MOTORTECH

POWERVIEW3 – ENGINE INFORMATION MONITOR

OPERATING MANUAL
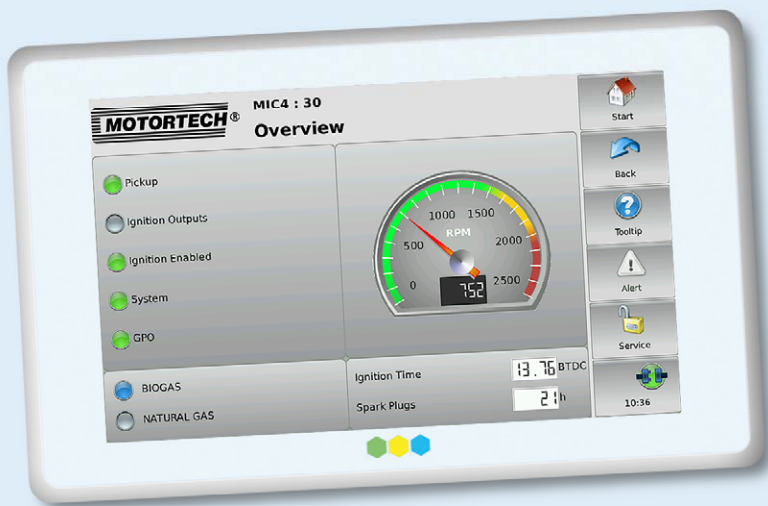
PowerView3
MOTORTECH ENGINE INFORMATION MONITOR

TABLE OF CONTENTS

TABLE OF CONTENTS

1 GENERAL INFORMATION

Read through this operating manual carefully before use and become familiar with the machine. Installation and start-up should not be carried out before reading and understanding this document. Keep this manual readily available so that you can reference it as needed.

1.1 What Is the Purpose of this Operating Manual?

This manual serves as an aid for the installation and operation of the product and supports the technical staff with all operating and maintenance tasks to be performed. Furthermore, this manual is aimed at preventing dangers to life and health of the user and third parties.

1.2 Who Is this Operating Manual Targeted to?

The operating manual provides a code of conduct for personnel tasked with the set-up, operation, maintenance, and repair of gas engines. A certain level of technical knowledge with respect to the operation of gas engines and basic knowledge of electronic ignition systems are necessary. Persons who are only authorized to operate the gas engine shall be trained by the operating company and shall be expressly instructed concerning potential hazards.

1.3 Which Symbols Are Used in the Operating Manual?

The following symbols are used in this manual and must be observed:

Example

This symbol indicates examples, which point out necessary handling steps and techniques. In addition, you receive additional information from the examples, which will increase your knowledge.

Notice

This symbol indicates important notices for the user. Follow these. In addition, this symbol is used for overviews that give you a summary of the necessary work steps.

Warning

This symbol indicates warnings for possible risks of property damage or risks to health. Read these warning notices carefully and take the mentioned precautionary measures.

Danger

This symbol indicates warnings for danger to life, especially due to high voltage. Read these warning notices carefully and take the mentioned precautionary measures.

2 SAFETY INSTRUCTIONS

2.1 General Safety Instructions

The following safety instructions must be followed in the area in which the device is operated:

High voltage! Danger to life!

While the engine is running, the area around the ignition system especially holds the risk of danger due to high voltage. The following parts should therefore not be touched or removed unless explicitly stated otherwise:

– Ignition coils and caps

– Wires of the high voltage circuit

– In- and output wiring of the ignition controller

– Pickups and their wiring

Danger to persons with pacemakers!

Electromagnetic impulses in the wiring of the ignition system may exceed the permissible limits of pacemakers. Persons with pacemakers must therefore not be present in the vicinity of the ignition system being operated. Mark the operating location of the ignition system with the corresponding standardized warning symbol.

MOTORTECH equipment is manufactured as state of the art and therefore safe and reliable to operate. Nevertheless the equipment can cause risks or damage can occur, if the following instructions are not complied with:

– The gas engine must only be operated by trained and authorized personnel.

– Operate the equipment only within the parameters specified in the technical data.

– Use the equipment correctly and for its intended use only.

– Never apply force.

– For all work such as installation, conversion, adaptation, maintenance, and repair, all equipment must be disconnected from the mains and secured against unintentional reactivation.

– Perform only such maintenance and repair work as is described in this operating manual, and follow the instructions given while working. For maintenance of the equipment, only use spare parts supplied by MOTORTECH. Further work must only be performed by personnel authorized by MOTORTECH. Non-compliance with the instructions will void any warranties for the proper function of the equipment as well as the responsibility for the validity of the certifications.

– Safety devices must not be dismounted or disabled.

– Avoid all activities that can impair the function of the equipment.

- Operate the equipment only while it is in proper condition.
- Investigate all changes detected while operating the gas engine or ignition system.
- Ensure compliance with all laws, directives and regulations applicable to the operation of your system, including such not expressly stated herein.
- If the system is not entirely tight and sealed, gas may escape and result in explosion hazard. Upon completion of all assembly works, always check the system's tightness.
- Always ensure adequate ventilation of the engine compartment.
- Ensure a safe position at the gas engine.

2.2 Electrostatic Discharge Hazards

Electronic equipment is sensitive to static electricity. To protect these components from damage caused by static electricity, special precautions must be taken to minimize or prevent electrostatic discharge.

Observe these safety precautions while you work with the equipment or in its vicinity.

- Before performing maintenance or repair work, ensure that the static electricity inherent to your body is discharged.
- Do not wear clothing made from synthetic materials to prevent static electricity from building up. Your clothing should therefore be made of cotton or cotton mix materials.
- Keep plastics such as vinyl and Styrofoam materials as far away from the control system, the modules, and the work environment as possible.
- Do not remove the circuit boards from the housing of the device.

2.3 Special Safety Instructions for the Device

Explosion hazard!

The following operations may only be executed providing the environment is classified as non-explosive.

- Establishing and terminating communications via PowerView3 interfaces and connections.
- Inserting and removing SD cards.

Risk of destruction and injury!

The PowerView3 is an electrically operated device and there is the risk of electrostatic discharges. Therefore, never operate the device without the appropriate grounding, to prevent injuries and damage.

2 SAFETY INSTRUCTIONS

Risk of damage!

It is possible to damage the ignition kit and engine through PowerView3 settings. Consequently, protect your device against unauthorized access.

– Activate access control.

– Log out after using the access level employed.

Risk of damage!

When using the PowerView3 observe the following points:

– Do not let the device fall.

– The device must not come into contact with water and other liquids.

– Do not operate the device in direct sunlight, near heat sources or in humid environments.

– Only operate the device according to the technical specifications.

Disregard of these guidelines can lead to the destruction of the device.

Risk of damage!

The surface of the touchscreen is sensitive to pointed and sharp-edged objects. Therefore handle the touchscreen carefully. Pixel errors due to improper handling are excluded from the warranty.

Risk of damage and malfunctions!

Safe operation is no longer guaranteed if

– the product is visibly damaged,

– the display remains dark or displays an unusual pattern for an extended period,

– the device does not react after a restart.

The PowerView3 must then be turned off and must not be used any longer.

2.4 Proper Disposal

After the expiration of its service life, MOTORTECH equipment can be disposed of with other commercial waste, or it may be returned to MOTORTECH. We will ensure its environmentally friendly disposal.

3 INTENDED USE

3.1 Functional Description

The PowerView3 is used to visualize and record engine operating data. The data can be provided by the following MOTORTECH devices that are connected via a CAN bus:

– Ignition controller MIC3, MIC3+, MIC4, MIC4+, MIC5, MIC5+

– Detonation control system DetCon16 and DetCon2/20

– Temperature scanner TempScan20

Some of the settings of the ignition controllers: MIC3, MIC3+, MIC4, MIC4+, MIC5 and MIC5+ can be changed via the PowerView3. The TempScan20 temperature module is fully configurable via the PowerView3. If warnings and errors occur, two digital outputs can be activated on the PowerView3. A slot for SD cards and a USB port permit saving recorded data on a storage device.

A maximum of one ignition controller, one detonation control and three temperature modules can be monitored by the PowerView3 simultaneously. A further maximum of three devices can be added that are not directly supported by the PowerView3. The PowerView3 only monitors the connection status of these products.

3.2 Application Range

The PowerView3 must only be operated in a control cabinet with the devices specified for this purpose.

Any use other than the one described in the operating manual shall be considered improper use and will result in the voiding of all warranties.

4.1 Certifications

The PowerView3 is certified in compliance with the following regulations:

CSA

–   Class I, Div 2, Groups C, D, T4
–   CSA Std C22.2 No. 0 -10
–   CSA Std C22.2 No. 142-M1987 (R 2004)
–   CSA Std C22.2 No. 213-M1987 (R 2004)
–   ANSI/ISA 12.12.01, Ed 1 (2007)
–   UL Std No. 916, Ed 3 (1998)

CE

–   2004/108/EC (EMC directive)
    –   Limits and methods of measurement in compliance with DIN EN 55022:2010 Class B
    –   Limits and test methods in compliance with DIN EN 55024:2010
    –   Limits for harmonic current emissions in compliance with DIN EN 61000-3-2 + A1:2009 + A2:2009, Class A
    –   Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <=16 A per phase and not subject to conditional connection in compliance with DIN EN 61000-3-3:2008.
    –   Electrostatic discharge immunity test in compliance with DIN EN 61000-4-2:2009
    –   Radiated, radio-frequency, electromagnetic field immunity test in compliance with DIN EN 61000-4-3:2006 + A1:2008 + A2:2010
    –   Immunity for industrial environments as per DIN EN 61000-6-2:2005
–   2011/65/EU (RoHS directive)

CSA Group

Certificate of Compliance

Certificate:	2173514 (LR 211392)	**Master Contract:**	211392
Project:	2650124	**Date Issued:**	June 20, 2014
Issued to:	Motortech GmbH		

Hogrevestrasse 21-23
Celle, 29223
Germany
Attention: Rainer Voelz

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

C ℠ US

Issued by: Marin Banu, P. Eng.

PRODUCTS

CLASS 2258 02   - PROCESS CONTROL EQUIPMENT - For Hazardous Locations
CLASS 2258 82   - PROCESS CONTROL EQUIPMENT - For Hazardous Locations -
                           Certified to US Standards

Class I, Div 2, Groups C and D, T4.

• PowerView 2 Series of Engine Information Monitor, input ratings: 24V dc, 1.8 A; Ambient temperature range 0ºC to +50ºC.

Notes: 1. This unit must be supplied by a SELV-circuit.

2. The unit is certified to be installed on a Control Panel in accordance to the CEC and NEC wiring method.

3. The final installation of the PowerView 2 on Control Panel shall meet the requirements for IP65/Type 4 Encl.

4. The USB and LAN interface connectors are only to be used in areas known to be non-hazardous.

DQD 507 Rev. 2012-05-22   Page: 1

![MOTORTECH]

![CSA Group]

Certificate:	2173514 (LR 211392)	Master Contract:	211392
Project:	2650124	Date Issued:	June 20, 2014

- PowerView 3 Series of Engine Information Monitor, input ratings: 214mA@24V max 7 Watt; Ambient temperature range 0°C to +60°C.

Notes: 1. This unit must be supplied by a SELV-circuit.

2. The unit is certified to be installed on a Control Panel in accordance to the CEC and NEC wiring method.

3. The final installation of the PowerView 2 on Control Panel shall meet the requirements for IP65/Type 4 Encl.

4. The USB and LAN interface connectors are only to be used in areas known to be non-hazardous.

APPLICABLE REQUIREMENTS

CSA Std C22.2 No. 0 -10	- General Requirements – Canadian Electrical Code – Part II
CSA Std C22.2 No. 142-M1987 (R 2004)	- Process Control Equipment
CSA Std C22.2 No. 213-M1987 (R 2004)	- Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
ANSI/ISA 12.12.01, Ed 1 (2007)	- Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations
UL Std No. 916, Ed 3 (1998)	- Energy Management Equipment

MARKINGS

CSA Monogram with "C" and "US" indicators

- Master contract number or manufacturer name

- Model name or number ("A010301" for PowerView 2/ "B010301" for PowerView 3)

- Serial number or Date of manufacturing

- Electrical Ratings

- Hazardous Location Designation: Class I, Division 2, Groups C and D;

- Temperature Code

DQD 507 Rev. 2012-05-22   Page: 2

CSA Group

Certificate:	2173514 (LR 211392)	**Master Contract:**	211392
Project:	2650124	**Date Issued:**	June 20, 2014

- Maximum Ambient Temperature

- Warning re. substitution of components

- Text: "EXPLOSION HAZARD! Do not disconnect while circuit is live unless area is known to be non-

  hazardous."

Note - Jurisdictions in Canada may require these markings to also be provided in French language. It is the responsibility of the manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the manufacturer to determine this requirement and have bilingual wording added to the "Markings".

DQD 507 Rev. 2012-05-22   Page: 3

CE DECLARATION OF CONFORMITY

The company:

MOTORTECH GmbH
Hogrevestrasse 21-23
29223 Celle

declares that the product:

PowerView3
(visualisation device)

intended purpose:

use with gas Otto engines

complies with the provisions of the following EC Directives:

2004/108/EC (EMC directive)

2011/65/EU (RoHS directive)

under consideration of the following standards:

EN 55022:2010 Class B
EN 55024:2010
EN 61000-3-2- + A1:2009 + A2:2009, Class A
EN 61000-3-3:2008
EN 61000-4-2:2009
EN 61000-4-3:2006 + A1:2008 + A2:2010
EN 61000-6-2:2005

The marking of the product is:

P/N 06.05.085

This declaration is submitted by:

Name: Florian Virchow   Position in company: Managing Director

Celle, dated 8/13/2012
Place, date

Legally binding signature

4 PRODUCT DESCRIPTION

4.2 Technical Data

4.2.1 Mechanical Data
The PowerView3 has the following mechanical characteristics.

Feature	Value
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Operating temperature	0 °C to +60 °C (32 °F to +140 °F)
Relative humidity	ax. 95 % (without condensation)
Width	201.1 mm (7.96'') (without attachment clamps – see *Overview Drawing* on page 22)
Height	126.1 mm (4.96'')
Depth	29.5 mm (1.16'')
Weight	670 g (1.48 lbs)
Protection class (entire device)	IP20
Protection class (Device front)	IP64

4.2.2 Display
The PowerView3 display has the following features:

Feature	Value
Screen diagonal	178 mm (7'')
Width x height	800 x 480 pixels
Resolution	WVGA
Brightness	400 cd/m²
Viewing angle	120° (v) / 140° (h)
Touch technology	Four-wire resistive, single touch

4.2.3 Electrical Data

The PowerView3 has the following electrical characteristics:

Feature	Value	
Supply voltage	Nom. 12 to 24 V DC	
Current consumption	Maximum 7 W	
Internal backup battery	Type:	Li-Ion Type CR2032 (3 V)
	Service life:	10 years (depending on use)

4.2.4 Product Identification – Labeling on the Device

On the back of the PowerView3 there is a sticker with the following information:

HMI Module

– P/N: Product number

– A/N: Arrangement number

– S/N: Serial number

Activation Code

This section tells you which activation codes for configurable device types the PowerView3 was shipped with.

– Ignition Control: Ignition controller MIC3/MIC4/MIC5/MIC3+/MIC4+/MIC5+

– Detonation Control: Detonation control system DetCon16 / DetCon2/20

– Temperature Control: TempScan20 Temperature Control

You can obtain activation codes that were not part of the scope of supply of your PowerView3 via MOTORTECH (see *Customer Service Information* on page 109).

4 PRODUCT DESCRIPTION

4.2.5 Warning Notices on the Device

> **Validity of the Warning Notices on the Device**
>
> The warning notices on the device are valid for the PowerView3 and all CSA-certified MOTORTECH components connected to it.

English warning notice on the device	French Translation
EXPLOSION HAZARD! Do not disconnect while circuit is live unless area is known to be non-hazardous. For wiring details please refer to the operating manual.	RISQUE D'EXPLOSION! Ne débranchez pas lorsque le circuit est sous tension sauf si la zone est connue pour être non dangereux. Pour plus de détails de câblage, veuillez consulter le manuel d'utilisation.
WARNING! Read and understand the installation and operating manual prior to installing or making any adjustments.	ATTENTION! Avant d'installer ou d'effectuer une modification, lisez et comprenez le manuel d'utilisation et d'installation.

