alfa
COLORPAINT DISPENSER

Technical Manual

CR6

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

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Table of contents

0. FOREWORD

0.1. HOW TO USE THE MANUAL

0.1.1. IMPORTANCE OF THE MANUAL

This manual provides instructions on the ordinary and extraordinary maintenance of the product CR6.
Further ordinary maintenance instructions are provided in the Operator Manual.
Before performing any repair or extraordinary maintenance operations, carefully read this manual in all its parts, paying particular attention to the paragraphs relating to precautions and safety alerts.
If problems or difficulties should arise, the Alfa Srl TECHNICAL SERVICE SUPPORT is always available to provide the appropriate support, advice, explanation and assistance.
Alfa Srl reserves the right to make modifications to its products, with the purpose of improving their performance, without prior notification.
Incorrect use of the system can lead to loss of warranty in all its forms and terms.

0.1.2. HOW TO KEEP THE MANUAL

Do not remove, modify or rewrite the contents of this manual for any reason.
Keep the manual in a safe place, protected from heat and humidity.

0.1.3. HOW TO CONSULT THE MANUAL

This manual consists of:

- COVER PAGE IDENTIFYING THE TYPE OF PRODUCT
- TABLE OF CONTENTS
- INSTRUCTIONS AND/OR NOTES ON THE PRODUCT

The COVER PAGE identifies the product described in this manual.
Use the TABLE OF CONTENTS to find the list of CHAPTERS and PARAGRAPHS contained in the manual and the corresponding topics.
The INSTRUCTIONS AND/OR NOTES ON THE PRODUCT define the safe working practices and advice on the correct procedures and the skills required to operate the system correctly and maintain it.
Some images of this manual, which have been included for easier identification of the described parts, may not be exactly the same as the ones in your System.

0.1.4. SYMBOLS USED IN THE MANUAL

The purpose of the safety and information symbols used in this manual is to draw the reader's attention to warnings concerning safety or indicating good working practices.
The same symbols are also placed on the machine to indicate dangerous areas and refer to the relevant safety notes in the manual.

MEANING OF THE SYMBOLS

	**ATTENTION! GENERIC HAZARD**
	**ATTENTION! HAZARDOUS VOLTAGE**
	**ATTENTION! CRUSHING RISK.**
	**ATTENTION! LASER RADIATION HAZARD**
	**CABLES WITH EARTH CONNECTION** **THIS SYMBOL IDENTIFIES THE EARTH CONNECTION REFERENCE POINT.**

0.1.5. PROCEDURE FOR UPDATING THE MANUAL IN CASE OF MODIFICATIONS TO MACHINE

If the MACHINE or MANUAL is MODIFIED in any way, an UPDATE may be sent for insertion into the printed Manual.

0.2. INSTRUCTIONS FOR ORDERING ORIGINAL SPARE PART AND CONSUMABLES

To ensure you obtain the correct items as rapidly as possible, please include the following information when placing your order:

- **Machine type**: as indicated on nameplate.
- **Serial number**: as indicated on nameplate.
- **Quantity** of each item required.
- **Part number** of required part.
- **Description** of required part.

0.3. SAFETY INFORMATION

0.3.1. PRECAUTIONS AND USAGE REGULATIONS

The machine must be positioned in an enclosed area that complies with the environmental requirements set out in the relevant paragraph.

	Do not install the machine in a dusty environment. Do not expose the machine to sources of heat, excessive cold, water, electromagnetic energy, or sources of smoke. The machine must be positioned on a completely level surface.
	Always make sure that the power cable is intact and free of any cuts or cracks. In case of cable damage, renew the cable using genuine spare parts.
	The noise level generated by the machine is less than 70 DB (measured at a distance of 1 m and at a height of 1.60 m from the floor). This value may be exceeded in certain work environments. If the operator is exposed noise levels potentially exceeding 85 DB on daily basis, effective hearing protections must be used, as required by the 86/188/EEC regulations.

0.3.2. GENERAL SAFETY WARNINGS

	CR6 is compliant with all the safety requirements of the main European and extra-European Standards and Institutions. Nevertheless, it is recommended that you read carefully the information contained in the following pages, since it illustrates the potential hazard situations and the necessary precautions to take.
	The machine is provided with doors and guards that prevent the operator from coming in contact with mechanical and electrical hazardous parts. A periodical check on the safety devices must be performed according to the instructions provided by this manual. If the safety protection systems are damaged, turn off the machine and call the technical service.
	**High voltage parts - Risk of electric shock** No high voltage parts are accessible from the User area. All the high voltage circuits are housed within enclosed areas and protected by fixed guards. The high-voltage internal parts are accessible to the maintenance operator and are protected against direct contact by means of IP 2X or higher class protection. Hazardous parts are marked by the symbol on the left.
	**Hazardous mechanical parts - Risk of crushing or entanglement.** Internal moving parts are accessible only to technical personnel. Do not put your hands into the machine working areas. Tie hair to avoid it becoming entangled in the machine. For the same reason, avoid wearing loose objects such as ties, necklaces, pendants or other similar items when working on the machine.
	**High-temperature parts - Risk of scalding** The machine does not include any components or areas that may reach temperatures high enough to pose a risk to the user, the maintenance operator or the technician. The areas where this risk could occur, under fault conditions, are marked by the symbol on the left.
	**Inflammable parts - Fire risk** In order to minimise the fire risk, the machine is made from materials that do not propagate fire. Nevertheless, the machine must be installed in a properly ventilated room, complying with the manufacturer's installation requirements. Never leave materials, fluid or foreign objects that might increase the risk and spread of a fire inside the machine.
	It is forbidden to modify the internal and external machine protections. If necessary, contact Alfa Technical Service Support. Alfa Srl may not be held responsible for any damage that may arise due to the failure to comply with the above instructions. In the event of a malfunction, contact the manufacturer's technical support service.

	**EARTH CONNECTION** Earth conductor connection point. Always ensure that yellow-green earth leads are securely fastened to the earth point indicated by the symbol on the left. DO NOT REMOVE THE EARTH CONNECTIONS FOR ANY REASON. In the event of damage to the conductors, switch the machine off and immediately contact the technical service support.

IF THE EQUIPMENT HAS BEEN USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED

0.3.3. USERS AND ACCESS LEVELS

The machine has three different user interfaces:

- USER: an operator who uses the machine for the purpose of producing a colour sample;
- MAINTENANCE OPERATOR: user in charge of performing ordinary maintenance operations, such as canister filling, nozzle cleaning and autocap moisturising;
- TECHNICIAN: an expert operator authorised to access the machine special diagnostic, calibration, configuration, troubleshooting, and extraordinary maintenance functions.

In order to identify the various areas of intervention, the following definitions must be taken into account:

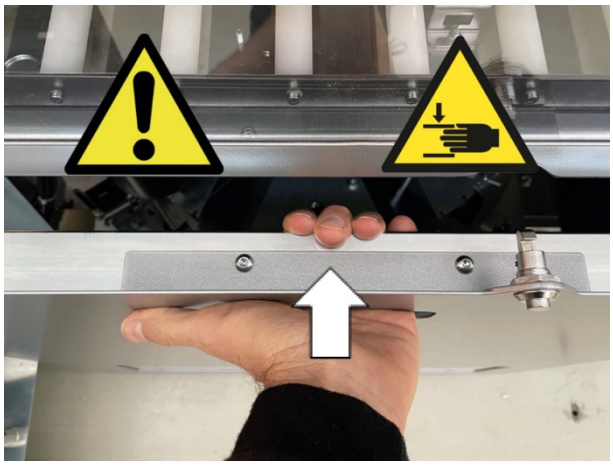
- USER AREA: the area outside the machine that the user accesses in order to produce a colour sample and to perform ordinary maintenance operations;
- MAINTENANCE AREA: the area inside the machine, which can be accessed using a key, and where ordinary maintenance operations are usually performed (on Thor such operations are performed by the MAINTENANCE OPERATOR); extraordinary maintenance operations require access to the SERVICE AREA and are performed by the TECHNICIAN (replacement of dispensing units, circuits, electric parts);
  SERVICE AREA (FOR USE BY TECHNICIANS): the internal areas of the machine that cannot be accessed simply with a key but also require other tools (circuits, electrical cabinets);

0.3.4. RESIDUAL RISKS AND HAZARDOUS AREAS

USER AND MAINTENANCE OPERATOR
The potentially dangerous areas associated with mechanical moving parts:

- Colourant table movement*; the rotary movement of the colourant support base rotation during dispensing or refill operations does not give rise to any risks that are not immediately obvious; however, it is advisable to be careful and not to approach the parts with hands, arms, hair or clothes during operation.
- Circuit canisters: risk of crushing for arms, hands or fingers do to the movement of the stirring blades in the event of a failure or malfunction affecting the panel opening sensors. Stirring is controlled by a timer and may start unexpectedly (for example, when the machine is in diagnostic or refill mode). Do not insert your hands into the canisters. If necessary, switch the machine of before carrying out any operation.

  Extracting the lower carriage: be careful when refitting the carriage. Possible crushing risk for hands and fingers between the fixed and the mobile parts (see adjacent figure).



TECHNICIAN: The authorised technician can remove the machine fixed protections and access the internal parts containing live electrical components.

- Electrical panel area: risk of electric shock.

Any intervention that requires the operator to access zones where risks of electric shock are present must be performed with the machine off.

	**TECHNICAL SERVICE SUPPORT**: **The machine may also be operated remotely via a Personal Computer or Smart device. Pay maximum attention when accessing dangerous areas.**

0.3.5. CONTACT WITH COLOURANTS

Always beware of any product leaks from the machine or circuits during production, as well as during cleaning and maintenance operations.
Contact with the products can cause irritations or injuries if not properly treated.
If necessary, always refer to the safety sheet of the liquid in question, which available from the supervisor.

0.3.5.1. GENERAL FIRST AID MEASURES

In the event of eye contact: remove contact lenses, if present. Immediately rinse the eyes with running water for at least 15 minutes, holding the eyelids open. Seek immediate medical advice.
In the case of skin contact: remove the contaminated garments. Wash the skin thoroughly with soap and water.
Ingestion: seek immediate medical assistance, indicating the container, label or material safety data sheet. Keep the person warm and relaxed. Do not induce vomiting.

0.4. TECHNICAL SPECIFICATIONS

0.4.1. ELECTRICAL SPECIFICATIONS

Power supply	220Vac ±10% 60Hz or 230Vac ±10% 50Hz
Max current	8.0A
Maximum power consumption	1000W max (+200W AUX panel + 100W internal AUX)
Fuses 5X20 mm	T8.0A-250V Q.ty 2cs
Working noise (*)	Less than 70 dB (A)

(*) A-weighted sound pressure level determined during normal use at a distance of 1 m from the surface of the machinery and 1.60 m above floor level.

0.4.2. EQUIPMENT CLASSIFICATION AND REFERENCE STANDARDS

Over voltage category	II See note (1)
Protection rating	IP 20
Equipment classification	I
Reference standards	IEC 61010-1 IEC EN 61326-1
Airborne noise (*)	Less than 70 dB (A)

Note (1):
The equipment is protected against voltage overloads of up to 1500V. For power lines that are subject to transients with peaks of voltage greater than > 1500V, the use of external suitable protection devices is recommended.

0.4.3. OPERATING CONDITIONS

Operating temperature (*)	+5 - +35°C
Relative humidity	30% - 90% without condensation
Storage temperature	-25 - +55°C
Altitude	2000 m

* The components tend to lose their rheological characteristic outside the manufacturer’s recommended temperature range. Adhere to the specifications of the components in use.

1. DESCRIPTION OF THE MACHINE

This paragraph illustrates the main internal and external machine components are describes their respective functions.

1.1. MAIN COMPONENTS

1.1.1. MAIN COMPONENTS

- Colourant groups cabinet
- Colourant groups cabinet (extractable)
- Loading roller conveyor
- Unloading roller conveyor
- Lifters
- Supervisor (User Interface touch screen)
- Electric panel (on rear)

1.1.2. ROTATING COLOURANT TABLE

Each head can house up to 16 colourant groups.
The circuits are placed on a “rotating table”, so that the product can be dispensed via the various circuits in sequence.

Each colourant group may be equipped with a 1.5, 2.5 or 3 litre storage canister and its own dispensing unit.

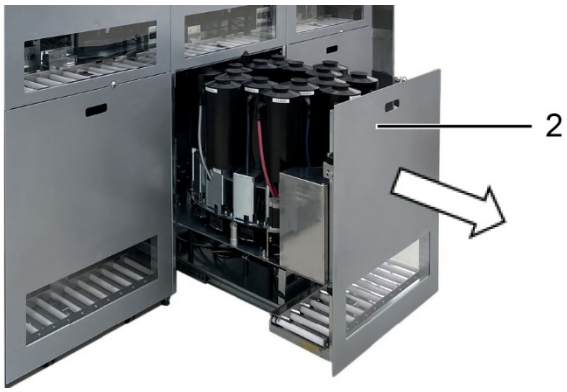
Dispensing is controlled by a single actuator, which is coupled exclusively to the unit currently in the dispensing position (in front of the operator). Thus, there is only one dispensing position for each head, and this is the same position where it is possible to recirculate the circuit.

1.1.3. ACCESSING THE GROUPS

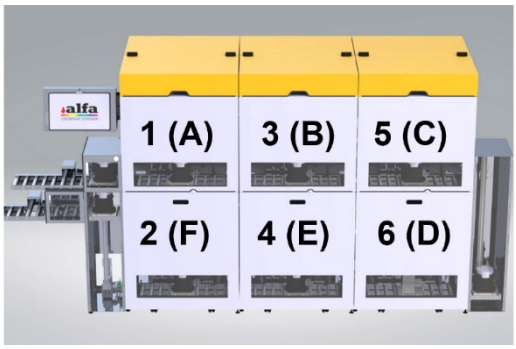
The canisters of the groups housed in the upper part of the machine may be accessed by opening the upper lid (1).

To access the groups in the lower part of the machine it is necessary to extract the respective carriages (2).
The carriages are maintained in position by a retaining system consisting of a guides and a magnet.

When closing the carriage and access door, take care to avoid potential crushing risks.
Extract one carriage at a time: close the open carriage before opening the adjacent one.

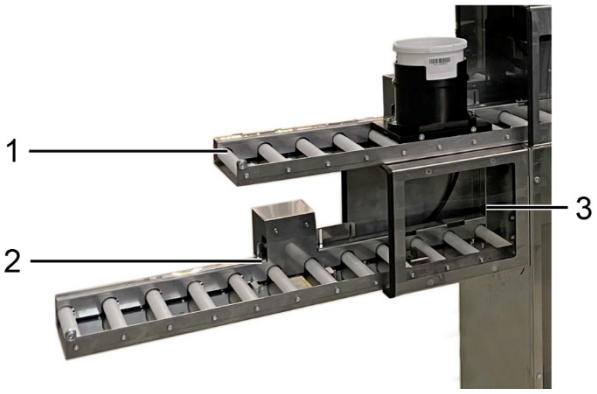


By convention, the heads are numbered (1..6), as shown in the figure.
The letters A..F are adopted in the software.



1.1.4. LOADING AND UNLOADING ROLLER CONVEYORS

The container infeed (1) and outfeed (2) roller conveyors are located on the left hand side of the machine, together with the outfeed tunnel (3).
The containers may only fed into the machine by means of the respective shuttles. The shuttle must be selected based on the volume of the container to be used and is defined when setting up the machine.



Load the shuttle housing the container manually on the loading roller conveyor, then generate the start dispensing command via the Alfa40 software (see Chap. 4 - “HOW TO PRODUCE A COLOUR” in the user manual).
The machine loads the shuttle by means of the motorised roller conveyor and checks that the selected volume corresponds to the volume of the container that has been loaded.
Once the process is complete, the container is positioned on the outfeed roller conveyor, where it can be removed manually.

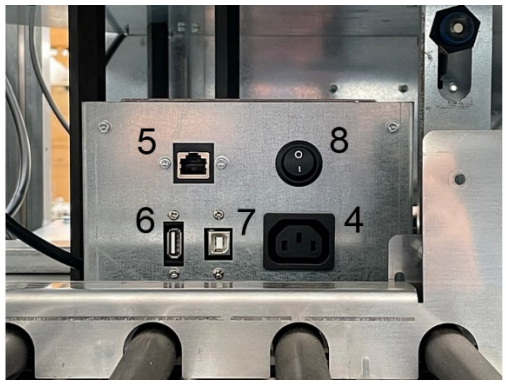
1.1.5. AUXILIARY FUNCTIONS

In addition to the rotating colourant table, each head includes a cleaning station (1), a roller conveyor for moving the shuttle (2) and an electrical panel (3) that is provides access to a series of service functions, as described below.

The purpose of the cleaning station is to eliminate any residual traces of colourant from the dispensing nozzles on each group, so as to prevent them from becoming blocked.

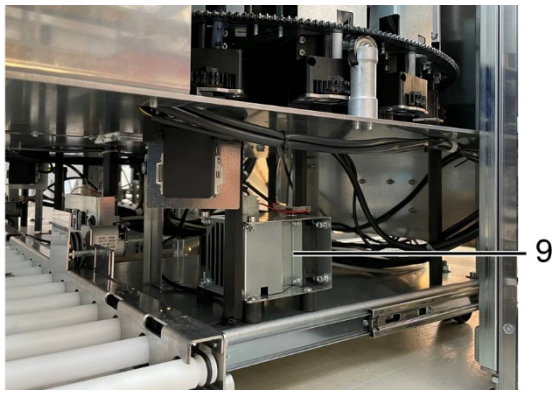
The following connections are available for each head:

4. IEC320 power socket for connecting a weighing scale (max. 100 W);
5. Network socket for the PC board 192.168.0.100:8080/admin;
6. USB-A port for connecting the weighing scale (via the USB-RS232 converter);
7. USB-B port for programming the MMT board;
8. Main power switch for switching the head off and disconnecting the IEC320 power socket;



ATTENTION: The head 1 switch also switches the supper visor off.

The upper part of the carriages is also fitted with a heater (9). This device is activated automatically when the temperature falls below a programmable threshold, thus ensuring that the temperature of the components remains above the minimum limits indicated by the manufacturer.



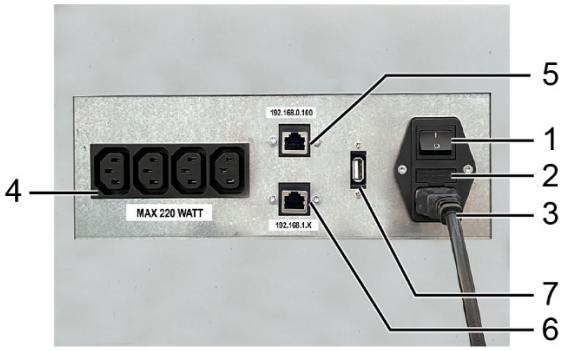
1.1.6. LIFTERS

The shuttle is transferred from the upper to the lower heads and to the outfeed by means of two lifters positioned on the left (1) and right (2) hand sides of the machine.

1.1.7. ELECTRICAL CONTROL PANEL

This panel is located on the side of the machine and houses the main system electrical connections.

1. On/off Switch
2. Fuse holder 5x20 mm T8 A 250 Vac
3. IEC standard CT-120 power socket
4. 4 x standard C14 connector (200 W MAX*)
5. “192.168.0.100”: RJ45 socket for direct communication with the machine supervisor
6. “192.168.1.X”: RJ45 socket for local Ethernet network connection (component heads)
7. “USB”: supervisor USB port
8. Not used



* total power available at the 4 external sockets.

ATTENTION: After switching the machine off, wait 2 minutes before switching it on again (it is necessary to wait until the internal controllers have shut down).

2. REMOVAL AND REPLACEMENT OF PARTS

2.0. SAFETY REGULATIONS FOR MAINTENANCE

2.0.1. AUTHORISED PERSONNEL

The operations described in this chapter require access to hazardous service areas **AND MAY BE CARRIED OUT BY TRAINED AND AUTHORISED TECHNICAL PERSONNEL ONLY.**

2.0.2. SWITCHING THE MACHINE OFF

In order to switch the machine off, turn the main switch to its “O” position and disconnect the power cable from the socket.

NOTE: in order to disconnect the machine, the operator must not rely exclusively upon the power switch, but must also unplug the machine power cable.

2.0.3. ACCESSING THE REPAIR AND MAINTENANCE OPERATIONS

	**BEFORE ACCESSING THE SERVICE AREA AND, IN GENERAL, BEFORE CARRYING OUT ANY REPLACEMENT/REPAIR PROCEDURES, DISCONNECT THE POWER CABLE FROM THE MAINS SOCKET. IT IS ALSO RECOMMENDED TO POSITION THE CABLE SO THAT THE PLUG IS ALWAYS VISIBLE TO THE OPERATOR DURING THE COURSE OF THE MAINTENANCE INTERVENTION.**

2.0.4. RESTORING NORMAL MACHINE OPERATION FOLLOWING MAINTENANCE

Once the repair procedure has been completed:

- **RESTORE ALL THE ELECTRICAL CONNECTIONS**
- **RESTORE ALL THE EARTH CONNECTIONS**
- **REINSTALL ANY SAFETY PANELS THAT MAY HAVE BEEN REMOVED**
- **CONNECT THE MACHINE TO THE MAINS SOCKET**
- **PERFORM A FUNCTIONAL CHECK (SEE PARAGRAPH 3.4 AND CHAPTER 4 OF THE USER MANUAL)**

ALFA MAY NOT BE HELD RESPONSIBLE FOR ANY MACHINE MALFUNCTIONS OR PROBLEMS THAT MAY ARISE DUE TO THE OMISSION OR INCORRECT EXECUTION OF THE MAINTENANCE OPERATIONS.

2.0.5. DISPOSAL OF PRODUCTS

During the maintenance or repair procedures it may be necessary to empty canisters of the paint contained in the circuits.

Colourants and bases must be disposed of in suitable collector tanks, which must be treated and disposed of appropriately.

It is forbidden to dispose of the products in the environment or in the public drains.

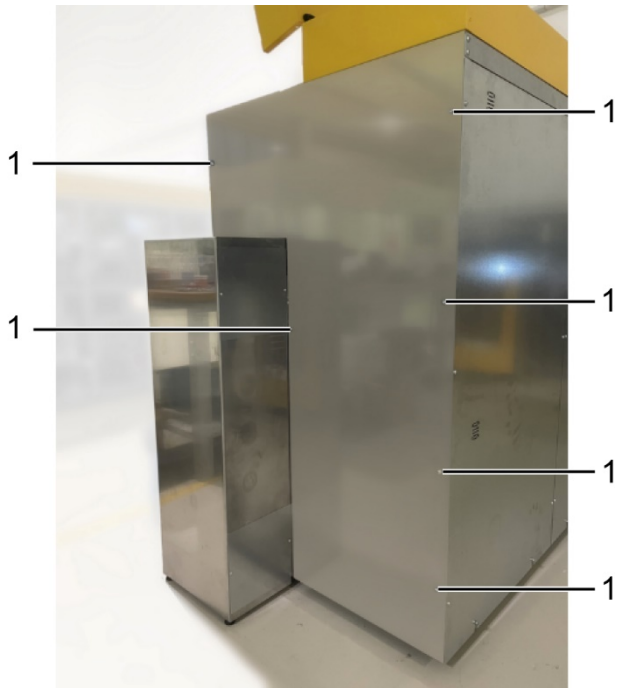
2.1. REMOVING PANELS

To access the colourant groups, the rotating table and stirring movement mechanisms, it is necessary to remove the covers of the machine as described in this paragraph.

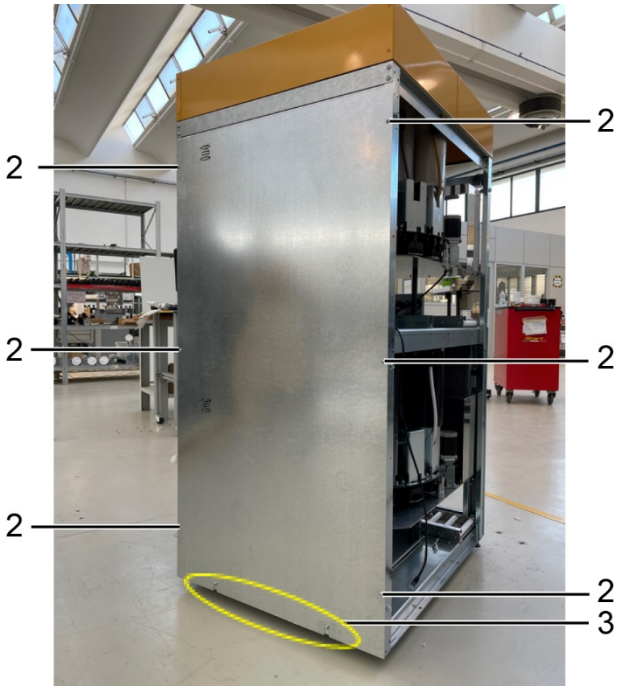
2.1.1. SIDE AND REAR PANELS

On each of the cabinets present in the machine configuration:

- remove the side panel, if present, by unscrewing the 6 retaining screws (1).



- remove the rear panel by unscrewing the 6 retaining screws (2) and loosening the 2 lower supporting screws (3), without removing them.
- lift the panel off the two lower supporting screws.

