

MySiteCare Operation manual

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Disclaimer

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Conformity

The products listed in the document comply with the directive of the Council of the European Communities implemented by the laws of the Member States relating to electromagnetic compatibility (EMC Directive 2004/108/EC) and concerning electrical equipment for use within specified voltage limits (Low-voltage directive 2006/95/EC). Such conformity is the result of tests conducted by ABB in accordance with product standards EN50263 and EN60255-26 for the MEC directive and with product standards EN 60255-1 and EN 60255-27 for the low voltage directive.

Safety Information



Dangerous voltages can occur on the connectors, even though the auxiliary voltage has been disconnected.



Non-observance can result in death, personal injury or substantial property damage.



Only a competent electrician is allowed to carry out the electrical installation.



National and local electrical safety regulations must always be followed.



MySiteCare must be earthed

1. Introduction

The Operation manual contains instructions on how to operate MySiteCare with the proper software tools once it has been commissioned. The manual provides instructions for monitoring, controlling the device. The manual also describes how to identify errors or problems to determine the cause of a fault.

Intended audience

This manual addresses system and service engineers and installation and commissioning personnel, who use technical data during engineering, installation and commissioning, and in normal service.

The installation and commissioning personnel must have a thorough knowledge of circuit-breakers, and a basic knowledge about handling electronic equipment.

Product documentation set

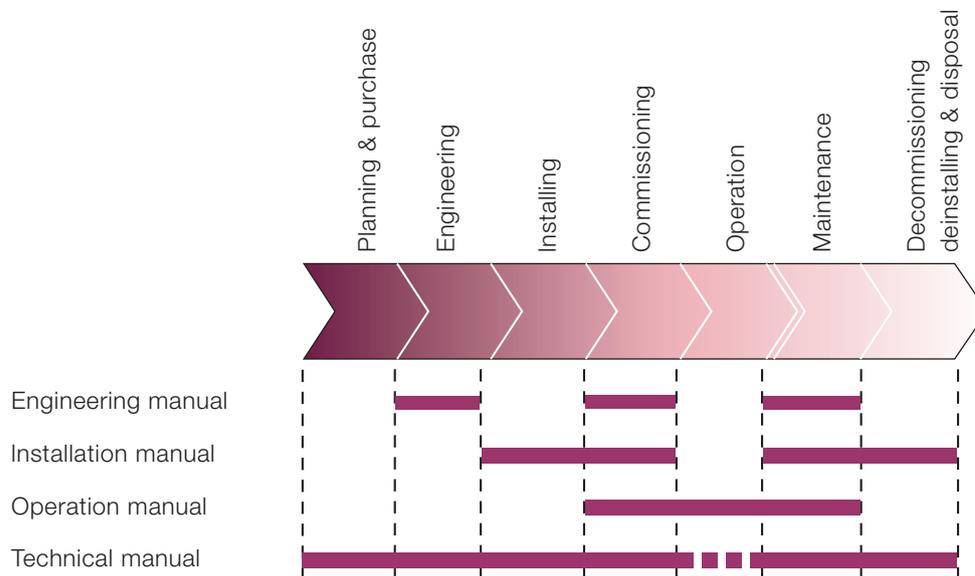
The Installation manual contains instructions on how to install MySiteCare. The manual describes procedures for mechanical and electrical installation. The chapters are set out in the order in which the device should be installed and connected to the circuit-breaker.

The Technical manual contains application and functionality descriptions and includes functions, input and output signals, setting parameters and technical data. The manual can be used as a technical reference during the engineering phase, installation and commissioning phase, and during normal service.

The Operation manual contains instructions on how to configure and monitor the device once it has been commissioned. The manual provides instructions for monitoring, controlling the device and making the required settings. The manual also describes how to locate errors or problems and determine the causes of faults.

The service manual contains instructions on how to service the device. The manual also describes procedures for de-energizing, de-commissioning and disposal of the device.

The application manual contains application descriptions and setting guidelines divided as to function. The manual can be used to establish when and for what purpose a typical diagnostic function can be analyzed. The manual can also be used when calculating settings, thresholds, etc.



The intended use of manuals in different lifecycles



Some of the manuals are not yet available.

Revision history

Document revision/date	MySiteCare firmware version / monitoring tool version	History
2012-06-30	1.0 / \geq 1.0	First release
2013-06-30	4.0 / \geq 1.3	Updated to the product version
2014-01-31	4.3, 4.4 / \geq 1.4.5	Added Onboard reprogramming paragraphs
2016-07-30	5.2 / \geq 1.9.0.8	Content updated to correspond to the product version. Added feature: switchgear hot-spot temperature monitoring and spring charging motor detailed analysis.
2016-10-25	5.3 \geq 1.10.0.3	Content updated to correspond to the product update. Added features: license management



Download the latest documents from the ABB web site

Related documentation

Product series and product specific manuals can be downloaded from the ABB web site.

Symbols



The electrical warning icon indicates the presence of a hazard which could result in electrical shock.



The warning icon indicates the presence of a hazard which could result in personal injury



The caution icon indicates important information or warnings related to the subject discussed in the text. It might indicate the presence of a hazard which could result in damage to software, equipment or property.



The information icon alerts the reader of important facts and conditions.



The tip icon indicates advice on, for example, how to design your project or use a certain function.

Although warning hazards are related to personal injury, it is necessary to understand that under certain operational conditions, operation of damaged equipment may result in degraded process performance leading to personal injury or death. Therefore, comply fully with all warning and caution notices.

2. Environmental aspects

Sustainable development

Sustainability was taken into account from the time product design began and included the pro-environmental manufacturing process, long life, operation reliability and disposal of MySiteCare.

The choice of materials and the suppliers was made in accordance with the EU RoHS directive 2011/65/EU of the European Parliament and of the council of 8 June 2011 on the Restriction of Hazardous Substances in electrical and electronic equipment (RoHS Directive).

MySiteCare complies with the maximum values for lead (Pb), mercury, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE) and cadmium.

Pursuant to EU-regulation REACH that came into force on 1 June 2007, the products are solely non-chemical.

Moreover, the products supplied will not release any substances under normal and reasonably foreseeable application circumstances.

Disposing of the product

Definitions and regulations concerning hazardous materials are country-specific and change as knowledge of materials increases. The materials used in this product are typical for electric and electronic devices.

All parts used in this product are recyclable. When disposing of MySiteCare or its parts contact a local waste handler who is authorized and specialized in disposing of electronic waste. These handlers can sort the material by using dedicated sorting processes and dispose of the product in accordance with local requirements.

Table 1: Product composition

Gateway	Parts	Material
Case	Case	Plastic
	Metallic plates, parts and screws	Steel
	Electronic modules	Various
Package	Box	Cardboard, Polyethylene foam
Attached material (optional)	Manuals	Paper

Applicable directives, standards and compliance

The following directives, standard and compliances are applicable to MySiteCare:

- ESD: EN61000-4-2
- Radiated Electromagnetic Field: EN61000-4-3
- EFT Immunity: EN61000-4-4
- Surge immunity: EN61000-4-5
- Common Mode Conducted RF-Disturbances: EN61000-4-6
- Power frequency magnetic field: EN61000-4-8
- Conducted common mode disturbances in 0-150kHz: EN61000-4-16
- Immunity Test 1MHz Burst: EN61000-4-18
- Conducted and Radiated emission test: CISPR 11
- EU directive 2002/96/EC/175
- Low-voltage directive 2006/95/EC

3. MySiteCare overview

Overview

MySiteCare is a smart service device that manages maintenance for the circuit-breakers and switchgear in utility and industrial distribution systems. The MySiteCare diagnostic unit is able to monitor a circuit-breaker, estimate its remaining life and suggest maintenance activities, as well as switchgear health condition.

MySiteCare monitors circuit-breaker real life based on actual use: trips, current interruption, etc. The final result of MySiteCare calculations are shown by the front LEDs: red, yellow, and green. The diagnostic information is immediately clear thanks to this traffic light system.

Each time the breaker operates, circuit-breaker life reduces through wear. Contact wear depends on the interrupted current. The remaining life of the breaker is estimated from the circuit- breaker trip curve provided by the manufacturer.

Moreover, MySiteCare can monitor the important hot-spots of the switchgear, like busbar joints, cable joints and spouts.

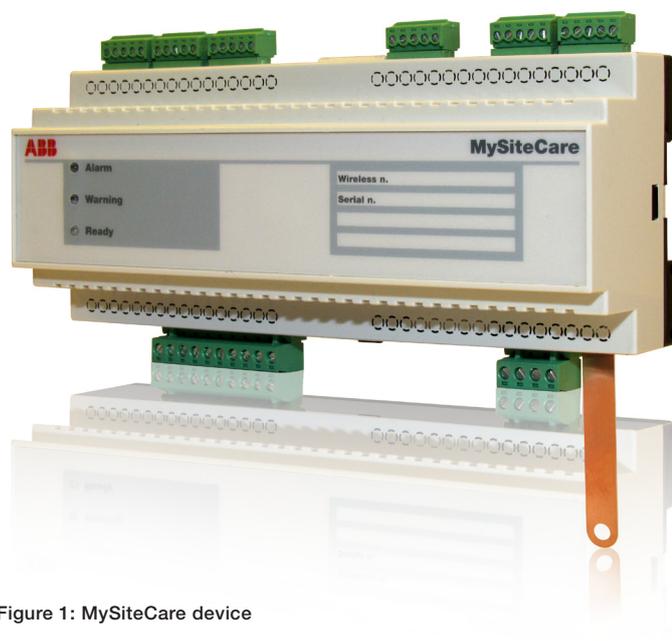


Figure 1: MySiteCare device

Diagnostic analysis

MySiteCare is able to measure current under tripping conditions, and the following binary inputs:

- Open command (open coil)
- Close command (close coil)
- Charged spring contact
- Circuit-breaker state contact
- Trip command from protection relay or external warnings, e.g. SF6 low pressure (optional)

Inputs

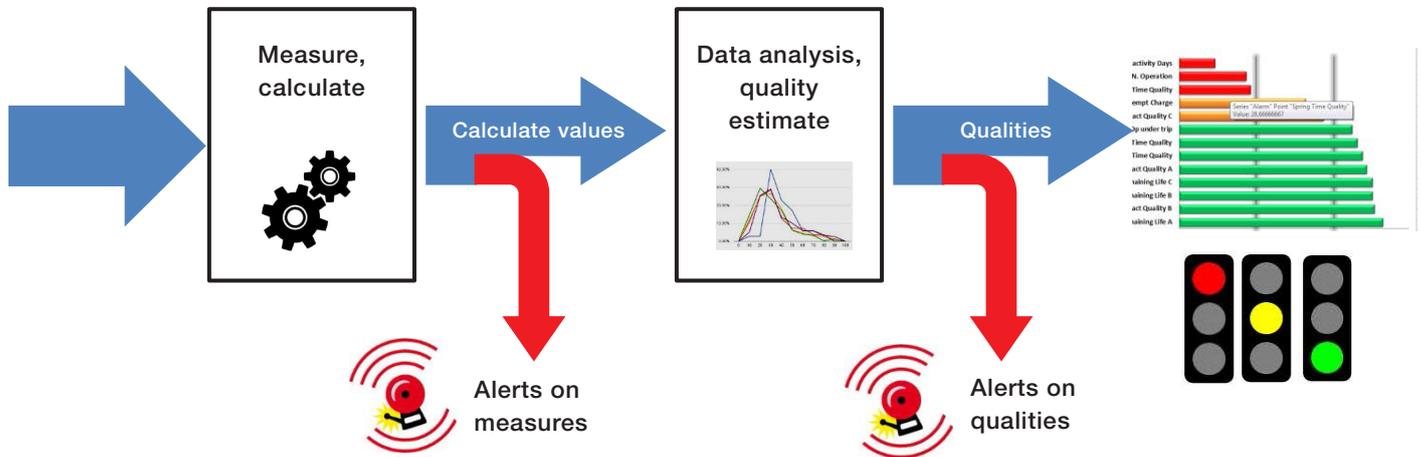


Figure 2: General workflow of MySiteCare diagnostic algorithms

MySiteCare offers a full range of functions which are used to obtain optimized predictive diagnostic analysis of the circuit-breaker and switchgear.

