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External Control Unit
Multi Power Master (MPM)

CE

CONTENTS

Preface

This manual is intended for the installation and use of the External Control Unit MPM, in this guide also referred to as Control Unit. The Control Unit is used in combination with a MPM.

This manual must always be accessible to the operating personnel. Read this manual in its entirety before using this product.
Instructions given in this manual should be followed to ensure the proper working of the product and in order to avoid possible violation of the warranty terms.
The warranty terms are described in the SIMCO (Nederland) B.V. general terms and conditions.

Explanation of symbols

Warning
Indicates special information for preventing injury or significant damage to the product or the environment.

Danger
Indicates information for preventing electrical shocks.

Note
Important information for making the most efficient use of the product or for preventing damage to the product or the environment.

1 Introduction

The Control Unit is used to set the ion balance of the anti-static equipment connected to the MPM. The remaining charge on the product to be discharged can be greatly reduced if the ion balance is set correctly, as described in this manual. Using the Control Unit, the MPM can also be switched off and on remotely, and the HV On and HV Overload signals will be passed on through the MPM. The Control Unit can only be used in combination with a Multi Power Master fitted with remote control functions (MPM-xx**R**).

The regulation of the ion balance is only effective on directly connected 4kV-anti static equipment.

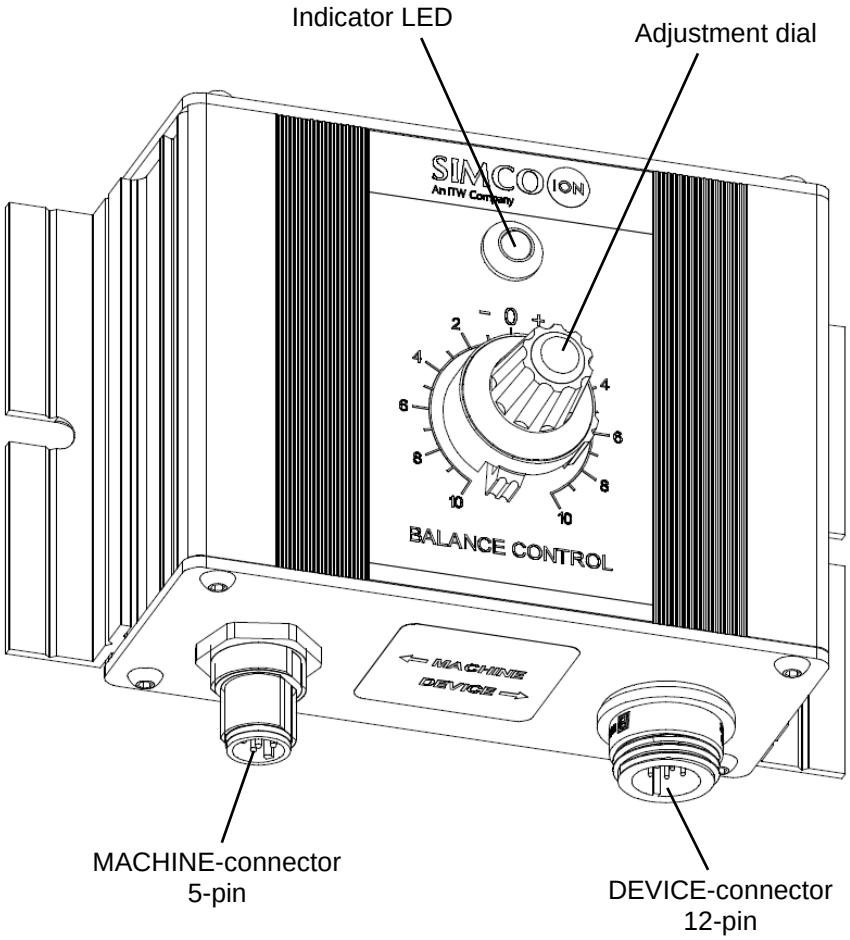


Fig. 1, External Control Unit MPM

2 Description and operation

The Control Unit is connected to the MPM using a 12-pin cable to the DEVICE-connector. Power is supplied to the Control Unit from the MPM through the DEVICE-connector.
The ion balance of the anti-static equipment connected to the MPM is set using the dial on the Control Unit. The [High Voltage On] or [Cycle OK] signals from the MPM is passed on through the MACHINE-connector to the connected switch box of the machine or a PLC. Active high voltage is made visible through the LED on the Control Unit. In addition, the MACHINE-connector has a connection with which the MPM can be remotely switched on and off.