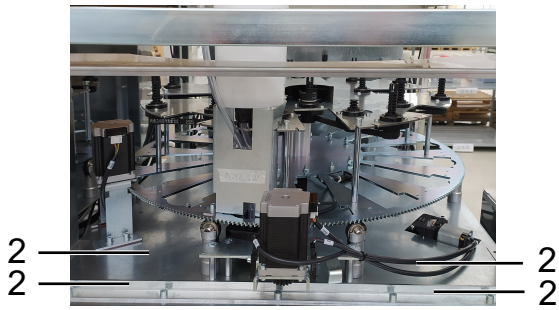


2.1.2. FRONT PANEL

To remove the front panel, in order to access and remove the groups, proceed as follows:

- Unscrew the 2 retaining screws (1) at the top of the panel using a suitable Allen key;
- Lift the panel off.

- Unscrew the retaining screws present in the inner part of the safety panel (3) using a suitable Allen key;

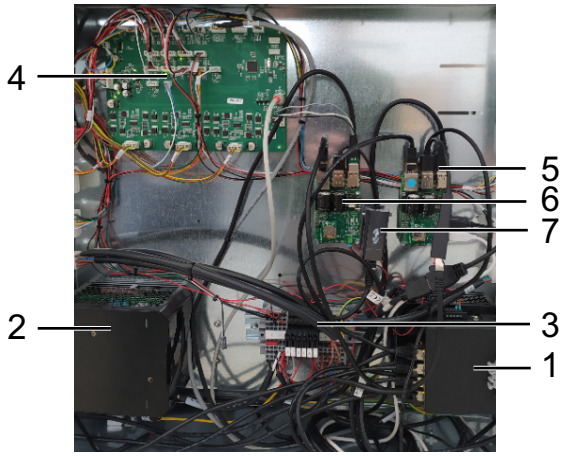


- Slide the safety panel (3) out.

2.2. ACCESSING THE ELECTRICAL PARTS

Inside the rear removable panel of the machine there is an electric box that houses:

1. power supply unit, 100-240Vac, 24Vdc
2. power supply unit, 100-240Vac, 48Vdc
3. circuit protection fuses
4. MMT board
5. Raspberry board (Supervisor)
6. Raspberry board (Head)
7. battery

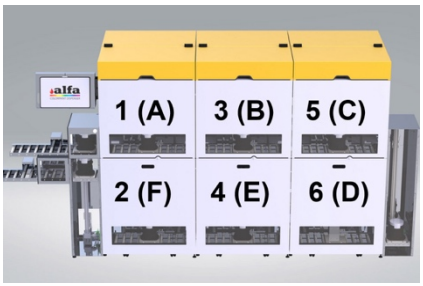


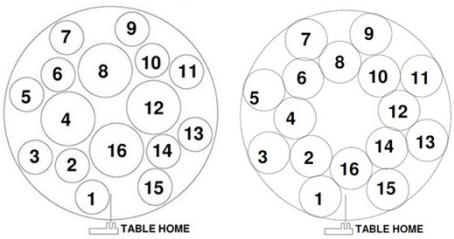
2.3. REMOVING COMPONENT CIRCUITS

To replace the component group proceed as follows:

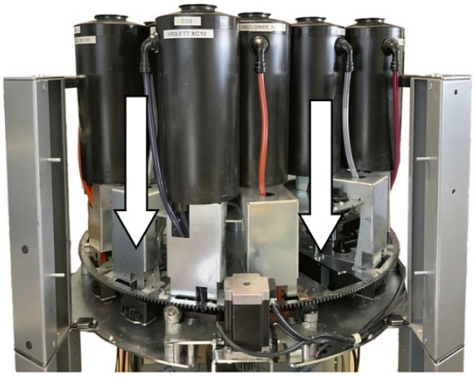
- Make sure the machine is disconnected from the power supply as described in para. 2.0.3.
- Identify the colourant group to be replaced.

In case of different circuit configurations, refer to the numbers indicated on the machine.

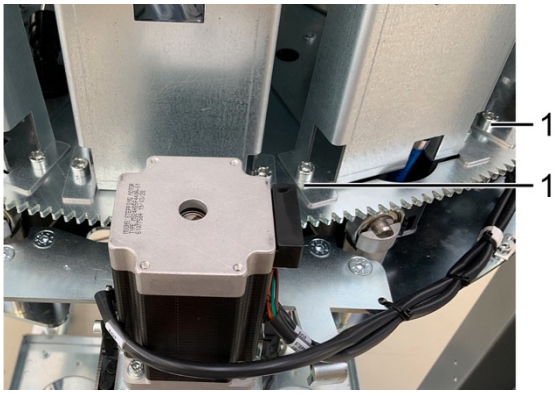




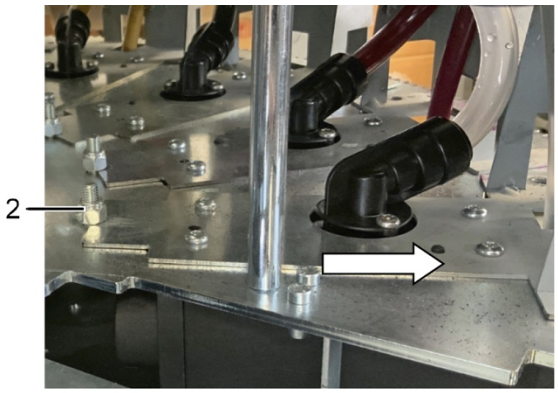
- Next, turn the rotating table manually so as to position the group in one of the two positions indicated by the arrow in the figure.



- Using a 5 mm Allen key, loosen the two M6 screws (1) that secure the group to the support surface.



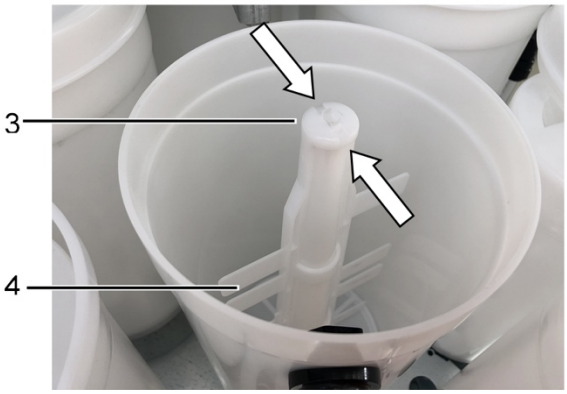
- Pull the group slightly outwards so that the lower metal sheet is pulled out from underneath the fixed locking pin (2).
- When the metal sheet is free, gently lift the colourant group to be replaced until it is removed from its housing.
- Insert the new colourant group, taking care to fit the metal sheet profile into the pin (2).
- Replace the M6 screws (1) to secure the group to the support surface.



2.3.1. CLEANING THE FILTERS

Clean the colourant filters as described below:

- Remove the lid of the colourant group housing the filter to be cleaned.
- Lift the cross element located inside the colourant tank and release the filter by pressing the tabs (3) indicated in the figure.
- Lift the stirring blade (4) with the filter fixed to the bottom.
- Remove the filter and rinse it with running water, taking care not to damage it.
- Refit the filter on the end of the stirring blade and reinsert the components inside the tank by pressing on the central rod to engage the tabs.

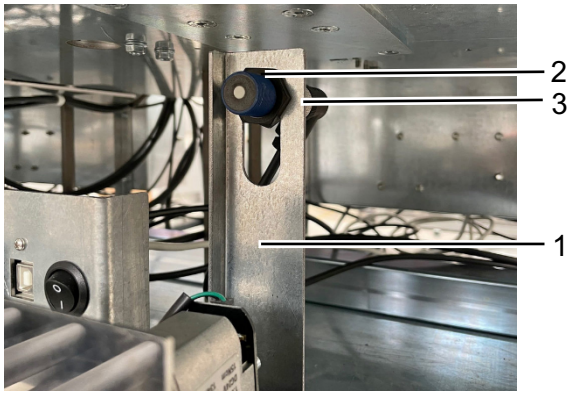


Reposition the cross element and the colourant tank lid.

2.4. REPLACING THE AUXILIARY ACTUATORS AND SENSORS

2.4.1. REPLACING A SENSOR

- To remove the sensor from the bracket (1), unscrew the retaining nut (2).
- Disconnect the sensor by loosening the wiring ring nut on (3) and screw the new sensor into place.

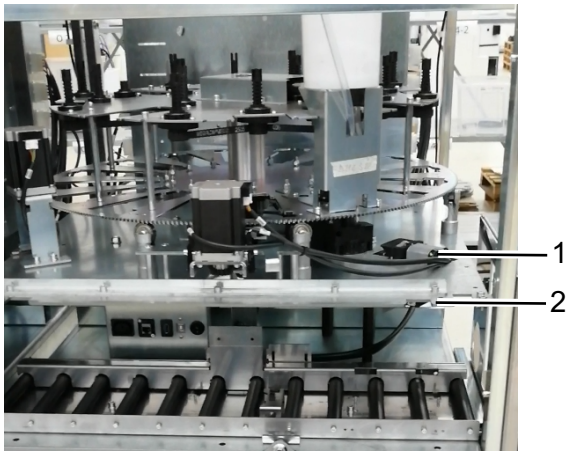


2.4.2. SERVICING/CLEANING THE NOZZLE CLEANING UNIT

To replace the cleaning brush located at the rear of the machine, remove the lower right side panel (see 2.1.1), then proceed as follows:

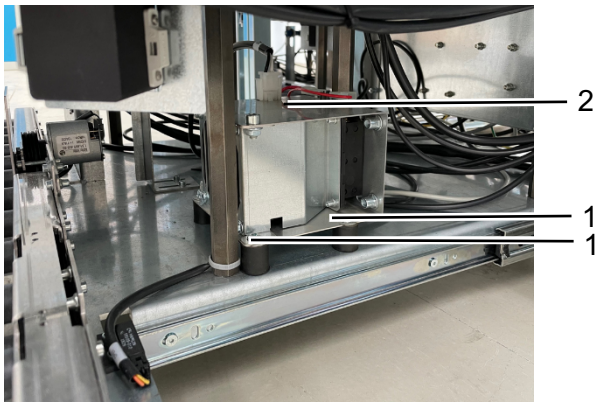
- Loosen the 2 M4 screws to release the cleaning unit (1) from its support surface, then remove the unit from below;
- Disconnect the electrical connections and then install the replacement group, restoring the connections and fastenings;

As part of periodic maintenance/overhaul activities, remove and clean the removable drawer located in the lower part of the cleaning unit (2).



2.4.3. REPLACING THE HEATER

- To remove the heater, open the carriage where it is housed, and then loosen the 2 M6 screws that secure it to the support feet (1) and disconnect the electrical wiring (2).

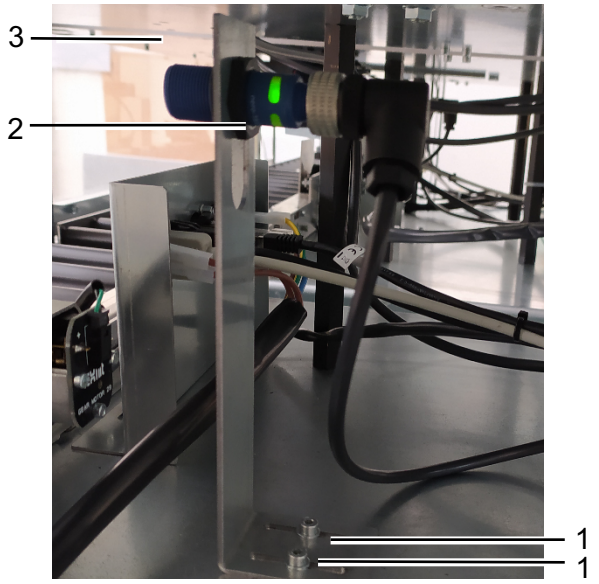


2.4.4. SERVICING THE DISPENSING/RECIRCULATION MOTOR

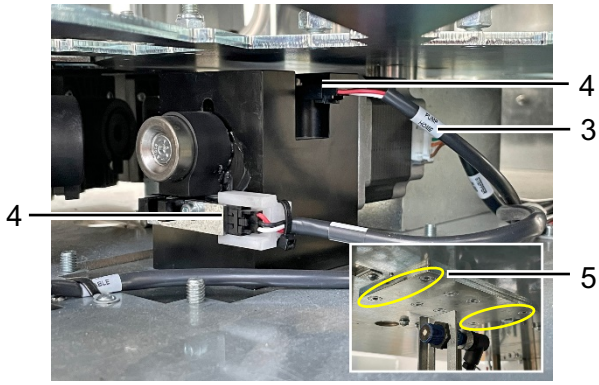
If the dispensing and recirculation operations become noisy over time, the dispensing motor must be removed and lubricated with grease.

To remove the dispensing motor:

- Move the sensor support (2) located underneath it by removing the two screws (1).

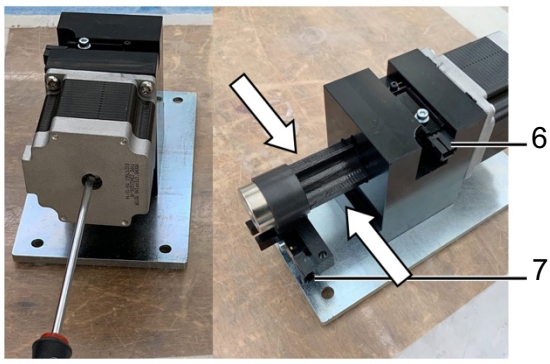


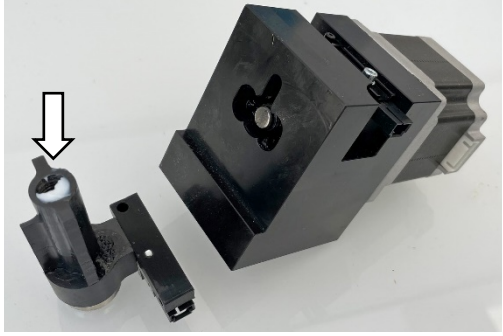
- Disconnect the motor (3) and photocell (4) connectors;
- Loosen the M6 retaining screws (5) underneath the lower surface, then pull the motor unit downwards;
- Replace the unit or lubricate and grease as recommended:



- Use a flat screwdriver to rotate the lead screw so that the pusher comes out of its housing;
- Lubricate the horizontal tabs (indicated by the arrows) using Mobilgear OGL007 graphite grease; **DO NOT grease the top tab as the grease could dirty the HOME photocell and cause malfunctions;**

  If it is also necessary to lubricate the lead screw coupling, unscrew the lead screw completely and use "Molycote G1074" grease;
- Once the maintenance operations are complete, screw the lead screw back on so the pusher returns to its original position.
- If necessary, replace the HOME photocell (6) or the CONNECTION photocell (7) by loosening the corresponding M4 retaining screw with an Allen key.
- Reassemble the group and restore the connections.

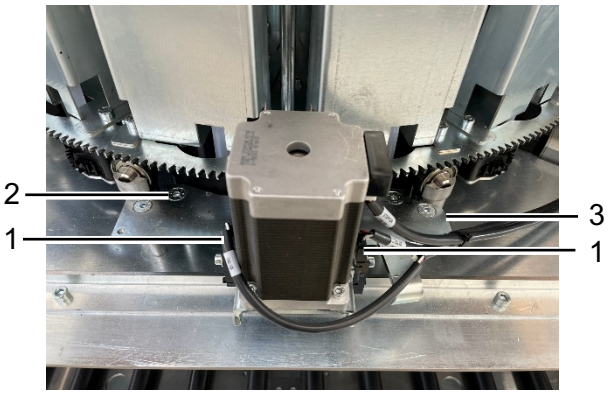




2.4.5. REPLACING THE CERAMIC VALVE DRIVE MOTOR

To remove the ceramic valve drive motor, proceed as follows:

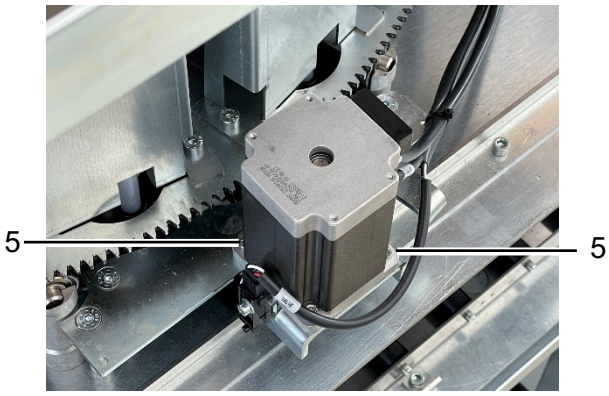
- Disconnect the motor and photocell connectors (1);
- Loosen the 4 M6 countersunk head screws (2) and remove the motor with the respective support plate (3);
- Place the assembly on a workbench and replace the motor by removing it from the support flange, then reassemble the unit and restore the connections.



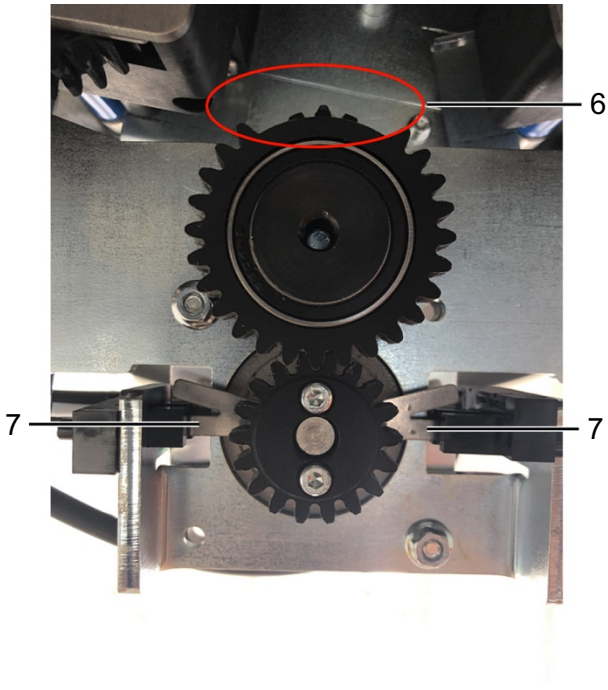
If the pinion under the motor, the gear or the photocells have to be removed and replaced, proceed as follows:

- Unscrew the two motor retaining screws indicate in the figure (5).
- Replace damaged parts with original Alfa spare parts.

Pay attention to the following during assembly:



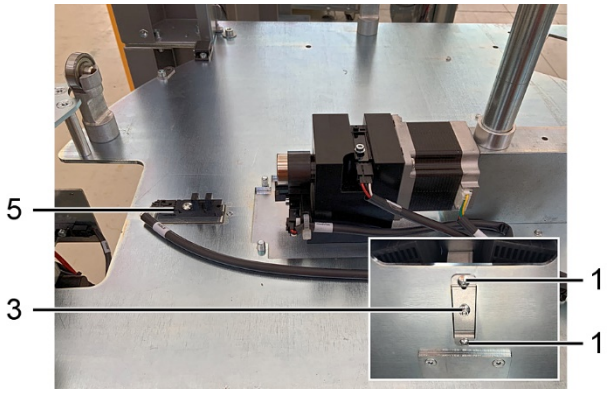
The group is reassembled correctly when the toothless gear part (6) is facing the rotating table and, at the same time, the two tabs (7) are both inside photocell.



2.4.6. REPLACING THE ROTATING TABLE ROTATION HOME PHOTOCELL

To replace the rotating table rotation home photocell, proceed as follows:

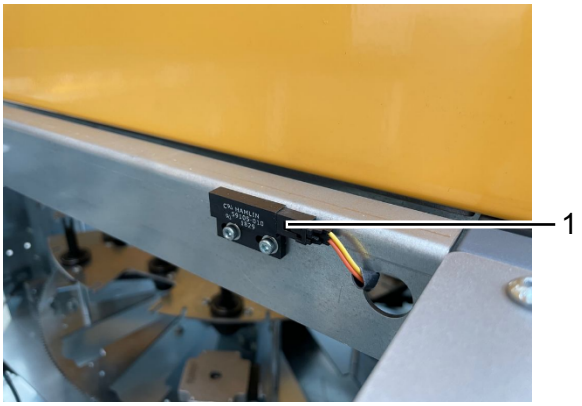
- Loosen the two M5 button head screws (1) underneath the colourant support base that support the photocell holder plate (3), which can then be removed from below. Loosen the screw (5) securing the photocell to the support and disconnect the connector.

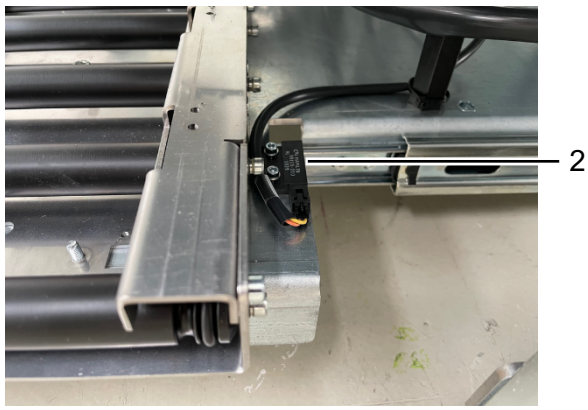


2.4.7. REPLACING THE DOOR SENSORS

To replace open door or open carriage sensors, proceed as follows:

- Locate the door sensor (1) or the carriage sensor (2) to be replaced;
- Disconnect the sensor connector;
- Loosen the 2 M3 retaining screws and remove the sensor;
- Fit the new sensor and restore the connections.



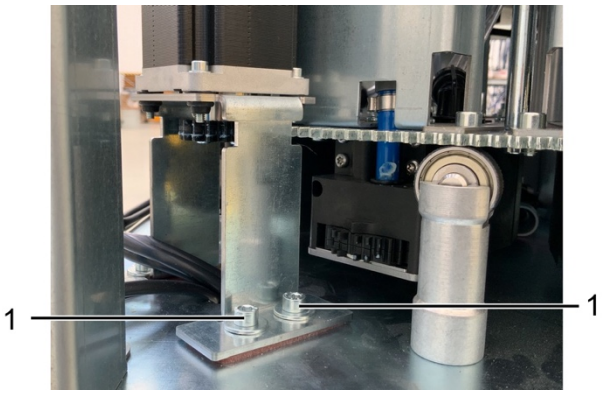


2.5. REPAIR PROCEDURES ON THE COLOURANT ROTATING TABLE

2.5.1. REPLACING/ADJUSTING THE ROTATING TABLE MOTOR

Over time, the coupling between the motor pinion and rotating table toothed gear may become subject to backlash. To eliminate backlash, or replace the motor, proceed as follows:

- Remove the upper body parts as described in 2.1.
- Loosen the 4 M6 screws securing the motor support (1) with a 5 mm Allen key;
- When carry out adjustments in order to reduce backlash, tighten the screws while keeping the motor pressed against the toothed gear of the rotating table. Then,rotate the table by hand, making sure that each movement corresponds to a movement of the pinion coupled to it.
- When replacing the motor, remove the it from the support by loosening the 4 flange retaining screws and disconnecting the electrical connection.



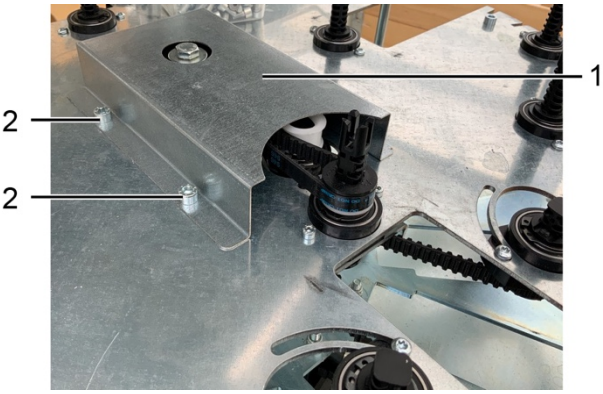
IMPORTANT: Use threadlocker when remounting the support on the plate. Tighten the screws using a torque wrench calibrated to 5 Nm.

2.5.2. REPLACING THE STIRRING BELT AND/OR THE DRIVE COUPLING

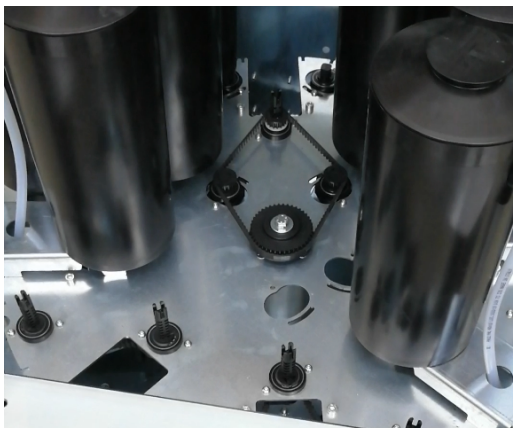
Colourant circuit stirring motion is transmitted by the rotation of the table as well as by a belt drive system. The central belt is subject to greater wear and may require replacement. See below for the main instructions for correct belt replacement and for the main maintenance operations on the turning table group.

To access the belt, it is necessary to remove several colourant groups. In particular:

- In the case of machines configured for 1.5 litre canisters: remove circuit no.9;
- Next, remove the protective metal panel (1) by loosening the 4 M6 screws (2) with a 5 mm Allen key.

