MRL200 - MULTIROPE SENSOR

QTY 1 MultiRope MRL rope sensor [**A**]
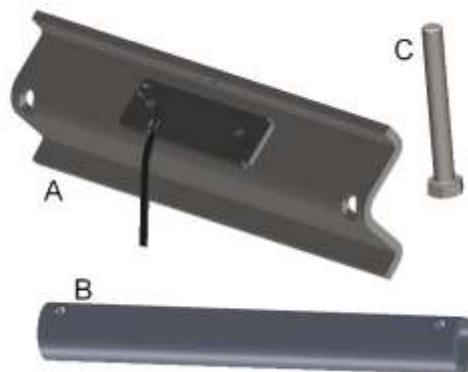QTY 2 screws (engraved with ID)
  Hex head, normal [C] or flanged type[D]
QTY 1 Deflection rod [**B**]

NOTE:

A) Engraved [C and D type] screws, are matched to specific elevator rope diameters and specific lift configuration.

SENSOR INSTALLATION

1) Apply [**C/D**] screws to [**A**] sensor.
2) *MRL* sensor [**A**] must be close to the ropes, parallel to the cabin roof.
3) Evenly position the ropes along the inner MRL sensor slot width (space between [**C/D**] screws), without overlapping them. Avoid ropes to touch screws.
4) Install the [**B**] deflection rod.
5) Screw calibrated [**C/D**] screws in the threaded [**B**] holes.
6) Screw [**C/D**] screws till they touch the inner side of the deflection rod
7) Ropes are not to overlap and are to be parallel between each other.

8) **Multirope MRL sensor is installed on the ropes, use the elevator for some runs with inside the cabin the maximum payload (also jump in the cabin), then calibrate with (𝑀𝐴𝑁𝑈 procedure) applying a known weight, in the cabin.**

MRL200 SENSOR INSTALLATION HINTS

- **MRL200** have been tested with loads (**P+Q**) up to **2.000 Kg** and 1:1 roping.
  This **load limit** is the effective load on all the ropes = Lift nominal weight (Q) + Car weight (P) / *roping coefficient*.
- Screws MUST be screwed until the tip touches the internal surface of the deflection bar.
- When screw's tip touches the inside surface of the deflection bar, stop tightening the screws.
- Avoid to use screws with damaged thread.
- Use two screws with same marking (ID) engraved on the head.
- DO NOT use MRL sensor + C/D screws for a lift configuration different from the one it was designed for.
- DO NOT damage RJ11 connector or connection cable.

MANDATORY
Tip of the screw in contact with inside surface of deflection bar
0 mm
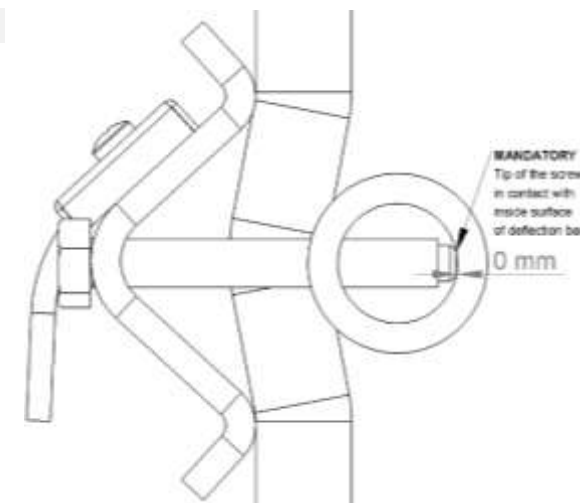
MRL100 and MRL 150 - MULTIROPE SENSORS
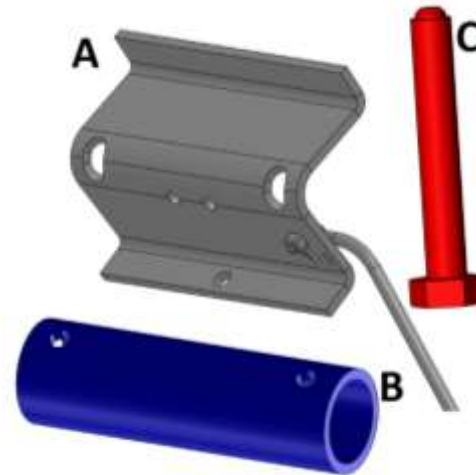
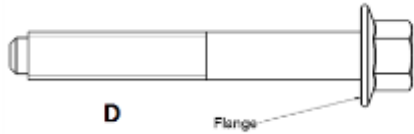QTY 1 MultiRope MRL rope sensor [**A**]

