

# Diagnose Controller Quick Installation Manual





**(en) Electric current! Danger to life!**

Installation, commissioning and maintenance work must be carried out by qualified personnel only.

**(de) Lebensgefahr durch elektrischen Strom!**

Arbeiten bzw. Montage an diesem Produkt darf nur von Elektrofachkräften und elektrotechnisch unterwiesenen Personen ausgeführt werden.

**(fr) Tension électrique dangereuse!**

L'installation de l'appareil, ainsi que tous les travaux effectués sur celui-ci, doivent être réalisés par un électricien qualifié ou par un personnel spécialement formé.

**(es) ¡Corriente eléctrica! ¡Peligro de muerte!**

La instalación del dispositivo, así como todos los trabajos en él, deben ser realizados por un electricista calificado o por personal especialmente capacitado.

**(it) Tensione elettrica: Pericolo di morte!**

L'installazione e il lavoro sul dispositivo devono essere effettuati da un elettricista qualificato o da personale specializzato.

**(zh) 触电危险!**

設備的安裝，以及所有工作，必須由合格的電工或經過專門培訓的人員完成。

**(ru) Электрический ток! Опасно для жизни!**

Установка и эксплуатация устройства должны выполняться квалифицированным электриком или специально обученным персоналом.

**(nl) Levensgevaar door elektrische stroom!**

Installatie van het apparaat en alle werkzaamheden eraan, mogen uitsluitend door een gekwalificeerd elektricien of speciaal opgeleid vakpersoneel worden uitgevoerd.

**(da) Livsfare på grund af elektrisk strøm!**

Arbejde i forbindelse med installation, opstart og vedligehold må kun udføres af kvalificeret personale.

**(el) Προσοχή, κίνδυνος ηλεκτροπληξίας!**

Η εγκατάσταση, εκκίνηση και συντήρηση θα πρέπει να πραγματοποιείται μόνο από εξειδικευμένο προσωπικό.

**(pt) Perigo de vida devido a corrente eléctrica!**

A instalação do dispositivo, bem como todos os trabalhos devem ser realizados por um electricista qualificado ou por pessoal especialmente formado.

**(sv) Livsfara genom elektrisk ström!**

Installation, idrifttagande och underhållsarbete får endast utföras av behörig personal.

**(fi) Hengenvaarallinen jännite!**

Laitteen asennus ja käyttö ainoastaan sähköasentajan tai siihen perehdytetyn henkilön toimesta.

**(cs) Nebezpečí úrazu elektrickým proudem!**

Instalace zařízení a veškeré práce na něm musí být provedeny kvalifikovaným elektrikářem nebo speciálně vyškoleným personálem.

**(et) Eluoltlik! Elektrilöögioht!**

Paigaldus-, kasutus- ja hooldustööid peab läbi viima ainult kvalifitseeritud personal.

**(hu) Életveszély az elektromos áram révén!**

Az eszköz felszerelését, valamint az ehhez kapcsolódó összes munkát szakképzett villanyszerelővel vagy szakképzett személyzetnek kell elvégeznie.

**(lv) Elektriskā strāva apdraud dzīvību!**

Uzstādīšana, nodošana ekspluatācijā un apkopes darbi jāveic tikai kvalificētam personālam.

**(lt) Pavojus gyvybei dėl elektros srovės!**

Jrėngimo, paleidimo ir techninės priežiūros darbus turi atlikti tik kvalifikuotas personalas.

**(pl) Porażenie prądem elektrycznym stanowi zagrożenie dla życia!**

Instalacja urządzeń, jak również prace nad nimi, muszą być wykonywane przez wykwalifikowanego elektryka lub specjalnie wyszkolony personel.

**(sl) Življenjska nevarnost zaradi električnega toka!**

Dela montaže, zagona in vzdrževanja morajo izvajati samo usposobljeno osebeje.

**(sk) Nebezpečnosť ohrozenia života elektrickým prúdom!**

Instalácia prístroja, ako aj všetky práce na ňom musia byť vykonané kvalifikovaným elektrotechnikom alebo špeciálne vyškoleným personálom.

**(bg) Опасност за живота от електрически ток!**

Инсталирането на устройството, както и всяка работа по него, трябва да бъде извършвано от квалифициран електротехник или от специално обучен персонал.

**(ro) Atenție! Pericol electric!**

Montajul și lucrul cu acest aparat trebuie făcute numai de un electrician calificat sau de personal tehnic specializat.

**(hr) Opasnost po život uslijed električne struje!**

Radove ugradnje, puštanja u pogon i održavanja mora vršiti samo kvalificirano osoblje.

**(tr) Elektrik akımı! Hayati tehlike!**

Bu ürünün çalıştırılması veya kurulumu sadece elektroteknik eğitimleri almış olan ehliyetli elektrikçiler ve kişiler tarafından yapılmalıdır.

**(sr) Električna struja! Opasnost po život!**

Arbeiten bzw. Montage und diessem Produkt darf od Elektrofachkraften und elektrotechnischen unterwiesenen Personen ausgeführt werden.

**(no) Elektrisk strøm! Livsfare!**

Installasjon av enheten, samt arbeid på den, skal kun utføres av kvalifisert personell, eller av de som er spesielt opplært til dette arbeidet.

**(uk) Електричний струм! Небезпечно для життя!**

Встановлення пристрою, так само, як і робота з ним, повинні виконуватись кваліфікованим електриком або персоналом, що пройшов спеціальну підготовку.

**(ar) تيار الكهربائي! خطر موت! التثبيت والتكليف وأعمال الصيانة يجب أن تقام فقط من طرف الموظفين المؤهلين**

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# Table of contents

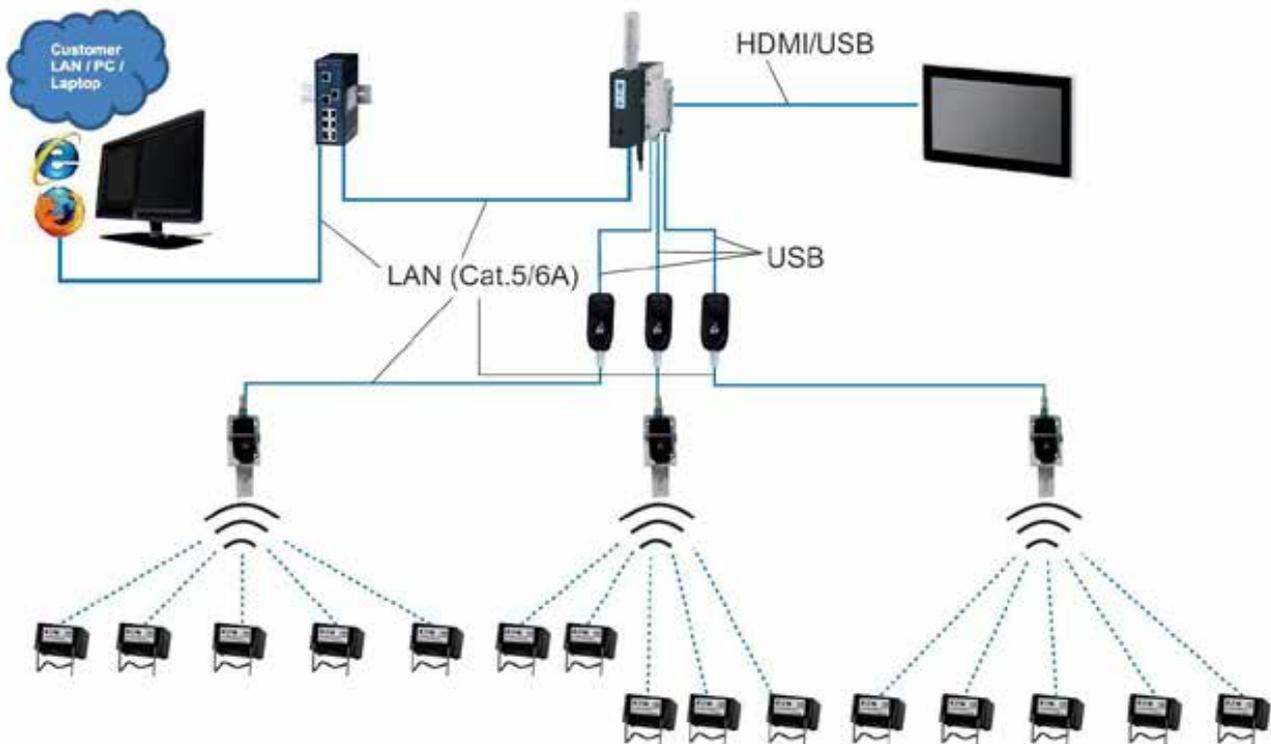
<b>1</b>	<b>Abbreviations .....</b>	<b>4</b>
<b>2</b>	<b>Accessing your Diagnose controller from your PC .....</b>	<b>4</b>
	<b>2.1 Physical network setup .....</b>	<b>4</b>
	<b>2.2 Obtaining your IP address via your router .....</b>	<b>5</b>
	<b>2.3 Accessing your Diagnose controller.....</b>	<b>5</b>
<b>3</b>	<b>Updating your Diagnose controller to the latest firmware version.....</b>	<b>7</b>
<b>4</b>	<b>Diagnose controller settings .....</b>	<b>8</b>
	<b>4.1 Time settings .....</b>	<b>8</b>
	<b>4.2 Change password .....</b>	<b>8</b>
	<b>4.3 IP settings.....</b>	<b>9</b>
	<b>4.4 Https certificate.....</b>	<b>9</b>
	<b>4.5 Email settings .....</b>	<b>10</b>
<b>5</b>	<b>Configuring your Diagnose controller to visualize your low voltage site setup .....</b>	<b>11</b>
	<b>5.1 Exporting the XML file from Eaton Configurator.....</b>	<b>11</b>
	<b>5.2 Uploading the Eaton Configurator file and place sensors .....</b>	<b>12</b>
	<b>5.3 Backup and restore configuration .....</b>	<b>24</b>
	<b>5.4 Eaton Configurator preview picture.....</b>	<b>24</b>
	<b>5.5 Sensor list, data backup and restore, delete sensor data .....</b>	<b>25</b>
	<b>5.6 Controller information, reboot, service.....</b>	<b>25</b>
	<b>5.7 Device reset.....</b>	<b>25</b>
	5.7.1 Reset Diagnose controller to factory defaults .....	25
	5.7.2 Reset IP settings to DHCP .....	25
<b>6</b>	<b>Status box - definitions .....</b>	<b>26</b>
	<b>6.1 Using the alarm list to locate compromised areas for red and amber .....</b>	<b>27</b>
<b>7</b>	<b>Modbus – definitions .....</b>	<b>28</b>
	<b>7.1 Modbus-TCP register explanation .....</b>	<b>28</b>
	7.1.1 Modbus slave .....	28
	7.1.2 Alarm codes .....	29
	7.1.3 Sensor position .....	29