4.2.6 Interfaces

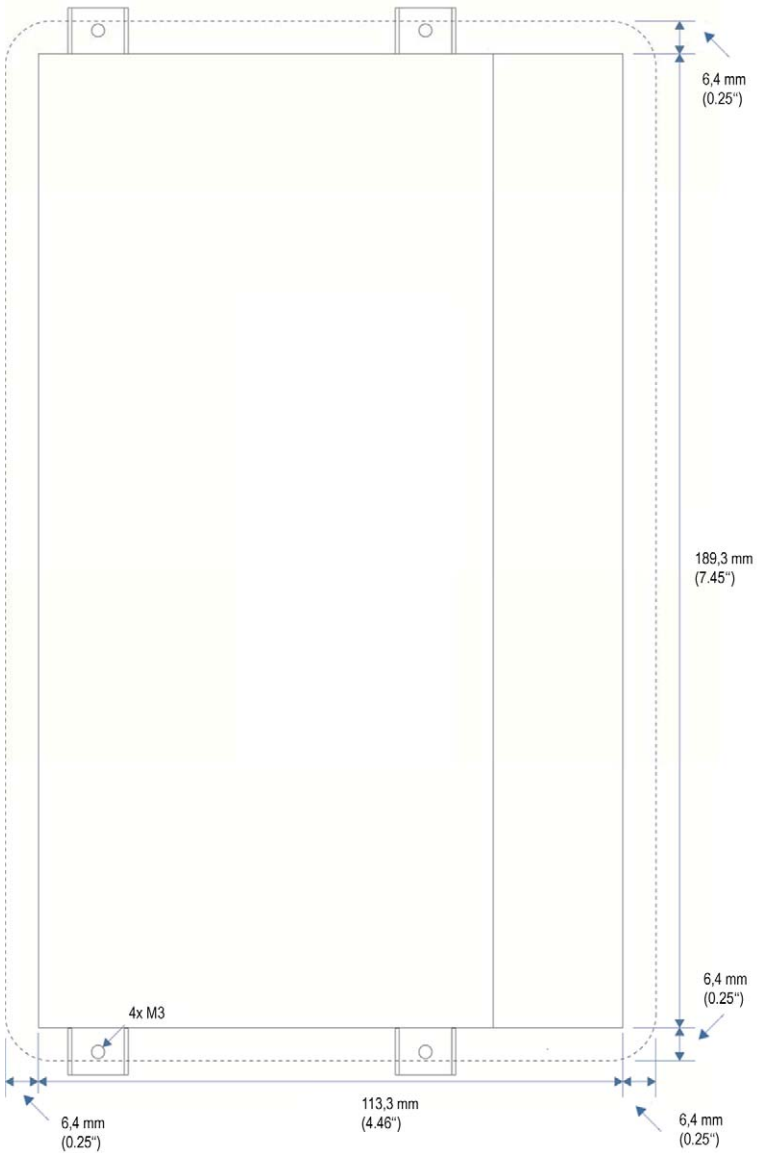The PowerView3 has the following interfaces:
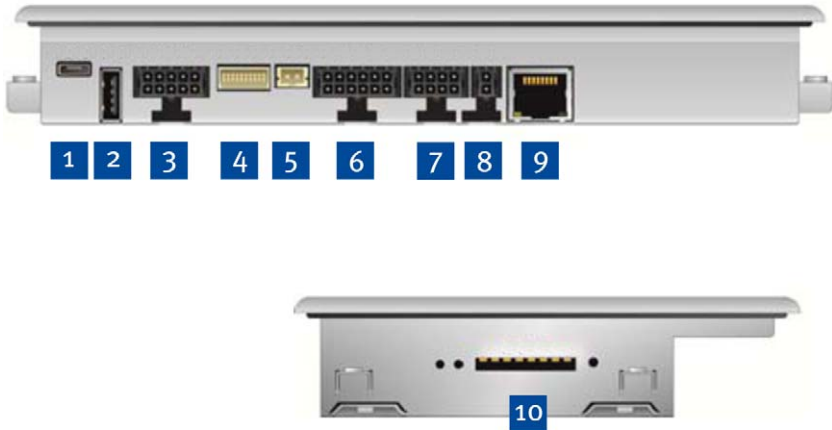
Item no.	Type	Properties
1	USB	Not available
2	USB 2.0	1x 12 Mbit/s full-speed host 1x 480 Mbit/s high-speed
3	Serial interface	Not available
4	SPI/Keypad	Not available
5	Audio	Not available
6	CAN bus	1x CAN (ISO/DIS 119898) 1x RS485
7	Digital Inputs and Outputs	X14
8	Power	12 to 24 V DC
9	Network	Not available
10	Memory card slots	Suitable for – SD cards up to 2 GB – SDHC cards up to 32 GB

4 PRODUCT DESCRIPTION

4.2.7 Overview Drawing

Rear view

6,4 mm
(0.25")

189,3 mm
(7.45")

6,4 mm
(0.25")

4x M3

6,4 mm
(0.25")

113,3 mm
(4.46")

6,4 mm
(0.25")

Plan view

4,4 mm (0.17")

198,5 mm (7.81")

14,6 mm (0.57")

4,4 mm (0.17")

4 mm (0.16")

2,1 mm (0.08")

Side view

10,4 mm (0.41")

63.1 mm (2.48")

14,7 mm (0.58")

25,2 mm (0.99")

19,7 mm (0.78")

4 mm (0.16")

5,8 mm (0.23")
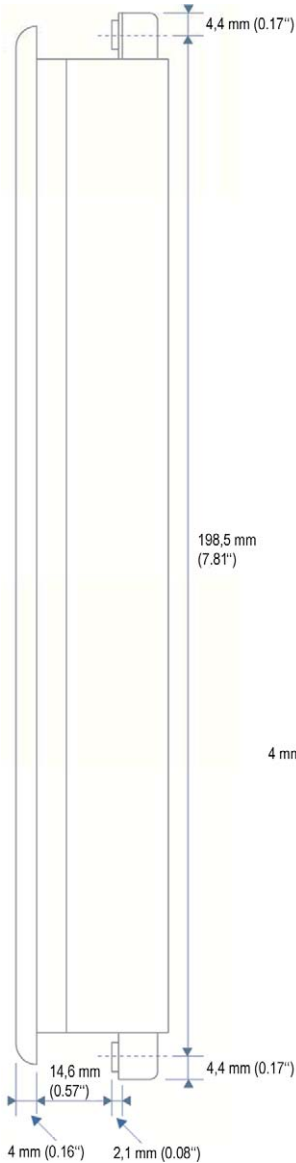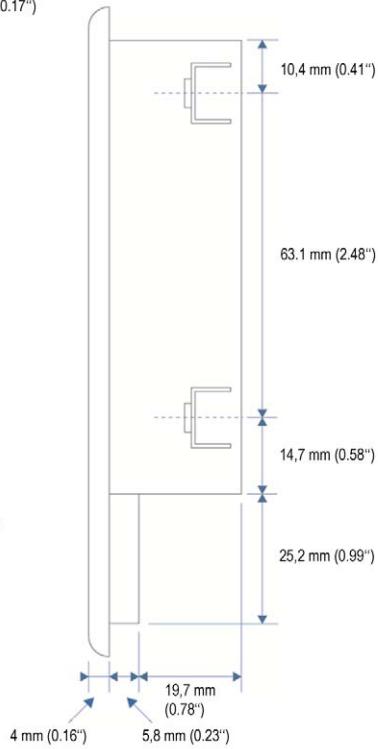
5 INSTALLATION INSTRUCTIONS

5.1 Unpacking the Equipment and Scope of Supply

Unpacking

Unpack the equipment, taking care not to damage it, and ensure that the operating manual is always stored with the equipment and is easily accessible. Check the contents for completeness and verify that the equipment meets your application requirements.

Scope of Supply

The scope of supply of the PowerView3 includes:

– PowerView3

– Cable for power supply (15 m / 49.2'')

– CAN cable (15 m / (49.2 '')

– 4 attachment clamps

– 4 attachment screws M3

– SDHC card (8 GB)

– Operating Manual

5.2 Installation

The PowerView3 is designed for installation in a control cabinet door. Install the device as follows:

> **i NOTICE**
>
> **Installation by two people**
>
> MOTORTECH recommends that the PowerView3 is installed by two people.

1. Select a suitable place for the PowerView3. When selecting observe the following points:

   – The display must be easily visible and accessible for the user.

   – The interfaces of the device must not be covered by other components and wires (even when the door of the control cabinet is closed).

   – When the door of the control cabinet is closed a minimum distance of 50 mm (2'') to other components and cables must be maintained.

   – The device front has larger dimensions than the cut-out dimensions (see *Overview Drawing* on page 22).

2. Cut a rectangular opening with the following dimensions in the control cabinet door:

max 114,5 mm (4.51")
min 113,5 mm (4.47")

max 190,5 mm (7.50")
min 189,5 mm (7.46")
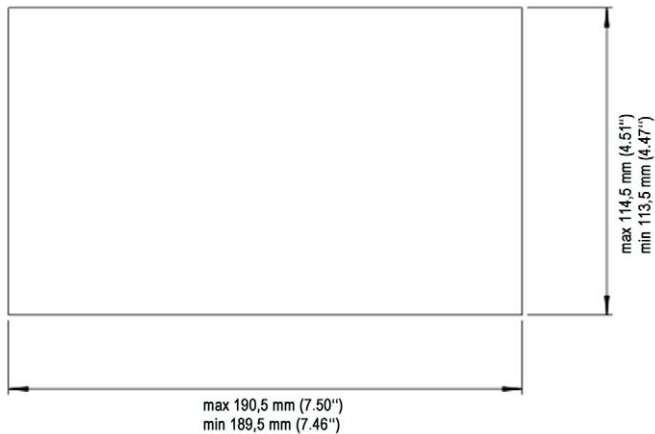
3. If necessary, remove sharp edges.

4. Carefully insert the PowerView3 into the opening from the outside.

5. Hold the PowerView3 firmly while a second person hooks in the four attachment clamps in the openings provided for this on the sides of the device.
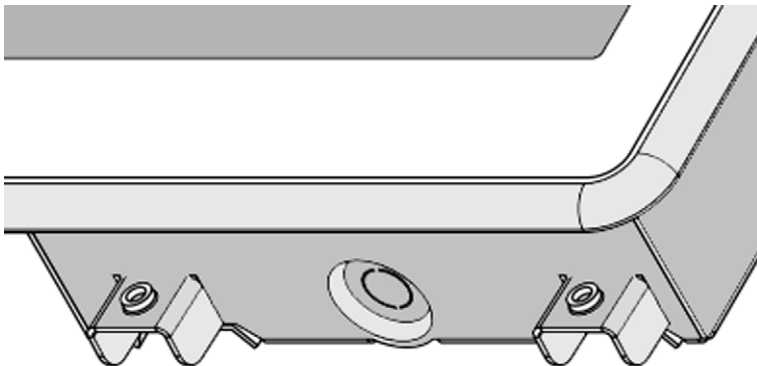
6. Carefully screw in the four fixing screws from the back while the second person firmly holds the PowerView3.

7. Check if the PowerView3 is mounted tightly in the correct position.

   ▸ You can now wire the device (refer to section Wiring of the device).

6 WIRING OF THE DEVICE

The PowerView3 must be securely mounted in a panel before wiring (see section *Installation* on page 24).

6.1 CAN Bus Wiring

All devices are connected to the PowerView3 via a CAN-bus. The communication via the bus is effected using the CANopen protocol with a data transfer rate of 250 kBit/s.

General Information on CAN Bus Wiring

The CAN bus wiring requires three conductors: (CAN High, CAN Low und CAN Ground). The conductors for CAN high and CAN low must be twisted wires. The bus may only have a maximum wire length of 250 m (820 ft) and must be connected on both ends by a terminating resistor of 120 Ω between the CAN High and CAN Low wires, to prevent reflections.

The diagram shows an example of the wiring for four devices:

First device   Second-to-last device

Second device   Last device
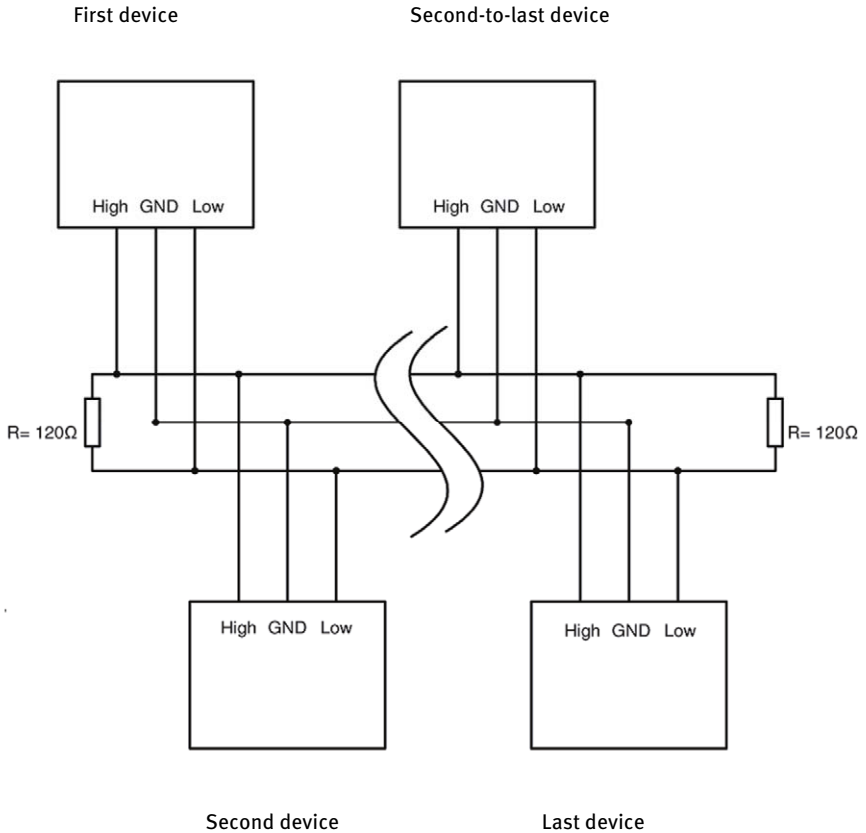
	CAN bus wiring
NOTICE	Note the following when connecting the CAN bus: – There can be a maximum of 110 devices connected to one CAN bus. – The maximum wire length is 250 m (820') depending on the transfer rate. – Each bus end must be fitted with a terminating resistor of 120 Ω (see drawing).

6 WIRING OF THE DEVICE

Pin Assignment of the Interface of the CAN Field Bus
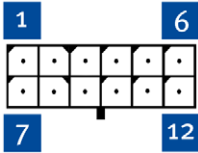
Pin	Assignment	Description
1	CAN1_GND	Ground for CAN and RS485 group
2	CAN1_TERM	To install CAN1 termination, establish bridge to CAN1_H
3	CAN1_H	CAN High
4	CAN1_L	CAN Low
5	CAN1_TERM	To install CAN1 termination, establish bridge to CAN1_L

Pins 6 to 12 are not assigned.

The arrangement of the interfaces of the PowerView3 can be found in the chapter *Interfaces* on page 21.

Connection of the CAN Cable
The conductors of the CAN cable included are assigned as follows:

Color	Assignment
Green	Ground for CAN and RS485 group
White	CAN High
Brown	CAN Low
Yellow	Not assigned

The connector for the shielding must be connected with one of the four shielding connections at the back of the PowerView3.
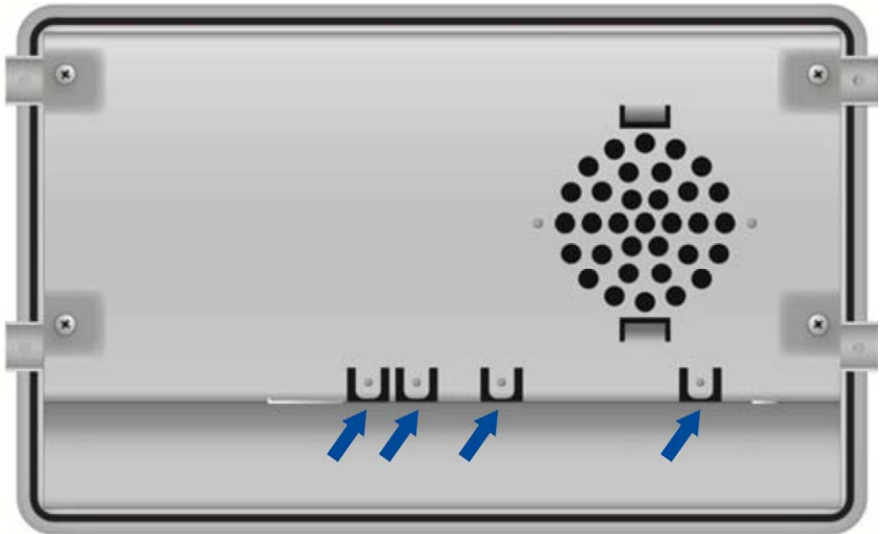
The other end of the conductor for the shielding must be suitably fitted.

CAN Bus termination

The PowerView3 has a built-in 120-Ω-terminating resistor and must therefore be the last device in the CAN bus.

If the PowerView3 is not the last device in the CAN bus, the cables of connection 2 and 5 must be separated.

