CNC AKC-PPC

Installation Manual

Issue: March 2023, Revision D

Revision History

Revision	Remarks
10/2016 Rev A	First revision of the CNC PPC installation manual.
08/2017 Rev B	Second version of the quick installation guide, mechanical information.
02/2022 Rev C	Third version of the quick installation guide, template revision.
03/2023 Rev D	CNC configuration / update information.

1   General

1.1   About the manual

This manual, PPC - Installation Manual, describes the characteristics of the CNC, its technical specifications, and information for a correct and safe installation.

Documents complementary to the Installation Manual:

1.   CNC Programming Manual AKC-PPC;

2.   CNC PLC Manual;

3.   IDE Manual.

2 Packaging

2.1 Included Items

The CNC PPC delivery package consists of:

- 1 CNC PPC
- 1 BiVolt power supply - except 17" model
- Identification Tag

The identification label contains the product's identification code, its serial number, and the CNC's voltage and power supply cor- rente.

2.2 Product Code Formatting

PPC W0 V A 1 1 – 0000

- **PPC Série**
- **Member**
  - Windows 10 = W0
- **Terminal Option**
  - Touch Screen = T
  - Mini = M
  - Rack = R
- **CPU**
  - BTQuad = Q
  - I3 = 3
  - I5 = 5
  - I7 = 7
- **CPU Bus**
  - 64 bits = 2
- **Memory**
  - 4 GB = 1
  - 8 GB = 2
  - 16 GB = 3
- **Customization**
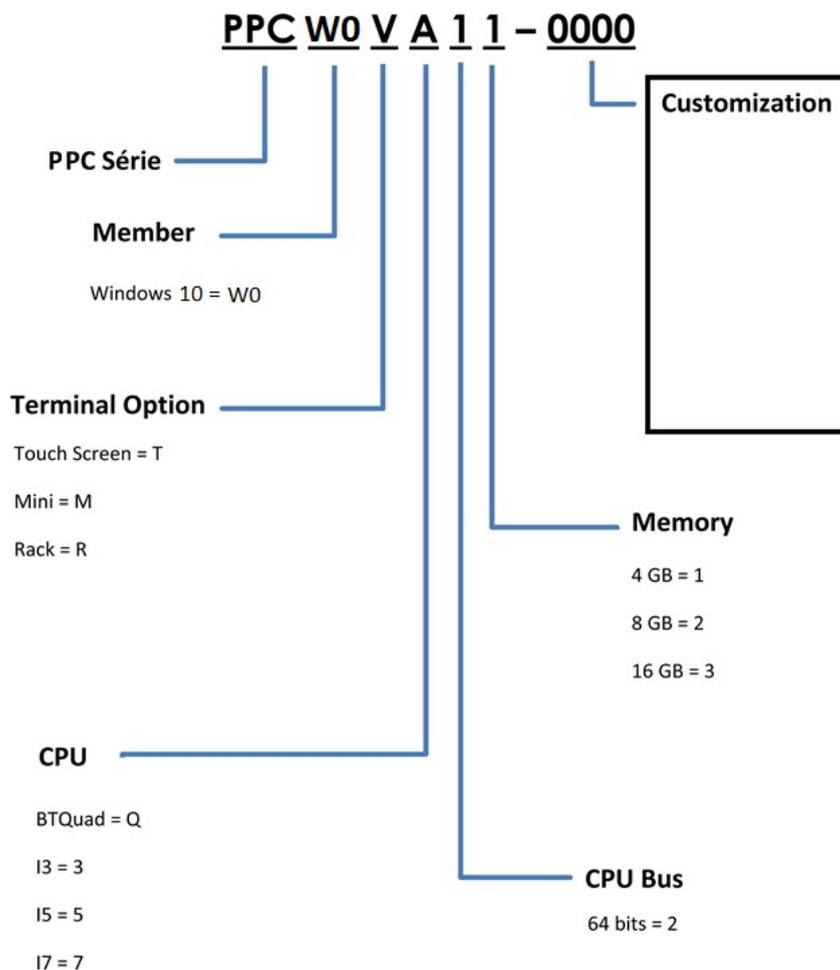
3 Technical Description

New technologies have changed the horizons of CNCs . Advances in PC-based controllers, automation using high-speed networks, and modern software tools are giving machine builders, integrators, and operators more CNC options at a fraction of the cost of traditional solutions.

The CNC is a compact and powerful solution that combines the latest technology with over 30 years' experience in providing solutions for machine builders, integrators, and operators.

3.1 Standard Configuration / Basic Features

1. **PPC Mini**
   - Power voltage12V@5A.
   - 4GB RAM
   - SSD 64GB
   - 64Bits
   - Intel Celeron Braswell N3160 Processor - Quad-Core
   - Windows 10 IoT

2. **PPC Touch - 15"**
   - Supply voltage 12V@5A
   - 15" Display
   - 4GB RAM
   - SSD 64GB
   - 64Bits
   - Intel Celeron Braswell N3160 Processor - Quad-Core
   - Windows 10 IoT

3. **PPC Touch - 17"**
   - Power voltage 110/220V
   - 17" Display
   - 16GB RAM
   - SSD 64GB
   - 64Bits
   - i5-6500T CPU

3.2 CNC Machine and Programming

1. ISO standard and MCS CNC programming .
2. Programmable in structured language according to ST IEC61131-3 programming.
3. Linear interpolation (up to 8 simultaneous axes), circular (2D), helical (3D), rigid threading.
4. Program editing simultaneous to the execution of another program. Editor allows you to load and modify a program while another part program is running in the foreground.
5. Assisted program block editor with context-sensitive user assistance.
6. Dialog for graphically supported cycle programming.