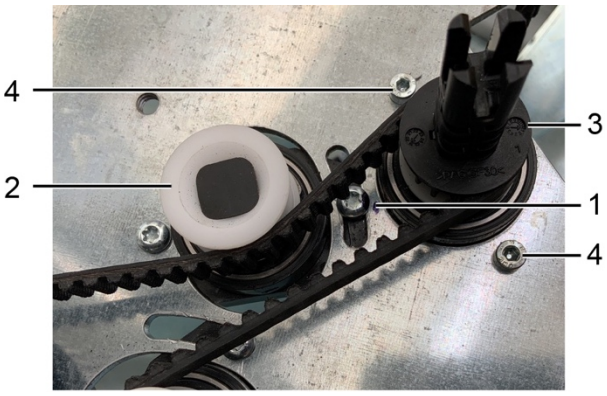


- In the case of machines configured for 2.5 litre canisters: remove circuits no. 7, 8 and 9;



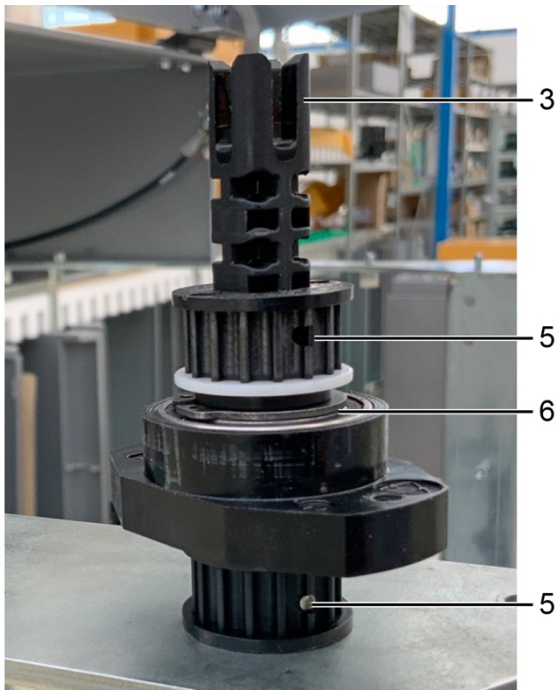
See para. 2.3 for instructions on removing the groups.
If deemed necessary to gain a better access to the work area, remove other circuits.

- In order to ensure the new belt is tensioned correctly, we recommend marking the position of the belt tensioner screws with a marker pen (1);
- Next, loosen the belt tensioners (2) by loosening the screws with a T20 torx driver and slide out the worn belt;
- Fit the new belt, then push the belt tensioners into their original positions and tighten the screws.



- To replace the drive coupling (3), loosen the two M4 screws (4) with a 3 mm Allen key, then extract the coupling from below. Machines with 2.5 litre circuits are fitted with torx type screws.
- Remove the pins (5) and the circlip (6);

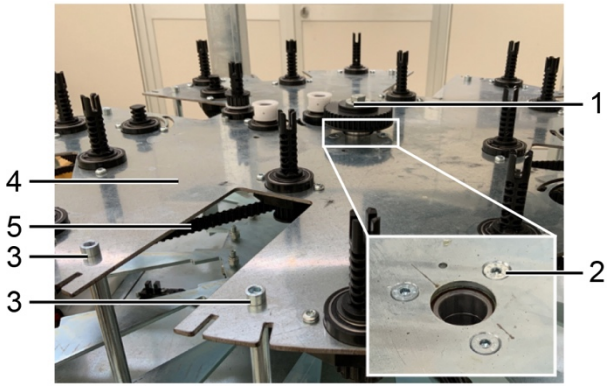
NOTE: to replace the unit transmission belt, the entire rotating table must be removed. In this case, refer to par. 2.9.4.



2.5.3. REMOVING THE ROTATING TABLE, REPLACING THE BEARINGS AND THE BELT

If it is necessary to replace the rotating table bearings or the belt that transmits the stirring motion to the individual circuits, proceed as follows:

- Remove all covers following the instructions set out in para. 2.1, the rotating table motor, as described in para. 2.5.1 and all units, as set out in para. 2.3.
- Remove the central pinion (1), which is held in place by the M8 hex. head screw, using a 13 mm wrench;



- It is not necessary to remove the rotating table from the machine when replacing the transmission belt. To replace the bearings, slide the wheel upwards and place it on an easily accessible and appropriate work surface and continue;
- Loosen the 3 M6 countersunk head screws (2) with a 4 mm Allen key and the 8 M6 screws (3) with a 5 mm Allen key;
- Remove the stirring support plate (4) for complete access to the belt (5);
- To remove the belt, loosen the belt tensioners as described in para. 2.5.2;

To replace the hub bearings, proceed as follows:

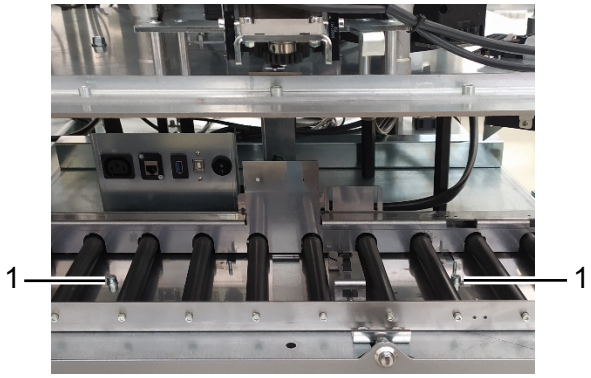
- Loosen the other 3 M6 countersunk head screws (6) with a 4 mm Allen key, then remove the hub (7) from geared rotating table;
- Remove the bearings from the hub and replace them with the new bearings, then reassemble by repeating the removal procedure in reverse order.

2.6. REMOVING THE ROLLER CONVEYORS

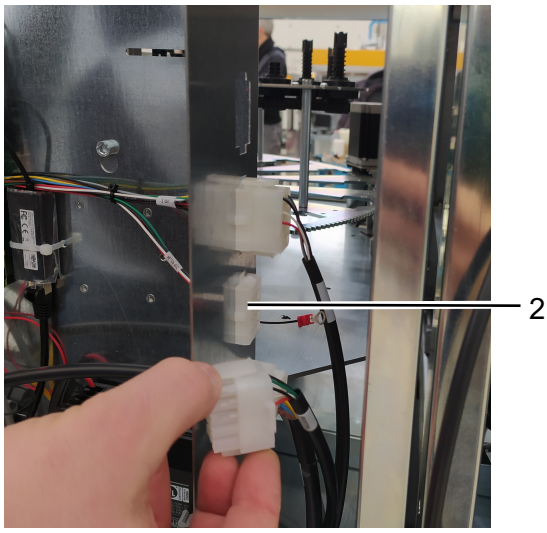
2.6.1. REMOVING THE UPPER HEAD ROLLER CONVEYOR

To remove the upper head roller conveyor, proceed as follows:

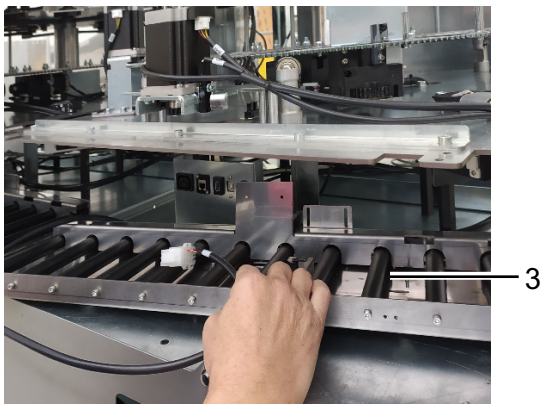
- Unscrew the 2 retaining screws (1)



- Disconnect the respective connector (2) from its socket
- Remove any retaining clips from the connector



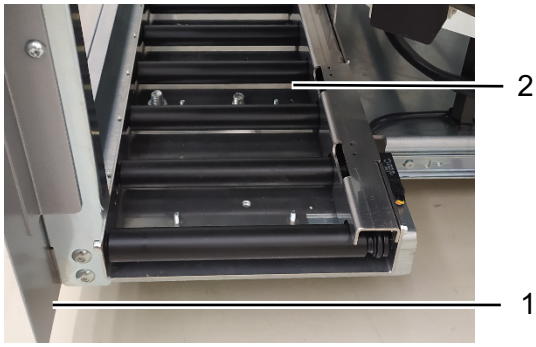
- Remove the roller conveyor (3) by sliding it out



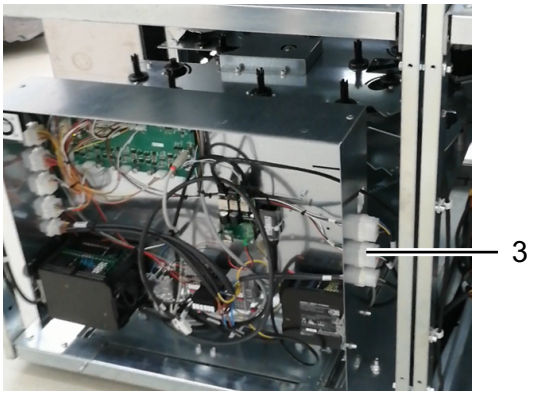
2.6.2. REMOVING THE LOWER HEAD ROLLER CONVEYOR

To remove the lower head roller conveyor, proceed as follows:

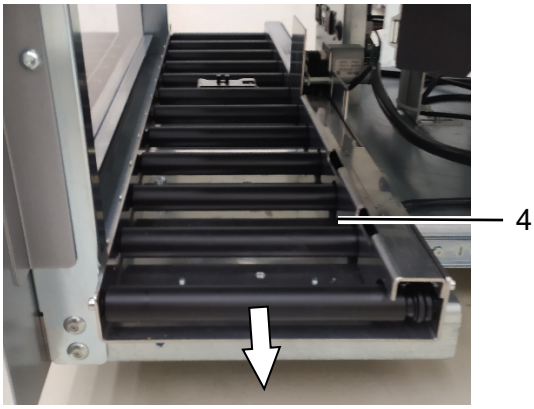
- Extract the lower carriage (1)
- Unscrew the two retaining screws (2) (see para. 2.6.1).



- Disconnect the respective connector (3) from its socket
- Remove any retaining clips from the connector



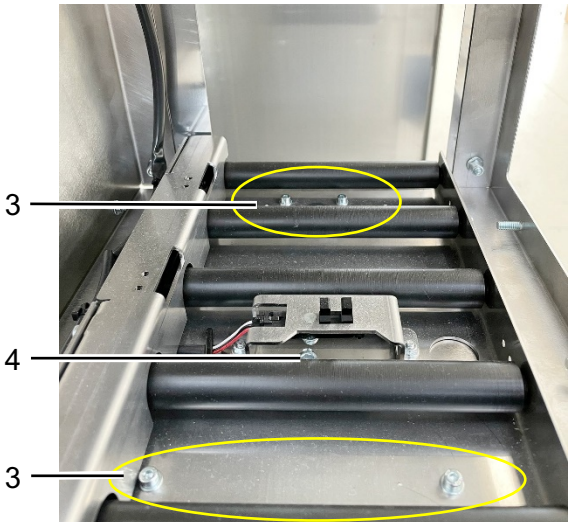
- Remove the roller conveyor (4) sliding it out laterally from the lower carriage



2.6.3. REMOVING THE INFEED AND OUTFEED ROLLER CONVEYOR

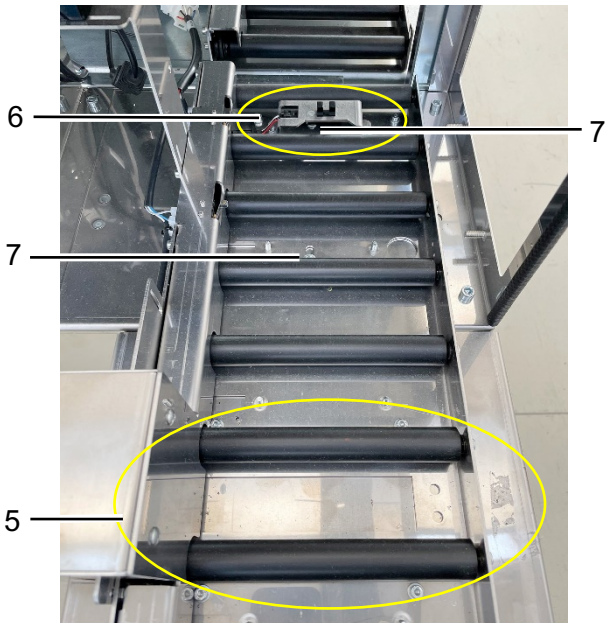
Outfeed roller conveyor

- Unscrew the 4 M4 cyl. head hex. socket screws (3) using a 3 mm Allen key, and the M6 cyl. head hex. socket screw (4) using a 5 mm Allen key. Accessible from inside the outfeed tunnel.



Infeed roller conveyor

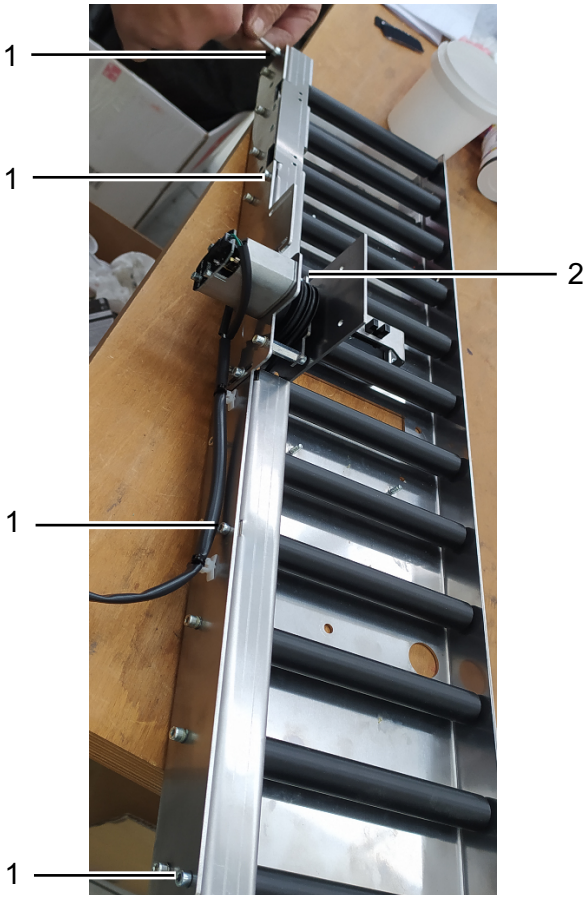
- unscrew the 4 M4 cyl. head hex. socket screws (5) that secure the roller conveyor to the tunnel using a 3 mm Allen key
- unscrew the 2 M4 cyl. head hex. socket screws (6) and the 2 M6 cyl. head hex. socket screws (7) that secure the roller conveyor to the tunnel using a 3 mm and a 5 mm Allen key, respectively.



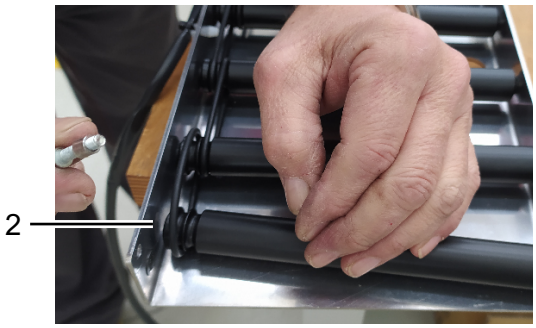
2.6.4. REPLACING THE ROLLER CONVEYOR O-RINGS

To remove the o-rings from the roller conveyors, proceed as follows:

- Unscrew the four retaining screws (1) from the safety guard (2) and remove it.



- Unscrew the screw with the iron bushing from its housing (2).



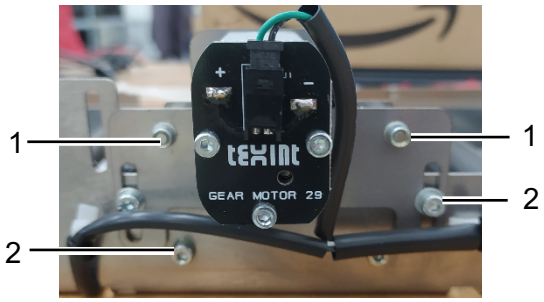
- Loosen the screws (3) from the other side, using the respective roller as a pivot

- Unscrew the screw (3) on the adjacent roller and loosen the screw (4)
- Lift the two rollers and extract the o-ring (5) from either side and replace it with a new one.
- To reassemble, repeat the above procedure in reverse order.

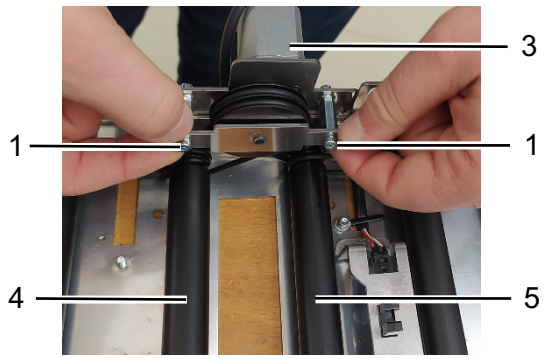
2.6.5. REPLACING THE CENTRAL O-RINGS

To remove the central o-rings (motor zone)

- Unscrew the screws (1) to release the motor pulley support (3) and remove it



- To replace the o-rings on the rollers (4) or (5), unscrew the screws (2) and follow the procedure described in para. 2.4.4.

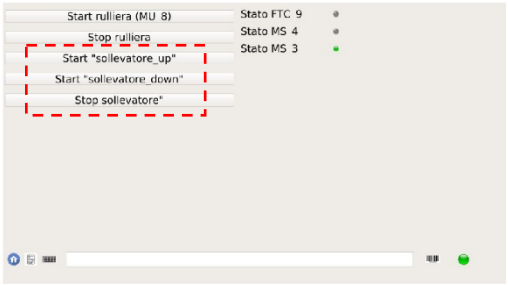


2.7. LIFTER ADJUSTMENTS

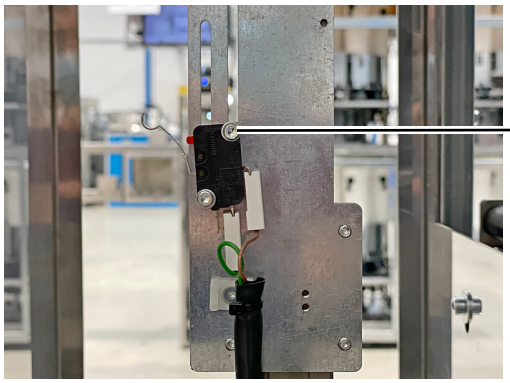
2.7.1 LIMIT SWITCH ADJUSTMENT

The “high” and “low” positions of the lifters are defined by means of microswitches.
To adjust the microswitches proceed as follows:

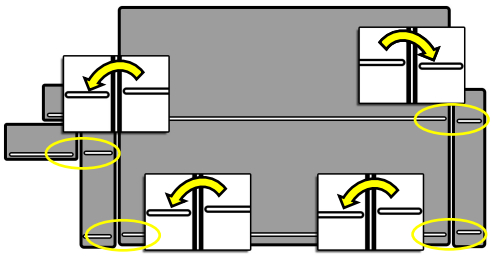
- Unscrew the 2 M4 screws (1) that secure the rear panel with a 2.5mm Allen wrench.
- Remove the plastic panel that closes the lifter by unscrewing the 6 countersunk head screws with 2.5mm Allen wrench (2).
- Using the lifter manual controls (see par. 6.7 of the operator’s manual) move the lifter in order to reach the microswitch behind it.



- Using a 2.5mm Allen wrench loosen the microswitch fixing screws;
- Move or tilt the microswitch to lower or raise the stop position as required.
- After changing the position of the microswitch, use the manual controls to move the lifter and check that the stop level is correct.



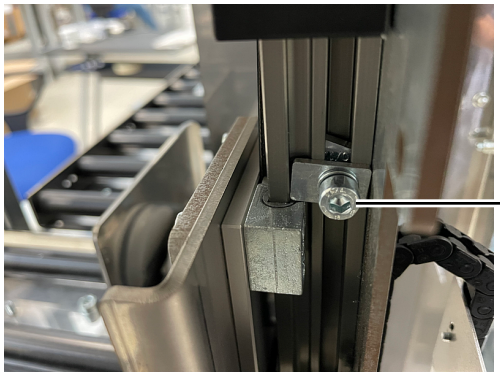
In order to facilitate the shuttle passage between the different roller conveyors, it is recommended to adjust the positions of the lifters so that the downstream roller conveyor is always slightly lower than the upstream roller conveyor.
It is advisable to set the heights so that there is a difference in level of about 1-2mm.



Check each level a few times by repeatedly moving the lifter up and down.

Once the correct position has been found, adjust the mechanical limit switch by unscrewing the fixing screw (4) and bringing the stop into contact with the lifter trolley.

Re-tighten the mechanical limit switch screw and refit the guards that were initially removed.

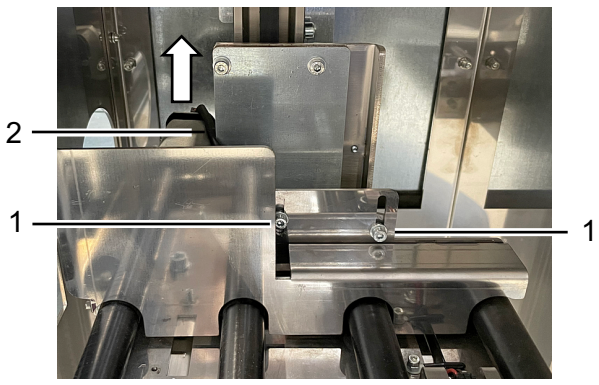


2.7.2 ROLLER CONVEYOR TRANSMISSION O-RING TENSIONING

To tension the roller conveyor transmission O-ring located inside the lifter, proceed as follows:

- Loosen the 2 screws (1) that secure the motor support bracket (not visible in the photo) using a 3mm Allen wrench.
- Lift the motor upwards (2) and tighten the screws firmly.

To replace the secondary belts, proceed in the same way as described for the roller conveyors of the units (par. 2.6).



3. ELECTRICAL REPAIR PROCEDURES

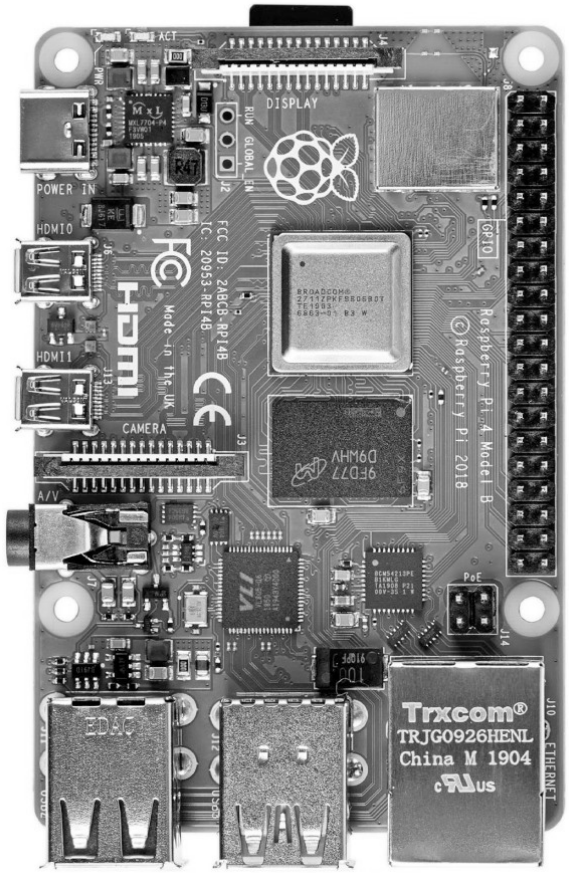
3.1. DESCRIPTION OF ELECTRONIC PARTS AND DIAGNOSTICS

3.1.1. PC BOARD

The machine is provided with a PC board (Raspberry Pi) on which the high-level machine software is stored.

The PC board receives the Ethernet connection from the outside (LAN1 port) and is internally connected to the Main board (refer to next paragraph) via RS-232. The board is fitted with the RS-232 and USB ports necessary to connect certain accessories, such as the weighing scale.

The PC board is powered by a 24 V supply.



3.1.2. MMT BOARD

MMT is the Main board on which machine management firmware is stored. The orders sent by the high-level software are managed at MMT level. This board organises the machine cycle by interrogating and sending orders via RS-485 to the slave boards of the single circuits.

The MMT board receives the external 48 Vdc and 24 Vdc power supplies, while it generates the 5 Vdc and 3.3 Vdc voltages internally.

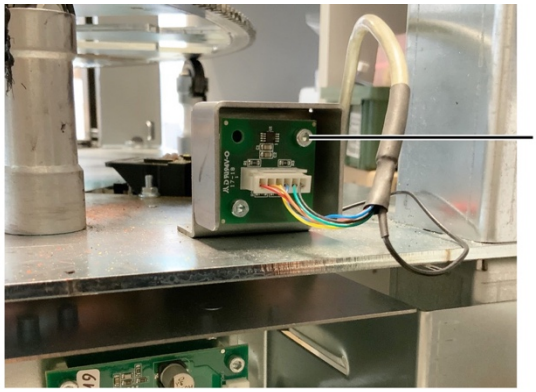
DL1 = +5 V
DL2 = +3.3 V
DL9 = +48 V

MMT also directly controls many actuators and sensors, as summarised in the table below:

CN5 is used for firmware programming via USB with bootloader (refer to chapter 4 – PROGRAMMING THE ELECTRONIC BOARDS)

3.1.3. HUTTS BOARD

The HUT_TS board (1) is the board that supports the temperature sensor TC72 used to monitor the temperature of the products (colourants and bases).
The board is located inside the cabinet, mounted on the rear of the colourant support base.
The signal is acquired by the MMT board.



3.2. CHECKING AND REPLACING THE NETWORK FUSES

In case of mains malfunction or problems, the safety fuses may blow and cut off the power.
The fuses are located in the fuse holder built into the switching socket on the rear panel.
To replace a blown fuse, prise the fuse holder open using a flat head screwdriver.
Remove the fuse and its holder and install a new fuse.