Connection between Ignition Controller and PowerView3

As shown in the following illustrations, you can connect the PowerView3 directly to the MOTORTECH ignition controller (MIC3, MIC3+, MIC4, MIC4+, MIC5, MIC5+) using the CAN cable delivered with the PowerView3. To do so, you need to insert the connector into the CAN interface on the PowerView3. On the ignition controller, connect the color-coded conductors of the CAN cable to the correct CAN interface connections.

– With ignition controllers with a service cover, connect the CAN cable of the PowerView3 via the contacts of the corresponding connector strip.

– With ignition controllers without a service cover, connect the CAN cable of the PowerView3 via the contacts of the corresponding military style connector.

6 WIRING OF THE DEVICE

| Ignition controllers with a service cover | Ignition controllers without a service cover |

Connector for CAN interface on PowerView3

CAN cable

CAN interface on the ignition controller
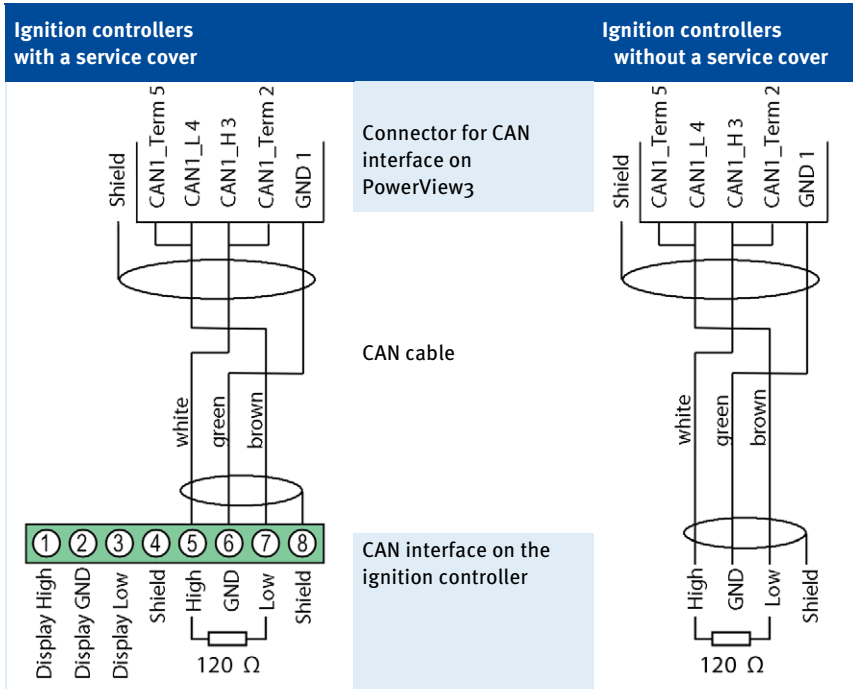
Settings on the Devices

All connected devices are specified as nodes on the CAN-bus. Each node is identified by a CANopen node-node- ID. These node numbers must be indicated both in the connected devices as well as in the configuration of the PowerView3. Refer to the operating manuals for the respective devices for instructions on how to set the node ID on each device and if further settings must be made to communicate via the CAN bus.

A node ID can only be assigned once within a CAN bus and must be a number between 1 and 127. Note that some devices use several node numbers. The node numbers must be assigned in the configuration after start-up of the PowerView3.

Overview of the CAN bus

Setting up the CAN field bus requires the following settings:

- – Activate CAN interface on the devices if applicable.
- – Assign unique CANopen node IDs to the devices.
- – Set transfer rate of all devices to 250 kBit/s

CANopen protocol

If you require information on the CANopen protocol, contact your MOTORTECH contact person.

–

6.2 Digital Inputs and Outputs

Risk of destruction

The PowerView3 and the software are not designed for safety-critical applications. The digital inputs and outputs must therefore not be used for safety-critical purposes.
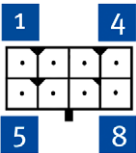
Pin	Assignment	Description	Level
1	DIG_IN1	Input 1	0 V Low 3 to 36 V High 500 mA
2	DIG_IN2	Input 2	0 V Low 3 to 36 V High 500 mA
3	GND_DIO	Ground for digital IO group	
4	GND	Common ground	
5	DIG_OUT1	Output 1 – Warning	0 V Low Vcc_DIO High 500 mA
6	DIG_OUT2	Output 2 – Error	0 V Low Vcc_DIO High 500 mA

Pin	Assignment	Description	Level
7	Vcc_DIO	Supply input for digital IO group	‹ 36 V
8	Vcc	Supply output	Vcc_In

6.3 Power Supply

SELV power supply

The PowerView3 must be supplied with power via a safety extra-low voltage (SELV) circuit.

Before connecting the power supply, make sure that the CAN bus wiring is set up. Information on this is found in the section *CAN Bus Wiring* on page 26.

Connect the PowerView3 to the power supply using the appropriate connector. The position of the connection for the power supply is found in the section *Interfaces* on page 21.

Pin Assignment for Power Supply

Pin	Assignment
1	Ground
2	Input voltage (12 to 24 V DC)

Cable for Power Supply
The conductors of the cable included for the power supply are assigned as follows:

Color	Assignment
white	Ground
brown	Input voltage (12 to 24 V DC)

PowerView3 Power Supply via the Ignition Controller

If you use a MOTORTECH ignition controller with a service cover and connector strip, you have the option of supplying power to the PowerView3 via the ignition controller. A special connector is included in the PowerView3's scope of supply. This must be replaced for the connector for the power supply from the ignition controller's scope of supply.

Connector supplied with
the ignition controller
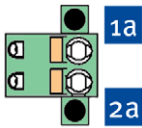
Connector supplied with
PowerView3 *
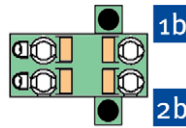
* A cable is already attached to this connector, the other end of which is connected to the PowerView3.

1. Disconnect the ignition controller's power supply.

2. Remove the connector for the power supply from the ignition controller.

3. Positive terminal: Disconnect the conductor from the contact **1a** and insert it into the contact **1b** of the connector included with the PowerView3.

4. Negative terminal: Disconnect the conductor from the contact **2a** and insert it into the contact **2b** of the connector included with the PowerView3.

5. Connect the device's power supply.

   ▸ The power supply of the PowerView3 is now provided through the connector on the ignition controller.

Switching on the PowerView3

When the power supply of the PowerView3 is connected, the device switches on automatically. If the power supply is interrupted, the device switches off.

7 GENERAL OPERATION

General functions and setting options for the PowerView3 are described in this chapter. You can find information on the device menus of configurable devices in the chapter *Devices* on page 62.

Notice

In this manual, the screenshots and buttons are displayed in day mode. You can find out how to toggle between day and night mode in the section *Start Menu* on page 37.

7.1 Activation and Deactivation of the Device

The device is switched on by connection to the power supply and switched off by interrupting the power supply.

7.2 Navigation

The PowerView3 has a touchscreen, which can be operated directly with the finger or a special stylus pen (not included in scope of supply).
The screen comprises the following areas:
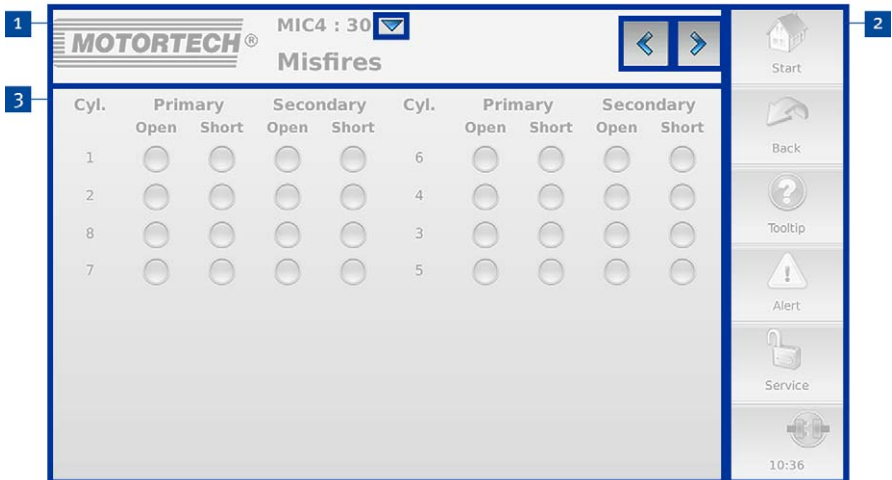
1 Title Area

The name of the current view is displayed in the title area of the PowerView3. If you are in a device menu, the device type and its node ID set in the PowerView3 are displayed. In several views you can access additional options via the button ▼ or open additional views via the buttons ‹ and › .

2 Menu Bar

The menu bar on the right-hand side of the screen is always displayed. There is more information in the section *Menu Bar* on page 36.

3 Main Window

The PowerView3 is configured in the main window and the device menus of configurable devices are shown.

7.3 Activated, Added and Selected Devices

The PowerView3 distinguishes between *activated*, *added* and *selected* devices.

Activated Devices

In order to add and select a device, the corresponding device type must be activated once with a key file (see section *Activate Device Type* on page 43).

Added Devices

In order to be able to monitor and configure a device, a corresponding device with the right node ID must be added in the device configuration of the PowerView3.

– Only activated device types can be added (see sections *Activate Device Type* on page 43 and *Device Configuration* on page 42).

– A maximum of one ignition controller, one detonation control and three temperature modules can be added at the same time.

– Added devices are displayed in the *Start Menu*.

Selected Device

Only one configured device can be selected. Depending on its status, the selected device is displayed in the *Start Menu* with either a bright blue, bright red or orange edge.

To select a device, tap on an added device in the *Start Menu*. The corresponding *Main Menu* opens and the device is selected. If you have added a new device in the device configuration, this is also selected.

7 GENERAL OPERATION

7.4 Menu Bar

The menu bar is always displayed and offers the following options and information:

Symbol	Function
Start	With the button *Start* you reach the *Start Menu*. There is more information in the section *Start Menu* on page 37.
Back	With the button *Back* you reach the next higher operating level of the PowerView3.
Tooltip	Information on the buttons and functions can be displayed in pop-up windows. Proceed as follows: 1. In the menu bar touch the button *Tooltip*. ► The button *Tooltip* is now activated and framed light blue. 2. Tap a button or an area of the display. ► A pop-up window with information opens. ► The button *Tooltip* is deactivated. 3. Touch the screen at any location to close the pop-up window. To get information about other buttons and areas, the button *Tooltip* must be reactivated.
Alert	The button *Alarm* in the menu bar can display two states: – If the button is grayed, there are no alarms, warnings or errors. – The button is activated when alarms, warnings and errors occur. If you tap the activated button, the *Event Log* view opens with the current message log. If the errors which led to activation of the button no longer exist, the button turns gray. Tap the activated button to have detailed information displayed.
Service	This button opens the *Access Control* view (the symbol displayed and label depend on the setting). There is more information in the section *Access Control* on page 52.
09:57	Status information of added devices is shown in the lower field of the menu bar. The database symbol provides information on the following states: The data of a connected device are being recorded.

Symbol	Function
🗄	An error has occurred while recording the data of a connected device (e. g. insufficient disk space, unreadable storage medium).
	The communication status symbol provides information on the following states:
🔵	There is a connection to all added devices.
🟡	There a connection to the currently selected device. There is no connection to another device added in the device menu.
🔴	There is no connection to the currently selected device.
	The system time is displayed below. If you tap the button for the communication status, the *Event Log* view opens. There is more information in *Event Log* on page 59.

7.5 Start Menu

The *Start Menu* will be displayed after the PowerView3 has started. You can access the *Start Menu* any time via the *Start* button in the menu bar.

You have the following options in the *Start Menu*:

7 GENERAL OPERATION

Devices
With this button you open the *Device Setup* view, in which you can add new devices and edit device settings. There is more information in the view *Device Configuration* on page 42.

Display
With this button, you open the *Display Configuration* view. Among other things, you can set the language and system time of the PowerView3 and calibrate the display. There is more information in the view *Display Configuration* on page 40.

Connection
This button opens the *Communication Settings* view. You can change the node ID of the PowerView3 and the baud rate of all devices integrated in the CAN bus. There is more information in the section *Communication Setup* on page 47.

Night Mode/Day Mode
With this button you can change the display colors to ensure legibility under various lighting conditions.
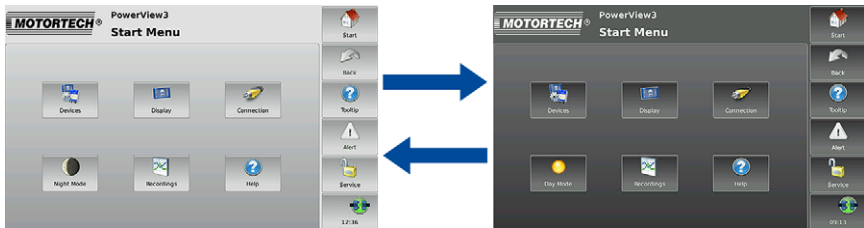
Recordings
With this button, you open the view *Recorded Files*. You can retrieve and display trend data from an external storage medium. There is more information in the section *Recordings* on page 50.

Help
This button opens the operating manual of the PowerView3. There is more information in the section *Help* on page 61.

Configured Devices
The buttons of configured devices each display a device symbol, device name and the node ID of the device configured in the PowerView3. The frames of the buttons can take different colors:

– Light blue: The device is selected. There are no errors.

– Dark blue: the device is not selected. There are no errors.

– Light red: The device is selected. There is no connection.

– Dark red: the device is not selected. There is no connection.

– Orange: The device is selected. The device has reported an error.

– Brown: the device is not selected. The device has reported an error.

– Colorless: There is no valid key file available for the device.

Tapping on a device opens the *Main Menu* of the particular device. Find out how to configure your device in the section *Device Configuration* on page 42.
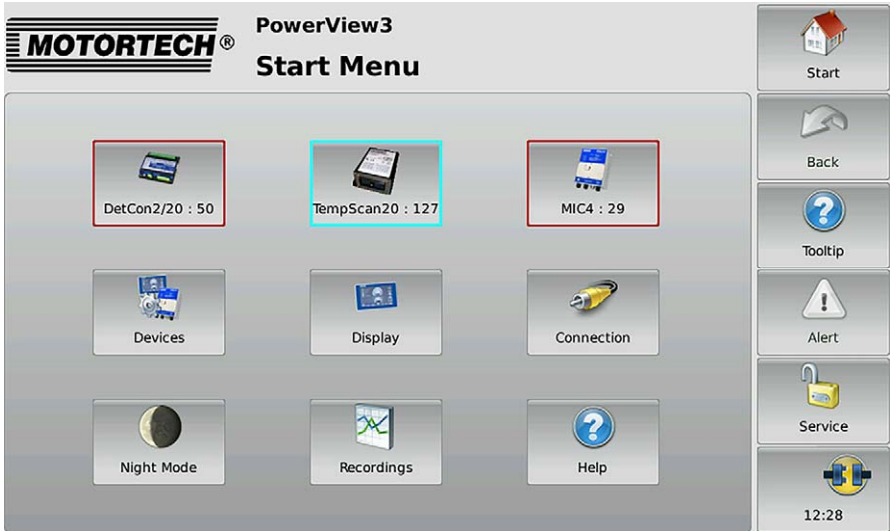
7.5.1 Display Configuration

You reach the display configuration via the button *Display* in the *Start Menu*.

With the buttons [◀] and [▶] switch to the view *Display Configuration*.
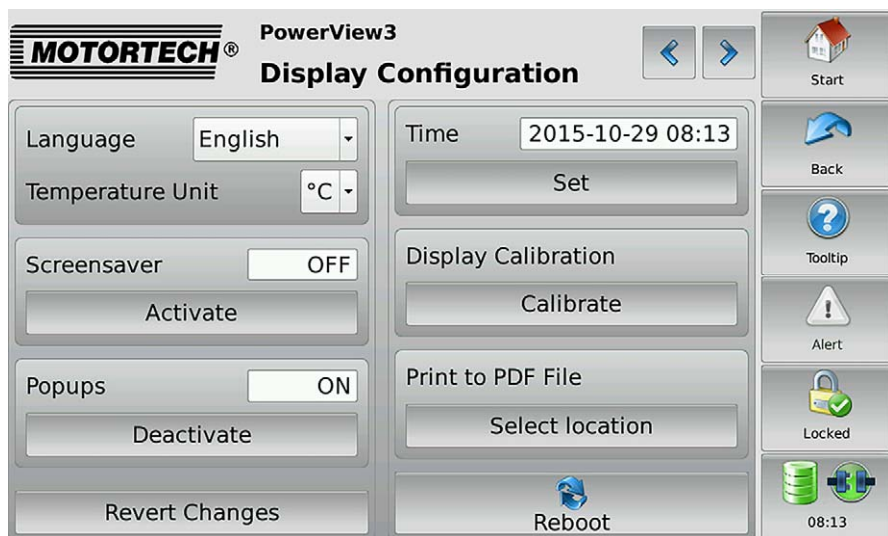
You have the following options:

– Select language
  Tap *Select* to set German or English as system language.

