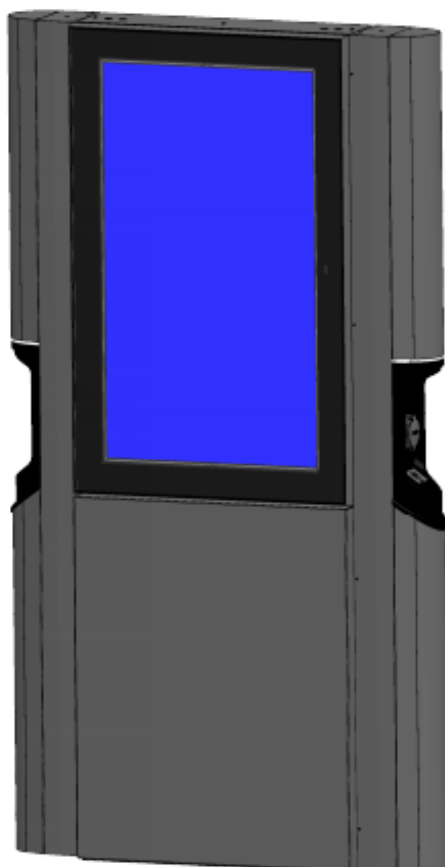


# ENSTO

## Chago Media

**ENG** Installation instructions  
Operation instructions



CE

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# 1 Introduction

This document describes the installation, operation and troubleshooting tasks for Ensto Media 46”.

## 1.1 Safety notices and display handling

The voltage level inside the display and the charging point is 230 – 400 V<sub>AC</sub>. Only qualified electricians are allowed to perform electrical installations and maintenance tasks.

The display must be handled carefully like any other piece of glass. Any mechanical shocks, blows, drops and stress should be avoided.

### DANGER



Take extra caution to handle live display, as there is electric shock risk.

### WARNING



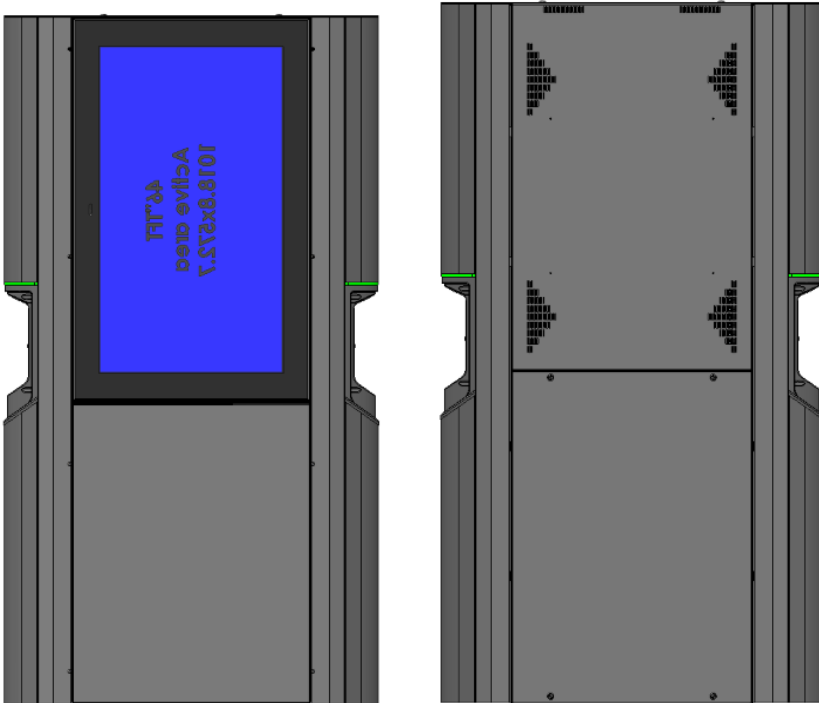
Take extra care to prevent the electro static discharges from damaging the electronics components inside the display while the display unit case remains opened. Maintenance personnel should use the protective **ESD gloves** or **ESD bracelet**. Ensto recommends using **ESD bracelet** connected to DIN rail to make the earth connection.

## 1.2 Abbreviations

Abbreviation in English	Description
A/D-board	Analog to Digital board. Used to convert HDMI etc. video signal to LVDS for the panel
HDMI	High Definition Multimedia Interface, video signal cabling standard
RCD	Residual Current Device, protecting humans from electric shock
RFID	Radio Frequency Identification, information remote reading/writing system, here used to identify authorized charging point users
LED	Light Emitted Diode
LVDS	Low Voltage Differential Signaling. Standard used for video signal cabling.
MCB	Master Circuit Breaker, also sometimes Miniature Circuit Breaker, protects cables from over load and short circuits
OCPP	Open Charge Point Protocol, protocol how the charger is communication with backend systems
PCB	Printed Circuit Board
TFT-LCD	Thin Film Transistor, Liquid Crystal Display. A panel technology widely used in information display products

## 2 Overview of the product

The display structure consists of 46" Display unit, two charging points and electrical centre.



*Picture 1 View of the display including pillar from front and behind*

### **3 Installation**

Display is pre-installed into a pillar and sub-assemblies are wired into pillar's electrical centre. Installation procedure consist of:

- Pillar mounting/fixation on to concrete base
- Electricity supply into pillar's electrical centre
- Data cabling if required
- Video signal output device into display's component plate

Display has two lifting slings on top of the display. Suitable hoist, crane or equivalent should be used to lift the display on to the concrete base. On the concrete base, there are several M16 bolts which have M16 nuts between the base and the display. These are used to adjust tilting angle to level the display. Cables are run through the concrete base into display's pillar structure and then into electrical centre/display housing.

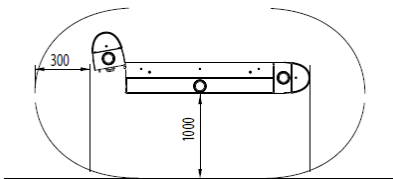
#### **3.1 Setting up installation site and other installation preparations**

Remember to leave enough empty space around the display for maintenance purposes. The space must be free from any obstacles, objects, formations and other impediments that could prevent the display's appropriate maintenance. Leave a minimum of 300 mm of empty space around the sides and above the display frame top for maintenance purposes. When selecting the installation site, check that there are no objects that might obstruct maintenance in the vicinity of the display. Also make sure that no such objects are installed in the area at a later stage.

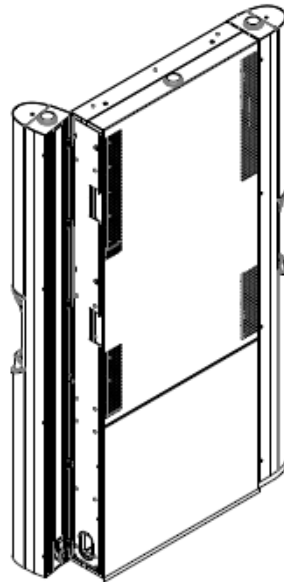


### 3.2 Installation tools

Display pillars are installed using M16 bolts and nuts. So appropriate spanner should be used. Display's charging points are opened using torx tool and display housing is opened with triangle key. Electrical installation tools are needed to make the required wiring connections. Please see electric diagrams for the power cable and data connection.