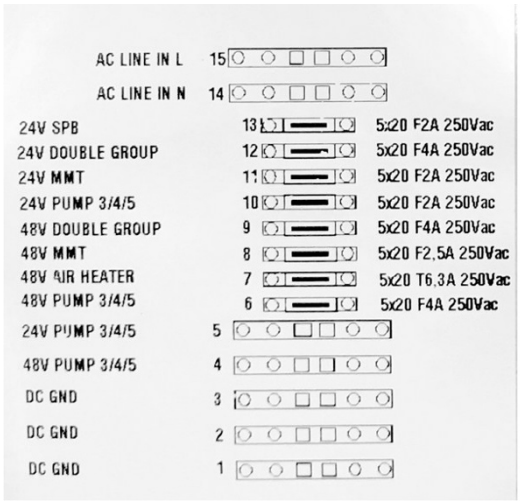
	**USE ONLY FUSES OF THE SAME TYPE AND THE NOMINAL RATING SHOWN IN THE PRODUCT LABEL.** **Fuse requirements:** **EU - IEC 60127 Approval** **US - UL248-1 and UL248-14 Approval**

3.3. REPLACING THE SECONDARY CIRCUIT FUSES (INTERNAL TERMINAL BOARDS)

In case of malfunction or faults, the safety fuses may interrupt the output power supply of the terminal boards.
The fuses are located on the terminal boards, located inside the rear electric compartment (see chapter 2 - ACCESSING THE ELECTRIC PARTS).

- To replace the fuses, proceed as follows:
- Remove the rear panel as described in chapter 2 - REMOVING THE EXTERNAL COVER to access the fuse holder terminal boards (1).

- Identify the circuit corresponding to the interrupted power supply line and procure a fuse having the correct rating as indicated on the adjacent diagram.
- Lift the fuse holder until it is possible to manually remove the damaged fuse.
- Insert the new fuse in the fuse holder.
- Close the fuse holder by slightly pressing on it.
- Reposition and fix the machine rear panel using the screws that were removed previously.

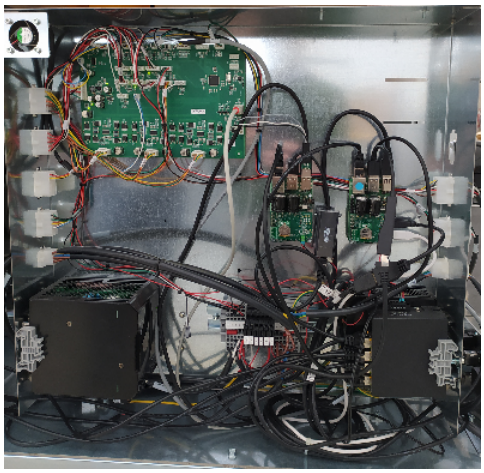


WARNING: use only fuses of the same type and with the same nominal rating specified by the manufacturer.

3.4. REPLACING POWER SUPPLIES

In case of an electric fault in one or more power supply units of the machine, proceed as follows to replace them:

- To access the power supply unit compartment, remove the rear panel as described in chapter 2 - REMOVING THE EXTERNAL COVER.
- Disconnect the wiring between the power supply unit to be replaced and the rest of the machine.
- Remove the power supply unit by fitting a small flat screwdriver in the suitable retaining tab and remove the unit from the DIN guide.



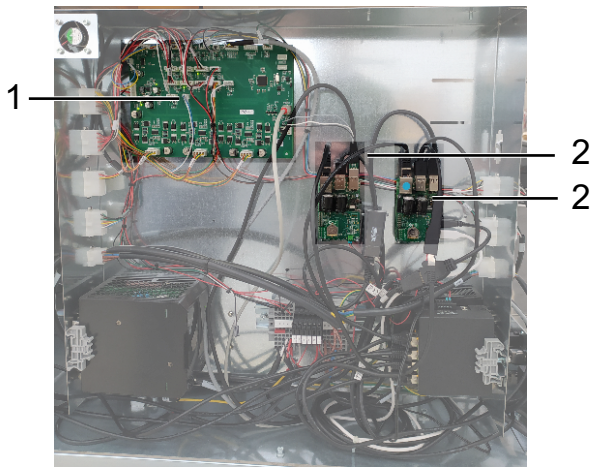
- Mount the new power supply, inserting manually on the DIN guide.
- Reconnect the power supply unit to the wiring according to the attached wiring diagram.
- Reposition the safety panel that was removed previously.

WARNING: use only genuine spare parts supplied by the manufacturer.

3.5. REPLACING THE PC AND MAIN BOARDS

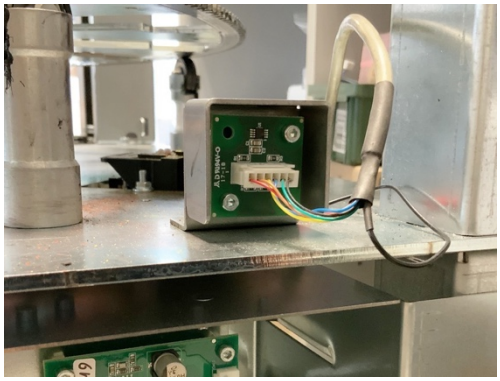
To replace the PC (Linux or Raspberry) or Main (MAB or MMT) boards, proceed as follows:

- Remove the rear panel as described in chapter 2 - REMOVING THE EXTERNAL COVER.
- Disconnect the power supply and signal cables from the board to be replaced.
- Remove the Main (1) or PC (2) board from the supports at the corners (pressure-fit plastic supports for the Main board and M3 retaining screws for the PC board).
- Insert a new board on the supports, taking care not to damage its components.
- **ATTENTION**: Use a pre-programmed board or a suitable programmer to upload the correct software/firmware. To reprogram the boards refer to chapter 4.
- Restore the electrical connections.



3.6. REPLACING THE HUTTS BOARD

The board is located inside the cabinet, mounted on the rear of the colourant support base.



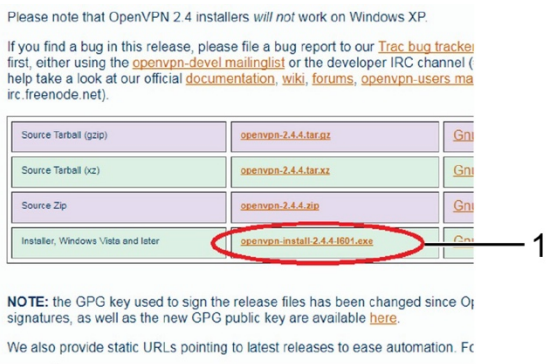
To replace the board, remove the top rear panel as described in Chap. 2 REMOVING THE EXTERNAL COVERS, and then:

- Disconnect the board connector.
- Loosen the two M3 screws that secure the board to the support, then complete the replacement by restoring the connections.

3.6.1. CONNECTION VIA VPN CLIENT ON WINDOWS 7 AND 10

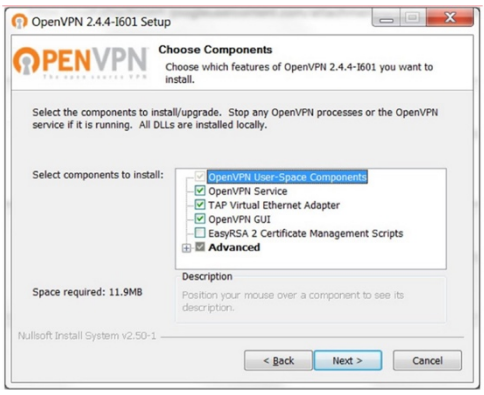
To install the VPN Client, proceed as follows:

- Open the following address in an internet browser https://openvpn.net/index.php/open-source/downloads.html
- Click “openvpn-install-2.4.4-I601.exe” (1) and download the file.



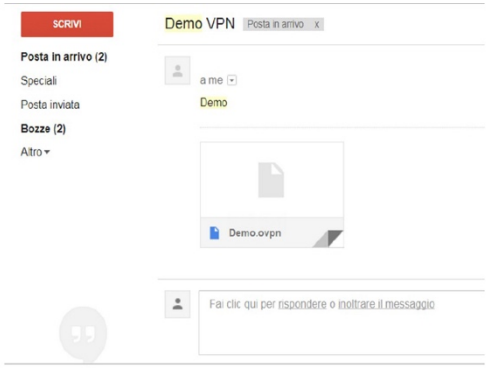
- Open the file that has been downloaded, and then press “Next” (2) on the subsequent screen.

- Check the boxes indicated in the adjacent figure, then press “Next”.

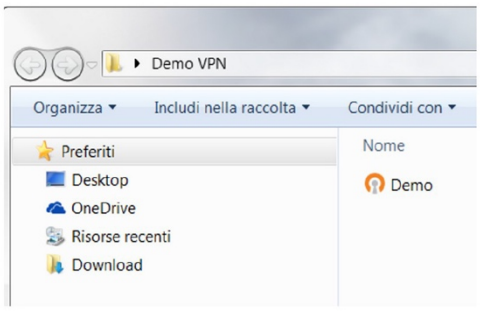


To connect to the machine via the VPN Client, proceed as follows:

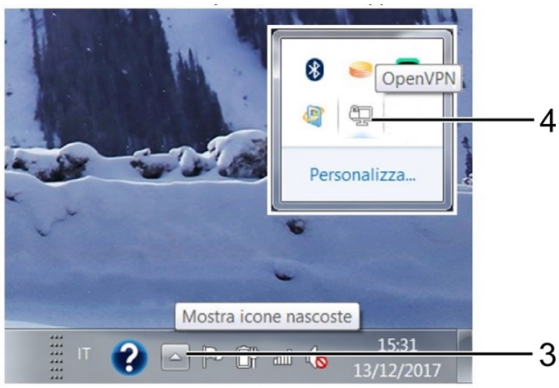
- Download the file containing the login credentials sent by Alfa via email.



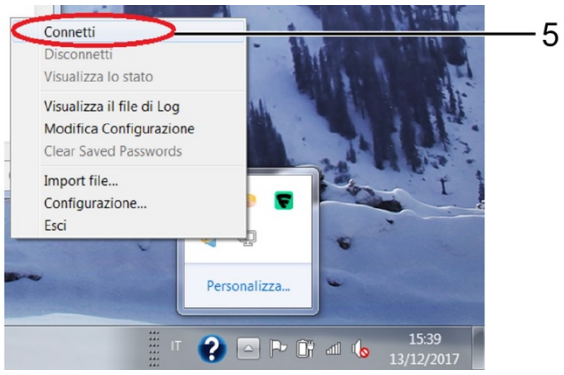
- Save the file containing the credentials to C:/programs/OpenVPN/Config
- Make sure you save it as an ".opvn" file.



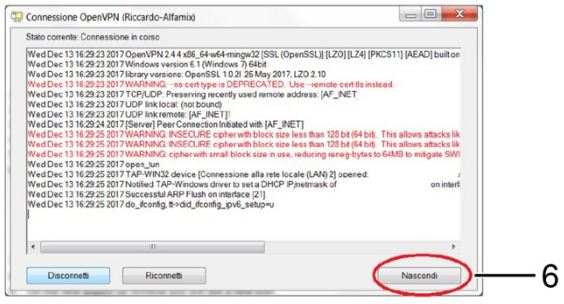
- On the Windows Toolbar, click the arrow icon "show hidden icons" (3) then locate the icon "OpenVPN" (4) in the pop-up.



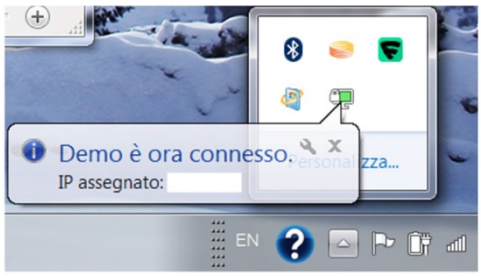
- Right click on the icon and select "Connect" (5);



- Press "Hide" (6) to close the subsequent page;

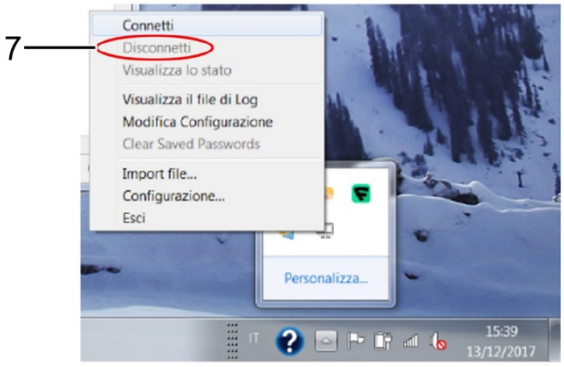


- After a few seconds, a new pop-up will open on the toolbar, near the clock indicating that the PC is connected. This window may close automatically, while the OpenVPN icon becomes green.



- To connect to the machine, open your internet browser.
- Enter the IP address of the machine you wish to establish connection with in the address bar; this is usually indicated on the LTE router.
- Enter the login credentials provided by Alfa.

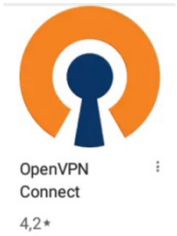
To disconnect from the machine, right click on OpenVPN icon and select “Disconnect” (7).



3.6.2. CONNECTION VIA VPN CLIENT FROM ANDROID DEVICES

To install the VPN Client, proceed as follows:

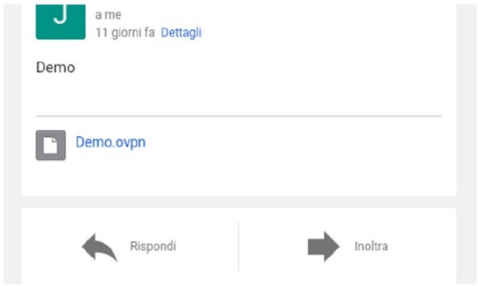
- From the Home screen of your device, open Play Store.
- In the search bar, type “openvpn for android”.



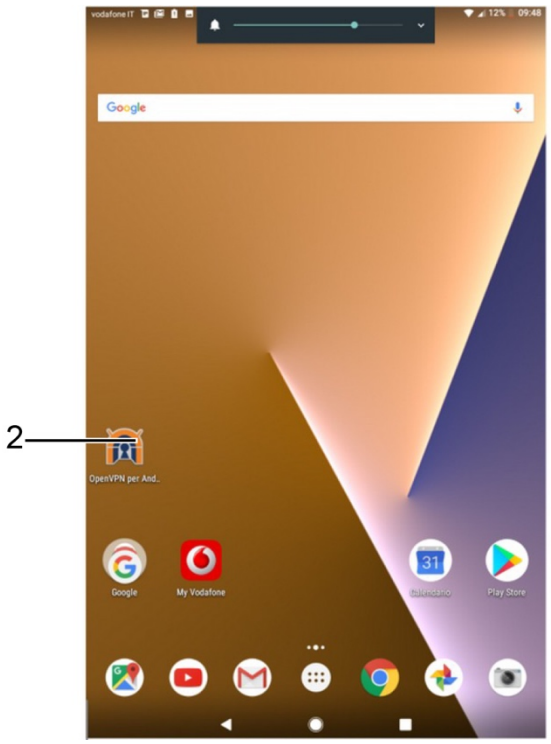
- Click the green button (1) to install the application.

To connect to the machine via the VPN Client, proceed as follows:

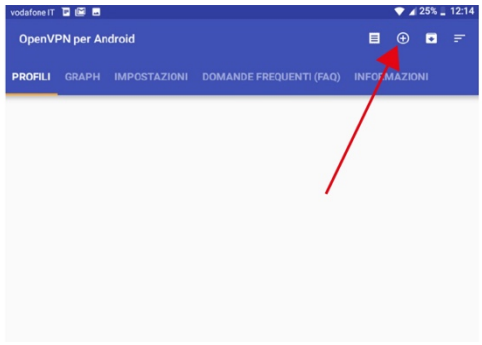
- Download the file containing the login credentials sent by Alfa via email.



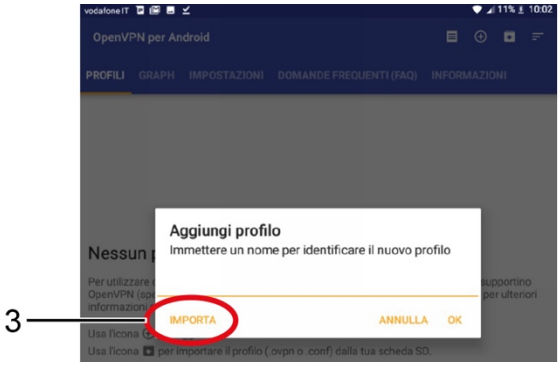
- Run the app OpenVPN (2) installed previously.



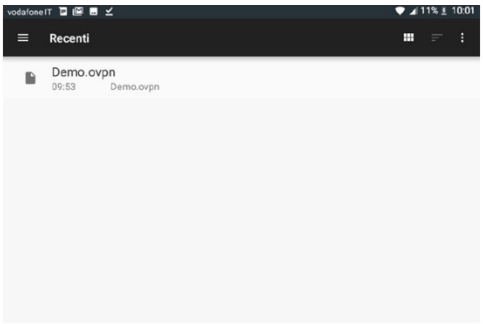
- Press the “+” symbol present on the bar at top right of the app screen.



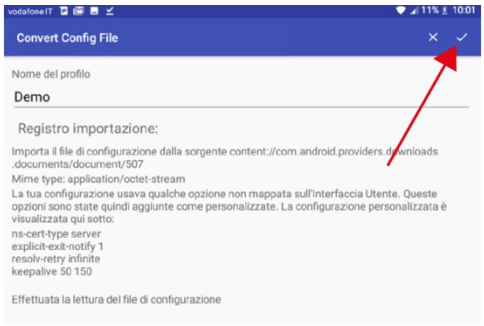
- Press “Import” (3).



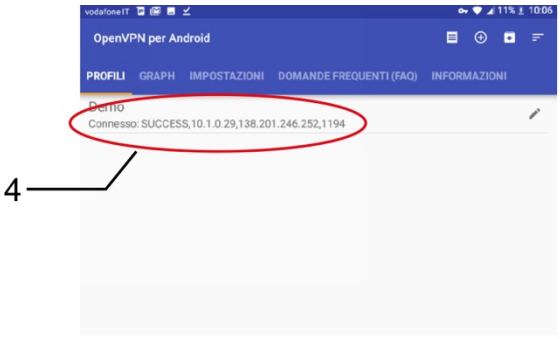
- Select the “.ovpn” file downloaded previously;



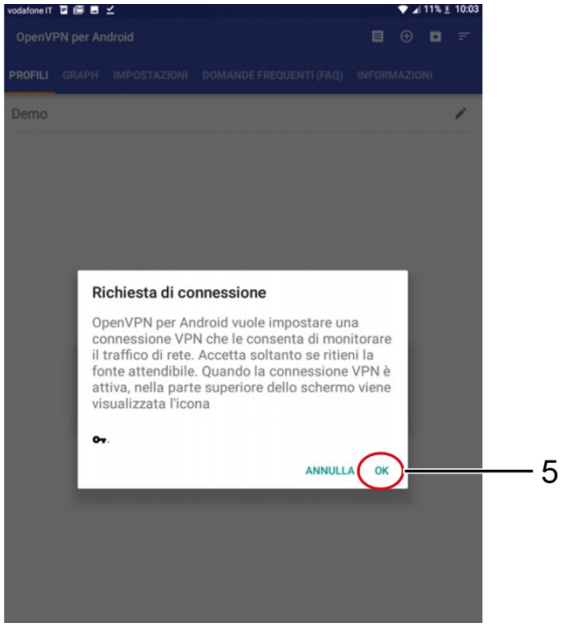
- Press on the check mark in the top right corner;



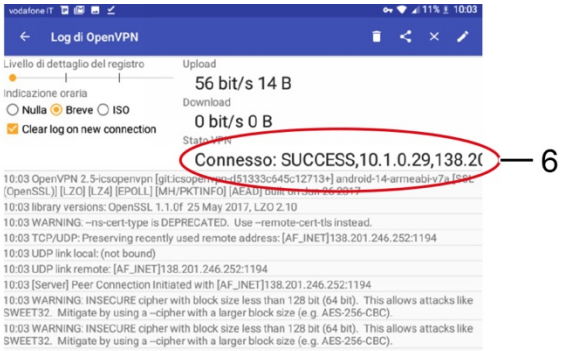
- Press on the file that has just been added (4).



- Press OK (5) on the next window.



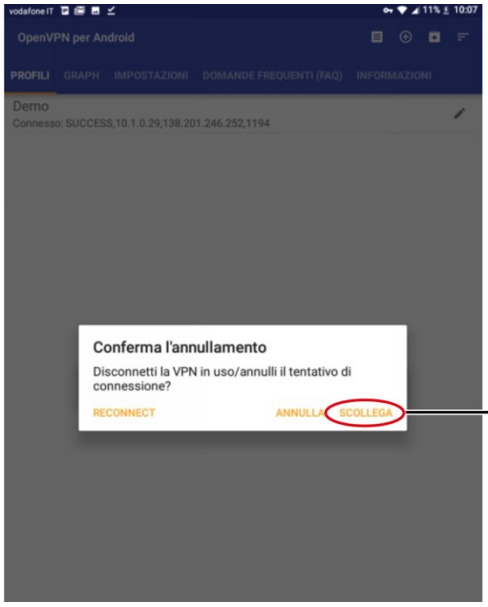
- At this point, the VPN status should be “Connected” (6).



- To connect to the machine, open your internet browser.
- Enter the IP address of the machine you wish to establish connection with in the address bar; this is usually indicated on the LTE router.

Enter the login credentials provided by Alfa.

- To disconnect from the machine, open the app OpenVPN, then select the “Profiles” menu and press “Disconnect” (7).



4. PROGRAMMING THE ELECTRICAL CIRCUIT BOARDS

Depending on the version, two different methods may be used to program the boards:
- Boards without bootloader (programming through PICkit / ICD3).
- Boards with bootloader.

Alfa products are delivered with the Bootloader loaded on all boards.

Each FW update therefore includes the procedure using the BootLoaderAPP Software (also called AlfaUSBProgrammer), described in paragraph 4.2 below.

4.1. PROGRAMMING BOARDS WITHOUT BOOTLOADER

The procedure using PICkit (or ICD3 for MMT and HUTBRD boards) is only necessary when loading the Boot to boards that are not supplied with it, in particular on first-generation machines. This procedure may only be carried out by Alfa Service.
Each spare part is shipped with the Boot already preloaded.

4.2. PROGRAMMING BOARDS WITH BOOTLOADER

4.2.1. "BOOTLOADERAPP" SOFTWARE

The most recent boards are preloaded with BOOT firmware for the management of the BootLoader, i.e. the application that allows the machine control firmware to be updated.
N.B.: To program a board that does not feature preloaded BOOT, please contact Alfa technical service.

To program a hard-wired board via BootLoaderAPP, proceed as follows:
1. Switch the machine off;
2. connect the special Alfa USB BOOT LOADER cable (code 305001893) between the dedicated connector on the Main board (CN13 for the MAB, CN5 for the MMT, if it is used instead of the MAB) and a USB port on the PC/LAPTOP on which the BootloaderAPP.exe application resides; Machine side, use the "BOOT" panel connector when present.
3. run BootloaderAPP;
4. switch the machine on.

TO USE A MACHINE IN BOOT MODE, YOU MUST FIRST CONNECT THE USB CABLE FROM MAB/MMT TO PC/LAPTOP AND THEN SWITCH THE MACHINE ON.

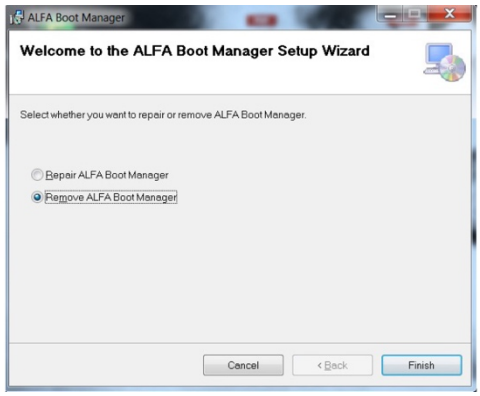
The BootLoaderAPP installation procedure is described in the following paragraph. If the software is already installed on the PC, go directly to the following paragraph explaining the use of software to program boards.

4.2.2. INSTALLING THE “BOOTLOADERAPP”

If a version of the application is already present on the PC, you must first remove it before installing a new version.

In this case, run the installation software ALFA Boot Manager, select the “Remove ALFA Boot Manager” option, and then press “Finish”.

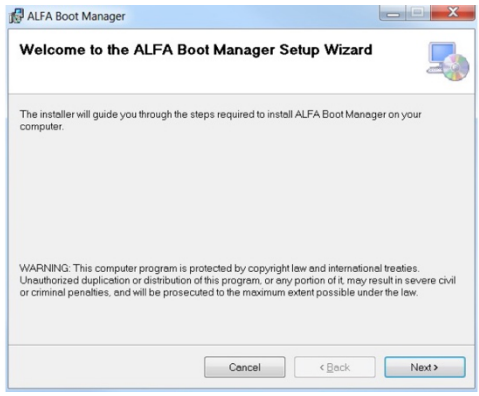
Wait until the uninstallation process is complete, and then press “Close”.