– Temperature Unit
  Select, whether temperatures in the PowerView3 are to be displayed in °C or in °F.
  Recordings are also created in the units selected.

– Screensaver
  If the screensaver is activated, the display is switched off after a time set upon activation.
  The PowerView3 is placed on the access level *Read Only* or the minimum level set. The
  display switches on again when touched.

– Pop-ups
  Activate or deactivate pop-ups with information for the user. Important pop-ups, e. g. with
  information on errors are always displayed. Po-pups which e. g. provide information on
  successful actions can be deactivated.

– Reset
  Tap *Reset* to restore the status of the last stored configuration. Date and time are not
  affected.

- System Time
  Tap *Set* to set the system time and the date.

- Display Calibration
  Calibration of the display is required if the display does not register touches at the desired point. Tap as precisely as possible in the midpoint of the five successively displayed X's to do this. The calibration is then automatically ended after conclusion.

- Write to PDF
  Tap *Select Storage Location* to save a PDF document with information about display configuration, connected devices and a list of events on a USB storage medium or an SD card.

- Reboot
  With the button *Reboot* carry out a reboot of your PowerView3. Settings that were not saved get lost and databases are closed.

Disdisplay Information

The display ID, MOTORTECH serial number, arrangement number, board support package version and software version of your PowerView3 are displayed in the *Display Information* view.

7 GENERAL OPERATION

7.5.2 Device Configuration

You can reach the view *Device Setup* via the button *Devices* in the *Start Menu*.
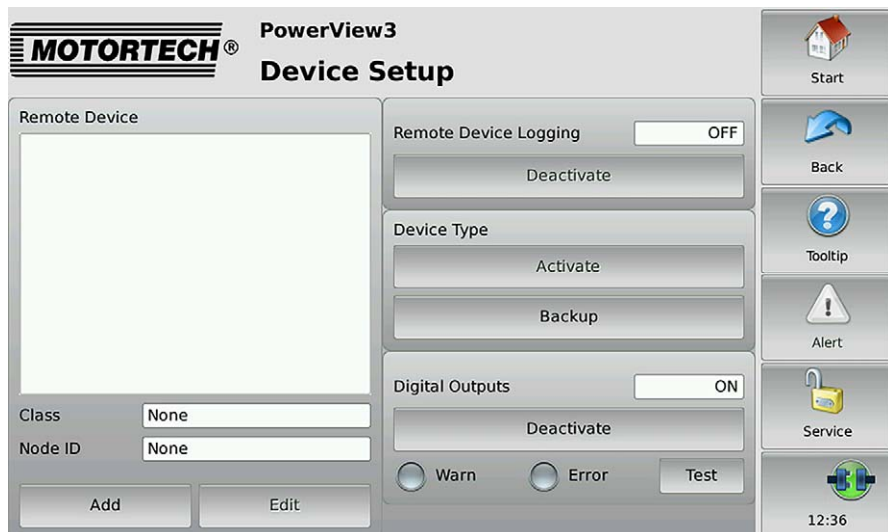
You have the following options in device setup:

– **Add**
  With the button you open the dialog *Add device*. You can find more information in the section *Add Device* on page 44.

– **Edit**
  With the button you open the dialog *Edit device* in which you can edit or delete a device. More information is in the sections Edit device setup and *Delete Device* on page 46.

– **Remote Device Logging**
  With the button you can record data of the selected device. There is more information in the section *Log device data* on page 46.

– **Device Type**
  Via MOTORTECH you obtain the keys needed to enable you to monitor devices with the PowerView3. Further information can be found in the section *Activate Device Type* on page 43.
  With the *Save* button you can save keys to a USB storage device or an SD card (e. g. before software updates).

– **Digital Outputs**
  In this area you can activate and deactivate the digital outputs of the PowerView3. The *Test* button opens a window in which you can activate the digital outputs. This allows you to test the behavior of devices that are connected to the digital outputs.

> **Use of the digital outputs**
>
> The PowerView3 is not suitable for controlling security-critical applications via the digital outputs.
>
> WARNING

> **Connected devices are controlled**
>
> Testing the digital outputs affects the connected devices. Before performing tests, make sure that switching the digital outputs will not result in hazards or damage.
>
> WARNING

7.5.2.1 Activate Device Type

In order to be able to configure a device, the corresponding device type must be activated. At least one device type is already activated as a factory setting.

Activate a new device type as follows:

1. Insert an external storage medium with a key file from MOTORTECH in your device.
2. Under Device Type tap *Enable*.
   ‣ The storage locations available are displayed in a window.

3. Navigate to the desired key file (with the file extension *.ssk*).
4. Tap *Enter*.
   ‣ The device type is activated.
   ‣ You can monitor devices of the activated type.

7.5.2.2 Add Device

	Maximum number of added devices
	In the PowerView3 the maximum number of devices that can be added at one time comprise: one ignition controller (MIC3, MIC3+, MIC4, MIC4+, MIC5, MIC5+), one DetCon detonation control system, three TempScan20 temperature modules and three devices not directly supported.

To add a device, proceed as follows:

1. Tap the button *Add* in the device setup.
   ▸ The dialog *Add Device* opens.
2. Select the device type.
3. Set the node ID of the device that should be added with the arrow keys.

	Node ID
	The assigned node ID must correspond to the node ID that is set on the respective connected device. To learn about the node ID, refer to the operating manual of the connected device.

4. Confirm your entry via the button *Save*.

► The dialog is closed and you switch back in the view *Device Setup*. Here the added device with device class and node ID is displayed.

► If you tap *Start* in the menu bar, the device and its node ID will be displayed in the *Start Menu*.

7.5.2.3 Edit Device Configuration

The settings for a device added in the PowerView3 can be edited

– if the node ID of a device has been changed.

– if you want to add another device instead of a previously added device.

Proceed as follows:

1. Select the device in the device configuration whose settings you want to change.

2. Tap the button *Edit*.

   ▸ The dialog for editing devices opens.

3. Enter the device type and node ID.

4. Tap *Save*.

   ▸ The dialog is closed.

   ▸ The device is displayed with changed settings in the *Device Setup* view and in the *Start Menu*.

7.5.2.4 Delete Device

To delete a configured device, proceed as follows:

1. Select the device that you want to delete in the device configuration.

2. Tap the button *Edit*.

   ▸ The dialog for editing devices opens.

3. Tap *Delete*.

   ▸ The dialog is closed.

   ▸ The device is no longer displayed in the device setup and in the *Start Menu* .

7.5.2.5 Log device data

You can record the trend data of added devices in the device setup. Proceed as follows:

Start Recording

1. In the area *Remote Device Logging* select the device whose data you would like to record.

2. In the area *Remote Device Logging* touch *Activate*.

   ▸ A database symbol 🗄 in the menu bar indicates that data is being recorded.

   ▸ You can start or end more recordings and use other functions of the PowerView3 without an active recording ending.

   ▸ The recording is not interrupted by the screensaver.

End Recording

1. In the area *Remote Device Logging* select the device whose data you would like to record.

2. In the area *Remote Device Logging* tap *Deactivate*.

   ▸ The recording is ended. The database symbol in the menu bar disappears if no further recordings are being made.

   ▸ You can administer and display the recorded data (see *Recordings* on page 50).

Recording data

If the voltage supply is interrupted during recording, data can be lost.

At every reboot of the PowerView3 a new recording file is created in the selected folder.

7.5.3 Communication Setup

The view *Communication Setup* is accessed via the button *Connection* in the *Main Menu*.

Disconnect all other devices from the CAN bus!

When LSS commands are transmitted, all devices connected to the CAN bus are addressed. In order to change the baud rate or the node ID only of the desired device, no other devices may be connected to the PowerView3 via the CAN bus. Disconnect all other devices from the CAN bus.

MOTORTECH devices are set to 250 kBd.

MOTORTECH devices are usually delivered with the baud rate set to 250 kBd. If you change the baud rate, it can lead to problems in communicating via the CAN bus.

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The *Communication Setup* view provides the following options:

Change Node IDs
Change the PowerView3 Node ID

The factory setting for the node ID on your PowerView3 is 66. Change the node ID as follows:

1. You can set a node ID for your PowerView3 in the *PowerView3* area using the arrow keys.
2. Tap *Save* to confirm the setting of the node-ID.
   ‣ The node ID of your PowerView3 is changed.

The changed node ID will be discarded if you tap *Reset* or leave *Communication Setup* without saving.

Change the Node ID of Another Device

You can change the node ID of another device in the CAN bus as follows:

1. Make sure that only the device whose node-ID you want to change is connected to the PowerView3 via the CAN bus.
2. Enter the node ID that the connected device is to be given in the *LSS Commands* area.
3. Tap *Transmit Command*.
   ‣ The node-ID of the connected device is changed.

Change the Baud Rate
Change the baud rate of your PowerView3

Change the baud rate of the PowerView3 as follows:

1. Select the desired baud rate in the *PowerView3* area.

2. Tap *Save*.

   ‣ The baud rate of the PowerView3 is changed.

Change the baud rate of another device

You can change the baud rate of another device in the CAN bus as follows:

1. Make sure that only the device whose baud rate you want to change is connected to the PowerView3 via the CAN bus.

2. In the *PowerView3* area, select the current baud rate of the device whose settings you want to change.

3. Tap *Save*.

   ‣ The baud rate of the PowerView3 is changed. It corresponds to the current baud rate of the device whose settings you want to change.

4. In the *LSS Commands* area, select the node ID that the device whose baud rate you want to change, is to be given.

5. Select the baud rate that the device is to be given.

6. Tap *Transmit Command*.

   ‣ The baud rate and the node ID of the device are changed.

7. In the *PowerView3* area, change the baud rate to the value that you have entered for the connected device in the *LSS Commands* area.

8. Tap *Save*.

   ‣ The baud rate of the PowerView3 is changed.

   ‣ The baud rates of the connected device and the PowerView3 are identical.

7 GENERAL OPERATION

7.5.4 Recorded Files

You reach the view *Recorded Files* via the button *Recordings* in the *Start Menu*.

At first all recorded files are displayed. You have the option of filtering the recordings according to device type, node ID, alteration date and file size. The double arrows in the drop-down lists indicate the sorting order.

You have the following options for navigating in the list:

– Double tap the upper or lower edge of the list to jump to the top or bottom of the list.

– Touch the list and drag it to the desired position.

– Touch and hold the upper or lower edge of the list to scroll the list up or down.

– Move the scroll bar.

When you have selected a file by tapping on it, you can delete it, save it to an external storage device or display it in the PowerView3.

Files from active recordings are marked with an X in the *logging* column. These files can neither be saved nor deleted.

7.5.4.1 Recordings

You have the option to display recorded data in the PowerView3:

1. Navigate to the desired file in the *Recorded Files* view.

2. Touch the button *Plot*.

► The selected file is opened.
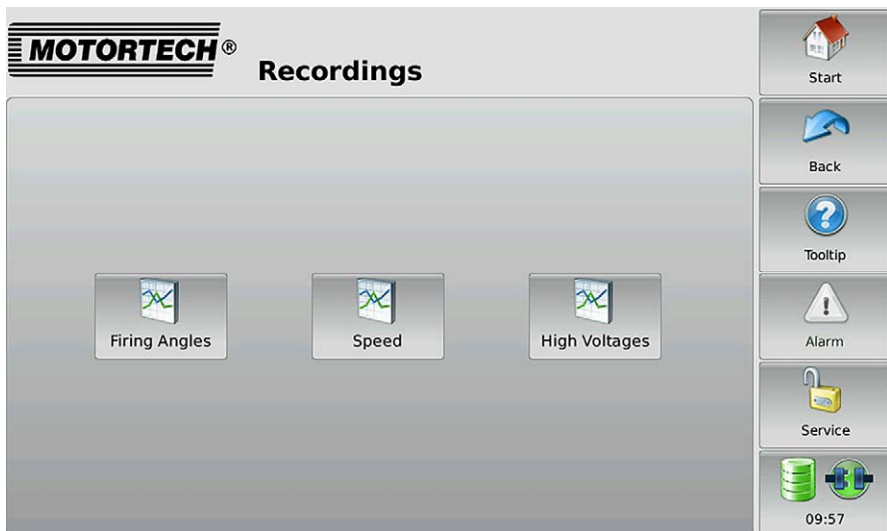
3. Select a button in the view to display the recorded data.

► The selected data is displayed.
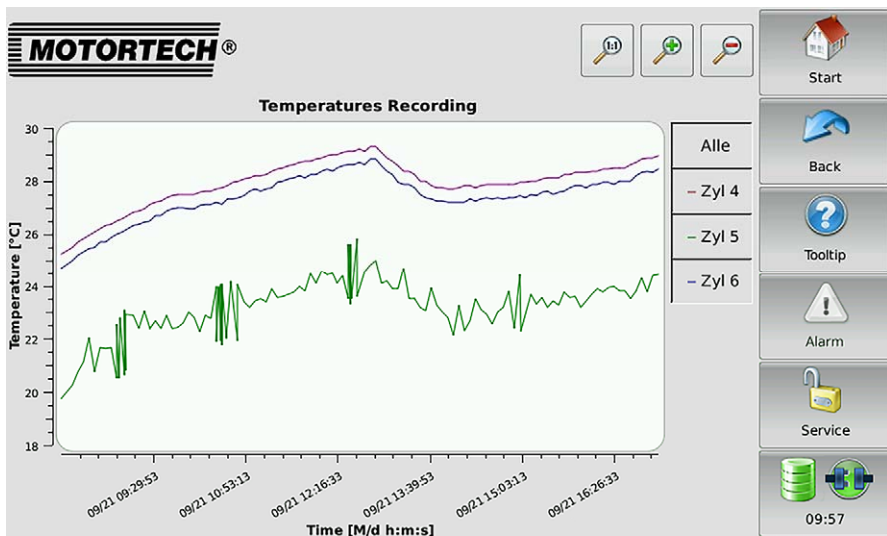
You can customize the recording views to suit your requirements:

– Display and hide individual graphs above the legend next to the menu bar.

– Adjust the magnification factor:

larger

smaller

overall view

– Move the graphs by touching and dragging them directly in the display.

7.5.4.2 Processing Data on the PC

With the aid of the *MOTORTECH Trend Viewer* you can process data on your PC that has been recorded with the PowerView3. The software provides the following options:

– Visualization of data

– Export of data as CSV file

– Export of data as graphic file

Further information can be found in the MOTORTECH Trend Viewer operating manual.

7.6 Access Control

You reach the access control via the menu bar. Depending on the current setting, this button can be labeled: *Deactivated*, *Locked*, *Read Only*, *Operator*, *Service* or *Master*.
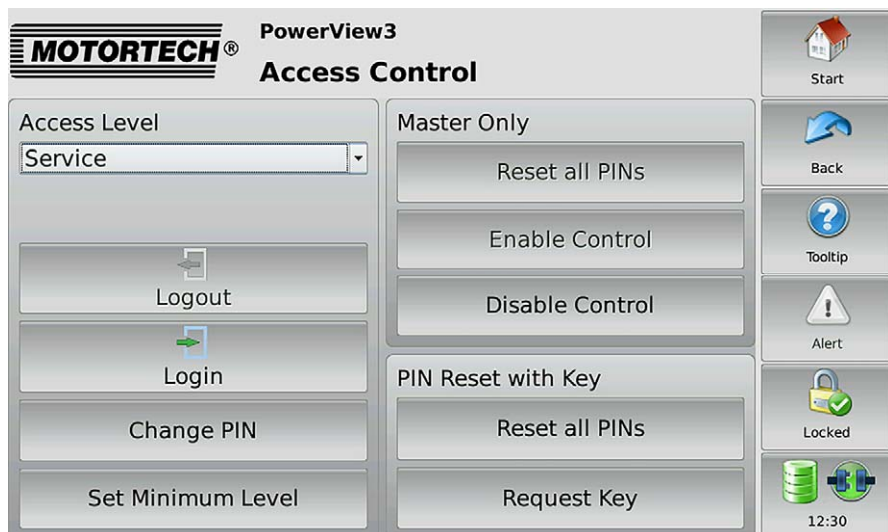
The access control of the PowerView3 serves to protect sensitive data and functions. If the access control is activated, four access levels with different rights are available.