Minimum free operating and maintenance space in front of the maintenance space side and around the charging point



### **3.3 Opening the package and handling the product**

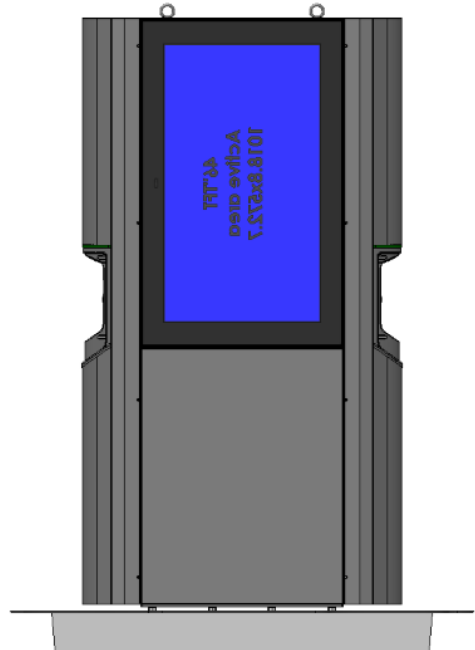
Products are transported to the agreed site/addresses on their delivery packages. Handle the packages with care. Store the packages in a dry place and prevent them from falling over. Do not expose the packages to strain or impacts. When handling the product, use special caution to protect the front section from impacts, scratching, pressing and twisting. Do not remove the product away from the delivery package before installation.

#### **Opening the transportation package:**

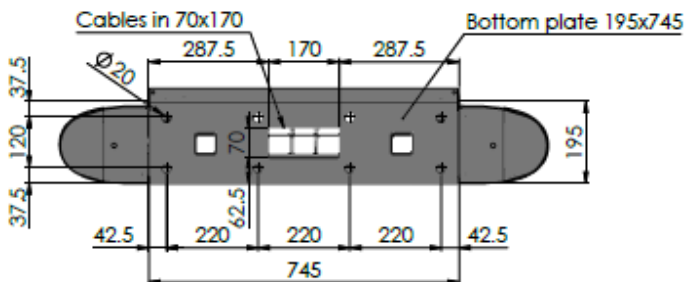
1. Set the package to a suitable place for handling.
2. Remove package covers around the products and avoid any damages and scratching.
3. Insert lifting slings on top of the display if not already present.
4. Check that the product has not been damaged during the transportation and handling. Please inform Ensto immediately about any detected damages.
5. Clean the installation site once the installation work has been completed. Recycle the transportation box, padding and protective plastic.

### 3.4 Concrete base stand

Concrete base should be casted according to provided drawings (please see chapter 13). Concrete base should include channel for cable bushing and bolts pre-fitted into cast for display fixation. Alignment nuts are inserted to each bolt. These are to operate display posture once fixed into place.



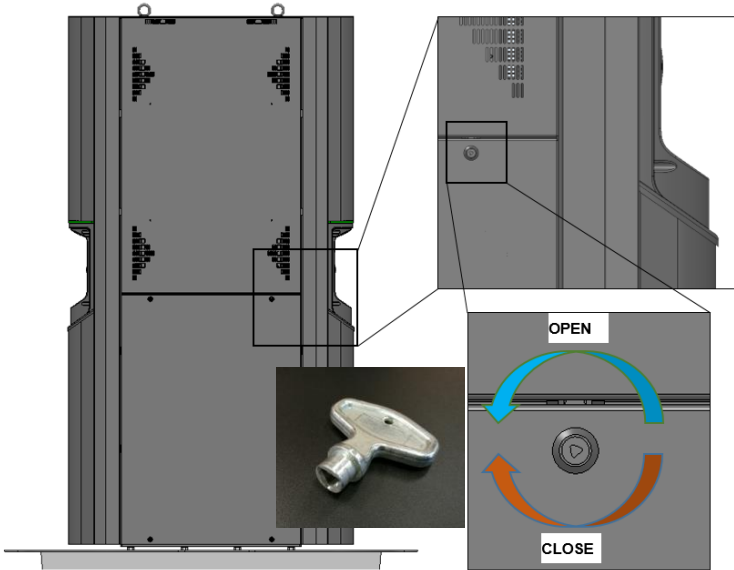
*Picture 2* Display standing on the concrete base



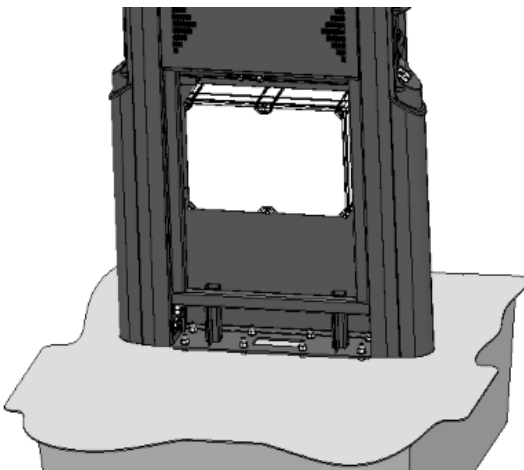
### **3.5 Installation procedure**

Once display transportation package is removed and lifting slings are fixed into place, display installation may commence. Cover plates on behind of the display pillar should be removed in order to help installation.

1. Check and set lifting slings into place on top of the display if not already present
2. Remove cover plate from back using triangle key (*check next page*)
3. Insert hoist harness to lifting slings
4. Remove bolts from transportation stand
5. Lift the display on to concrete base
6. Insert fixation bolts with nuts
7. Check alignment of the display and adjust nuts below stand as needed
8. Finally check and secure fixation nuts



**Picture 3** Back cover removal using triangle key



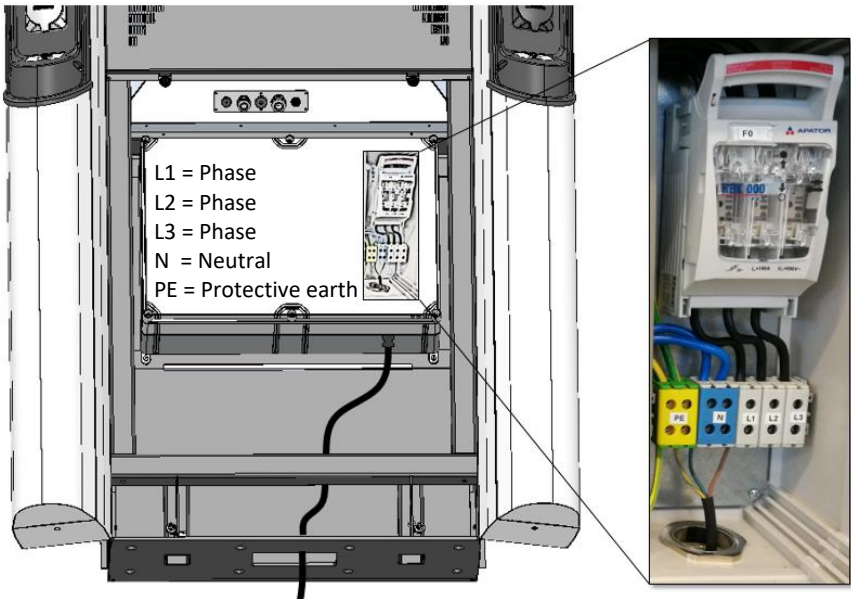
**Picture 4** Display on concrete base without back cover

## 4 Commissioning

Once display has been securely installed onto concrete base and cables withdrawn into display pillar commissioning may commence.

