	a. During menu navigation: Enter to modify a parameter. b. While modifying a parameter: Chose digit to change.
⬆	a. During menu navigation: Show the stored value of the selected parameter. b. While modifying a parameter: Change the blinking digit incrementally from 0 to 9.

Note: After two minutes without any operation, the unit automatically returns to the total weight measure display, independent of the menu item previously selected.

Led	Functions
STA	Led status *(Blinks on normal Operation. Fix for WIFI)*
ERR	Error *(Blinks for any Unit Error)*

3. DIMENSIONS, INSTALLATION AND CONNECTIONS

1	**Sensor inputs**	Up to 12 USB Connectors for easy plugging
2	**Power Supply**	**Input 24 VDC** power supply

4. MENU STRUCTURE

The menu has the cyclic structure shown in the following figure.

Press (M) button for 2 seconds to enter and then press it repeatedly to move from a parameter to another. Press it for 2 seconds to exit.

Weight indication. Display the value of the measured load

Press Menu for 2 Seconds

Shows Identification Data of the unit

System calibration. These menus shows all parameters related with the load cell Configuration.

Load Cell mv/v. signal value.

Pressing Menu for 2 seconds inside the internal navigation menu will end the menu navigation and return to Display the value of the measured load

5. HOW TO VISUALIZE OR CHANGE PARAMETERS

Once inside any menu and displaying the parameter to be viewed or changed:

- Press (↑) to display the current value.
- Press (→) to select the parameter to be modify :
- Press (→) to choose the digit position to change (Flashing)
- Press (↑) to change the value of the Current Flashing digit position. (if there's no flashing digit, change the value with (↑) key directly)
- Press (M) twice to save the value.

> If (M) button is not pressed again before display Flashing ends (10 seconds), the parameter value will not be changed.

After any of these operations, the display will show the current parameter.

6. DEVICE INFO

All new NG units store some important information in this menu in order to build wireless connections with any remote future unit developed by Dinacell Electronica. All parameters can be read in this submenu.

Submenu InFo

Press to enter — Check value — Enter to modify

Add: NG Network Address of the unit.

Id_nu: Identification number of the unit. Unique identification for each unit.

Equip: Model of unit.
Valid Values: **OME**

Ver: Firmware Version of Unit **OMEGA-RT^{NG}**
Valid Values: 1.00 and above

V_Har: Hardware Version of Unit **OMEGA-RT^{NG}**

APi: ApiVersion of NG Dinacell Network
Valid Values: 100 and above

VOLt: Internal Power supply Voltage of unit **OMEGA-RT^{NG}**
Valid Values: (around 24 volts)

rESE: Reset all parameters value to Factory defaults. All calibration data will be lost

7. SYSTEM CONFIGURATION

This section describes how to configure the Unit to obtain the best measure accuracy. The configuration is done in CALLb Menu.

Calibration process:

1) Install the control unit with the information of the *INSTALL AND CONNECTIONS* chapter.
2) Connect Load Cell to the **OMEGA-RT^{NG}**
3) Power up the unit with the correct voltage (see the *ELECTRICAL SPECIFICATIONS* chapter).
4) Go to CALLb **Submenu**:
5) Detail Calibration Procedure:

Follow next steps to set a precise Load Measuring system

SEnSo

nSEn 5.1) Select number of sensor ropes.

IrEF 5.2) Do and Iref Operation with sensors **not installed** on the ropes.

tYPE 5.3) Select the Type of sensor.

dIAmE 5.4) Select the diameter of the Ropes

UnLtS 5.5) Select display measuring units. Available units are Kilograms or Pounds

SuSPE 5.6) Select Suspension. By default 1:1 is selected

2Ero 5.7) ***Zero adjustment:***

a) **Install sensors on the ropes**.
b) Select Submenu Zero by pressing ➡
c) Change countdown value if desire.
d) Press menu (M) and display will start flashing
e) Make sure elevator is empty and confirm operation by pressing (M) again.
f) The countdown will start. During this time, the car weight must not change.
g) **Now the unit is calibrated**. Cabin weight is calculated when Zero operation is finished.

