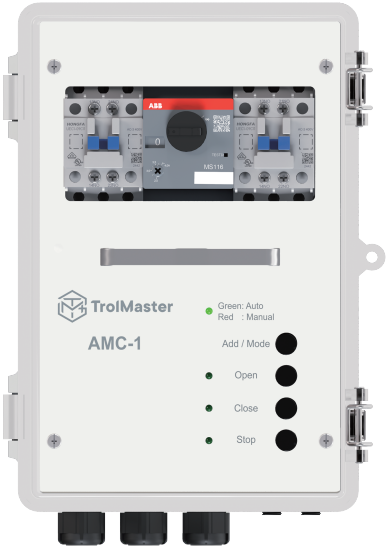
# Single/Three Phase Curtain Motor Controller (AMC-1) User Manual




## OVERVIEW

The AMC-1 is an advanced agricultural greenhouse curtain motor driver that facilitates both manual and automated control of curtain motors. Designed for seamless integration with the GCS-1 (Green-X Greenhouse System), the AMC-1 allows for precise motor control, including open and close operation, stopping functions, timeout shutoff, and overcurrent protection. This integration enhances greenhouse management by enabling centralized monitoring and control, which optimizes environmental conditions for plant growth and improves operational efficiency.

## PACKAGE CONTENTS

- 1x  Single/Three Phase Curtain Motor Controller (AMC-1)
- 1x 12ft RJ12 to 4-pin IP65 Connector Cable

# SPECIFICATIONS

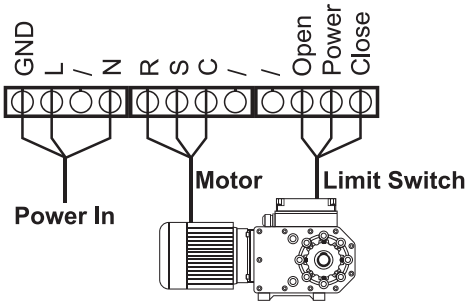
| | |
|---|---|
| Input Voltage | [Single-Phase] 100-277V, 50/60Hz<br>[Three-Phase] 207-480V, 50/60Hz |
| Maximum Output Current | 4A |
| Communication Method | RS-485 (4-pin waterproof connector) |
| Waterproof Rating | IP54 |
| Ambient Temperature | 32~104°F (0~40°C) |
| Relative Humidity | ≤90%RH |

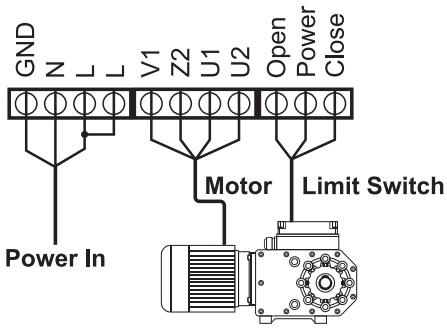
Intertek
5008191

CONFORMS TO
UL STD.508A,
CERTIFIED TO CSA
STD.C22.2#286.

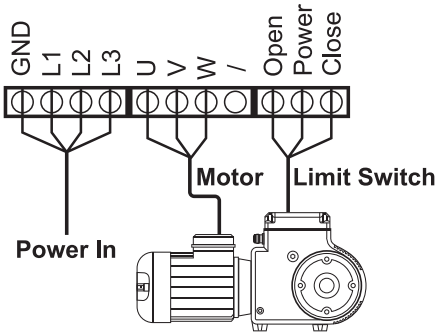
# LINKING DIAGRAM

## Single-Phase




## Three-Phase



# INSTALLATION

**Preparation:**

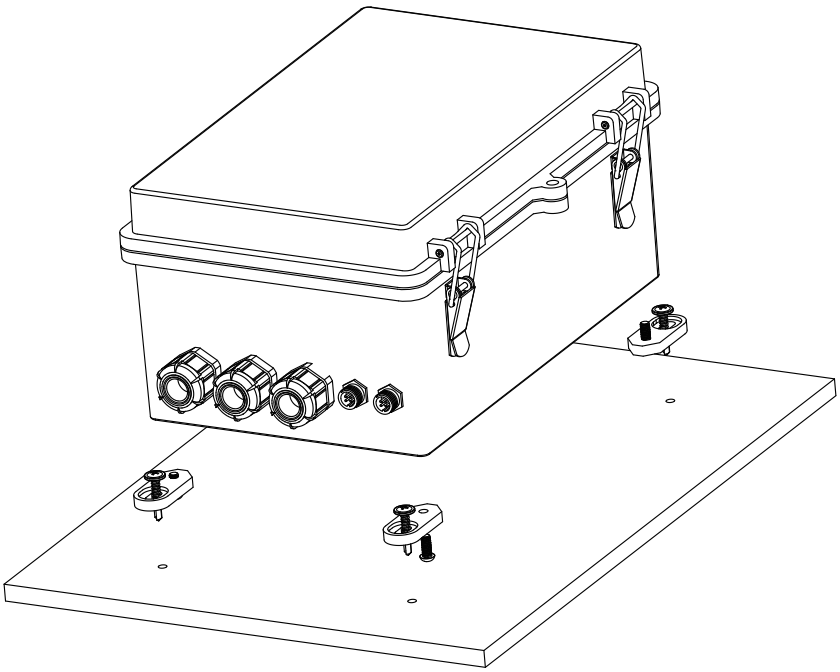
- Ensure all components are available and undamaged.
- Read all safety precautions before installation.

**Mounting:**

***CAUTION:** Users are responsible for ensuring all building structures, mounting solutions, and components are rated and structurally sound. Ensure the mounting solution is rated and installed by a certified professional. The mounting structure must be able to support the weight of the AMC-1.

