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SIMCO ION™
An ITW Company

Charge Master Micro (IQ) Easy
CMM (IQ) Easy

DC-Hochspannungsgenerator

CE

CONTENTS

Preface

This manual describes how to install and use the CMM (IQ) Easy high-voltage generator, also referred to as generator in this manual.
This manual must be available at all times to staff operating the equipment.
Read through the entire manual before installing and commissioning the product.
Follow the instructions set out in this manual to ensure proper operation of the product and to retain your entitlement under the guarantee.
The guarantee terms are set out in the General Terms and Conditions of Sale of Simco-Ion Netherlands.

Explanation of symbols

The following symbols may appear in this manual or on the product.

Warning:
Indicates special information to prevent injury or significant damage to the product or the environment.

Danger:
Indicates information for preventing electric shocks.

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

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1 Introduction

The CMM Easy is a high-voltage generator that supplies power to charging electrodes in IML applications. The CMM Easy is designed to generate short charge pulses. The output voltage is current-limited.
The small dimensions and low weight of the generator enable it to be placed close to the charging electrode. The generator can be used as an end-of-arm tool on IML robots. The replaceable head on the generator allows users to quickly change charging electrodes. The electrode head on the generator is part of the charging electrode and is not supplied as standard.
The CMM Easy is powered and controlled by an M12 connector.
The CMM Easy can be controlled directly via the M12 connector or by using the CMM external control kit. The external control kit is a separate module that can be placed elsewhere in the machine and offers a range of options for providing an analogue setpoint for the output voltage. See the CMM external control kit manual for more information.

The CMM **IQ** Easy with IQ function can be used as described above; in addition, it can also be connected to the Simco-Ion IQ Easy platform. If the CMM IQ Easy is connected to the Simco-Ion IQ Easy platform, it will be controlled by the IQ Easy Manager or IQ Com communication adapter using a serial protocol. Read the manual for the IQ Easy Manager or the IQ Com communication adapter for more information. During start-up the CMM IQ Easy will detect whether serial communication with the Simco-Ion IQ Easy platform is possible. If no serial communication is active during start-up, the CMM IQ Easy will perform like a CMM Easy with analogue controls.

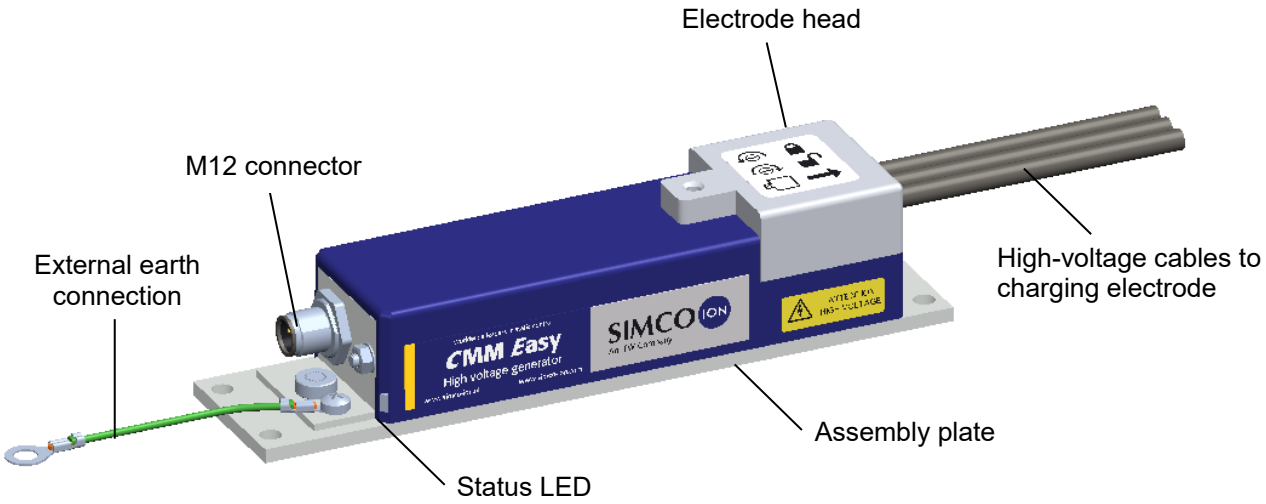

Figure 1, CMM Easy

2 Description and operation

The built-in electronic high-voltage power unit operates at 24 V DC and delivers a negative output voltage of between 0 and 20 kV DC. The output voltage is current-limited. If the high voltage output is overloaded, the output voltage will drop. The level of the output voltage is set with an external control current signal of between 4 and 20 mA (setpoint).
The high voltage becomes active when 24 V DC is applied to the “Remote On/Off” input. The unique “Cycle OK” output produces a 24 V signal when high voltage is present and the label in the mould is fully charged. When the "Remote On/Off" input is then switched off, the "Cycle OK" output will indicate when the charge of the electrode has been reduced to zero and the electrode can be removed from the mould.

If the CMM IQ Easy with IQ function is connected to the Simco-Ion IQ platform, the “Setpoint” and “Remote On/Off” will be configured on or through the Simco-Ion IQ platform. Communication between the CMM IQ Easy and the Simco-Ion IQ platform runs through a serial protocol. Sending the “Cycle OK” signal back to the Simco-Ion IQ platform is also done through this serial protocol. In addition, the CMM IQ Easy offers a number of adjustable parameters which can only be used if the generator is connected to the Simco-Ion IQ platform. Please see the manual of the IQ Easy Manager or the IQ Com communication adapter for more information.

Two LEDs on the generator (on the same side as the M12 connector) indicate the status of the CMM (IQ) Easy.

3 Safety

The following safety guidelines must be observed in order to prevent physical injury and damage to objects or to the CMM (IQ) Easy itself.

The output current of the CMM (IQ) Easy is limited to 0.4 mA.
If the combined capacity of the connected electrodes is lower than 2 nF, then the output of the generator is safe to touch.

 **Danger:**
Make sure that the equipment is properly earthed. Earthing is necessary to ensure safe and proper operation and to prevent electric shocks upon contact.
- Touching parts being subjected to a high voltage will result in an electric shock.
- Exposure to high voltages can be dangerous for people with pacemakers.
- An electric shock can cause a shock reaction, even from high voltages that are safe to touch!