CELL 5.8) **Cell:** This parameter stores the Sensor Sensibility. Cell value is automatically loaded when the diameter of the Ropes or the type of sensor is selected.

Adjusting process:

Once all the parameters have been set, then a wire rope tension balancing may be done.

See section 11.1 Wire Rope Tension checking Tool

8. ERROR CODES AND TROUBLESHOOTING

When the unit detects some anomaly it will show an error code from the following table:

	Error description	Action
Err 1	Load cell is not properly connected, or its cable is damaged.	Check the load cells connection.
Err2	Negative overflow. The load cell is giving a too high negative signal.	Check the load cell connection. It should be no negative charge.
Err3	Positive overflow. Load cell is holding a higher load than its nominal value.	Change the load cell by another with higher nominal load.
Err4	Polarity error. It could happen if the unit was adjusted with a wrong load cell polarity.	Check the load cell connector. Adjust iref and zero operations again.
Err6	Loss of data in memory.	The unit must be reset to its default values
Err7	Load cell with very low sensibility. The unit was not properly adjusted or load cell has a low nominal value.	Adjust the zero and Load again. Change the load cell by another with lower nominal load.

RESTORING THE FACTORY SETTINGS (Only in case of configuration problems)

Just go to menu InFo and set rESEt option to **yes**:

9. ELECTRICAL SPECIFICATIONS

Power supply characteristics	Short-circuitable. It is not necessary to replace any fuse.
Nominal voltage	18-40 Vdc
Maximum current	<165mA(*)
Relays Contacts (Nominal Switching Capacity)	1A - 30V DC 0.3A - 125V AC
HOLD Input	24V-230V AC/DC
Box	IP-50 V0 fireproof plastic.

(*) increases 30 mA if NG activated.

10. NG CONECTION

All New Dinacell Units have a special feature called NG Connection (New Generation connections)

The main function of the NG connection is to connect to android Smart phones for Unit calibration, and reading Pen Drives for software updating.

10.1 Wifi NG Connection

To use all advanced features of NG Connection, user needs to connect the **WRCT^{NG}** adapter to the unit **OMEGA-RT^{NG}** and **Dinacell TOOLS Application software** must be installed in a smart Phone or Laptop.

Users can download the Dinacell Application "**Weighing NG"** from Google Play Store market or from Apple Store.

With the New **WRCT^{NG}** adapter connected to the NG Connection of the **OMEGA-RT^{NG},** users can:

a) Get all parameter values of the unit in real time.

b) Calibrated the unit without using the key board.

c) Test the installation performance.

d) Make studies of the measures in the installation to adjust rope tensions, guides, detect friction problems during travels.

e) Save all Calibrating parameters data in a Pdf report.

f) Send reports by mail.

g) Stores all installation calibrations in a single phone.

h) And so on, cause software is in continuous development.

10.2 Firmware Update

It is possible to update the firmware of any NG Device using the NG connection and a Flash Pen drive. Follow next steps to enter in Boot loader mode for firmware updating:

a) Copy new firmware (.CYP file) in the Flash Pen drive.

b) Plug the Pen drive in the auxiliary USB cable adapter from USB to Mini USB.

c) Switch off the unit **OMEGA-RT^{NG}** by removing the power supply.

d) Press (M) key and **apply power to the unit with the key pressed**. ERR LED will flash each second, and 5 Digits display will be switched off.

e) Plug the Mini USB cable on the NG connector. STA LED Will be ON and ERR LED will Flash Faster (each 0.5 second)

f) Be patient and Wait until unit reboots. The process can take up to a minute.

g) When programming ends the Unit Will reboot automatically.

11. WIRE ROPE TENSION ADJUSTMENT

This section explains how to adjust the tension of all wire ropes of the installation. All ropes should carry the same tension. Equally tensioned ropes improve ride quality and extend life of ropes and sheaves.