- The AMC-1 is designed for wall mounting only.
- The unit includes four mounting holes for overhead installation.
- Before installation, verify that the wall or mounting surface is structurally capable of supporting the AMC-1's weight.
- Drill holes and use appropriate wall anchors or fasteners based on the wall type and load capacity.

STEP 1: Use T5x12 fasteners to secure the four adapter plates to the back of the AMC-1 cabinet.
STEP 2: Position the cabinet on the wall and use T4.8x25 fasteners to securely mount the unit through the adapter plates.



**Wiring:**

- Connect the input power supply to the designated terminals.
- Connect the output terminals to the motor.

  ***CAUTION**

  Use copper conductors only, hot wires cannot be lower than 18AWG.
  This unit shall be installed after suitable branch circuit breaker.

**Testing:**

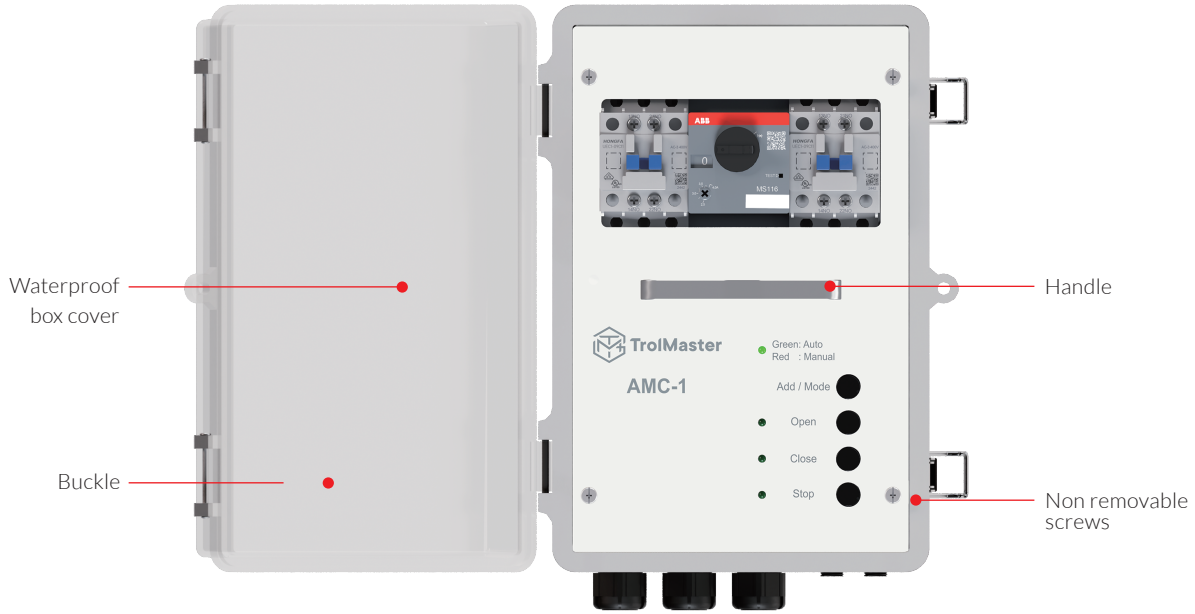
- Before powering on, double-check all connections.
- Power on the unit and verify that the motor operates correctly.

# INSTRUCTIONS

***CAUTION:** Ensure that the AMC-1 motor controller is completely disconnected from any power source before tapping into any connection cables. This precaution is critical to prevent potential electrical damage to the device and ensure user safety.

To successfully link the AMC-1 (AC Motor Controller) to the GCS-1 (Green-X Greenhouse Controller), please follow these detailed instructions:

**1. Case and Cover**



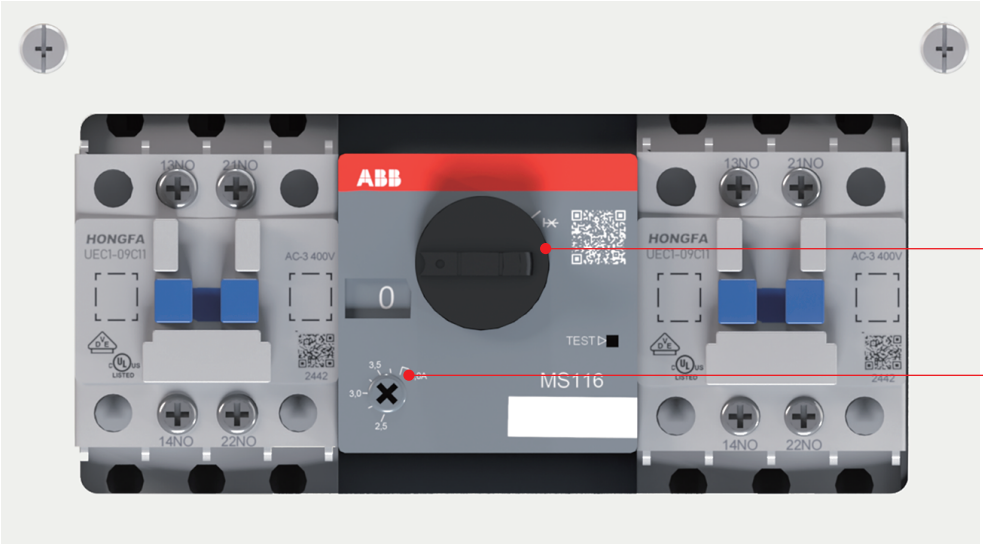

- Unlock the securing clips to access the junction box. Locate the handle at the center of the front-facing panel, firmly grip it, lift it upward, and gently pull outward to detach the panel from the junction box. This will reveal all internal components, providing access for wiring.