3.3 Connectivity / Interface

1. PPC Mini
   - Ethernet (TCP/IP) 10/100 Mbits/s network
   - 4 USB 3.0 ports
   - EtherCAT interface / protocol
   - MODBUS Interface
   - HDMI and Display Port

2. PPC Touch - 15"
   - Ethernet (TCP/IP) 10/100 Mbits/s network
   - 4 USB 3.0 ports
   - EtherCAT interface / protocol
   - MODBUS Interface
   - 15" Touch and HDMI

3. PPC Touch - 17"
   - Ethernet (TCP/IP) 10/100 Mbits/s network
   - 4 USB 3.0 ports
   - Interface / protocolEtherCAT
   - MODBUS Interface
   - 17" Touch and HDMI/DisplayPort

3.4 I/Os

1. None of the W10 devices have local I/Os, only EtherCAT modules.

3.5 Flexible and Intuitive Tools

1. IDE - Development platform that includes CNC, PLC, and HMI programming tools in one integrated environment.

2. Integrated simulation tools for rapid testing and verification.

3. Windows connectivity makes integration with the factory easy.

4. Integrated web server for remote access and download via mobile devices facilitates access to production, operation, and maintenance information of the system.
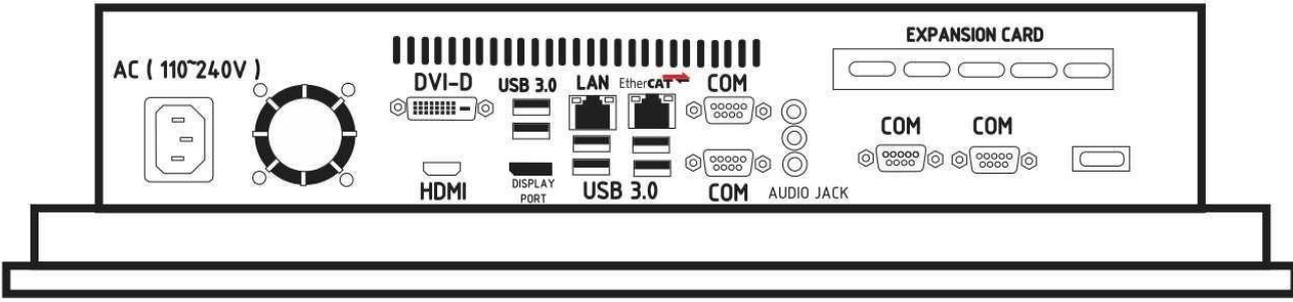
3.6 Mechanical Information

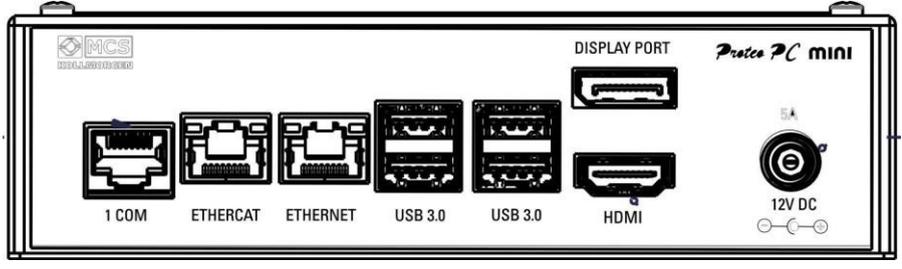| Greatness	Unit	Mini	Touch
Weight	KG	5,360	4,810
Height	mm	405	480
Width	mm	332	240
Depth	mm	56	56

3.6.1 Connector Locations on the Touch CNC - 15"
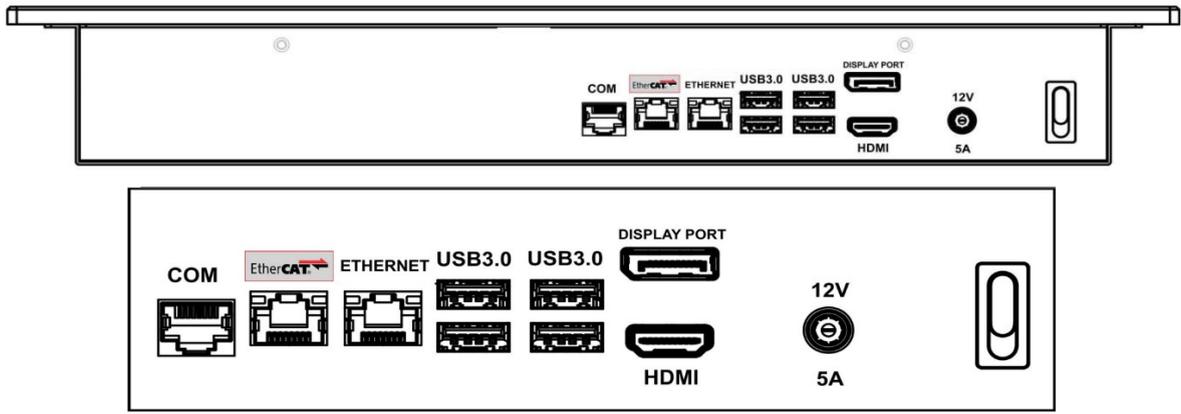
3.6.2 Connector Locations on the Touch CNC - 17"

3.6.3 Connector Locations on the CNC Mini

3.7   Cables

3.7.1 Cables and Cabling Recommendations

Interface	Session	Detail	Max Length
DC supply - 24V	2.5 mm².	Single cable, shielded	30m
Ethercat	(4 x 2 x AWG26)	Twisted pair, shielded	100m
Ethernet	(4 x 2 x AWG26)	Twisted pairs	100m
Earth/carcass - Shield	2.5 mm².	Single cable	30m

3.7.2 Connector View and Configuration

3.7.2.1   Ethernet

VISTA POR CIMA

Pin	Signal
1	TD+
2	TD-
3	RD+
6	RD-

3.7.2.2   Ethercat

VISTA POR CIMA

Pin	Signal
1	TD+
2	TD-
3	RD+
6	RD-
Carcass	Earth

# 4 Mechanical Installation

4.1 Installation

The following items are required to mount the CNC to the machine panel. Specific installations may require additional items.