### 4.1 Pillar's electrical centre

Carry three-phase feed into the plastic box via cable grommet and connect into terminal blocks.

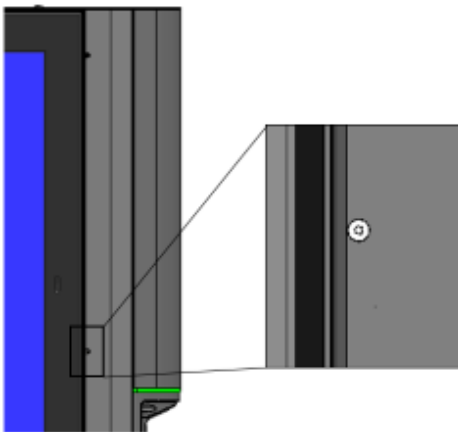


**Picture 5** Main power cable feed into pillar's electrical centre

## 4.2 Charger door opening

Both charging doors must be opened in order to open display's door. There are four M5 torx pin-head screws on both charging doors to lock them in place. Remove these screw to open both charging doors. Screws are located right next to the display structure.

To ease handling of the charging doors, there are hinges supporting opening of them.



**Picture 6** Charging doors locking screws (M5 Torx pin-head)

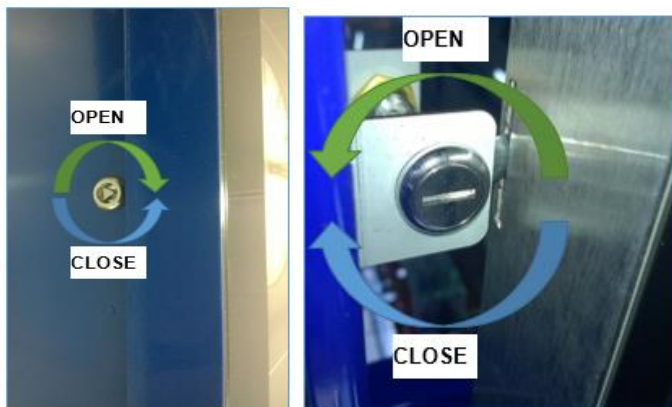
## 4.3 Display's door and panel opening

To enter display's component, both the door and the TFT-LCD panel must be opened. They have hinge system to ease the procedure. There are also telescopic supports to further ease the handling.

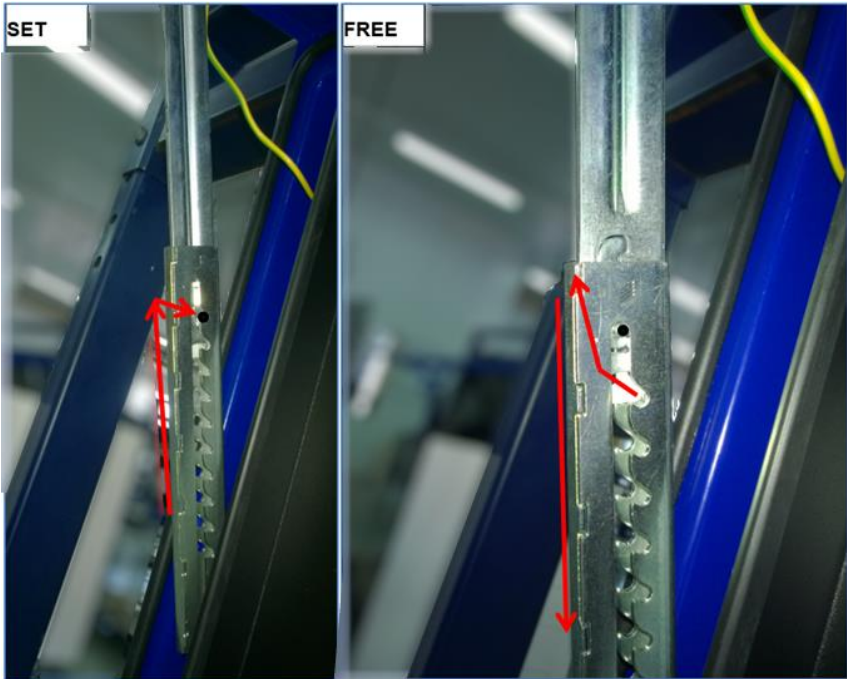
1. Open the display's door using a triangle key. Turn the key to clockwise. **Note! Turn the key from the wings.**
2. Lift the door a bit from the lower edge. The door structure will open to an angle of 92°.

3. Make sure that the telescopic supports' locking mechanism will hold the door in place.
4. Open the TFT LCD-element with wide screwdriver. Turn the screwdriver to counter-clockwise.
5. Then lift the TFT LCD-element a bit to open, it will open 89°.
6. When closing the case, release the locking mechanism of the telescopic support by moving all the way open.
7. Close the TFT LCD-element with wide screwdriver by turning it to clockwise, so that the lock's latch will set into the TFT LCD-element's mechanics.
8. Close the door and lower locks by turning the triangle key to counter-clockwise. **Note! Turn the key from the wings.**





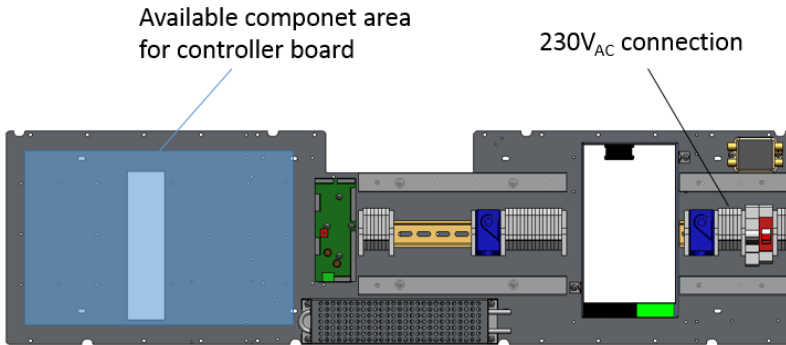
**Picture 7** Door's and TFT-LCD element's locks and open/close directions



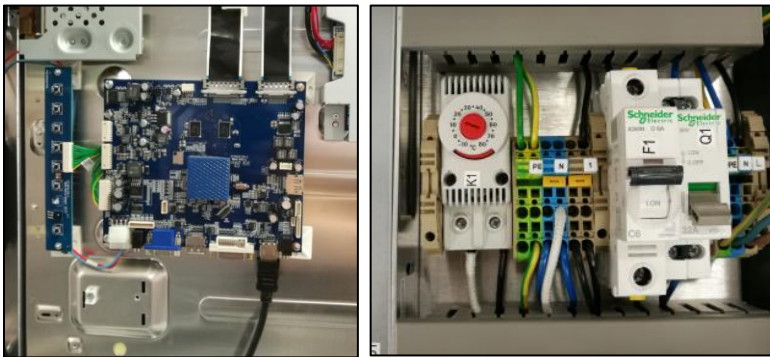
**Picture 8** Latch locking system to ensure door and TFT-LCD element's stability to remain open.