3 Safety

The following safety guidelines must be observed in order to prevent physical injury and damage to objects or to the Control Unit itself.

 **Danger:**

- Read the MPM manual for more information about the potential hazards of high voltages!

 **Warning:**

- Electrical installation and repairs must be carried out by a skilled electrical engineer with the relevant training and qualifications.
- Disconnect the power supply before carrying out work on the unit.
- The Control Unit must not be used in environments that pose a fire or explosion hazard.
- The Control Unit is intended for use with the MPM only. Any other use is not allowed.

 **Note:**

- Making changes, adjustments etc. without prior written consent or carrying out repairs using non-original parts will invalidate the equipment's guarantee.

4 Technical specifications

MACHINE-connector

Input:	High voltage On/Off	24 V DC, max. 20 mA
Output:	Power supply (from MPM)	24 V DC, max. 100 mA
	Signal HV ON	24 V DC, max. 50 mA
	Signal HV Overload	24 V DC, max. 50 mA
Connection		M12-connector, 5-pin, male

DEVICE-connector

Input:	Power supply (from MPM)	24 V DC, max. 100 mA
	Signal HV ON	24 V DC, max. 30 mA
	Signal HV Overload	24 V DC, max. 30 mA
Output:	Ion balance	0 – 10 V DC
	High voltage On/Off	24 V DC, max. 20 mA
Connection		Bulgin Buccaneer 400 series, 12-pin, male

Environment

Operating environment	Industrial, operation inside
Temperature	0 - 55°C
Installation	Dust-free
Protection class	IP-52

Mechanical

Dimensions (lxwxh)	106 x 141 x 70 mm
Weight	0,35 kg
Casing material	Aluminium

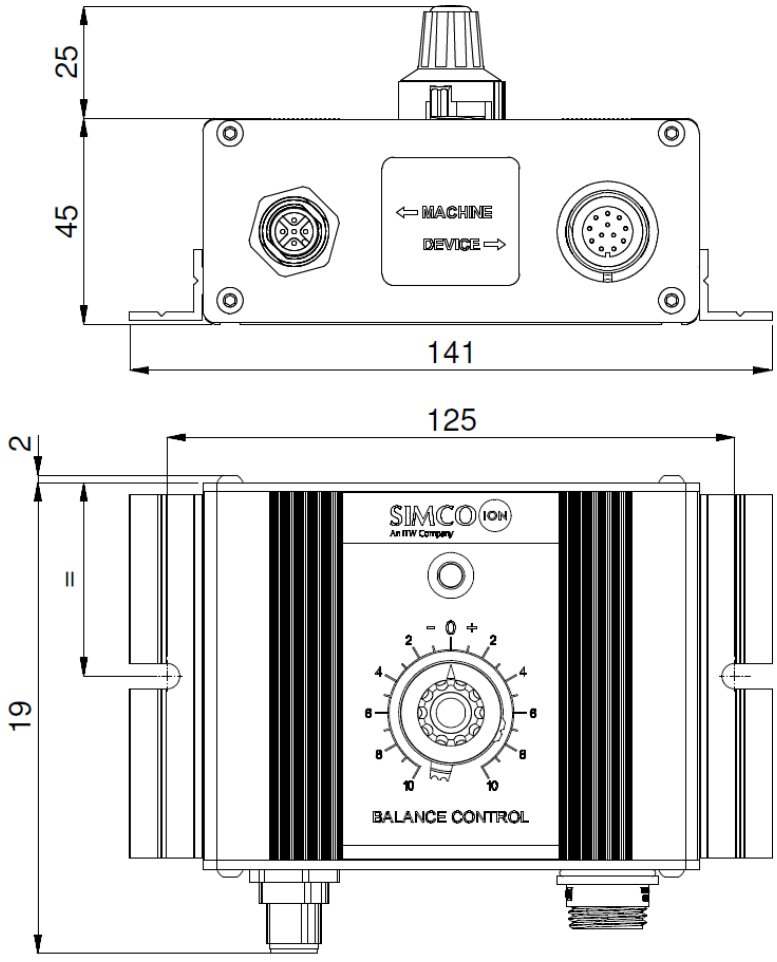


Fig. 2, Dimensions External Control Unit MPM

5 Installation

Warning:

- **Electrical installation and repairs must be carried out by a skilled electrical engineer with the relevant training and qualifications.**
- **Disconnect the power supply before carrying out work on the unit.**
- **The Control Unit and the MPM must be properly earthed. Earthing is needed to ensure proper operation of the equipment and to avoid electrical shocks upon contact.**
- **Read also the installation instructions for the MPM before mounting and connecting the MPM on the Control Unit and the machine.**

Note:

The Control Unit is not to be used in a damp or dusty environment or an environment where chemicals or other corrosive materials are in use.

5.1 Check

- Check whether the equipment received is undamaged and in the version required.
- Check whether the information on the delivery note corresponds with the information of the product received.

Contact SIMCO (Nederland) B.V. or your regional agent in case of problems and/or doubts.

5.2 Mounting the Control Unit

- Mount the Control Unit on a clearly visible, easily reached and stabile location on or close to the machine.
- Mount the Control Unit using 2 screws in the 2 notches in the flanges of the Control Unit.

5.3 Connecting the Control Unit

- Use an MPM cable female-male for the connection of the MPM to the device-connector.
- Use a device connector M12 female or a device cord M12 female for the connection of the Control Unit to the switch box of the machine or a PLC.
- See fig. 3 and Table 1 for the connections of the Control Unit and the MPM.

Standard connection cables and connectors are available through Simco-Ion or your regional agent. See spare parts list on page 9.

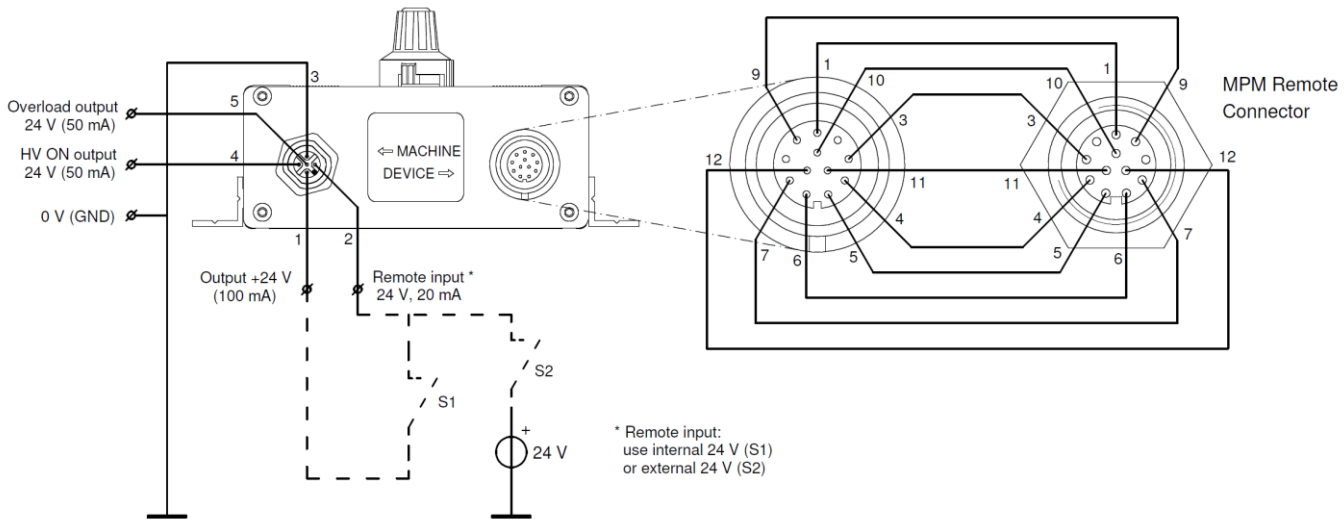


Fig. 3, External Control Unit - MPM connections.