1. 4 M4x10 hexagonal screws, cylindrical head (ISO 4762 / DIN 912).
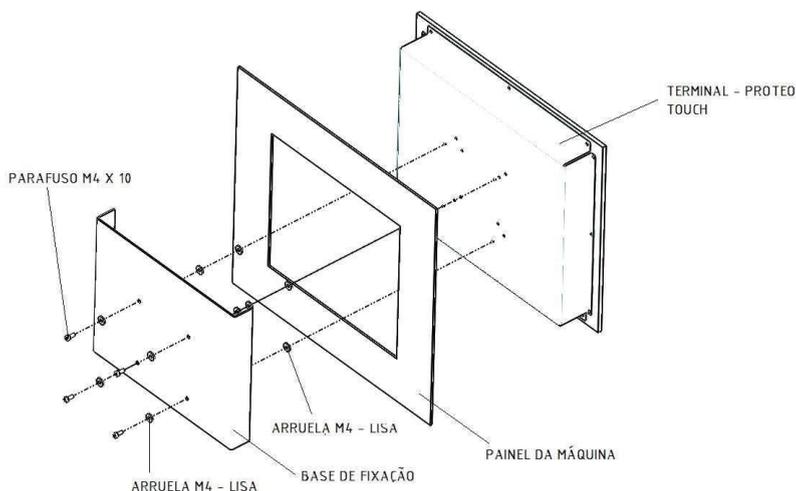2. 1 Allen key 3mm.

In the case of the Mini, the fixation can be done using the DIN rail support or using 2 M4x10 screws. Below

Dimensions and positions of the mounting holes vary depending on the model to be mounted. See the following figures.

4.1.1 CNC Touch Dimensions - 15"

The touch equipment is affixed directly to the panel of the machine through a support that comes with the product.
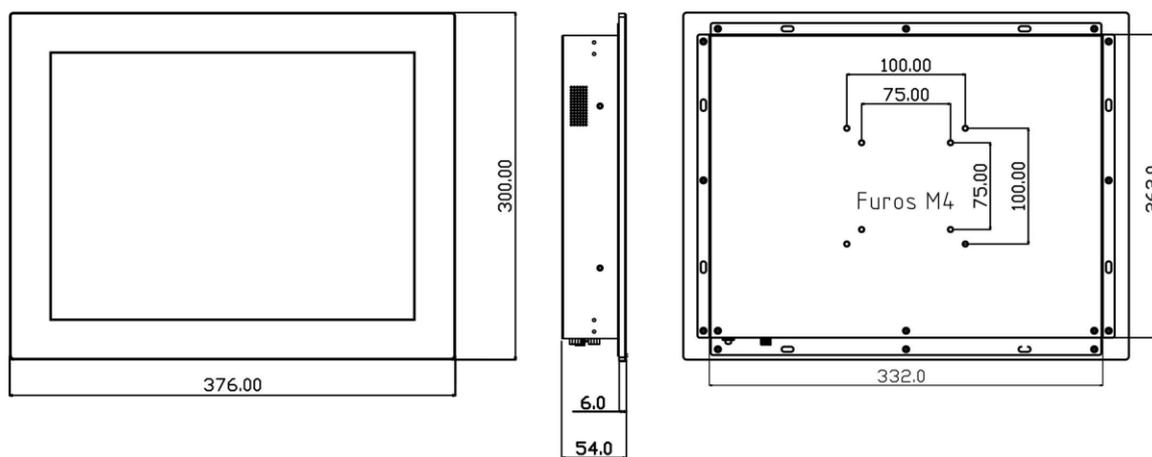
The support should be used as shown in the image below.

Below are the mechanical dimensions of the support that comes with the product.