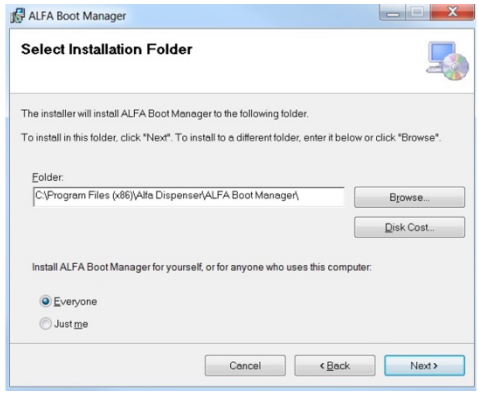
To install the application:

1. Run the installation file ALFA Boot Manager.

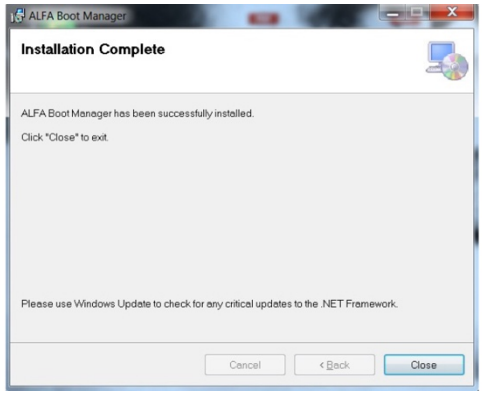
The adjacent screen will appear.



2. In the following window, select the software installation path and select option “Everyone”, then press “Next >”.

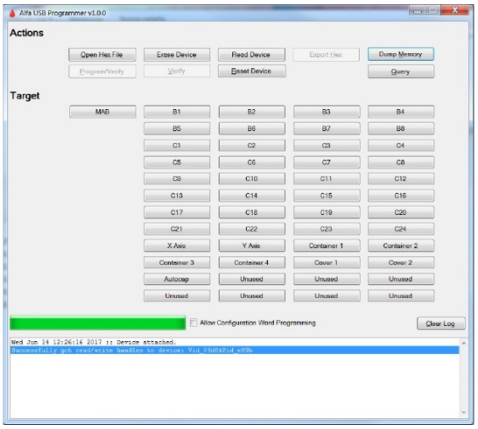


3. When prompted, press “Next >” until the installation procedure is complete, then press “Close” to terminate the installation procedure.



4.2.3. STARTING THE BOOTLOADER

Run the BootloaderApp on the PC (the application is in the folder selected in step 2 of the installation procedure).
The following window will open.

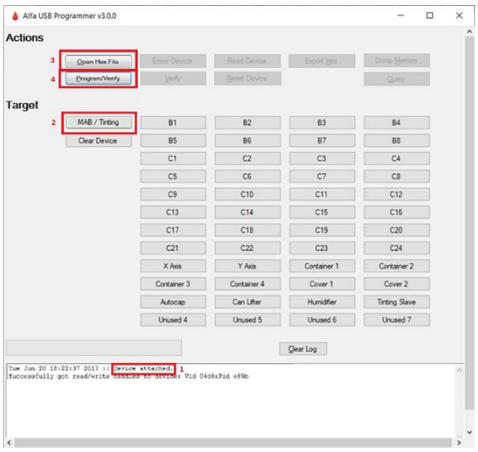


4.2.4. UPDATING THE MAB FIRMWARE

- Not used on CR6

4.2.5. UPDATING THE MMT FIRMWARE

- Check that the software has detected the presence of a MMT ‘Device attached’ (1).
- Select the MAB board to be used by pressing the MAB button (2) ‘Selected target device is now MAB’ + ‘QueryVerify command sent to MAB BOOT LOADER’.
- Select the Intel HEX file to be programmed, and press ‘Open Hex File’ (3) ‘HEX File Complete’.
- Proceed with Programming and Verification, by pressing ‘Program/Verify’ (4) ‘’: wait for the final message ‘Erase/Program/Verify Completed Successfully’.
- If programming is successful, the ‘MAB/Tinting’ button becomes GREEN.



5. MOVING AND HANDLING THE MACHINE

5.1. MOVING THE MACHINE (CR2 VERSION)

All necessary safety precautions must be implemented when moving the machine.

In order to move the machine with the cabinet, it is possible to raise the support feet and use the dedicated wheels.

IN ORDER TO AVOID THE RISK OF SPILLING PAINT INSIDE THE MACHINE, NEVER MOVE THE MACHINE WITH THE COLOURANT CIRCUITS FULL.

BEWARE OF ANY STEPS OR IRREGULARITIES IN THE FLOORING/TERRAIN THAT COULD RESULT IN SUDDEN STOPPAGES, AS THESE COULD CAUSE MACHINE TO BECOME UNBALANCED. ALWAYS PROCEED AT A LOW SPEED WITH TWO PEOPLE HANDLING THE MACHINE AT ALL TIMES.

When moving the machine over long distances a suitable lifting device should be used. In this case, proceed as follows:

Switch the machine off and disconnect all electric connections (power supply, Ethernet, etc.);

Remove the PC, keyboard, monitor and any other device from the machine supporting surfaces;

Push the machine onto the forks of a forklift truck or a manual lift truck having a suitable load capacity, having first checked the weight of the configuration in para. 1.5.4 of the user manual;

EMPTY ALL TANKS OR BRING THEM TO MINIMUM LEVEL BEFORE LIFTING AND/OR MOVING THE MACHINE.

LIFT THE MACHINE CAREFULLY, TAKING CARE TO MAKE SURE THAT IT IS SECURED PROPERLY AND IS NOT AT RISK OF TIPPING OVER

Move the machine using the fork lift truck and position it in the installation space.

Always place the machine on a surface capable of supporting its weight or on perfectly smooth and level flooring.

Once the movement has been completed, lower the support feet to stabilise the machine and reconnect the electrical circuits. Use a spirit-level to level the machine.

5.2. MOVING THE MACHINE (CR4 AND CR6 VERSIONS)

When moving the machine over small distances, it is possible to raise the support feet and push it along on its wheels.

If it is not possible to move the machine simply by pushing it, the modules that make up the CR4 and CR6 versions must be dismantled and moved separately.

See chap. 3 - INSTALLATION for instructions on how to separate the modules.

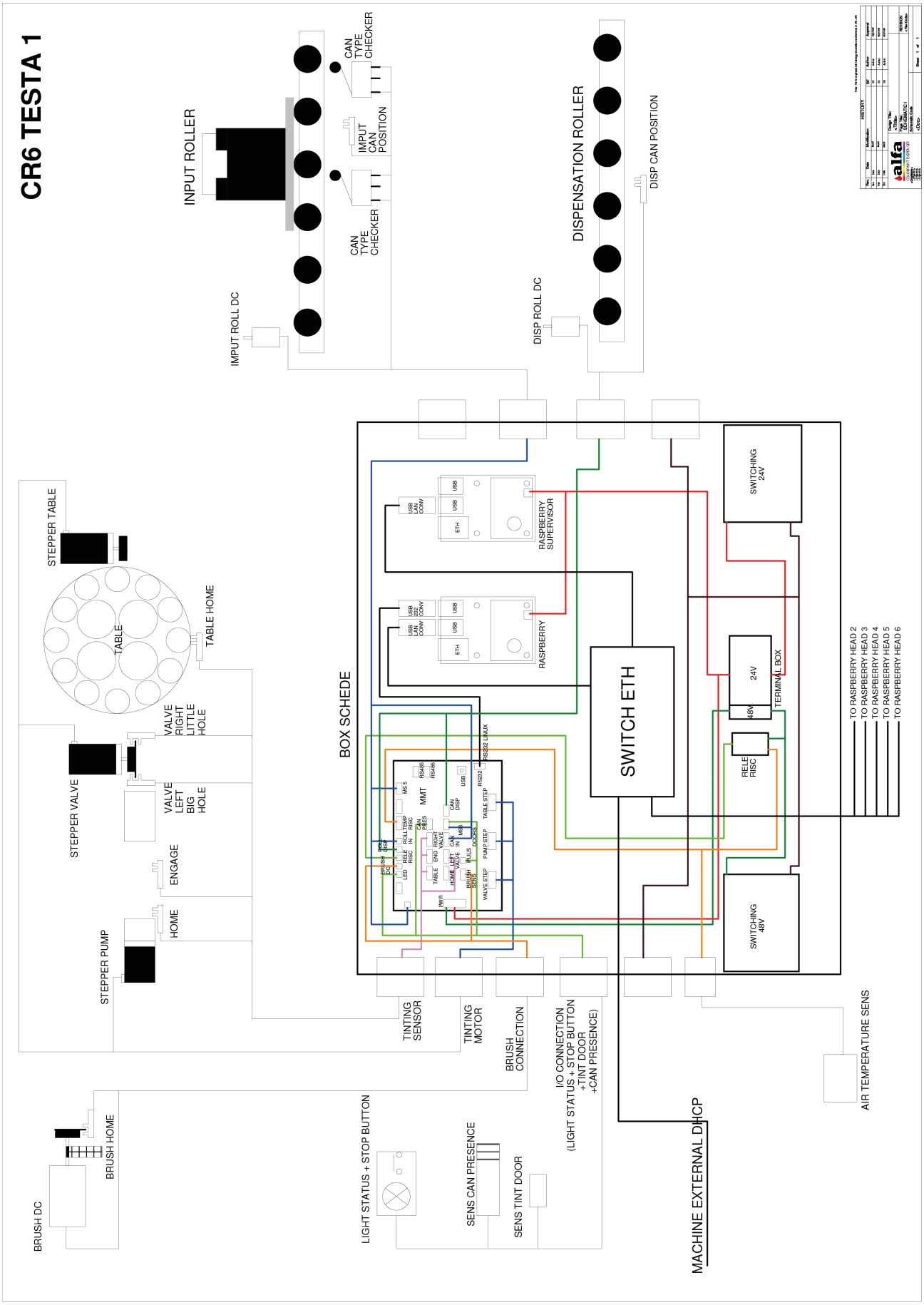
Move each module using appropriate lifting devices, as described in the previous paragraph.

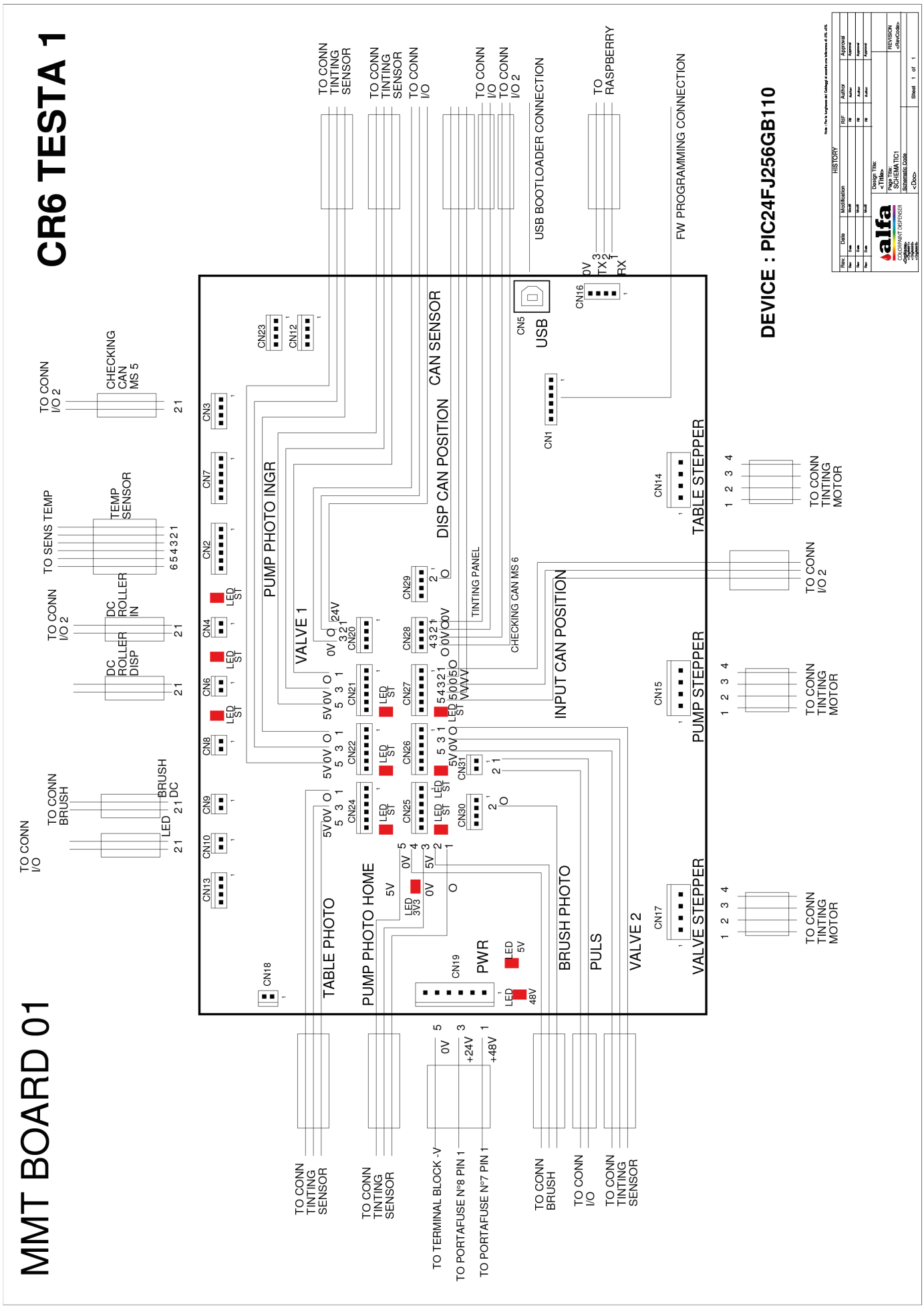
6. ACCESSING THE DIAGNOSTIC FUNCTIONS

6.1. CONTROL AND DIAGNOSTIC INTERFACE

The essential diagnostic functions are indicated in the user manual. For more information, contact Alfa customer assistance

7. CONNECTION DIAGRAMS




CR6 TESTA 1
MMT BOARD 01
DEVICE : PIC24FJ256GB110
TABLE PHOTO
PUMP PHOTO HOME
PUMP PHOTO INGR
VALVE 1
DISP CAN POSITION
CAN SENSOR
TINTING PANEL
CHECKING CAN MS 6
INPUT CAN POSITION
TABLE STEPPER
PUMP STEPPER
VALVE STEPPER
BRUSH PHOTO
PULS
VALVE 2
PWR
USB
USB BOOTLOADER CONNECTION
FW PROGRAMMING CONNECTION
TO CONN I/O
TO CONN BRUSH
BRUSH DC
LED
CHECKING CAN MS 5
TO SENS TEMP
TEMP SENSOR
DC ROLLER IN
DC ROLLER DISP
TO CONN TINTING SENSOR
TO CONN I/O
TO CONN I/O 2
TO RASPBERRY
TO CONN TINTING MOTOR
TO TERMINAL BLOCK -V
TO PORTAFUSE N°8 PIN 1
TO PORTAFUSE N°7 PIN 1
+24V
+48V
0V
5V
24V
TX
RX
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
CN10
CN12
CN13
CN14
CN15
CN16
CN17
CN18
CN19
CN20
CN21
CN22
CN23
CN24
CN25
CN26
CN27
CN28
CN29
CN30
CN31
LED ST
LED 3V3
LED 5V
LED 48V
HISTORY
Rev.
Data
Modification
RIF
Author
Approval
Design Title:
<Title>
Page Title:
SCHEMATIC1
Schematic Code:
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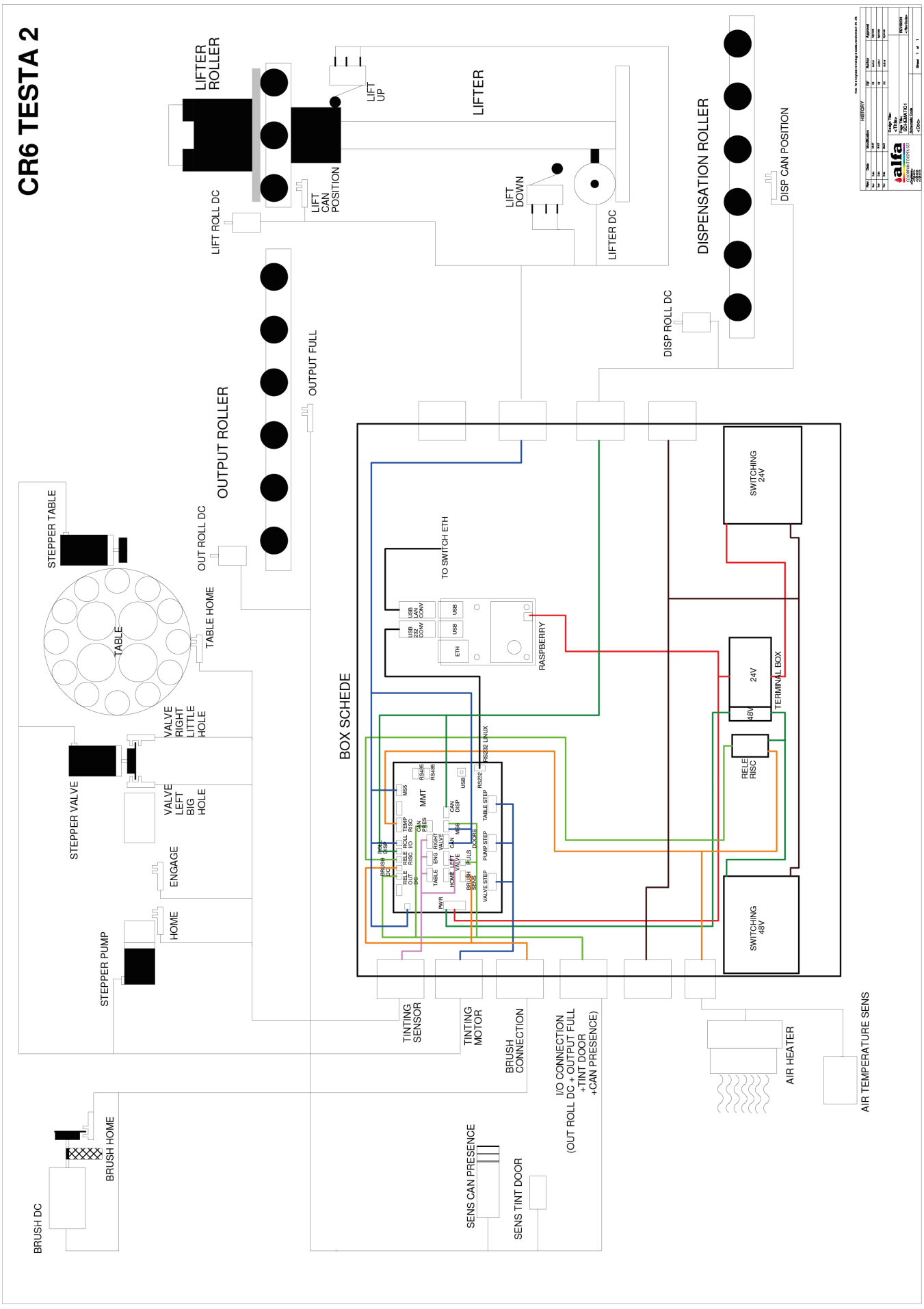
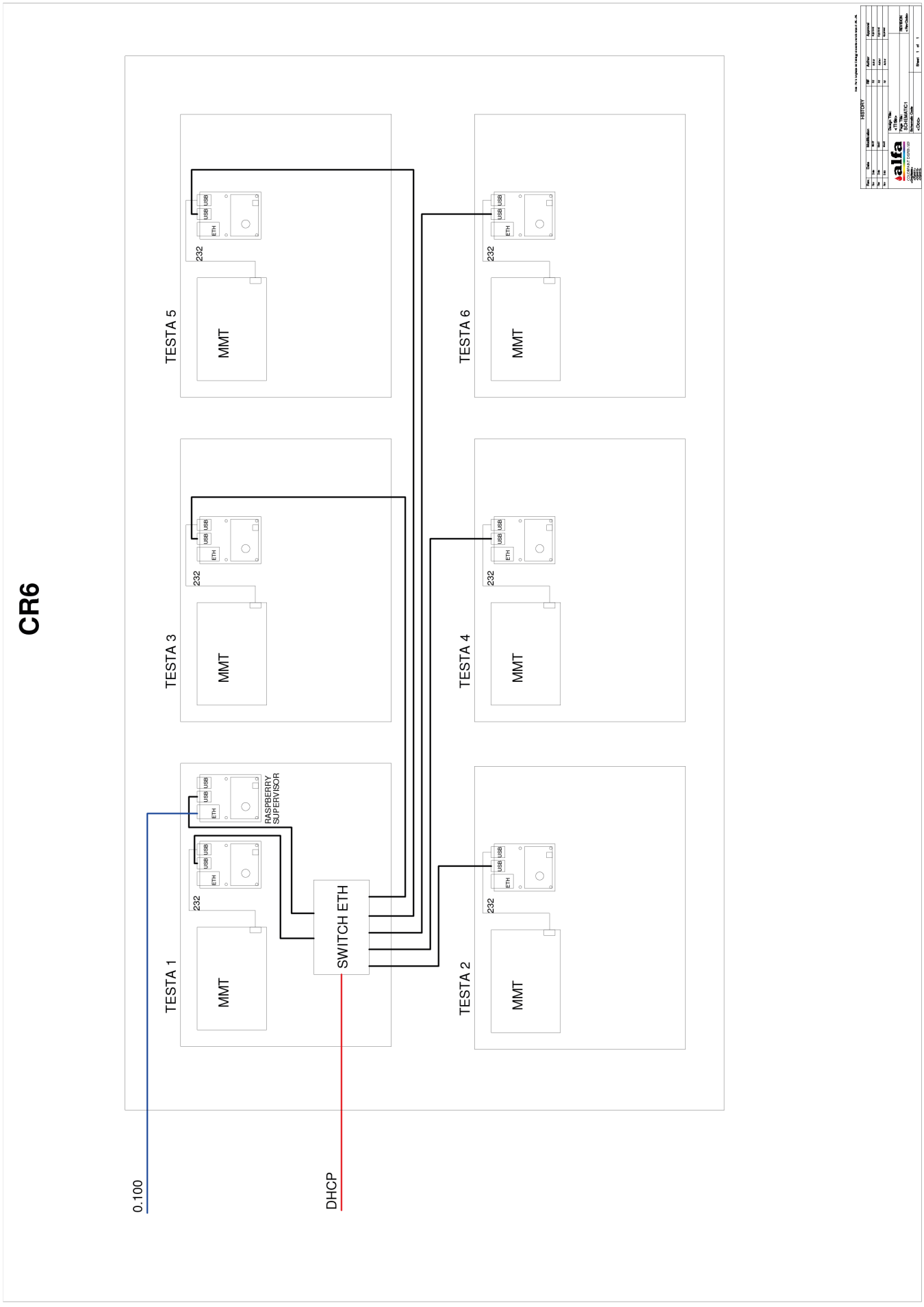
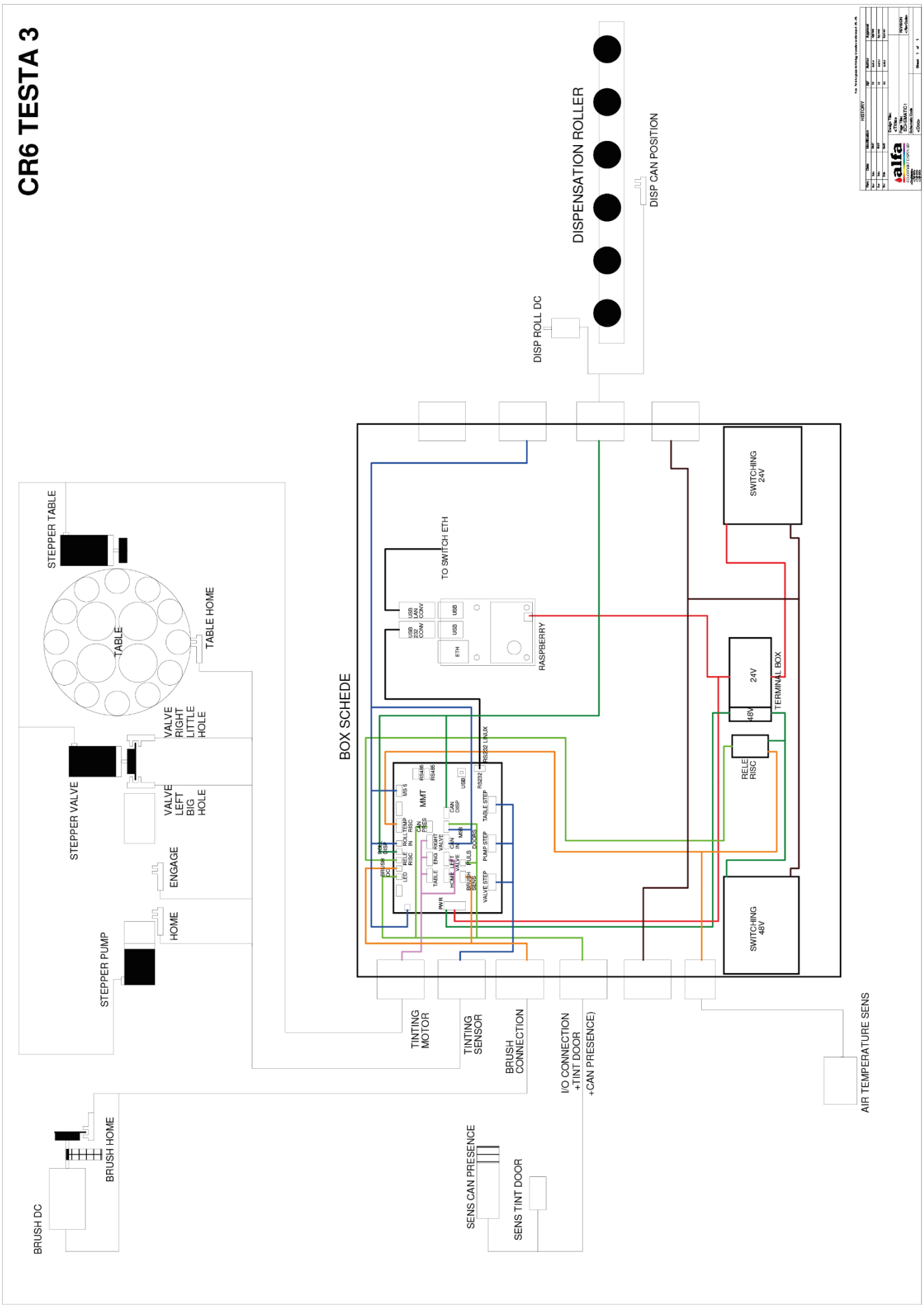
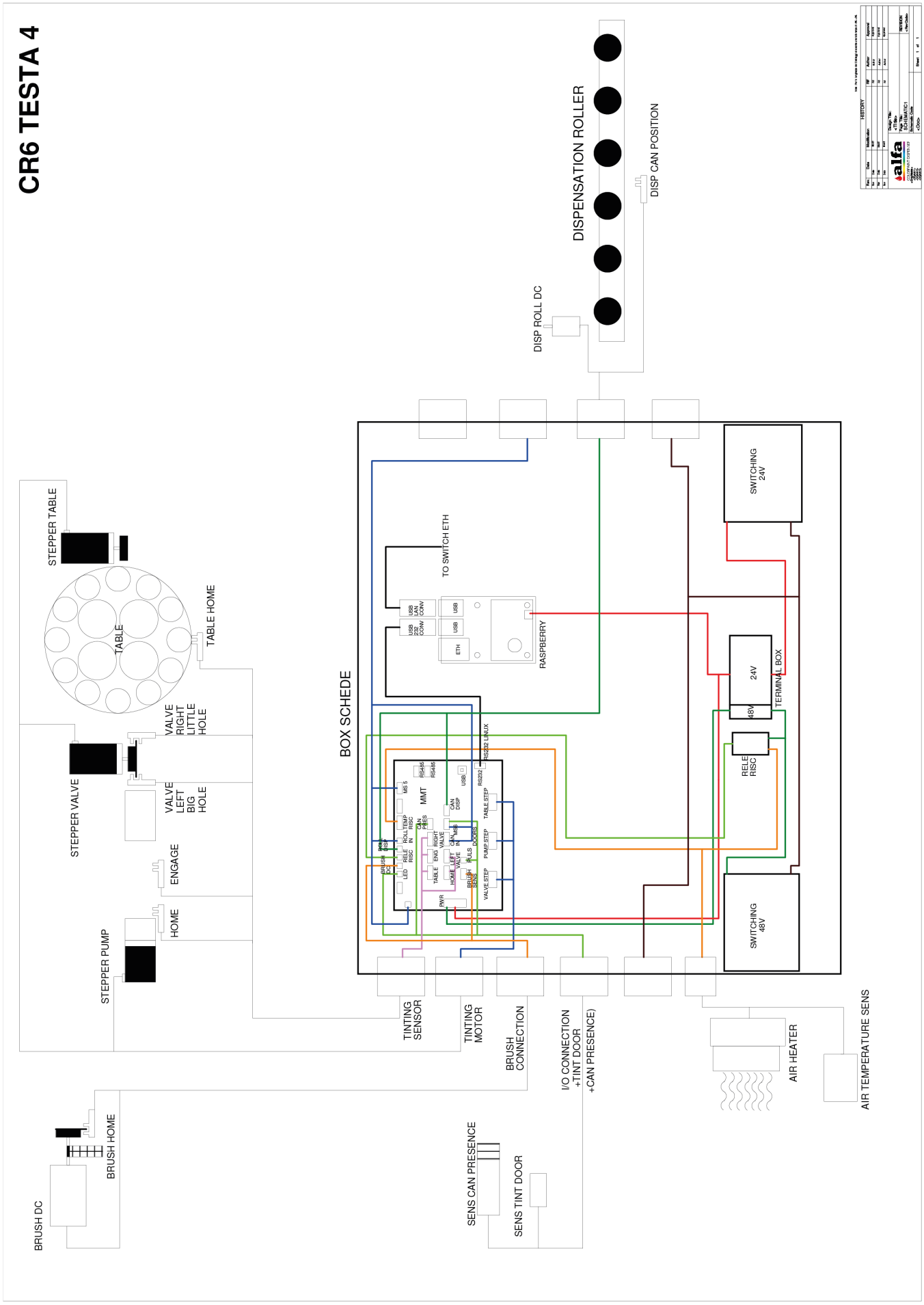
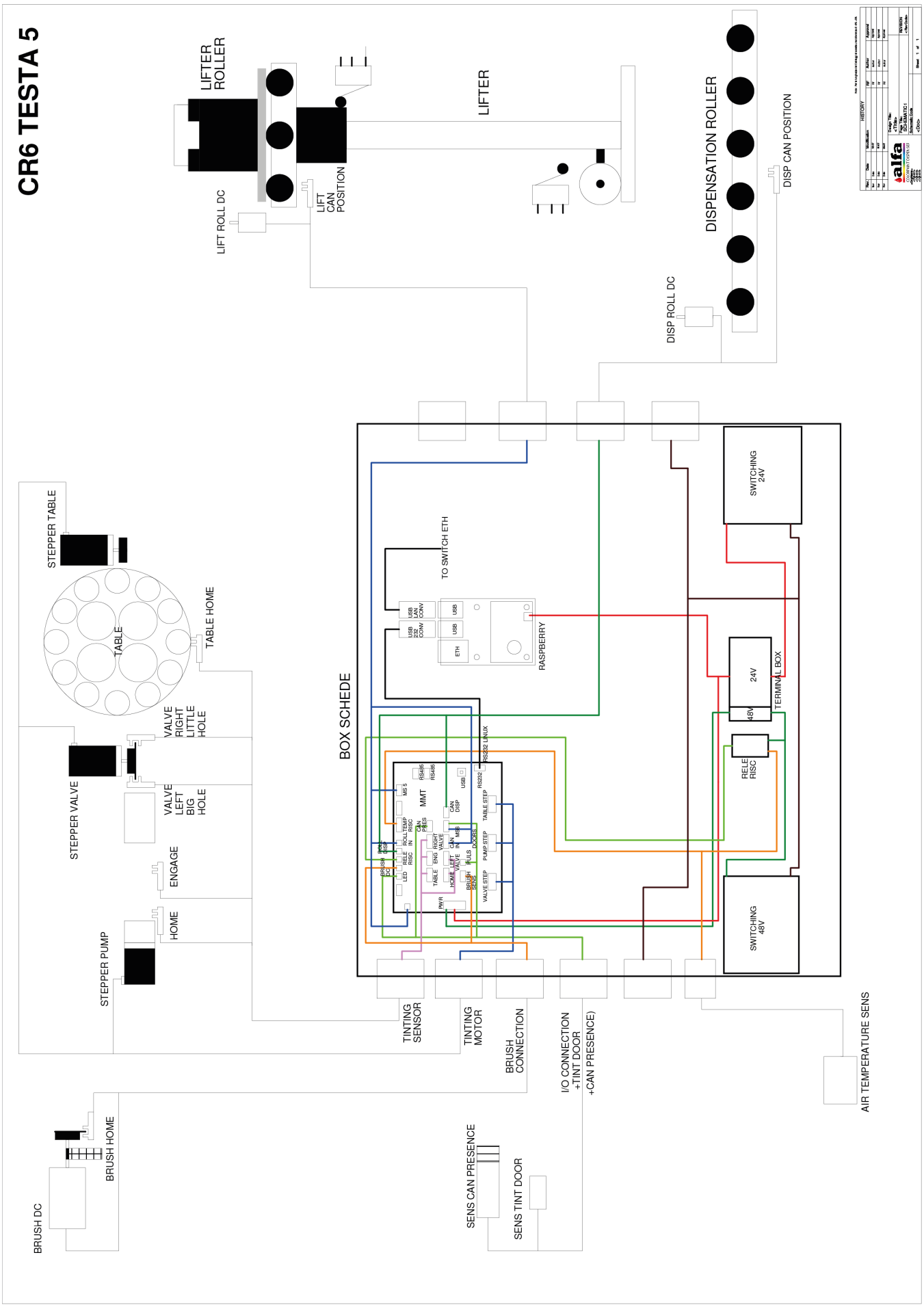
REVISION
<RevCode>
Sheet 1 of 1