 **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 CMM (IQ) Easy must not be used in environments that pose a fire or explosion hazard.
- The CMM (IQ) Easy is designed solely for charging non-conductive materials in combination with a charging electrode with a special CMM (IQ) Easy head that fits on the generator. It is not advisable to use it for any other purpose.

 **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

Power supply and I/O			
Supply voltage	21–27 V DC		
Electricity consumption	Max. 0.9 A		
Max. total cable length at the power supply	24V DC ±2%	24V DC ±5%	24V DC ±10%
Max. cable resistance per wire	2.8Ω	2Ω	0.66Ω
Standard Simco 5x 0.34mm² & M12 Male-Female cable	28m	20m	6.5m
Optional Simco cable 5x 0.75mm²	56m	40m	13m
High-voltage setpoint	4–20 mA output voltage control, ≤ 4 mA = 0 kV, 20 mA = 20 kV Serial, using the Simco-Ion IQ platform (CMM IQ Easy only)		
Remote On/Off input	15 - 30 V DC = high voltage ON, 0 - 5 V = high voltage OFF Serial, using the Simco-Ion IQ platform (CMM IQ Easy only)		
Speed after Remote On	Unloaded from 0 to 20 kV in 15ms maximum 0.4 s (connected to the IQ Easy platform)		
Cycle OK output	24 V DC (±3 V), 50 mA max. Serial, using the Simco-Ion IQ platform (CMM IQ Easy only)		
Connection	M12 connector, 5-pin		
Output			
Output voltage	0–20 kV DC negative		
Output current	Max. 0.4 mA		
Environment			
Operating environment	Industrial, internal use		
Temperature	0–55°C		
Protection class	IP54		
Signalling			
Cycle OK output	24 V DC (±3 V), 50 mA max. Serial, using the Simco-Ion IQ platform (CMM IQ Easy only)		
LED indications			
Green flashing quickly	Start up		
Green flashing slowly	Standby, HV output not active		
Orange	Normal operation, HV output active		
Red	HV output overloaded, HV output active		
Red flashing slowly (1Hz)	1) Generator overheated, HV output temporarily inactive 2) Supply voltage too low, HV output unchanged 3) Cycle OK, HV output overloaded, HV output active 4) Output current peak too high or too low, HV output unchanged (only CMM IQ Easy) 5) Charge pulse too long, HV output unchanged (only CMM IQ Easy) 6) Eeprom reading error, HV output unchanged		
Red flashing quickly (5Hz)	No communication with the Simco IQ platform, HV output inactive (only CMM IQ Easy)		

Mechanical

Dimensions (lxwxh)	200 x 45 x 43 mm (including electrode head)
Weight	0.48 kg (excluding high-voltage cables)
Housing material	Aluminium, ABS, PVC (electrode head)

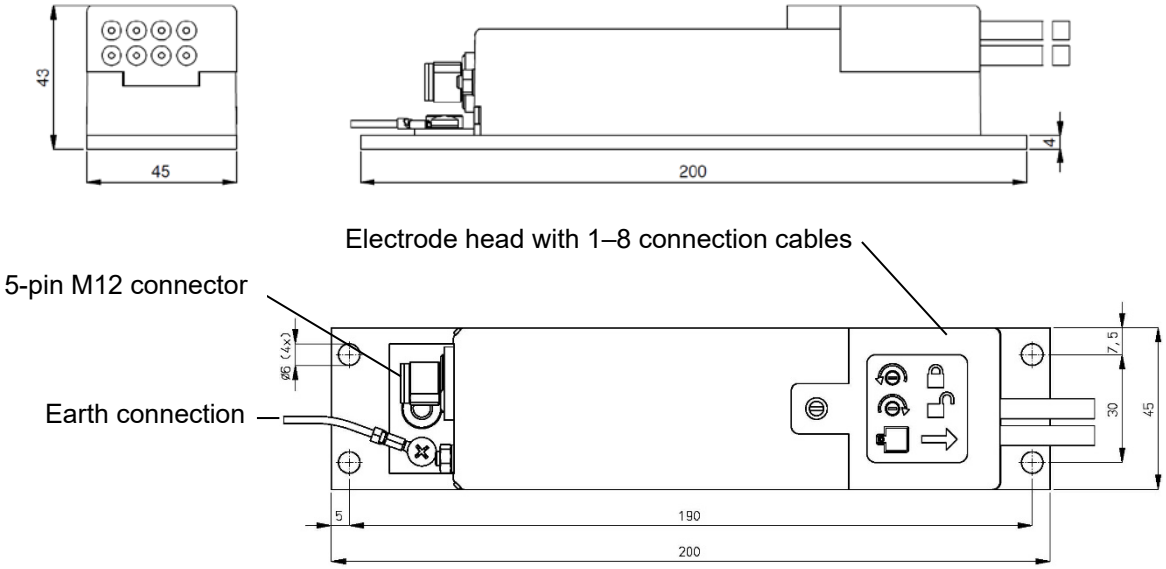

Figure 2, dimensions of the CMM (IQ) Easy

5 Installation

Warning:

- **The electrical installation must be carried out by an electrical engineer with the relevant training and qualifications.**
- **Disconnect the power supply before carrying out work on the unit.**
- **The CMM (IQ) Easy must be properly earthed. Earthing is needed to ensure proper operation of the equipment and to avoid electrical shocks upon contact.**

5.1 Checks

- Check that the equipment is undamaged and that you have received the correct version.
- Check that the data on the packing slip corresponds to the data shown on the product received.
- Check that you have received a connection cable with a 5-pin M12 connector (female).
  A standard connection cable can be obtained from Simco-Ion Netherlands or from the agent in your region.
  See the spare parts list.
  If the connection cable is to be fitted through a cable carrier, please use the special flexible connection cable available from Simco-Ion or another type that is suitable for this purpose.

If you have any problems or are unsure, please contact Simco-Ion Netherlands or the agent in your region.

5.2 Fitting the CMM (IQ) Easy

The CMM Easy must be fitted so that the connection cables of the charging electrode are within reach of the electrode head; preferably so that the electrode head can be removed without dismantling the entire generator.

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- Fasten the generator to a stable machine part or to the end of an IML robot arm using the four ø6 mm assembly holes in the assembly plate.