# 1. Abbreviations

xDC	Diagnose controller
RF	Radio frequency

## 2. Accessing your Diagnose controller from your PC

The Diagnose Controller can be directly accessed from your computer by using the web browser on your computer. In order to access the xDC, it is important that the PC and your xDC be placed in the same network.



### 2.1 Physical network setup

1. Connect your xDC to your computer network, by using an Ethernet network cable.
2. To obtain the IP address for accessing the xDC web server through your web browser, then use IP address assigned by your IT team or follow the instruction set 2.2 for using your own router.
3. In case of missing DHCP server (timeout for searching: 10min), a fix IP address (169.254.1.15) is available for the Diagnose controller.
4. When you have the IP address then move to Instruction set 2.3.

## 2.2 Obtaining your IP address via your router

1. Ensure that both your computer and xDC are connected to the same router.
2. Read the instruction manual of your router, or check the type label of the router in order to access the router directly.

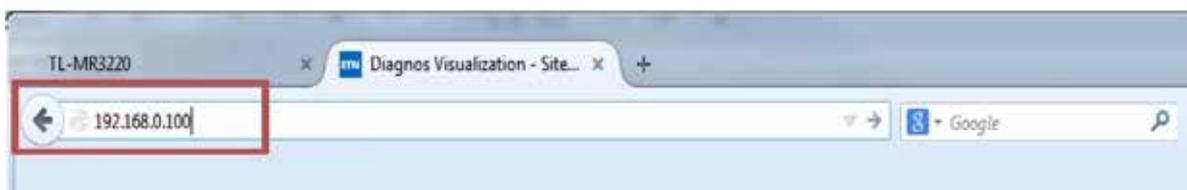
To access the router directly you will need the following information:

- The Router IP address that you need to type directly into your web browser.
  - The default username and password that you need to login into the Router.
3. Upon accessing the router web page, navigate to the DHCP clients list to find out the assigned IP address for the xDC.

ID	MAC Address	IP Address	Status	Configure
1	00-01-C0-26-63-25	192.168.0.100	Unbound	<a href="#">Load</a> <a href="#">Delete</a>
2	AC-16-2D-57-EC-49	192.168.0.101	Unbound	<a href="#">Load</a> <a href="#">Delete</a>

## 2.3 Accessing your Diagnose controller

- ### 2.3.1
- Once you have the correct IP address for the xDC, type it into your web browser.

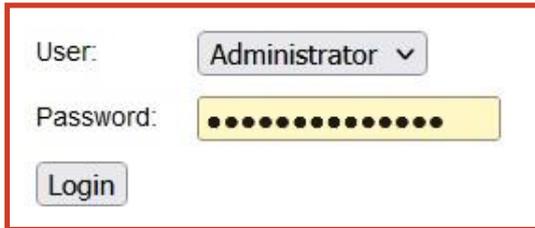


**2.3.2** When you arrive to the Login screen, enter the following details for Login:

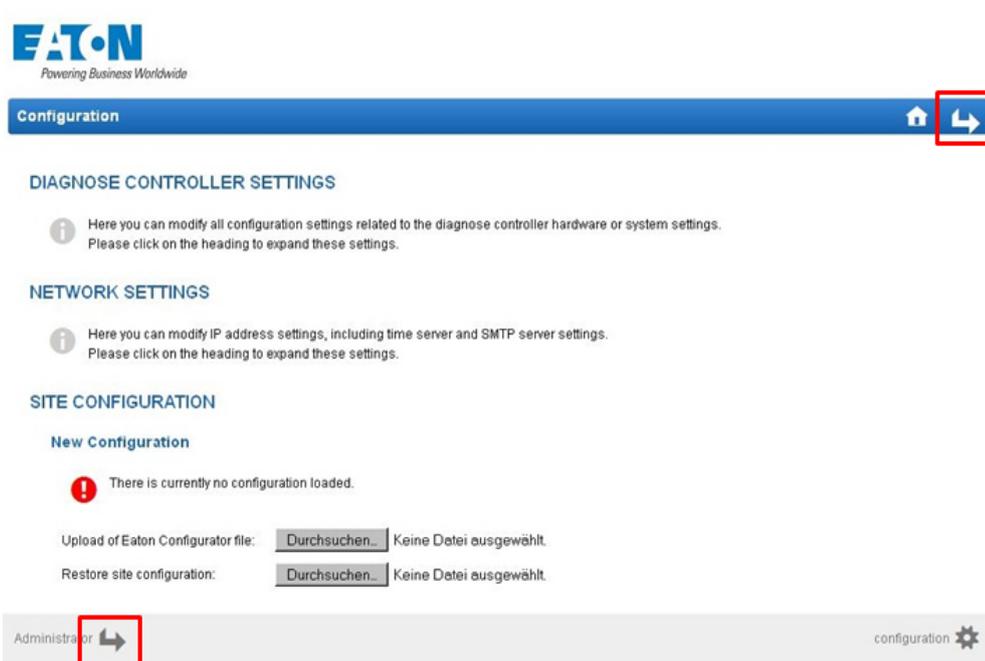
In case of first login choose Administrator as per default password: eaton\_diagnose  
Full access for uploading.  
XML-file and doing configuration / sensor arrangement etc.

Viewer mode can be entered if configuration was successfully uploaded before / 2nd login after configuration limited access just for visualization the running application on an HMI.

## LOGIN



**2.3.3** Correct entry of login details will take to the Site Configuration page – click on the arrow bring you back to the login screen. Non-admins cannot access the settings page and cannot change any settings of the diagnose controller.



### 3. Updating your Diagnose controller to the latest firmware

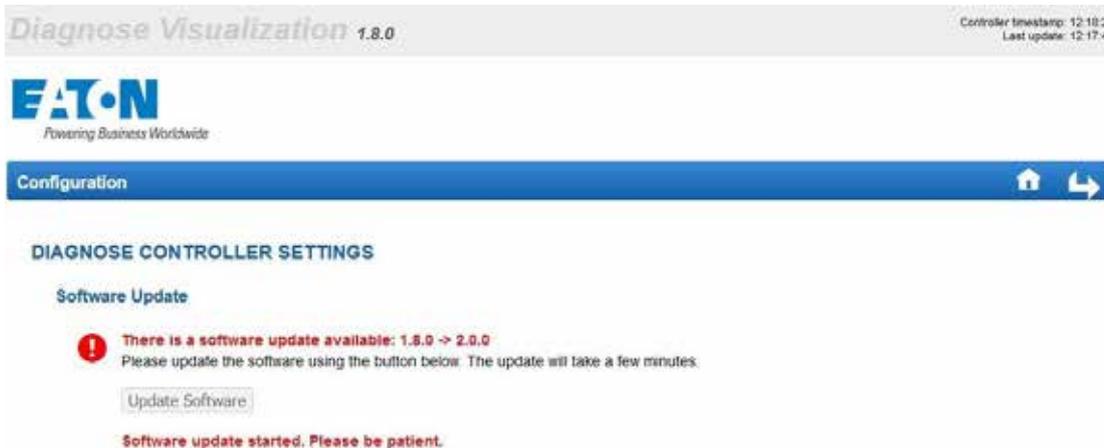
#### 3.1 You can update your xDC to the latest firmware version:

Download the latest firmware version from Eaton Download Center: [ftp://ftp.moeller.net/AUTOMATION/DOWNLOAD/XNT/XNT-CTRL-00\\_01](ftp://ftp.moeller.net/AUTOMATION/DOWNLOAD/XNT/XNT-CTRL-00_01). Copy all file from diagnose\_offline\_update\_x-y-z.zip on empty, formatted USB Stick. Insert USB stick in USB port of Diagnose Controller. The bottom configuration icon changes to red and is displayed with the red text “update available” next to it. Open Configuration page (or reload it, if already opened).