Table 1, Machine connector

Machine connector		
Pin	**Name**	**Cable colour** (standard)
1	+24V DC output	Brown
2	Remote input (+24 V DC)	White
3	0V / GND	Blue
4	HV ON output	Black
5	Overload output	Yellow/green or grey

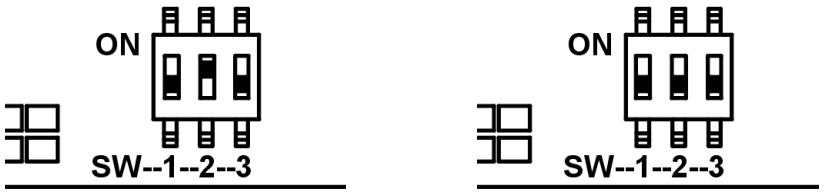
Tabel 2, Device connector

Device connector (MPM)		
Pin	**Name**	**Cable colour** (standard)
1	+24V DC IN	White
2	NC	Brown
3	Ion balance OFF	Green
4	HV ON (c) MPM	Yellow
5	Overload OFF (c) MPM	Grey
6	HV AAN (e) MPM	Pink
7	Overload OFF (e) MPM	Blue
8	NC	Red
9	0 V / Earth	Black
10	Remote control ON/OFF (a) MPM	Violet
11	Remote control ON/OFF (c) MPM	Grey/pink
12	0 V / Earth	Red/blue

5.4 Switching on the ion balance regulation function on the MPM

Also check the MPM manual for instructions on opening and closing the MPM, as well as an explanation on the ion balance regulation.

In order to use the Control Unit, the ion balance regulation function must be switched on in the MPM. The MPM contains a dipswitch that has to be set for the balance regulation function.
In order to switch on the ion balance regulation, dipswitch 2 has to be set to [ON]. The cover of the MPM has to be temporarily removed to flip dipswitch 2.



Ion balance function On
Dipswitch 2 [ON]

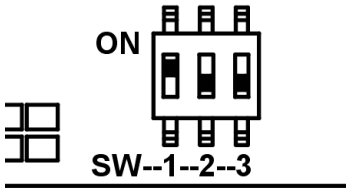
Ion balance function Off
Dipswitch 2 [OFF]

Fig. 4: Switching MPM ion balance function on or off

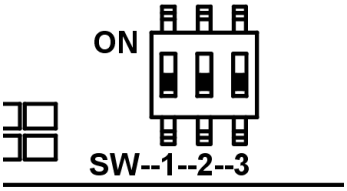
5.5 Switching on the remote High Voltage On/Off function on the MPM

Also check the MPM manual for instructions on opening and closing the MPM, as well as an explanation on the Remote High Voltage On/Off function .

In order to use the Remote High Voltage On/Off function, this has to be switched on in the MPM. The MPM contains a dipswitch that has to be set for the Remote High Voltage On/Off function.
In order to switch on the Remote High Voltage On/Off, dipswitch 1 has to be set to [ON]. The cover of the MPM has to be temporarily removed to flip dipswitch 1.



Remote On/Off function ON
Dipswitch 1 [ON]



Remote On/Off function OFF
Dipswitch 1 [OFF]

Fig. 5: Switching remote On/Off function of the MPM on or off

6 Commissioning and operation

- Read chapter 7 of the user manual of the MPM before commissioning and operating the MPM.
- When using the Remote High voltage On/Off function: switch on the external signal for Remote High voltage On/Off.
- The ion balance of the anti-static equipment connected to the MPM is set using the dial on the Control Unit. In setting “0” the level of positive and negative high voltage the MPM supplies is equal. In setting “-10” the ion balance is maximally negative, in setting “+10” it is maximally positive.

7 External Control Unit and checking the MPM

Read chapter 8 of the user manual of the MPM as well to check whether the MPM is working correctly.

The system is working correctly when the green LEDs [Power] and [High Voltage] on the MPM light up. When using the Remote High voltage On/Off function, the [Remote] light on the MPM will light up as well. When high voltage is switched on, the indication LED on the Control Unit will light up.

8 Measuring and adjusting the ion balance

 **Warning:**

The anti static equipment is connected to the high voltage. Touching the high voltage tips will cause an electric shock and may damage the measuring equipment. The maximum output power of the MPM is 3 mA.