- Before making any connections, ensure all required cables and wires are passed through the couplers. This step prevents the need for rewiring while reassembly.

## 2. Motor Protector

***CAUTION:** To prevent potential overcurrent damage, thoroughly test all functionalities manually with the AMC-1 alone before connecting it to the controller. Follow these steps in sequence:

a) **Connect the Limit Switch** – Ensure proper wiring and functionality.
b) **Connect the Motor** – Verify that the motor operates correctly.
c) **Connect the Power Supply** – Power on the AMC-1 and check for any irregularities.
d) **Test Manual Operation** – Use the [Open], [Close], and [Stop] buttons to confirm smooth opening and closing actions.
e) **Test Motor Protector** - Ensure the switch engages properly.
f) **Connect to the Controller** – Once manual testing is successful, proceed to connect the AMC-1 to the controller and verify automatic operation.

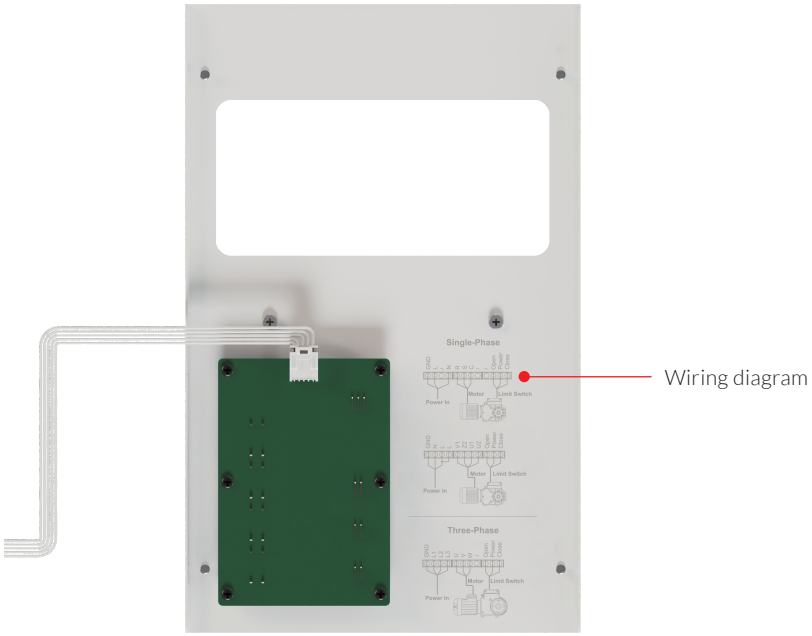



- The AMC-1 comes equipped with a preinstalled power surge protector. The maximum current amperage can be adjusted between 2.5 to 4 amps to suit different operational needs.

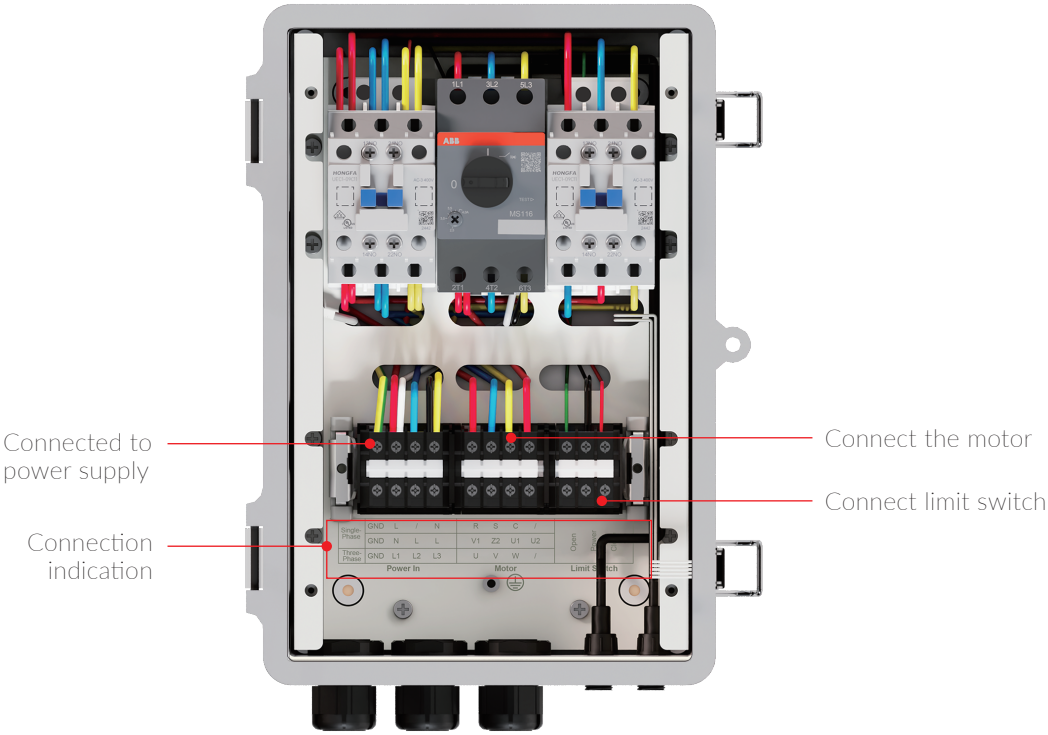
- The motor protector features a resettable knob. Under normal operating conditions with a safe current, the knob handle remains in a vertical position. If an overcurrent is detected, the circuit breaker will trip, causing the knob handle to shift to a horizontal position, indicating a break in the circuit.

### 3. Connections

- Power Connections




On the back of the front-facing panel, a wiring diagram for single-phase and three-phase power is displayed. Use this diagram as a reference to ensure proper wiring connections.