Access level	Rights
Read Only	– Read access to all data provided – Switch between day and night modes – Activate and deactivate pop-ups – Screen calibration – Change DetCon settings

Operator	– Read Only rights
	– Complete display configuration
	– Record of device data
	– MIC3/MIC3+/MIC4/MIC4+/MIC5/MIC5+
	  – Confirm runtime errors
	  – Confirm alarms
	  – Reset misfire rate

Service	– Operator rights
	– Complete display configuration
	– Set node ID of the PowerView3.
	– Activate device units
	– MIC3/MIC3+/MIC4/MIC4+/MIC5/MIC5+
	  – Energy Adjustments
	  – Adjustment ignition timing
	  – Selftest
	  – Set engine operating hours
	  – Set the spark plug operating hours
	– Change TempScan20 settings

Access level	Rights
Master	– Service rights
	– Enable/Disable Access Control
	– Reset all PINs
	– Firmware Update
	– Transmit LSS commands

Access to locked functions

If you would like to access a function with activated acces control, which exceeds your currently set rights, you will be prompted to enter the PIN for the access level required.

7.6.1 Enabling/Disabling Access Control

Enabling/Disabling access control

As a default setting, the access control is not activated, and all PINs are set to *oooo* . If the access control has already been activated once and the PINs have been changed, the altered PINs continue to be used. To activate the access control again, you will need the PIN for access level *Master*. It is therefore recommended to reset all PINs to the value *oooo* before disabling.

Activate Access Control

Activate the access control for all access levels as follows:

1. Tap the button *Enable Control*.
    ▸ You are prompted to enter the PIN for the access level *Master*.
2. Enter the PIN for the access level *Master* and tap *Confirm*.
    ▸ Access control for all access levels is activated:
    ▸ You are logged in as *Master*.
    ▸ The button *Logout* is activated.
    ▸ The button *Disable Control* is activated.

Disable Access Control

Deactivate the access control for all access levels as follows:

1. Touch the button *Disable Control*.
   - ▸ You are prompted to enter the PIN for the access level *Master* .
2. Enter the PIN for the access level *Master* and touch *Confirm*.
   - ▸ Access control for all access levels is activated:
   - ▸ In the menu bar the condition *deactivated* is displayed.
   - ▸ The buttons *Login* and *Logout* are deactivated.
   - ▸ The button *Enable Control* is activated.

7.6.2 Minimum Level

If upon logging out your PowerView3 is not be set to the access level *Read Only*, but instead to a higher access level, you can set a minimum level. The access level to which the device is automatically set on logging out is called the minimum level. As a result, the functions of the minimum level are always available and do not have to be released again by PIN entry.

Minimum level functions are always available

Become acquainted with the rights of the individual access levels before you set a minimum level. The functions of the minimum level set are always available without PIN entry (see *Access Control* on page 52).

Set Minimum Level

Set a minimum level as follows:

1. Select the access level via the drop-down menu which is to be set as minimum level.
   - ▸ If the selected minimum level is higher than the currently set access level, you will be asked to enter the appropriate PIN.
2. Touch *Set Minimum Level*.
   - ▸ The access level set is set as minimum level.

Delete Minimum Level

There are two ways to delete a minimum level.

- – Set another access level as minimum level.
- – Tap *Delete minimum level*. As a result, when logging out the access level *Read only* is set.

7.6.3 Log in and log out

When access control is activated, PowerView3 offers three access levels, which you can select via a drop-down list. On the access levels *Operator*, *Service* and *Master* you are prompted to enter the corresponding PIN.

Log in

Log in as follows for an access level:

1. Select the desired access level from the drop-down list.
2. Tap the button *Login*.
    - ▸ You will be prompted to enter the corresponding PIN.
3. Enter your PIN and confirm your entry.
    - ▸ You have now logged onto the desired access level and can use the associated functions.
    - ▸ The access level set is displayed in the menu bar.

Log out

Automatic logging out

You are automatically logged out of an access level

– if you have not entered anything for six minutes.

– if for six minutes only functions of lower access levels are used.

– if the screensaver is switched on.

The PowerView3 is placed on the access level *Read Only* or the minimum level set.

There are three options for logging off manually from an access level:

Option 1:

Leave the currently set access level with the button *Logout* in access control.

- ▸ In the menu bar the status *locked* is displayed or the currently set minimum level.
- ▸ The button *Logout* is deactivated.
- ▸ The button *Login* is activated.

Option 2:

1. Select another access level in the access control via the drop-down list.
2. Tap the button *Login*.
    - ▸ You will be prompted to enter the corresponding PIN.

3. Enter your PIN and confirm your entry.

- ► You have now logged onto the desired access level and can use the associated functions.

- ► The access level set is displayed in the menu bar.

Option 3 (also available if you are not in the view *Access Control*):

1. Touch the symbol for access control in the menu bar.

- ► A window opens in which you can choose between *Logging Out* and *Opening Access Control*.

2. Select *Logout*.

- ► In the menu bar the status *Locked* is displayed or the currently set minimum level.

7.6.4 Changing the PIN

Set a PIN
Set the PIN of an access level as follows:

1. Log in on the access level whose PIN you wish to set (see section Log in and log out).

2. Tap the button *Change PIN*.

- ► You are prompted to enter the current PIN for the active access level.

3. Enter the current PIN.

- ► You are prompted to enter a new PIN for the active access level.

4. Enter a four-digit PIN.

5. Tap the input field *Enter*.

6. Enter the new PIN a second time.

7. Tap the button *Enter* to save your new PIN.

- ► The PIN of the active access field was changed.

Reset all PINs
In the access level *Master* you can reset all PINs together:

1. Log in on the access level *Master* (see section *Log in and log out* on page 56).

2. Tap the field *only Master* on *Reset all PINs*.

- ► All PINs are reset to the value *0000* .

7 GENERAL OPERATION

> **Enter new PIN!**
>
> After resetting the PINs, new PINs must be entered for all access levels to guarantee maximum security.
>
> **NOTICE**

7.6.5 Reset PIN

Forgotten Operator PIN / Service PIN

If you have forgotten the PIN for the access levels *operator* or *service,* contact the master. The latter can reset all PINs to the value *0000*. After this new PINs must be entered for all access levels (see section *Changing the PIN* on page 57).

Master PIN Forgotten

If you have forgotten the master PIN, you must apply for a PIN reset request key from MOTORTECH. With this key you can reset all PINs.

Request Key

Request the key from MOTORTECH as follows:

1. Touch the button *Request Key*.

   ▸ A dialog window with the new and current PIN reset request key opens.

   ▸ Send the new PIN reset request key to your contact at MOTOTECH.

2. Touch the button *Confirm Request*.

   ▸ MOTORTECH will send you a new PIN reset request key.
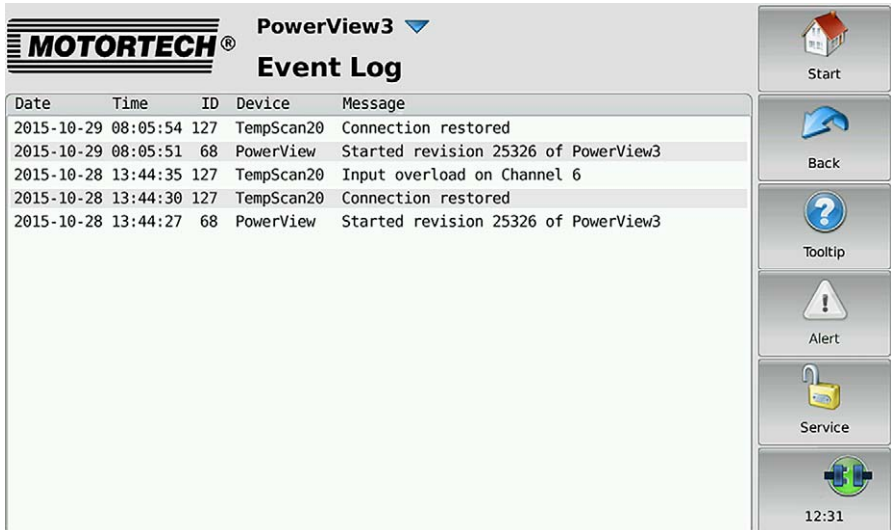
Enter Key

Enter the key from MOTORTECH as follows in your PowerView3:

1. Connect an external storage medium which contains the key from MOTORTECH to PowerView3.

2. In the field *Reset PINs with Key* tap the button *Reset all PINs*.

   ▸ The storage locations available are displayed in a window.

3. Navigate to the PIN reset request key (with the file extension *.prak*).

4. Tap the button *Confirm*.

   ▸ All PINs are reset to the value *0000* .

7.7 Event Log

If you tap the field in the menu bar with the status information, the *Event Log* view opens.

The following data is displayed: date (YYYY-MM-DD) and time (HH:MM:SS) of the entry, device, node ID of the device and an accompanying message. You can define the following settings via the ▼ button:

– Automatic Scrolling – Activate automatic scrolling to always display the latest entries.

– Time – Filter the entries according to their creation dates.

– Node-ID – Filter the entries according to the node IDs.

You have the following options for navigating in the list:

– Double tap the upper or lower edge of the list to jump to the top or bottom of the list.

– Touch the list and drag it to the desired position.

– Touch and hold the upper or lower edge of the list to scroll the list up or down.

– Move the scroll bar.

7.8 Software Update

In the *Display Information* view (see *Display Configuration* on page 40), you can check which software version and board support package are installed on your PowerView3. You receive software updates for your PowerView3 from MOTORTECH.

Carry out an update of the software as follows:

7 GENERAL OPERATION

Risk of destruction

An interruption to the power supply during the installation of an update can lead to severe errors. Consequently, never interrupt the power supply during a software update.

Settings can be lost

Some updates re-establish the factory settings of the PowerView3. All settings made by the user are then lost.

Saving keys for device types

Before running a software update, save the keys for activated device types (see *Device Configuration* on page 42).

A software update always consists of an update file and a signature file to verify the update file.

1. Save the update file (with file extension *.tar.bz2*) and the corresponding signature file (with file extension *.sh1*) in the root directory of a USB storage medium or an SD card.

2. Read all the information supplied with the update (e. g. the readme file).

3. Insert the storage medium into your current PowerView3.
   ‣ The update dialog opens.
   ‣ Available updates are displayed successively.

4. Decline updates until the required update is displayed.

5. Confirm the installation of the required update.
   ‣ The update is installed.
   ‣ The PowerView3 restarts.
   ‣ The update dialog opens again.

6. Decline the installation of all other displayed updates until the update dialog closes.
   ‣ You can now use the PowerView3 with the new software.
   ‣ You can remove the USB storage medium.

7.9 Help

You can display technical data and information about the PowerView3 and added devices .

– You can open the operating manual of the PowerView3 via the *Help* button in the *Start Menu*.

– You can open the operating manual of an added device via the *Help* button in the *Main Menu*.

Tap in the browser on the appropriate links and then use the bars on the right side of the screen to scroll and the buttons for navigation:

– Start
  Use this button to change to the first page of the operating manual.

– Back
  Use this button to get to the previously displayed page of the operating manual.

– Close
  Use this button to exit the Help menu.

8 DEVICES

This chapter describes the device menus of the devices that can be configured in the PowerView3.

Information about adding devices can be found in the Section *Device Configuration* on page 42.

You can access the device menus of added devices via the corresponding buttons in the *Start Menu*.

8.1 Ignition Controllers
This section describes the functions of the device menu for MOTORTECH ignition controllers.

8.1.1 Main Menu
The *Main Menu* view is accessed via the buttons *MIC3*, *MIC3+*, *MIC4*, *MIC4+*, *MIC5* or *MIC5+* in the *Start Menu*.

The main menu has the following buttons:

– Overview
  With the button you obtain information on the most important operating data. More information is in the section *Overview* on page 64.

– Timing
  With the button you receive information on ignition timing. More information is in the section *Timing* on page 66.

- Ignition

  With the button you receive information on secondary voltages and misfires. More information is in the section *Ignition* on page 67.

- Energy

  Via the button you receive information on energy output and spark duration. There is more information in the section *Energy* on page 70.

- Firing Angle

  Via the button you receive information on the absolute and relative firing angles. There is more information in the section *Firing Angle* on page 71.

- Adjustments

  With the button you have access to four views: This permits modification of the spark duration, the spark intensity and global ignition timing. In addition, you can carry out a self-test. There is more information in the section *Adjustments* on page 72.

- Trends

  With the button you have access to the trend of the firing angle and to the trend of the firing angle offset. There is more information in the section *Trends* on page 78.

- Message Log

  This view lists information, alarms, warnings and errors. There is more information in the section *Message Log* on page 80.

- Diagnosis

  With the button you receive information on the operating data of the ignition controller. There is more information in the view *Diagnosis* on page 83.

- Information

  With the button you receive data on the hardware and software of the remote ignition controller. There is more information in the section *Information* on page 82.

- Help

  This button opens the operating manual of the ignition controller. There is more information in the section *Help* on page 61.

8 DEVICES

8.1.2 Overview

You reach the view *Overview* via the button *Overview* in the *Main Menu*.
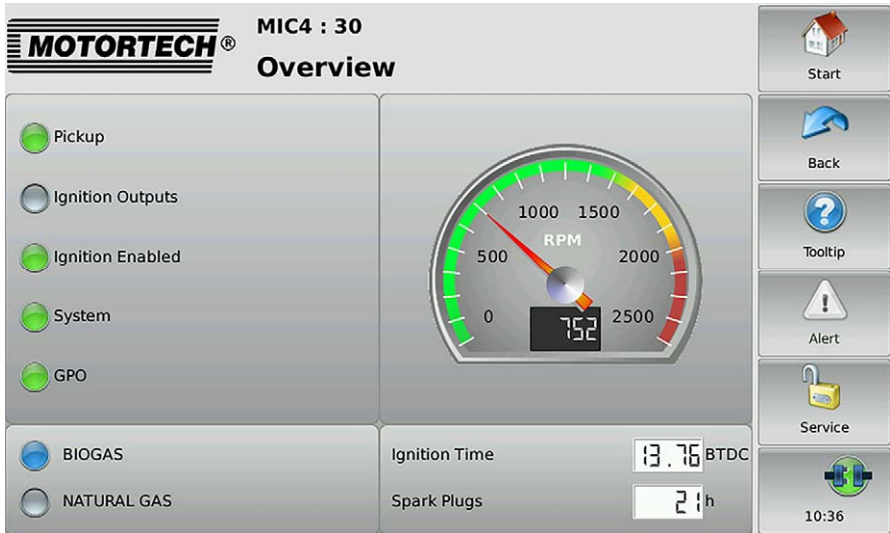
The most important operating data of the ignition controller are summarized in the view.

− **Pickup**

    The status display shows whether pickup signals are being recorded:

    − Gray – No signals were recorded.

    − Yellow – The ignition controller is being synchronized to the pickup signals.

    − Green – Signals are recorded.

− **Ignition Outputs**

    The status display shows the status of the ignition outputs of the ignition controller:

    − Gray – There are no firings.

    − Green – The outputs fire without any errors.

    − Yellow – There have been previous misfires, but there are no more misfires at present.

    − Red – There are misfires.

    Detailed information on ignition outputs can be found in the view *Ignition* (see section *Ignition* on page 67).

– Ignition Enabled
  The status display shows whether the ignition controller has received an ignition enabled command.

  – Gray – Ignition not enabled.
  – Green – Ignition enabled.
  – Yellow – Ignition enabled but the ignition controller waits for the engine to stop.

– System
  The status display displays the system status.

  – Gray – No signal is received.
  – Green – The system works flawlessly.
  – Yellow – There are warnings or alerts, which do not lead to an engine stop.
  – Red – There are errors, which lead to an engine stop. The ignition controller is put into a safe condition when errors occur.

– GPO (General Purpose Output)
  The status indicator displays the status of the general purpose output. You can define the function and resulting colors in the MICT configuration. (Further information can be found in the operating manual of your ignition controller.)

– Schedule
  The status indicator displays the active schedule of the ignition controller. If schedules are named in the MICT, the names are displayed. If no names are assigned, the schedules are called *A* and *B* in the   PowerView3.

  – Gray – The schedule is not active.
  – Blue – The schedule is active.

– Engine Speed
  In the analog display the current engine speed is presented with a pointer and also numerically.

  – Green area – below the nominal speed
  – Yellow area – between nominal speed and overspeed
  – Red area – overspeed

– Ignition Timing
  Shows the current global ignition timing in °crankshaft.

– Spark plugs
  Displays the previous operating hours of the spark plugs.

8.1.3 Timing

The view *Ignition Timing* is reached via the button *Ignition Timing* in the *Main Menu*.

The following information is provided:

Calculating the Global Ignition Timing
Overview of values from which the global ignition timing is calculated.

–   Base Timing
    Shows the base ignition timing in °crankshaft.

–   Potentiometer Timing
    Displays the adjustment of the ignition timing via the potentiometer in °crankshaft in the
    direction advanced or retarded and right next to it the adjustment on the potentiometer in
    percent.

–   Analog Current Input Timing
    Displays the adjustment of the ignition timing via the analog current signal in °crankshaft in
    direction advanced or retarded. On the right next to it the current measurement value of the
    analog current input is displayed in mA.