5.3 Connecting the CMM (IQ) Easy

- Connect the earth wire to a guaranteed earthing point on the machine.
- Connect the M12 connector of the connection cable to the generator.
- Safely route the connection cable to the 24 V power supply and the control unit or to the Simco-Ion IQ platform (only for the CMM IQ Easy with IQ function).
- Connect the cable as shown in figure 4 (standard) or figure 5 (with IQ platform).
- Route the high-voltage cable to the electrodes and shorten it where possible.
- Make sure that directly connected charging electrodes (without series resistors) do not touch or come too close to earthed objects.
- Connect the high-voltage cable(s) to the electrode(s), bearing in mind that voltages of up to 20 kV can be generated.
- Turn the locking screw right into the housing of the CMM (IQ) Easy.
- Slide the electrode head onto the generator.
- Manually turn the locking screw upwards until it is securely fastened in the electrode head.

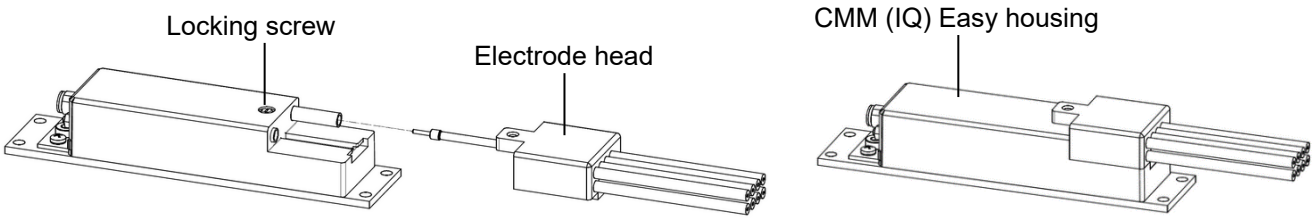
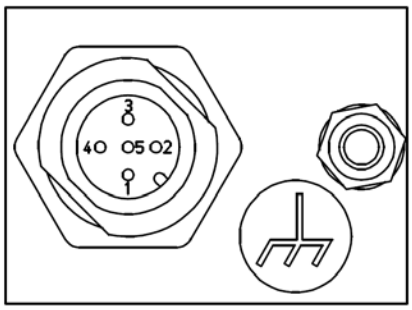


Figure 3, electrode head on the CMM Easy



Pin	Name	Standard core colour
1	+24 V DC	Brown
2	Remote On/Off	White
3	0 V/GND	Blue
4	Cycle OK	Black
5	SETPOINT (4–20 mA)	Yellow/Green - Grey

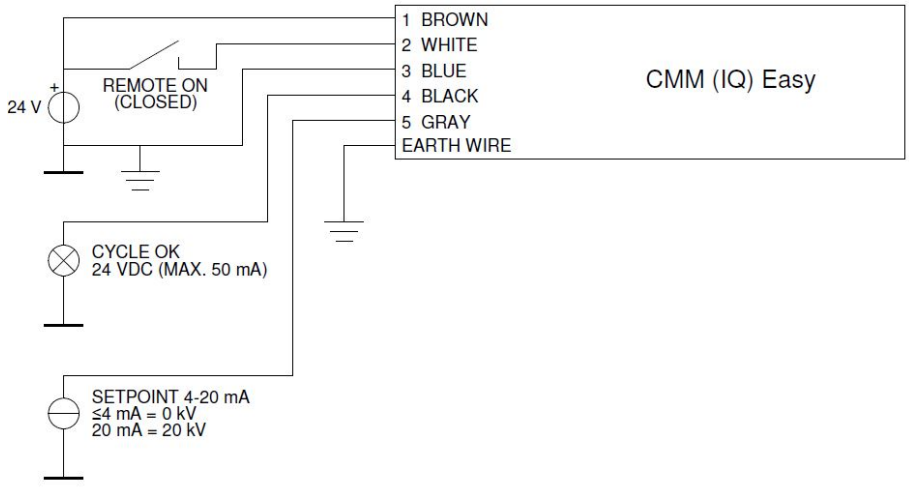
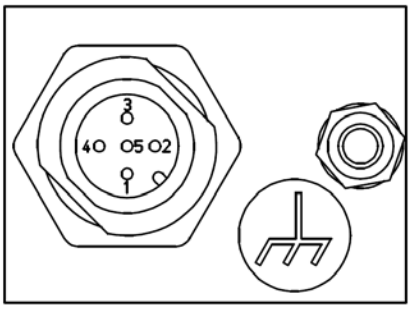


Figure 4, connections of the CMM (IQ) Easy (standard analogue control)

☞ **Note:**

To ensure correct and safe operation, the blue core (0 V/GND) of the power cable and the earth wire must *both* be connected to earth.



Pin	Name	Standard core colour
1	+24 V DC	Brown
2	Serial (A)	White
3	0 V/GND	Blue
4	Serial (B)	Black
5	0 V/Earth	Yellow/green - Grey

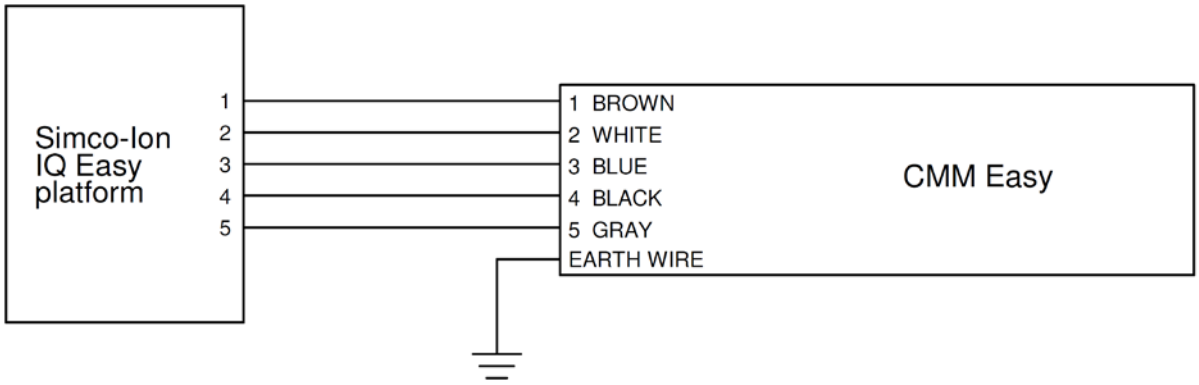


Fig 5, connections CMM IQ Easy (with Simco-Ion IQ Easy platform)