Base de Fixação - Proteo PC W7

MEC8687

INOX
esp. 2mm

Roberto
28/07/16

270

364

100

132

85

100

50

Ø5

50

4.1.2 CNC Touch Dimensions - 17"

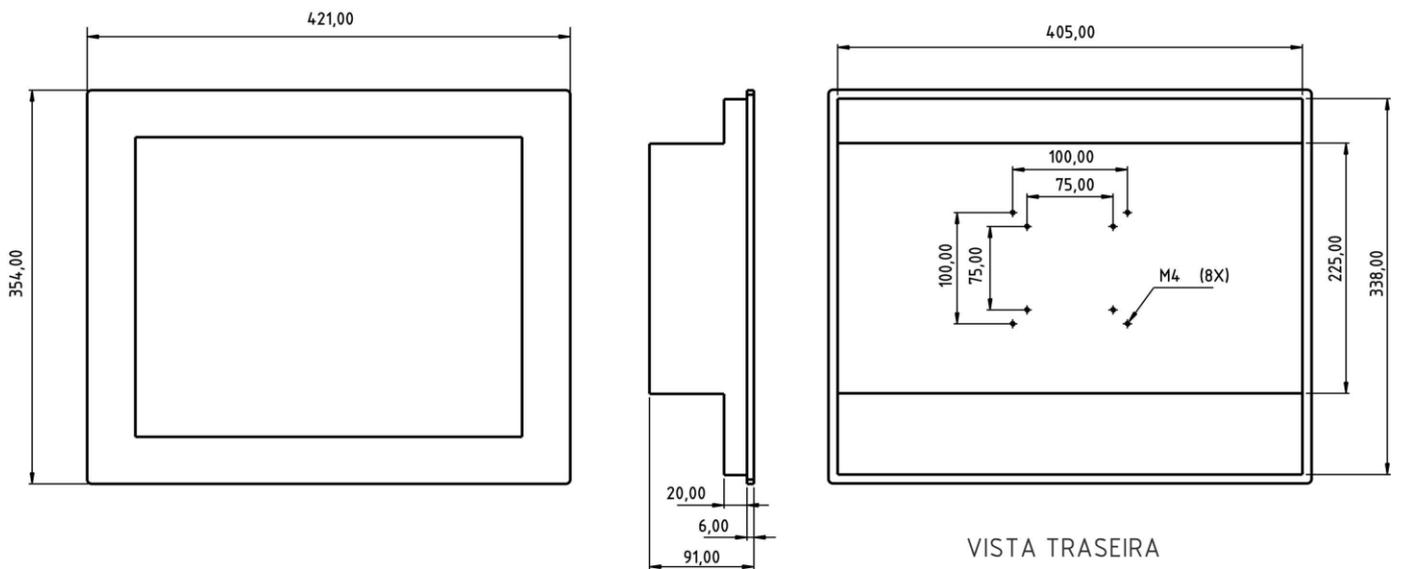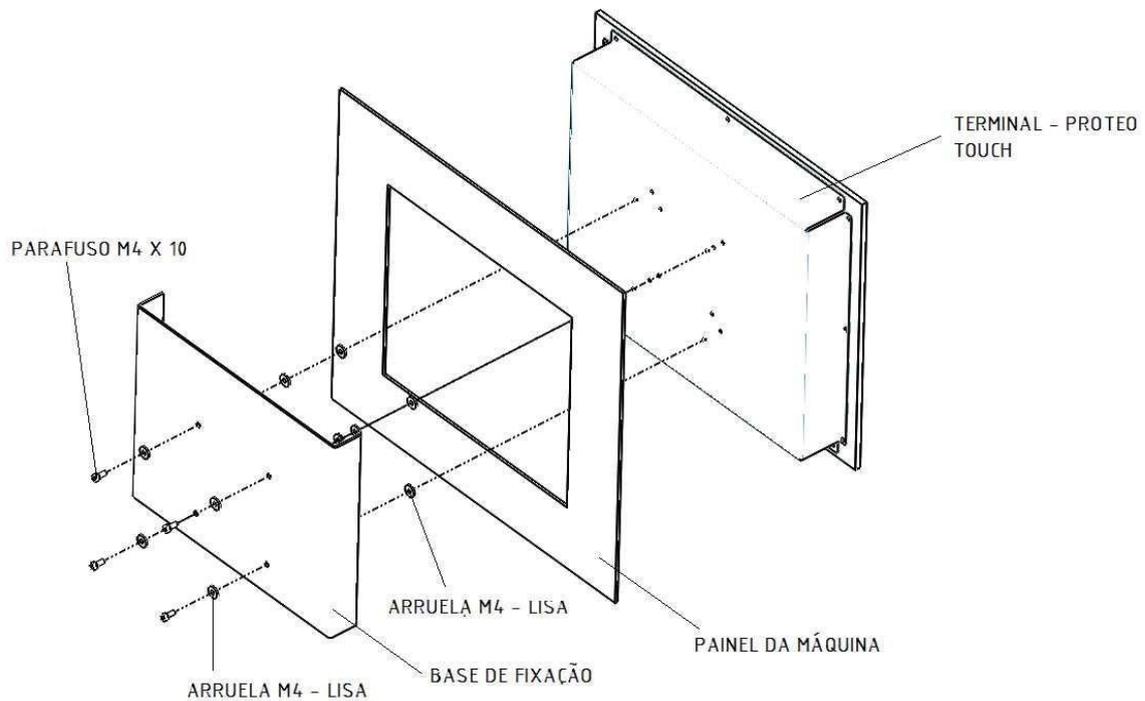The touch equipment is affixed directly to the panel of the machine through a support that comes with the product.