–   Analog Voltage Input Timing
    Displays the adjustment of the timing via the analog voltage signal in °crankshaft in
    direction advanced or retarded. On the right next to it the current measurement value of the
    analog voltage input is displayed in V.

–   Speed Curve Correction
    Displays the adjustment via the speed curve in °crankshaft in direction advanced or
    retarded.

- Timing Correction
  Displays the adjustment via the timing correction in °crankshaft in direction advanced or retarded.
- Global Timing Point
  Displays the currently set timing in °crankshaft, which was calculated for the engine from the previously named settings.

Individual Ignition Timing
Overview of the adjustment of the cylinder-specific ignition timing:

- Minimum
  Displays the minimum ignition timing in °crankshaft resulting from the cylinder-specific adjustment.
- Maximum
  Displays the maximum ignition timing in °crankshaft resulting from the cylinder-specific adjustment.
- Average Relative Firing Angle
  Displays the average value of the cylinder-specific adjustment of the ignition timing in °crankshaft.

8.1.4 Ignition

The view *Ignition* is reached via the button *Ignition* in the *Main Menu*.

Via the buttons ❮ and ❯ switch between the views *Ignition* and *Misfires*.

Information on the *Cyl.* column

If cylinder names have been activated via the MICT in the configuration of the ignition controller, they are displayed in the *Cyl.* column. If cylinder names have not been activated, the ignition output numbers are displayed (A1, A2, …).

8 DEVICES

Ignition:

The following information is provided:

–   The estimated ignition voltage is displayed individually for every ignition output of the ignition controller.

–   The status display provides information about misfires for each cylinder.

    –   Gray – No misfires recorded.

    –   Yellow – There were previous misfires, but there are no more misfires at present.

    –   Red – Misfires occurred and there is no warning or error status.

Misfires

You receive information on where an error has occurred in the ignition circuit:

– Primary: The information relates to the primary side of the ignition circuit.

– Secondary: The information relates to the secondary side of the ignition circuit.

You receive information on which error has occurred in the wiring of the ignition coils:

– Open: The ignition circuit is not closed.

– Short: short circuit

The status displays can show different colors:

– gray –There are no errors.

– red – No misfires occurring at the moment.

– yellow – At least one misfire has occurred.

– The wrong ignition coils were set via the MICT or the misfire detection is unavailable for the coils selected.

With the button ▼ you can reset the misfire rate of the ignition controller.

8 DEVICES

8.1.5 Energy

> **Information on the *Cyl.* column**
>
> If cylinder names have been activated via the MICT in the configuration of the ignition controller, they are displayed in the *Cyl.* column. If cylinder names have not been activated, the ignition output numbers are displayed (A1, A2, …).

The view *Energy* is accessed via the button *Energy* in the *Main Menu*.

This view displays the spark duration in µs and the ignition energy in mJ.

The values can be used to detect possible wear of the spark plugs.

8.1.6 Firing Angle

The view *Firing Angles* is reached via the button *Firing Angle* in the *Main Menu*.

With the buttons [←] and [→] switch between the views *Firing Angles* and *Firing Angles Drift*.

> **Information on the *Cyl.* column**
>
> If cylinder names have been activated via the MICT in the configuration of the ignition controller, they are displayed in the *Cyl.* column. If cylinder names have not been activated, the ignition output numbers are displayed (A1, A2, ...).

Firing Angle

The firing angle of the cylinders is displayed in °CRANKSHAFT for each output of the ignition controller.

You can switch between the following using the button ▼:

– *Absolute Firing Angle*: the firing angle of a cylinder in ° crankshaft in relation to the top dead center of the first cylinder in the firing order

– *Relative Firing Angle*: the firing angle of a cylinder in ° crankshaft in relation to its own top dead center

Deviation from the Firing Angle
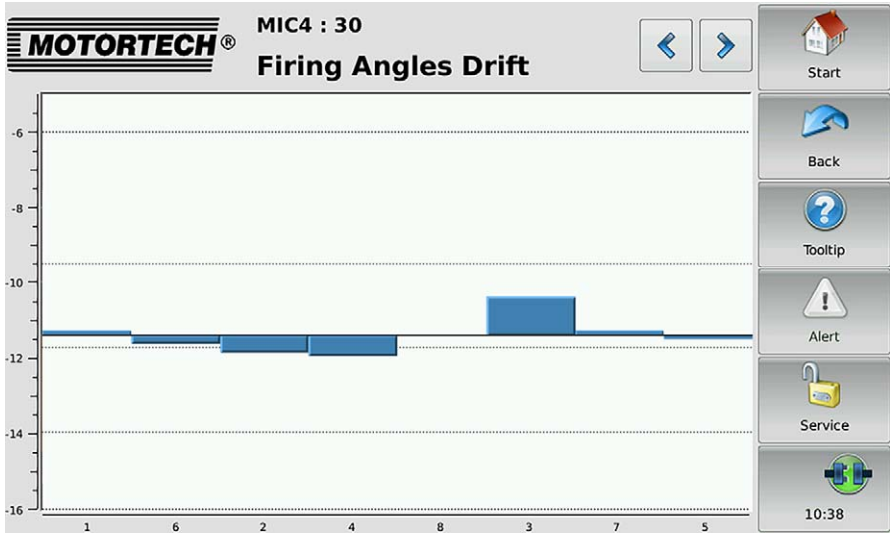
The deviations from global ignition timing in °CRANKSHAFT are displayed in a bar chart.

8.1.7 Adjustments

You reach the views for adjusting the settings of MIC4 via the button *Adjustments* in the *main menu*.

With the buttons and you can switch between the views *Energy Adjustments*, *Timing Adjustment*, *Selftest* , *Operating Hours*, *Voltage Calibration* and *Reset Position*.

> **Risk of damage!**
>
> Incorrect settings for energy, firing angle and the reset position can lead to damage to the engine and the ignition system. Therefore make sure that engine and ignition kit are designed for the corresponding settings.

> **Risk of damage!**
>
> Changes to the settings for energy, firing angle, voltage and reset position take effect *immediately and without further confirmation*. Therefore always comply with the operating manuals of the engine and all components of the ignition kit.

Selftest

> **Operational safety!**
>
> If you carry out a self-test, it is essential for the gas supply to be switched off and no more residual gas is left in the combustion chamber.
> Non-compliance can result in damage to equipment or injury to persons.

You can run a selftest to check the order of the wiring and the connection between the ignition controller outputs down to the spark plugs.

The status display indicates whether the ignition controller is ready for the self-test.

– Red – the ignition controller is in a state in which no self-test can be done. For example, there is an error or a configuration is currently being downloaded into the device.

– Yellow – the selftest is running.

– Green – the ignition controller is ready and the self test can be started.

Carry out the self-test as follows:

1. Stop the gas supply to the engine.

2. Purge the engine.

   ▸ The engine is ready for the selftest.

3. Set the *Selftest Period* (the interval between the two ignitions).

4. Define via the *Number of Tests* whether the self test is to run *Unlimited* or whether it should be ended after a defined number of cycles.

5. Define whether *All* outputs or only a defined output should be fired during the self test.

6. Start the selftest via the button *Start*.

   ▸ The selftest runs until it is stopped. In the meantime you can inspect the data received in other views.

7. End the selftest via the button *Stop*.

   ▸ The selftest is now complete.

Energy Adjustments

In the view Energy Adjustments you have the following options:

–   The spark duration for the schedules can be lowered or increased via the corresponding buttons by 1 μs or 5 μs.

–   The spark intensity for the schedules can be lowered or increased via the corresponding buttons by 1 mA or 5 mA.

Timing Adjustment

The global ignition timing can be put forward or back via the corresponding buttons by 0.1 degrees or 0.5 degrees.

8 DEVICES

Operating Hours Counter

Set the operating hours of the spark plugs or the engine to the desired value using the arrow keys. You can reset the value of the operating hours for the spark plugs and the motor to *o* with the *Reset* buttons.

Voltage Calibration

Set a unitless correction value for the calibration of the secondary voltage estimate using the arrow keys.

Reset Position

8 DEVICES

Using the arrow keys, adjust the index/reset position of the crankshaft in steps of 0.1 ° and 0.5 °. If the correction range is not sufficient, the reset/index position must be adjusted in the configuration in the MICT.

8.1.8 Trends

You reach the view *Trends* via the button *Trends* in the *Main Menu*.

Via the view *trends* the trend of firing angles and voltage can be displayed:

Trend of Firing Angles

The view *Firing Angle* is reached via the button *Firing Angle* in the view *Trends*.
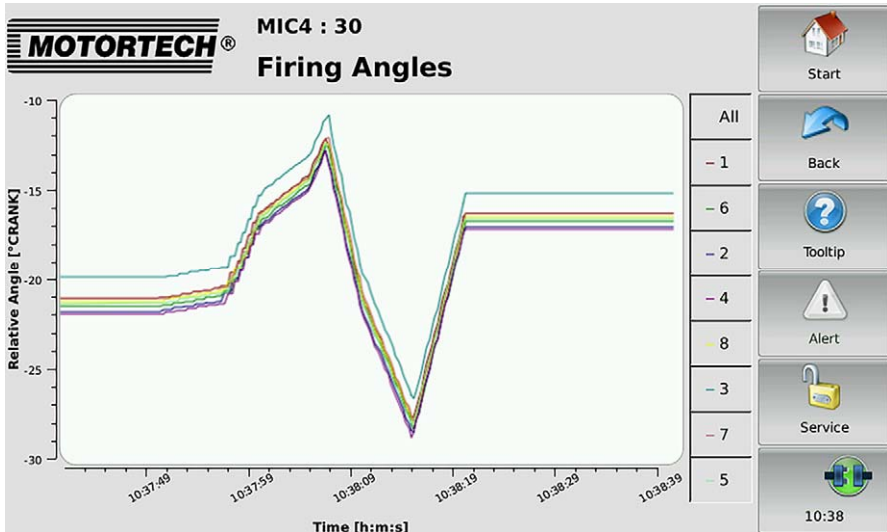
You receive information on the trend of the firing angles. The cylinders can be displayed and hidden individually via the legend.

Trend of Secondary Voltage

The view *Secondary Voltage* can be reached via the button *High Voltage* in the view *Trends*.
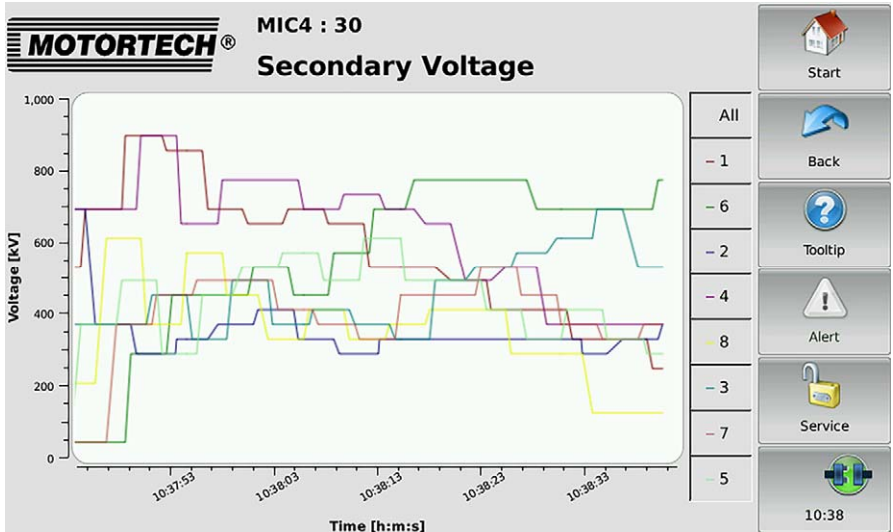
You receive information on the trend of the secondary voltage. The cylinders can be displayed and hidden individually via the legend.

8.1.9 Message Log

The view *Message Log* is reached via the button *Message Log* in the *Main Menu*.

With the buttons [◁] and [▷], you can switch between the views *Status Messages* and *Message Log*.

States

Status messages are listed in the view *States*.

The following information is provided:

– Operating hours – hours on the operating hour meter at the time of the message

– Time – date and time of the message

– Status Message – message text

Status messages are displayed in black if they are current. If a status is reset, the status message is displayed gray for 10 seconds before it is deleted from the list.

Message Log

Information, alarms, warnings and errors are listed in the *Message Log* (applies to ignition controller MIC4 Version 0.16 and higher).

With the button ▼ you access the following options:

– Confirm alarms

– Confirm runtime errors

– Switch automatic scrolling on and off

8 DEVICES

8.1.10 Information

You reach the view *Information* via the button *Information* in the *Main Menu*.

In the view *Information* Information on the hard- and software of the ignition controller are displayed:

Hardware

Overview of the hardware of the connected ignition controller

– **Device ID**
 The identification number of the device provides information on type and subtype of the MOTORTECH device.

– **Revision**
 Hardware revision number of the device

– **Serial Number**
 The unique serial number is assigned once to each device.

– **Arrangement**
 The arrangement number comprises the type and sub-type of the ignition controller.
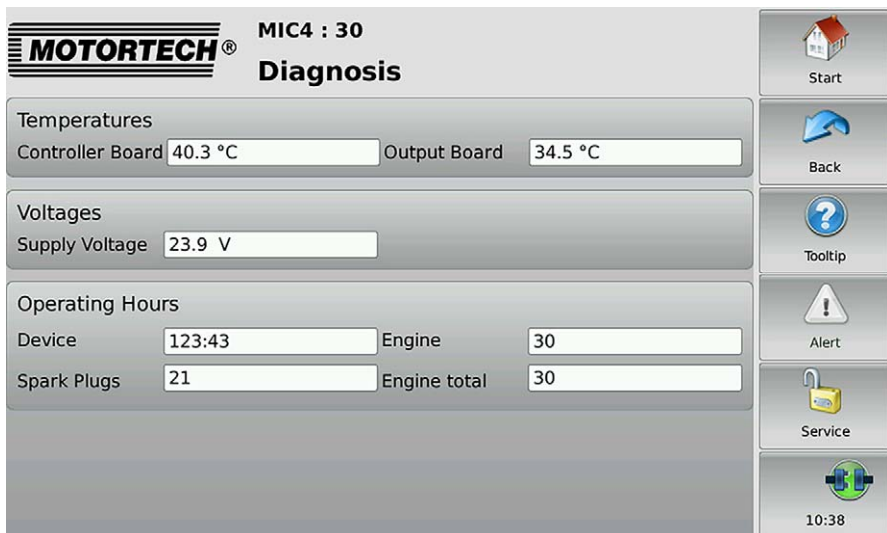
Software Version

Information on the software of the ignition controller

– **Bootloader**
 Version number of the bootloader

– **Firmware**
  Version number of the firmware of the device
– **Coil Data**
  The coil data version configured in the ignition controller

8.1.11 Diagnosis

You reach the view *Diagnosis* via the button *Diagnosis* in the *Main Menu*.

In the view *Diagnosis* information on the operating values of the ignition controller are displayed:

Temperatures

Overview of the temperatures of the ignition controller.

– **Controller Board**
  Temperature of the controller board
– **Output Board**
  Temperature of the outboard board

8 DEVICES

Switching between °C and °F

In the display configuration, you can specify whether the temperatures are displayed in °C or in °F (see Section *Display Configuration* on page 40).

Voltage

Information on the supply voltage of the ignition controller.

Operating Hours

The operating time of the ignition controller is displayed in hours and minutes. The operating time of the engine and the spark plugs is displayed in hours.

– Controller
  Overall operating time of the ignition controller

– Engine
  Operating hours of the engine since the last start-up

– Engine total
  Total operating hours of the engine with the ignition controller

– Spark plugs
  Operating hours of the spark plugs used

8.2 DetCon

In this section the functions of the device menu of the detonation control DetCon are described.

8.2.1 Main Menu

The view *Main Menu* is accessed via the button *DetCon* in the *Start Menu*.

The *Main Menu* has the following buttons:

– Overview
  With the button you obtain information on the most important operating data. More information is in the section *Overview* on page 86.

– Intensity
  With the button you receive information on the knocking intensity of each cylinder. There is more information in section *Knocking Intensity* on page 88.

– Trends
  You gain access to the trend of knocking intensity and output signal via the button. There is more information in the section *Trends* on page 89.

– Preferences
  This button gives you access to the settings for processing the DetCon signals. There is more information in the section *Preferences* on page 91.

– Help
  This button opens the DetCon operating manual. There is more information in the section *Help* on page 61.