#### **4.4 Media display controller board installation**

Controller board will be installed into the display's component plate. There are terminal blocks for 230V<sub>AC</sub> operating voltage available to be used. Video signal will be provided via HDMI cable to A/D-board. A/D-board is located on the back side of the TFT-LCD element.



*Picture 9 Component plate inside the display*



*Picture 10 HDMI cable connected to A/D-board and 230V<sub>AC</sub> connection terminal blocks*

## 5 Display's operational functions

Following paragraph describes and shortly covers functionality of each topics. Each topic consists of essential component and/or sub-system in the display structure.



*Picture 11 Display's inside*

## 5.1 Switch, fuse, filter, terminal blocks

Switch Q1 – Operates power switch for display's components (except filter).

Fuse F1 – Thermal magnetic fuse to protect over high current, 6A C-curvature.

Filter F11 – EMC filter.

Terminal blocks from far right (PE, N, L) – Operating voltage input for the display system.

Terminal blocks in the middle (PE, N, 1) – 230V<sub>AC</sub> interface for display's components.



## 5.2 Power supply

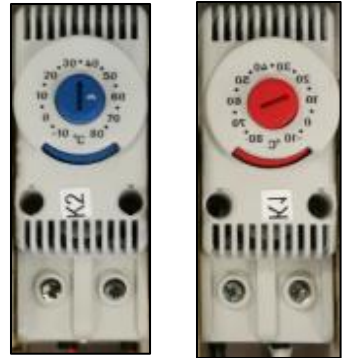
Power supply U1 – A 500W AC/DC unit to provide 24V<sub>DC</sub> operating voltage for display's components. Has autonomously working cooling fan.



### 5.3 Thermostats

Thermostat K1 (Red) – Normally closed thermostat to control heating element. Works autonomously. Set to 15°C.

Thermostat K2 (Blue) – Normally open thermostat to control cooling fans. Works autonomously. Set to 35°C.



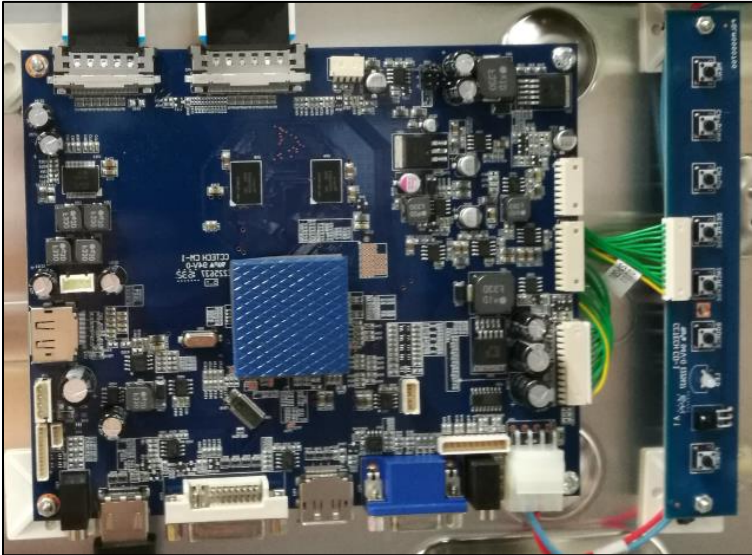
### 5.4 Diagnostic board

Diagnostic board 95IPD – Monitors temperature and ambient light sensors. It also controls display's backlight according to sensor parameters.



## 5.5 A/D-board and keyboard

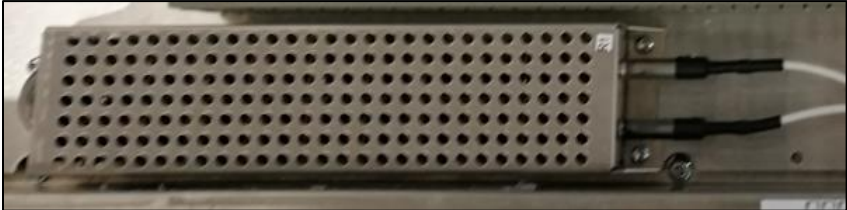
A/D-board 95VGA13 – Provides video signal to TFT-LCD panel.  
Connection via HDMI (alternatively DVI, DP). Controlling keyboard  
available for image adjustment parameters.





## 5.6 Heating element

Heating element R1 – A 200W heater controlled by thermostat K1. Operates using 230V<sub>AC</sub>.



## 5.7 Fans

Circulation fans M1 & M5 – These fans operate 24/7 to circulate small air current inside the display.

Cooling fans M2, M3, M4, M6 – These fans cool the display if too warm. Controlled by thermostat K2. M6 fan is located inside the heat exchanger channel.





## 6 Charging Point User Instructions

### 6.1 User Interfaces

LED signal lights will show the status of the charging point as described below:

Charging point status	LED light	LED operation
Charging point free and ready to use	Green	Stable
RFID read, user login ongoing	Green	Flashing
User login fail, access denied	Red	Stable
User login passed, charging allowed	Green	Waving
While connecting the cable	Green	Flashing twice
Vehicle connected, charging not started	Blue	Waving
Vehicle connected, starts charging	Blue	Waving
Charging ongoing	Blue	Stable
Error state	Red	Stable

#### 6.1.1 Charging Free Charging

- Plug in your electric vehicle to start charging.
- Unplug your electric vehicle to stop charging.

## **6.1.2 Charging with RFID**

You must have an RFID tag which has a permission to access the charging point.

### **6.1.2.1 Start Charging with RFID**

- When the charging point is free and the indicator light shows green, you can start a charging event.
- Show the RFID tag to the RFID reading area.
- When the RFID tag is read, the charging point will flash green and verify the user permission to charge. If the user login is failed, the indicator light turns to red. If the user login is passed, the indicator light turns to waving green.
- Now you are logged in to the charging station.
- Plug in the electric vehicle for charging. The indicator light turns to stable blue.