QTY 2 screws (engraved with ID)

   Hex head, normal [C] or flanged type[D]
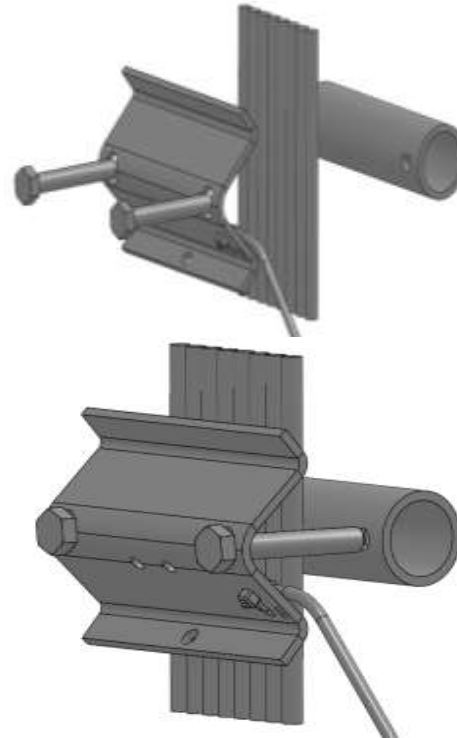
QTY 1 Deflection rod [**B**]

NOTE:

A) Engraved [C and D type] screws, are matched to specific elevator rope diameters and specific lift configuration.

SENSOR INSTALLATION

1) Apply [**C/D**] screws to [**A**] sensor.
2) *MRL* sensor [**A**] must be close to the ropes, parallel to the cabin roof.
3) Evenly position the ropes along the inner MRL sensor slot width (space between [**C/D**] screws), without overlapping them.
   Avoid ropes to touch screws.
4) Install the [**B**] deflection rod.
5) Screw calibrated [**C/D**] screws in the threaded [**B**] holes.
6) Screw [**C/D**] screws till they touch the inner side of the deflection rod
7) Ropes are not to overlap and are to be parallel between each other.
8) **Multirope MRL sensor is installed on the ropes, use the elevator for some runs with inside the cabin the**

maximum payload (also jump in the cabin), then calibrate with (MANU **procedure) applying a known weight, in the cabin.**

MRL 100 / MRL 150 SENSOR INSTALLATION HINTS

- **MRL100 / MRL 150** have been tested with loads (P+Q) up to **4.000 Kg**, with Ø 6,5 mm ropes and 1:1 roping. This **load limit** is the effective load on all the ropes = Lift nominal weight (Q) + Car weight (P) / *roping coefficient*.
- Screws MUST be screwed until the tip touches the internal surface of the deflection bar.
- When screw's tip touches the inside surface of the deflection bar, stop tightening the screws.
- Avoid to use screws with damaged thread.
- Use two screws with same marking (ID) engraved on the head.
- DO NOT use MRL sensor + C/D screws for a lift configuration different from the one it was designed for.
- DO NOT damage RJ11 connector or connection cable.

MANDATORY
Tip of the screw in contact with inside surface of deflection bar
0 mm
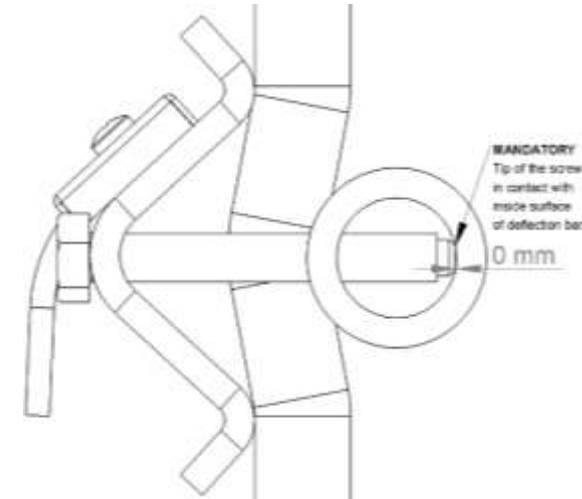
942 STRAIN LINK SENSOR

QTY 1 *942 Strain Link* transducer
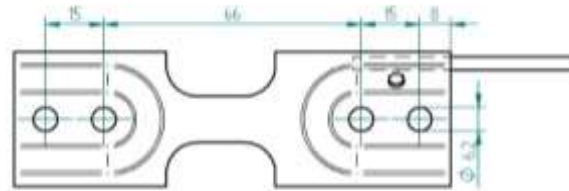
QTY 4 Screws, type M 6x30 8.8 DIN 933

