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WARNING

Information provided in this manual is used for the installation of the radio remote control on the machine and for its maintenance.

Information provided in this manual allows to disable, enable and set some radio remote control's functions that may have impacts on the risk assessment related to the machine; this assessment must be carried out to decide whether the machine can be radio remote controlled.

Information provided in this manual cannot be used and performed by people who are not competent, responsible, and authorized for this matter.

Those who use this information must have been trained about the radio remote control and its risks by Elca's personnel or by people authorized by Elca.

Elca srl cannot be held liable for responsibilities resulting from the modification of these functionalities.

Warnings and caption for the documentation attached to the radio remote control

The attached documentation is an integral part of the radio remote control and it aims at providing the instructions needed for using and maintaining the system, paying particular attention to the safety functions. Always remember that:

- **photos and drawings are useful examples that help understand the instructions and warnings of each radio remote control configuration**
- **if necessary, contact Elca if any of the instructions and/or warnings are not clear.**

No part of the documentation may be reproduced, in any form or by any means, without written permission of Elca (including recording and photocopying). If documentation is lost or damaged, ask Elca for a copy. Please specify the serial number of the related radio remote control.

The documentation must be kept for the whole life of the radio remote control: after reading it, keep it on hand for future reference.

Information contained in the radio remote control documentation adds to and completes the information provided by the manufacturer of the remote controlled machine and/or by those who install the radio remote control on the machine.

All installation, usage and maintenance operations must be carried out by qualified technicians who are suitably trained with respect to the relevant norms and laws.

Therefore, this documentation must be read and understood in all its parts by the user and by:

- **the radio remote control owner and/or installer**
- **the person responsible for and in charge of maintenance and/or safety in the workplace where the radio remote control is used.**

As for instructions and warnings regarding the machine where the radio remote control is installed, follow the instructions given in the machine's manual.

Three symbols are employed throughout documentation, which are used to highlight specific safety-related issues. They are classified according to the hazardous situation that may arise and on the possible consequences:

Symbol	If the highlighted instructions are not respected ...		
	... a dangerous situation will occur...	...consequences for people may be...	...consequences for property may be...
	...highly probable.	... critical (death or physical damage).	... critical.
	... probable.	... critical (death or physical damage).	... critical.
	... probable.	... moderate (non-severe physical damage).	...moderate.

	**This symbol is also used, and it identifies texts to be read carefully.**

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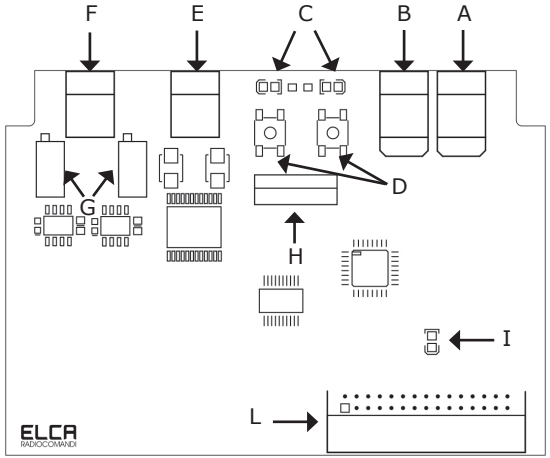
The card 0403IA0001DE is used to handle analogue voltage and current signals inputs in the receiving units of the E1 series.
Check the data sheet for the presence of this analogue card in your system.

1 Card 0403IA0001DE

The card has up to 2 proportional voltage outputs and 2 proportional current outputs. The factory settings are indicated in the data sheet.

The SETUP procedure allows to modify the values of these proportional outputs (see chapter 4).

2 CARD DESCRIPTION



A	Positive power input (COM+)
B	Negative power input (GND-)
C	Signalling LED (DL1, DL2)
D	SETUP buttons (S1, S2)
E	Proportional current output (PWMH, PWML)
F	Analogue proportional voltage output (A0, A1)
G	Analogue output adjustment trimmer (P1, P2)
H	Programming connector
I	ENABLE LED (DL3)
L	Mother board connection

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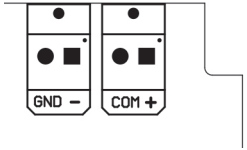
2.1 Power inputs

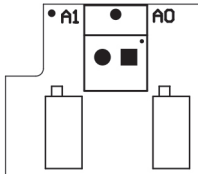
The power inputs of the positive COM+ and the negative GND- they are designed to power the proportional outputs: wire the connector following the polarity shown below.



