SMC
SHIP MOTION CONTROL

SMC-1210 & SMC-1214

Datalogger System

User Guide

Notice

The information in this Setup Guide is subject to change without notice.

Not all the features described in this manual are available in all SMC Datalogger versions. Please check with SMC for specific details of supported features.

SMC Ship Motion Control is not responsible for any errors in this manual or their consequences.

SMC Ship Motion Control Ltd

Email: info@shipmotion.eu

Web: www.shipmotion.eu

Tel: +46 8 644 50 10

TABLE OF CONTENTS

1. INTRODUCTION

This User Guide includes details of the SMC-1210 and SMC-1214 Datalogger, its setup, configuration, features and functions.

The SMC Datalogger configuration is very flexible and can be modified according to requirements.

The SMC-1210 and SMC-1214 Datalogger accepts input from various types of sensors and weather instruments. The input data is logged into the datalogger internal memory using an SQL database and can be viewed or downloaded for further analysis.

The SMC-1210 and SMC-1214 can be used as a stand-alone system or viewed across a network with an Internet browser. The device is fan-less.

The SMC-1210 is equipped with 1x Ethernet port, 4x RS232 or 2x RS422 or 2x RS485 user configurable. USB ports are available for system expansion.

The SMC-1214 has 1x Ethernet port, 20x RS232 or 10x RS422 or 10x RS485 user configurable. USB ports are available for system expansion.

The SMC datalogger is a headless device which is accessed over the ethernet. The graphical interface is presented over HTML and viewed in a web browser.

The SMC monitoring modules support many data communication strings by default, including most common NMEA string formats and can therefore integrate almost any measurement instrument on the market.

2. PACKAGE CONTENTS

Unpack the delivery box and remove all the packaging materials and shipping carton.

When the Datalogger has been received, it must be inspected for damage during shipment. If damage has occurred during transit, all the shipping cartons and packaging materials should be stored for further investigation. If damage is visible, a claim for shipping damage must be filed immediately.

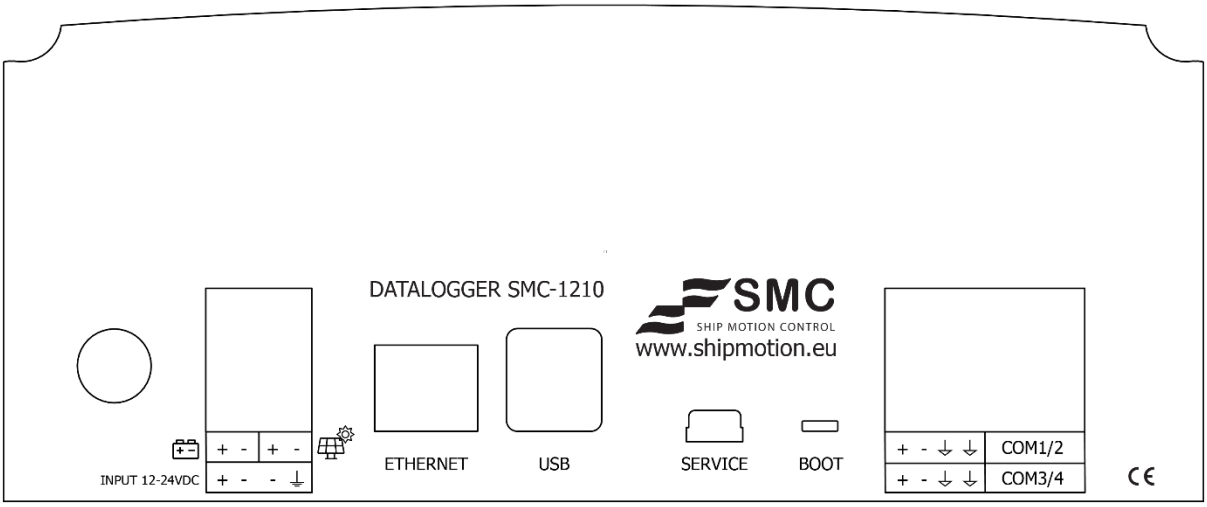
As with all electronic devices the datalogger should be handled with care and must not be dropped.