Below are the mechanical dimensions of the support that comes with

the product.
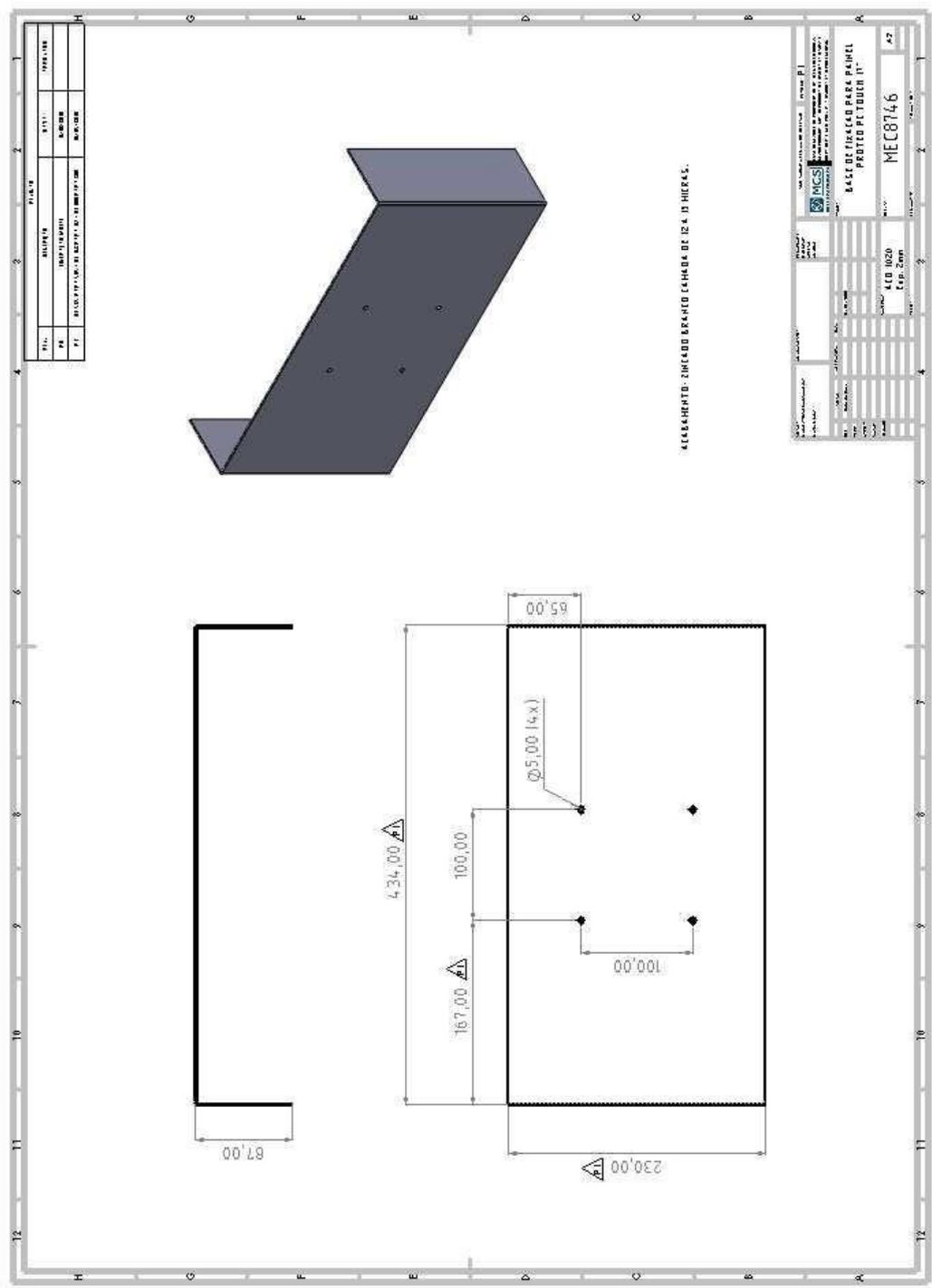
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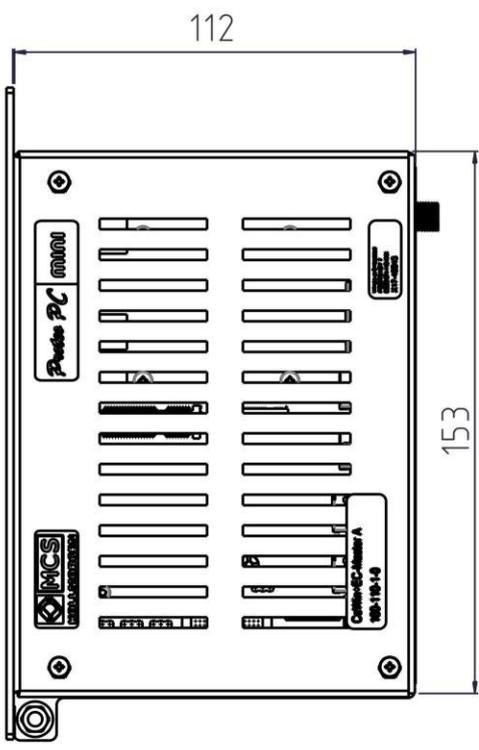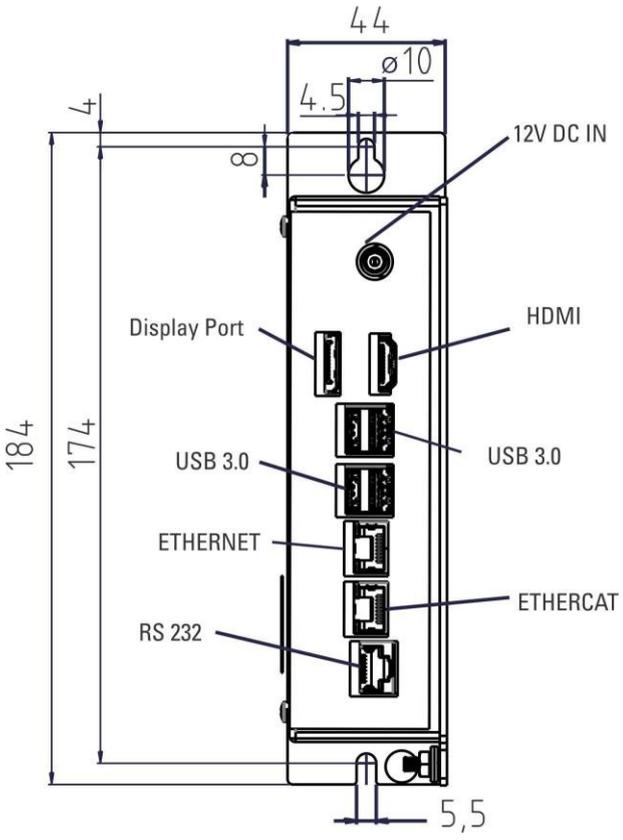
Because Motion Matters™

KOLLMORGEN

Because Motion Matters™

Below are the mechanical dimensions of the support that comes with the product.

4.1.3 CNC Mini Dimensions

4.2 Notes

1. Protect the CNC from shocks and stress. Make sure that the case is closed and that the device is securely fastened during transportation and handling to avoid shocks and impacts with other devices.
2. The CNC turns off in case of overheating. Make sure there is adequate cooling.
3. Do not mount devices that produce magnetic fields near the CNC. Strong magnetic fields may directly affect the internal components of the CNC and/or cause malfunction. Install devices that produce magnetic fields away from the CNC or ground devices and their cables.

5   Electrical Installation

5.1   General Recommendations

Use cables as specified in the "Cables and wiring recommendations" table. Connect the CNC

housing to ground.