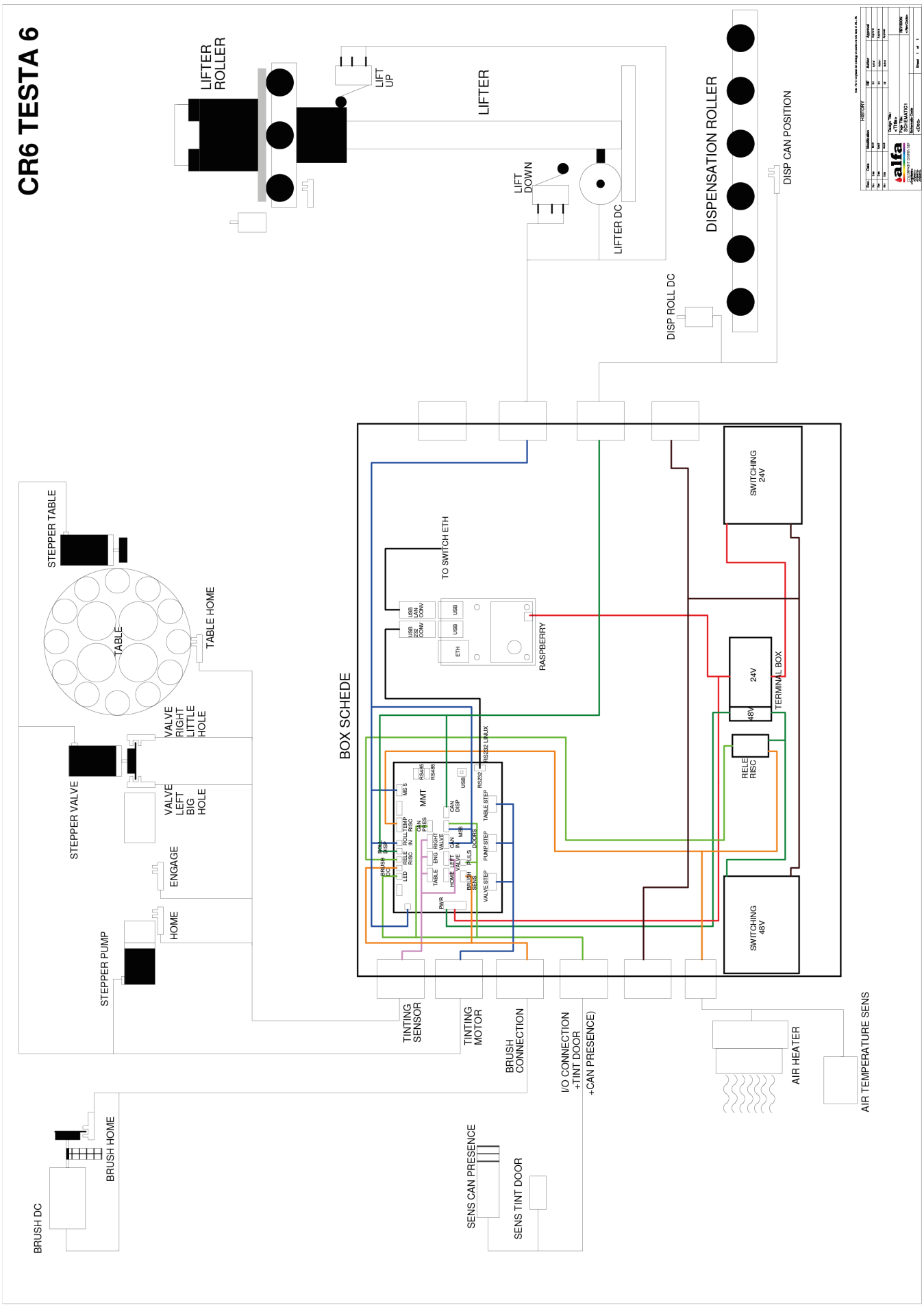

CR6 TESTA 2
LIFTER ROLLER
LIFT UP
LIFTER
LIFT ROLL DC
LIFT CAN POSITION
LIFT DOWN
LIFTER DC
DISPENSATION ROLLER
DISP CAN POSITION
DISP ROLL DC
OUTPUT ROLLER
OUTPUT FULL
OUT ROLL DC
TABLE HOME
STEPPER TABLE
TABLE
VALVE RIGHT LITTLE HOLE
VALVE LEFT BIG HOLE
STEPPER VALVE
ENGAGE
HOME
STEPPER PUMP
BOX SCHEDE
TO SWITCH ETH
RASPBERRY
SWITCHING 24V
SWITCHING 48V
TERMINAL BOX
24V
48V
RELE RISC
TINTING SENSOR
TINTING MOTOR
BRUSH CONNECTION
I/O CONNECTION (OUT ROLL DC + OUTPUT FULL +TINT DOOR +CAN PRESENCE)
AIR HEATER
AIR TEMPERATURE SENS
BRUSH DC
BRUSH HOME
SENS CAN PRESENCE
SENS TINT DOOR

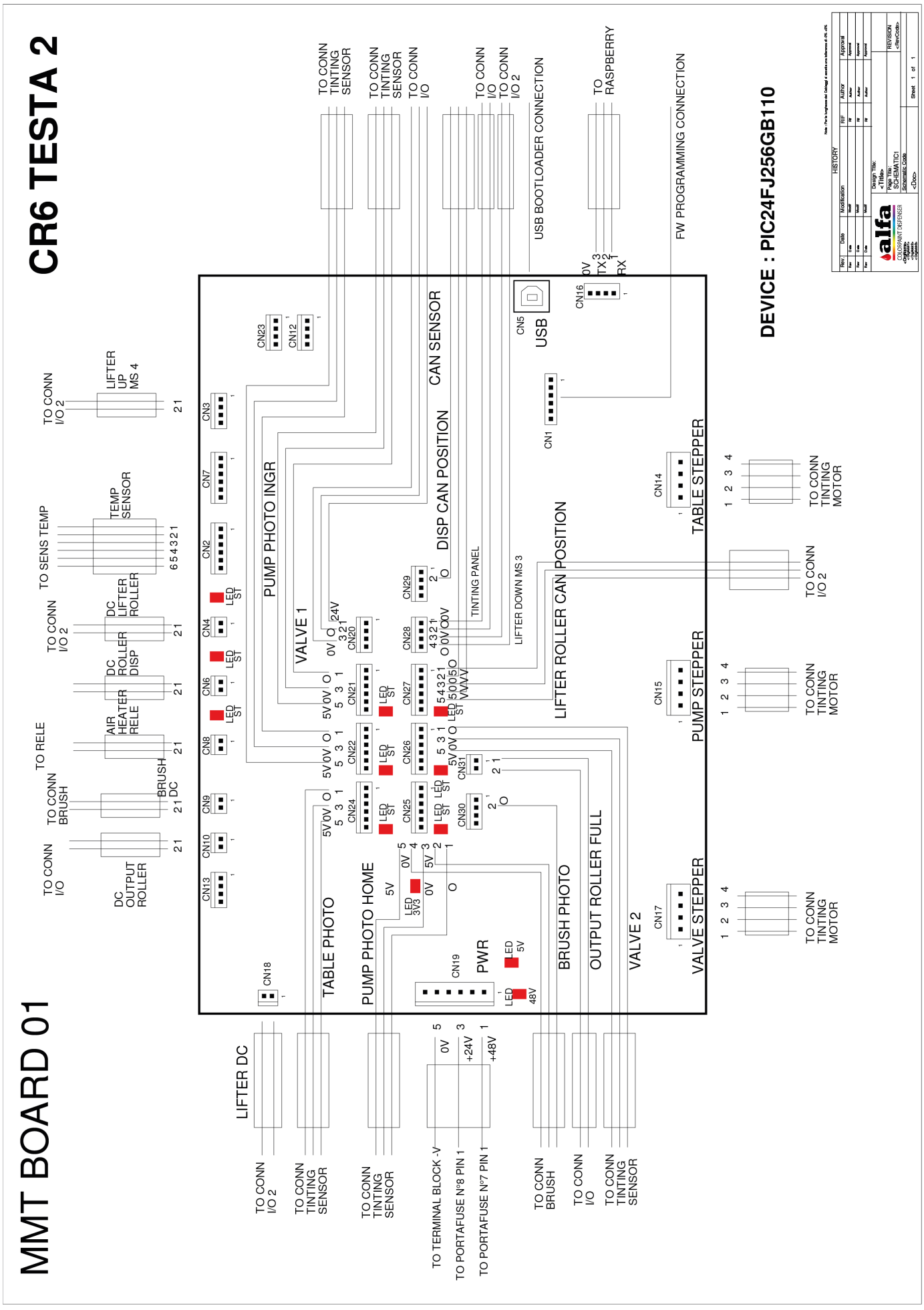

CR6
TESTA 5
TESTA 6
TESTA 3
TESTA 4
TESTA 1
TESTA 2
MMT
232
USB
ETH
RASPBERRY
SUPERVISOR
SWITCH ETH
0.100
DHCP

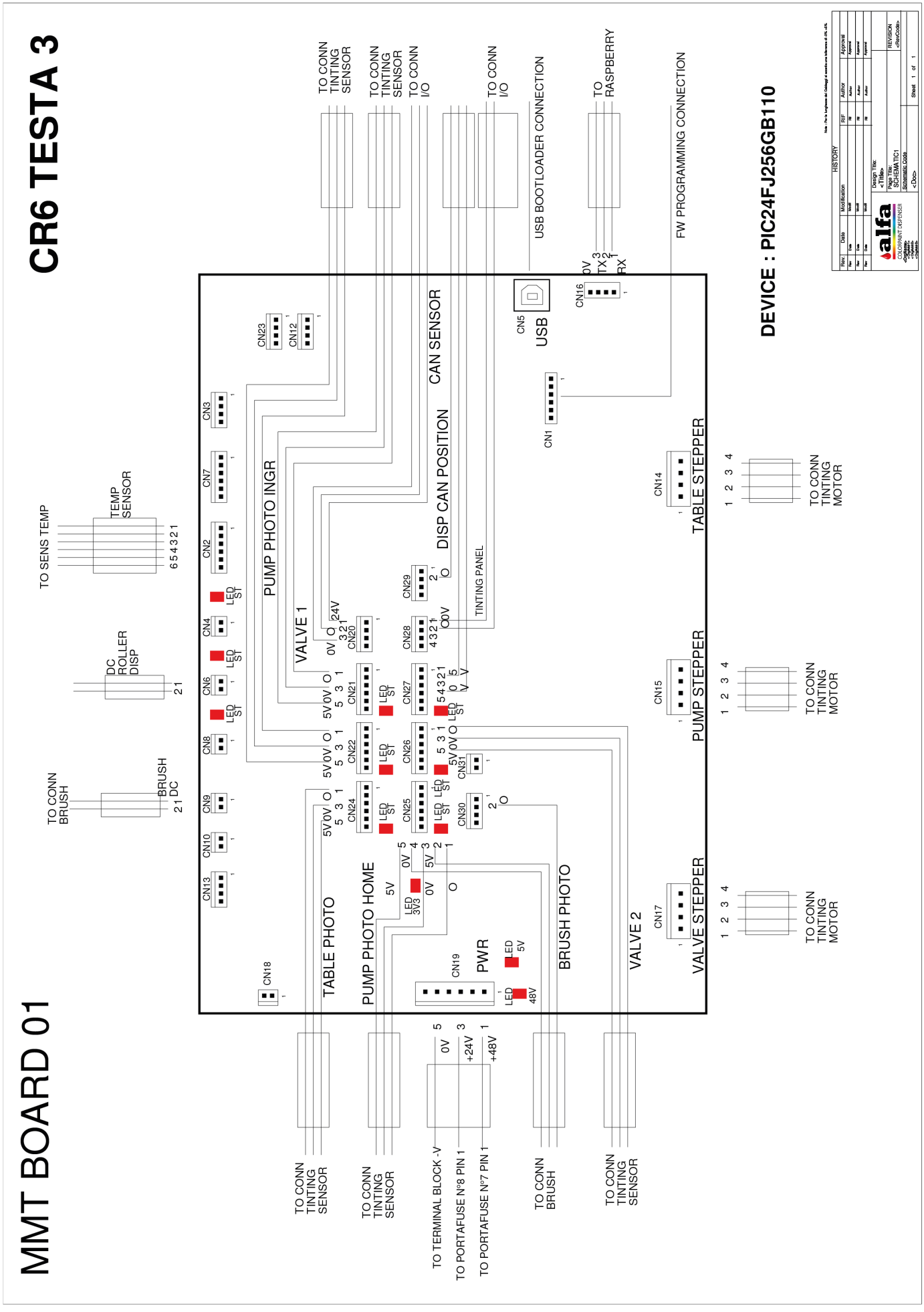

CR6 TESTA 3
DISPENSATION ROLLER
DISP CAN POSITION
DISP ROLL DC
BOX SCHEDE
TO SWITCH ETH
RASPBERRY
SWITCHING 24V
SWITCHING 48V
TERMINAL BOX
RELE RISC
STEPPER TABLE
TABLE
TABLE HOME
VALVE RIGHT LITTLE HOLE
STEPPER VALVE
VALVE LEFT BIG HOLE
ENGAGE
HOME
STEPPER PUMP
TINTING MOTOR
TINTING SENSOR
BRUSH CONNECTION
I/O CONNECTION +TINT DOOR +CAN PRESENCE)
AIR TEMPERATURE SENS
BRUSH DC
BRUSH HOME
SENS CAN PRESENCE
SENS TINT DOOR


CR6 TESTA 4
DISPENSATION ROLLER
DISP CAN POSITION
DISP ROLL DC
STEPPER TABLE
TABLE
TABLE HOME
VALVE RIGHT LITTLE HOLE
VALVE LEFT BIG HOLE
STEPPER VALVE
ENGAGE
HOME
STEPPER PUMP
BOX SCHEDE
TO SWITCH ETH
RASPBERRY
SWITCHING 24V
SWITCHING 48V
TERMINAL BOX
24V
48V
RELE RISC
TINTING SENSOR
TINTING MOTOR
BRUSH CONNECTION
I/O CONNECTION +TINT DOOR +CAN PRESENCE)
AIR HEATER
AIR TEMPERATURE SENS
BRUSH DC
BRUSH HOME
SENS CAN PRESENCE
SENS TINT DOOR


CR6 TESTA 5
LIFTER ROLLER
LIFT ROLL DC
LIFT CAN POSITION
LIFTER
DISPENSATION ROLLER
DISP CAN POSITION
DISP ROLL DC
STEPPER TABLE
TABLE
TABLE HOME
VALVE RIGHT LITTLE HOLE
STEPPER VALVE
VALVE LEFT BIG HOLE
ENGAGE
HOME
STEPPER PUMP
BOX SCHEDE
TO SWITCH ETH
RASPBERRY
SWITCHING 24V
SWITCHING 48V
TERMINAL BOX
24V
48V
RELE RISC
TINTING SENSOR
TINTING MOTOR
BRUSH CONNECTION
I/O CONNECTION +TINT DOOR +CAN PRESENCE)
AIR TEMPERATURE SENS
BRUSH DC
BRUSH HOME
SENS CAN PRESENCE
SENS TINT DOOR


CR6 TESTA 6
LIFTER ROLLER
LIFT UP
LIFTER
LIFT DOWN
LIFTER DC
DISPENSATION ROLLER
DISP CAN POSITION
DISP ROLL DC
STEPPER TABLE
TABLE
TABLE HOME
VALVE RIGHT LITTLE HOLE
STEPPER VALVE
VALVE LEFT BIG HOLE
ENGAGE
HOME
STEPPER PUMP
BOX SCHEDE
TO SWITCH ETH
RASPBERRY
SWITCHING 24V
SWITCHING 48V
24V
48V
TERMINAL BOX
RELE RISC
TINTING SENSOR
TINTING MOTOR
BRUSH CONNECTION
I/O CONNECTION +TINT DOOR +CAN PRESENCE)
AIR HEATER
AIR TEMPERATURE SENS
BRUSH DC
BRUSH HOME
SENS CAN PRESENCE
SENS TINT DOOR


MMT BOARD 01
CR6 TESTA 2
DEVICE : PIC24FJ256GB110
TABLE PHOTO
PUMP PHOTO HOME
BRUSH PHOTO
OUTPUT ROLLER FULL
VALVE 2
PWR
PUMP PHOTO INGR
VALVE 1
CAN SENSOR
DISP CAN POSITION
LIFTER ROLLER CAN POSITION
TINTING PANEL
LIFTER DOWN MS 3
USB
USB BOOTLOADER CONNECTION
FW PROGRAMMING CONNECTION
TO RASPBERRY
VALVE STEPPER
PUMP STEPPER
TABLE STEPPER
LIFTER DC
TO TERMINAL BLOCK -V
TO PORTAFUSE N°8 PIN 1
TO PORTAFUSE N°7 PIN 1
TO CONN I/O
TO CONN I/O 2
TO CONN TINTING SENSOR
TO CONN TINTING MOTOR
TO CONN BRUSH
TO SENS TEMP
TO RELE
DC OUTPUT ROLLER
BRUSH DC
AIR HEATER RELE
DC ROLLER DISP
DC LIFTER ROLLER
TEMP SENSOR
LIFTER UP MS 4