Standard Delivered Items

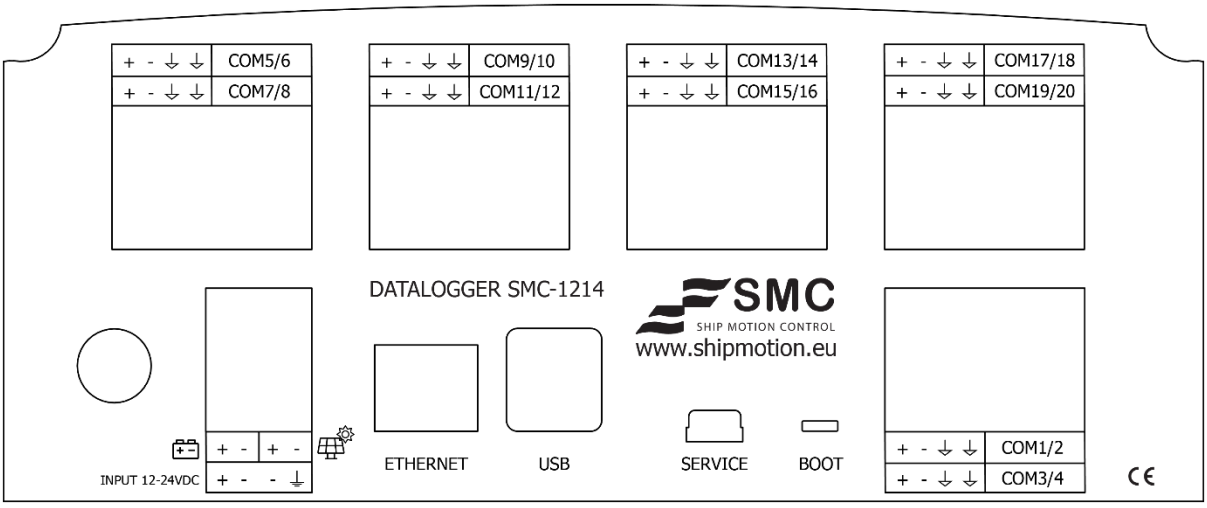
- Datalogger
- USB flash drive with SMC Software and User Manual

3. DATALOGGER DESCRIPTION

The SMC Dataloggers are fully integrated devices with external connections for operating power, data input, network communication and a service connection. All the inputs and outputs are located on one side of the Datalogger, as seen below.



SMC-1210 version

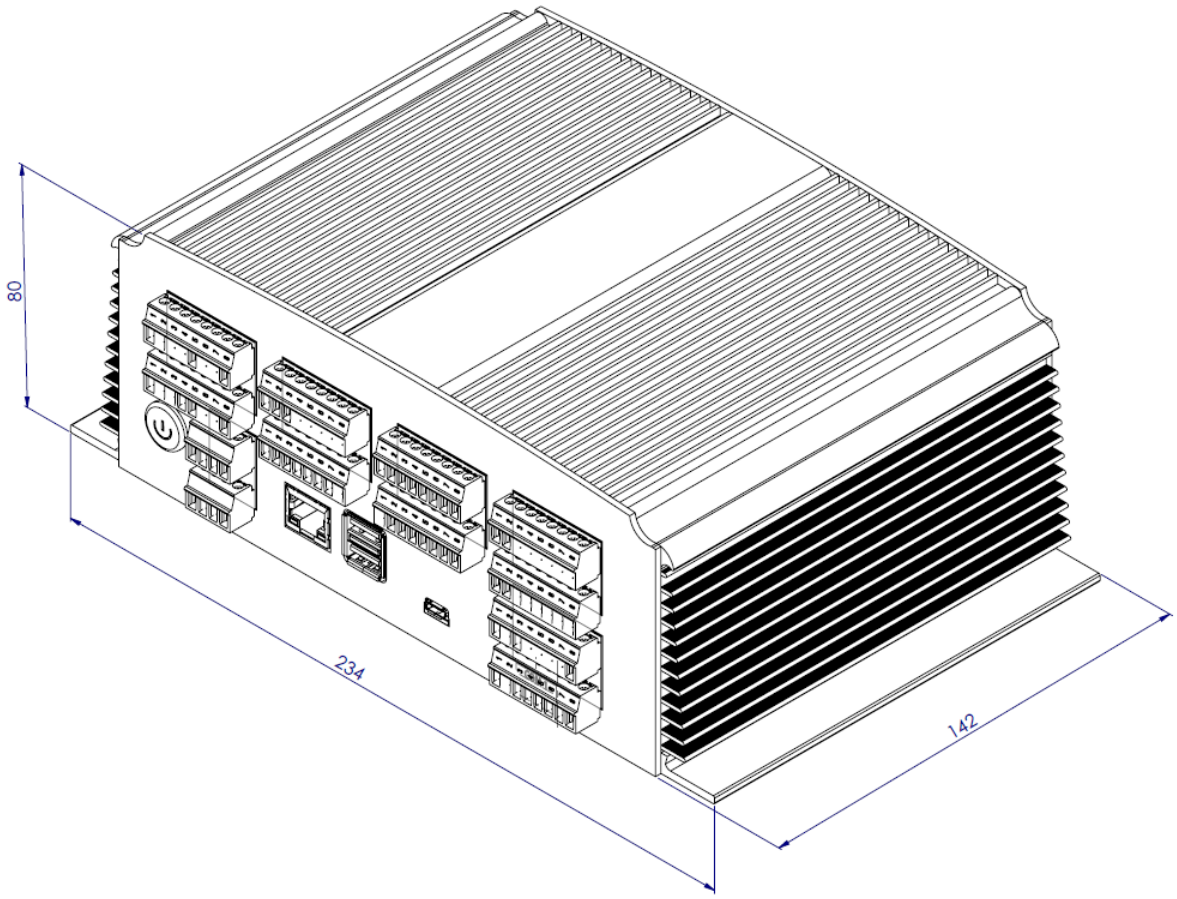


SMC-1214 version

3.1 DIMENSIONS

The overall dimensions of the Datalogger are as shown below in mm.