6 Commissioning and operation

6.1 Checking functionality of CMM (IQ) Easy

- It is recommended that the setpoint for the output voltage first be set to 0 and then subsequently increased.
- Switch on the supply voltage (24 V DC).
  The LEDs on the generator will quickly flash green during start-up. The CMM **IQ** Easy will check whether the Simco-Ion IQ platform or an analogue control is being used during start-up. They will then flash slowly as long as no setpoint has been set for the high voltage. Cycle OK output is inactive.
- Connect 24 V DC to the “Remote On/Off” input or activate the “Remote On/Off” through the Simco-Ion IQ platform.
  Increase the setpoint so that the LEDs light up orange. The high voltage is now active and Cycle OK will become active when it no longer detects a charging current to the electrodes. If the CMM is connected as seen in fig. 4 (standard analogue control), the setpoint can be increased by connecting e.g 7,5 mA (=4 kV) to the setpoint input. Chapter 6.5 describes how to increase the setpoint of an CMM IQ Easy which is connected to the Simco-Ion IQ platform.

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6.2 Fine-tuning the CMM (IQ) Easy

☞ **Note:**

- The high voltage value and the cycle duration must be set for optimum charging to suit different applications and numbers of electrodes. The set values must be established by experimenting.
- If there is no material between the charging electrode and earth when the high voltage is switched on, the CMM (IQ) Easy may, depending on the electrode configuration, become overloaded, illuminating the red LED.
- Set the setpoint for the output voltage approx. 10% higher than the optimum value, in order to accommodate process fluctuations. Do not set unnecessarily high values as this may result in wear and arcing on the electrodes.

6.3 IML charging cycle using Cycle OK feedback

Allowing the machine control unit to use the “Cycle OK” feedback signal makes it possible to obtain optimum process times.

- Make sure the 24 V DC power supply is connected.
- Set the optimum setpoint found in 6.2. This 4–20 mA control current must be supplied continuously if the CMM (IQ) Easy is used without the IQ platform.
- Insert the electrode(s) and label(s) in the mould with the label(s) placed against the mould wall.
- Now activate the high voltage by activating the “Remote On/Off” input.
- The CMM (IQ) Easy will now charge the label(s) electrostatically (orange LEDs). As soon as the CMM (IQ) Easy detects that the label or labels have been charged, the “Cycle OK” signal will become active.
- Now turn the generator off by switching off the “Remote On/Off” input.
- Wait until the CMM (IQ) Easy has detected that the charge on the electrode has reduced sufficiently and the “Cycle OK” signal is no longer active.
- The electrode or electrodes can now be removed from the mould and injection can take place.

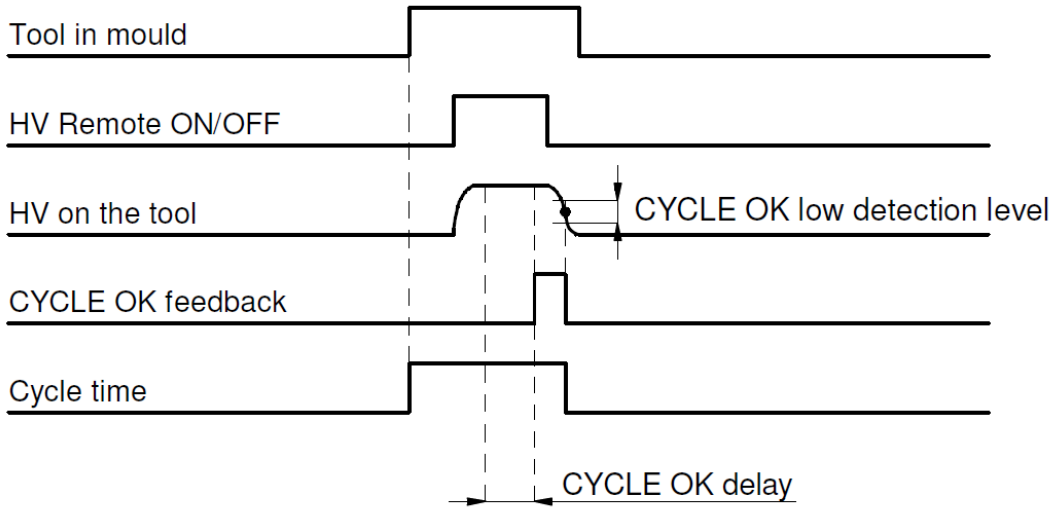

Figure 6, charging cycle with Cycle OK

Note:

The following parameters can be set through the Simco-Ion IQ platform only when using the CMM IQ Easy with IQ function:

- Cycle OK delay, between the moment the CMM IQ Easy detects that the label(s) have been charged and activation of the “Cycle OK”-signal, an additional delay can be set in order to increase process stability.
- Cycle OK low detection, the level where the CMM IQ Easy detects that the charge of the electrode has decreased sufficiently can be adjusted for additional process optimisation.

6.4 IML charging cycle without use of Cycle OK feedback

The control unit can ignore the Cycle OK feedback signal and follow the procedure described in 6.3. The Remote On/Off signal will need to remain active for a longer pre-determined period in order to ensure that the label has enough time to charge. After the generator has been switched off, you will need to wait a specific set time before the electrode can be removed from the mould. This will result in longer cycle times.

6.5 IQ functions (only CMM IQ Easy)

The IQ functions described in this chapter are only available on the CMM IQ Easy in conjunction with a Manager IQ Easy. As soon as the CMM IQ Easy is connected to the Manager IQ Easy, the generator will appear in the manager's (main) screen (Figures 7 and 8). The colour in the manager's main screen indicates the status of the CMM IQ Easy:

 Inactive or no communication

 Active (Run) and operating OK, without warnings or alarms

 Standby, waiting for start command

 Warning

 Alarm

The status of the CMM IQ Easy is also indicated by the following symbols:

- Hourglass  = CMM IQ Easy is starting up
- Pause  = CMM IQ Easy is on Standby
- Play  = CMM IQ Easy is active (Run)

The number of visible parameters depends on the user level selected on the Manager IQ Easy. This manual uses the “Expert” user level. The user level can be selected as follows: go to the manager's main screen, first select  and then  . The “Expert” user level can now be selected.

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Figure 7, CMM IQ Easy in Standby mode

Figure 8, CMM IQ Easy in Run mode

In the Manager IQ Easy's main screen, click the CMM IQ Easy symbol to check the inbound generator parameters. Press  to go to the previous/next tab (Figures 9 and 10). First click  and then  behind the desired parameter in order to change it.