#### 3.2 Press the “Update Software” button.



3.3 Upon direction to the Waiting for Software Update, please allow 15 minutes to pass while waiting for the device to reboot and automatically redirect back to the site configuration page.



3.4 After about 15 minutes, you will be re-directed to the Site Configuration page and the Software Update section will no longer be displayed. This section will only be shown when another update is available.

## 4. Diagnose controller settings

### 4.1 Time settings

Click on "Diagnose controller settings"- Button, insert current date and time and click on "Change Time"- button.

#### DIAGNOSE CONTROLLER SETTINGS

##### Software Update

You can check whether there is a SW update available. Please make sure to have this Diagnose controller connected to the Internet before performing this check.

##### Time Settings

The date and time settings for the Diagnose controller are automatically retrieved by a network time server. However, if the controller is not connected to public internet, the automatic time synchronization may not be possible. In this case you can manually adapt the time settings here.

Timezone:

Current date:

Current time:

### 4.2 Change password

Click on "Diagnose controller settings"- button.

For change the Login-Password fill in the current password, choose Administrator or Viewer, enter the new password and repeat it. Default for Viewer is no password (auto-login) Press "Change Password" button.

#### DIAGNOSE CONTROLLER SETTINGS

##### Software Update

You can check whether there is a SW update available. Please make sure to have this Diagnose controller connected to the Internet before performing this check.

##### Time Settings

The date and time settings for the Diagnose controller are automatically retrieved by a network time server. However, if the controller is not connected to public internet, the automatic time synchronization may not be possible. In this case you can manually adapt the time settings here.

Timezone:

Current date:

Current time:

##### Change Password

You can change the password for the administrator or for the viewer account. The web side can be viewed without login if the password for the viewer user is left empty. To be able to change a password also the current administrator password needs to be entered.

The password of the administrator account requires minimal 6 characters, including three of upper case, lower case, digits and special characters.

Current administrator password:

Account to change password for  Administrator  
 Viewer

New password:

New password repeated:

Password length should be minimum 6 characters and must meet at least 3 out of the following 4 complexity rules:

- at least 1 uppercase character (A-Z)
- at w character (a-z)
- at least 1 digit (0-9)
- at least 1 special character (punctuation)

### 4.3 IP settings

Click on "Network Settings"- button.

#### NETWORK SETTINGS

##### IP Settings

Mode:

NTP server 1:

NTP server 2:

Standard mode is DHCP – IP-address will create from the Ethernet network If you want to set fix IP-address, change to mode "Static" and fill in the fields and save the IP settings.

#### NETWORK SETTINGS

##### IP Settings

Mode:

IP Address:

Subnet mask:

Default gateway:

DNS nameserver:

NTP server 1:

NTP server 2:

Fill in NTP server if needed.

### 4.4 Https certificate

Click on "Network Settings"- button.

An externally signed certificate can be upload.

#### NETWORK SETTINGS

##### IP Settings

Mode:

NTP server 1:

NTP server 2:

##### Https Certificate

For security reasons, the Diagnose controller is only accessible via TLS. Per default it uses self-signed certificates, which are automatically generated. Alternatively you may upload an externally signed certificate here, that matches your controller domain.

Certificate file:  No file selected.

Key file:  No file selected.

## 4.5 Email settings

Click on "Network Settings"- button.

### NETWORK SETTINGS

#### IP Settings

Mode:

NTP server 1:

NTP server 2:

#### Https Certificate

For security reasons, the Diagnose controller is only accessible via TLS. Per default it uses self-signed certificates, which are automatically generated. Alternatively you may upload an externally signed certificate here, that matches your controller domain.

Certificate file:  No file selected.

Key file:  No file selected.

#### Email Settings

Please configure an Email provider, such that the Diagnose controller is able to send emails, i.e. on alarm events.

SMTP Hostname:

Username:

Password:

From address:

To address:

TLS Security:

Fill in the settings for the e-mail. Test e-mail could be send.

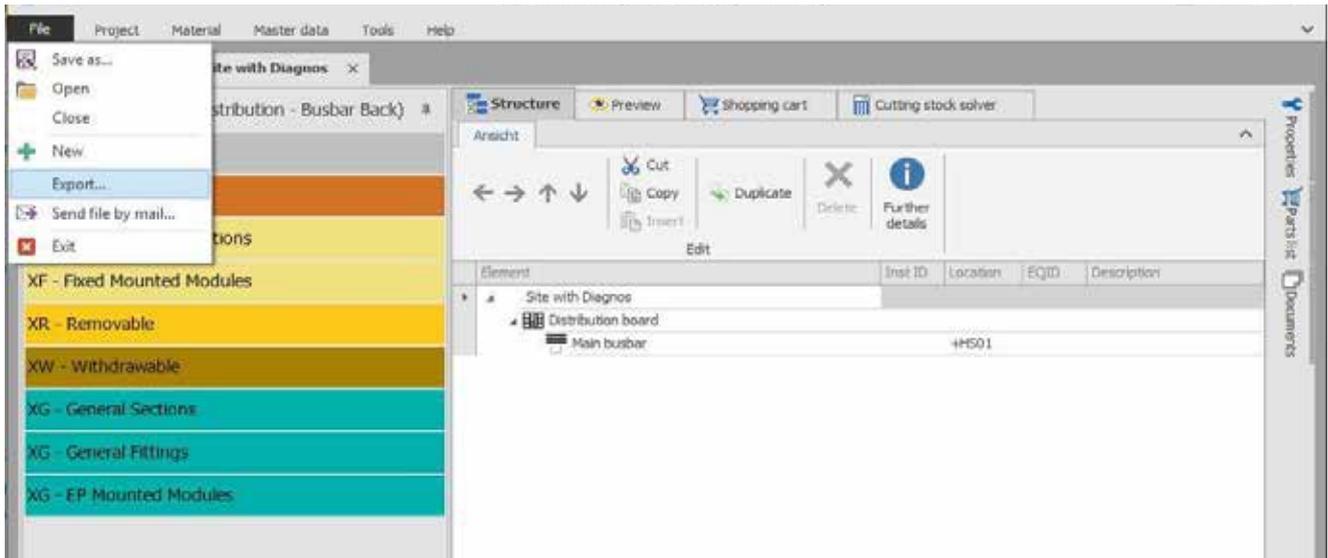
Alarms are sent by e-mail to specified address(es). Language of e-mail is set when e-mail settings are saved: if preferred language of browser is set to german, e-mails are sent in german; otherwise e-mails are sent in English.

## 5. Configuring your Diagnose controller to visualize your low voltage site setup

The xDC requires an XML file export of your site configuration from the Eaton Configurator xEnergy tool. Follow the instruction set 5.1. to obtain the XML file from the Eaton Configurator xEnergy tool. When you have this XML file available on your PC then proceed to the next instruction set 5.2.