8 DEVICES

8.2.2 Overview

You reach the view *Overview* via the button *Overview* in the *Main Menu*.
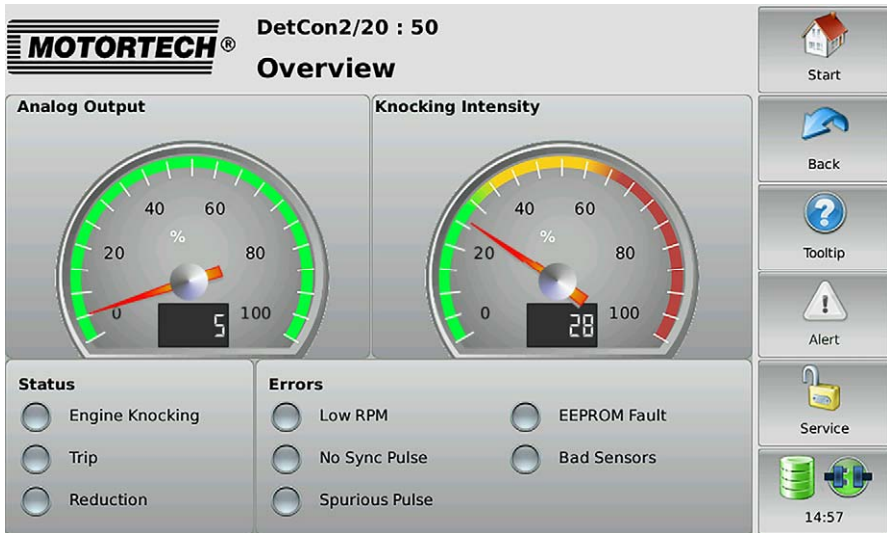
The most important operating data of the detonation control are summarized in the view.

- Analog Output Signal
  The current analog output signal strength is presented with a pointer and also numerically in the display.

- Knock Intensity
  The maximum knock intensity measured is presented in percent with a pointer and also numerically in the display.

  - Green area – Knock level is below the ignition reduction limit.

  - Yellow area – Knock level is above the ignition reduction limit.

  - Red area – Knock level is above the limit for an emergency stop.

In the field *Status* the operating condition of DetCon is presented via status displays:

– Engine Knocking
A yellow status display indicates that the knock level is above the ignition reduction limit.

– Trip
If the output TRIP on the DetCon is configured as "normally open", a red status display indicates that the knocking level is above the limit for an emergency stop.
If the output TRIP on the DetCon is configured as "normally closed", a red status display indicates that the knocking level is below the limit for an emergency stop.
The status display *Trip* in PowerView3 can be inverted irrespective of the setting in the DetCon (see *Preferences* on page 91).

– Reduction
A yellow status display indicates that the reduction of the knock level has exceeded the maximum value above the analog output signal. The load reduction is reduced.

In the field *Malfunctions* errors of DetCon are presented via status displays:

– Low RPM
A yellow status display indicates that the detonation control is ineffective on account of insufficient speed.

– No Sync-Pulse
A red status display indicates that no pulses are being detected at the ignition input of the DetCon.

– Signal Interference
A red status display indicates that the knocking sensor signals are disrupted.

– EEPROM Fault
A red status display indicates that configuration data is defective.

– Bad Sensor
A red status display indicates that one or more sensors are not connected.

8 DEVICES

8.2.3 Knocking Intensity

The view *Knocking Intensity* can be reached via the button *Intensity* in the *Main Menu*.
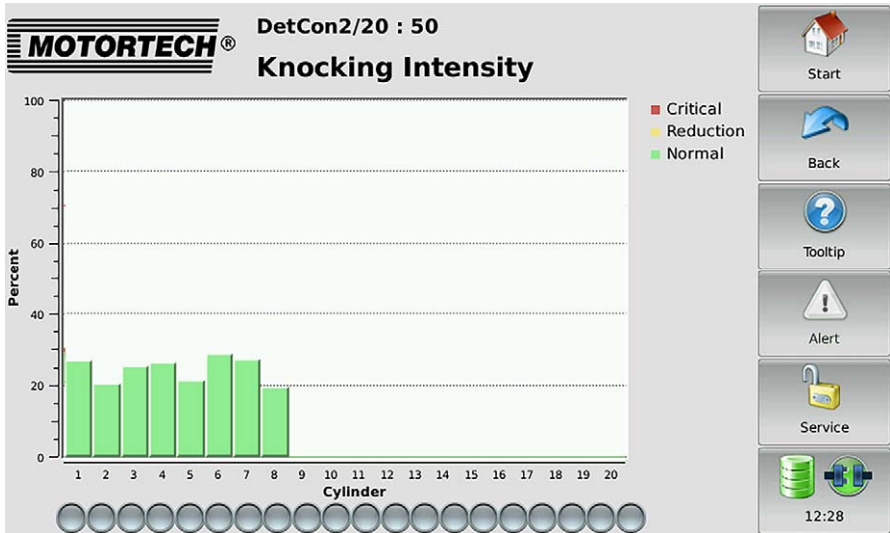
In the view *Knocking Intensity* the knocking intensity is shown in percent for each cylinder monitored.

The colors of the bars have the following meanings:

Color	Meaning
Green	Normal – the detonation control is not registering any excessive knocking intensity.
Yellow	Reduction – the detonation control reduces the knocking intensity.
Red	Critical – the knocking intensity is so high that the engine must be immediately shut down.

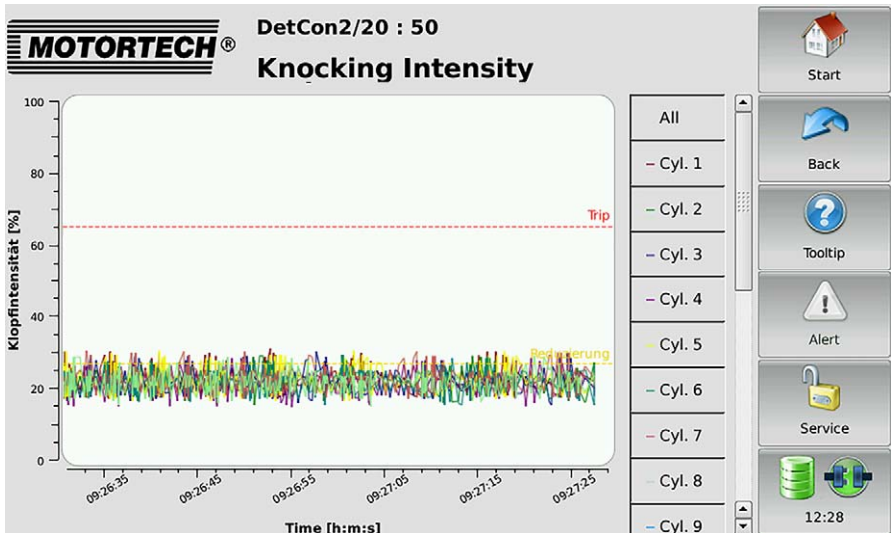A red status display indicates a sensor error.

8.2.4 Trends

You reach the view *Trends* via the button *Trends* in the *Main Menu*.

Via the view *Trends* the trend of the knocking intensity and the trend of the output signal can be displayed.

Trend of Knocking Intensity

The view *Knock Intensity* can be reached via the button *Detonation* in the view *Trends*.

In this view the trend of knock intensity of all cylinders is presented. The cylinders are presented in different colors and can be removed and reconnected individually from the view via the buttons to the right next to the display window.

The areas have the following meaning:

Area	Meaning
from 0 to the yellow line	The detonation control is not registering any excessive knocking intensity.
from the yellow to the red line	The detonation control reduces the knocking.
from the red line to 100	The knocking intensity is so high that the engine must be immediately shut down.

8 DEVICES

Trend of Output Signal

The view *Analog Output* is reached via the button *Analog Output* in the view *Trends*.
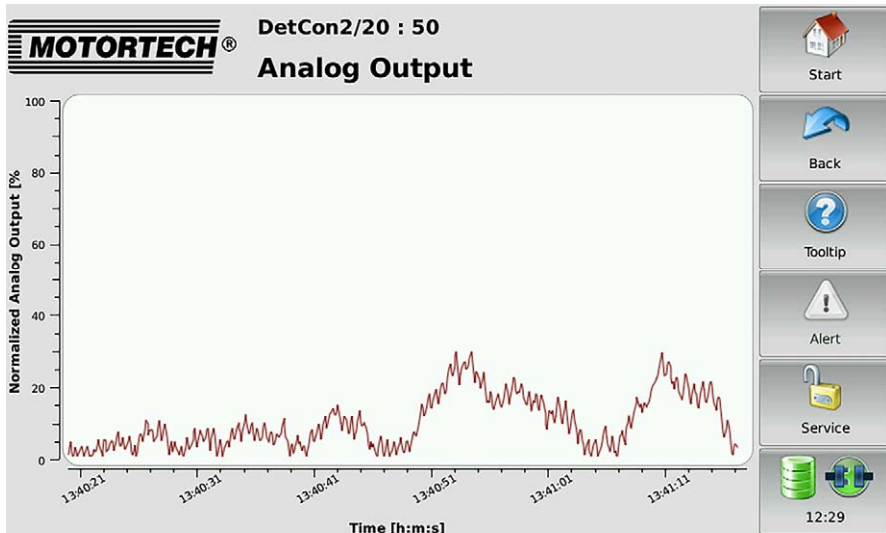
The diagram indicates the trend of the analog output signal in percent.

8.2.5 Preferences

You reach the view *Preferences* via the button *Preferences* in the *Main Menu*.

In this view you can change the settings for processing the signals that the PowerView3 receives from the DetCon.

Sensor Sequence

In the factory settings the knocking intensity of all cylinders is displayed in the *Knocking Intensity* view (see *Knocking Intensity* on page 88). The sequence depends on the DetCon sensor output the relevant knocking sensor is connected to. Tap *Change* to change the sequence or to display the knocking intensity of only a selection of the sensors.

Trip Handling

Regardless of the setting in the DetCon, the status display *Trip* (see *Overview* on page 86 section) can be inverted in the PowerView3:

– You should not invert the *Trip* status display if the TRIP output on the DetCon is configured as normally open.

– You should invert the *Trip* status display if the TRIP output on the DetCon is configured as normally closed.

When you use the recommended setting, a red status display indicates that the knock level is above the limit for an emergency stop.

8 DEVICES

Digital Outputs

If the digital outputs of the PowerView3 are activated in the *Device Setup* view (see section *Device Configuration* on page 42), you can activate the following messages:

– *Warning on Knocking* – If DetCon registers engine knocking, digital output 1 on the PowerView3 is activated.

– *Error on Trip* – If the *Trip* output is activated on the DetCon, digital output 2 is activated on the PowerView3 .

Risk of destruction

The PowerView3 and the software are not designed for safety-critical applications. The digital inputs and outputs must therefore not be used for safety-critical purposes.

8.3 TempScan20

This section describes the functions of the device menu of the Temperature scanner TempScan20.
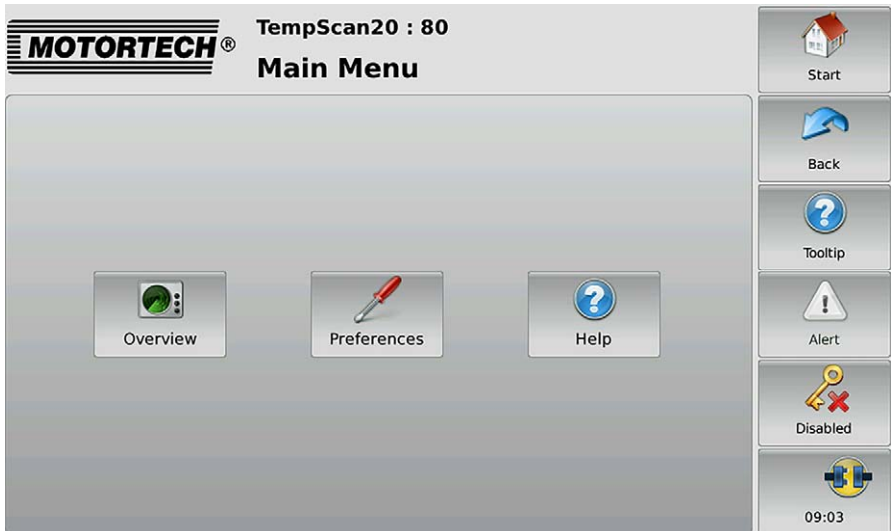
Switching between °C and °F

In the display configuration, you can specify whether the temperatures are displayed in °C or in °F (see section *Display Configuration* on page 40).

8.3.1 Main Menu

The view *Main Menu* is accessed via the button *TempScan20* in the *Start Menu*.

The *Main Menu* has the following buttons:

– Overview
This button opens the view *Overview* in which all the currently measured temperatures are listed. More information is in the section *Overview* on page 103.

– Preferences
This button opens the *Preferences* view from which you can access all of the configuration pages for your TempScan20. There is more information in the section *Preferences* on page 94.

– Help
This button opens the TempScan20 operating manual. There is more information in the section *Help* on page 61.

If a group has at least one activated channel assigned to it, additional buttons for calling up group-specific views are displayed in the *Main Menu*. Further information can be found in the section *Group-specific Views* on page 104.

8 DEVICES

8.3.2 Preferences

The view *Preferences* is accessed via the button *Preferences* in the *Main Menu*.

The *Settings* view contains the following buttons:

– **Names**
  This button opens the *Channel Names* view, in which you can assign names to the available channels. There is more information in the section *Cannel Names* on page 96.

– **Groups**
  This button opens the *Group Names* view, in which you can assign names to the available groups. There is more information in the section *Group Names* on page 97.

– **Thresholds**
  This button opens the views for configuring the warning and shutdown thresholds. There is more information in the section *Thresholds* on page 99.

– **Activation**
  This button opens the *Channel Activation* view, in which you can activate and deactivate individual channels and assign them to groups. There is more information in the section *Activation* on page 95.

– **Channels**
  This button opens the views for configuring the individual channels. There is more information in the section *Channel Settings* on page 100.
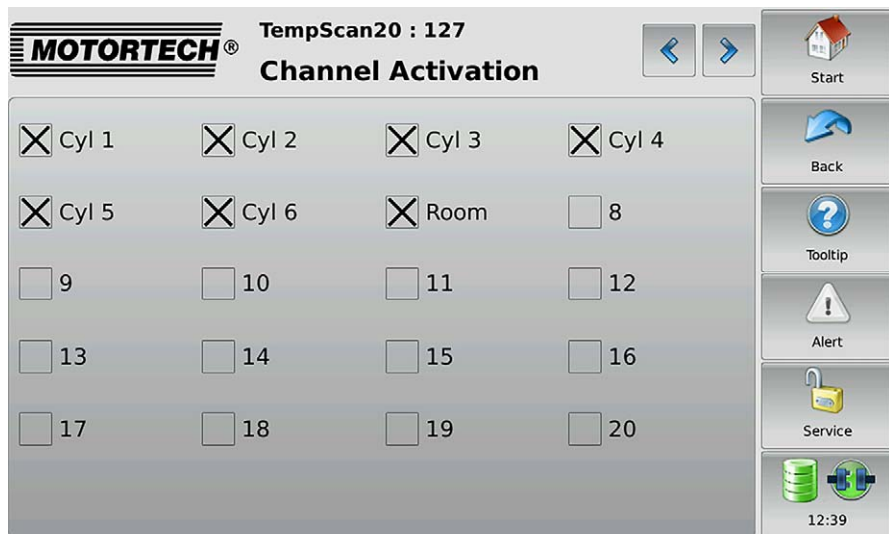
– Save
Tap this button to permanently save the following information in the TempScan20:

- – Warning and shutdown thresholds

- – Thermocouple types

- – The information whether a channel is activated or deactivated.

If you do not save this information, it will be lost when the PowerView3 is switched off!

8.3.3 Activation

You can call up the views for activating channels, warnings, error messages and the allocation of channels to groups via the *Activation* button in the Preferences view.

You can toggle between the views via the ⟨ and ⟩ buttons. All channels are displayed with their numbers or an abbreviation (where present).

Activate a Channel

To activate the channels, tap the corresponding checkboxes.

Output Warning

Tap the checkboxes of the channels on which digital output 1 of the PowerView3 is to be triggered if warning thresholds are exceeded or not reached.

Output Error

Tap the checkboxes of the channels on which digital output 2 of the PowerView3 is to be triggered if error thresholds are exceeded or not reached.

Group Assignment

Click the checkboxes of the channels that you wish to assign to the displayed group.

8.3.4 Cannel Names

The *Channel Names* view is accessed via the *Names* button in the view: *TempScan20 Settings*.

This view lists all the channels of the TempScan20. You have the following options:

Abb.

To enter an abbreviation, proceed as follows:

1. Tap the input field *Abbreviation*.

2. Enter an abbreviation (maximum five characters) via the on-screen keyboard and confirm with *OK*.

   ▸ The abbreviation is displayed and then always used in the user interface of the PowerView3 if there is insufficient space for the full name.

Name

Name the channel as follows:

1. Tap the input field *Name*.

2. Enter a channel name (maximum 20 characters) via the on-screen keyboard and confirm with *OK*.

   ▶ The name is displayed.

Advanced Settings

The *Configure Channel* button opens the channel settings. There you can edit all the settings of the respective channel (see section *Channel Settings* on page 100).

