# MC01 Software Manual

*Release 6.8*

**Embention**

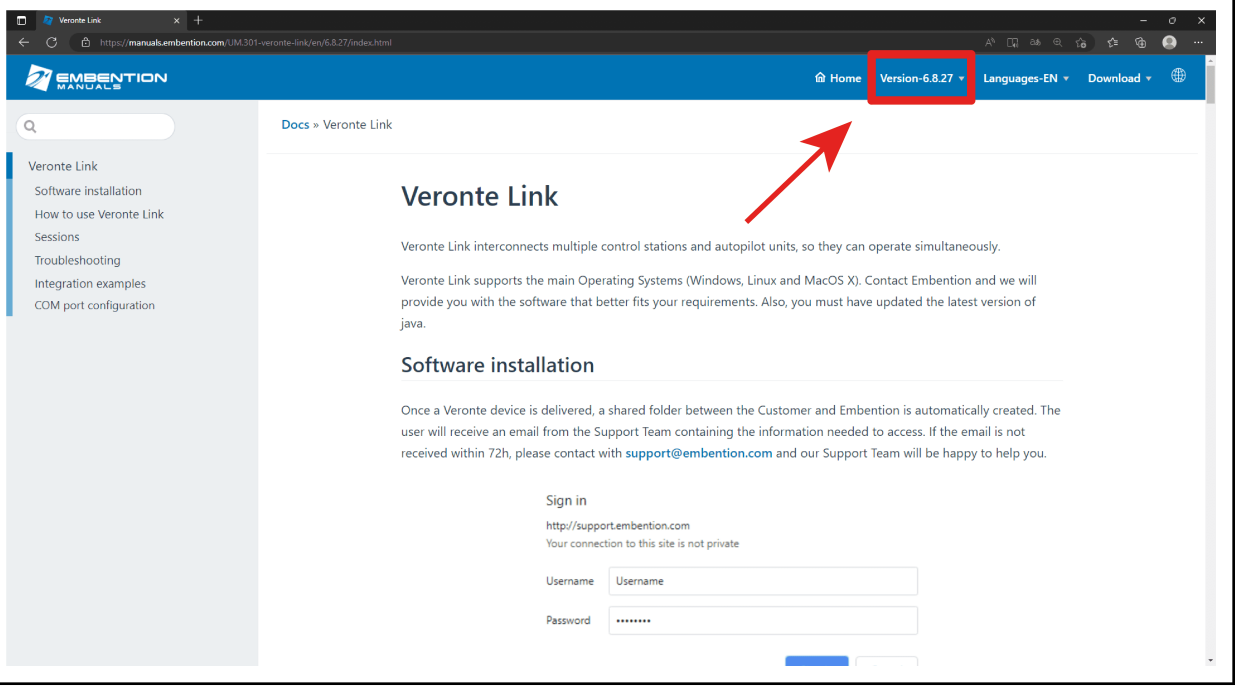
**2023-08-21**

# CONTENTS

In this manual the user can consult a brief description of all the applications created and designed to work together with the **Veronte MC01**.

In addition, links are available to access the manuals for each of these applications.

**Warning:** Select your version before reading any user manual for software. The following image shows where to select a version from any Embention user manual.



CHAPTER

ONE

# QUICK START

To configure the **MC01**, users have to follow the steps:

1. A **Veronte Autopilot 1x** must establish connection with a PC using **Veronte Link**. Read its user manual to use it.
2. Configure the **Autopilot 1x** to operate as a CAN-USB (or CAN-RS) converter, with a Serial to CAN setup.

   To configure a Serial to CAN communication, read the Input/Output -> I/O Setup section of the **1x PDI Builder** user manual.
3. Configure the **MC01** with the corresponding PDI Builder:
   - **MC01S PDI Builder** for stepper version. Click here to read the user manual.
   - **MC01B PDI Builder** for brushless version. Click here to read the user manual.

To configure a Veronte device (CEX, MEX, 1x or 4x) and control the **MC01**, use its respective PDI Builder. An example can be found in the Integration examples -> MC01 section of the **1x PDI Builder** user manual.

CHAPTER

TWO

# SOFTWARE APPLICATIONS

## 2.1 Veronte Link

**Veronte Link** stablishes communication between a computer and any Veronte product by creating a VCP bridge. It allows to use multiple control stations and autopilots to be interconnected, operating simultaneously. **Veronte Link** also includes a post-flight viewer, to reproduce all recorded data from previous flights and generate plots and reports.

Fore more information, read its user manual.

## 2.2 1x PDI Builder

**1x PDI Builder** is the main configuration tool to adapt a **Veronte Autopilot 1x** to a specific application, including user-defined commnication protocols. **1x PDI Builder** includes:

- Telemetry: real-time onboard UAV metrics, such as sensors, actuators and control states.
- Configuration: edit vehicle settings, such as servo trim, interface/port management and modes.
- Automations: actions that are automatically executed when a set of configured conditions are accomplished.
- Block Programs: **Veronte Autopilot 1x** can be programmed with a friendly-user programming language.

For more information, visit the 1x PDI Builder user manual.

## 2.3 MC01S PDI Builder

**MC01S PDI Builder** configures the stepper variant of **MC01** (MC01S). This application allows to adapt control, communications and telemetry to each motor implementation.

To know more, read the MC01S PDI Builder user manual.

## 2.4 MC01B PDI Builder

**MC01B PDI Builder** configures the brushless variant of **MC01** (MC01B). This application allows to adapt control, communications and telemetry to each motor implementation.

To use it, consult the MC01B PDI Builder user manual.

CHAPTER

# THREE

# CAN BUS PROTOCOL

All CAN messages for **MC01** follow the same structure: a chain of bits divided in three groups:

<table>
<tr><th>Position</th><th>Name</th><th>Size</th><th>Description</th></tr>
<tr><td>1</td><td>CAN Id</td><td>2 bytes</td><td colspan="2">If the Id matches with the Id of the MC01, the message will be read. Otherwhise, it will be ignored</td></tr>
<tr><td rowspan="4">2</td><td rowspan="4">Mode</td><td rowspan="4">1 byte</td><td colspan="2">It indicates what kind of order is receiving the MC01</td></tr>
<tr><td>Value</td><td>Order</td></tr>
<tr><td>0</td><td>Turn off</td></tr>
<tr><td>3</td><td>Move to the angular position written in Data</td></tr>
<tr><td>4</td><td>Move to the angular speed written in Data</td></tr>
<tr><td>3</td><td>Data</td><td>3 bytes</td><td colspan="2">• With Mode 3, it indicates the decoded angular position in radians<br>• With Mode 4, it indicates the decoded angular speed in radians per second</td></tr>
</table>

The parameter that is configured in the **MC01** is the **CAN Id**. To do it, use its respective PDI Builder and manual:

- For **MC01B** read MC01B PDI Builder manual -> Input/Output.
- For **MC01S** read MC01S PDI Builder manual -> Input/Output.