The main functions are the following:

- Opening time
- Closing time
- Position error
- Number of operations
- Number of fault operations
- Inactivity timer
- Charging time of operating mechanism springs
- Slipping or failing spring charging operation
- Circuit-breaker compartment air temperature
- Auxiliary voltage quality
- Power contact wear (I²t)
- External warnings
- Hot-spot temperature on busbar, spout and cable joints

All these functions estimate quality variables which are then used to generate the overall MySiteCare state and the traffic light displayed by the LEDs.

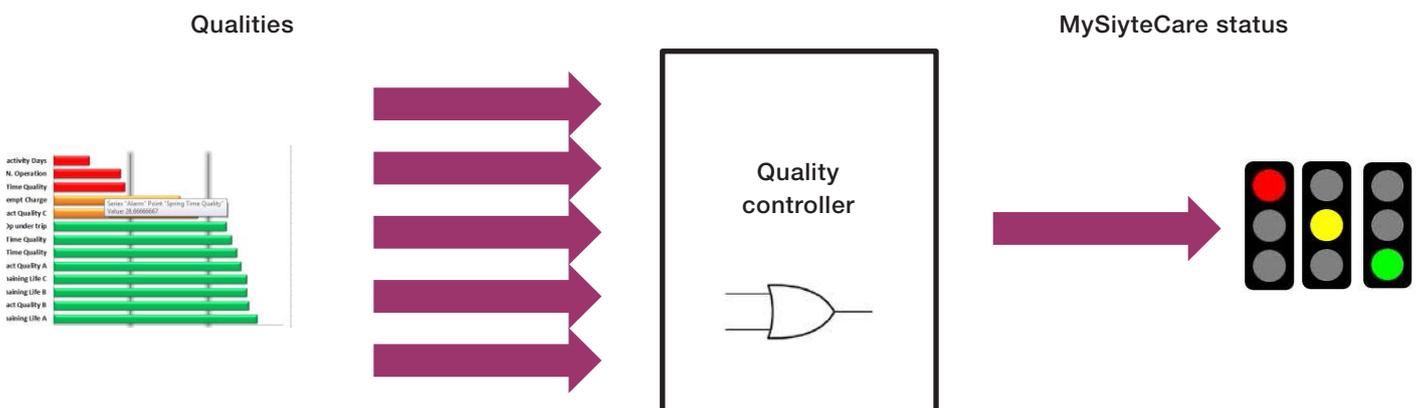


Figure 3: MySiteCare state generation

Typical Installation

Installation of MySiteCare is very easy and does not interfere with protection relays or measurements. MySiteCare can be ordered with a special kit composed of DIN-rail, terminal blocks, and corresponding cables. The current sensor is just clamped around the cables leading from the preexisting current sensor without any changes to the wiring.

The binary inputs are connected in parallel to the preexisting coils and contacts. Hot-spot temperature sensors are mounted in the busbar and cable compartments.

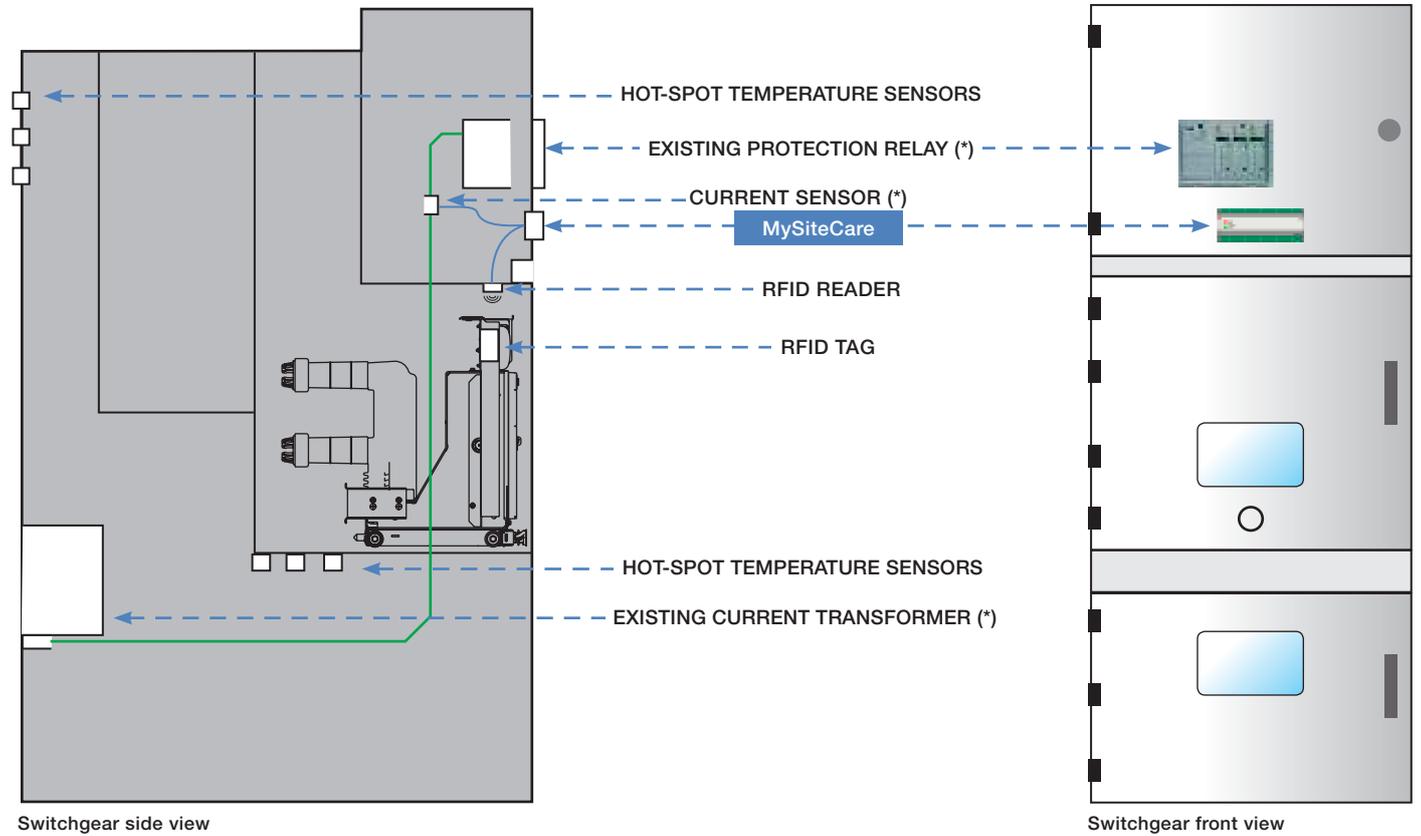


Figure 4: Example of a typical installation in a switchgear (other solutions are available)

Local LEDs

There are three LEDs on the front of MySiteCare: red, yellow and green.

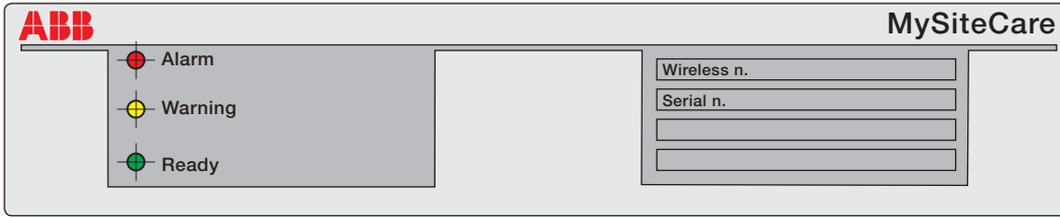


Figure 5: Front LEDs

One of these LEDs blinks every second during normal operation. MySiteCare blinks the one that indicates the state of the monitored circuit-breaker.

Table 2: LED states in the run mode

LED red	LED yellow	LED green	Description
Blinking, every second *	Off	Off	There is an active alarm on at least one quality variable
Off	Blinking, every second *	Off	There is an active warning on at least one quality variable (no alarms)
Off	Off	Blinking, every second *	All the quality variables are good (no alarms, no warnings)
Blinking, every second	Blinking, every second	Blinking, every second	License is expired

* Blinking frequency is doubled when license is close to the expiration date.

Monitoring Tool

MySiteCare Monitoring software tool allows the customer and the service personnel to monitor the state of the breaker and switchgear. The PC must be connected to the device via the USB port. Once connected, the main page shows the quality indicators and main life estimation parameters.

Every variable or parameter is colored in the usual way: red (alarm situation), yellow (warning zone) and green (normal operation).

The monitoring tool also allows verification of the identification parameters of the breaker which must correspond to the monitored equipment.

Once connected, the Monitoring Tool also allows download to the MySiteCare device a configuration previously made with the configuration tool.

The screenshot displays the MySiteCare Monitoring Tool interface. The title bar reads "MySiteCare Monitoring Tool - v.1.10.0.3". The interface is divided into several sections:

- Monitor Panel:** Includes "Disconnect", "Open", and "Events log" buttons, and the "Device" label.
- ABB Logo:** Located in the top right corner.
- Circuit breaker data:**
 - Brand: ABB
 - Model: VD4
 - Type: 121240
 - Aux Voltage: 24V DC
 - Network freq: 50 Hz
 - Serial: 1VC100000000
- Device Info:**
 - Pc port: COM9
 - Address: 1
 - Fw ver: 5.3.0.1
 - Serial Number: 100000000101
 - License: Unlimited
- Alarms/Warnings:** Shows "CB open".
- RFID Tag Info:** Operation: None, Data status: Data ok. Includes a "Read TAG" button.
- RFID Tag Reader:** Shows a green checkmark.
- Current Sensors:** Phase A, B, and C are all green with checkmarks. Spring charger is red with an 'X'.
- Binary Inputs:** CAUX, EXT W., SPRING, CLOSE, OPEN.
- Circuit breaker health condition:**
 - Travelling Open: Green
 - Travelling Close: Green
 - Contact Phase A: Green
 - Contact Phase B: Green
 - Contact Phase C: Green
 - Estimated Life Phase A: Green
 - Estimated Life Phase B: Green
 - Estimated Life Phase C: Green
 - Spring charging motor: Green
 - Fatal Attempt To Charge: Green
- Status Bar:** Shows "ALARM" (red), "WARNING" (yellow), and "NORMAL" (green) zones.
- Key Performance Indicators (KPIs):**
 - Operations: 1
 - Trip Oper.: 0
 - Inactiv. Days: 0
 - CB Temperature: 28 °C
 - Aux Voltage: 26 V
 - Last Open Time: 40 ms
 - Last Close Time: 33 ms
 - Spring charge Time: 4496 ms
- Switchgear:** External Warnings: SF6 CCC.
- Footer:** "Updating Board status..."

Figure 6: Monitoring Tool, main page

The identification parameters of the breaker can also be verified by the monitoring tool and must correspond to the monitored equipment.

Once connected, the Monitoring Tool also allows a configuration made previously with the configuration tool to be downloaded to MySiteCare.