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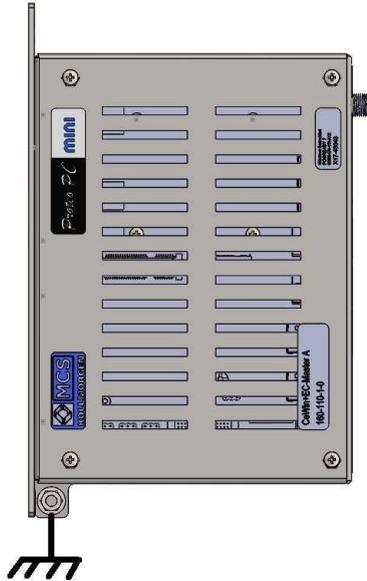
5.2   Grounding Concept

When, in a system, several electronic devices are interconnected, the communication between the different components of the system is established having as reference, a voltage reference point (0V or GND) common to all interconnected devices. This reference point should not be floating. If fluctuation of the reference point occurs, the condition is established for the induction of voltages/currents in the interconnection cables (electromagnetic interference), which can cause malfunction of the system. This voltage reference point must be grounded as well as the machine housing (enclosure, electrical panel, conduit, etc.) and the CNC to prevent induction/EMI and to ensure safe machine operation.

5.3   Radiated Noise Reduction Recommendations

Ensure good connections between electrical cabinet components. Connect the panel plate and cabinet doors to the cabinet body via copper braided loops. Do not rely on mounting rings or screws for ground connections. Connect the equipment to earth ground through the equipment ground terminal.

Ensure a good earth ground for connecting the machine. Grounding cables must be of the same gauge as the pathways feeding the equipment.

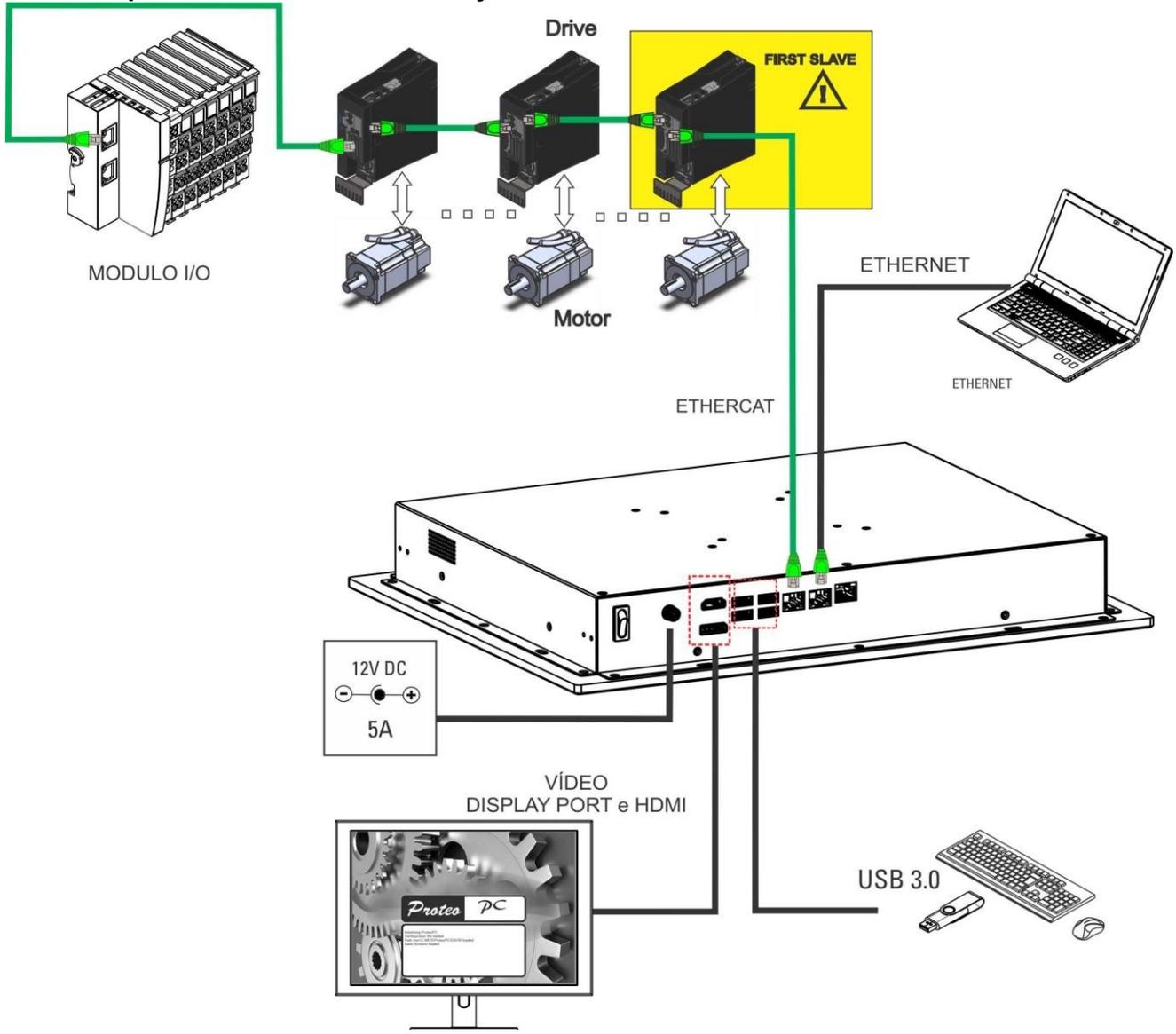Always use shielded cables and connectors, and ground them at both ends.

Never splice cables.