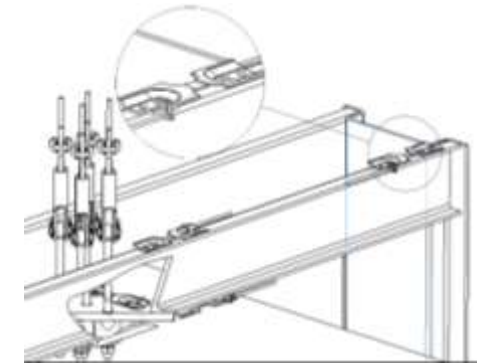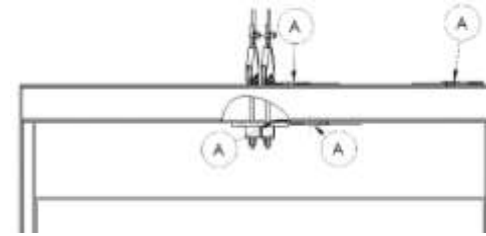QTY 4 Flat Washers M 6, type UNI 6592

QTY 8 Fixing M6 nuts

Suggested fixing torque

M6 screws = 10,30 Nm

(**wrench with 10 mm hex. opening)**

1 x 942 flexion Strain Link

SENSOR INSTALLATION

1) 942 Strain link and 699 Plus are to be installed on the lift frame.
2) 942 Strain link must be fixed on a **flat and clean surface, without rust, paint grease or oil.**
3) Drill Ø 6,2 mm holes finishing hole edges to restore the plane (90° to the beam plane).
4) Use *flat washers* and tighten the 4 screws to fix strain link 942**.**
5) Connect 942 Strain Link to *699Plus*.
6) *Ground to earth to 699Plus*.
7) Power 699Plus and wait 15 minutes before calibrating.
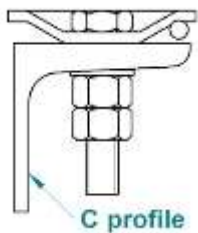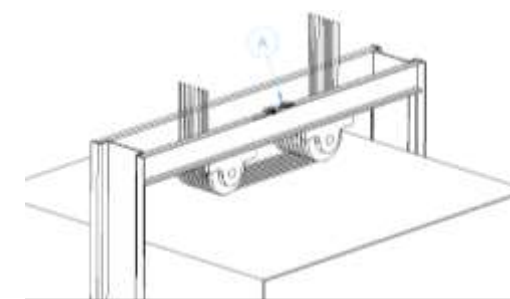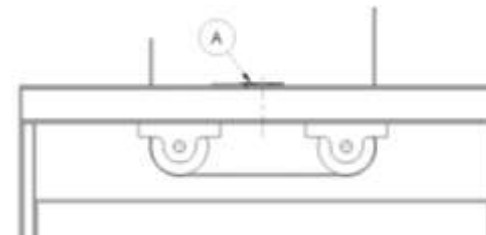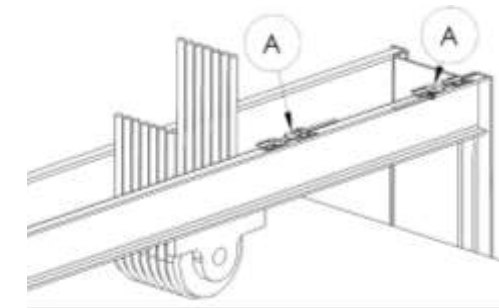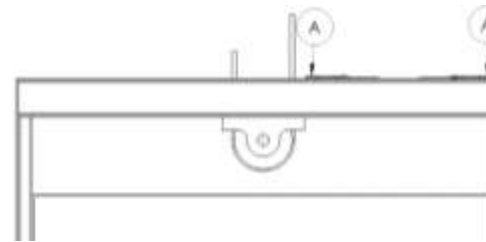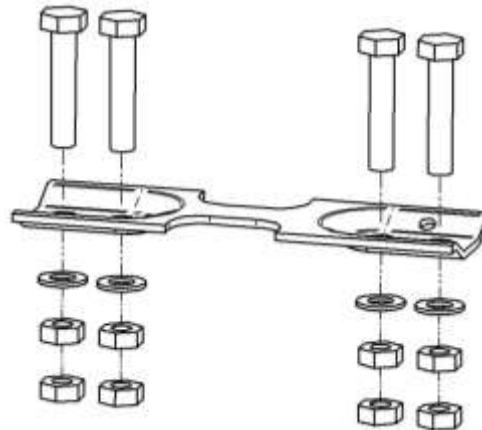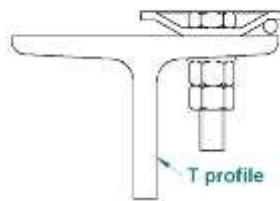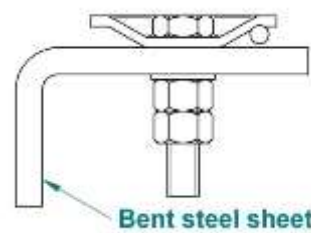
C profile T profile Bent steel sheet