There are wiring diagrams located inside the junction box, indicating the proper location of “Power In” , “Motor” , and “Limit Switch” . Use them as a reference to ensure proper wiring connections.

If the motor' s rotation direction is opposite to the desired direction, you can correct it by changing the motor wiring positions.

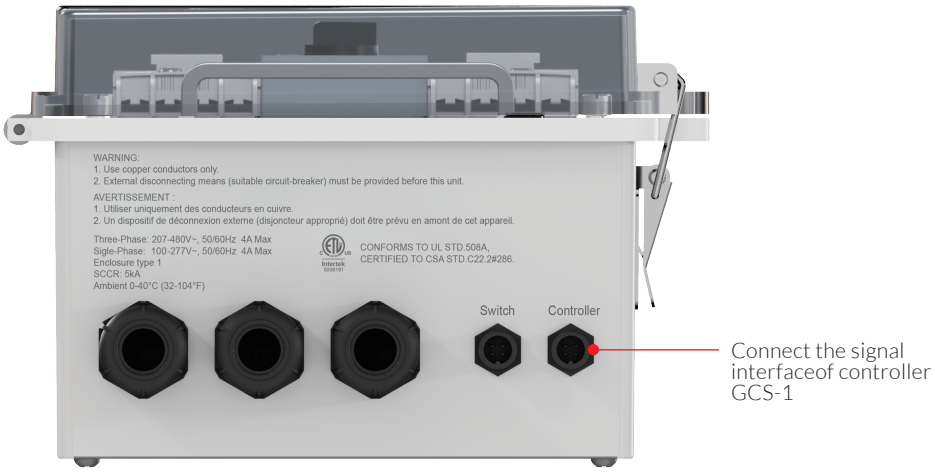
- Single-phase motor 1: Swap the R and S wire positions.
- Single-phase motor 2: Swap the U1 and U2 wire positions.
- Three-phase motor: Swap the positions of the U and V wires.

**Limit Switch:**

During normal operation, **Open/Power** and **Close/Power** must be connected through the limit switch so that they conduct while moving, and disconnect when reaching the end limit.

If you do **not** use the AMC-1 limit switch function, you can directly **short Open/Power** and **Close/Power** together.

- AMC-1 to Controller (GCS-1)




Using the RJ-12 to 4-Pin Connection Cable. The 4-pin connector goes to the AMC-1 Controller Port, and the RJ-12 connector links to the GCS-1 Controller Device Port.

**4. LED Indicators**

- **[Red: Manual]** – Once power is supplied to the AMC-1, the indicator light will turn red. In this mode, the [Open], [Close], and [Stop] buttons below the indicator light are available for manually controlling the motor.

- **[Green: Auto]** – When the AMC-1 successfully establishes a connection with the controller, pressing the [Add/Mode] button will switch the indicator light from red to green. This indicates that the AMC-1 is now operating in automatic mode, taking commands directly from the controller.

**5. Operation Instructions**

On the AMC-1 Face Panel, there are 4 control buttons:

- [Add/Mode]
- [Open]
- [Close]
- [Stop]

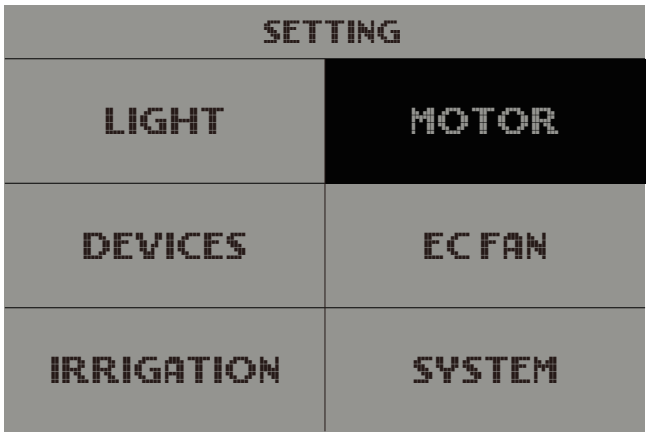
Once you have connected with AMC-1. There will be an interface shown like this:

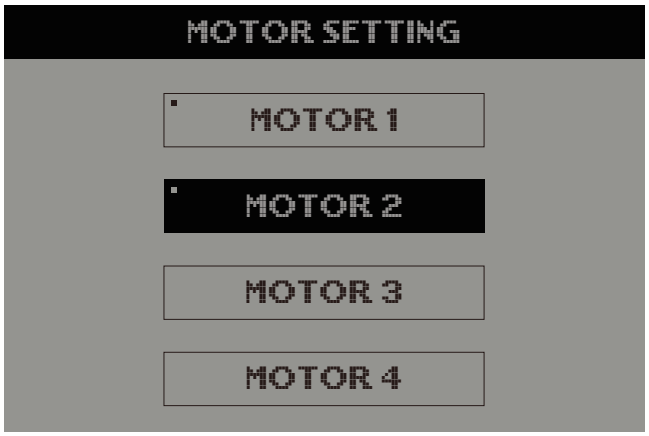
Use[Open] or [Close] and [Stop] to operate the motor manually.

- Automatic Control

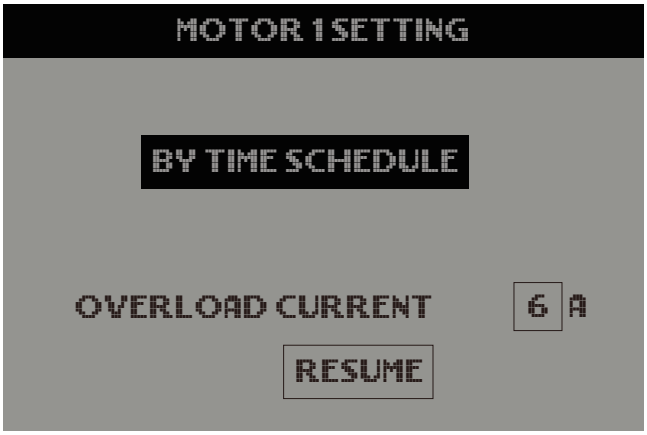
  **a.** Connect the AMC-1 to a compatible controller for automatic operation.
  **b.** Follow the controller’ s instructions for setup and programming.