The weight of the datalogger is approximately 1kg



3.2 INSTALLATION

The Datalogger is designed to run unattended and should be installed in a location that would be suitable for any electrical device. Care should be taken to ensure the operating environment remains ventilated and as free from moisture as possible. The SMC-1210 and SMC-1214 is not a water proof device.

The Datalogger can be mounted in any orientation using the fixture holes at the side of the casing.

However, it is recommended that the Input/Output side of the Datalogger is not facing up to avoid dust and debris ingress to the ports and connections.

3.3 OPERATING POWER CONNECTION

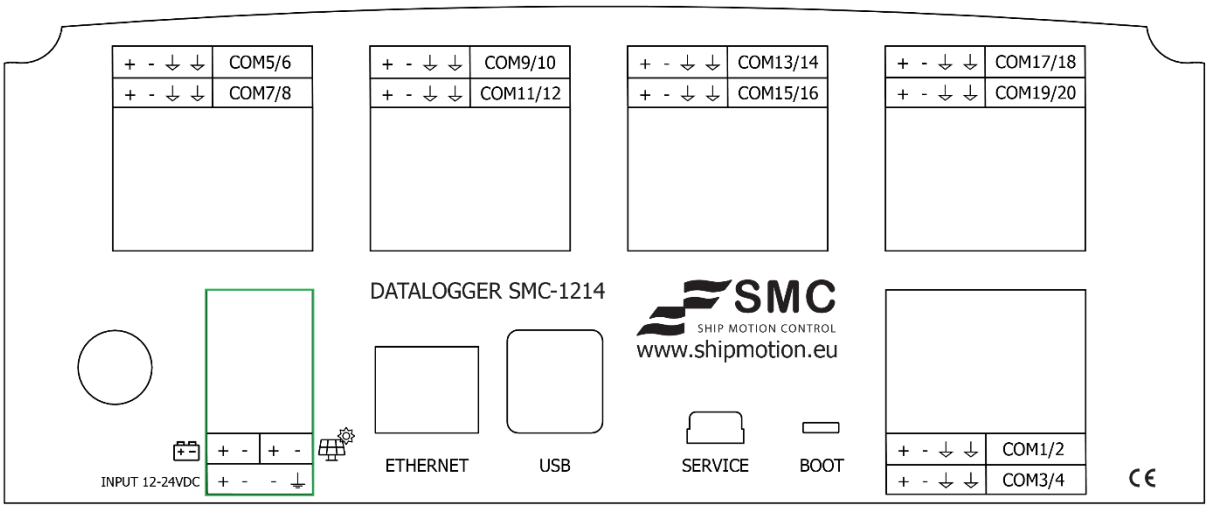
The Datalogger operating power is built for a voltage input in the range of 12 to 24 volts DC. It has a maximum voltage input at 36 VDC. The power consumption is 3W for the SMC-1210 and SMC-1214. Using the power from the device to power instruments will increase the power consumption.

The SMC Datalogger offers power outputs for the connected instruments. The power output is the same voltage as the input voltage. If the Datalogger operating power is 12v, the voltage supplied at the device connectors will be 12v as well.

The operating power connections are all on one terminal block at the **bottom left** of the device, *as highlighted in green below.*

WARNING

Overvoltage can damage the device, applying voltage to the data input channels can damage the device.



2x4 Pin terminal connector – Datalogger operating power (highlighted in green)

Pin	Terminal function		Details
Top 1	VDC+	Battery operating power *	Power **input** 12…24 VDC
Top 2	VDC -	Battery operating power *	
Top 3	VDC+	Solar cells charging power *	
Top 4	VDC -	Solar cells charging power *	*optional

Bottom 1	VDC+	Operating power (PSU)	Power **input** 12…24 VDC
Bottom 2	VDC -	Operating power (PSU)	
Bottom 3	VDC -		
Bottom 4	Chassis ground		

INFO

The battery and Solar power inputs are optional. *****

3.4 DEVICE CONNECTION AND OPERATING POWER

Each COM port has a Phoenix contact terminal block.

Any serial communication enabled device can be connected to the terminals.

The attached device can also take its operating power from the terminal if required.

All 8 port terminals have the terminal layout as below

Pin	Terminal function	Details
1	VDC+	Power **output** 12…24 VDC **
2	VDC -	Power **output** 12…24 VDC **
3	Signal Ground	Signal ground for Serial port
4	Signal Ground	Signal ground for Serial port
5	Serial Port	
6	Serial Port	
7	Serial Port	
8	Serial Port	

INFO

The COM port terminal blocks are labelled with a + plus and – minus.

This is an output for powering attached sensors and devices. **

INFO

The sensor/device operating power matches the input voltage. If the Datalogger operating power is 12v, the voltage supplied at the device connectors will be 12v.

4. CONNECTING TO THE DATALOGGER

4.1 INITIAL SETUP

Connect the SMC Datalogger to a network using the RJ45 ethernet port at the front of the Datalogger, then power on the datalogger.

The Datalogger is designed to be connected to a network with a DHCP server. The Datalogger will automatically be assigned a network IP address.