Nowadays most elevator systems have multiple wire ropes attached to the cabin and counterweight. This ropes normally run over a traction sheave or pulley just to move the cabin up and down the hoistway.

When some ropes have more tension than other, the ropes with lower tension will slide over the pulley and can produce a crown groove wear at the sheave. It is possible to detect this wear by rope slapping, vibrations on the cables, or metal dust on the pulley.

Normally, the system works better if all the ropes have similar tension (about ± 5%) of the nominal load of the installation.

Although some installers manage to adjust the rope tension manually just touching the ropes or just tuning the installation plucking each rope as a harp string, the best way to do this operation is measuring the load on all the ropes and displaying it in real time.

11.1 Wire Rope Tension checking Tool

The only tool needed to adjust the wire rope tension is the **WRCT^{NG} dongle** and a Smartphone a tablet or a laptop. Then from the rope tension screen you will visualize the load of each rope in real time Now it is possible to adjust the tension of each rope to make then equal.

11.2 Assistance to the wire rope tension adjustment

With this assistant tool you will be guide to adjust each rope with the adequate load just to accomplish the desired target. To enter this mode just push **ADJUST** label

Following the suggested steps, you can apply the precise load to each rope to perform the whole "wire rope tension" process, just in a few minutes.

Now, you can check the final result of the adjustment process.

You can save all your installations data on your Smartphone, tablet or laptop. You can save as many installations as you desire (the only limitation is the memory of each device). Sending reports by mail or create your own PDF reports are also possible from the tool.

Laptop Configuration Software:

Same operations can be done from a laptop or any computer with WIFI connection.

Tools NG
MENU
ACTIONS
DINACELL ELECTRÓNICA S.L.
Change Language
Close Connection
Company Details
Settings
Chain Load Wizard
Sensors Adjustment
Factory Settings
Device
Set Zero
Create report
Reports
TOOLS NG
Device Information
Model: VK-OMEGA
Device Id: 25673
Net address: 125
Voltage: 28.15
0 1330 kg
Additional Information
API version: 1.03
Software version: 1.02
Hardware version: 21.02
Label: OME
Refresh weight frecuency: 20
Weighing
Units of measure: kg
Suspension: 1:1
Load value: 100 kg
Cell value: 1728
Number of alarms: 4
Number of relays: 4
Chain and Hold
Compensation type: Ninguna
Hold time to departure: 0.2 s
Hold time to arrival: 0.4 s
Sensors
Number of sensors: 12
Total weight: 1.328.77 kg
Middleweight: 110.73 kg
Maximum deviation: 26 kg
Allowable deviation: 5 %
94 112 127 100 137 127 109 102 105 103 108 105
#1 #2 #3 #4 #5 #6 #7 #8 #9 #10 #11 #12
Sensors
Dinacell electrónica
Dinacell Electrónica S.L
Alarms
Full Load 100 kg
Relay status: Change
Overload 200 kg
Relay status: Change
Load 40 kg
Relay status: Change
Slack Rope 100 kg
Relay status: Change
Cabin display
Display type: Incremental
Incremental output
Hold
HOLD OFF
Hold time to departure: 0.2 s
Hold time to arrival: 0.4 s

12. QUICK CONFIGURATION GUIDE

- **Parameters checking or modification**

- **Quick System configuration**

1. Install the **OMEGA-RT^{NG}** in an appropriate location.
2. Connect all sensors to the unit.
3. Go to CALLb submenu.
4. Set the number of sensor (ropes) nSEn of the installation.
5. Do and IrEF operation for all sensors.
6. Select the right tYPE of sensor and dIAmE.
7. Set UnLtS to kilo or Pounds
8. Set the Suspension Factor SuSPE.
9. **Install the sensors on the Ropes.**
10. Empty the elevator and set the countdown value for calibrating operations. Confirm the value 2Ero.for Zero Operation. A countdown will start.
11. Now You can start to equalize all ropes with the same tension.
12. then if all individual ropes are balanced a final report can be generated with all the installation data.

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