**MOTOR SETTING**



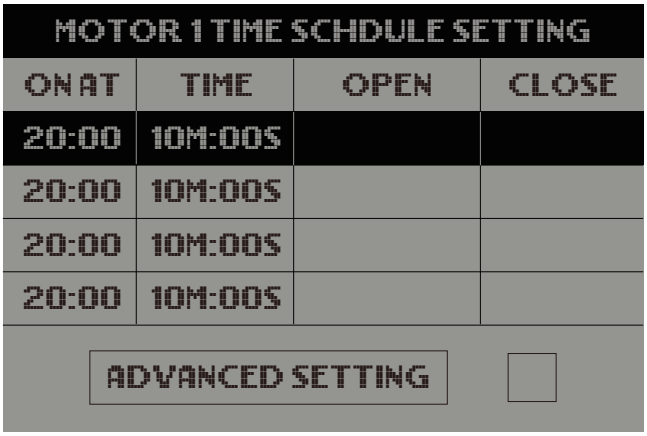




The Motor 1 Setting page on the GCS-1 controller allows you to schedule motor operations to control curtains based on specific environmental conditions.

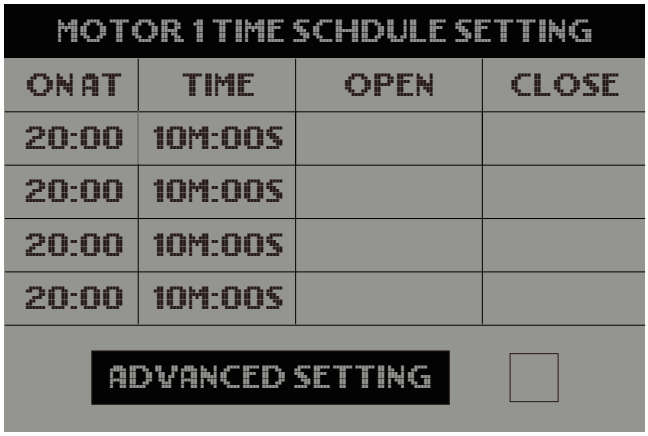


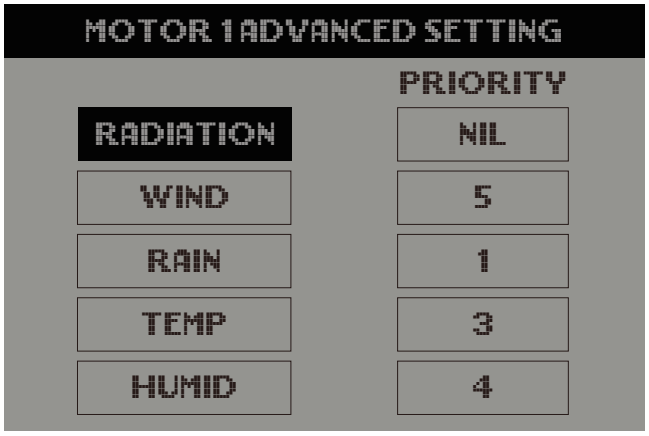

From this page user can either choose :

- **BY THE SCHEDULE**
- **OVERLOAD CURRENT :** By pressing **ENTER** to select the current from 2-10A, press **ENTER** to confirm.
- **RESUME**




- **BY THE SCHEDULE :** User can be set up the schedule time for open and close, by press the **ENTER** button to adjust the **ON AT & TIME** and selecting the **OPEN & CLOSE** slot for ✓



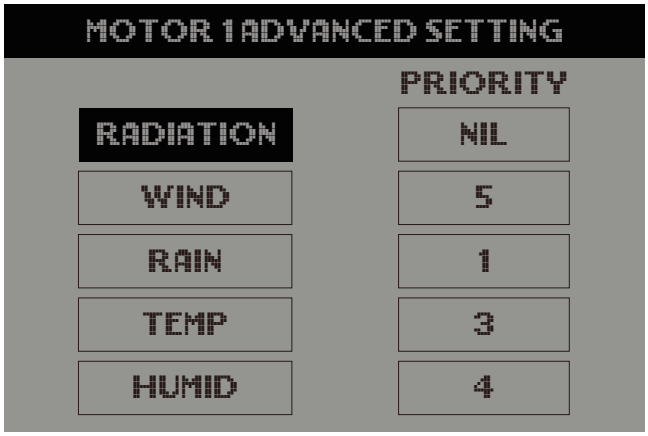



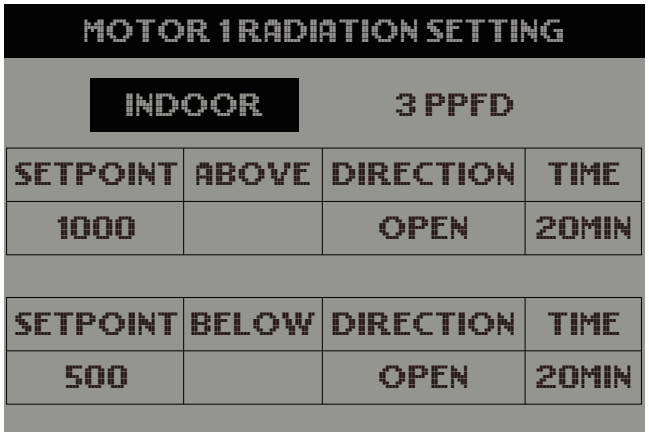

**ADVANCED SETTING**

To access advanced settings, press **ENTER**. You will see five options on the left side :

- **RADIATION**
- **WIND**
- **RAIN**
- **TEMP**
- **HUMID**

On the right side, you can set the **PRIORITY** from 1 to 5, where 1 is the highest priority and 5 is the lowest.