### **6.1.2.2 Stop Charging with RFID**

- Show the RFID tag to the RFID reading area.
- When you stop the charging event, the indicator light turns to waving green and you are able to unplug the charging cable.
- After you have unplugged, you are logged out from the charging point and the charging point is free for the next user.

## 7 Charging Point Installation / Commissioning Checklist

### 7.1 Introduction

This checklist is a guidance for ensuring both mechanical and electrical installation as well as commissioning of the Chago Media charging points.

### 7.2 Before Installation

Read the product specific installation instructions (*Ensto Commissioning instructions*) before performing any actions.



Note! Only trained electrician may perform the installation in accordance with the applicable local and national electrical rules and standards.

### 7.3 Checking the Installation

Go through the visual, mechanical and electrical installation when the charging point is un-powered.

CATEGORY	X	ITEM	NOTES
Overall look		Ordered material has been received.	
		Protective plastic wrapping have been removed.	
		No scratches or damages may be seen.	
Mechanical installation		Charging point is fixed properly on the ground.	
		The front cover opens and closes smoothly.	

Electrical installation	Charging point's power supply capacity meets electrical planning (cable size, MCB...).	Review local electrical design plan.
	Gently push the charging point with a hand to create vibration to ensure no bad contact / connection exist (wire or PCB).	
	Gently push the controller to create vibration to ensure no bad contact / connection exist (wire or PCB).	
	Check tightness of the PE-cable screw.	
	Power supply cables (L1, L2, L3, N and PE) are properly connected.	
	Insulation of power supply cables is intact (L1, L2, L3, N and PE)	
	Voltage between PE and N is less than 10 V	
	PE quality is less than 3 $\Omega$	
Operational check	All the LED states / color (green, blue, red) and RFID reader is functioning.	Create fail and charge (with RFID tag). Red at bootup, green at idle and blue while charging.
	Available electricity at the sockets. All the contacts (L1, L2, L3) must be tested.	Use Mode 3 tester.
	Verify that when charging point LED is green, there is no power at the charging socket contact (L1, L2, L3, N).	
	With Mode 3 charging tester, test the functioning of Mode 3 (from green to blue).	

## 8 Charging Point Maintenance / Preventive Maintenance Instructions

1 x per year



**WARNING!** Danger of electrical shock or injury.  
Disconnect power before working inside the device or removing any components.

X	MAINTENANCE ACTION
	Retighten all screws (electric components).
	Check the Mode 3 socket and if needed change it (burn or parts damage) (socket cost not under warranty).
	Check the charging cable and if needed change it.
	Check the sealings.
	Gently push the charging point with a hand to create vibration to ensure no bad contact / connection exist (wire or PCB).
	Gently push the controller to create vibration to ensure no bad contact / connection exist (wire or PCB).
	Create fail and charge (with RFID card) to check all the LED states / color (green, blue, red) and RFID reader is functioning.
	Test available electricity at the sockets; use Mode 3 tester if needed. All the contacts (L1, L2, L3 must be tested).
	With Mode 3 tester, test the functioning of Mode 3 (from green to blue).
	Check tightness of the PE-cable screw.
	Test voltage between PE and N (must be less than 10 V).
	Test PE quality (must be less than 3 Ω).
	SW update if needed (if in service contract).
	Restart the station from F0, ensure it will restart properly.

Maintanance performed by:

Date:

---

## **9 Display Maintenance**

### **9.1 Maintenance tasks after 50.000/70.000 operating hours**

Following maintenance tasks should be carried out after 50.000 or 70.000 operating hours. Please note if a power save mode is used during the night time. This means that the backlighting of the TFT LCD-element is turned off.

- Checking the TFT LCD-element. The brightness of the TFT LCD-element has decreased to 50% of the maximum level after 50.000 operating hours. Change the TFT LCD-element if necessary.
- The fans should be changed after 70.000 operating hours. The circulation fans are always on when the display is powered on. The cooling fans are controlled by the thermostat and are in use only when the inner temperature of the housing is over +35°C. Please check that the fans do not make any strong noise during the rotation, change if necessary.

Please see the Maintenance chapter for more information about the inspection of the electrical components.

### **9.2 Scheduled maintenance once a year**

This activity is highly recommended but not obligatory.

To prevent temperature problems, and therefore increasing life expectancy of electrical components, it is suggested to vacuum Heat Exchanger channel from dust and debris once a year. This is located

inside the display. To able vacuuming of the Heat Exchanger channel, hatches located on the channel needs to be removed.

### **9.3 Electrical inspection every other year**

Perform the following electrical inspection every second year.

1. Check the back lightning adjustment by first covering and then illuminating the light sensor.
2. Check the circulation fans that are located on the side of the display housing.
3. Check the cooling fans. Thermostat K2 controls the cooling fans. Check the heater. Thermostat K1 controls the heater

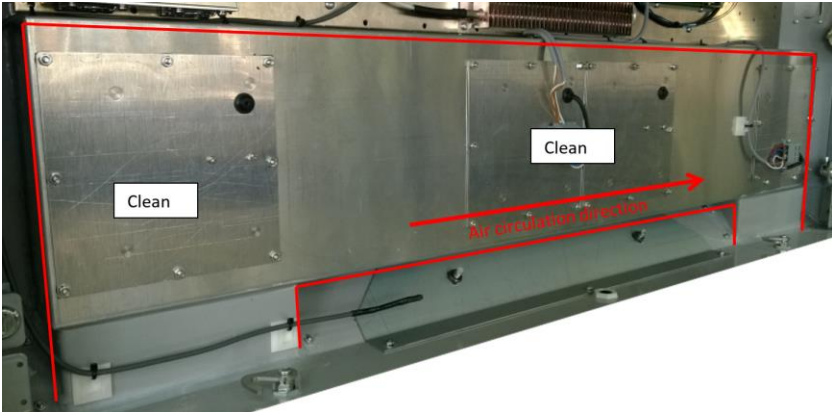
### **9.4 Mechanical inspection once a year or so**

Perform the following mechanical inspection every year or more often depending of the environmental impurities.

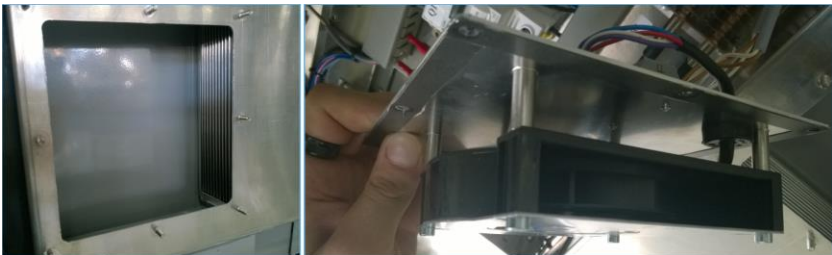
1. Clean the display housing and the front glass with moisture soft cloth and if necessary use mild soapy water to remove the worst impurities.
  - DO NOT use jet washer for cleaning the displays!
  - DO NOT use any strong alkaline or abrasive materials for the cleaning!
2. Check the paint coating for any damages
  - Patch-paint the mechanical part with two component metal paint if necessary.
3. Check the glasses of the front door(s).
4. Check and lubricate the hinges (use for example Vaseline spray). Check the tightness of the cable glands and the installation points.