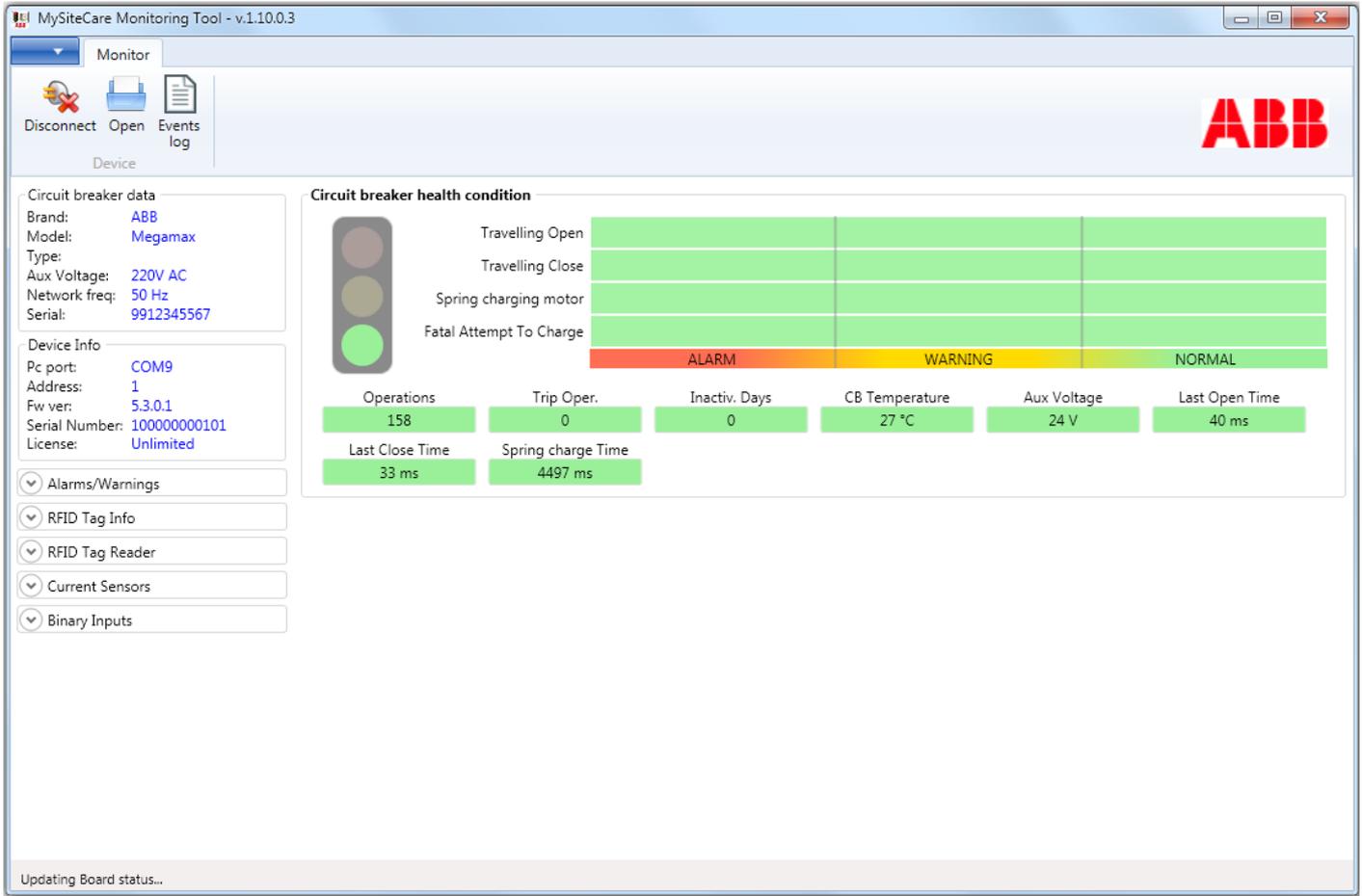


Figure 7: Monitoring Tool for LV installations, main page

Configuration Tool

The configuration software tool is intended for use by ABB service personnel only. The configuration tool allows MySiteCare to be configured, commissioned and serviced.



The Configuration tool is intended for use by ABB service personnel, who must take part in product training at the ABB service center to ensure its proper use.

The most important functions are:

- Configuration of the monitored breaker parameters
- Configuration of the serial port, the RFID and the current sensors.

The Configuration Tool can be used “on-line” when directly connected to MySiteCare, or “off-line” via the PC.

The second mode allows a configuration to be prepared in the office for later use on site.

The quality monitor function is the same as that of the Monitoring Tool.

The configuration of the breaker consists of the following topics:

- Asset identification parameters (e.g. type, model, s/n, etc.)
- Input & Sensors for binary input and sensors configuration
- Diagnostic parameters of circuit breaker (e.g. thresholds, allowed working timings, etc).
- Health indexes for circuit breaker quality variables (e.g. circuit breaker estimated life, contact quality, spring quality, etc.) and switchgear health condition alerts (e.g. unbalanced temperatures among phases)

Quality parameters and quality variables can be then modified in the corresponding configuration pages. The tool allows the configuration to be downloaded/uploaded from/into the device and a configuration to be loaded and saved from/into a file in the PC.

ABB Service personnel

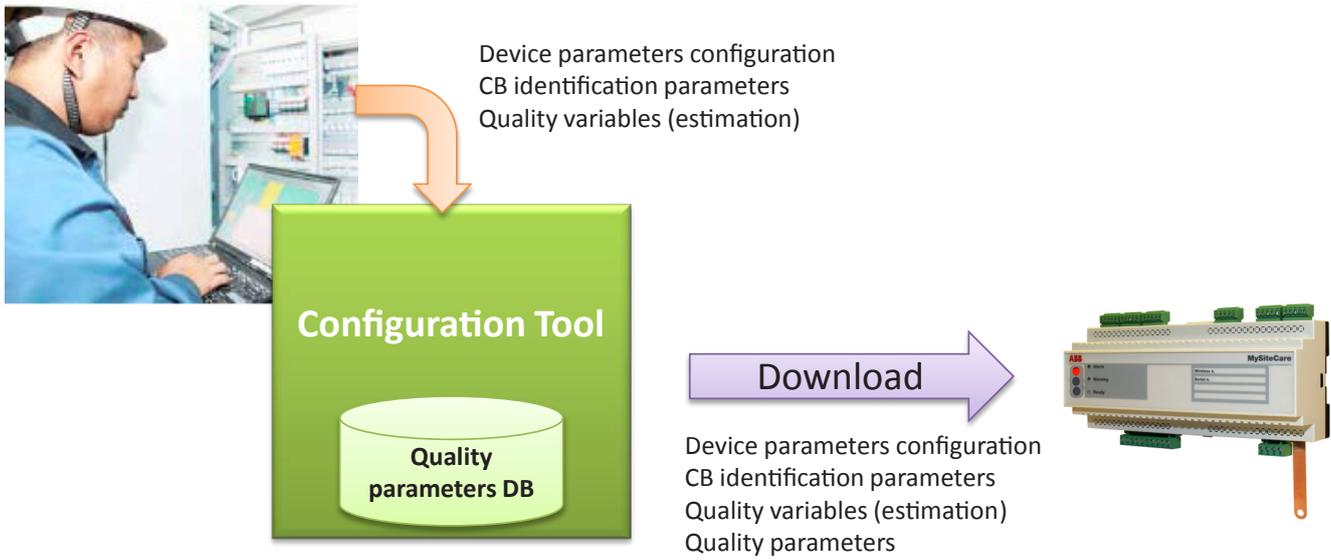


Figure 8: Configuration Tool, data flow

Asset identification	Input & Sensors	Diagnostic parameters	Health indexes
Circuit Breaker			
Serial Number	<input type="text" value="1VC100000000"/>		
Brand	<input type="text" value="ABB"/>		
Model	<input type="text" value="VD4"/>		
Type	<input type="text" value="121240"/>		
Command type	<input type="text" value="Double"/>		
Switchgear			
Auxiliary Voltage (V)	<input type="text" value="24"/>	<input type="text" value="DC"/>	
Network frequency	<input type="text" value="50 Hz"/>		
Current transformer ratio	<input type="text" value="100"/>	:	<input type="text" value="1"/>

Figure 9: Configuration Tool, asset identification page

Communication channel for monitoring

MySiteCare supports the Modbus® RTU protocol. Operational information is available through this protocol. The protocol is available via the serial channel (RS485). MySiteCare works as a slave node through this channel. This means that one Modbus® master node can query any available register via the serial channel.



Although Modbus® is a standard protocol, it is advisable to use the MyRemoteCare gateway as a self-configurable master specifically designed to integrate with MySiteCare.

MyRemoteCare Gateway acts as a Modbus® Master RTU and/or Modbus® TCP Client in order to read information from the diagnostic equipment.

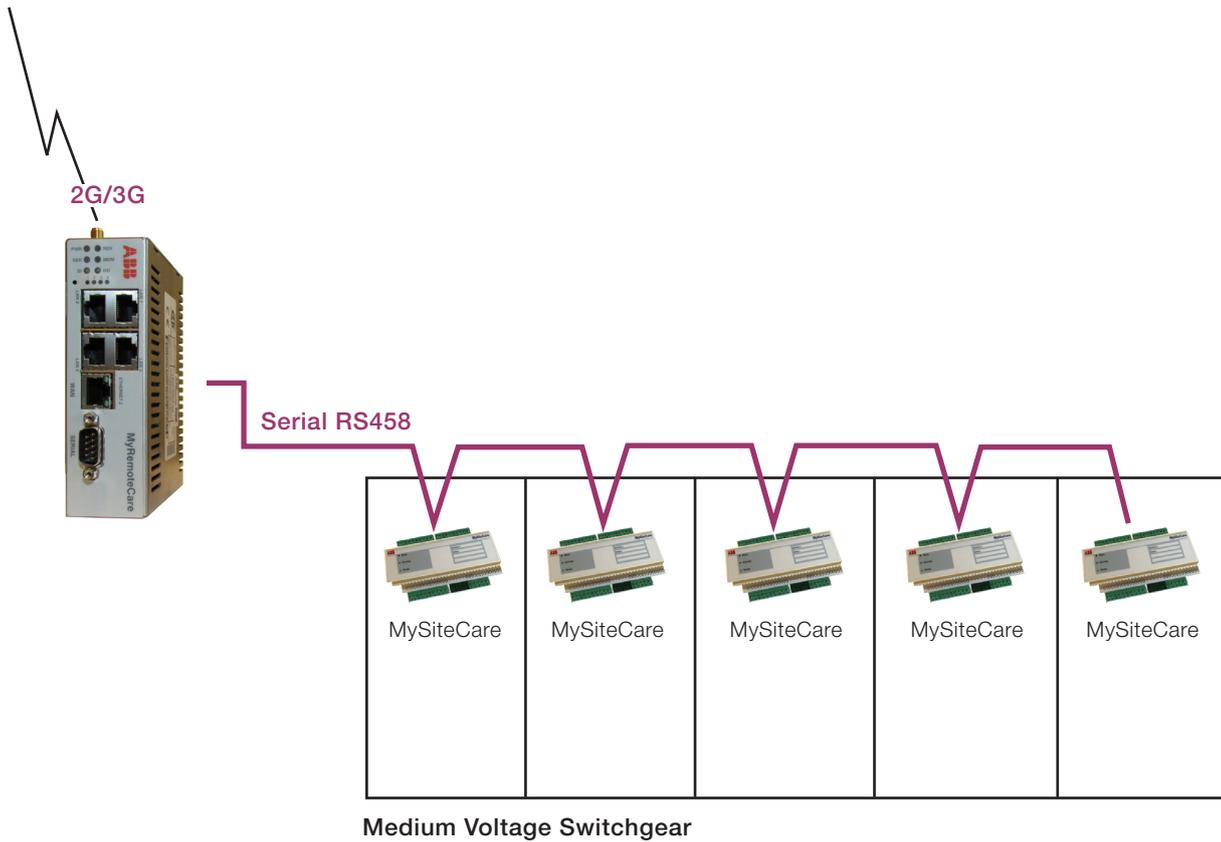


Figure 10: Example of communication architecture

4. Monitoring functions

The Monitoring Tool monitors the equipment connected to MySiteCare. The monitoring functions described here are available both via the Monitoring Tool and in the Configuration Tool.

Connecting to the device

MySiteCare has a USB port on the bottom part. This port can be used to configure and monitor the device using a PC. MySiteCare USB is compatible with 2.0 and the plug is Standard A.