**RADIATION Settings**

Press [ENTER] to select **RADIATION**.

You can set:

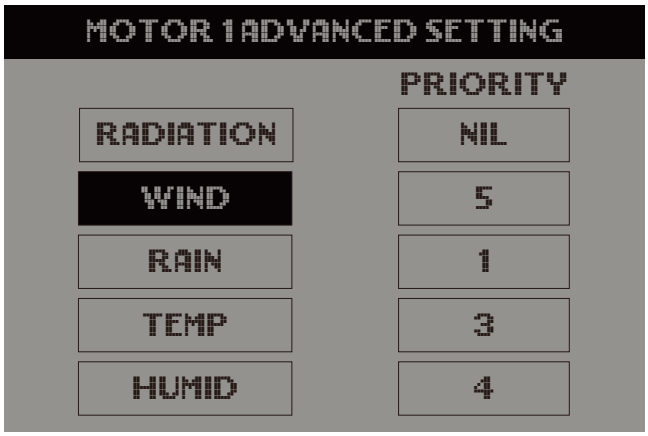
**INDOOR / OUTDOOR**: View PPFD / LUX levels inside and outside the greenhouse. Press [ENTER] to switch between indoor and outdoor settings.

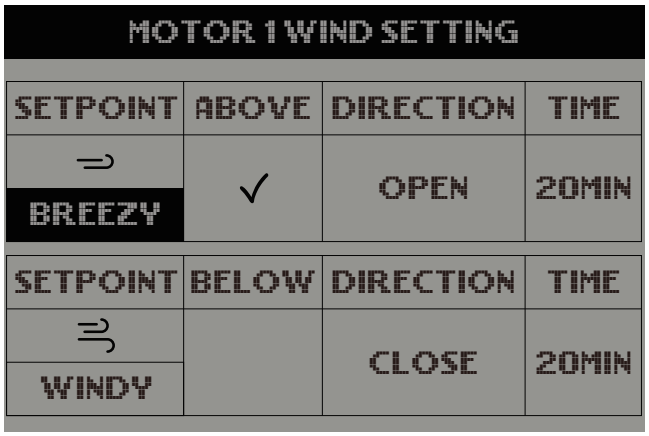
SETPOINT for **INDOOR / OUTDOOR**: Set up to a maximum of 1000 PPFD. Press [ENTER] , use [◀] [▶] to select **SETPOINT**, then press [ENTER] again. Use [▲] [▼] to adjust your optimal PPFD settings, then press [ENTER] to confirm.

**ABOVE** and **BELOW**: Press [ENTER] **(✓)** these options to control the motor. Press [ENTER] to confirm.

**DIRECTION**: Press [ENTER] , then use [▲] [▼] to choose **OPEN** or **CLOSE**. Press [ENTER] to confirm.

**TIME**: Press [ENTER] , then use [▲] [▼] to choose a time in __MIN. Press [ENTER] to confirm.




**WIND** Settings

Press [ENTER] to select **WIND**.

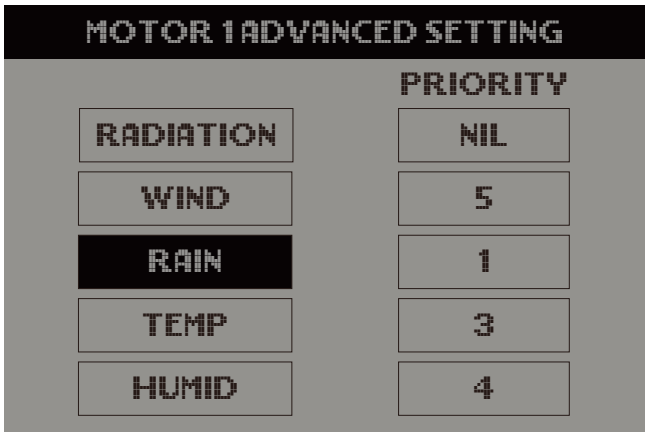
You can set:

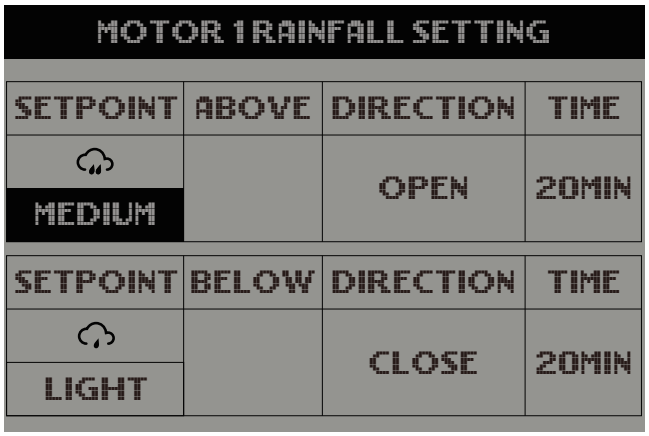
**SETPOINT** for **ABOVE**: Choose from 4 modes: **MILD / BREEZY / WINDY / STRONG**. Press [ENTER], use [◀] [▶] to select SETPOINT, then press [ENTER] again. Use [▲] [▼] to adjust your wind settings, then press [ENTER] to confirm.