If an “Undefined param” appears on the info screens of the CMM IQ Easy on the Manager, the manager must be updated with the latest software.
Download the latest software version on www.simco-ion.co.uk/software
and follow the “Upgrade” instructions as described in the Manager manual.

The “Device name” and “Machine position/name” parameters can be changed at your own discretion. This could be useful to keep track if multiple CMM IQ Easys are connected to one machine.

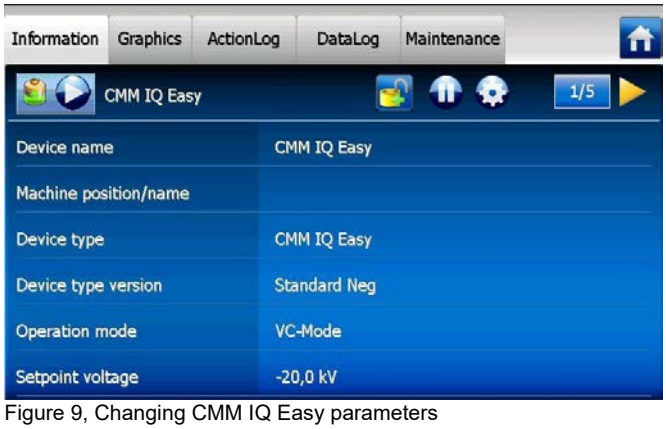

Figure 9, Changing CMM IQ Easy parameters

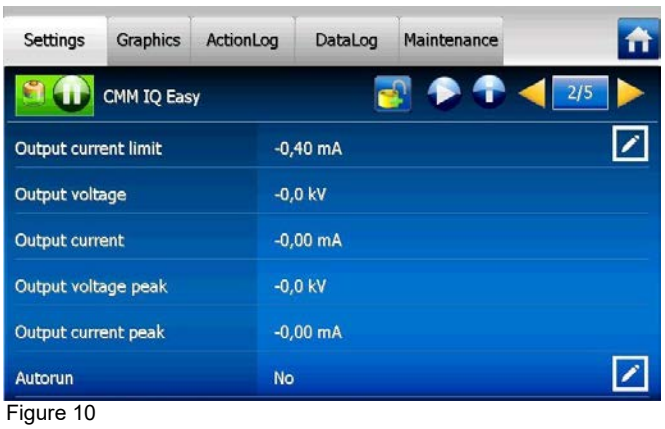

Figure 10

To activate the high voltage output of the CMM IQ Easy, the following conditions must be met:

- The generator must be in “Run” mode (6.5.1 Standby, Run and Autorun)
- A “Setpoint” must be set (6.5.2 Control mode)
- The “Remote” signal must be active or the generator must be in Continuous mode (6.5.3 Continuous and Remote mode)

The present output voltage and current can be read with the “Output voltage” and “Output current” parameters (Figure 10).
The maximum peak output voltage and output current can be read with the “Output voltage peak” and “Output current peak” parameters (Figure 10). These peak values are updated after each process cycle (HV output active → HV output inactive).

6.5.1 Standby, Run and Autorun

On the Manager IQ Easy's main screen, press the “CMM IQ Easy“ symbol. Press to put the generator in Run mode. On the main screen , the generator is now shown as in Figure 8. Press to put the generator back in Standby mode. If the “Autorun” parameter (Figure 10) displays “Yes”, the generator will automatically go to Run after starting up.

Figure 11.

Figure 12.

6.5.2 Control mode

A CMM IQ Easy always operates in VC mode (Voltage Control, Figure 9). The desired output voltage must be set by using the “Setpoint voltage” parameter. The generator will now maintain the set output voltage and adjust it with more or less current if needed - depending on the load. The charging current depends on the generator and possible dirt on the charging bar/electrode. The maximum output current can be set by using the “Output current limit” parameter. The output current will only drop when the “Output current Limit” parameter value is reached.

6.5.3 Continuous and Remote mode

The default setting for the CMM IQ Easy is Continuous mode (Figure 11). If the generator is in Continuous mode, the high voltage at the output becomes active when the following conditions are met:

- the generator must be in “Run” mode
- a setpoint must be set.

If the CMM IQ Easy is in Remote mode, the following conditions must be met to activate the high voltage at the generator's output:

- the generator must be in “Run” mode
- a setpoint must be set
- on the Manager IQ Easy's machine connector, a “Remote On” signal must be indicated.

For more information about the “Remote On/Off” signal, please read the Manager IQ Easy manual.

6.5.4 Charge pulse single shot (in Remote-mode only)

The “Charge pulse single shot” parameter (Figure 11) ensures that the high voltage at the generator's output is active for a fixed period of time (which can be set) once the “Remote On” signal has been received. The default setting for the “Charge pulse single shot” is 0 ms (=inactive).

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6.5.5 Charge pulse min/max time (in Remote-mode only)

The “Charge pulse min time” parameter (Figure 11) ensures that the high voltage at the generator's output is active for a minimum period of time (which can be set) once the “Remote On” signal has been received. If the “Remote On” signal is longer than the set time for “Charge pulse min time”, the “Remote On” signal takes precedence. The high voltage will then follow the “Remote On” signal. The default setting for the “Charge pulse min time” is 0.00 sec (=inactive).

The “Charge pulse max time” parameter is a “Warning” setting. If the high voltage at the generator's output is active longer than the “Charge pulse max time” value set, a warning will appear on the Manager IQ Easy's screen. The default setting for the “Charge pulse max time” is 0.00 sec (=inactive).

6.5.6 Cycle OK parameters

Cycle OK high delay (Figure 12), between the moment the CMM IQ Easy detects that the cable(s) have been charged and activation of the “Cycle OK”-signal, an additional delay can be set in order to increase process stability.
Cycle OK low level, the level where the CMM IQ Easy detects that the charge of the electrode has decreased sufficiently can be adjusted for additional process optimisation.

6.5.7 Setpoint Warning/Alarm min./max. output current peak

With the “Setp warning min outp cur pk”, “Setp warning max outp cur pk”, “Setp alarm min outp cur pk” and “Setp alarm max outp cur pk” parameters (Figure 13), warnings and alarms can be set to monitor the minimum and maximum output current peaks. The default setting for these parameters is 0,00 mA (=inactive)

Figure 13.