To connect to the SMC datalogger interface launch the ***SMC Client Software*** from a PC on the same network as the datalogger.

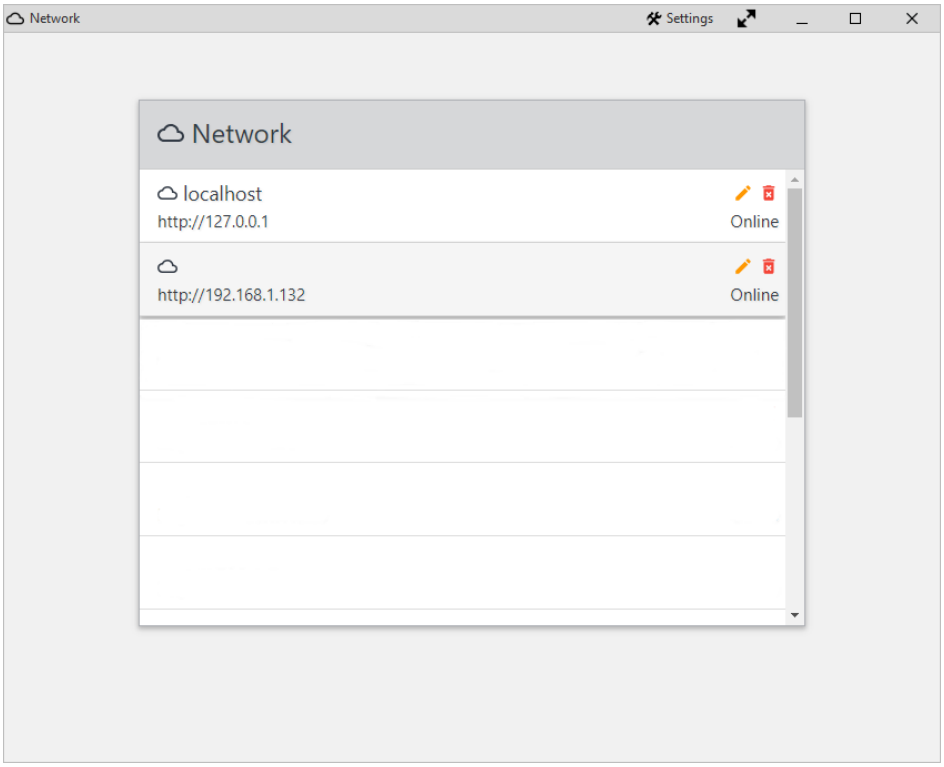
The SMC Client Software is included on the SMC USB flash drive.

The Client Software will scan the network and list any devices found. In the screenshot below the device has been assigned the IP address 192.168.1.132. Click on the bar with the IP address to access the Datalogger graphical interface.

The device can also be accessed by typing the IP address of the datalogger into an Internet browser window.

INFO

The IP address shown below *is an example* it will be different on different networks.



A static IP address can be set in the Datalogger. Note that incorrect IP address settings can make the device inaccessible over the network.

After initial setup, the SMC Client Software can be downloaded from the dashboard of the datalogger for use on other PCs, avoiding the need for an Internet browser.

INFO

The SMC-1210 and SMC-1214 has an USB service port, it is used for backups and firmware updates. Using the SMC programming software tool, the IP address can be changed with this tool.

4.2 EDITING SETTINGS

The settings of the SMC Datalogger can be accessed by clicking on the SMC logo at the top left of the welcome screen and selecting the System sub menu.

Under the System menu there are the following options;

Date and Time.

Select to change the system time, date, and time zone.

Storage

The storage menu displays the device storage spaces, Used space and Free space.

Network

Lists the network cards of the device. Click on the heading of a network card to see the Adapter Status, MAC Address and IP Address.

SSH

Displays the ssh-rsa key for remote access via a terminal software such as Putty or RealTerm.

USB

Shows the system USB devices, note the COM port controller blocks are listed as USB devices.

UART

Select to see the COM port controllers. Click on a controller heading to edit the Operating Mode, see Section 5.

dmesg

Displays the diagnostic messages since the last boot.

5. SERIAL PORT CONFIGURATION

The input serial ports can be configured to support RS232, RS422, RS485 and Mixed modes.

Each Serial port block has a VDC+/- out to power a connected device, two data grounds and four data terminal inputs. Below is the user selection available for each serial terminal block.

The SMC-1210 has 1 terminal block and the SMC-1214 has 5 terminal blocks. This is configured from the Main menu in the datalogger under System->UART

INFO

Each table below has eight columns representing the eight terminals of each physical connector.