**SETPOINT** for **BELOW**: Same as **SETPOINT** for **ABOVE**.

**DIRECTION**: Press [ENTER], then use [▲] [▼] to choose **OPEN** or **CLOSE**. Press [ENTER] to confirm.

**TIME**: Press [ENTER], then use [▲] [▼] to choose a time in __MIN. Press [ENTER] to confirm.



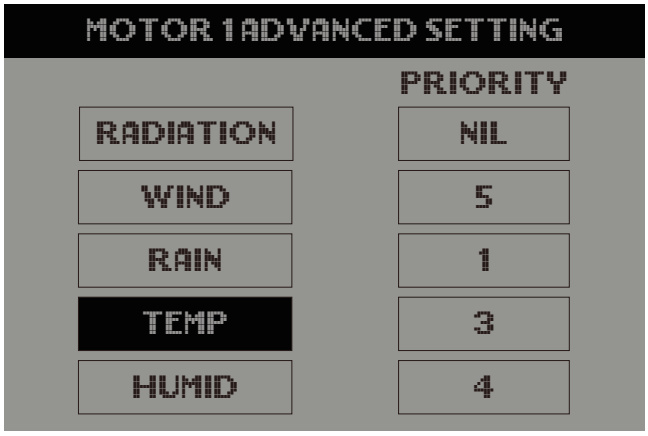

**RAIN Settings**

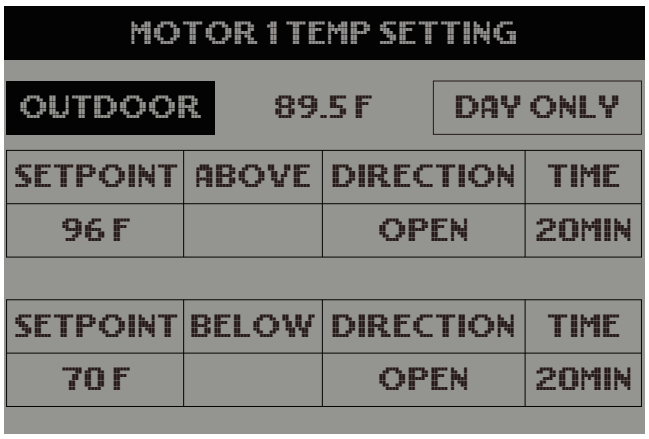
Press [ENTER] to select **RAIN**.

You can set:
**SETPOINT** for **ABOVE DIRECTION**: Choose from 3 modes: **MEDIUM / LIGHT / HEAVY**. Press , use , to select **SETPOINT**, then press again. Use , to adjust your rain settings, then press to confirm.

**SETPOINT** for **BELOW DIRECTION**: Same as **SETPOINT** for **ABOVE DIRECTION**

**TIME:** Press , then use , to choose a time in __MIN. Press to confirm.




**RADIATION Settings**
Press to select **TEMP**.

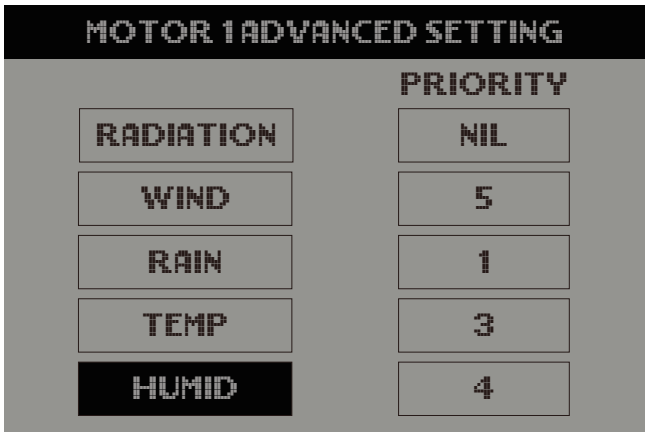
You can set:
Choose from **DAY ONLY**, **NIGHT ONLY**, or **ALWAYS** by pressing , then using , to select an option. Press to confirm.

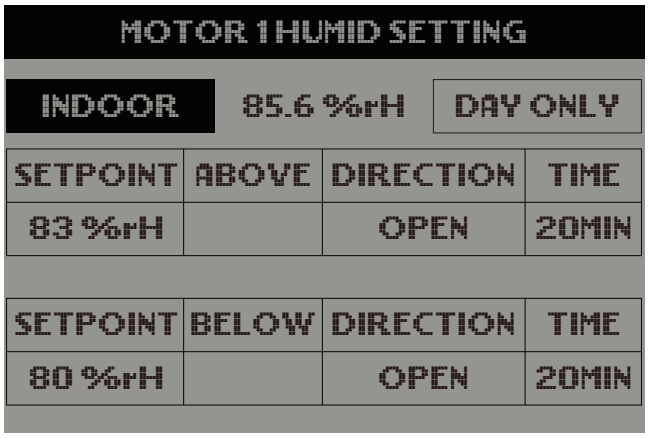
For **SETPOINT** for **OUTDOOR**: Press , use , to select **SETPOINT**, then press , and use , to adjust your temperature settings **(__F)**. Press to confirm.

Press **(✓) ABOVE / BELOW** by pressing and confirming.

For **OUTDOOR DIRECTION**: Press , use , for **SETPOINT**, then press and use , for **OPEN** or **CLOSE**. Press to confirm.

**TIME**: Press , then use , for **__MIN.** Press to confirm.




**HUMID** Settings

Press [ENTER] to select **HUMID**.

There are two types of **HUMID** settings: **INDOOR / OUTDOOR**.

You can set:
Choose **DAY ONLY**, **NIGHT ONLY**, or **ALWAYS** by pressing [ENTER] and using [▲] [▼] for selection. Confirm with [ENTER] .