MMT BOARD 01
CR6 TESTA 3
DEVICE : PIC24FJ256GB110
TO SENS TEMP
TEMP SENSOR
DC ROLLER DISP
TO CONN BRUSH
BRUSH DC
TO CONN TINTING SENSOR
TO CONN I/O
USB BOOTLOADER CONNECTION
TO RASPBERRY
FW PROGRAMMING CONNECTION
CAN SENSOR
DISP CAN POSITION
TINTING PANEL
USB
PUMP PHOTO INGR
VALVE 1
TABLE PHOTO
PUMP PHOTO HOME
PWR
BRUSH PHOTO
VALVE 2
TABLE STEPPER
PUMP STEPPER
VALVE STEPPER
TO CONN TINTING MOTOR
TO TERMINAL BLOCK -V
TO PORTAFUSE N°8 PIN 1
TO PORTAFUSE N°7 PIN 1
HISTORY
Rev. Date Modification Ref Author Approval
Design Title:
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Page Title:
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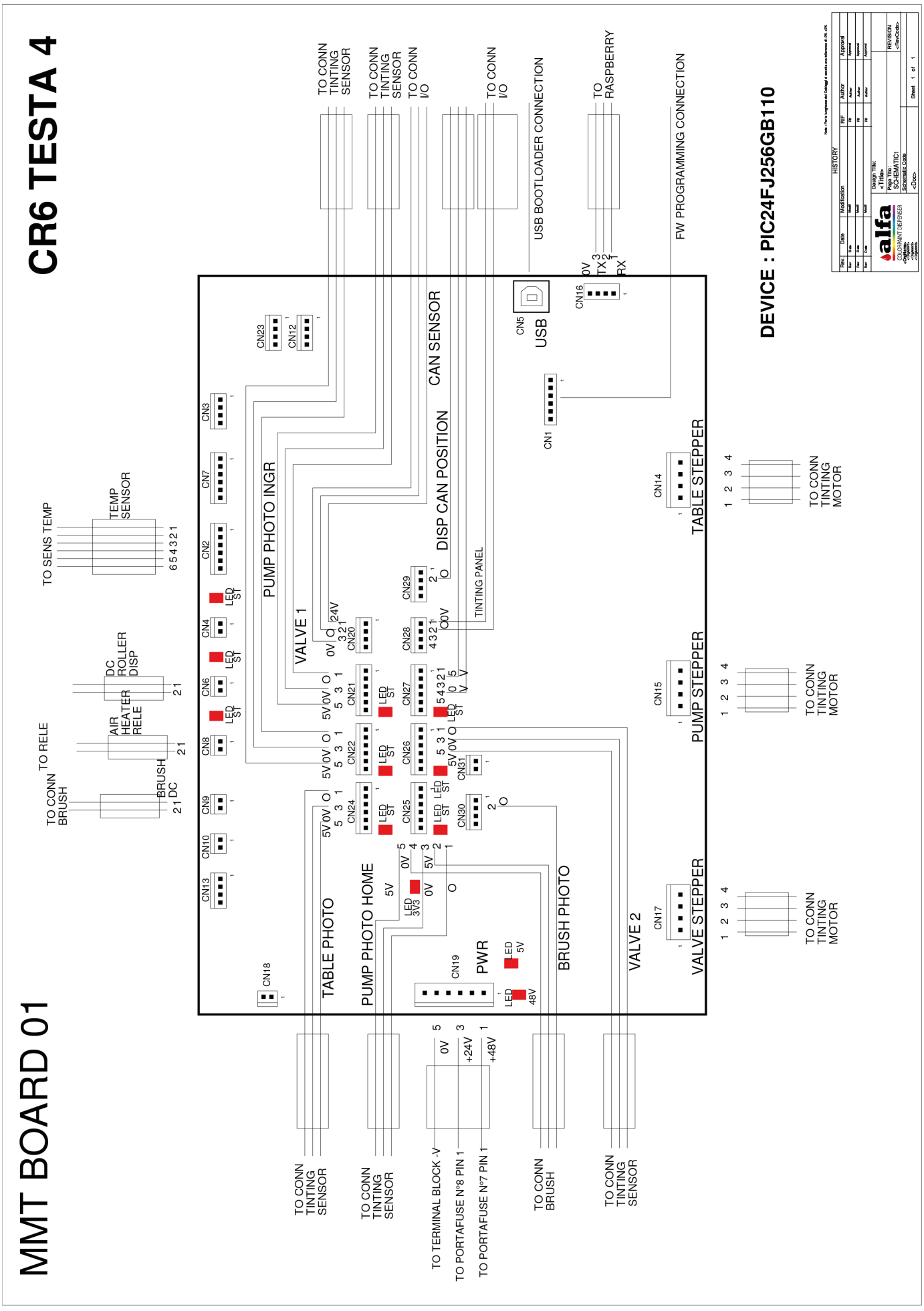
Schematic Code:
<Doc>
REVISION
<RevCode>
Sheet 1 of 1


CR6 TESTA 4
MMT BOARD 01
DEVICE : PIC24FJ256GB110
TABLE PHOTO
PUMP PHOTO HOME
PWR
BRUSH PHOTO
VALVE 2
VALVE STEPPER
PUMP PHOTO INGR
VALVE 1
DISP CAN POSITION
CAN SENSOR
TINTING PANEL
PUMP STEPPER
TABLE STEPPER
USB
USB BOOTLOADER CONNECTION
FW PROGRAMMING CONNECTION
TO RASPBERRY
TO CONN I/O
TO CONN TINTING SENSOR
TO CONN TINTING MOTOR
TO CONN BRUSH
TO TERMINAL BLOCK -V
TO PORTAFUSE N°8 PIN 1
TO PORTAFUSE N°7 PIN 1
TO SENS TEMP
TEMP SENSOR
TO RELE
TO CONN BRUSH
BRUSH DC
AIR HEATER RELE
DC ROLLER DISP
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Date
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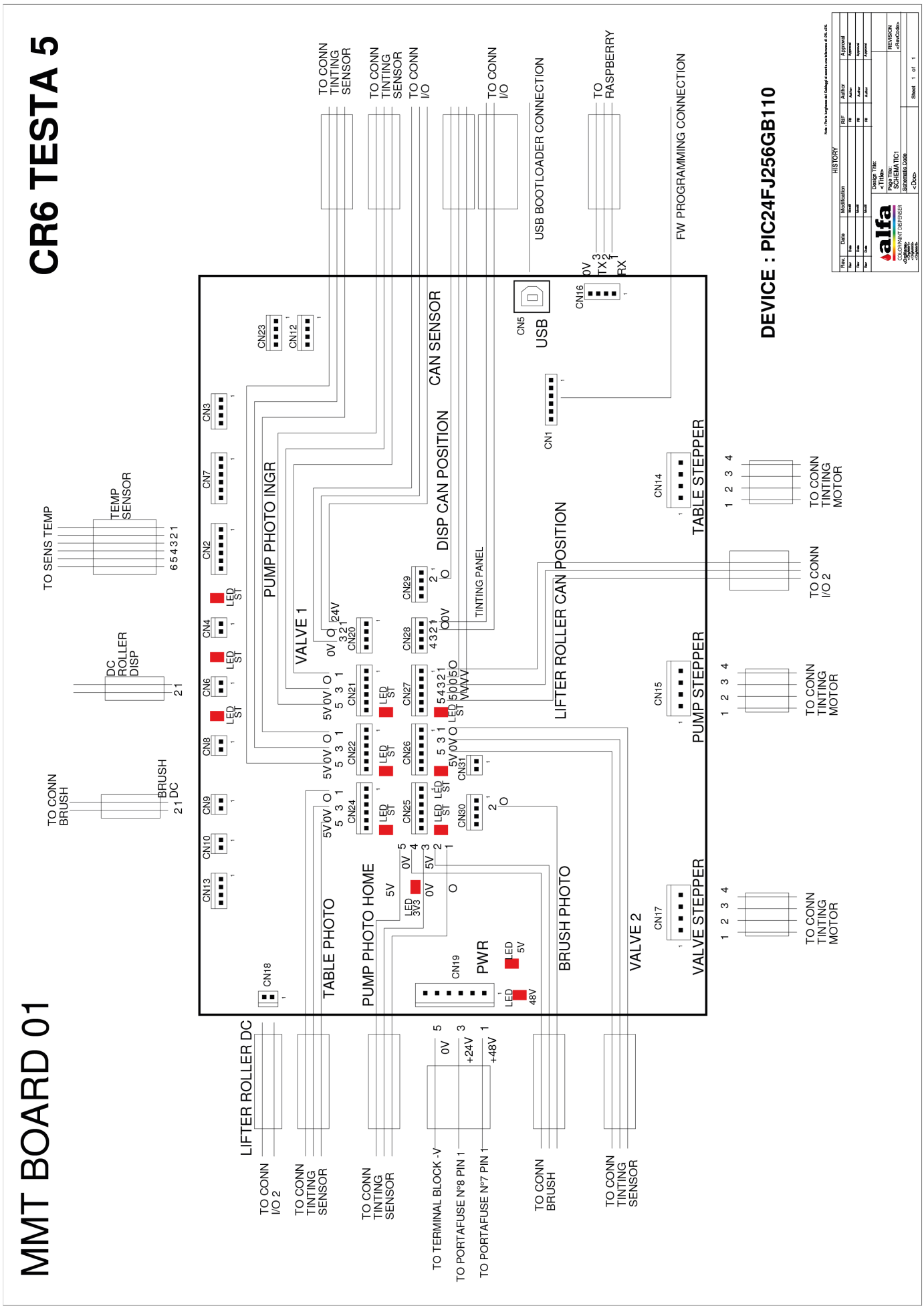
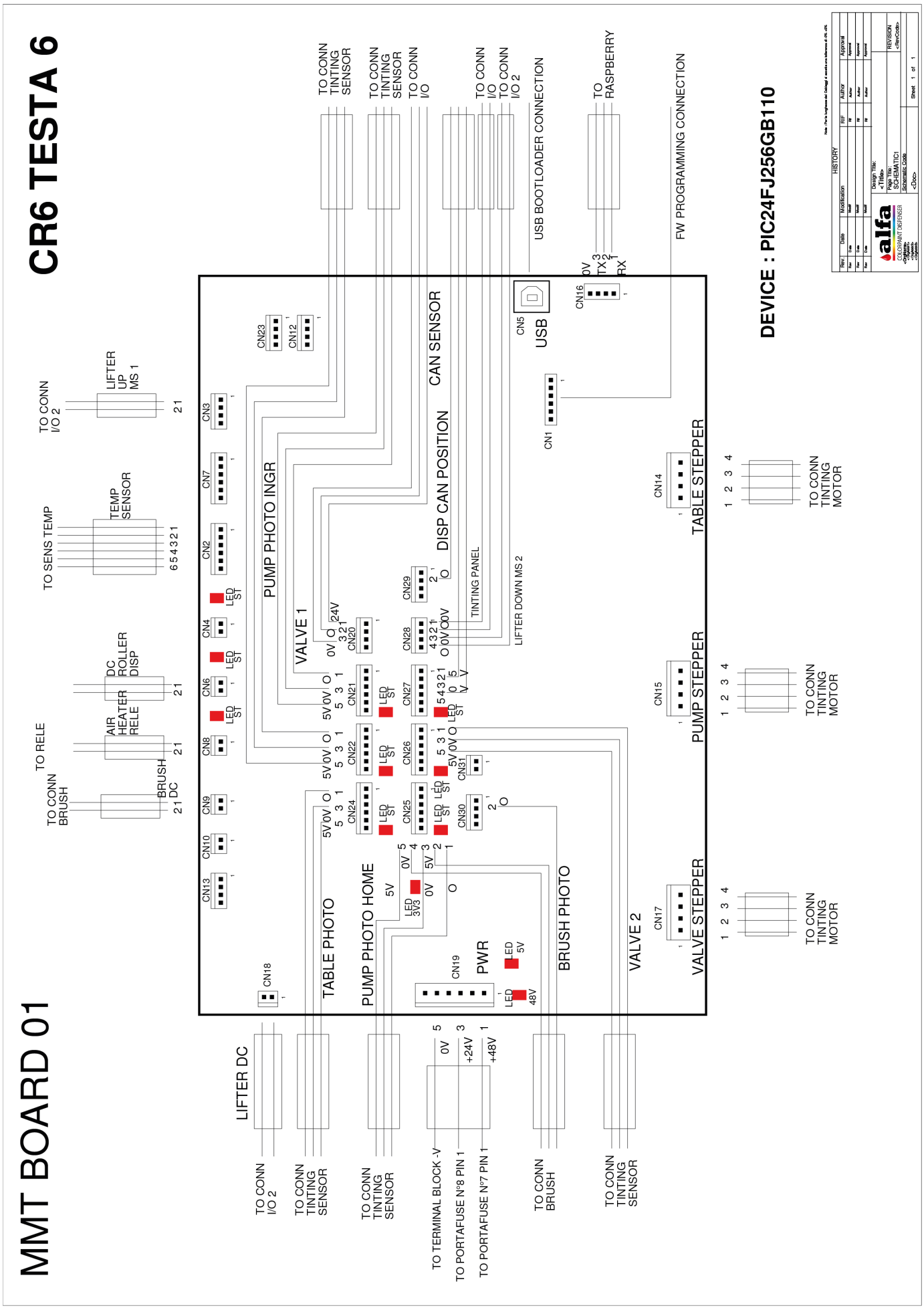
Sheet 1 of 1


MMT BOARD 01
CR6 TESTA 5
DEVICE : PIC24FJ256GB110
TABLE PHOTO
PUMP PHOTO HOME
PUMP PHOTO INGR
VALVE 1
VALVE 2
BRUSH PHOTO
PWR
CAN SENSOR
DISP CAN POSITION
LIFTER ROLLER CAN POSITION
TINTING PANEL
TABLE STEPPER
PUMP STEPPER
VALVE STEPPER
USB
USB BOOTLOADER CONNECTION
FW PROGRAMMING CONNECTION
TO RASPBERRY
TO SENS TEMP
TEMP SENSOR
DC ROLLER DISP
BRUSH DC
TO CONN BRUSH
LIFTER ROLLER DC
TO CONN I/O 2
TO CONN TINTING SENSOR
TO CONN I/O
TO CONN TINTING MOTOR
TO TERMINAL BLOCK -V
TO PORTAFUSE N°8 PIN 1
TO PORTAFUSE N°7 PIN 1
HISTORY
Design Title:
Page Title:
SCHEMATIC1
Schematic Code:
Sheet 1 of 1


MMT BOARD 01
CR6 TESTA 6
DEVICE : PIC24FJ256GB110
TABLE PHOTO
PUMP PHOTO HOME
BRUSH PHOTO
VALVE 2
PWR
PUMP PHOTO INGR
VALVE 1
TINTING PANEL
LIFTER DOWN MS 2
DISP CAN POSITION
CAN SENSOR
USB
USB BOOTLOADER CONNECTION
FW PROGRAMMING CONNECTION
TO RASPBERRY
TABLE STEPPER
PUMP STEPPER
VALVE STEPPER
LIFTER DC
TO CONN I/O 2
TO CONN TINTING SENSOR
TO CONN BRUSH
TO CONN TINTING MOTOR
TO TERMINAL BLOCK -V
TO PORTAFUSE N°8 PIN 1
TO PORTAFUSE N°7 PIN 1
TO SENS TEMP
TEMP SENSOR
TO RELE
AIR HEATER RELE
DC ROLLER DISP
BRUSH
LIFTER UP MS 1
HISTORY
Design Title:
<Title>
Schematic Code:
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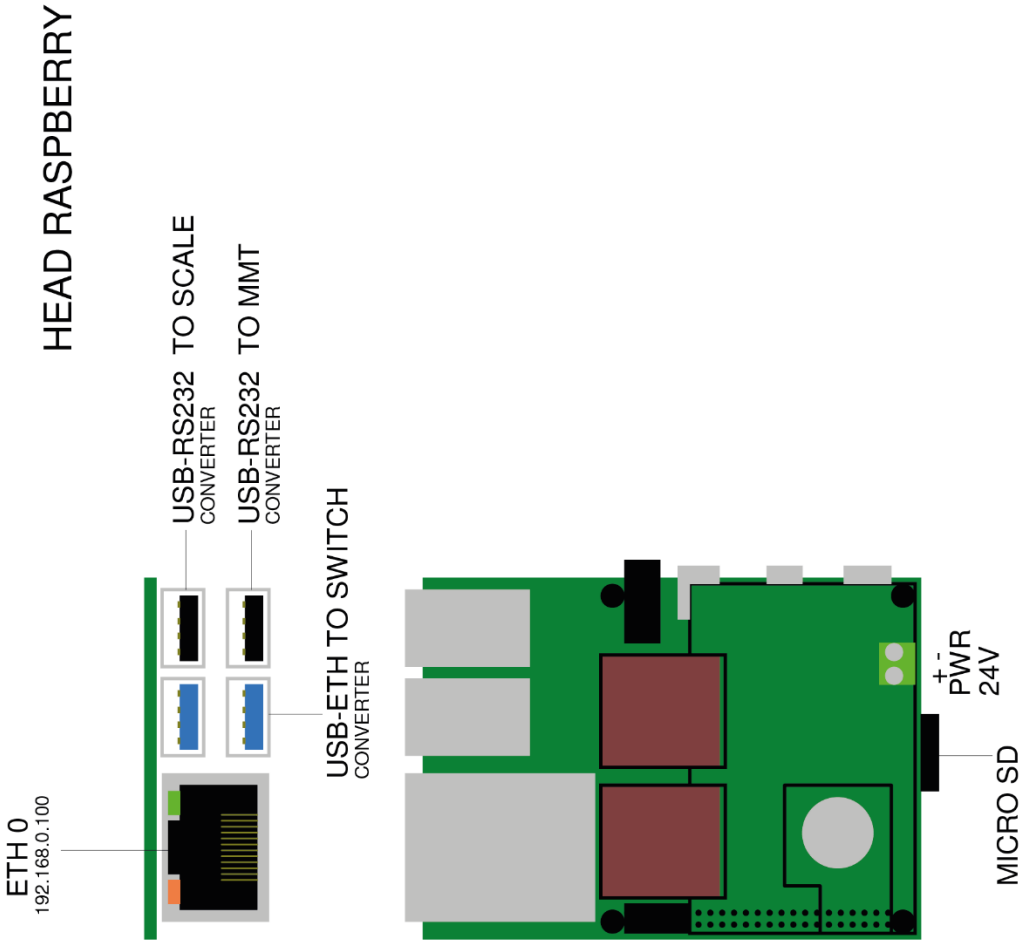
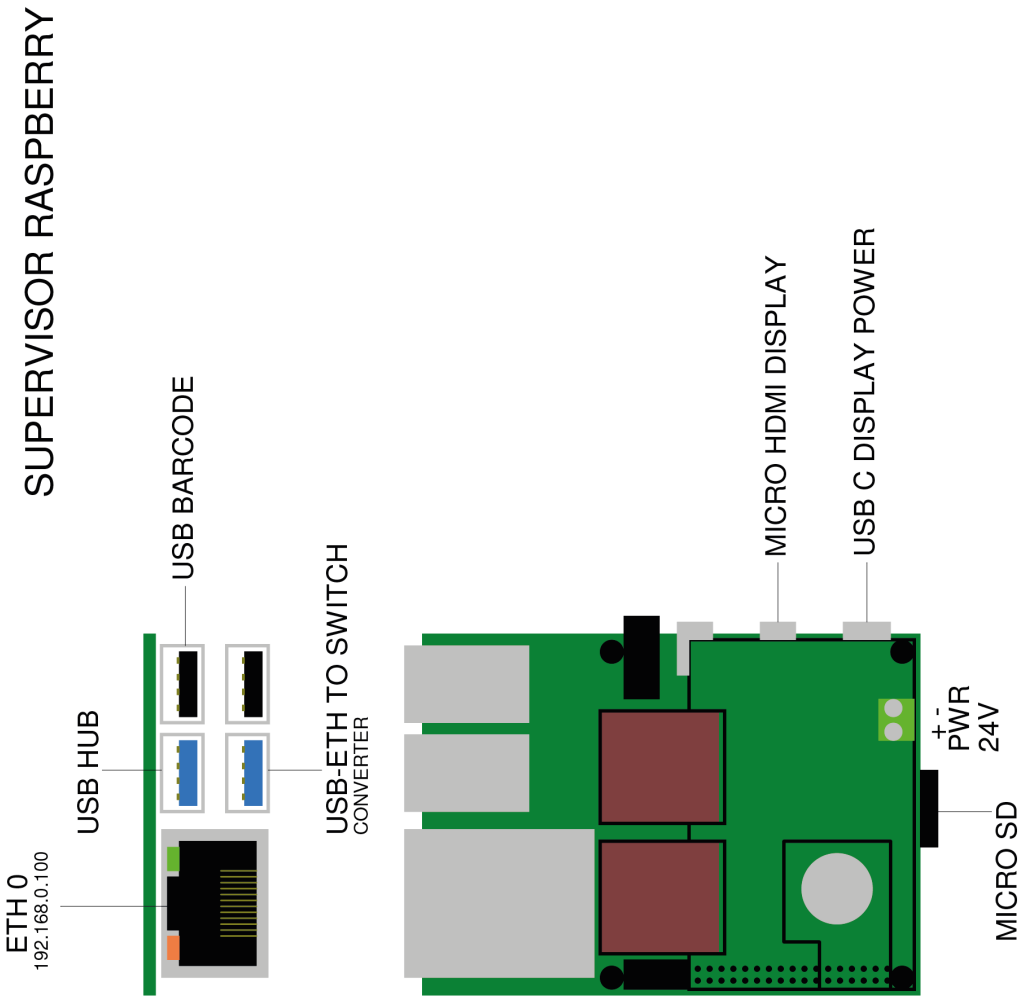
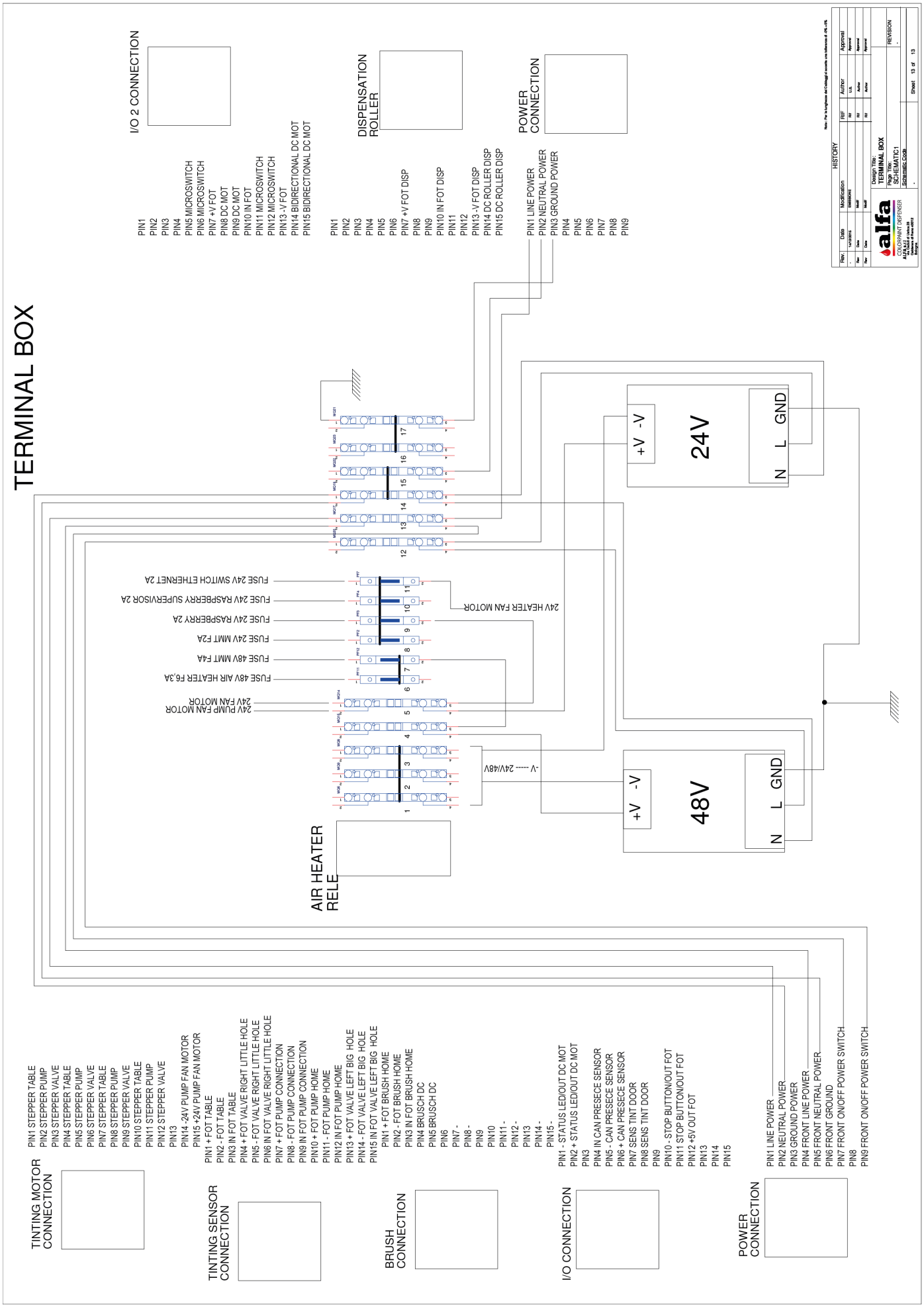
Sheet 1 of 1