COM+	Positive power supply of the outputs
GND -	Negative power supply of the outputs

2.2 Proportional voltage outputs

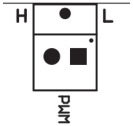
Depending on the programming of the analogue card, the proportional outputs A0 and A1 may have different voltage values to meet the user's needs, in particular they can be programmed to vary between a voltage V Min and V Max.
E.g: It is possible to program A0 for values between 2.5 V and 5 V.



A0	Proportional voltage output A0
A1	Proportional voltage output A1

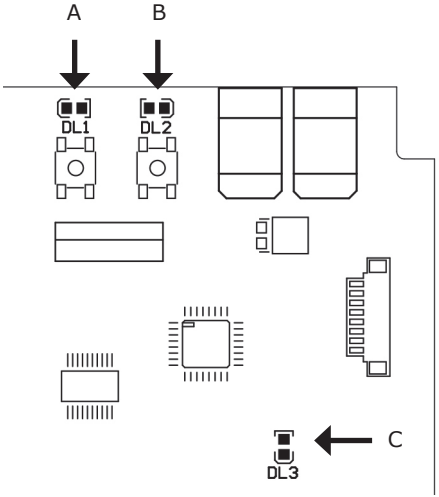
2.3 Proportional current outputs

The PWML and PWMH command outputs can be connected to the connector for the proportional current (PWM) outputs.



	To be checked in the radio remote control data sheet the exact connection of the proportional current outputs.

2.4 LED



A	DL1 LED
B	DL2 LED
C	ENABLE LED

The card has three LEDs signalling the working status and any possible malfunction of the card itself:

- The green DL1 and DL2 LEDs signals the operational status and the working status of the card during the SETUP of the proportional current output.
- The green ENABLE LED signals the operational status of the card.

3 Technical data

Power supply voltage of the outputs ..... 8-30V ⎓
Number of the available proportional voltage outputs 2
Proportional voltage outputs (adjustable) .....
..... da 0 a 28V ⎓ (10mA)*
Number of proportional current outputs 2
Proportional current outputs (adjustable) ..... da 0 a 2 A

(*) The proportional voltage outputs can reach a maximum value of 2 V lower than the power supply voltage of the outputs.

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4 SETUP procedure

	**The SETUP procedure must only be performed by qualified and trained personnel.**
	**During the SETUP procedure, pay attention to the machine as it moves by activating the different actuators.**

4.1 Controls and light signals in the transmitting unit

The SETUP procedure can only be performed using both the receiving unit and transmitting unit.

In the card 0403IA0001DE there are:
- two buttons (S1, S2) used for SETUP;
- two trimmer (P1, P2) to adjust the amplification of the analogue outputs (A0, A1);
- three LEDs (DL1, DL2, DL3/ENABLE) to signal the operational status or any malfunctions of the card.

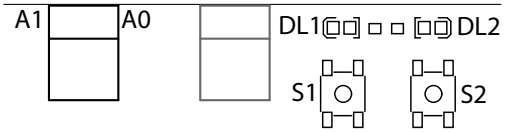
	**DL1 LED and DL2 LED, present in the trasmitting unit, can report the status of the digital inputs of the mother board in the receiving unit.**

4.2 Calibration of the maximum and minimum values of the analogue outputs (MIN/MAX SETTING)

1. Start up the receiving unit and trasmitting unit.
2. To access the SETUP mode press the S1 and the S2 buttons at the same time, for about 10 seconds, until DL1 and DL2 LEDs start flashing simultaneously.
3. To change the minimum position of the potentiometer, set the control device to the minimum position, a steady LED lights up (DL1 or DL2), use the S1 and S2 buttons to change the value.
4. To change the maximum position of the potentiometer, set the control device to the maximum position, a steady LED lights up (DL1 or DL2), use the S1 and S2 buttons to change the value.

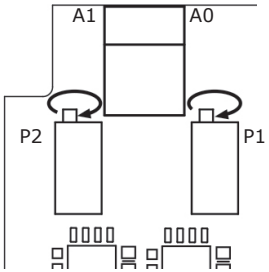
Note: If the output is at an intermediate value between the maximum and minimum value, the DL1 and DL2 LEDs light up steadily and the S1 and S2 buttons are not enabled for modification.