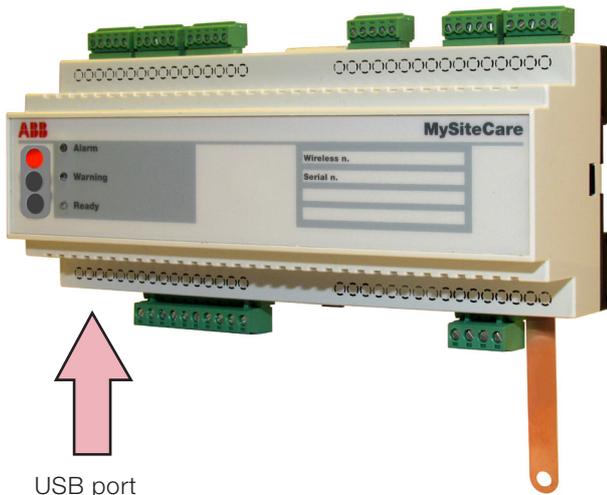


Figure 11: MySiteCare USB port

Power the device, then connect the PC USB port to the USB port of the device. Once the USB is connected and the device is powered, the Virtual COM port is automatically created in the Windows® system settings. Every program running on that PC can use this COM port as a standard one.



If the device is connected to the USB of the PC without any power supply, it still turns on, since the USB can supply enough power to the device. However, without any external power supply only the main microcontroller is turned on, but not the sensors, RFID, and binary inputs.



Figure 12: USB cable



The USB port of the PC is used with a Virtual COM driver, so it functions in Windows as a standard COM port. The number of the COM port depends on the Windows configuration and existing COM ports into the PC.

In order to check the COM port of the USB driver in the Windows system, go to Start, Computer, Manage, Device Manager, and check in Ports the COM port used by the USB driver.

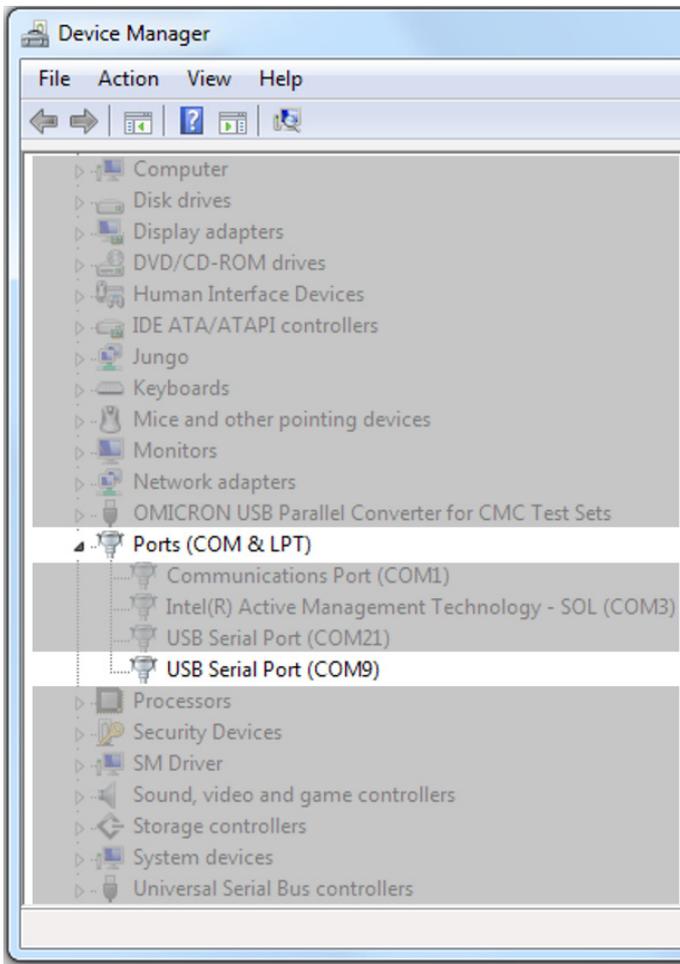


Figure 13: Device manager COM port

If the USB cable is inserted after launching the tool, it is necessary to open the port DropDown menu in order to refresh the ports list. Once the right port has been selected from the list, press the “Connect” button to continue.



Do not disconnect the USB cable, since the tool is connected. Close the tool or disconnect before disconnecting the cable.



Figure 14: MySiteCare Monitoring Tool, connection



The virtual COM port only appears in the Windows system when the PC is connected to MySiteCare and the device is turned on.

When the Monitoring tool is launched, the first window asks for the COM port to be used. Select the right port and the address. Regarding this latter, AUTO can always be used with the USB port, since the Monitoring Tool can use a special addressing mode, independent of the actual address of the device. Press Connect button to open the serial link to the device.

The close button at the top right of the window terminates the application.

Monitoring tool: main page

The monitoring main page is displayed once the connection is established. It comprises three main areas:

- The toolbar: displays the function buttons
- The monitoring area: displays the qualities and main monitored values of the circuit-breaker
- The device state area: displays the state of the device and main information

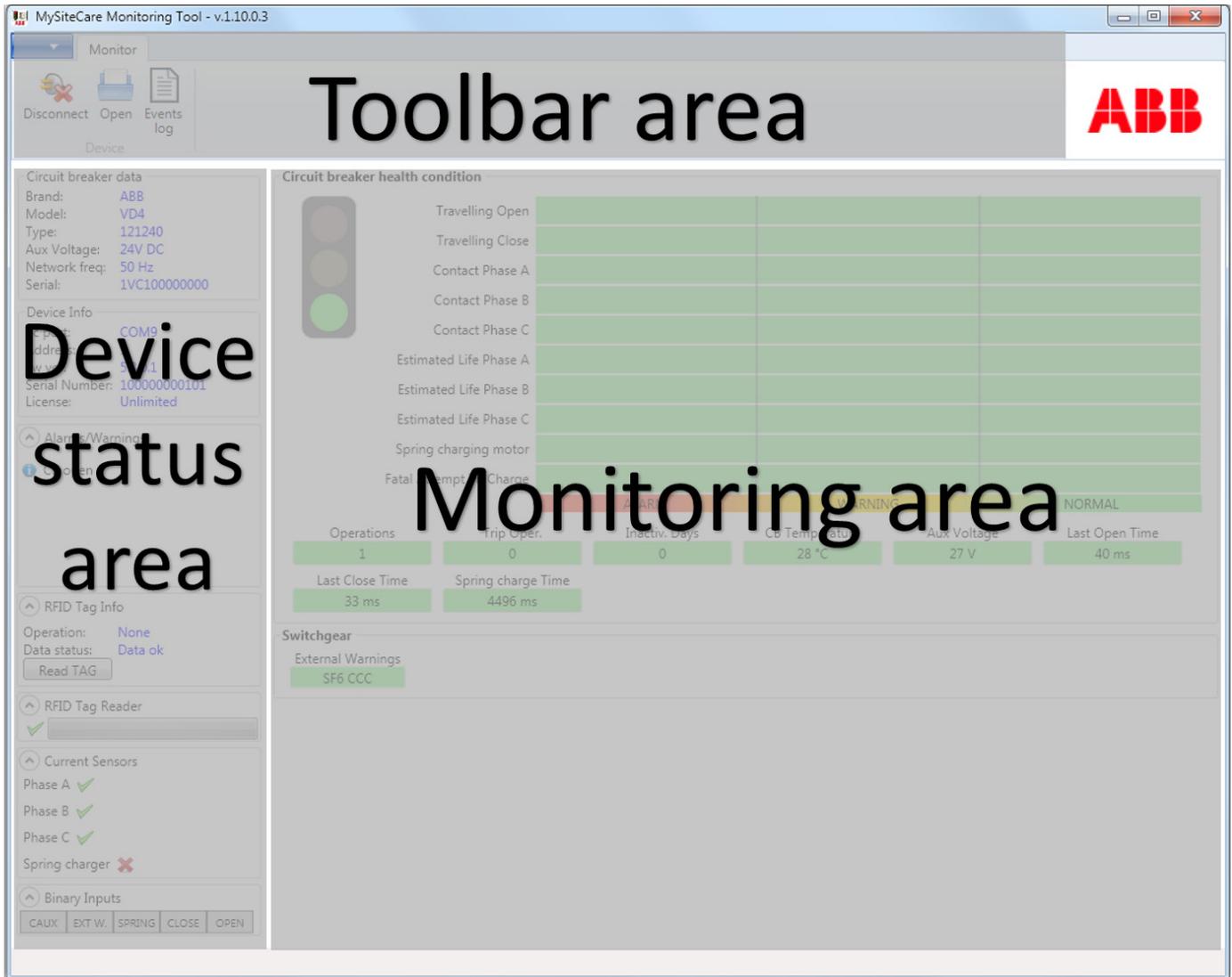


Figure 15: Main page of monitoring tool

The traffic light sums up the status of the monitored equipment. Whenever a quality indicator or absolute value becomes red, the traffic light is set to red. Otherwise, whenever a quality indicator or absolute value becomes yellow (and none are red), the traffic light is set to yellow. Otherwise, if everything is green, the traffic light is set to green.

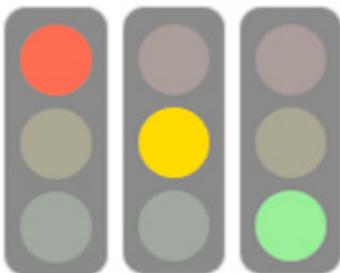


Figure 16: Traffic light. Summary of overall conditions

Monitoring tool: Toolbar area

There are three buttons on the toolbar in the monitoring page (once the device is connected):

- Disconnect button: closes the serial connection to the device and goes back to the initial page
- Open file button: used to open a configuration file stored in the PC
- Events log button: open the event log window



Figure 17: Toolbar

Monitoring tool: device state area

The state area is underneath the ABB logo. It comprises the following parts:

- Circuit breaker data
- MySiteCare device informations
- Alarms/Warnings
- RFID tag informations
- RFID tag status
- Current sensors status
- Binary inputs status

Circuit breaker data

Brand: **ABB**
Model: **VD4**
Type: **121240**
Aux Voltage: **24V DC**
Network freq: **50 Hz**
Serial: **1VC100000000**

Device Info

Pc port: **COM9**
Address: **1**
Fw ver: **5.3.0.1**
Serial Number: **100000000101**
License: **Unlimited**

Alarms/Warnings

CB open

RFID Tag Info

Operation: **None**
Data status: **Data ok**

RFID Tag Reader

Current Sensors

Phase A
Phase B
Phase C
Spring charger

Binary Inputs

Figure 18: State of the device

If configured, the circuit-breaker data contains the identification information of the equipment: brand, model, type, serial number and auxiliary voltage. This information allows the circuit-breaker to be recognized. If installed, the data are also stored in the RFID label, so as to track circuit-breaker life.

Device information includes the identification data of the MySiteCare unit: serial number and firmware version.



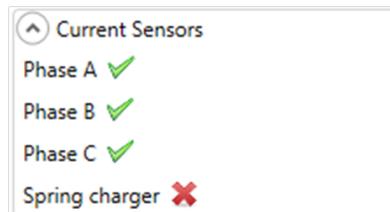
Ensure that the serial number of the monitored breaker corresponds to the one shown on MySiteCare Monitoring tool.

Contact the ABB service team if the serial numbers do not match.

The MySiteCare unit can be connected to dedicated current sensors. The configuration allows up to four sensors:

- 3 for the phases
- 1 for spring charger motor

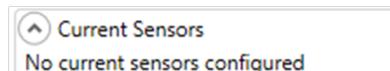
The current sensors (maximum 4) area shows the actual status of these sensors enabled on the MySiteCare unit.



Based on the configuration the sensors can be in one of the following status:

- Current sensor not connected or communication problem
- Current sensor under calibration
- Current sensor ready
- Current sensor is initializing
- Current sensor has finished initializing but there were problems (it is required a re-initialization of the current sensor)
- TSD has not been configured (only for current sensor connected to Spring charging motor)

The initial value in MySiteCare is “No current sensors configured”.



Please contact the ABB service team for further checks and analysis if an error is signalled.

RFID presence (maximum 1) is monitored by the RFID state icon if configured. The current sensor icons are:

- Configured and running ()
- Configured but not working properly or not found or not connected ()
- Not configured (blank or)

Monitoring tool: circuit-breaker replacement

Once MySiteCare is configured, it monitors the breakers and saves any changes in its flash memory and RFID tag. Let's consider the scenario when a circuit breaker has to be replaced with a spare or moved in another panel.

MySiteCare recognizes this situation by means of the RFID: the new breaker has its own RFID tag, which contains identification and quality data.