8.3.5 Group Names

The *Group Names* view is accessed via the *Groups* button in the view *TempScan20 Preferences*.

The TempScan20 channels can be assigned to one to four groups (with the identifiers A to D). For each group there are up to three group-specific views available: the temperature profiles of a group, a group overview and deviations from the average temperature of a group (see section *Group-specific Views* on page 104).

In the *Group Names* view the following options are available:

Group Name

Name the groups A to D as follows:

1. Tap the input field *Group Name*.

2. Enter a group name (maximum eleven characters) via the on-screen keyboard and confirm with *OK*.

It is not possible to name groups to which no channel has been assigned.

Average

Activate or deactivate the item *Average*. If this item is activated for a group, an additional button with the group name is displayed in the *Main Menu*:

This button opens a view that displays the deviation of each channel in a group from the average temperature of all channels in the group.

You cannot activate the "Average" item for groups to which no channel has been assigned.

8.3.6 Thresholds

The views for adjusting threshold values can be accessed via the *Thresholds* button in the view *TempScan20 Preferences*.

The [◀] and [▶] buttons allow you to switch between the following views:

- *High Temp. Shutdown* – sets the upper shutdown threshold values.
- *High Temp. Warning* – sets the upper warning threshold values.
- *Low Temp. Warning* – sets the lower warning threshold values.

If the warning thresholds are exceeded or fallen below, the PowerView3 activates digital output 1 of the PowerView3 and/or digital output 2 if the following settings are configured.

- Digital outputs are activated (see *Device Configuration* on page 42).
- A channel is activated (see sections: *Activation* on page 95 and *Channel Settings* on page 100).
- The output *Warning* is activated and/or the output *Error* is activated. see *Channel Settings* on page 100

The colors of the temperature displays in the *Overview* view and in the group-specific views are dependent on the threshold settings (see *Overview* on page 103 and *Group-specific Views* on page 104).

You have the following options for adding channels to the selection:

–   Directly tap the channels if you want to select them individually.

–   Tap the group symbol (e. g.) to select all the channels of a group.

   ▸   Selected channels have a blue frame.

You have the following options for removing channels from the selection:

–   Directly tap the channels to remove them individually from the selection.

–   Tap   to remove all channels from the selection.

Adjust the threshold values using the arrow keys as follows:

–   and – in steps of 1 °C or 1 °F

–   and – in steps of 20 °C or 20 °F

Minimum separation of threshold values

The threshold values *Low Temp Warning*, *High Temp. Warning* and *High Termp. Shutdown* must each be separated by at least 10 °C (18 °F).

8.3.7 Channel Settings

The views for the individual configuration of the channels can be accessed via the *Channels* button in the view *TempScan20 Preferences*. Here you can configure all the settings for a channel in a single view.

You can switch to the desired channel via the [<] and [>] buttons. The configured channel is always the one shown in the title area.

Abb.

To enter an abbreviation, proceed as follows:

1. Tap the input field *Abbreviation*.

2. Enter an abbreviation (maximum five characters) via the on-screen keyboard and confirm with *OK*.

   ▸ The abbreviation is displayed and then always used in the user interface of the PowerView3 if there is insufficient space for the full name.

Name

Name the channel as follows:

1. Tap the input field *Name*.

2. Enter a channel name (maximum 20 characters) via the on-screen keyboard and confirm with *OK*.

   ▸ The name is displayed.

Sensor

Set the thermocouple type that is connected to the TempScan20 channel. The following thermocouple types are available B, E, J, K, N, R, S and T.

8 DEVICES

Status

In the *Status* area you have the following options:

– To activate the displayed channel, activate the checkbox *Channel Activated*.

– To activate the digital output *Warning* for the displayed channel, activate the checkbox.

– To activate the digital output *Error* for the displayed channel, activate the checkbox.

Group

Assign a channel to one or several groups. To do so, mark the desired groups with an x.

Limits

If the warning thresholds are exceeded or fallen below, the PowerView3 activates digital output 1 of the PowerView3 and/or digital output 2 if the following settings are configured.

– Digital outputs are activated (see *Device Configuration* on page 42).

– A channel is activated.

– The output *Warning* is activated and/or the output *Error* is activated.

The colors of the temperature displays in the *Overview* view and in the group-specific views are dependent on the threshold settings (see *Overview* on page 103 and *Group-specific Views* on page 104).

You can set the following threshold values:

– *Shutdown High* defines the upper shutdown threshold value.

– *Warning High* defines the upper warning threshold value.

– *Warning Low* defines the lower warning threshold value.

Adjust the threshold values as follows:

– With ⌄ and ⌃ in steps of 1 °C or 1 °F

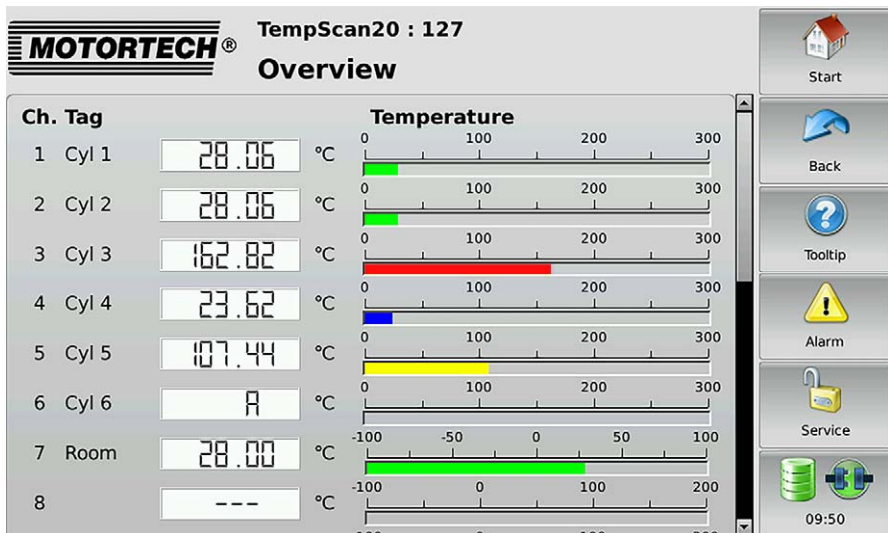– With ⌄ and ⌃ in steps of 20 °C or 20 °F

Minimum separation of threshold values

The threshold values *Low Temp Warning*, *High Temp. Warning* and *High Termp. Shutdown* must each be separated by at least 10 °C (18 °F).

8.3.8 Overview

You reach the view *Overview* via the button *Overview* in the *Main Menu*.

This view lists all the channels of the TempScan20:

– *K.*: channel number

– *Abb.:* ser-specified abbreviation

– The currently measured temperature (*A* = thermocouple failed; --- = channel not configured)

The colors of the temperature displays have the following meanings:

– Green: The temperature is within the permitted range.

– Blue: The temperature has dropped below the lower warning threshold.

– Yellow: The upper warning threshold has been exceeded.

– Red: The upper shutdown threshold has been exceeded.

Information about setting thresholds can be found in *Thresholds* on page 99.

8 DEVICES

8.3.9 Group-specific Views

If a group has at least one activated channel assigned to it, additional buttons with the group name are displayed in the *Main Menu*:

Temperature Profiles of a Group

With this button you can open a view with the historical data of all channels in a group.

The available channels can be displayed or hidden via the legend.

Group Overview
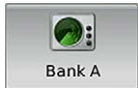
This view lists the measured temperatures of all channels in a group.

– *K.*: Channel number
– *Abb.:* User-specified abbreviation
– The currently measured temperature (*A* = thermocouple failed; --- = channel not configured)

The colors of the temperature displays have the following meanings:

– Green: The temperature is within the permitted range.
– Blue: The temperature has dropped below the lower warning threshold.
– Yellow: The upper warning threshold has been exceeded.
– Red: The upper shutdown threshold has been exceeded.

Information about setting thresholds can be found in *Thresholds* on page 99.

Deviations from the Average Temperature of a Group

This button is only displayed if the *Average* item in the *Group Names* view is activated. The deviation of each channel from the average temperature of all channels in a group is displayed.

8.4 Other Devices

You can add up to three devices that are not directly supported by the PowerView3 as *Generic* devices and monitor their communication status.

> **The devices are not displayed in the** *Start Menu*
>
> *Generic* devices appear in the *Device Setup* view in the *Remote Device* area. These devices are not displayed in the *Start Menu*.

Functions

– When a device is added in *Device Setup*, it will be started, providing this has not already been done.

– The communication status is monitored by the PowerView3 and is visualized in the menu bar (see section *Menu Bar* on page 36).

– Changes to the communication status are listed in the *Event Log* view (see *Event Log* on page 59).

9 OPERATION

9.1 Start-up

Enable the device as follows:

1. Install the device in a panel with a second person (see *Installation* on page 24).

2. Connect the device to the CAN bus (see *CAN Bus Wiring* on page 26).

3. Establish the power supply (see *Power Supply* on page 32).

   ▸ The PowerView3 starts automatically after establishing the power supply .

9.2 Shutdown

Shut down the device as follows:

1. Interrupt the power supply (see *Power Supply* on page 32).

   ▸ The PowerView3 switches off automatically after interruption of the power supply.

2. Separate the device from CAN bus (see *CAN Bus Wiring* on page 26).

3. If necessary, remove any USB memory and SD card.

   ▸ You can dismount the device from the panel with a second person (see *Installation* on page 24).

10.1 Possible Faults

Fault	Possible Cause	Solution
Data bank symbol is red.	Insufficient disk space on the storage device.	Use a storage device with sufficient disk space.
	The storage medium is unreadable.	Use a suitable storage device (see section *Interfaces* on page 21).
The communication status symbol is yellow.	There is no connection to a currently unselected device.	Re-establish the connection (see section*CAN Bus Wiring* on page 26).
	The node ID of a currently unselected device is incorrect.	Enter the correct node ID for all devices (see section *Device Configuration* on page 42).
The communication status symbol is red.	There is no connection to the currently selected device.	Re-establish the connection (see section*CAN Bus Wiring* on page 26).
	The node ID of a currently selected device is incorrect.	Enter the correct node ID for the device (see section *Device Configuration* on page 42).
The display does not register touches at the desired position.	The display is dirty.	Clean the display (see *Cleaning the Touchscreen* on page 112).
	The display is not calibrated properly.	Carry out a calibration of the display (see *Display Configuration* on page 40).
The displays on the screen are difficult to recognize.	The lighting conditions are unfavorable.	Adjust the display to the lighting conditions using the *Day Mode/Night Mode* button in the *Start Menu*).
The system time is repeatedly incorrect.	The internal battery is dead.	Change the battery (see *Changing the Battery* on page 110).
A connected device indicates erroneous operating data.	Node IDs in the CAN-Bus are incorrectly assigned.	Check the node IDs of all remote devices on the CAN bus (see *CAN Bus Wiring* on page 26).
	The connected device is incorrectly wired.	Check the wiring of the connected device.
Data does not get updated.	The wiring of the CAN bus is defective.	Check the wiring of the CAN bus and correct any defects.
	The remote device is not sending any data (e. g. in case it is defective or the software has crashed).	Check the connected device and fix the problems.

10 FAULTS

Fault	Possible Cause	Solution
A connected and added device is not displayed in the device menu.	One node ID has been assigned twice. As a result, the last device added is not displayed.	Assign unique node IDs. Instructions for setting a device ID are in the operating manual of your particular device.
The node ID of the PowerView3 cannot be set on the desired value.	The node ID has already been assigned to another device in the CAN bus.	Assign unique node IDs. Instructions for setting a device ID are in the operating manual of your particular device.
A connected device cannot be added.	The baud rate of the connected device does not correspond to the baud rate of the PowerView3.	Change the baud rate of the connected device (see section *Communication Setup* on page 47).
	In the PowerView3 the connected device has been assigned the wrong node ID.	In the PowerView3 enter the correct node ID for the connected device (see section *Device Configuration* on page 42).
A device cannot be added.	The device type has not been activated.	Activate the device type of the device (see *Activate Device Type* on page 43).
The digital outputs are not switching.	Digital outputs are not activated.	Activate the digital outputs (see section *Device Configuration* on page 42).

10.2 Customer Service Information

You can reach our customer service during business hours at the following phone and fax number, or by e-mail:

Phone: +49 5141 93 99 0

Fax: +49 5141 93 99 99

Email: service@motortech.de

10.3 Returning Equipment for Repair / Inspection

To return the device for repair and inspection, obtain a return form and return number from MOTORTECH.

Fill out the return form completely. The completely filled out return form guarantees fast, uncomplicated processing of your repair order.

Send the device and the return form to one of the two addresses below or to the nearest MOTORTECH representative:

MOTORTECH GmbH
Hogrevestr. 21-23
29223 Celle

Germany

Phone: +49 5141 93 99 0
Fax: +49 5141 93 99 98

www.motortech.de
motortech@motortech.de

MOTORTECH Americas, LLC
1400 Dealers Avenue, Suite A
New Orleans, LA 70123

USA

Phone: +1 504 355 4212
Fax: +1 504 355 4217

www.motortechamericas.com
info@motortechamericas.com

10.4 Instructions for Packaging the Equipment

For return shipment, equipment should be packaged as follows:

– Use packaging material that does not damage the equipment surfaces.

– Wrap the equipment with sturdy materials and stabilize it inside the packaging.

– Use sturdy adhesive film to seal the packaging.

11 MAINTENANCE

11.1 Changing the Battery

The internal board has a battery of the type CR2032, whose service life is ten years.

Risk of injury!

The PowerView3 is an electrically operated device. Disconnect the PowerView3 from all power supplies before changing the battery.

Explosion hazard!

Using the wrong battery can cause an explosion. Only use lithium batteries of type CR2032.

Risk of destruction or injury

Improperly changing the battery can lead to destruction of the device or to injuries. Batteries must only be changed by authorized and trained personnel and following the operating manual.

Disposal of Batteries

Dispose of empty batteries in an environmentally responsible manner and complying with local regulations.

Change the battery as follows:

1. Shut down the device (see section *Shutdown* on page 106).
2. Dismount the device from the panel with a second person (see *Installation* on page 24).
3. Put the PowerView3 on an even, soft surface.
4. Unscrew the four screws that attach the back cover panel.
5. Carefully remove the back cover panel.

Risk of damage!

The circuit board and the components mounted on it can be damaged by touch, contact with foreign bodies and contamination. It is therefore important that you carry out the following steps with the utmost care.

6. Remove the battery.
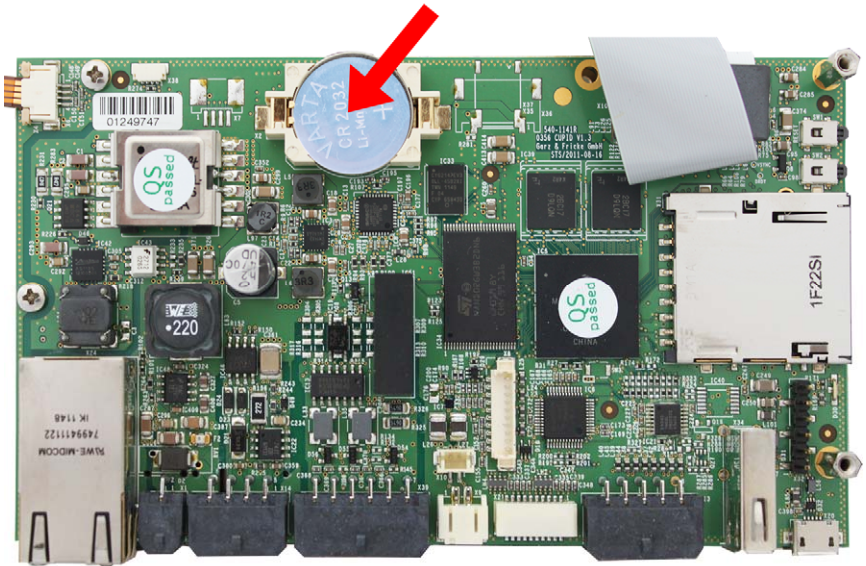
7. Insert the new lithium battery of type CR2032. The positive pole of the battery must be pointing upwards!

8. Close and screw shut the housing.

   ▸ You can reinstall and restart the device (see *Installation* on page 24 and *Start-up* on page 106) sections.

11 MAINTENANCE

11.2 Cleaning the Touchscreen

Clean the touchscreen of the PowerView3 with a soft cotton cloth and alcohol.

> **Risk of damage!**
>
> Dirt effects the function of the touchscreen. Water, fingerprints and other dirt should be removed immediately from the touchscreen and frame to avoid spots.

> **Risk of damage!**
>
> Organic solvents as well as acids and alkaline solutions could damage the touchscreen. Therefore only clean the device with a soft cotton cloth and alcohol.

12 INDEX

Original MOTORTECH® Accessories for Stationary Gas Engines

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