### 5.1 Exporting the XML file from Eaton configurator

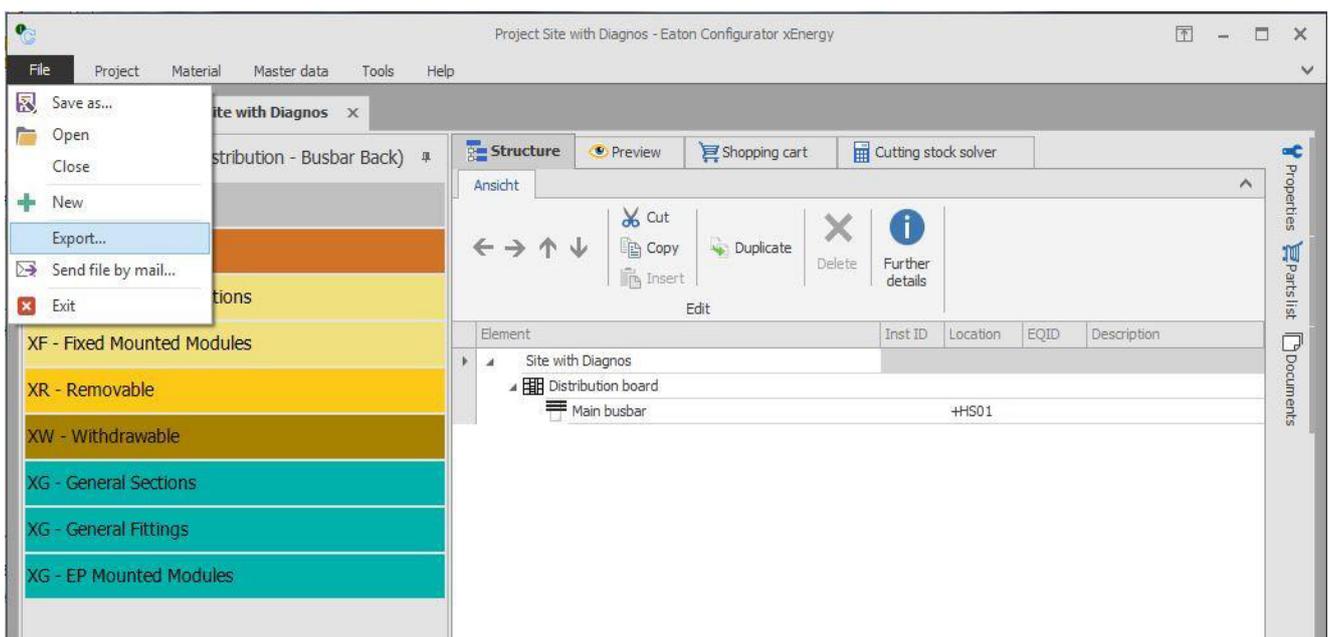
1. Once you have the completed configuration of your xEnergy Site, using the Eaton Configurator xEnergy tool, navigate to the menus: **File > Export**.



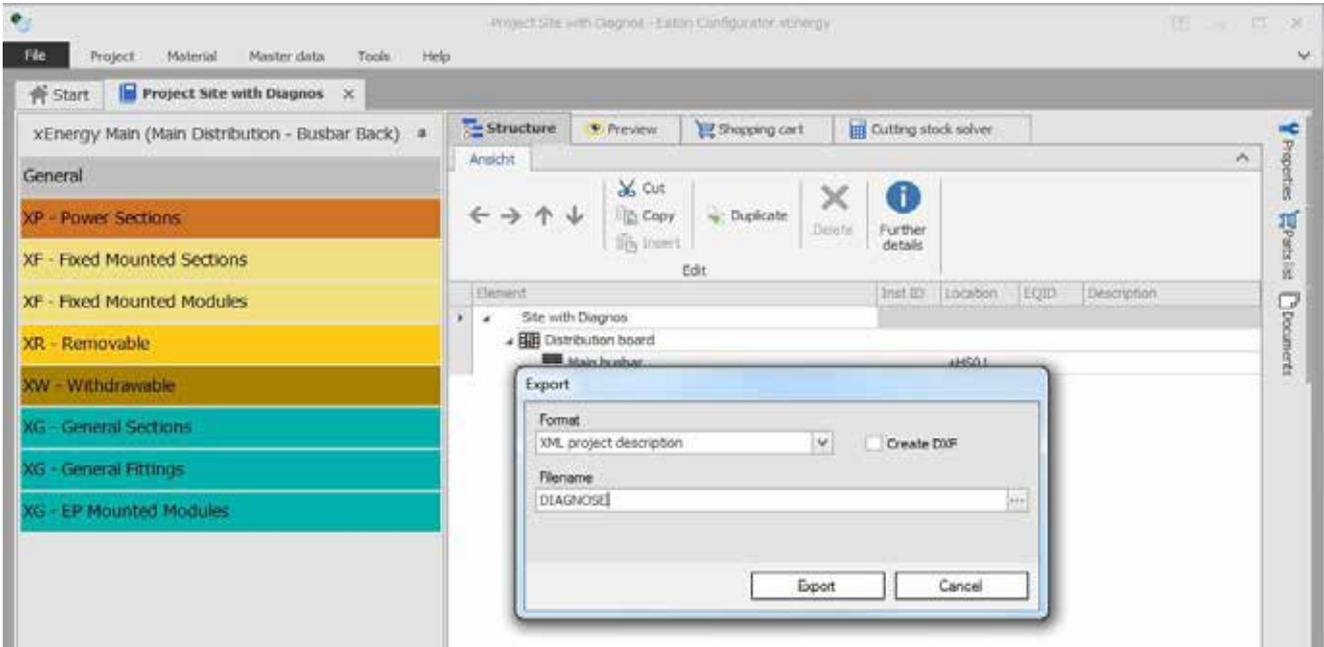
2. When the **Export** popup window comes up, ensure that the Format setting is *XML project description*.

Under Filename, use the  Button to select filepath, and to enter the name that would like the XML file to be saved under.

Finally click the Export button to carry out the export.

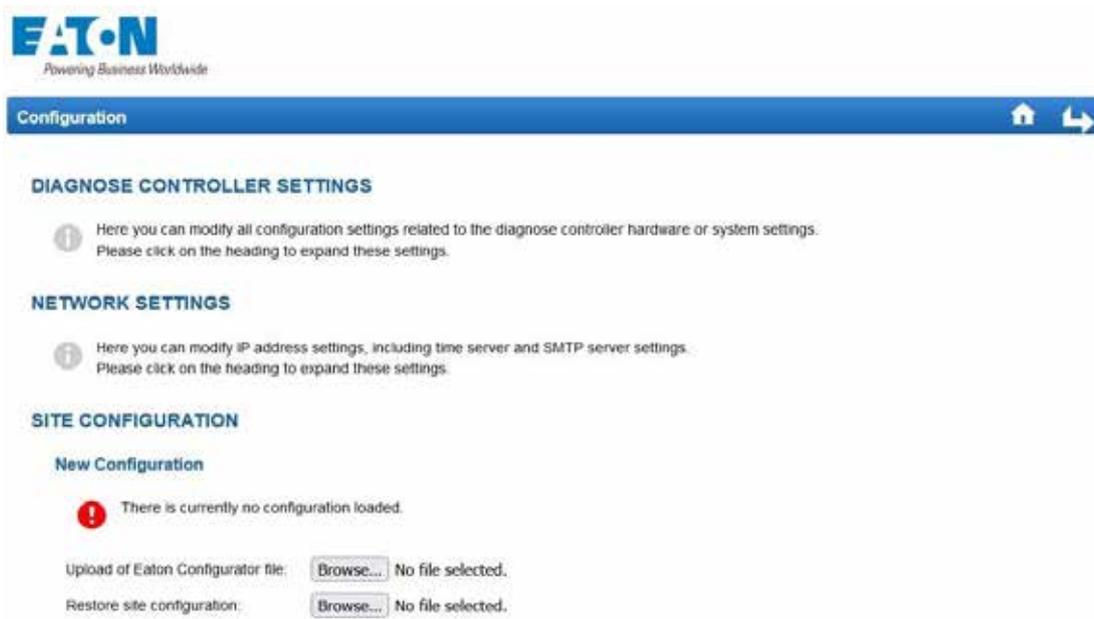


- Once the export is complete and successful, the **Transfer project** popup window should come up with the information that “The project has been exported successfully”. Continue to instruction set 4.2 to continue configuring the visualization your xDC.



## 5.2 Uploading the Eaton Configurator file and place sensors

- Click on “Site Configuration” button.
- Click the Browse button to find the Eaton Configurator XML file export to upload. Selected the file and it will be upload.



5.2.3 Once the xDC has completed the upload process, you will be re-directed to the Distribution Board Site Overview Page. On this page you can see all the sections visualized.

Diagnose Visualization 2.0.1 Controller timestamp: 9:52:03  
Last update: 9:51:47

**EATON**  
Powering Business Worldwide

SYSTEM STATE: MISSING DATA

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Site View

BBB\_XP\_IZMX16\_TOP\_3P\_INC\_BOTTOM\_XF\_3P

Power section 1 Festeinbau Abgangsfeld 1

Table view of all sensors

**i** Above graphic shows all sections which are configured for your site. You can click on a section to get a detailed view for a single section. The text at the bottom of each section shows the number of equipped sensors and the number of possible sensor positions.

If a warning or alert prevails within a section this gets indicated by an orange or red background color.

Administrator configuration

5.2.4 Hovering over a section with your mouse highlights the section for selection. Clicking on section will direct to the Section View.