RS232 mode (4T/4R RS-232)

VDC+	VDC-	Signal GND	Signal GND	COM1 RS232 TxD	COM1 RS232 RxD	COM2 RS232 TxD	COM2 RS232 RxD
VDC+	VDC-	Signal GND	Signal GND	COM3 RS232 TxD	COM3 RS232 RxD	COM4 RS232 TxD	COM4 RS232 RxD

RS422 full duplex (2T/2R RS-422/RS-485-4w)

VDC+	VDC-	Signal GND	Signal GND	COM1 RS422 Tx+	COM1 RS422 Rx+	COM1 RS422 Tx-	COM1 RS422 Rx-
VDC+	VDC-	Signal GND	Signal GND	COM3 RS422 Tx+	COM3 RS422 Rx+	COM3 RS422 Tx-	COM3 RS422 Rx-

RS485 half duplex (2T/2R RS-485 & 2R RS-232)

VDC+	VDC-	Signal GND	Signal GND	COM1 485 Data+		COM1 485 Data-	COM2 RS232Rx
VDC+	VDC-	Signal GND	Signal GND	COM3 485 Data+		COM3 485 Data-	COM4 RS232 Rx

Mixed Protocol Full Duplex (2T/2R RS-232 & 1T/1R RS422/RS485-4w)

VDC+	VDC-	Signal GND	Signal GND	COM1 RS232 TxD	COM1 RS232 RxD	COM2 RS232 TxD	COM2 RS232 RxD
VDC+	VDC-	Signal GND	Signal GND	COM3 RS422 Tx+	COM3 RS422 Rx+	COM3 RS422 Tx-	COM3 RS422 Rx-

Mixed Protocol half Duplex (2T/3R RS-232 & 1T/1R RS485)

VDC+	VDC-	Signal GND	Signal GND	COM1 RS232 TxD	COM1 RS232 RxD	COM2 RS232 TxD	COM2 RS232 RxD
VDC+	VDC-	Signal GND	Signal GND	COM3 485 Data+		COM3 485 Data-	COM4 RS232 Rx

6. USB SERVICE CONNECTION

The Datalogger has a service port in the form of a micro-USB port on the front panel.

The USB port can be used to backup and restore data to the Datalogger and to update the firmware.

The access to the Datalogger is done using the SMC Firmware Update Application software.

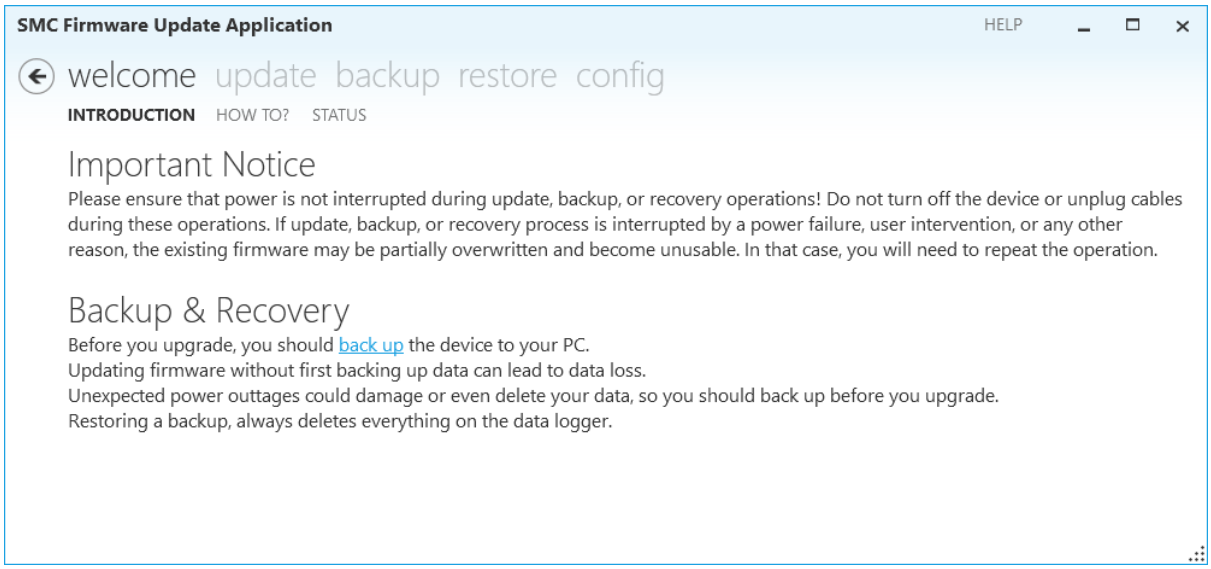
The steps needed to access the Datalogger

1. Power off the Datalogger
2. Open the device front panel by unscrewing the 4 screws that holds the panel
3. There is a jumper in the main board with a mark PROG. Move the jumper to 1 instead of position 0
4. Connect the micro-USB service cable (not included) to the datalogger and to a PC or laptop
5. Launch the SMC Firmware Update Application software application
6. Power on the Datalogger
7. The application will detect the Datalogger. Make the desired changes on the device
8. Power Off the datalogger
9. Move the PROG jumper from position 1 to position 0
10. Close the front panel
11. Startup the datalogger