When running cables in the panel, avoid crossing and do not leave signal cables together with power cables. Keep them away from each other.
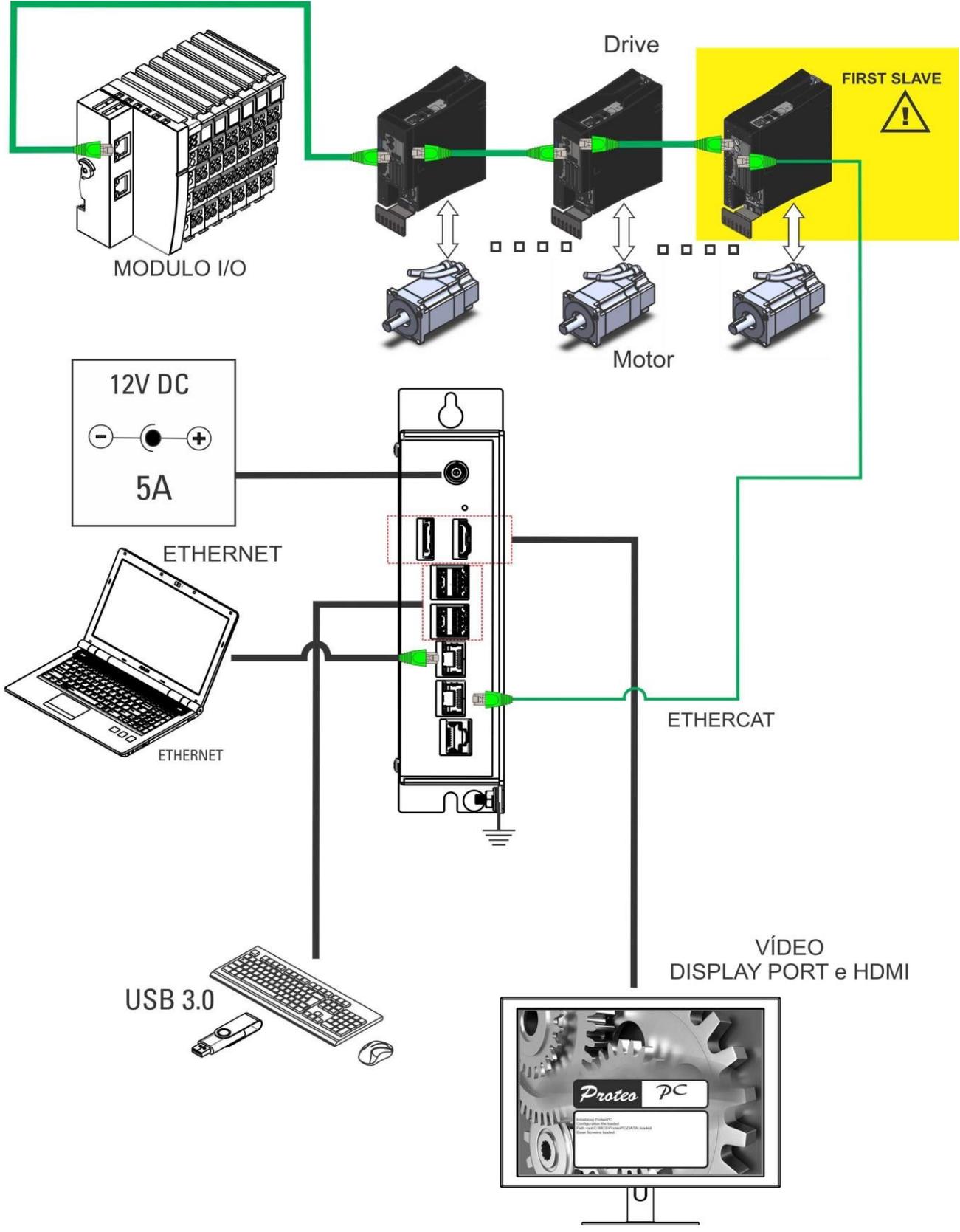
5.4 System Components

Below are examples of connection between devices on a machine, with each CNC model.

5.4.1 Components of the Touch CNC system

Drive

FIRST SLAVE

MODULO I/O

Motor

ETHERNET

ETHERNET

ETHERCAT

12V DC
5A

VÍDEO
DISPLAY PORT e HDMI

USB 3.0

Proteo PC

5.4.2 CNC Mini System Components

Drive

FIRST SLAVE

MODULO I/O

Motor

12V DC

5A

ETHERNET

ETHERNET

ETHERCAT

USB 3.0

VÍDEO
DISPLAY PORT e HDMI

6 CNC Setup

When you turn on the CNC for the first time, you will see a screen similar to the figure below.

According to the message on the screen, we must load the application on the
CNC. There are 3 ways to do this configuration:

- **USB stick** containing the FULL image of the CNC (ProteoPC-full.image file).

- **AKC-PPC IDE** (local connection): sending the ProteoPC-full.image or publishing the application project.

- **Cloud** (web - remote connection): by entering the PPC Cloud site and uploading the ProteoPC-full.image.

6.1   Update via USB Stick

Plug the USB flash drive with the ProteoPC-full.image file in the root into one of the CNC's USB ports. Wait for the update to appear on the CNC's PPC Cloud screen, Updates tab.
To confirm the update you may need to login with User0.
After confirming, a yellow message will appear stating that the firmware has been updated. Turn the CNC off and on to allow the application to be updated.

6.2   Update via AKC-PPC IDE

- **Connection to the CNC**

Click the Connect to CNC button in the IDE.
If the CNC IP does not appear automatically in the list, click the button to add the CNC IP address manually. This address can be seen in the Parameter Editor screen (Network tab) of the CNC.
If the CNC is set to Auto IP, this address may change after some time, so it needs to be rechecked when making another connection.


NOTE: If the CNC is configured for "dynamic" IP, the computer must have this same configuration. If the CNC is set to "fixed" IP, the computer must have this same configuration and within the same network range.