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Site View

BBB\_XP\_IZMX16\_TOP\_3P\_INC\_BOTTOM\_XF\_3P

Power section 1 Festeinbau Abgangsfeld 1

5.2.5 The Section View allows you to view all the recommended sensor positions for that particular section.

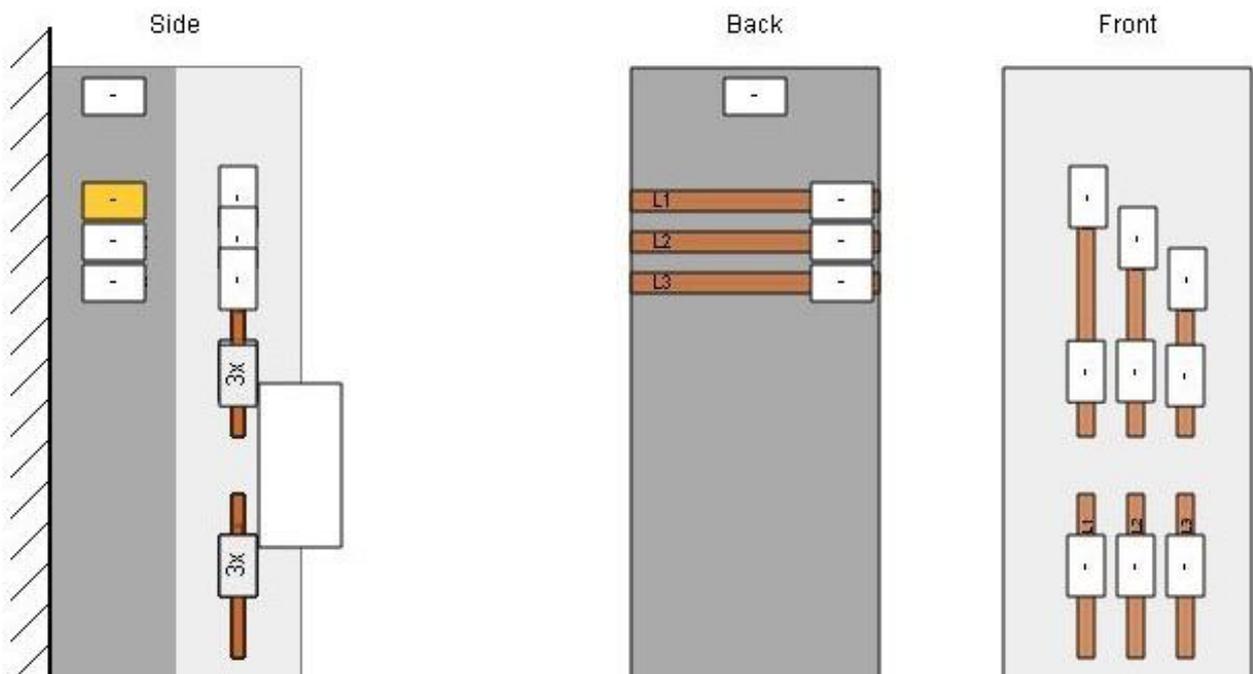
SECTION POWER SECTION 1

Data shown:  Temperature  Current

**i** Above graphic shows the section Power section 1. On the left you see the side view of the section and on the right the front view. If there are sensors equipped behind each other, the view shows all different z-planes.

You may click on a sensor to see the details of the sensor assigned to the bus bar. If no sensor is assigned the link yields the sensor assignment configuration page.

5.2.6 Hovering over a sensor area highlights the selected sensor. Clicking on the sensor will direct you to the Sensor page for that particular sensor location.



- 5.2.7 To assign a sensor, select it from the dropdown menu if already detected by the system. Otherwise manually enter the sensor number in the Serial Number entry box. You can add any comments regarding the sensor in the comment box. Upon completion selected the "Assign Sensor" button in order to assign the sensor to that position.

The screenshot shows the Eaton sensor assignment interface. At the top, the Eaton logo and navigation path "Site View > Section View > Sensor Assignment" are visible. The system state is "MISSING DATA". The page title is "BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment".

**SECTION POSITION**  
 This is the assignment of the temperature sensor for:  
 Section name: Power section 1  
 Sensor position: Main Busbar Top / L1

**NEW SENSOR ASSIGNMENT**  
 Type: Busbar  
 Serial number: other (dropdown) [input field]  
 Assign Sensor (button)

On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors. The currently modified sensor is indicated with a red border in the graph on the right. By clicking on another sensor in the section graph you can perform the assignment for a different position. After assignment of a sensor the next unassigned sensor is automatically selected. If you want to assign a sensor which is not clickable due to overlaps, please switch to the section view (link near "Section name") and click there the according sensor.

The diagram on the right shows a busbar layout with several sensor positions. One sensor position is highlighted with a red border, indicating it is the currently selected sensor.

- 5.2.8 Fill in correct number of digits for serials of sensors – otherwise warning field informs you:  
 Busbar: 5 digits  
 Ambient: 7 digits

The screenshot shows the Eaton sensor assignment interface with an error message displayed. The system state is "MISSING DATA". The page title is "BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment".

**SECTION POSITION**  
 This is the assignment of the temperature sensor for:  
 Section name: Power section 1  
 Sensor position: Main Busbar Top / L1

**NEW SENSOR ASSIGNMENT**  
 Type: Busbar  
 Serial number: other (dropdown) [input field]

Serial number not valid. Please enter 5 (Busbar) or 7 (xComfort) digits.  
 Don't allow 192.168.0.101 to prompt you again  
 OK (button)

On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors. The currently modified sensor is indicated with a red border in the graph on the right. By clicking on another sensor in the section graph you can perform the assignment for a different position. After assignment of a sensor the next unassigned sensor is automatically selected. If you want to assign a sensor which is not clickable due to overlaps, please switch to the section view (link near "Section name") and click there the according sensor.

The diagram on the right shows a busbar layout with several sensor positions. One sensor position is highlighted with a red border, indicating it is the currently selected sensor.

**5.2.9** Assignment of the sensor takes the user to the assignment of the next unassigned sensor of the current section. After all sensors of current section are assigned, it brings you back to the Section View. If the sensor has not yet sent a signal to the xDC then a question mark will be displayed in the box, otherwise the sensor temperature reading will be displayed in the box. The sensor assignment can be continued in the same fashion for all sensors.

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Site View > Section View > Sensor Assignment

SYSTEM STATE: OK

BBB\_XP\_I2MX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment

**SECTION POSITION**

This is the assignment of the temperature sensor for:

**Section name:** Power section 1  
**Sensor position:** Main Busbar Top / L2

Create a new Sensor Position

**NEW SENSOR ASSIGNMENT**

Type: Busbar

Serial number: other

**i** On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors.

The currently modified sensor is indicated with a red border in the graph on the right. By clicking on another sensor in the section graph you can perform the assignment for a different position.

After assignment of a sensor the next unassigned sensor is automatically selected.

If you want to assign a sensor which is not clickable due to overlaps, please switch to the section view (link near "Section name") and click there the according sensor.

**5.2.10** To assign an ambient sensor, click on the sensor on the top of section view. Manually enter the sensor number in the serial number entry box and select channel. You can add any comments regarding the sensor in the comment box. Upon completion selected the "Assign Sensor" button in order to assign the sensor to that position.

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Site View > Section View > Sensor Assignment

SYSTEM STATE: OK

BBB\_XP\_I2MX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment

**SECTION POSITION**

This is the assignment of the temperature sensor for:

**Section name:** Power section 1  
**Sensor position:** Ambient Section /

Create a new Sensor Position

**NEW SENSOR ASSIGNMENT**

Type: xComfort

Serial number: other

Channel: Channel A

**i** On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors.

The currently modified sensor is indicated with a red border in the graph on the right. By clicking on another sensor in the section graph you can perform the assignment for a different position.

After assignment of a sensor the next unassigned sensor is automatically selected.

If you want to assign a sensor which is not clickable due to overlaps, please switch to the section view (link near "Section name") and click there the according sensor.

5.2.11 It is the ability to set own thresholds for warning and alarms. Click off the “Default” checkbox and enter the values.

**EATON** Powering Business Worldwide

Site View > Section View > Sensor Assignment

SYSTEM STATE: OK

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment

### SECTION POSITION

This is the assignment of the temperature sensor for:

Section name: Power section 1  
 Sensor position: Main Busbar Top / L1

Create a new Sensor Position

### CURRENT SENSOR ASSIGNMENT

Type: Busbar  
 Serial number: 1

Remove Sensor Replace Sensor

### SENSOR SETTINGS

Comment:

Custom temperature warning [°C]: 90  Default

Custom temperature alarm [°C]: 100  Default

Custom current limit [A]: 3400  Default: 3750.0

Save Settings

Delete sensor data Delete Data

*i* On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors.

5.2.12 To create a new sensor position choose any sensor position. After that click on “Create a new Sensor Position” and select the x and y-Position in % - press “Create Position”.

**EATON** Powering Business Worldwide

Site View > Section View > Sensor Assignment

SYSTEM STATE: OK

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment

### SECTION POSITION

This is the assignment of the temperature sensor for:

Section name: Power section 1  
 Sensor position: Main Busbar Top / L2

Create a new Sensor Position

x-Position [%]: 50

y-Position [%]: 50

### NEW SENSOR ASSIGNMENT

Type: Busbar

Serial number: other

*i* On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors.

The currently modified sensor is indicated with a red border in the graph on the right. By clicking on another sensor in the section graph you can perform the assignment for a different position.