SENSOR INSTALLATION HINTS

Suggested installation position depends on car frame type. See below for possible mounting options of **A**= *942 Strain Link (1* sensor per car is required).

NOTE:942 Strain Link measures the relative extension and has NOT to be installed where TORSION deflection occurs.

699PLUS CONTROLLER CONNECTIONS

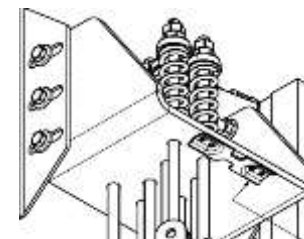| Screw Terminal	Meaning
1	GND (DC POWER SUPPLY)
2	+ 24 V (DC POWER SUPPLY)
3	EARTH connection
4	CONTACT I/O 2 (Display *Zeroing*)
5	CONTACT I/O 1 (Chain compensation)
6	I/O CONTACT's common reference
7	**Relay 3** - *Normally Open contact*
8	**Relay 3** - *Normally Closed contact*
9	**Relay 3** Common contact
10	**Relay 2** - *Normally Open contact*
11	**Relay 2** - *Normally Closed contact*
12	**Relay 2** Common contact
13	**Relay 1** - *Normally Open contact*
14	**Relay 1** - *Normally Closed contact*
15	**Relay 1** Common contact
16	+ power supply to transducer
17	- power supply to transducer
18	+ signal form transducer
19	- signal from transducer
23	AGND (Analog output)
24	Analog Output

Ground to earth the 699 electronics and **respect all the relevant safety and electrical regulations**.

Once performed all the needed electrical connections feed power supply and wait 15 minutes, before calibrating. **Measurement changes are displayed in tens of the used engineering units.**

POWER SUPPLY = 24 Vdc

699PLUS CONTROLLER
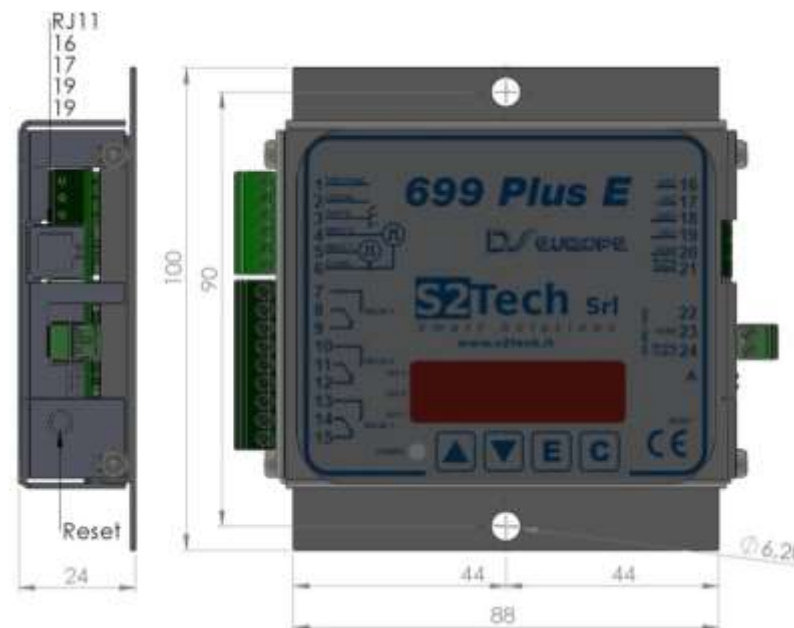
QTY 1 699Plus weight controller
QTY 2 Fixing screws, type M4 x 12 UNI 7687
QTY 2 Nuts, type M4

PUSHBUTTONS AND THEIR ACTION for 699Plus programming

Use ▲ or ▼ to view available parameters.