As shown in Figure 18, there can be 2 different situations:

- The brand, model, type of the new CB are the same as the previous one: in this case MySiteCare recognizes the diagnostic parameters of this breaker and can continue the analysis, starting from the new RFID tag data
- The brand or model or type of the new CB do not correspond to the previous one: in this case MySiteCare is unable to continue with the analysis and stops, waiting for a new configuration. The operator must connect to the device with the PC and download a new configuration.

The MySiteCare unit reads the RFID tag every hour. To anticipate this operation, it can be forced with the monitoring tool. Press the "Read tag" button in the CB data frame. After few seconds (the tag is quite slow) the CB information is updated.

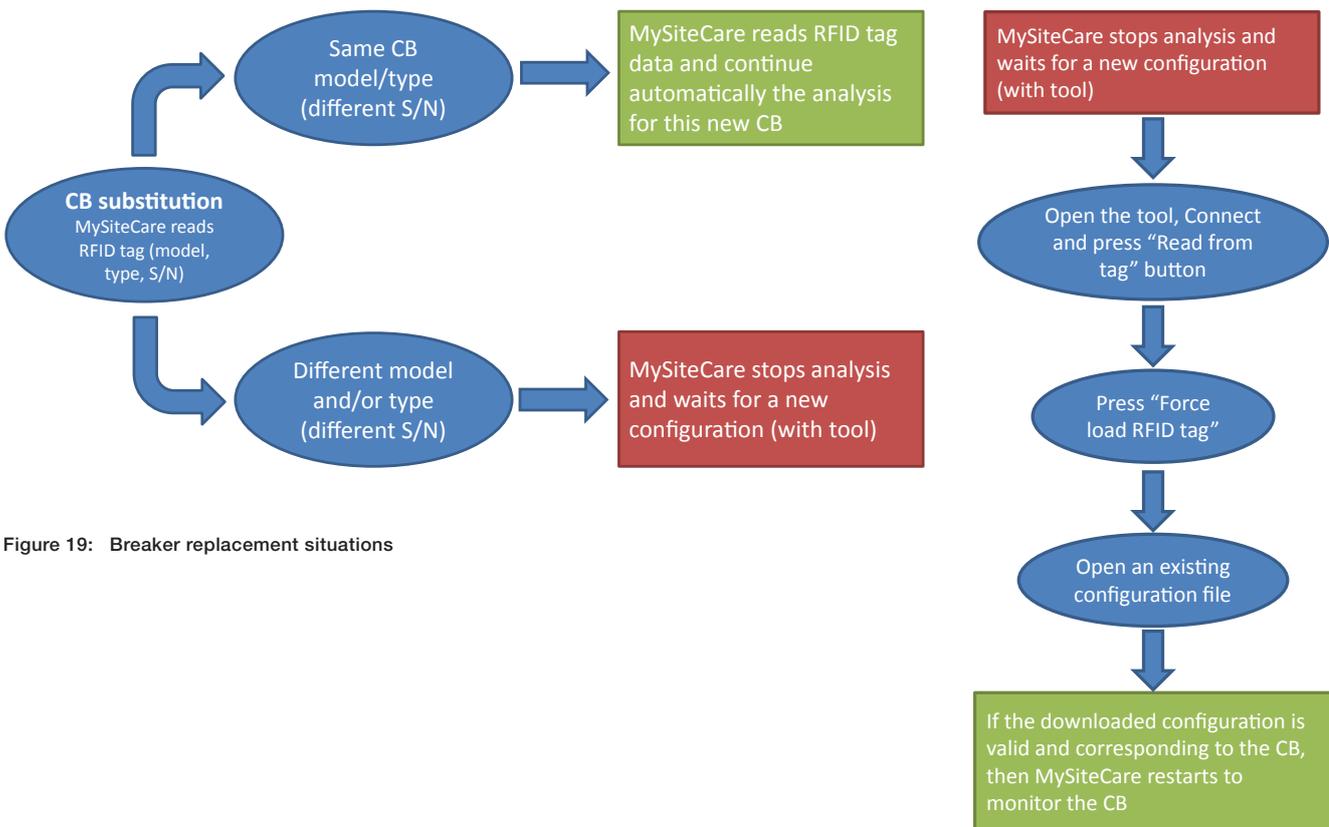


Figure 19: Breaker replacement situations

Figure 20: CB replacement with another type, workflow

The tool only accepts a valid configuration which corresponds to the new RFID tag data.

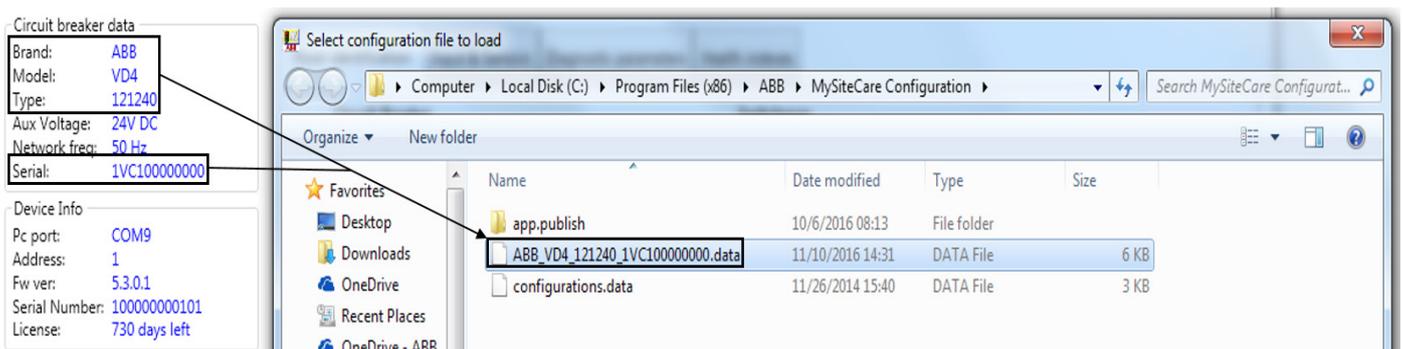


Figure 21: Monitoring tool: downloading an existing configuration file

Monitoring the circuit-breaker

The monitoring area consists of two parts:

- Bar graph with the main estimated quality variables and traffic light representing the overall condition
- Measured values



Figure 22: Monitoring area

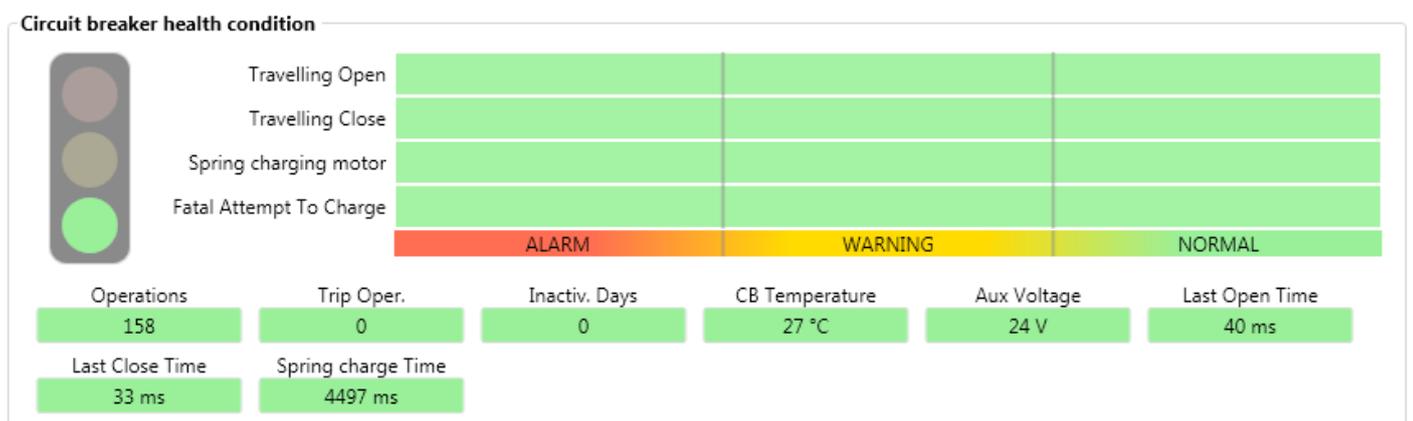


Figure 23: Monitoring area when no current sensors are used (e.g. LV breaker monitoring or MV/LV contactors)

All these values can be in the following status:

- Normal (green) zone: correct operation. No maintenance required
- Warning (yellow) zone: the diagnostic unit has found a bad event, which could mean a higher probability of a fault in the equipment
- Alarm (red) zone: the diagnostic unit has logged a really bad event, which means that the equipment must be checked and might require maintenance

The quality indicators are shown by bar graphs, which decrease during the life of the equipment, starting from green (full bar) to alarm zone (empty bar). The measured values could be in the red, yellow or green areas depending on their actual state.

Downloading of a valid configuration

The monitoring tool is able to download a valid configuration generated by the ABB service personnel into the MySiteCare unit.

Once downloading has been performed, the device verifies the data and automatically sets to the run mode with the new configuration. Contact the ABB service team for further information if errors occur during this operation.



Download a new configuration into MySiteCare unit if and only if it matches the monitored equipment (circuit-breaker). For instance, if the circuit-breaker must be replaced, download the pre-generated configuration (by ABB service team) which corresponds to that new equipment.

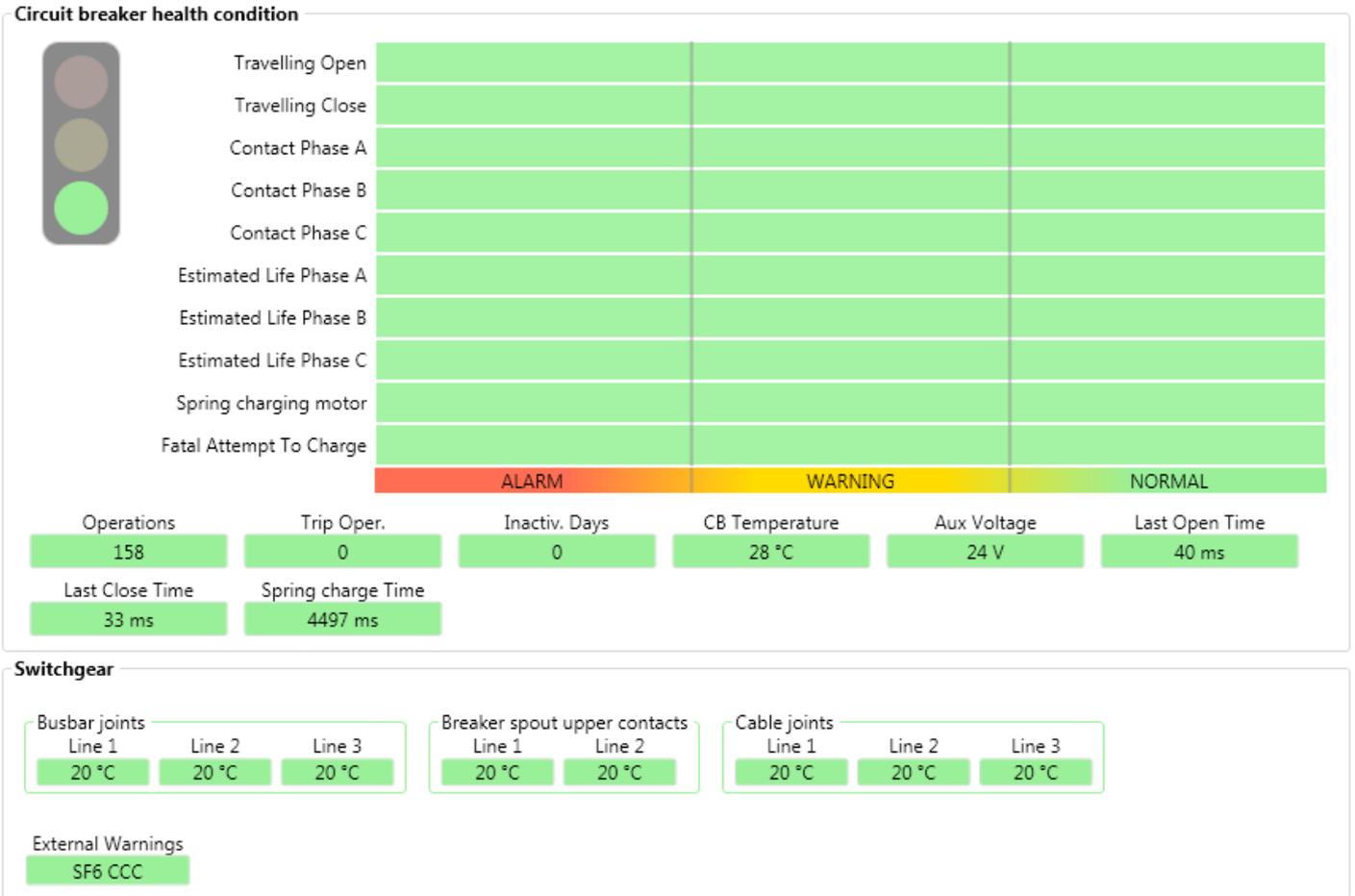


Figure 24: Quality warning or alarm maintenance

Maintenance

If the yellow or red LEDs on the MySiteCare unit come on, check the Monitoring tool to locate the fault.