6.1 SMC DATALOGGER APP

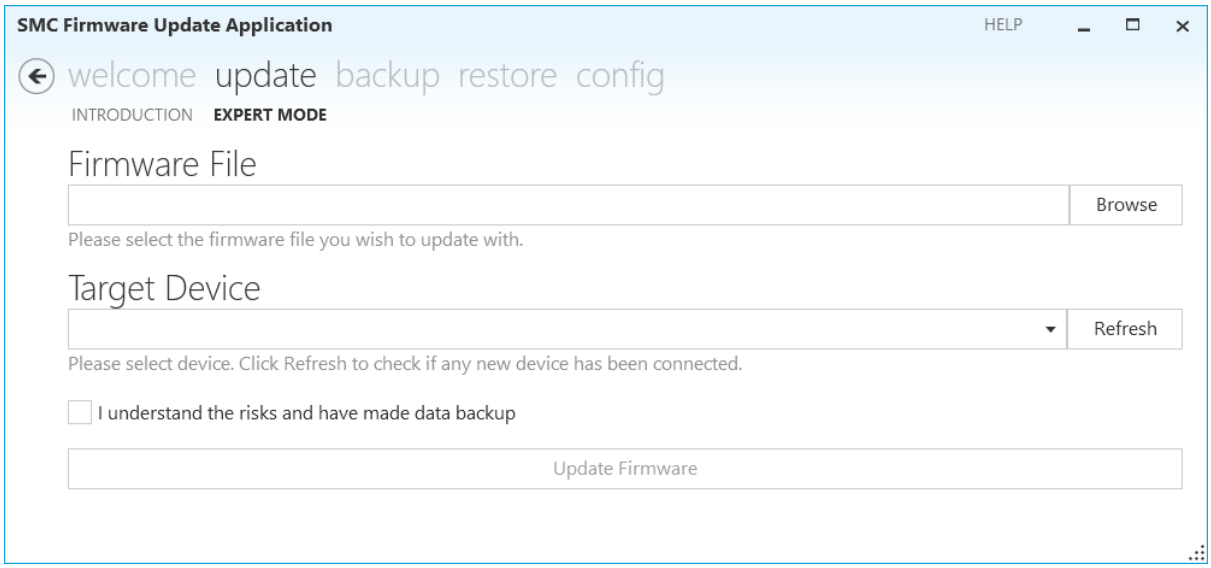
The SMC Firmware Update Application, can be used to Backup and Restore the Datalogger Operating System and Data, or to update the SMC-1210 and SMC-1214 firmware.

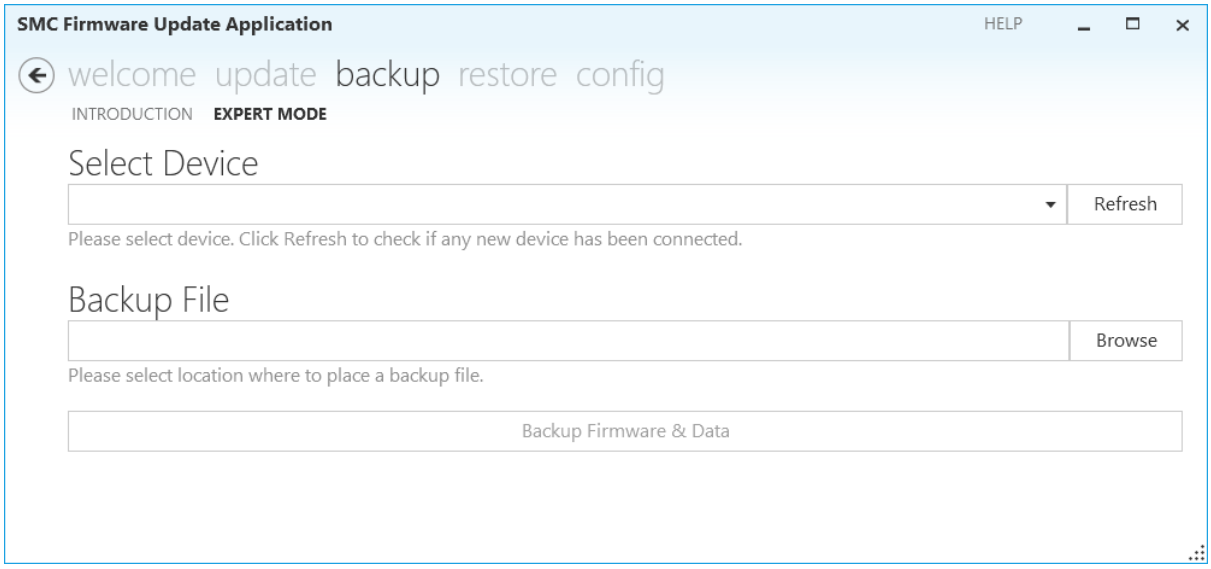
The application can be run when the datalogger is connected to a PC over the USB service cable as described previously.