After assignment of a sensor the next unassigned sensor is automatically selected.

If you want to assign a sensor which is not clickable due to overlaps, please switch to the section view (link near "Section name") and click there the according sensor.

You can modify or remove the new position.

### SECTION POSITION

This is the assignment of the temperature sensor for:

**Section name:** Power section 1  
**Sensor position:** Flexible Sensor / X50, Y50

#### Modify this Sensor Position

**x-Position [%]:**     
**y-Position [%]:**

#### Create a new Sensor Position

### 5.2.13 You can remove the sensor or replace it with other sensor.

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment

### SECTION POSITION

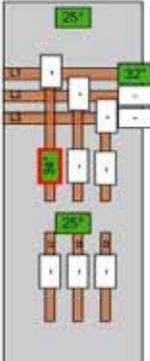
This is the assignment of the temperature sensor for:

**Section name:** Power section 1  
**Sensor position:** Connector Top / L1

Create a new Sensor Position

### CURRENT SENSOR ASSIGNMENT

**Type:** Busbar  
**Serial number:** 65535



### 5.2.14 Table view of all sensors

On the "Site View" by clicking on the link will bring you to the list of all sensors.

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Site View

### BBB\_XP\_IZMX16\_TOP\_3P\_INC\_BOTTOM\_XF\_3P

Power section 1 Festeinbau Abgangsfeld 1

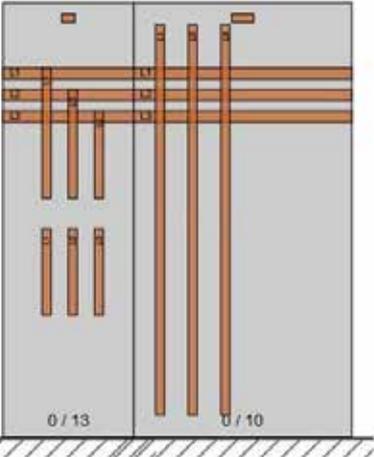


Table view of all sensors

By clicking on the head of the table, you can sort the values. Clicking on the Field will bring you the Section View; Clicking on the Serial number will bring you to the Sensor View.

State	Temperature	Current	Field	Place	Phase	Last Data	Serial
OK	26 °C		Power section 1	Ambient Section	-	2021-10-20 10:07:33	5906078
OK	33.7 °C	107 A	Power section 1	Connector Top	L1	2021-10-20 10:08:45	65535
OK	25.7 °C		Power section 1	Flexible Sensor	X50, Y50	2021-10-20 10:07:35	5906078
OK	32.2 °C		Power section 1	Main Busbar Top	L1	2021-10-20 10:08:42	2009

**5.2.15** Clicking on an assigned sensor location from the Section View page will direct you to the Sensor View. On this page you can view the sensor specific data, including the all the current day values, a 4 weeks graph (1 temperature value all 10min) and trend values for the past 180 days.

**SENSOR DATA**

State: OK

Last data from: 2021-10-20 9:17:21

Temperature: 39.5 °C

Current: 105 A

Signal strength: -71 dBm

Show further details

**SENSOR PROPERTIES**

Sensor Type: Busbar

Serial number: 65535

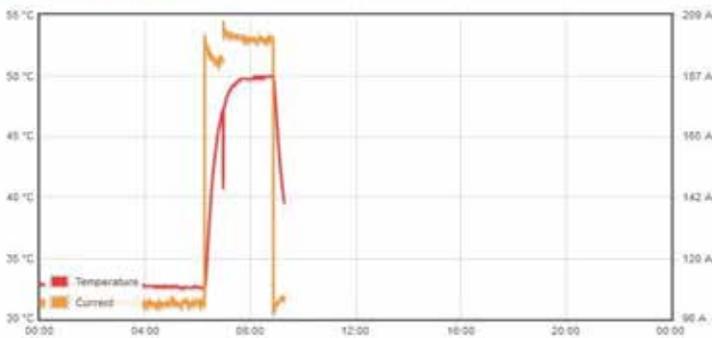
**SENSOR ASSIGNMENT**

Section Power section 1 / Main Busbar Bottom / L1

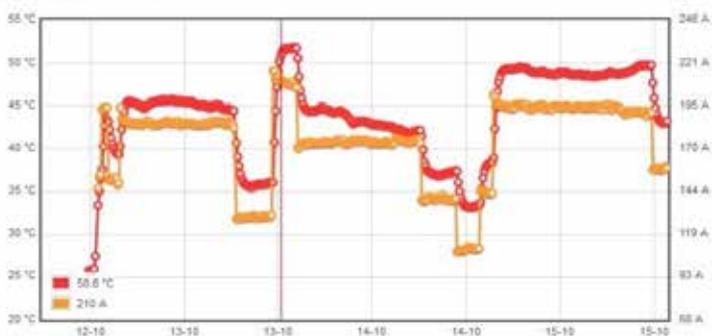
**i** Above you can see all the details of the selected temperature sensor and its current data values. Below you see the minimum, average and maximum value of past.

By clicking on the section name at sensor assignment at the right you can reconfigure the current sensor assignment.

#### TODAY'S VALUES

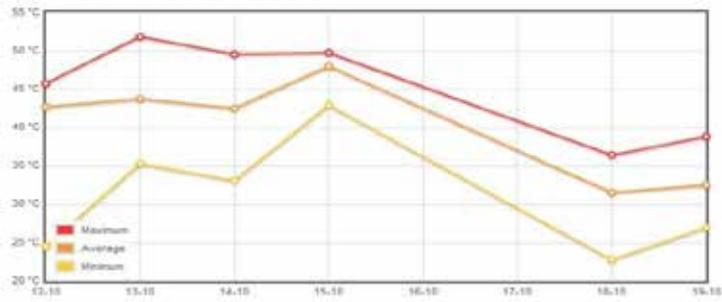


#### 4 WEEK VALUES

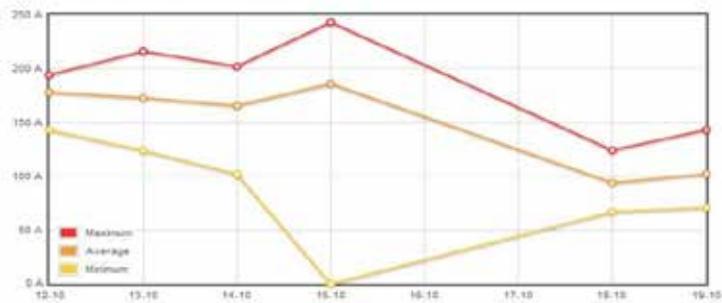


**i** Use scroll wheel to zoom and drag to pan.

### TEMPERATURE LONG-TERM VALUES



### CURRENT LONG-TERM VALUES



The sensor data shows the last time, when the sensor send a date; the temperature of the copper; the sensor signal strength.

### SENSOR DATA

**State:** OK  
**Last data from:** 2021-10-20 9:17:21  
**Temperature:** 39.5 °C  
**Current:** 105 A  
**Signal strength:** -71 dBm  
[Show further details](#)

### SENSOR PROPERTIES

**Sensor Type:** Busbar  
**Serial number:** 65535

### SENSOR ASSIGNMENT

Section Power section 1 / Main Busbar Bottom / L1

On further details you see: the battery voltage of the ambient sensor or the generated voltage depends on the current; the PCB-Temperature; the maximum allow current (if it is a current sensor).

### SENSOR DATA

**State:** OK  
**Last data from:** 2021-10-20 9:36:13  
**Temperature:** 35.8 °C  
**Current:** 104 A  
**Signal strength:** -71 dBm  
**Sensor voltage:** 5.5 V / good  
**PCB-Temperature:** 25.9 °C  
**Maximum allowed current:** 165 A

The Day graph shows the values of today and will reset at 0 o'clock. With the cursor you can move over the graph and it shows the values at this time.

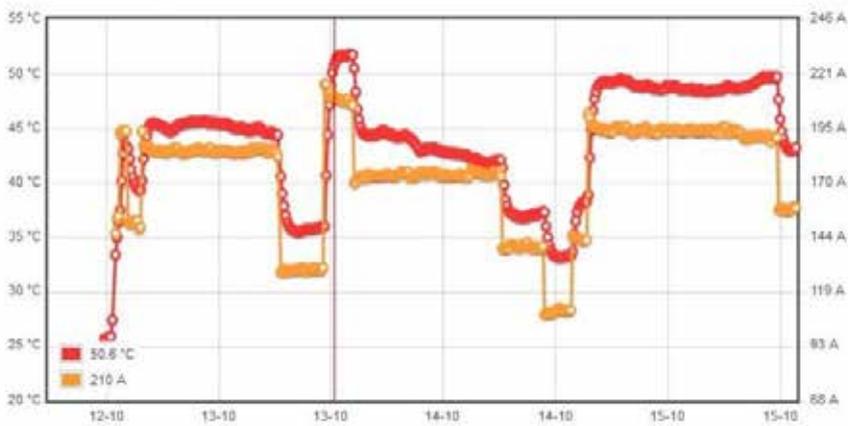
Both values for temperature and current will shown in the graph.