Figure 25: MySiteCare LEDs

There are three different events that can change the state of the traffic light:

- One or more of the quality indicators go into the warning or alarm area
- One or more of the measured values go into the warning or alarm area
- One or more of the sensors connected to MySiteCare units are not found or are not working properly

Contact the ABB service personnel for further information if the quality indicators move to the warning or alarm areas. If the measured values are involved, check the actions in Table 3.

Table 3: Monitored values, maintenance actions

Warning or alarm	Action
Temperature	<p>Check the temperature of the breaker compartment. Make sure that the operating conditions are correct.</p> <p>Contact the ABB service team for further information and checks if the measured temperature is correct, and the alarm or warning remains active.</p>
Auxiliary voltage	<p>Check the auxiliary voltage of the device, which should be the same as the one used for the circuit-breaker's auxiliary equipment. It is usually between 85% to 110% of the rated auxiliary voltage.</p> <p>Check the circuit-breaker data sheet.</p> <p>Contact the ABB service team for further information and checks if the measured auxiliary voltage is correct and the alarm or warning remains active.</p>
Inactivity days	<p>The unit checks the number of days since the last operation (open or close). It is now time to perform circuit-breaker maintenance in accordance with the circuit-breaker manufacturer's recommendations.</p> <p>Contact the ABB service team for further information and checks if the alarm or warning remains active, even after maintenance.</p>
Operation counter	<p>The number of operations exceeds the value established by the breaker manufacturer.</p> <p>The breaker requires maintenance, as indicated in the manufacturer's recommendations.</p>
Operations under trip counter	<p>The number of operations under trip exceeds the value established by the breaker manufacturer.</p> <p>The breaker requires maintenance, as indicated in the manufacturer's recommendations.</p>
Last operation timings (open, close, spring)	<p>Check the functionality of the circuit breaker, and contact the ABB service team for further information</p>



The MySiteCare unit must be informed whenever the equipment is serviced. Only ABB service personnel are allowed to update MySiteCare information with the proper tool.

Monitoring Switchgear temperatures

If the Temperature data card is enabled the following Switchgear temperatures view is visible in the bottom of the Monitoring area:



Figure 26: Temperatures monitoring

In this view are shown all the temperatures read from the infrared temperature sensor, which are installed as in the following image:

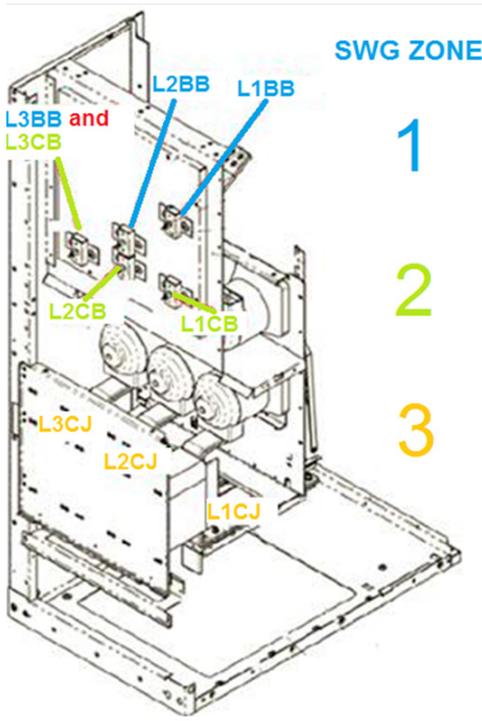


Figure 27: Infrared temperature sensor installation

Table 4: Infrared temperature sensor installation

Channel	Sensor name	Shortened name	SWG zone
1	L1 busbar joints	L1BB	1
2	L2 busbar joints	L2BB	1
3	L3 busbar joints and L3 breaker spout	L3BB and L3CB	1 and 2
4	L1 breaker spout	L1CB	2
5	L2 breaker spout	L2CB	2
6	L1 cable joints	L1CJ	3
7	L2 cable joints	L2CJ	3
8	L3 cable joints	L3CJ	3
9	Data card temperature	DCT	/

The temperature values are retrieved every 60 seconds.

MySiteCare monitors the hot-spot temperatures and compares the real-time values with two differential threshold levels (warning and alarm) for each of the three switchgear zones.

- if the delta of the temperature values in the same SWG zone are greater or equal of alarm threshold, the greatest temperature value becomes red
- if the delta of the temperature values in the same SWG zone are greater or equal of warning threshold but smaller than alarm threshold, the greatest temperature value becomes yellow



Figure 28: Switchgear with warnings and alarms

If the temperature data card is unavailable the Switchgear temperature becomes as the following image:

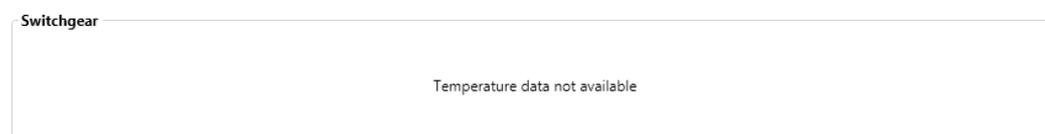


Figure 29: Temperature data card unavailable

Monitoring external warnings

It is possible to connect TRIP binary input to external warning inputs in order to monitor:

- SF6 level
- Control Coil Continuity
- Internal fuse alarm
- Internal Relay Fault

The screenshot displays the 'MySiteCare Monitoring Tool - v.1.10.0.3' interface. The main window is titled 'Monitor' and features the ABB logo in the top right corner. The interface is divided into several sections:

- Device Information:**
 - Circuit breaker data:** Brand: ABB, Model: VD4, Type: 121240, Aux Voltage: 24V DC, Network freq: 50 Hz, Serial: 1VC100000000.
 - Device Info:** Pc port: COM9, Address: 1, Fw ver: 5.3.0.1, Serial Number: 100000000101, License: Unlimited.
- Alarms/Warnings:** Shows 'CB open'.
- RFID Tag Info:** Operation: None, Data status: Data ok.
- RFID Tag Reader:** Status:
- Current Sensors:** Phase A: , Phase B: , Phase C: , Spring charger: (with a red 'x' icon).
- Binary Inputs:** CAUX, EXT W., SPRING, CLOSE, OPEN.

The central 'Circuit breaker health condition' section features a traffic light indicator (green) and a table of parameters:

Parameter	Alarm	Warning	Normal
Travelling Open	Green	Green	Green
Travelling Close	Green	Green	Green
Contact Phase A	Green	Green	Green
Contact Phase B	Green	Green	Green
Contact Phase C	Green	Green	Green
Estimated Life Phase A	Green	Green	Green
Estimated Life Phase B	Green	Green	Green
Estimated Life Phase C	Green	Green	Green
Spring charging motor	Green	Green	Green
Fatal Attempt To Charge	Red	Yellow	Green

Below the table, a summary of key metrics is shown:

Metric	Value
Operations	1
Trip Oper.	0
Inactiv. Days	0
CB Temperature	22 °C
Aux Voltage	23 V
Last Open Time	40 ms
Last Close Time	33 ms
Spring charge Time	4495 ms

The 'Switchgear' section shows 'External Warnings' with 'SF6 CCC' highlighted in green.

At the bottom, a status bar indicates 'Updating Quality...'.

Figure 30: Monitoring page with external warning status (example with SF6 pressure and coil continuity inputs)

MySiteCare LEDs

The behavior of the red, yellow and green MySiteCare LEDs is described below. When MySiteCare is configured and working properly, the LEDs show the circuit-breaker's condition. In case of any other LEDs behavior, contact ABB support.

Table 5: LEDs behavior

LEDs status	MySiteCare unit	RFID transmitter	Circuit breaker	License
  	Not powered-up or damaged	-	-	-
  	Properly configured and running properly	Ok if configured	Normal condition	Unlimited or far from expiration date
  	Properly configured and running properly	Ok if configured	Warning condition	Unlimited or far from expiration date
  	Properly configured and running properly	Ok if configured	Alarm condition	Unlimited or far from expiration date
  	Properly configured and running properly	Ok if configured	Normal condition	Near to expiration date
  	Properly configured and running properly	Ok if configured	Warning condition	Near to expiration date
  	Properly configured and running properly	Ok if configured	Alarm condition	Near to expiration date
  	-	-	-	Expired

Legend:



5. License uploader tool

MySiteCare is designed to manage the license feature.

The license could be:

- Unlimited (MySiteCare has no time restriction)
- With expiration date (MySiteCare has an expiration date after that it doesn't show the circuit breaker conditions)

In this case the MySiteCare could:

- Stop to output data
- Continue to output data

Depending on the setting into the license

If the license present in MySiteCare has an expiration date could be 3 situations:

- Far from expiration date: MySiteCare works as usual and led blinking is normal
- Close to the expiration date (MySiteCare has a new parameters "Pre-alarm days before deadline" which specify how many days before the expiration date it is close to the expiration date): MySiteCare works as usual but led blinking is fast
- After the expiration date: MySiteCare doesn't show the circuit breaker conditions and all leds blink In order to set a new license it is required to upload a license file to the MySiteCare using the License tool.

In Home press "License uploader" button to open license uploader window:

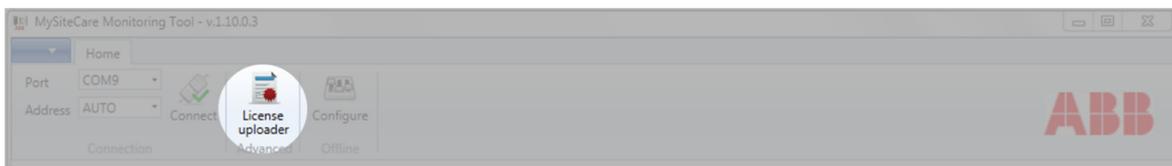


Figure 31: License uploader button

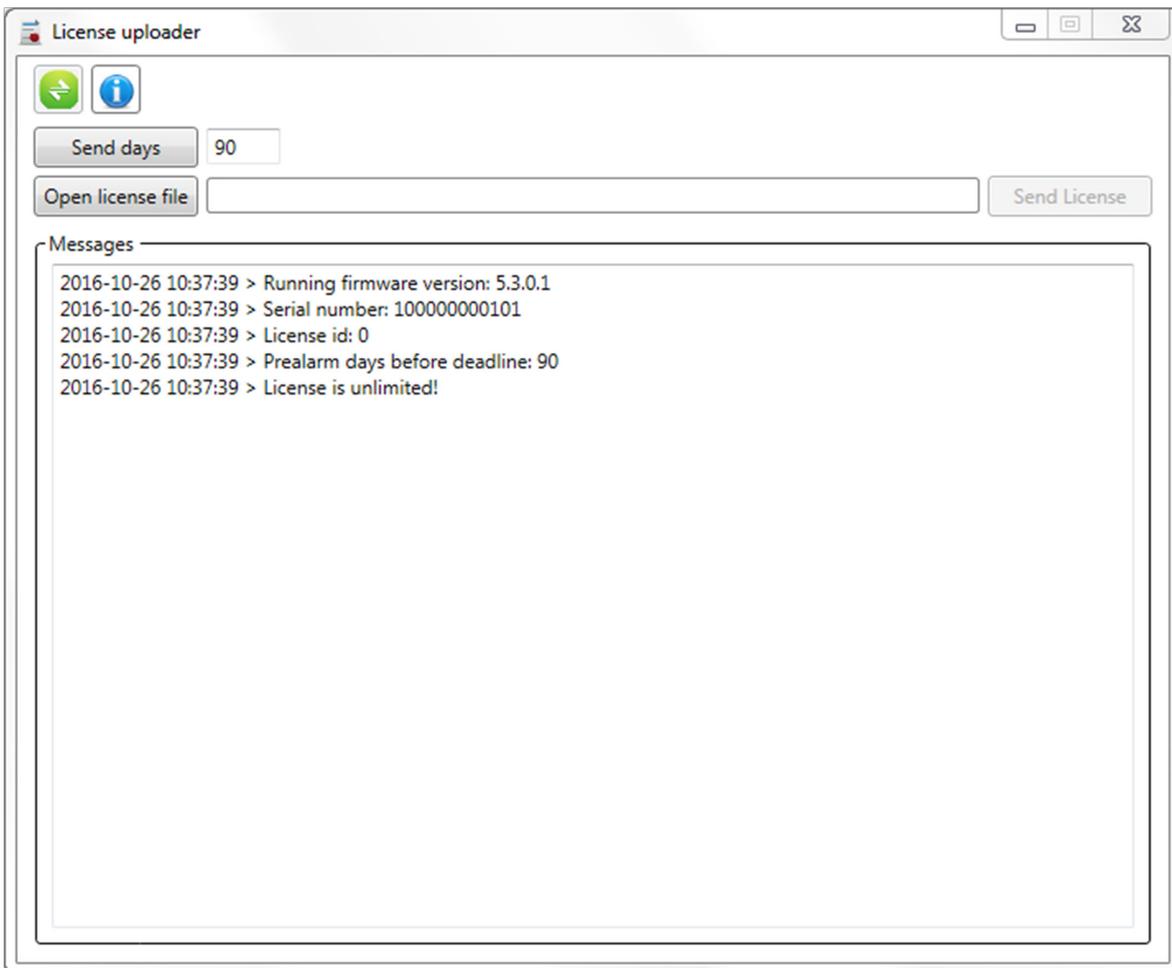
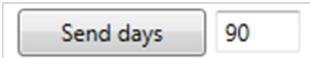


Figure 32: License uploader window

In the “Message” section are showed some useful information such as Running firmware version, Serial number, license id, Pre-alarm days before deadline, Number of remaining days.

It is possible to change the “Pre-alarm days before deadline”:



- Insert the number of days of pre-alarm
- Press “Send days” button

In order to load a new license it is required to open a license file:

- Press “Open license file”
- Select the license file and press Open

After that a license file is loaded in “Messages” section are showed some useful information regarding the uploaded file in order to check if the file is correct or not.

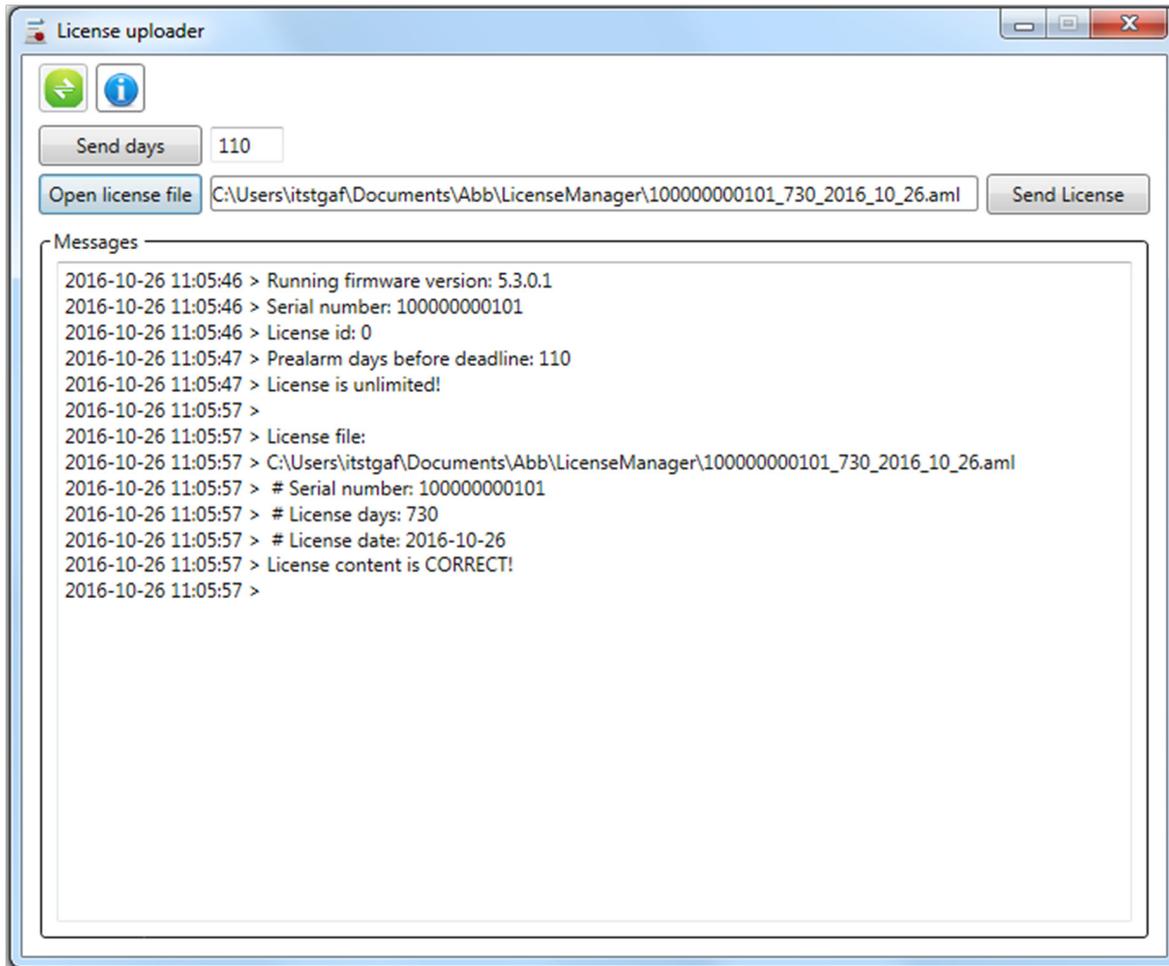


Figure 33: Correct license file opened

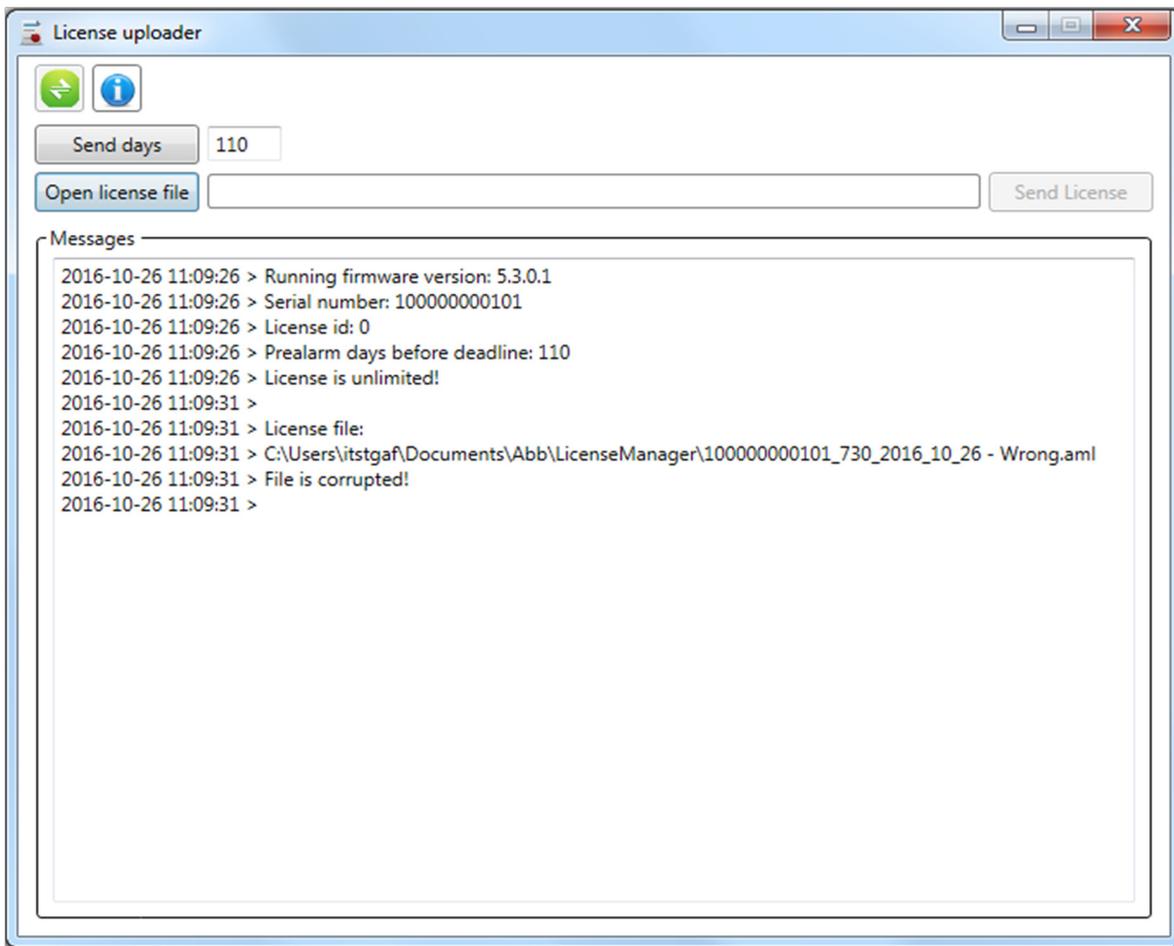


Figure 34: Corrupted license file opened

If the file is not corrupted is possible to send file to MySiteCare by pressing "Send license" button.