HEAD RASPBERRY
USB-RS232 CONVERTER
TO SCALE
USB-RS232 CONVERTER
TO MMT
USB-ETH TO SWITCH CONVERTER
ETH 0
192.168.0.100
+ -
PWR
24V
MICRO SD


SUPERVISOR RASPBERRY
USB BARCODE
USB HUB
USB-ETH TO SWITCH
CONVERTER
ETH 0
192.168.0.100
MICRO HDMI DISPLAY
USB C DISPLAY POWER
+ -
PWR
24V
MICRO SD


TERMINAL BOX
I/O 2 CONNECTION
PIN1
PIN2
PIN3
PIN4
PIN5 MICROSWITCH
PIN6 MICROSWITCH
PIN7 +V FOT
PIN8 DC MOT
PIN9 DC MOT
PIN10 IN FOT
PIN11 MICROSWITCH
PIN12 MICROSWITCH
PIN13 -V FOT
PIN14 BIDIRECTIONAL DC MOT
PIN15 BIDIRECTIONAL DC MOT
DISPENSATION ROLLER
PIN1
PIN2
PIN3
PIN4
PIN5
PIN6
PIN7 +V FOT DISP
PIN8
PIN9
PIN10 IN FOT DISP
PIN11
PIN12
PIN13 -V FOT DISP
PIN14 DC ROLLER DISP
PIN15 DC ROLLER DISP
POWER CONNECTION
PIN1 LINE POWER
PIN2 NEUTRAL POWER
PIN3 GROUND POWER
PIN4
PIN5
PIN6
PIN7
PIN8
PIN9
HISTORY
Rev. Data Modification Rif Author Approval
Design Title: TERMINAL BOX
Page Title: SCHEMATIC1
Schematic Code:
REVISION
Sheet 13 of 13
FUSE 24V SWITCH ETHERNET 2A
FUSE 24V RASPBERRY SUPERVISOR 2A
FUSE 24V RASPBERRY 2A
FUSE 24V MMT F2A
FUSE 48V MMT F4A
FUSE 48V AIR HEATER F6,3A
24V PUMP FAN MOTOR
24V FAN MOTOR
24V HEATER FAN MOTOR
-V ---- 24V/48V
AIR HEATER RELE
+V -V
24V
N L GND
+V -V
48V
N L GND
TINTING MOTOR CONNECTION
PIN1 STEPPER TABLE
PIN2 STEPPER PUMP
PIN3 STEPPER VALVE
PIN4 STEPPER TABLE
PIN5 STEPPER PUMP
PIN6 STEPPER VALVE
PIN7 STEPPER TABLE
PIN8 STEPPER PUMP
PIN9 STEPPER VALVE
PIN10 STEPPER TABLE
PIN11 STEPPER PUMP
PIN12 STEPPER VALVE
PIN13
PIN14 -24V PUMP FAN MOTOR
PIN15 +24V PUMP FAN MOTOR
TINTING SENSOR CONNECTION
PIN1 + FOT TABLE
PIN2 - FOT TABLE
PIN3 IN FOT TABLE
PIN4 + FOT VALVE RIGHT LITTLE HOLE
PIN5 - FOT VALVE RIGHT LITTLE HOLE
PIN6 IN FOT VALVE RIGHT LITTLE HOLE
PIN7 + FOT PUMP CONNECTION
PIN8 - FOT PUMP CONNECTION
PIN9 IN FOT PUMP CONNECTION
PIN10 + FOT PUMP HOME
PIN11 - FOT PUMP HOME
PIN12 IN FOT PUMP HOME
PIN13 + FOT VALVE LEFT BIG HOLE
PIN14 - FOT VALVE LEFT BIG HOLE
PIN15 IN FOT VALVE LEFT BIG HOLE
BRUSH CONNECTION
PIN1 + FOT BRUSH HOME
PIN2 - FOT BRUSH HOME
PIN3 IN FOT BRUSH HOME
PIN4 BRUSCH DC
PIN5 BRUSCH DC
PIN6
PIN7 -
PIN8 -
PIN9
PIN10
PIN11 -
PIN12 -
PIN13
PIN14 -
PIN15 -
I/O CONNECTION
PIN1 - STATUS LED/OUT DC MOT
PIN2 + STATUS LED/OUT DC MOT
PIN3
PIN4 IN CAN PRESECE SENSOR
PIN5 - CAN PRESECE SENSOR
PIN6 + CAN PRESECE SENSOR
PIN7 SENS TINT DOOR
PIN8 SENS TINT DOOR
PIN9
PIN10 - STOP BUTTON/OUT FOT
PIN11 STOP BUTTON/OUT FOT
PIN12 +5V OUT FOT
PIN13
PIN14
PIN15
POWER CONNECTION
PIN1 LINE POWER
PIN2 NEUTRAL POWER
PIN3 GROUND POWER
PIN4 FRONT LINE POWER
PIN5 FRONT NEUTRAL POWER
PIN6 FRONT GROUND
PIN7 FRONT ON/OFF POWER SWITCH
PIN8
PIN9 FRONT ON/OFF POWER SWITCH

8. DIAGNOSTICS

Error code	Error detected	Error description	Resolution of the problem
2	EEPROM_COLOR_CIRC_PARAM_CRC_FAULT	Circuit parameter CRC fault	Check for the absence of parameters in the case of MMT replacement. Load the bases/colorants circuit parameters onto the new MMT board
3	EEPROM_CALIB_CURVES_PARAM_CRC_FAULT	Calibration curve parameter CRC fault	Check for the absence of parameters in the case of MMT replacement. Load the calibration parameters onto the new MMT board
5	EEPROM_SLAVES_EN_PARAM_CRC_FAULT	Slave configuration CRC fault	Check for the absence of parameters in the case of MMT replacement. Load the SLAVE configurations onto the new MMT board
8	EEPROM_HUM_20_PARAM_CRC_FAULT	Humidifier 2.0 parameter CRC fault	Check for the absence of parameters in the case of MMT replacement. Load Humidifier 2.0 parameters onto the new MMT board
9	EEPROM_CIRCUIT_PUMP_TYPES_CRC_FAULT	Pump type CRC fault for each circuit	Check for the absence of parameters in the case of MMT replacement. Load the types of pumps onto the new MMT board
10	USER_INTERRUPT	Machine operation Software interruption	HALT has been pressed or ABORT has been sent
201	RESET_TIMEOUT	RESET process time-out	The RESET process was NOT completed within the maximum set time. Check for a mechanical jam in the dispenser and eliminate it if possible
202	TIMEOUT_SUPPLY_START	Time-out at Dispensing start	Dispensing did NOT start within the maximum set time. Check for a mechanical jam in the dispenser and eliminate it if possible
203	TIMEOUT_SUPPLY_FAILED	Dispensing duration time-out	Dispensing did not end within the maximum set time. The formula is too long, or check for a mechanical jam in the dispenser and eliminate it if possible
346	TINTING_PUMP_RESET_ERROR	Tinting Pump reset procedure duration time-out	Verify the integrity of the Pump motor, of connectors, the connection on the MMT board
347	TINTING_VALVE_RESET_ERROR	Tinting Valve reset procedure duration time-out	Verify the integrity of the Valve motor, of connectors, the connection on the MMT board
348	TINTING_TABLE_RESET_ERROR	Tinting Table reset procedure duration time-out	Verify the integrity of the Table motor, of connectors, the connection on the MMT board
359-374	C"X"_DATA_SUPPLY_FAILED, where "X" = 1..16	Invalid table parameters	Check for consistency errors between the tables and the circuit installed on the machine. Verify the proper installation of the calibration tables in the Machine menu.
409-424	C"X"_SUPPLY_CALC_ERROR, where "X" = 1..16	In CONTINUOUS dispensing the Number of steps of the "X" COLORANT to carry out is NOT a multiple of a whole stroke	Check for consistency errors between the tables and the circuit installed on the machine. Verify the proper installation of the calibration tables in the Machine menu.
451-475	DISABLED_REQUIRED_CIRCUIT_"X"_ERROR, where "X" = 0..24	"X" (Base or Colorant) circuit must dispense but is erroneously Disabled	Load the Slave configurations onto the new MMT board.

Error code	Error detected	Error description	Resolution of the problem
534	TINTING_VALVE_HOME_POS_ERROR	Error in the HOMING procedure of the Tinting Valve	Verify the correct operation of the 2 photocells and the correct movement of the stepper
535	TINTING_TABLE_HOME_POS_ERROR	Error in the HOMING procedure of the Tinting Turning Table	Verify the correct operation of the photocell, that there is at least one flag on the table and the correct movement of the stepper
584	TINTING_VALVE_HOME_BACK_ERROR	Engagement error of one of the 2 photocells during Valve HOMING	Check operation of each Valve photocell, Valve stepper motor wiring and metal nameplate alignment
633	TINTING_PUMP_POS0_READ_LIGHT_ERROR	Tinting Pump Home photocell NOT engaged at the end of pump step movement, or never engaged within an undefined time or number of steps, or NOT engaged during Tinting Table movement	Check Home photocell and Stepper operation
634	TINTING_VALVE_1_POS0_READ_LIGHT_ERROR	Valve HOME photocell NOT engaged during Tinting Table movement or at the end of Homing procedure, or CLOSED valve during Dispensing	Verify Valve and Stepper HOME photocell operation
733	TINTING_PUMP_OVERCURRENT_ERROR	Overcurrent on a Tinting Pump stepper motor driver jumper	Verify wirings and operation of Pump L6482H driver on MMT board
734	TINTING_VALVE_OVERCURRENT_ERROR	Overcurrent on a Tinting Valve stepper motor driver jumper	Verify wirings and operation of Valve L6482H driver on MMT board
735	TINTING_TABLE_OVERCURRENT_ERROR	Overcurrent on a Tinting Table stepper motor driver jumper	Verify wirings and operation of Table L6482H driver on MMT board
738	DOSING_ROLLER_OVERCURRENT_ERROR	Current circulating in the Dosing Roller Conveyor is higher than the threshold set in the MMT board driver, or overtemperature detected on the driver	Check the connection and wiring of the Dosing Roller Conveyor on the output reserved on MMT board
739	INPUT_ROLLER_OVERCURRENT_ERROR	Current circulating in the Input Roller Conveyor is higher than the threshold set in the MMT board driver, or overtemperature detected on the driver	Check the connection and wiring of the Input Roller Conveyor on the output reserved on MMT board
740	UNLOAD_LIFTER_ROLLER_OVERCURRENT_ERROR	Current circulating in the Unloading Roller Conveyor is higher than the threshold set in the MMT board driver, or overtemperature detected on the driver	Check the connection and wiring of the Unloading Roller Conveyor on the output reserved on MMT board
792	TINTING_PUMP_SOFTWARE_ERROR	Logic error in the Tinting Pump process statuses (including the Valve) or in the received formula parameters	Check the sent formula parameters, if the problem persists request a Tinting Firmware update
793	TINTING_TABLE_SOFTWARE_ERROR	Logic error in the Tinting Table process statuses	Request a Tinting Firmware update

Error code	Error detected	Error description	Resolution of the problem
795	ROLLER_SOFTWARE_ERROR	Logic error in the process statuses of the Roller Conveyors and Lifters	Request a Firmware update
842	ROLLER_DRV_OVER_CURR_TEMP_ERROR	Overcurrent or overtemperature in the driver that controls the Loading or Unloading Lifter or in the Loading Lifter Roller Conveyor of the MMT board	Check the connection and wiring of the Loading or Unloading Lifter or Loading Lifter Roller Conveyor on the MMT board
896	HUMIDIFIER_20_PARAM_ERROR	Error during machine RESET in parameter correctness check of Humidifier 2.0	Check the correctness of parameters sent with “DIAG_SETUP_HUMIDIFIER_TEMPERATURE_PROCESSES” command.
898	TEMPERATURE_ERROR	Error in Temperature measurement	Check connection of HUTTS Temperature Sensor housing board with MMT board. If the problem persists, replace the board and/or the connection cable
899	TEMPERATURE_TOO_LOW	Temperature on board the machine too Low	Check Heater operation
907	TINTING_TIMEOUT_TABLE_MOVE_ERROR	Time-out expired during Table Homing, or in positioning to one circuit	Verify Table stepper motor wirings, the Table characteristic parameters sent with the “UPDATE_TINTING_TABLE_SETTINGS” command, and operation of Table photocell
908	TINTING_TABLE_SEARCH_POSITION_REFERENCE_ERROR	The reference mark found in the Table HOMING differs from the theoretical value set by a quantity in steps greater than the tolerance set	Verify that there is a reference mark on the Table, that the Table characteristic parameters are correct and operation of Table photocell
909	TINTING_LACK_OF_CIRCUITS_POSITION_ERROR	A circuit that needs to be cleaned is not enabled, or a circuit to be positioned is not present in the positional table	Check that the circuit has been enabled and that a Self-learning has been correctly performed
911	TINTING_SELF_LEARNING_PROCEDURE_ERROR	Tinting Table Self-Learning procedure error: at the start the Table is not on the Reference mark, or the Table photocell is not engaged, or the number of circuits found is > 16, or the number of circuits found in one rotation direction is different from the other	A Reset must be successfully completed before performing Self Learning. Check Tinting Table photocell operation
912	TINTING_BAD_PUMP_PARAM_ERROR	Tinting Pump characteristic parameters are incorrect	Verify the set parameters and send the command to set the Pump parameters “UPDATE_TINTING_PUMP_SETTINGS” again
913	TINTING_BAD_TABLE_PARAM_ERROR	Tinting Table characteristic parameters are incorrect	Verify the set parameters and send the command to set the Table parameters “UPDATE_TINTING_TABLE_SETTINGS” again
914	EEPROM_PUMP_PARAM_CRC_FAULT	Tinting Pump parameter CRC fault	Possible absence of Pump parameters. In case of MM board replacement, load the Tinting Pump parameters with “UPDATE_TINTING_PUMP_SETTINGS” command

Error code	Error detected	Error description	Resolution of the problem
915	EEPROM_TABLE_PARAM_CRC_FAULT	Tinting table parameter CRC fault	Possible absence of Pump parameters. In case of MMT board replacement, load the Tinting Pump parameters with “UPDATE_TINTING_TABLE_SETTINGS ” command
916	TINTING_BAD_PERIPH_PARAM_ERRO R	Incorrect parameters in peripheral setting command	Verify the set parameters and send the command to set the Peripheral units again
917	EEPROM_CLEAN_PARAM_CRC_FAUL T	Tinting cleaning parameter CRC fault	Possible absence of Brush parameters. In case of MMT board replacement, load the Brush parameters with “UPDATE_TINTING_CLEANING_SETTI NGS” command
918	TINTING_PUMP_PHOTO_HOME_READ _DARK_ERROR_ST	The Tinting Pump Home photocell is engaged while it should not be engaged during HOMING, or during Recirculation or Dispensing when the circuit is already engaged	Verify Pump and Pump Stepper Home photocell operation
919	TINTING_PUMP_PHOTO_INGR_READ_ LIGHT_ERROR	Tinting Pump Coupling photocell is in a wrong state: engaged while it should not be engaged or vice-versa.	Verify Pump and Pump Stepper coupling photocell operation. Verify the Pump characteristic parameters sent with the specific command
920	TINTING_TABLE_TEST_ERROR	Tinting Table test failed: the starting position is NOT on the reference mark, or no circuit has been detected, or the number of detected circuits is > 16, or the position of at least one detected circuit in one direction differs from that in the opposite direction by a quantity in steps > than the set threshold, or the position of at least one detected circuit differs from that obtained in the Self-Learning by a quantity > than the set threshold, or the map of detected circuits differs from that configured by software	Perform a Reset and try the Table Test again, verify the operation of the Tinting Table photocell, check the consistency between the circuits present on the Table and those configured in the software, try again to perform Self Learning, increase the tolerance on the positions of the Table by sending the Table Parameter configuration command again
922	TINTING_BASES_CARRIAGE_ERROR	Product carriage off-position when the machine is NOT in Diagnostic mode	Replace the carriage into its position. Verify carriage microswitch wiring on MMT board
923	TINTING_PANEL_TABLE_ERROR	Open panel for Refill on the Tinting Table when the machine is NOT in Diagnostic mode, or it is in Diagnostic mode and you want to activate operations involving the movement of something that is NOT the Rotation of the Tinting Table	Close the panel. Verify panel microswitch wiring on MMT board
924	TINTING_BRUSH_OPEN_LOAD_ERRO R	No load at output reserved to Brush of MMT board	Check the connection and wiring of the Brush on the output reserved on MMT board

Error code	Error detected	Error description	Resolution of the problem
925	TINTING_BRUSH_OVERCURRENT_THERMAL_ERROR	Current circulating in the Brush is higher than the threshold set in the MMT board driver, or overtemperature detected on the driver	Check the connection and wiring of the brush on the output reserved on MMT board
930	TINTING_AIR_HEATER_OPEN_LOAD_ERROR	No load at output reserved to Air Heater on MMT board	Verify the connection and wiring of the Air Heater on the MMT board
931	TINTING_AIR_HEATER_OVERCURRENT_THERMAL_ERROR	Current circulating in the Air Heater is higher than the threshold set in the MMT board driver, or overtemperature detected on the driver	Verify the connections and wiring of the Air Heater on the MMT board
932	TINTING_GENERIC24V_OPEN_LOAD_ERROR_ST	No load at output reserved to Brush Motor of MMT board	Verify the connection and wiring of the Brush Motor on the MMT board
933	TINTING_GENERIC24V_OVERCURRENT_THERMAL_ERROR	Current circulating in the Brush Motor is higher than the threshold set in the MMT board driver, or overtemperature detected on the driver	Verify the connections and wiring of the Brush Motor on the MMT board
934	TINTING_PUMP_MOTOR_THERMAL_SHUTDOWN_ERROR	Tinting Pump stepper motor controller internal overtemperature	Shut off the machine, wait some minutes and turn in on again. If the problem persists, verify the electric connections with the Pump stepper motor. If the problem persists, replace the MMT board
935	TINTING_VALVE_MOTOR_THERMAL_SHUTDOWN_ERROR	Tinting Valve stepper motor controller internal overtemperature	Shut off the machine, wait some minutes and turn in on again. If the problem persists, verify the electric connections with the Valve stepper motor. If the problem persists, replace the MMT board
936	TINTING_TABLE_MOTOR_THERMAL_SHUTDOWN_ERROR	Tinting Table stepper motor controller internal overtemperature	Shut off the machine, wait some minutes and turn in on again. If the problem persists, verify the electric connections with the Table stepper motor. If the problem persists, replace the MMT board
937	TINTING_PUMP_MOTOR_UNDER_VOLTAGE_ERROR	Tinting Pump stepper motor controller gate control voltage too low	Verify the electric connections with the Pump stepper motor. If the problem persists, replace the MMT board
938	TINTING_VALVE_MOTOR_UNDER_VOLTAGE_ERROR	Tinting Valve stepper motor controller gate control voltage too low	Verify the electric connections with the Valve stepper motor. If the problem persists, replace the MMT board
939	TINTING_TABLE_MOTOR_UNDER_VOLTAGE_ERROR	Tinting Table stepper motor controller gate control voltage too low	Verify the electric connections with the Table stepper motor. If the problem persists, replace the MMT board
940	EEPROM_TINTING_COLORANTS_STEPS_POSITION_CRC_FAULT	CRC fault of positional table of the circuits on the Tinting Table stored on the MMT board EEPROM	Perform Tinting Table Self-Learning. If the problem persists, replace the MMT board

Error code	Error detected	Error description	Resolution of the problem
941	TINTING_TABLE_PHOTO_READ_LIGHT_ERROR	The Tinting Table photocell is not engaged when it should be engaged in various machine processes	Verify Tinting Table Photocell operation
942	TINTING_TABLE_MOVE_ERROR,	Generic error in Tinting Table movement, or in Refill the Table moved without engaging any circuit	Verify Tinting Table Photocell operation
943	TINTING_VALVE_2_READ_DARK_ERROR	Valve closed before High Resolution Dosing	Check operation of the 2 Valve photocells and the Valve stepper motor wiring
944	TINTING_VALVE_2_READ_LIGHT_ERROR	In Valve HOMING the Open Valve photocell has not engaged, or in Recirculation, in Valve opening movement before refilling, it has not engaged, or during dosing it has not engaged	Check operation of the 2 Valve photocells and the Valve stepper motor wiring
945	TINTING_PUMP_PHOTO_INGR_READ_DARK_ERROR	The Tinting Pump engagement photocell has not been engaged after movement for engagement of a circuit at the beginning of Recirculation or of a Dosing	Check operation and wiring of the engagement photocell
946	TINTING_BRUSH_READ_LIGHT_ERROR	The Brush HOME photocell is not engaged during movements for machine Reset, or during a Tinting Table movement, or during a Cleaning process	Check operation of photocell, brush DC motor and the motor wiring on MMT board
947	TINTING_BAD_PARAM_CLEAN_ERROR	The Cleaning process parameters are incorrect as found during machine Reset	Check Cleaning process parameters and, if necessary, send them again with “DIAG_COLORANT_ACTIVATION_CLEANING” command
948	EEPROM_TEST_ERROR	EEPROM operation test performed at Machine reset failed	Try again and, if the problem persists, replace the MMT board

Error code	Error detected	Error description	Resolution of the problem
984-1007	C"X"_TURN_TABLE_MISCMATCH_POSITION_ERROR, where "X" = 1..24	The circuits detected at the end of the Tinting Table Homing do not coincide with those found by the Self-Learning and stored in the MMT board EEPROM, or the positional tables of at least one circuit found in the two directions by the Self-Learning differ by a quantity in steps > of the tolerance set in the Table parameter configuration command, or the positional table of at least one circuit found by the Self-Learning differs from the theoretical value of a quantity in steps > of the tolerance set in the Table parameter configuration command, or incorrect matching between the positional table found in the Self-Learning and the colorant configuration set in the software	Verify Tinting Table photocell operation. Repeat the Self-Learning procedure, verify that the circuits physically present on the Table coincide with those set in the software configuration page, increase the Tolerance on the positions of the circuits and postpone the Tinting Table parameter setting command
1035	ROLLER_TIMEOUT_MOVE_ERROR	The movement of the Roller Conveyor or Lifter has not been performed within the specified Timeout	Verify the operation of the photocell controlling the end of movement
1036	DOSING_ROLLER_OPEN_LOAD_ERROR	No load on the output that controls the Dosing Roller Conveyor	Verify the connection and wiring of the Dispensing Roller Conveyor Motor on the MMT board
1037	INPUT_ROLLER_OPEN_LOAD_ERROR	No load on the output that controls the Input Roller Conveyor	Verify the connection and wiring of the Input Roller Conveyor Motor on the MMT board
1038	UNLOAD_LIFTER_ROLLER_OPEN_LOAD_ERROR	No load on the output that controls the Unloading Lifter Roller Conveyor	Verify the connection and wiring of the Unloading Lifter Roller Conveyor Motor on the MMT board
1040-1063	C"X"_ TINTING_VALVE_HOME_BACK_ERROR, where "X" = 1..24	The Open Valve photocell is not engaged when it should be engaged in Dosing and Recirculation processes that involve "x" circuit	Check operation of Open Valve photocell and its connection to the MMT board
1064-1087	C"X"_ TINTING_VALVE_1_POS0_READ_LIGHT_ERROR, where "X" = 1..24	The valve HOME photocell is not engaged when it should be engaged in Dosing and Recirculation processes that involve "x" circuit	Check operation of Valve HOME photocell and its connection to the MMT board
1088-1111	C"X"_ TINTING_PUMP_PHOTO_INGR_READ_LIGHT_ERROR, where "X" = 1..24	The Tinting Pump Coupling photocell is in a wrong status: it is not engaged when it should be engaged in Dosing and Recirculation processes that involve "x" circuit	Verify Pump and Pump Stepper coupling photocell operation. Verify the Pump characteristic parameters sent with the specific command
1112-1135	C"X"_ TINTING_PUMP_PHOTO_INGR_READ_DARK_ERROR, where "X" = 1..24	The Tinting Pump Coupling photocell is in a wrong status: it is engaged when it should not be engaged in Dosing and Recirculation processes that involve "x" circuit	Verify Pump and Pump Stepper coupling photocell operation. Verify the Pump characteristic parameters sent with the specific command

Error code	Error detected	Error description	Resolution of the problem
1136-1159	C"X"_ TINTING_VALVE_2_READ_LIGHT_ERROR, where "X" = 1..24	In Recirculation or Dosing processes that involve the "x" circuit, the Open Valve photocell is not engaged when it should be engaged	Check operation of the Open Valve photocell and the Valve stepper motor wiring
1160-1183	C"X"_ TINTING_VALVE_2_READ_DARK_ERROR, where "X" = 1..24	Valve closed before Dosing that involves the High Resolution "x" circuit	Check operation of the 2 Valve photocells and the Valve stepper motor wiring
1184-1207	C"X"_ TINTING_TABLE_VALVE_MOVE_ERROR, where "X" = 1..24	The Tinting Table photocell is no longer engaged during a process in which Valve movement occurs when the "x" circuit is engaged	Check positioning and hardness of the valve selector of the "x" circuit engaged
1000	SCALE NOT RESPONDING	The scale is not connected to the machine	Connect a scale to calibrate it, or disable the scale Device within machine configuration in Admin mode

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