 **Note:**

The emitters (ionisation tips) of the anti static equipment have to be clean in order to adjust the ion balance. Read the manual of the anti static equipment on cleaning and maintaining the equipment.

To measure ion balance and the static charges of the anti static bar, an electrostatic field meter type FMX should be used.

- Read chapter *Measuring the ion balance* of the FMX manual on setting and preparing to measure the ion balance using the FMX.
- Ensure that the anti static bar is accessible for the field meter on the side of the emitters. If necessary, remove the material to be discharged.
- Hold the measuring adapter of the field meter close to the emitters of the anti static equipment, at the same distance the anti static device normally operates. The display will show both the voltage measured (V) and the polarity of the ion balance.
- Turn the dial on the Control Unit to the left to adjust the voltage to less positive, and to the right to adjust it to less negative.
- Adjust the ion balance so that the voltage measured falls within the required levels.

9 Maintenance

 **Warning:**

- **Disconnect the power supply before carrying out work on the unit.**

- Keep the Control Unit free of moisture, dust, dirt and chemicals.
- The Control Unit contains no parts that require periodic maintenance.
- For maintenance of the connected MPM, see the corresponding manual.

10 Faults

Warning:

- **Disconnect the power supply before carrying out work on the unit.**
- **Electrical installation and repairs must be carried out by a skilled electrical engineer with the relevant training and qualifications.**
- **Refer to the MPM manual for problems regarding the MPM.**

Table 2, faults

Problem	Possible Cause	Solution
LED's on MPM do not light up	No power supply or MPM is switched off	Switch on power supply and MPM
- Indication LED on the Control Unit does not light up - LED [Remote] on MPM does not light up	No external signal for Remote High voltage On/Off.	Switch Remote High voltage On/Off on.
	Dipswitch 1 of the MPM is not in the [ON] position	Flip Dipswitch 1 to the [ON] position. See 5.4
	Faulty wiring	Detect fault and repair. See 5.3
Ion balance does not change when the regulation dial is turned.	Dipswitch 2 of the MPM is not in the [ON] position	Flip Dipswitch 2 to the [ON] position. See 5.5
	A capacitively connected bar is used as a discharge system	Use a directly or resistor-connected bar as a discharge system
	Wiring not connected properly.	Check the wiring
Ion balance changes but the adjustment reach is small or limited to 1 polarity	Anti static equipment is fouled	Clean anti static equipment
	HV tips of the anti static equipment are worn	Replace the anti static equipment
Ion balance can not be set to 0	Decharging system fouled	Clean the decharging system

11 Repairs

Warning:

- **Disconnect the power supply before carrying out work on the unit.**
- **Electrical installation and repairs must be carried out by a skilled electrical engineer with the relevant training and qualifications.**

Control Unit parts cannot be repaired. To order parts, see the spares list.
Request an RMA number for any returns by running through the internet form procedure which can be found at https://www.simco-ion.co.uk/support/
Pack the equipment properly and mention the RMA number clearly at the outside of the package.

12 Disposal

At the end of its service life, do not throw the device away with the normal waste but hand it in at an official collection point. By doing so, you will help to protect the environment.

Spare parts

Part number	Description
General	
9526350065	Button ø23 mm lockable
6811113020	Cover button ø23 mm
Connectors and connection cables MACHINE-connector	
7519020350	Connector device M12 female right ø4-6 mm cables
7519020351	Connector device M12 female right ø6-8 mm cables
7519020355	Connector device M12 female right-angled ø4-6 mm cables
7519020356	Connector device M12 female right-angled ø6-8 mm cables
7519020365	Cable device M12 female right 5 m
7519020366	Cable device M12 female right 10 m
7519020380	Cable device M12 female right 10 m shielded cable carrier
7519020375	Cable device M12 female right-angled 5 m
7519020376	Cable device M12 female right-angled 10 m
Connectors and connection cables DEVICE-connector	
6807004703	Cable MPM Female-male right 12-pin 3 m
6807004706	Cable MPM Female-male right 12-pin 6 m
6807004712	Cable MPM Female-male right 12-pin 12 m

Spare parts can be obtained from the agent in your region or from SIMCO (Nederland) B.V.

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