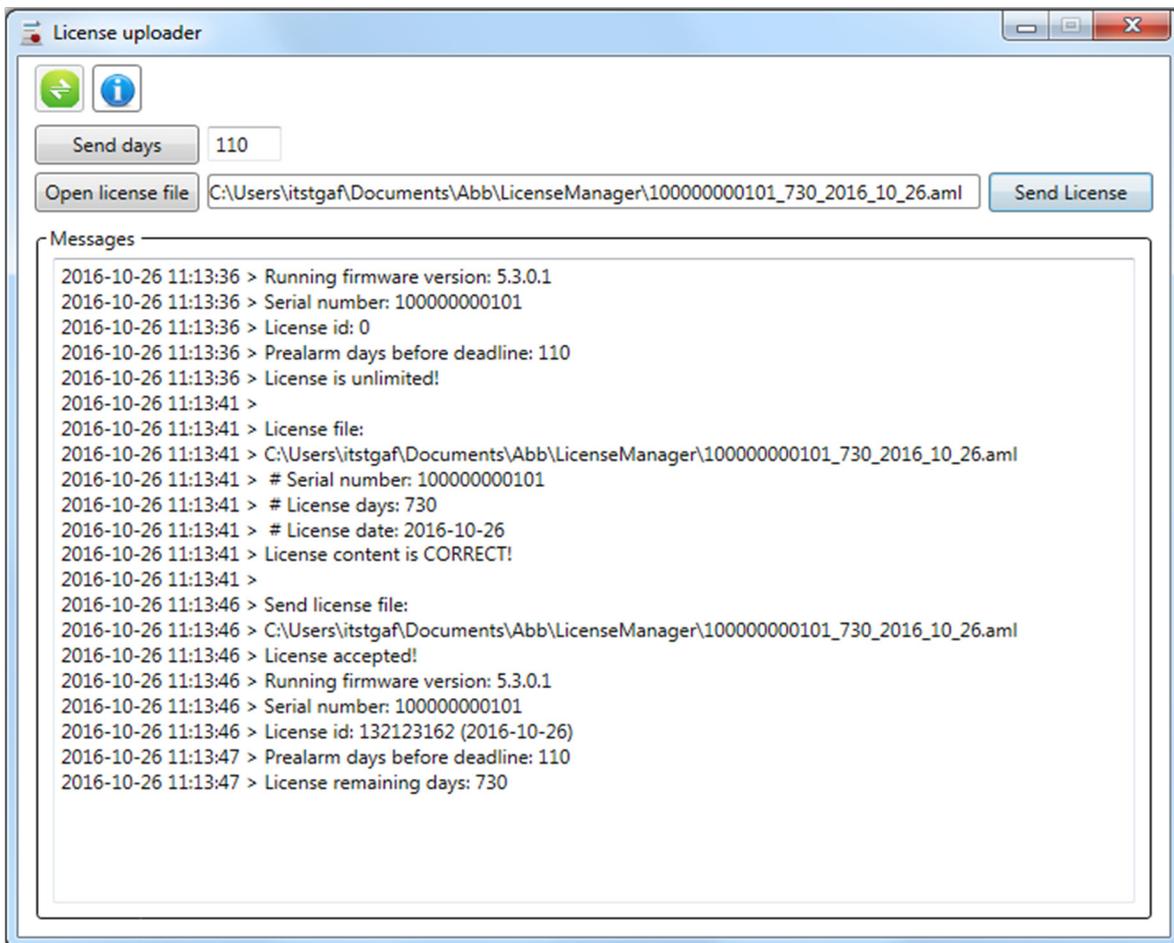


Figure 35: License file correctly sent

A license file is created for a specific MySiteCare (by its unique Serial number) and can be uploaded only one time, so the license could be rejected by the MySiteCare.

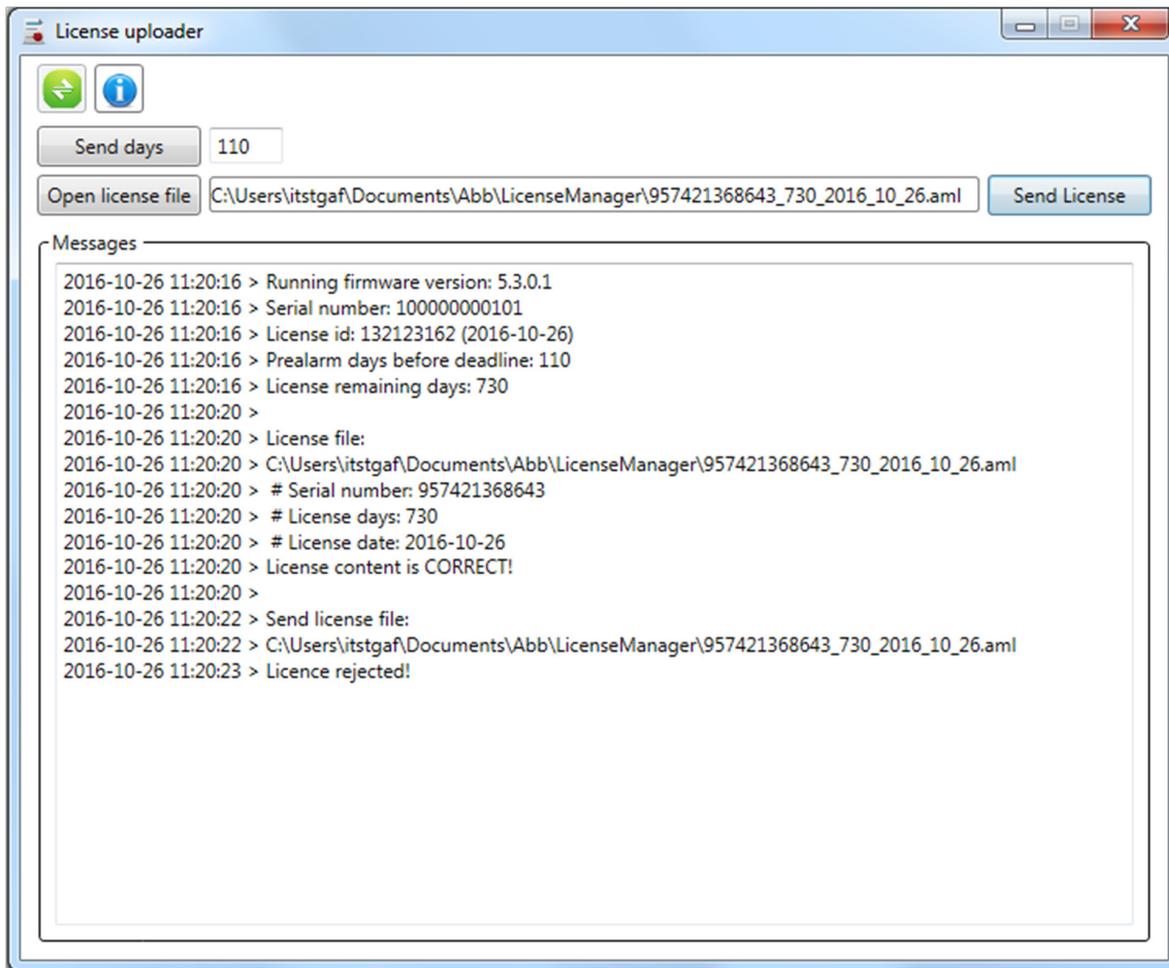


Figure 36: License file rejected by MySiteCare

In top of the window there are 2 buttons:

-  to require license info to MySiteCare
-  to reconnect to the MySiteCare in case the connection is lost

6. Troubleshooting

USB Communication error

Check the USB cable and the serial USB COM port into the Windows® System. The COM driver may have been corrupted. Reinstall the tool.

USB cable 3.0 may not be compatible with the MySiteCare USB port.

Contact the ABB service team if the fault persists.

Equipment not found or fails to correspond

If the circuit-breaker data is unavailable, or fails to match the device configuration (stored into its flash memory) the diagnostic unit waits for configuration.

Current Sensor not found

Error is indicated if at least one of the current sensor is configured but not found.

Each sensor has 3 LEDs, which represent the measured phase: L1, L2, or L3. Error appears if more sensors are measuring the same phase. In this case contact ABB service personnel.

If the sensor LEDs are all off, check the cable connecting the device and the sensor. Contact the ABB service personnel if the fault persists.

If the sensor LEDs are all blinking, contact the ABB service personnel, since the sensor may not be properly configured or not working properly.

RFID not found

If the monitoring tool indicates that the RFID is not working or not found, check the connection cable between MySiteCare unit and the RFID. Contact ABB service personnel if the fault persists.

7. System requirements

Hardware requirements

Hardware	Minimum	Recommended
CPU	1 GHz	>1 GHz
RAM	1 GB	>1 GB
Free hard disk space	100 MB	>100 MB
Monitor	1024 x 768	1280 x 1024
USB port	2.0 or compatible	2.0 or compatible

Supported operating systems

Operating System	Version
Microsoft Windows XP Professional 32-bit	SP3 or later release
Microsoft Windows Vista Professional 32-bit	SP2 or later release
Microsoft Windows 7 Professional 32-bit	
Microsoft Windows 7 Professional 64-bit	

Required software and libraries

Required software	Version
Microsoft .NET framework	4.5 or later
FTDI VCP (Virtual COM) driver for USB. It is also provided in the MySiteCare tools setup program.	2.08.24

.NET Framework technology overview

The .NET Framework (pronounced dot net) is a software framework developed by Microsoft that runs primarily on Microsoft Windows. It includes a large library and provides language interoperability (each language can use code written in other languages) across several programming languages. Programs written for the .NET Framework execute in a software environment (as opposed to a hardware environment), known as the Common Language Runtime (CLR), an application virtual machine that provides important services such as security, memory management, and exception handling. The class library and the CLR together constitute the .NET Framework. The .NET Framework's Base Class Library provides user interface, data access, database connectivity, cryptography, web application development, numeric algorithms, and network communications. Programmers produce software by combining their own source code with the .NET Framework and other libraries. The .NET Framework is intended to be used by most new applications created for the Windows platform. Microsoft also produces a popular integrated development environment largely for .NET software called Visual Studio. The .NET framework 4.5 was released on August 2012 and it is the actual recommendation from Microsoft.

USB virtual COM port driver

FTDI (Future Technology Devices International Limited) Virtual COM port (VCP) drivers cause the USB device to appear as an additional COM port available to the PC. Application software can access the USB device in the same way as it would access a standard COM port.

The latest tested driver version for Windows 32/64 bit is 2.08.24 (released on April 2012).

8. Software installation

Monitoring Tool

Launch the setup program, and follow the instructions. During the setup, you may be asked to install the Microsoft .Net Framework 4 (an Internet connection is required in order to automatically download it) and the virtual COM driver for USB. You must accept the installation of all the required libraries and software during the MySiteCare setup.

In order to install the tool, you need to be administrator of the PC or able to install the driver and the software files into the proper folders (otherwise launch it as “run as administrator”).



In order to properly install the tool and the USB driver, the logged windows user needs administrative privileges.

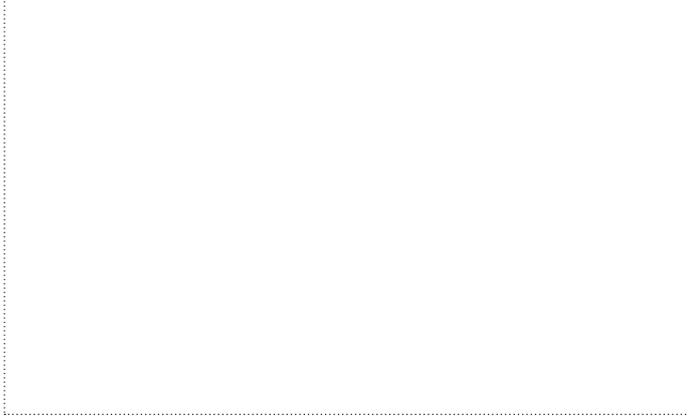
How to remove the installed Tool

Use the standard Windows® method to uninstall programs from the control panel.

9. Glossary

ARP	Address Resolution Protocol
CAT 5	A twisted pair cable type designed for high signal integrity
CPU	Central processing unit
CT	Current transformer
DHCP	Dynamic Host Configuration Protocol
EMC	Electromagnetic compatibility
Ethernet	A standard for connecting a family of frame-based computer networking technologies into a LAN
Firmware	System software or hardware that has been written and stored in a device's memory that controls the device
HMI	Human-machine interface
HW	Hardware
IEC	International Electrotechnical Commission
IEC 61850	International standard for substation communication and modeling
IED	Intelligent electronic device
IP	Internet Protocol
IP address	A set of numbers between 0 and 255, separated by periods. Each server connected to the Internet is assigned a unique IP address that specifies the location for the IP protocol.
LCD	Liquid crystal display
LCP	Liquid crystal polymer
LED	Light-emitting diode
LHMI	Local human-machine interface
Modbus	A serial communication protocol developed by the Modicon company in 1979. Originally used for communication in PLCs and RTU devices.
Modbus RTU	Modbus link mode. Character length 11 bits.
Modbus TCP/IP	Modbus RTU protocol which uses TCP/IP and Ethernet to carry data between devices
PA	Polyamide
PBT	Polybutylene terephthalate
PC	Personal computer; Polycarbonate
PCM600	Protection and Control IED Manager
PIN	Personal Identification Number
RJ-45	Galvanic connector type
RoHS	Restriction to the use of certain hazardous substances in electrical and electronic equipment
RS485	Serial link according to EIA standard RS485
STP	Shielded twisted-pair
TSD	Total Spectrum Distortion
SW	Software
SWG	Switchgear
TCP/IP	Transmission Control Protocol/Internet Protocol
VT	Voltage transformer
WAN	Wide Area network
WHMI	Web human-machine interface

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