### TODAY'S VALUES



In the 4 weeks graph use scroll wheel to zoom and drag to pan – on external display use double-touch to zoom in and use “Reset Zoom” button to zoom back.

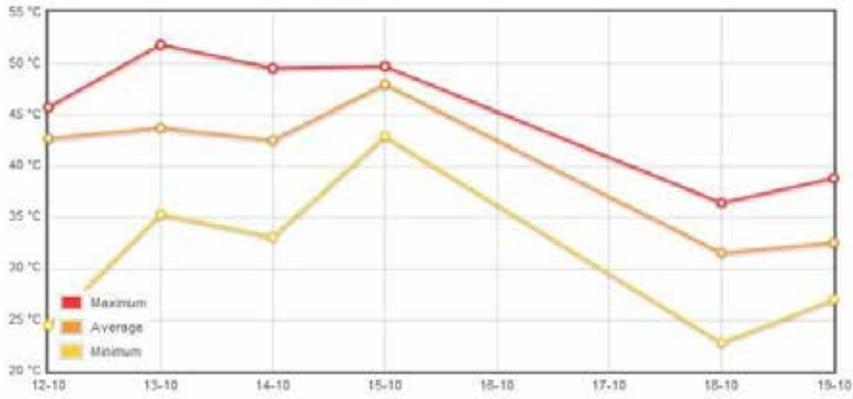
### 4 WEEKS VALUE



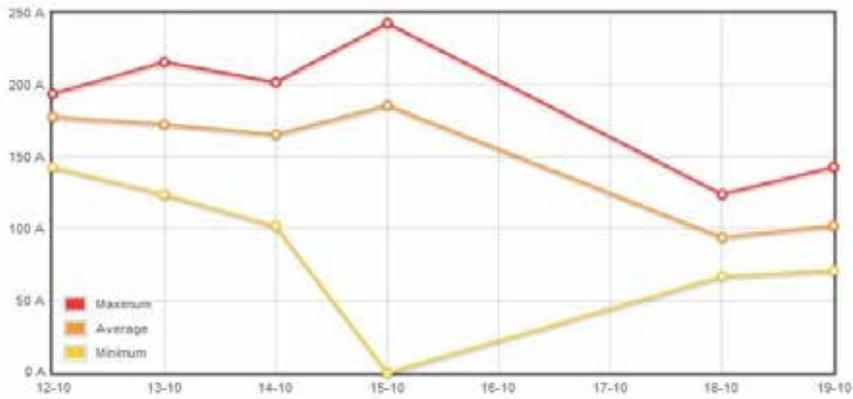
 Use scroll wheel to zoom and drag to pan.

The Trend value graph shows minimum, maximum and average values of the last 180 days.

### TEMPERATURE LONG-TERM VALUES



### CURRENT LONG-TERM VALUES



### 5.2.16 Delete Date

You can delete the saved date of each sensor in the Sensor Assignment – the Sensor Setting will be stay.

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Sensor Assignment

**SECTION POSITION**

This is the assignment of the temperature sensor for:

Section name: Power section 1  
 Sensor position: Main Busbar Top / L1

Create a new Sensor Position

**CURRENT SENSOR ASSIGNMENT**

Type: Busbar  
 Serial number: 1

Remove Sensor Replace Sensor

**SENSOR SETTINGS**

Comment:

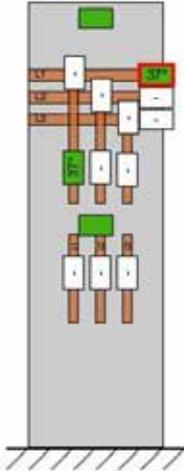
Custom temperature warning [°C]:   Default

Custom temperature alarm [°C]:

Custom current limit [A]: 1499.0  Default: 3750.0

Save Settings

Delete sensor data



**Information:** On this page you can assign a sensor to the given section bus bar or create a new sensor position for freely placeable sensors. The currently modified sensor is indicated with a red border in the graph on the right. By clicking on another sensor in the section graph you can perform the assignment for a different position. After assignment of a sensor the next unassigned sensor is automatically selected.

### 5.2.17 Section View

Select type of shown data with buttons.

Eaton Powering Business Worldwide

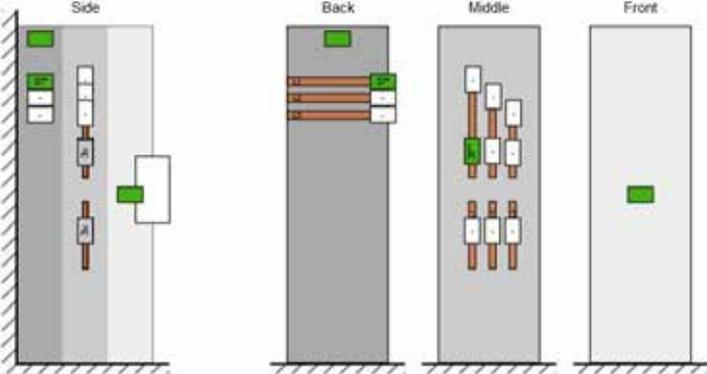
Site View > Section View

SYSTEM STATE: OK

BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p - Section View

**SECTION POWER SECTION 1**

Side Back Middle Front



Data shown:  Temperature  Current

**Information:** Above graphic shows the section Power section 1. On the left you see the side view of the section and on the right the front view. If there are sensors equipped behind each other, the view shows all different z-planes. You may click on a sensor to see the details of the sensor assigned to the bus bar. If no sensor is assigned the link yields the sensor assignment configuration page.

## 5.3 Backup and restore configuration

- 5.3.1 In the “Site configuration” page it is possible to back up your complete configuration (section and Sensors). Press “Backup Configuration” button and save the file.

### SITE CONFIGURATION

#### Current Configuration

Site name: BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p  
From file: BBB\_TOP\_XP\_3p\_XF\_3p.xml   
Preview picture:  No file selected.

- 5.3.2 To restore the site configuration click the “Browse” button to find the file. On clicking on the file will restore the site configuration.

### SITE CONFIGURATION

#### Current Configuration

Site name: BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p  
From file: BBB\_TOP\_XP\_3p\_XF\_3p.xml   
Preview picture:  No file selected.

#### New Configuration

Upload of Eaton Configurator file:  No file selected.  
Restore site configuration:  No file selected.

## 5.4 Eaton configuration preview picture

Click the “Browse” button to find the picture (jpg), by clicking on the file will upload screenshot

### SITE CONFIGURATION

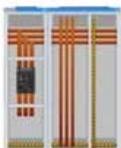
#### Current Configuration

Site name: BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p  
From file: BBB\_TOP\_XP\_3p\_XF\_3p.xml   
Preview picture:  No file selected.

You see the preview picture; use the “Delete” button to remove the picture

### SITE CONFIGURATION

#### Current Configuration

Site name: BBB\_XP\_IZMX16\_Top\_3p\_Inc\_Bottom\_XF\_3p  
From file: BBB\_TOP\_XP\_3p\_XF\_3p.xml   
Preview picture: 

## 5.5 Sensor list, date backup and restore, delete sensor data

Press the **Create File** button to create an Excel sensor list. Press on Download to save the data. Do it in the same way with sensor date. Restore the sensor date is similar to the configuration file. Delete data for all sensors with **Delete Data**.

### Sensor Data

Excel sensor list:	download from 2021-10-14 10:51:51	<input type="button" value="Create File"/>
Sensor data backup:	download from 2021-10-14 10:51:48	<input type="button" value="Create File"/>
Restore sensor data:	<input type="button" value="Browse..."/> No file selected.	
Delete sensor data:	<input type="button" value="Delete Data"/>	

## 5.6 Controller information, reboot, service

On Diagnose controller setting are information about the xDC, reboot the controller and send service data.

### Diagnose Controller Information

CPU load: 0.3 %  
RAM usage: 22.1 %  
SSD system usage: 5.1 %  
SSD data usage: 0.1 %  
RF receivers: 1

 Please reboot your Diagnose Controller after plug or unplug of an RF receiver.

### Reboot Controller

Here you can trigger a reboot of the Diagnose Controller. You will only need this function in rare cases.

### Service Data

You can trigger sending an email with various debug information to the configured email recipient. This email can then be forwarded to Eaton support team for further analysis. You will only need this function in rare cases.

## 5.7 Device reset

**5.7.1** Reset Diagnose controller to factory defaults available by inserting an USB stick with a special file in root directory named EatonDiagnoseCommands.txt with the content DoFactoryReset.

- Reset all IP settings (i.e. setting it to DHCP)
- Delete database
- Reset password
- Reset xComfort USB interface CKOZ-00/14

**5.7.2** Reset IP settings to DHCP

Available by inserting an USB stick with a special file in root directory named EatonDiagnoseCommands.txt with the content ResetIpSettings.