7 Functional check

7.1 Functional check through the LEDs

The system is functioning properly when the LEDs on the CMM (IQ) Easy flash green (standby) or light up orange (HV active). Any other LED indication signifies a process error or fault. During normal operation, the Cycle OK output will become active after the LEDs have turned orange.

Table 1, LED indications CMM (IQ) Easy

LED indications	Meaning
Green flashing quickly	Start up
Green flashing slowly	Standby, HV output not active
Orange	Normal operation, high voltage active
Red	High voltage overloaded, HV output active
Red flashing slowly, 1Hz	1) Generator overheated, HV output temporarily inactive OR 2) Supply voltage too low, HV output unchanged 3) Cycle OK output overloaded, HV output active 4) Output current peak too high or too low, HV output unchanged (only CMM IQ Easy) 5) Charge pulse too long, HV output unchanged (only CMM IQ Easy) 6) Eeprom reading error, HV output unchanged
Red flashing quickly, 5Hz	No communication with the Simco-Ion IQ platform, HV output inactive (only CMM IQ Easy)

See chapter 9 (Faults) to resolve problems.

7.2 Functional check through the Manager IQ Easy

The Manager IQ Easy's display provides information about the status of the CMM IQ Easy. Both on the main screen and on the device screens, the status of the CMM IQ Easy is always indicated by the background colour (see chapter 6.5 for more information about colours and symbols).

Detailed information is provided in the tabs Information/Settings, Graphics, ActionLog and DataLog.

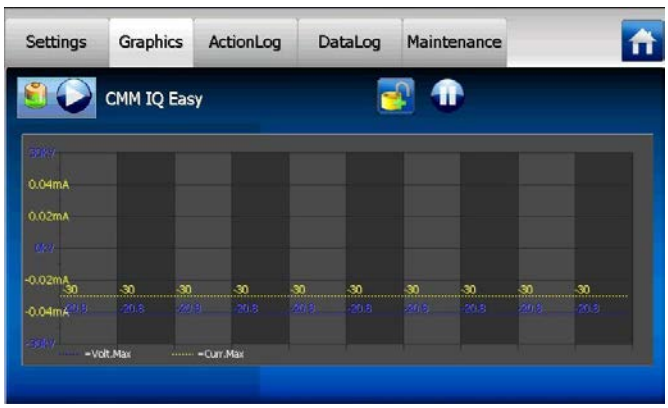

Figure 14, Graphics tab

Figure 15, ActionLog tab

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7.2.1 Information/settings tab

You can scroll through the different pages by using the  buttons. The following operational information can be found here:

- Output voltage (kV): indicates the present high voltage value at the HV output
- Output current (mA): indicates the present current value at the HV output
- Output voltage peak (kV): indicates the high voltage peak value at the HV output. These are updated after each process cycle (HV output active → HV output inactive)
- Output current peak (mA): indicates the peak value of the current at the HV output. These are updated after each process cycle (HV output active → HV output inactive)
- Last warning: date and time when the last warning occurred
- Last alarm: date and time when the last alarm occurred

7.2.2 Graphics tab

In the Graphics tab (Figure 14), operation is graphically displayed as a function of time:

- Blue: the output voltage at the HV output (kV).
- Yellow: the output current at the HV output (mA).

If you click anywhere on the screen, the screen freezes and “On hold” will be displayed. By clicking again, the present value will be indicated again.

7.2.3 ActionLog tab

In the ActionLog tab (Figure 15) tab wordt stap voor stap een veranderde status van de CMM IQ Easy gelogd. This is indicated with the date and time when the status change occurred. The most important notifications are:

- CYCLE OK: the generator is switched on and operates OK
- CYCLE NOT OK: the generator is switched off or the high voltage is not OK
- REMOTE ON:
- REMOTE OFF:

The ActionLog tab can be cleared in the Maintenance tab (Figure 17).

7.2.4 DataLog tab

Any available measurement data of the CMM IQ Easy is logged at fixed times in the DataLog tab (Figure 16). The most important measurement values are:

- Umax (kV): peak voltage at the high voltage output
- Imax (mA): peak current at the high voltage output

The DataLog tab can be cleared in the Maintenance tab (Figure 17).

These log values are also saved in the Manager IQ Easy's log file when the “Data logging” parameter in the manager and the “Data logging” parameter in the CMM IQ Easy (Figure 12) are switched on. The log interval is determined by the “Logfile refresh time” parameter in the Manager IQ Easy. For information about the log file, please see the operating instructions of the manager.

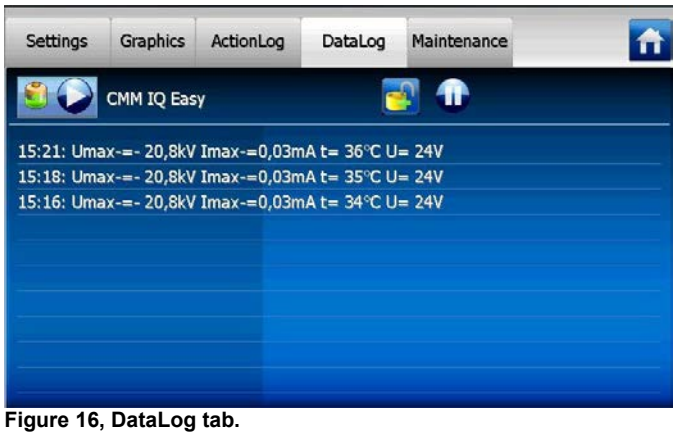

Figure 16, DataLog tab.

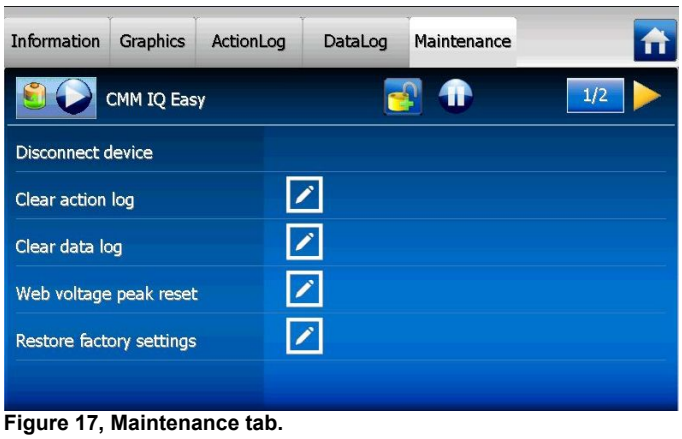

Figure 17, Maintenance tab.