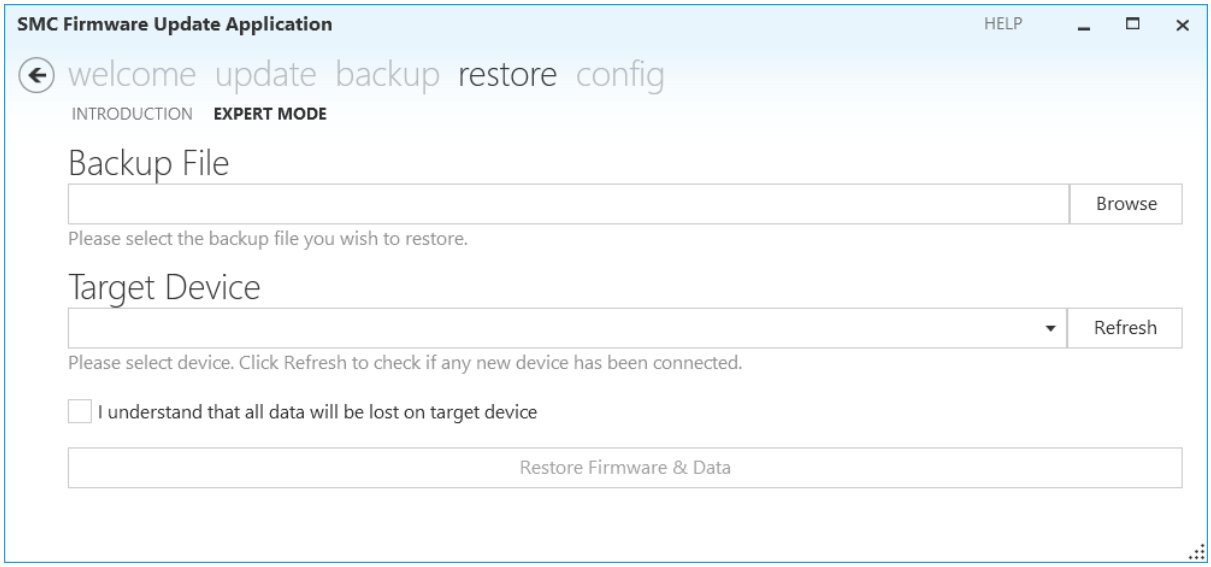


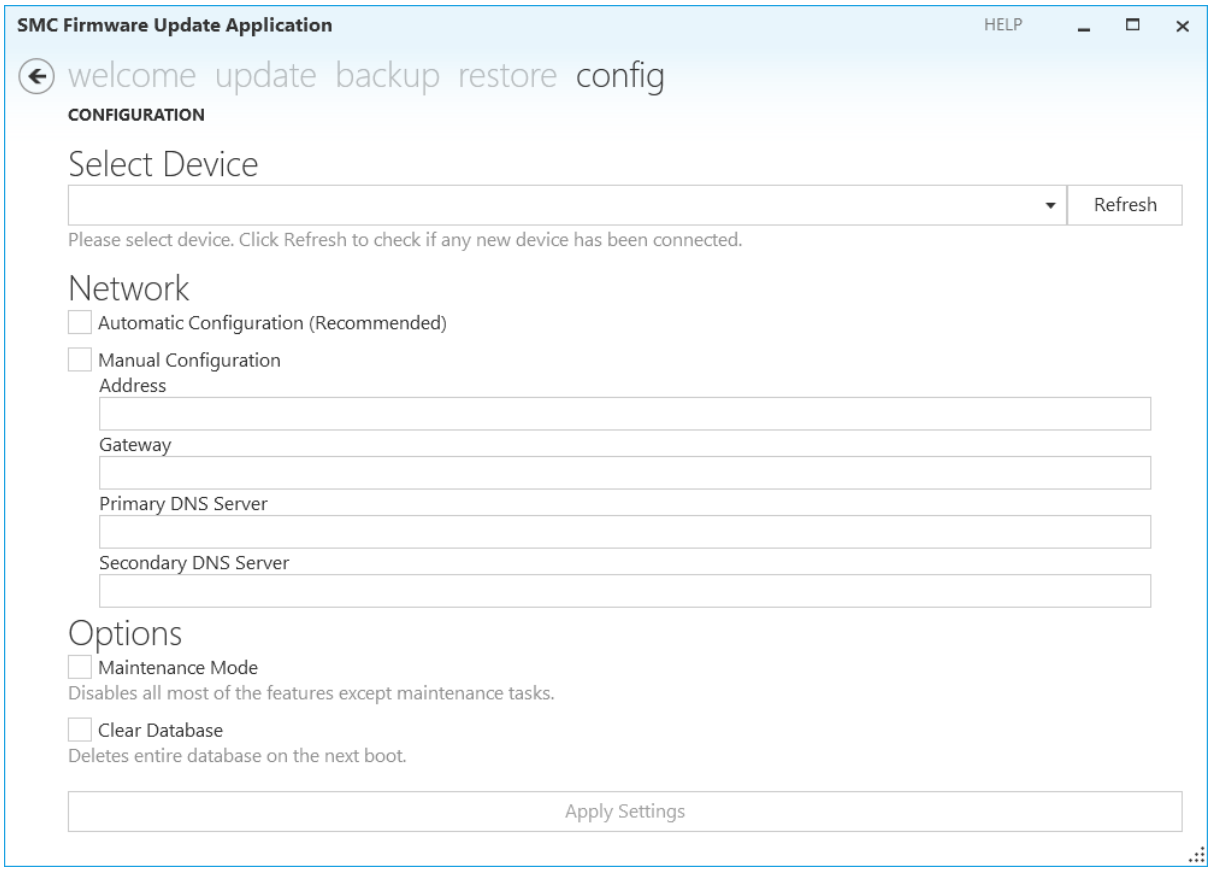
6.1.1 FIRMWARE UPDATE

Select the update tab from the main menu.