For **SETPOINT** for **OUTDOOR**: Press [ENTER] , use [◀] [▶] for **SETPOINT**, then press [ENTER] and use [▲] [▼] for adjusting humidity settings **(__%rH)**. Confirm with [ENTER] .

Check **(✓) ABOVE / BELOW** by pressing [ENTER] and confirming.

For **OUTDOOR DIRECTION**: Press [ENTER] , use [◀] [▶] for **SETPOINT**, then press [ENTER] and use [▲] [▼] for **OPEN** or **CLOSE**. Confirm with [ENTER] .

**TIME**: Press [ENTER] , then use [▲] [▼] for **__MIN**. Confirm with [ENTER] .

## 5. Safety Precautions

- General Safety:
  Always turn off the power and unplug the unit before performing maintenance.
  Avoid physical impacts and sharp objects that may damage the unit.

- Installation:
  Do not modify the unit or create new openings.
  Ensure the operating environment does not exceed 40°C to prevent damage.

## 6. Maintenance and Troubleshooting

- Regular Checks:
  Inspect the unit regularly for any signs of wear or damage.
  Ensure that connections remain secure and free from corrosion.

# GENERAL INFORMATION

TrolMaster Agro Instruments Co., Ltd. will occasionally release updated firmware for the AC Motor Controller (AMC-1). By registering your AC Motor Controller (AMC-1) on our website **www.trolmaster.com** we can notify you when an update is available. We will not sell, rent or share your personal information.

# WARRANTY

TrolMaster only uses high quality components Under normal. operating conditions, the mechanical and electronic components are covered by a three-year warranty from the original date of purchase. For service, return the AC Motor Controller (AMC-1) in the original packaging to your shop with the original sales receipt.

Components that are excluded from warranty are components that have failed due to abnormal usage.

In the case of defects of the AC Motor Controller (AMC-1), the Controller will either be replaced or repaired using new or reconditioned products or parts. If the Controller will be replaced this limited warranty shall apply to the replacement product for the remaining initial warranty period, i.e. (three) 3 years from the date of purchase of the original product.

# RETURNS

All returns need to be done in the original packaging in order to avoid. Damages of the product during transport. Defective products need to be returned to factory or service shop for repair. Non-professionals DO NOT open the cabinet to prevent electric shock or damage to the equipment.

# RETOURS

Pour tout retour, le produit doit être replacé dans son emballage d'origine afin d'éviter qu'il soit endommagé pendant le transport. Les produits défectueux doivent être renvoyés à l'usine ou à l'atelier d'entretien pour réparation. Avis aux non professionnels: n'ouvrez pas l'armoire afin d'éviter tout risque de choc électrique ou de dommages matériels.

# REGISTRATION

TrolMaster Agro Instruments Co., Ltd. will occasionally release updated firmware for the AC Motor Controller (AMC-1)

By registering your AC Motor Controller (AMC-1) on our website www.trolmaster.com we can notify you when an update is available.

We will not sell, rent or share your personal information.

# FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)This device may not cause harmful interference, and (2) this device must accept anyinterference received, including interference that may cause undesired operation. Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: - Reorient or relocate the receiving antenna. - Increase the separation between the equipment and receiver. - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. - Consult the dealer or an experienced radio/TV technician for help. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. WARNING: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

# TROUBLESHOOTING

If the AMC-1 does not function as expected, use the following guidelines to diagnose and resolve the issue:

Some of the most common issues or problems can be found within this section. Before returning the unit for service, please consult the troubleshooting points below, additional information can be found online at www.trolmaster.com

| ISSUE | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| AMC-1 does not receive signals | Loose or damaged connector | Check and secure the 4-pin connector |
| Device not triggering properly | Misaligned or damaged mechanical system | Realign or repair the system being monitored |
| Green light on AMC-1 does not flash | Signal interference or excessive cable length | Ensure the cable length does not exceed 500 meters and check the RS485 connection |

**WARNING:** **DO NOT** allow the AMC-1 to be exposed to water or excessive heat, DO NOT open or attempt to repair or disassemble the controller, as there are no user-serviceable parts inside. Opening the controller will void the warranty. If the surface of AMC-1 is dirty, wipe it with a dry towel. The AMC-1 operates under natural ventilation conditions.

1. Use copper conductors only.
2. External disconnecting means (suitable circuit-breaker) must be provided before this unit.

**AVERTISSEMENT:** **N'exposez PAS** le régulateur de zone AMC-1 à de l'eau ou à une chaleur excessive. NE l'ouvrez PAS, NE tentez PAS de le réparer ou de le démonter, car il ne contient aucune pièce réparable par l'utilisateur. Louverture du régulateur entraine l'annulation de la garantie. Si la surface du AMC-1 est sale, essuyez-la à l'aide d'un chiffon sec. Le AMC-1 fonctionne sous des conditions de ventilation naturelle.

1. Utiliser uniquement des conducteurs en cuivre.
2. Un dispositif de déconnexion externe (disjoncteur approprié) doit être prévu en amont de cet appareil.

## ENVIRONMENTAL AND DISPOSAL CONCERNS:

THIS PRODUCT CONTAINS A BATTERY AND OTHER COMPONENTS WHICHMUST BE DISPOSED OF PROPERLY.

This symbol displayed on a product, its accessories, or its packaging indicates that this product may not be discarded as household waste. Dispose of the equipment through a recycling center that handles electronics and electrical appliances. By disposing of the equipment in the proper and lawful way you will be helping to prevent possible damage to the environment and risk to public health.

For any issues or concerns with our products, DO NOT return them to the store. Please contact our tech support department at support@trolmaster.com or call 877-420-9876.

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