Use **E** to view and modify existing numeric parameter or to confirm changes to parameter. 699Plus indicates that new parameter has been accepted by showing, briefly, MEMO and then displaying again the parameter's name.

Use **C** to:
- abort changes to numeric parameter, maintaining the existing value
- end calibration – SAVE changed parameters - and start load measurement

To modify numeric parameters, use ▲ to increase or ▼ to decrease value of one unit.

▲+ **E** increase value of 10 and then 100 units while ▼+ **C** decreases of 10 and then 100 units.

LoadSentry Instruction Manual **MANU**

Digital load measuring system

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CE

Version : UK 3r5 dated 20/11/17
Page: 5/6

699PLUS PROGRAMMING   **MANU PROCEDURE**

Calibration of the installed load measuring system must be done when lift's cabin is at the lowest floor of the plant, or at the most frequently used.

Measurement changes are displayed in tens of the used engineering units.

Once system has been installed, enter programming procedure by:

- power the 699Plus keeping pressed ▼+**C** buttons (min 5 sec.), OR
- press ▼+**C** buttons (min 5 sec.) while pressing RESET

Display will show *MANU* to confirm procedure activation.

1 - TARE

a) WITH EMPTY CABIN, send the lift to the lowest floor
b) Jump slightly on top or inside the cabin
c) Use ▲ or ▼ to select **TARE**
d) Press **E** to start count down (60 sec; display shows from *T-60* to *T-01*, *STEP OFF FROM THE LIFT AND WAIT UNTIL THE COUNTDOWN ENDS*
e) Tare measurement is completed after *MEMO* is displayed and *TARE* is shown again.

2 - HI

a) Place known load in the cabin (from 50% to 80 % of lift's rated capacity)
b) Use ▲ or ▼ to select **HI** and press **E**
c) Enter the weight value in engineering units (Kg/lb) and press **E** to start count down (60 sec, from *T-60* to *T-0*), *STEP OFF FROM THE LIFT AND WAIT UNTIL THE COUNTDOWN ENDS*
d) If process is successful, **MEMO** is displayed and **HI** is shown again

3 – FSCA: lift's rated load, in engineering unit. *Default value = 0*

a) Use ▲ or ▼ to select **FSCA** and press **E**
b) Modify load and press **E**

4 – LEV1: Full Load (RELAY 1) as percentage of the rated load (modifiable value)
 *Default value = 80 % **FSCA***

a) Use ▲ or ▼ to select **LEV1** and press **E**
b) Modify **LEV1** value and press **E**

5 – LEV2: Overload (RELAY 2) as percentage of the rated load (modifiable value)
 *Default value = 110 % **FSCA***

c) Use ▲ or ▼ to select **LEV2** and press **E**
d) Modify **LEV2** value and press **E**

6 – LEV3: Presence (RELAY 3) as percentage of the rated load (modifiable value)
 *Default value = 5 % **FSCA***

e) Use ▲ or ▼ to select **LEV3** and press **E**
f) Modify **LEV3** value and press **E**

7 – CHNC: Compensation chain enabling signal (contact 5 and 6, continuous +12/24Vac/dc signal when doors are closed). Inactive (default) if **CHNC**=0; active if **CHNC**=1.

g) Use ▲ or ▼ to select **CHNC** and press **E**
h) Select 0 or 1 and press **E**

8 – press **C** to end calibration and save parameters

ERROR CODES

Code	Meaning
ER.01	*Negative Load*: ER01 indication is displayed alternatively to the measured load (the minus sign is displayed only up to three numbers, i.e. -999). *Check connections and recalibrate.*
ER.22	Conversion slope not correct: *too high signal from 942 Strain Link (fix 942 to a more rigid part of the lift frame or substitute it). Verify that HI value is entered with the right resolution* (use weight at least 80% FSCA).
ER.23	HI value is too low (in engineering units). HI-Tare must be > 10
ER.24	Calibration Load is too low. Increase load.
ER.26	TARE and HI values identical, in engineering units.
ER.28	*Overrange/Underrange*: ER.28 is displayed alternatively to measured load. Verify that sensor mechanical installation is OK and corresponding to Factory indications. In case perform again Sensor Installation. Calibrate again the 699Plus after the modifications.
ER.30	*C button* pressed for more than 3 seconds, when 699Plus controller is in calibration mode.
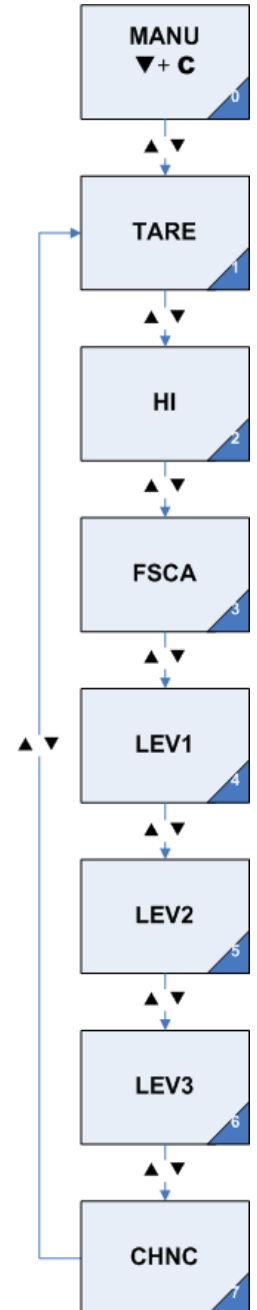
ADDITIONAL FUNCTIONS