5. To save the changes made, press buttons S1 and S2 at the same time until the LEDs start flashing alternately and then goes off, this indicates the return to normal operation.
6. Remove the power supply from the receiving unit to not save the changes.
7. At the end of the modification of the maximum and minimum values of the analog outputs, check the correct functioning of the system.



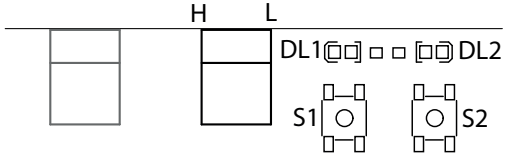
4.2.1 Modification of the analogue outputs amplification

1. Start up the receiving unit and trasmitting unit.
2. Turning P1 clockwise or anticlockwise shifts the output value of A0, keeping the difference between minimum and maximum unchanged. In the same way, turning P2 clockwise or anticlockwise shifts the output value of A1, keeping the difference between minimum and maximum unchanged.



4.3 Calibration of the maximum and minimum values of the PWM outputs controlled by potentiometer (MIN/MAX SETTING)

1. Start up the receiving unit and trasmitting unit.
2. To access the SETUP mode press the S1 and the S2 buttons at the same time, for about 10 seconds, until DL1 and DL2 LEDs start flashing simultaneously.
3. To change the minimum value, bring the output to the minimum value, the DL1 LED lights up, and use the buttons S1 to decrease and S2 to increase the value.
4. To change the maximum value, bring the output to the maximum value, the DL2 LED lights up, and use the buttons S1 to decrease and S2 to increase the value.
5. If the output is at an intermediate value between the maximum and minimum value, the DL1 and DL2 LEDs light up steadily and the S1 and S2 buttons are not enabled for modification.
6. To save the changes made, press buttons S1 and S2 at the same time until the LEDs start flashing alternately and then goes off, this indicates the return to normal operation.
7. Remove the power supply from the receiving unit to not save the changes.
8. At the end of the modification of the maximum and minimum values of the PWM outputs, check the correct functioning of the system.



4.4 Calibration of the maximum and minimum values of the PWM outputs controlled by joystick (MIN/MAX SETTING)

1. Start up the receiving unit and trasmitting unit.
2. To access the SETUP mode press the S1 and the S2 buttons at the same time, for about 10 seconds, until DL1 and DL2 LEDs start flashing simultaneously.
3. Operate the joystick as shown in the table:

Joystick position	Value to modify	DL1 LED	DL2 LED
down just off 0	minimum PWML	off	flashes slowly
down to the maximum	maximum PWML	off	flashes quickly
up just off 0	minimum PWMH	flashes slowly	off
upwards to the maximum	maximum PWMH	flashes quickly	off
intermediate	none	steady on intermediate position upwards	steady on intermediate position downwards
rest	none	steady on	steady on

4. Once you have chosen the value to be modified, keep the position of the joystick and use the S1 button to decrease and S2 to increase.
5. To save the changes made, press buttons S1 and S2 at the same time until the LEDs start flashing alternately and then goes off, this indicates the return to normal operation.
6. Remove the power supply from the receiving unit to not save the changes.
7. At the end of the modification of the maximum and minimum values of the PWM outputs, check the correct functioning of the system.

4.5 Restoring factory values

1. Start up the receiving unit and trasmitting unit.
2. Press the S1 and S2 buttons at the same time until the DL1 and DL2 LEDs start flashing, during the flashing press S2.
3. When the LEDs go out and the card returns to work with the factory values reset.

5 Malfunctions of the proportional outputs

In the event that the proportional outputs of the receiving unit do not work correctly, search for the malfunction according to the light signals of the LEDs on the analogue card 0403IA0001DE and in the transmitting unit. If the problem persists after the suggested solution has been carried out, contact the support service of the machine manufacturer.

To search for malfunction, the card must be accessed when the receiving unit is powered: these operations may entail electrical risks.

It is therefore mandatory that malfunction is searched for by staff skilled and trained for live-line working.

Signals in the analogue card	Possible reason	Solutions
ENABLE LED is off.	The analogue card is not enabled.	Check that the receiving unit is enabled and that the analogue card is insert correctly.
DL1, DL2 and ENABLE LEDs work correctly but have no outputs.	No power between GND- and COM+.	Check the correct connection of GND- and COM+.

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