8 Maintenance

Warning:

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

8.1 Cleaning the CMM (IQ) Easy

- Clean the CMM (IQ) Easy with a soft cloth.
- If very dirty: Clean the CMM (IQ) Easy with isopropyl alcohol or with Veconova 10 industrial cleaner (www.eco-nova.nl).

Note:

- Allow the CMM (IQ) Easy to dry completely before operating it again.

8.2 Changing the electrode head

The electrode head on the CMM Easy is part of the charging electrode. When changing a charging electrode, the electrode head must also be changed.
See also figure 3.

- Turn the locking screw for the electrode head right into the housing of the CMM (IQ) Easy.
- Pull the electrode head off the CMM (IQ) Easy.

  Slide the electrode head of the second charging electrode onto the CMM (IQ) Easy.
- Manually turn the locking screw upwards until it is securely fastened in the electrode head.

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9 Faults

 **Warning:**

- **Disconnect the power supply before carrying out work on the unit.**
- **Work must only be carried out on the equipment by an electrical engineer with the relevant training and qualifications.**

Table 2, Troubleshooting CMM (IQ) Easy (wiring diagram analogue 5.3.1)

Problem	Possible cause	Solution
All LEDs are off	No supply voltage	Switch on 24 V DC supply voltage
	Wiring fault	Locate fault and remedy, see 5.3
	Cable rupture in the M12 connection cable/connector	Replace M12 cable/connector
LEDs do not light up orange, but keep flashing green	High voltage set too low	Increase output voltage by increasing setpoint (5.3/6.2)
	No signal on the Remote On/Off input	Connect 24 V DC (±3 V) to the “Remote On/Off” input
LEDs light up red	Output voltage set too high, arcing on charging bar/electrode	Reduce output voltage by reducing setpoint or increasing distance to earth
	Short circuit between charging bar/electrode or HV cable and earth	Locate short circuit and eliminate
LEDs flashing red slowly, 1Hz	Supply voltage too low	Restore 21–27 V DC supply voltage on M12 connector
	“Cycle OK” output overloaded	Eliminate overload (24 V DC > 50 mA).
	Generator overheated	Check if the ambient temp. is below 55ºC

Table 3, Troubleshooting CMM IQ Easy (wiring diagram IQ 5.3.2)

Problem	Possible cause	Solution
All LEDs are off	No supply voltage	Switch on 24 V DC supply voltage (switch on Manager IQ Easy)
	Faulty wiring	Locate fault and remedy, see 5.3
	Cable rupture in the M12 connection cable/connector	Replace M12 cable/connector
LEDs do not light up orange, but keep flashing green	High voltage set too low	Increase output voltage by increasing setpoint (5.3/6.2/6.5)
	CMM IQ Easy is not in “Run” mode	Put the CMM IQ Easy in “Run” mode (6.5)
	“Remote On/Off” signal inactive	Activate the “Remote On/Off” signal or put the CMM IQ Easy in “Continuous” mode (6.5)
LEDs light up red	Output voltage set too high, arcing at charging bar/electrode	Reduce output voltage by reducing setpoint or increasing distance to earth
	Short circuit between charging bar/electrode or HV cable and earth	Locate short circuit and eliminate
LEDs flashing red slowly, 1Hz	Generator overheated	Check if the ambient temp. is below 55ºC
	CMM IQ Easy supply voltage too low	Check the supply voltage
	Warning/Alarm output current too low/high	Set the “Setpoint Warning/Alarm min./max. output current peak” correctly (6.5)
	Charge pulse too long	Set the charge pulse time and the charge pulse warning correctly (6.5)
	Eeprom reading error warning	Check the parameter settings and restart the CMM IQ Easy
	Eeprom reading error alarm	The CMM IQ Easy is faulty, request an RMA number (Chapter 10)
LEDs flashing red quickly, 5Hz	No communication between the CMM IQ Easy and the Simco-Ion IQ platform	Check the wiring between the CMM IQ Easy and the Simco-Ion IQ platform
		Restart the Simco-Ion IQ platform.

10 Repairs

Warning:

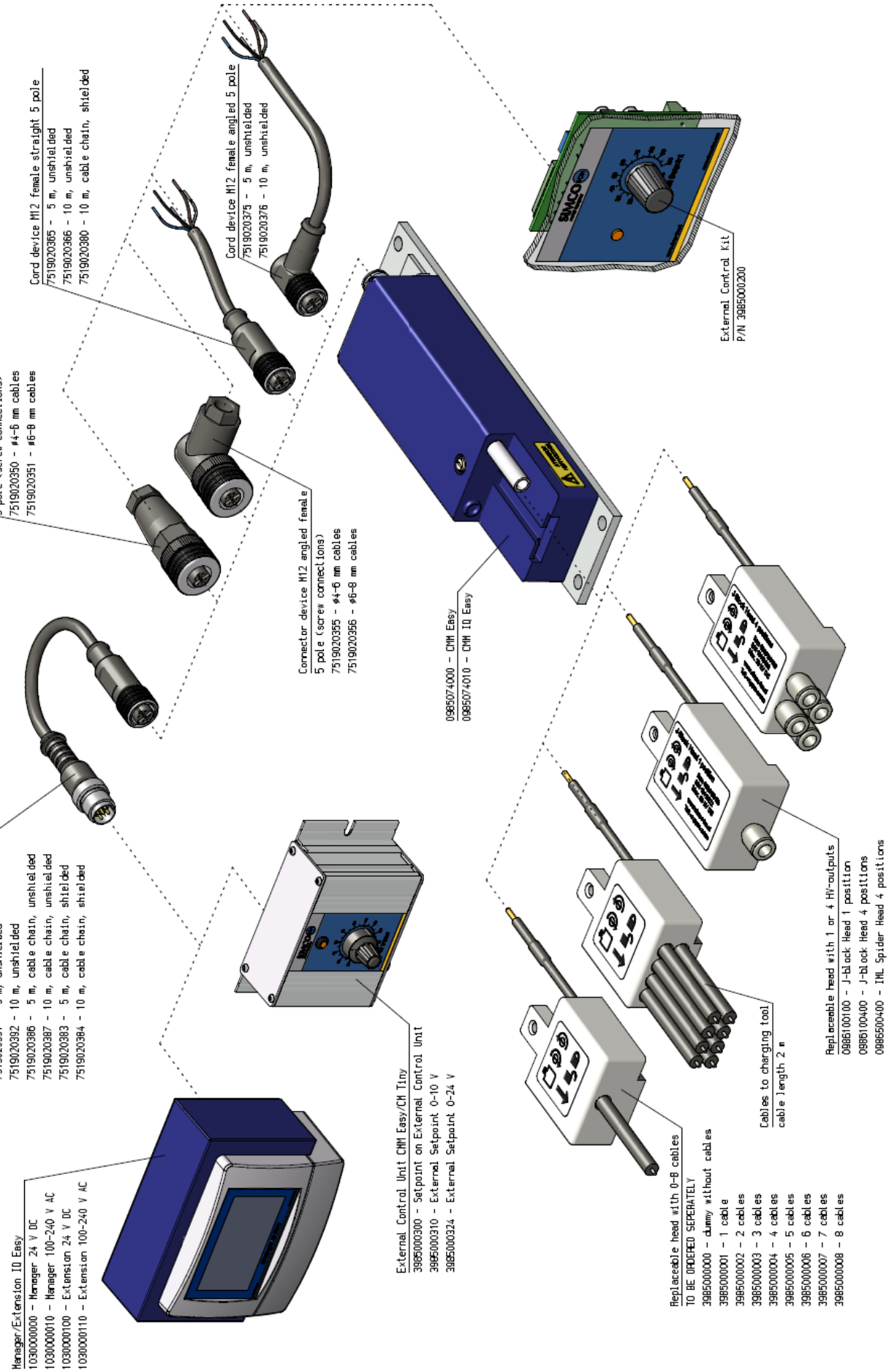
- **Disconnect the power supply before carrying out work on the unit.**
- **Repairs must be carried out by an electrical engineer with the relevant training and qualifications.**