### **9.5 Cleaning of the internal heat exchanger channel**

First, open the hatch to the most left in the heat exchanger channel. Then vacuum insides of the hatch and put hatch cover back on. Then proceed to the next hatch and repeat process.



*Heat exchanger channel and hatches*



*Open hatch and cooling fan in cover*

## 9.6 Changing the display's components

### 9.6.1 TFT LCD –element

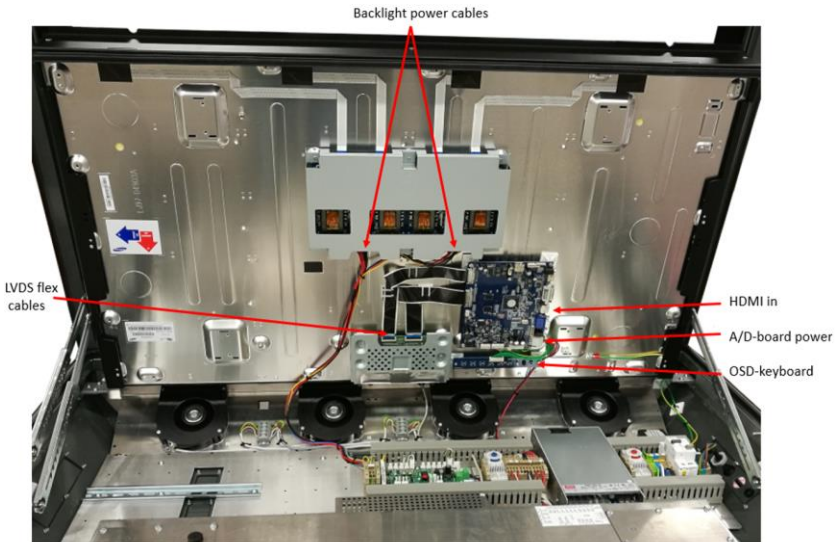
#### How to change the TFT-element:

1. Open the display's front door and TFT LCD –element.
2. Power off the display from the main switch Q1.



3. Remove A/D-board, OSD-keyboard and other cabling from the TFT LCD –element.
4. Remove TFT LCD –element by first removing the telescope support and then removing securing nuts from the sides.
5. Insert new TFT LCD –element and fix into plate.
6. Reinsert A/D-board, OSD-keyboard and other cabling to the TFT LCD –element.
7. Power on the display from the main switch Q1.
8. Close the display's TFT LCD –element and front door.



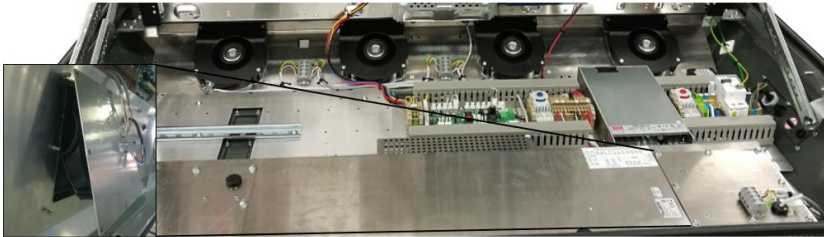


*TFT LCD –element, panel structure*

### **9.6.2 Fans**

The fans circulating air inside the display housing and between the front glass and TFT LCD-element. Fans are located inside the display at left side, and heat exchanger channel includes one.

In order to change a fan, the whole fan plate must be removed to access singular fan's mounting screws. TFT LCD –element needs to be removed to access the fan plate.



*Fan plate with circulation fans and one heat exchanger fan underneath a hatch*

### **How to change inside fans:**

1. Open the front door and TFT LCD –element.
2. Power off the display from the main switch Q1.
3. Remove TFT LCD –element to access fan plate. See chapter 7.2.1.
4. Remove fan power cabling coming from the fan plate to terminal blocks.
5. Remove the fan plate from the display.
6. Replace broken fan and install fan plate back into the display.
7. Re-connect the wires.
8. Power on the display with the main switch Q1.
9. Test the functionality of the fan by adjusting the thermostat value below the ambient temperature. Check that the fan starts to rotate and it blows to

correct direction. Remember to adjust the thermostat value back to the default value +35°C degrees (K2).

10. Close the TFT LCD –element and front door.

### **How to change heat exchanger fan:**

1. Open the front door and TFT LCD –element.
2. Power off the display from the main switch Q1.
3. Remove hatch cover and fan’s wiring.
4. Replace the fan and put the hatch back to plate so that fan’s blow direction is as it were.
5. Re-connect fan’s wiring.
6. Power on the display with the main switch Q1.
7. Test the functionality of the fan by adjusting the thermostat value below the ambient temperature. Check that the fan starts to rotate and it blows to correct direction. Remember to adjust the thermostat value back to the default value +35°C degrees (K2).
8. Close the TFT LCD –element and front door.

### **9.6.3 Thermostats**

Thermostat K1 controls the heating element. When the inside temperature of the housing goes below +15°C degrees, the

thermostat will turn the heating element on and the housing warms up.

Thermostat K2 controls the cooling fans. When the inside temperature of the housing raises over +35°C, the thermostat will turn the remaining ventilation fans on to cool the housing. Please note that some of the circulation fans are always turned on.

Default value for the K1 is +15°C degrees and the default value for the K2 is +35°C degrees. The red thermostat K1 is opening type and the blue thermostat K2 is closing type

### How to change a thermostat:

1. Open the display's front door and TFT LCD –element.
2. Power off the display from the main switch Q1.
3. Remove the thermostat from the DIN-rail.
4. Remove the wires from the thermostat.
5. Connect the wires to a new thermostat.
6. Press the thermostat to the DIN-rail.
7. Test the functionality of the thermostat.
8. Adjust the default values for the thermostat.
9. Power on the display with the main switch Q1.
10. Close the TFT LCD –element and display's front door.

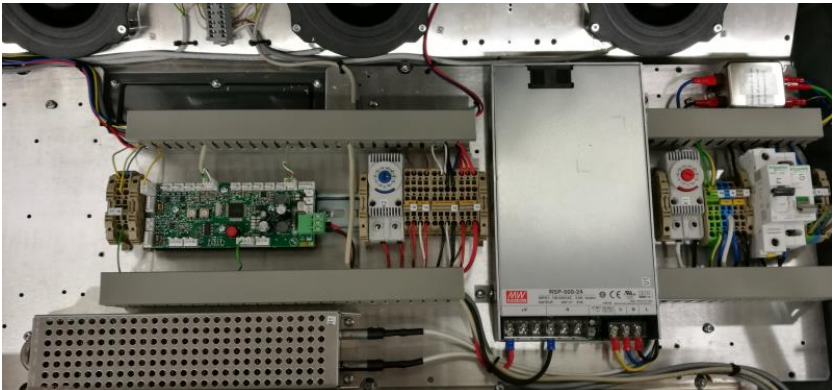


#### 9.6.4 Power supply

Power supply converts the 230 V<sub>AC</sub> to +24 V<sub>DC</sub> that is required by the electrical components to operate.