SMC Firmware Update Application
HELP
welcome update backup restore config
INTRODUCTION EXPERT MODE
Backup File
Browse
Please select the backup file you wish to restore.
Target Device
Refresh
Please select device. Click Refresh to check if any new device has been connected.
I understand that all data will be lost on target device
Restore Firmware & Data


SMC Firmware Update Application
HELP
welcome update backup restore config
CONFIGURATION
Select Device
Refresh
Please select device. Click Refresh to check if any new device has been connected.
Network
Automatic Configuration (Recommended)
Manual Configuration
Address
Gateway
Primary DNS Server
Secondary DNS Server
Options
Maintenance Mode
Disables all most of the features except maintenance tasks.
Clear Database
Deletes entire database on the next boot.
Apply Settings

7. SERVICE AND WARRANTY

7.1 TECHNICAL SUPPORT

If you experience any problem, or you have a question regarding your datalogger please contact your local agents or SMC directly.

Refer to the SMC website https://www.shipmotion.eu/

Please have the following information available

- Equipment Model Number
- Equipment Serial Number
- Fault Description

Worldwide Service contact

Telephone: +46 8 644 50 10 (CET 8am – 5pm)

E-mail: support@shipmotion.eu

Return Procedure

If this is not possible to solve the problem a Ship Motion Control technician will issue a Return Material Authorization Number (RMA#). Please be ready to provide the following information.

- Name
- Address
- Telephone, Fax, E-mail
- Equipment Model Number
- Equipment Serial Number
- Installation Date

If the datalogger is under warranty, repairs are free. Please see the SMC Ship Motion Control warranty statement.

Pack the datalogger in its original packaging, or suitable heavy packaging.

Mark the RMA# on the outside of the package

Return the datalogger, prepaid carrier to SMC

7.2 WARRANTY

All products are inspected prior to shipment and SMC manufactured products are guaranteed against defective material or workmanship for a period of two (2) calendar years after delivery date of purchase. SMC liabilities are limited to repair, replacement, or refund of the factory quoted price (SMC's option). SMC must be notified and provided with sufficient time to remedy any product deficiencies that require factory attention. This time period may include but is not limited to standard production lead times, travel time and raw material lead times. SMC will not be responsible for any charges related to repair, installation, removal, re-installation, or any actual, incidental, liquidated, or consequential damages. All claims by the buyer must be made in writing. All orders returned to SMC must have an issued RMA number supplied by the SMC prior to shipment. Only SMC shall have the authority to issue RMA numbers.

Any products manufactured by others supplied with and/or installed with SMC's products are covered by the original manufacturers' warranty and are excluded from SMC's warranty

SMC manufactured product must be sent to SMC for repair or replacement.

Please read the SMC Ship Motion Control terms and conditions for complete information.

7.2.1 LIMIT OF LIABILITY

SMC shall have no liability under the warranties in respect of any defect in the Products arising from: specifications or materials supplied by the Buyer; fair wear and tear; wilful damage or negligence of the Buyer or its employees or agents; abnormal working conditions at the Buyer's premises; failure to follow SMC's instructions (whether oral or in writing); misuse or alteration or repair of the Products without SMC's approval; or if the total price for the Products has not been paid.

SMC shall in no event be liable for any indirect or consequential, or punitive damages or cost of any kind from any cause arising out of the sale, use or inability to use any product, including without limitation, loss of profits, goodwill or business interruption. In case of failure in the product the company is not liable to compensate the buyer with anything exceeding the cost of the product sold by SMC.

The exclusion of liability in these Terms & Conditions shall not apply in respect of death or personal injury caused by SMC's negligence.

SMC shall not be bound by any representations or statements on the part of its employees or agents, whether oral or in writing, including errors made in catalogues and other promotional materials.

Please read the SMC Ship Motion Control terms and conditions for complete information.

7.2.2 RESTRICTION OF WARRANTY

The warranty does not cover malfunction of the Datalogger generated from

- If the datalogger has been exposed to extreme shock and vibrations
- If the datalogger case has been opened by the customer in an attempt to carry out repair work
- If the datalogger has been fed with an over voltage in the power supply wires or the signal wires

8. FAQ & SUPPORT

If no communication is seen or bad data is displayed, please refer to the FAQs below which cover the most common configuration problems.

Configuration

Is the sensor or device sending data via RS232, RS422 or RS485?

The Datalogger is *always on* and receives data over all the serial channels simultaneously.

The Datalogger is not dispatched pre-configured, the input serial ports must be set for the serial communication type required.

Check the communication type for the sensor or device being used.

Data is being received but is either seen as bad data or wrong data.

Check the baud rate settings for the sensor connected to the Datalogger. Bad data in the device terminal window usually indicates that the wrong data baud rate, data bit, stop bit or Parity has been set.

No Communication with the Datalogger

Check the cable connection and disconnect and reconnect is necessary.

Is the Datalogger powered up? The supply Voltage should be 12 to 24 VDC.

Check what Baud Rate and Output Rate should be used or has been set up.