Holding down the C button

By keeping pressed the **C** pushbutton for 5 seconds, the measured weight is zeroed. If this button is pressed for 5 seconds with load inside the car, once the load is removed the 699Plus will show a negative measure. Pressing and holding down the button again, new zero is stored and the display will show positive load once weight is placed inside the cabin. Zero is stored into EEprom memory.

Compensation Chain and Relays block function

When doors are closed, feed between **INPUT1** (terminal 5) and **EXGND** (terminal 6 = GND/common reference) a voltage coming from door relay where:

0 Vac/dc = lift DOOR OPEN.

+12/24Vdc (9/18 Vac) = lift DOOR CLOSED.

In case of black out, send cabin to lowest floor and reconnect the 699Plus control unit again to the power supply. 699Plus will automatically re-check and activate the compensation function.

699 Relay test procedure

Press ▲+**C** buttons and press RESET until display shows TREL.

Press ▲ to test Relay 1, ▼ to test Relay 2 or **E** to test Relay 3.
Press *Reset* button to return to normal measurement operation.

Er.24 Reset

1. ***Reset the unit*** (right side push-button) keeping pressed the ▲ + ▼ + **C** buttons, until display shows ECLR

2. Releasing the three front buttons, display shows CLRA, to indicate You initiated the procedure

3. Press once **E** button to clear Er.24. Display shows MEMO TO CONFIRM.

4. Press **C** button to end procedure.

5. Display shows SAVE and then will reset of 699Plus.

6. ECAL IS DISPLAYED to warn that controller is UNCALIBRATED and a NEW CALLIBRATION MUST BE DONE.

At this moment, the 699 unit **IS UNCALIBRATED** and a NEW CALIBRATION has to be performed, after having removed the condition that generated the wrong calibration.

Measurement is blinking, as it is based on the *default calibration parameters* (for troubleshooting purposes), **to indicate that a new calibration is needed**.

Electrical Connection limits

Power supply (Terminal 1 and 2):

+ 24 Vdc (-20/+10%) Current 50 mA with inrush current of max 1 A

+ 12 Vdc (-20/+10%) Current 100 mA with inrush current of max 300 mA

Relay - resistive loads (Terminals from 7 to 15): 1 A 24Vdc / 125 Vac

Digital I/O inputs (Terminals from 4 to 6): opto-insulated +12/24 V ac/dc (-20/+10%)

Respect all the relevant safety and electrical regulations.

CE DECLARATION

699 digital conditioner complies with the requirements of the following norms:

EN 61326-1(1997) + A1(1998) + A2(2001) + A3(2003); EN 61000-6-2(2001); EN 61000-3-2(2000) + A2(2005);EN 61000-3-3(1995) + A1(2001); EN 61000-4-2 (1995) + A1(1998) +A2(2001); EN 61000-4-3(2002) + A1(2002); EN 61000-4-4(1995) + A1(2001) + A2(2001); EN 61000-4-5(1995) + A1(2001); EN61000-4-6(1996) + A1(2001); EN 61000-4-8(1993)+A1(2001); EN 61000-4-11(2004)

Document history

Rev	Date	Description	FW	HW	Writer	Check
3.5	201117	Keys to enter MANU programming updated	1.38	5.1	SP/CF	CF/CM
3.4	041017	Paragraph 3 page 5 updated	1.38	5.1	SP/CF	CF/CM
3.3	050517	First release	1.38	5.1	SP/CF	CF/CM