##### **How to change the power supply:**

1. Open the display's front door and TFT LCD –element.
2. Power off the display from the main switch Q1.
3. Disconnect the power supply's cables and remove the power supply.
4. Insert a new power supply into place.
5. Connect the cables to power supply unit.
6. Power on the display from the main switch Q1.
7. Close the display's TFT LCD –element and front door.

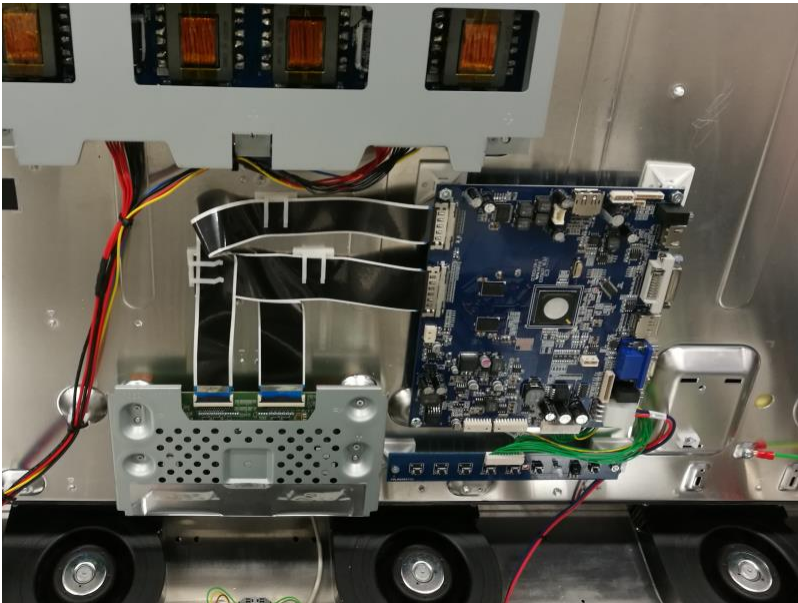


*Power supply U1*

### 9.6.5 A/D-board

#### How to change the A/D-board supply:

1. Open the display's front door and TFT LCD –element.
2. Power off the display from the main switch Q1.
3. Disconnect the A/D-board's cables and remove fixation nuts.
4. Change new board into place.
5. Secure fixation nuts and reconnect cables.
6. Power on the display from the main switch Q1.
7. Close the display's TFT LCD –element and front door.



*A/D-board found behind TFT LCD –element*

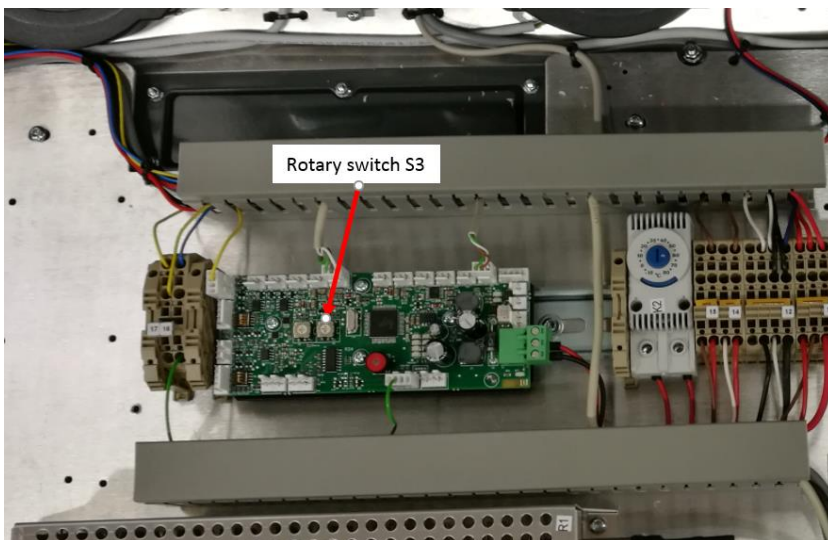
### 9.6.6 Diagnostic board

Before changing the diagnostic card 95IPD, make sure that it holds correct firmware for the display. On the PCB also has a rotary switch S3 that needs to be set to correct position. Verify position from old diagnostic card. Diagnostic board is installed to a mounting plate that has snap-on connection to DIN-rail.

#### **How to change the 95IPD diagnostic board:**

1. Open the display's front door and TFT LCD –element.
2. Power off the display from the main switch Q1.
3. Disconnect the diagnostic board's cables and remove from mounting plate.
4. Change new board into place.
5. Secure with screws and reconnect cables.
6. Check rotary switch S3 position.
7. Power on the display from the main switch Q1.
8. Close the display's TFT LCD –element and front door.





*Diagnostic board 95IPD*

## 10 Charging Point Troubleshooting

### Charging station is off, no lights on

Issue	Corrective action
Mains voltage does not exist in supply connector L1.	Ensure proper power supply.
Circuit breaker F0 is off.	Turn F0 on.
12V power unit has no LED on.	Ensure 230V power supply to 12V power unit; if ok re- place the power unit.
The controller has no PWR LED on.	Ensure powersupply to the controller; if ok replacethe controller.

### Charging cable is locked in Mode 3 socket outlet

Issue	Corrective action
Unexpected fault has occurred while power is on.	Option 1: If equipped with Mode 3 lock release functionality, turn off the power from F0 and pull charging cable out from the socket. Option 2: Turn off the power. Switch Mode 3 lock manually into open position.
Power is off.	Open the front cover. Switch Mode 3 lock into open position. Note! If the station has a Mode 3 Lock Release functionality, then during power cut the Mode 3 lock opens automatically.

### Configuration via web browser

Issue	Corrective action
PC does not recognize micro USB plug and connection to the controller cannot be established via web browser.	Check from Windows 7/10 operating system settings via "Device Manager" that RNDIS network adapter is available. If not, update the related Windows driver.