CMM (IQ) Easy parts cannot be repaired. To order parts, see the spares list.
Request an RMA form for any returns by sending an email to service@simco-ion.nl.
Pack the equipment properly and clearly state the reason for return.

11 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



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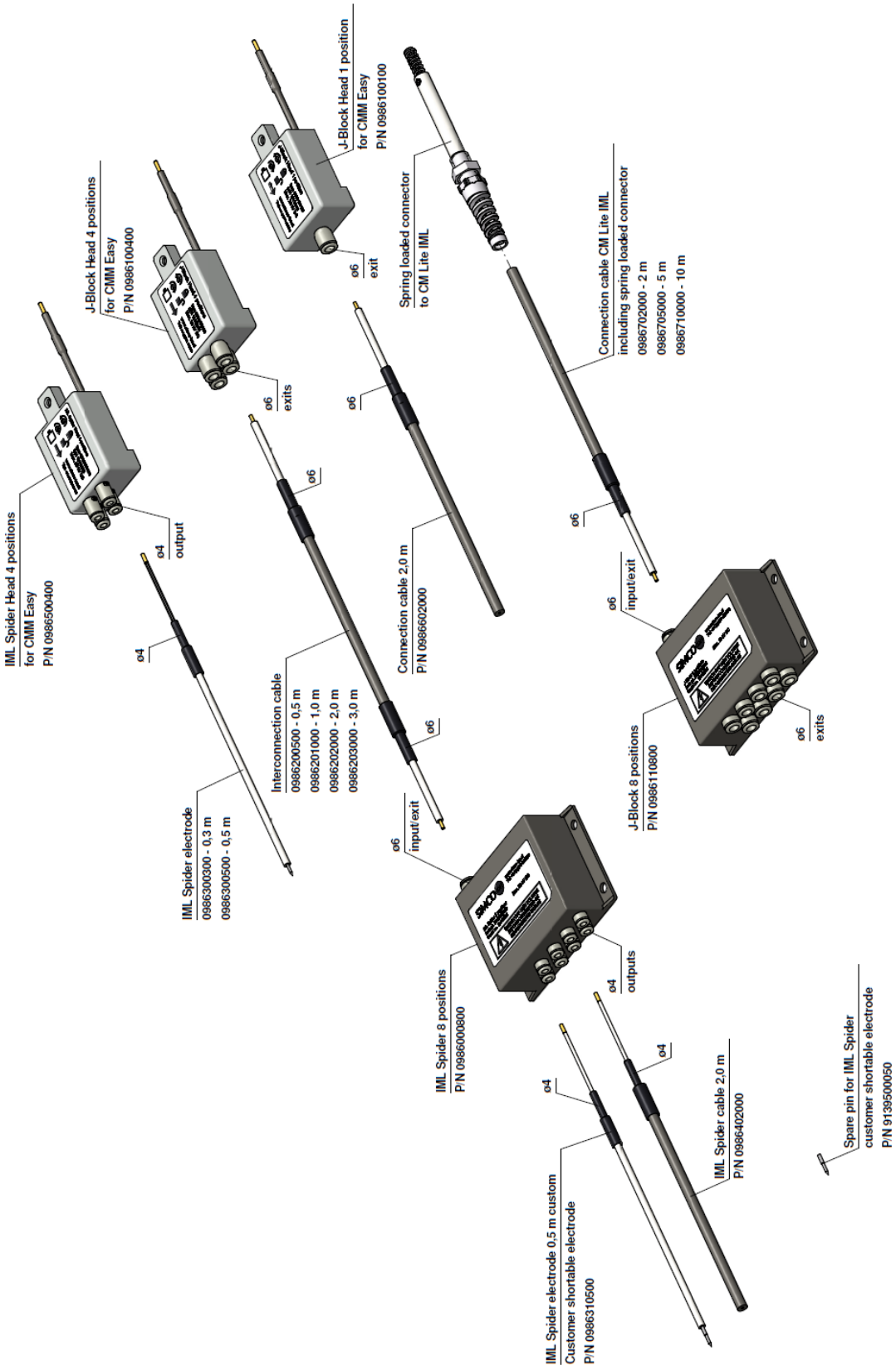

Spare parts can be obtained from the agent in your region or from Simco-Ion Netherlands.

Simco-Ion Netherlands
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NL7240 AB Lochem
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Fax +31(0)573257319
Email general@simco-ion.nl
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