- Reset all IP settings (i.e. setting it to DHCP)

## 6 Status box - definitions

The status box is displayed on the Site, Section and Sensor view pages in the top page areas.  
The status box should be interpreted as following:

Status Box Color	Interpretation
<b>Green</b>	
	Overall System health according to mounted sensors is fine. (at least one sensor has to be active to get "green" system state)
<b>No Data</b>	
	In preliminary state when no sensors are placed.
<b>Yellow</b>	
	In case of missing data at least from one allocated sensor. - potential reasons: Sensor signal strength is too low, no signal since 5 min, Voltage drops under 3,0 Volts; Info: required current rating at the busbar to reach 3,0 Volts: Cross section 40x10mm / 50x10mm: 60 Amps Cross section 60x10mm: 70 Amps Cross section 80x10mm: 100 Amps Cross section 120x10mm: 120 Amps
<b>Orange</b>	
	<b>Warning:</b> System health is close to exceeding the limits of acceptable operation. Recommended action is detailed on the right hand side of the status box in the Site View and section View pages. Hovering your mouse over the Status box provides the cause of state change.
<b>Red</b>	
	<b>Critical:</b> System health has exceeded the limits of acceptable operation. Recommended action is detailed on the right hand side of the status box in the Site View and section View pages. Hovering your mouse over the Status box provides the cause of state change.

## 6.1 Using the alarm list to locate compromised areas for red and amber

To quickly determine the sensor location causing the state change that you click the Alarm icon  to view the cause of the state change, text description of the sensor location and the suggested remedy. All areas causing a state change requiring attention will be highlighted in this list. For the Section view click the alarm text in the Section column for further details. Active alarms are represented in Red. Previous alarms not requiring any action will be represented in green.



The screenshot shows the Eaton Powering Business Worldwide interface. At the top right, a green button indicates 'SYSTEM STATE: OK'. Below this is a blue navigation bar with icons for home, alarm, and refresh. The main section is titled 'ALARM LIST' and contains a table with the following data:

Alarm	Alarm Status	Alarm Start	Alarm End	Section	Position	Suggested Remedy
<input type="checkbox"/> No signal	over	2016-06-15 12:53:41	2016-06-15 12:56:41	Power section 1	Ambient Section 1	Check whether sensor is still/properly attached. Check whether the section is still powered (Busbar sensor). Check sensor battery (xComfort).

Below the table, there are controls:  Select All, a button 'Acknowledge selected alarms', and  Show Acknowledged Alarms.

The Alarm list provides the user with text description of the compromised location. To visually identify the location and see the specific sensor details.

1. Clicking the text in the "Section" column will navigate you to the "Section View"
2. Select a highlighted sensor location for more details
3. Carry out recommended actions

**Or**

1. Clicking the text in the "Position" column will navigate you to the relevant sensor



The screenshot shows the Eaton Powering Business Worldwide interface. At the top right, a green button indicates 'SYSTEM STATE: OK'. Below this is a blue navigation bar with icons for home, alarm, and refresh. The main section is titled 'ALARM LIST' and shows 'No alarms pending.' with a checked checkbox for 'Show Acknowledged Alarms'. Below this is a section titled 'ACKNOWLEDGED ALARMS' with a table containing the same data as the previous screenshot:

Alarm	Alarm Status	Alarm Start	Alarm End	Section	Position	Suggested Remedy
No signal	over	2016-06-15 12:53:41	2016-06-15 12:56:41	Power section 1	Ambient Section 1	Check whether sensor is still/properly attached. Check whether the section is still powered (Busbar sensor). Check sensor battery (xComfort).

Acknowledged alarms are visible in the history view - select button.

## 7 Modbus – definitions

### 7.1 Modbus-TCP register explanation

#### 7.1.1. Modbus slave

The measured values and certain alarms are made available via a virtual Modbus slave (Server) over Modbus / TCP (IEC 61158). A maximum of 3 parallel Modbus connections is possible. Port-number is 502 (as in the standard). function/register type is 03 (read holding registers). Only 1 register can be read by one read command!

If device address scheme is used, register 0 is found at address 40001. Please be aware that 5-digits addressing (register 0 at 40001) would not be sufficient as there are more than 9999 registers in use.

Data retrieval is done via the Modbus register address by a Modbus master (client), where the 12 MSBs are determining the sensor-ID (which is not the serial number, written on the sensor!) and the 4 LSBs the measurand.

With the serial number (which can be read out via Modbus with the sensor-ID) the sensor can be identified in the web interface. Sensor-ID 0 is reserved for special queries (alarms). To find out all assignments of sensor-IDs to serial numbers, just read out all available serial numbers. If there are 100 sensors, read out following Modbus registers: 0x001B/0x001C, 0x002B/0x002C, ..., 0x064B/0x064C.

The measurand is defined as follows:

```
0x0 ... Temperature
0x1 ... Temperature PCB (only busbar sensors)
0x2 ... value of electrical current ([A], as 16 Bit integer value)
0x3 ... Pending alarms for this sensor, each Bit used as a flag (see 7.1.2)
0x6 ... Section number of sensor
0x7 ... Sensor position and phase (see 7.1.3)
0x8 ... RSSI
0x9 ... Supply/Battery voltage x 10.0
0xA ... Sensor Type (0..busbar, 1..xComfort)
0xB ... Serial (MSBs)
0xC ... Serial (LSBs)
0xD ... Datapoint (12 LSBs) / Channel No (4 MSBs) (only xComfort sensors)
0xE ... Timestamp UTC of last transmission (MSBs)
0xF ... Timestamp UTC of last transmission (LSBs)
```

Example: Modbus register address 0x00A0 holds the 2-Byte value of the current temperature of sensor with ID 10. 0x00AE and 0x00AF holds the 4-Byte value of its last data timestamp.

#### Alarms: Register-Address **0x0000**

```
4 MSBs ...Alarm-Code (see 7.1.2)
... lowest code if multiple alarms are pending
... 0 if no alarm is pending
12 LSBs ...Sensor-ID, if only one Alarm on one sensor is pending
... 0 if more alarms are pending or more sensors are affected
```

Register-Address **0x0000 + Alarm-Code** (e.g. 0x0001 for Temperature-alarm or 0x000C for Voltage-alarm)

```
4 MSBs ... Number of sensors affected
12 LSBs ... Sensor-ID of affected sensor (lowest ID if more Sensors are affected)
```

### 7.1.2. Alarm codes

In case of bit-coded alarms (pending alarms for one sensor), the LSB is Bit 0, and the MSB is Bit 15.

**Example:** The bit-coded alarm 0x0602 [Bit pattern 0000 0110 0000 0010] has Bit 1, Bit 9 and Bit 10 set. According the following list, this means that this sensor has triggered a temperature alarm (Bit 1, code 0x0002), a current warning (Bit 9, code 0x0200) and a low signal strength information (Bit 10, code 0x0400).

#### Alarms

- Bit 0 (0x0001): LSB, Not defined
- Bit 1 (0x0002): Temperature maximum reached:
  - Main busbar back:  $T > T_{max}$
  - Main busbar top:  $T > T_{max}$
  - ACB/MCCB connection:  $T > T_{max}$
  - Dropper busbar:  $T > T_{max}$
- Bit 2 (0x0004): High internal sensor temperature:  $T_{pcb} > T_{maxpcb}$
- Bit 3 (0x0008): High ambient Temperature:  $T_{amb} > T_{maxamb}$
- Bit 4 (0x0010): Abnormal temperature raising, not implemented
- Bit 5 (0x0020): Current higher than threshold

#### Warnings

- Bit 6 (0x0040): Temperature threshold prewarning:  $T > (T_{max} - 10K)$
- Bit 9 (0x0200): Current higher than 95% of threshold current

#### Infos

- Bit 10 (0x0400): Low sensor signal strength: RSSI value  $< -90dBm$
- Bit 11 (0x0800): Signal not received: no signal since 5min (xComfort: 12h)
- Bit 12 (0x1000): Battery/Voltage too low: voltage  $< 3.0V$

### 7.1.3 Sensor position

The sensor position is coded as follow:

Bit 0-7: Position

- 1: Main busbar top
- 2: Main busbar top double
- 3: Main busbar bottom
- 4: Main busbar bottom double
- 5: Main busbar roof
- 6: Vertical dropper busbar top
- 7: Vertical dropper busbar bottom
- 8: Horizontal dropper busbar

...

...

Bit 8-9: Phase

- 0:N
- 1:L1
- 2:L2
- 3:L3

Eaton is an intelligent power management company dedicated to improving the quality of life and protecting the environment for people everywhere. We are guided by our commitment to do business right, to operate sustainably and to help our customers manage power - today and well into the future. By capitalizing on the global growth trends of electrification and digitalization, we're accelerating the planet's transition to renewable energy, helping to solve the world's most urgent power management challenges, and doing what's best for our stakeholders and all of society.

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