## 11 Charging Point Technical Information

### Electrical connections

Nominal voltage	230 Vp-n / 400 Vp-p
Nominal current	2 x 32 A (Mode 3 socket)
Nominal frequency	AC 50 Hz
Rated power supply	<ul style="list-style-type: none"> <li>• 22kWpercharging outlet:2x3x32A Optionally:</li> <li>• Dynamic load management (DLM) based on available power supply</li> <li>• Static current limitation</li> </ul>
Supply connections and terminals	L1, L2, L3, N, PE Cu 2.5 - 50 mm <sup>2</sup> , Al 6 - 50 mm <sup>2</sup> Tightening torque Nm: 4 Nm (2.5 - 4 mm <sup>2</sup> ), 12 Nm (6 - 50 mm <sup>2</sup> )

### Design and mechanics

Material / color	Painted stainless steel color: <ul style="list-style-type: none"> <li>• RAL7021 "Anthracite"</li> </ul>
Enclosure class	IP54
IK class	IK10
Operating temperature	-30 ... +55 oC
Directive	LVD directive 2006/95/EC EMC 2004/108/EC RoHS 2011/65/EC
Standard	EN61439-1, EN 61439-3
Operation and communication	according to IEC 61851-1, IEC 61851-22
Approvals / Markings	CE

## Features

No. of simultaneous users	2 users
Connection to car	Default: Mode3 charging, Type2
Charging status indication	LED: <ul style="list-style-type: none"> <li>• Blue = Charging</li> <li>• Green = Available</li> <li>• Red = Malfunction</li> </ul>
User access & control	Standalone mode: <ul style="list-style-type: none"> <li>• Default:</li> </ul> Free use Online mode: <ul style="list-style-type: none"> <li>• Option: RFID reader (ISO/IEC 1443A/B)</li> <li>• Option: Remote control (through communication interfaces)</li> </ul>
Energy measurement	Default: Current transformers (per charging point) Option: MID class kWh metering (per charging point)

## Safety features

Over-current protection (MCB)	Default
Residual current protection (RCD)	Type A (30mA AC), Type B (6mA DC)
Automatic reset of RCD and RCD remote test	Default

Automatic release for Mode 3 socket in case of sudden power outage	Default
Surge, overvoltage protection	Option
Low control voltage 12 VDC	Default

### **Connectivity and Communication**

Connectivity	Default: GSM, 3G Option: Ethernet
Communication	Default: OCPP 1.5 or OCPP1.6, both fully implemented.

### **Warranty**

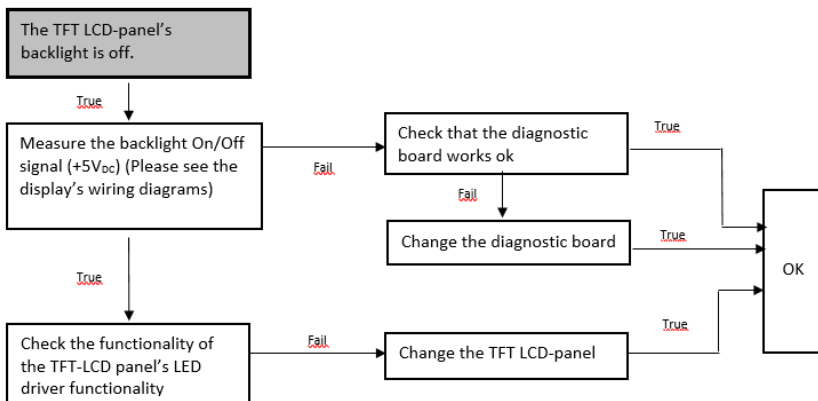
Warranty conditions, see [www.ensto.com](http://www.ensto.com).

## 12 Display Troubleshooting

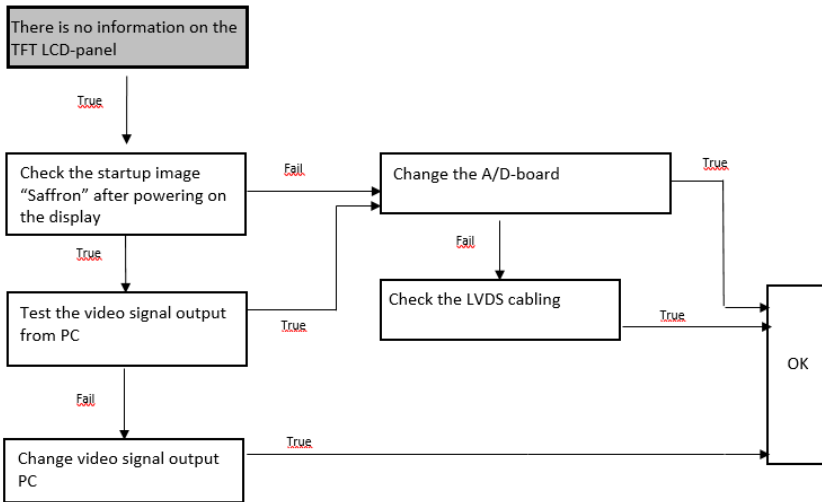
Inspection list:

1. Please see the wiring diagram for the connections.
2. Check the 230 VAC power supply.
3. Check that the display fuses are ok.
4. Check the 24 VDC power supply.

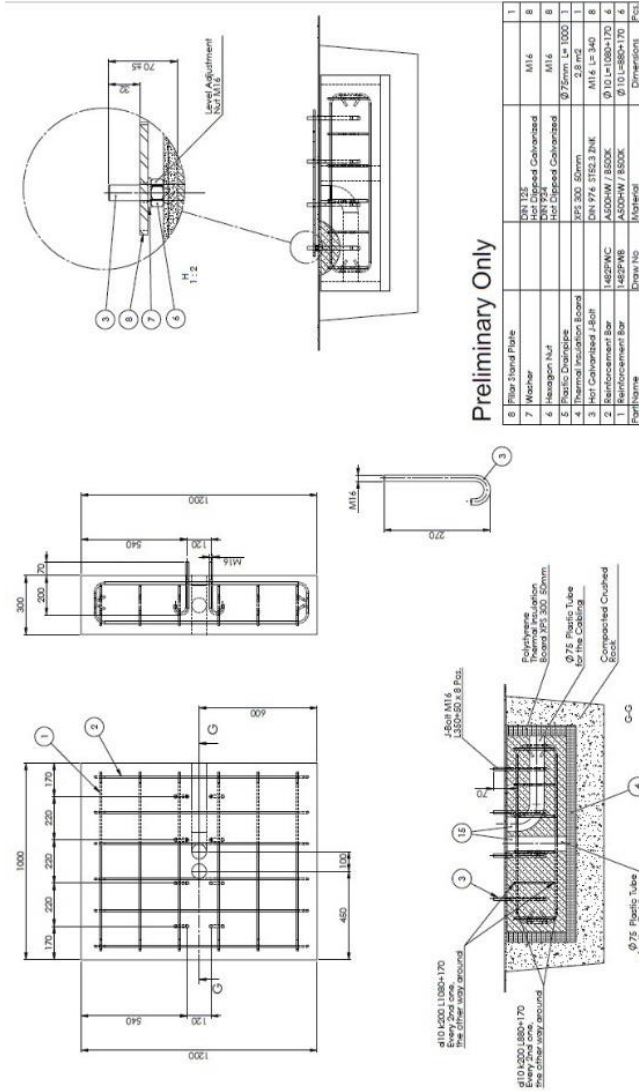
### 12.1 Backlighting failure



## 12.2 TFT LCD-panel failure



### 13 Concrete installation drawing





# 14 Charging point wiring diagram