- **Send Application Image**

Enter the Backup screen, create a new backup (+) with origin "Local Disk" and fetch the image file ProteoPC-full.image by entering a name and description.
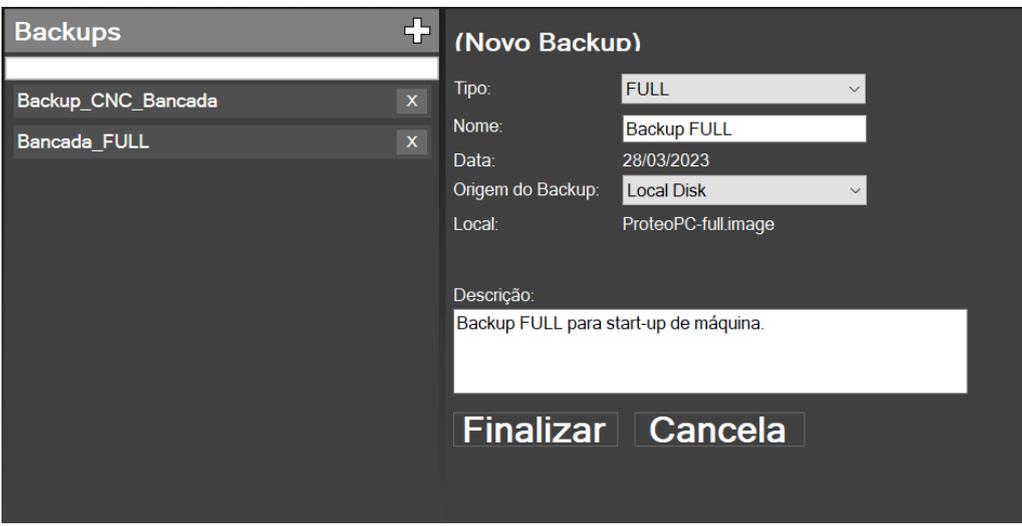
To send the update, connect to the CNC, select the backup you created, and click Restore.
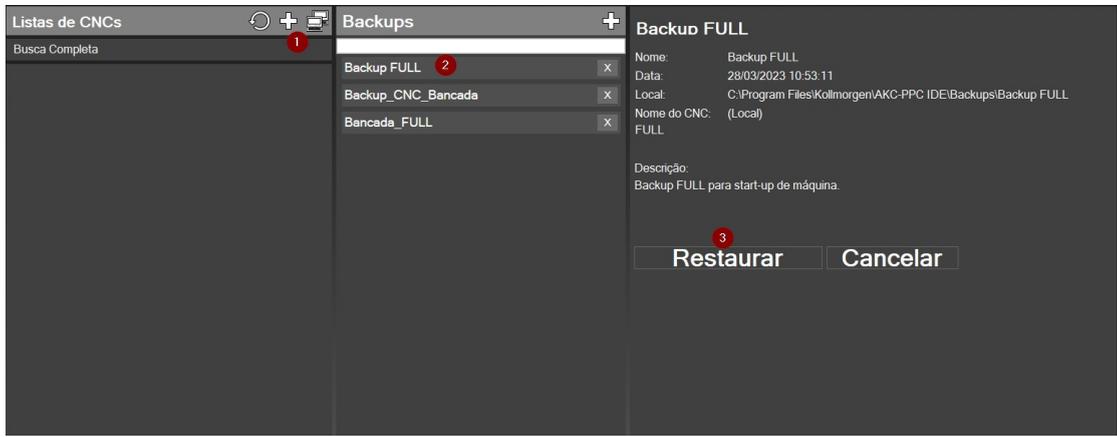
6.3 Cloud Upgrade

We can update an application using the PPC Cloud website (proteocloud.azurewebsites.net). To do this log in and select the device you want to send the application to.
Select the "Restore" icon below, which appears on the information screen.

Clicking this option will open a screen to select the file to be sent to the CNC.

Notice in the picture above that we can choose whether to send a local file, i.e. one that is on your computer, or a backup that was made by the Cloud.
Clicking on the "arrow" that is circled in red will allow you to select the desired file. After that, simply click on "Restore".

After sending the image is complete, we must confirm the update in the PPC CNC. On the CNC Cloud screen, go to the updates tab and confirm the update.

To confirm the update you may need to login with User0.
After confirming, a yellow message will appear stating that the firmware has been updated. Turn the CNC off and on to allow the application to be updated.

About Kollmorgen

National manufacturer of CNCs, with over 30 years in the Brazilian market, MCS Engenharia was acquired in 2013 by Kollmorgen, a company with over 60 years in the motion control market, present in Brazil since 2007, offering innovative solutions in terms of reliability, performance and ease of use.

Through global expertise in motion and quality, it is the market leader and has deep expertise in associating and integrating standard and customized products. We provide OEMs with the competitive edge they need to succeed.

Our infrastructure, knowledge, passion, and experience are evidence of our pursuit of the perfect movement. And because of our customization heritage, we see opportunities, not obstacles.

Every day, around the world, we explore the limits of movement. See how we do it.

Our experience is unmatched

With application expertise and rapid customization and prototyping, Kollmorgen surpasses others in helping you build differentiated equipment and get it to market faster. Our solutions combine programming software, engineering services, and best-in-class motion components for a unique solution.

We offer the widest variety of products in the industry

Standard, modified, and customized products - enables the widest range of solutions for your need. You can use our integrated systems or components to enhance and reduce development time. The best solution is often unclear. But our application expertise enables us to modify standard products or develop fully customized solutions across our entire product range.

We are your global partner with local resources

Leveraging a staff of over 1,800 employees and over 60 years of application experience to minimize risk and provide optimal motion components for your machine. We have excellent engineering and customer service centers in all major regions of the world. We have a global supply chain with low cost manufacturing around the world to drive excellent cost-effectiveness, continuity, and responsiveness. Our resources are unmatched.

These are the facts and our philosophy: We believe that maximizing motion is the differentiator of your machine and your equipment.

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