Manuals+ — User Manuals Simplified.

TRANE CM2 Symbio Communication Module

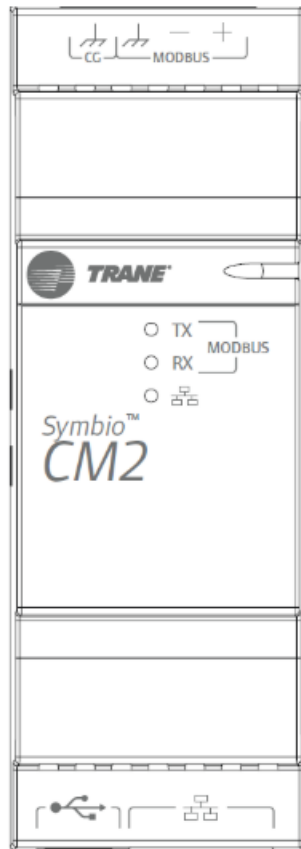# TRANE CM2 Symbio Communication Module Installation Guide

Contents

TRANE®

TRANE CM2 Symbio Communication Module

Specifications:

- Storage Temperature: 5% to 95%
- Storage Relative humidity: 5% to 95% (noncondensing)
- Operation Temperature: 5% to 95%
- Operation Humidity: 5% to 95% (noncondensing)
- Power: USB 5V, 225mA, PELV Class 2
- Mounting weight of controller: 0.17 lb. (0.077 kg)
- Environmental rating (enclosure): NEMA 1
- Installation: UL 840:Category 3
- Pollution: UL 840:Degree 2

Product Usage Instructions

Inspection

Visually inspect the contents for any defects or damage before proceeding with the installation.

Mounting and Wiring

Use a 1/8 inch flat-bladed screwdriver to remove or reposition the module on the DIN rail.

Storage and Operating Environment

Ensure the storage and operation temperatures and humidity levels fall within the specified range.

Power Supply

Connect the module to a USB power supply providing 5V and 225mA with PELV Class 2 rating.

Mounting

Ensure the mounting surface can support the weight of the controller (0.17 lb.) and complies with the NEMA 1 environmental rating.

Installation Compliance

Follow UL 840:Category 3 standards for installation and ensure pollution level complies with UL 840:Degree 2.

FAQ

Q: Who should install and service the equipment?

A: Only qualified personnel should install and service the equipment to prevent hazards.

Q: What power supply is required?

A: The module requires a USB power supply providing 5V and 225mA with PELV Class 2 rating.

Q: What are the environmental ratings for this product?

A: The product has a NEMA 1 enclosure rating and complies with UL standards for installation and pollution levels.

Ordering Number: X13651810001

SAFETY WARNING
Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Warnings, Cautions, and Notices

Read this manual thoroughly before operating or servicing this unit. Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

- WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

It could also be used to alert against unsafe practices.

- NOTICE Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns
Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices
Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to forresponsible management of refrigerants. Know the applicable laws and follow them.

WARNING
Proper Field Wiring and Grounding Required!
Failure to follow code could result in death or serious injury. All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

WARNING
Personal Protective Equipment (PPE) Required!
Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other countryspecific requirements for arc flash protection, PRIOR to servicing the unit.
- NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.

WARNING
Follow EHS Policies!
Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when

performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where

local regulations are more stringent than these policies, those regulations supersede these policies.

- Non-Trane personnel should always follow local regulations.

Overview
When used with a Symbio controller, the Symbio Communications Module (CM2):

- Provides additional IP connection, which can be configured either as a BACnet IP or TD7 Display.
- Enables Modbus client capability (communication with third-party downstream Modbus devices).

Packaged Contents

- Symbio Communication Module (CM2)
- USB cable
- Phoenix connector with chassis ground wire
- Installation Instructions

Important: Visually inspect contents for obvious defects or damage. All components have been thoroughly inspected before leaving the factory. Any claims for damage incurred during shipment should be filed immediately with the carrier.

**Required Tools for Mounting and Wiring**
A 1/8 inch, flat-bladed screwdriver is required to remove or reposition the module on the DIN rail.

Storage and Operating Environment Specifications

Storage	
Temperature:	-67°F to 203°F (-55°C to 95°C)
Relative humidity:	5% to 95% (noncondensing)
Operation	
Temperature:	-40°F to 158°F (-40°C to 70°C)
Humidity:	5% to 95% (noncondensing)
Power:	USB 5V, 225mA, PELV Class 2
Mounting weight of controller:	Mounting surface must support 0.17 lb. (0.077 kg)
Environmental rating (enclosure):	NEMA 1
Installation:	UL 840:Category 3
Pollution:	UL 840:Degree 2
Agency Compliance	

- UL60730-1 PAZX – (Open Energy Management Equipment)
- UL94-5VA Flammability
- CE Marked
- FCC Part 15, Subpart B, Class B Limit
- UKCA Marked
- AS/NZS CISPR 32:2015 Class B Limit
- VCCI-CISPR 32:2016: Class B Limit
- CAN ICES-003(B)/NMB-003(B)

CM2 Dimensions

Figure 1. CM2 dimensions
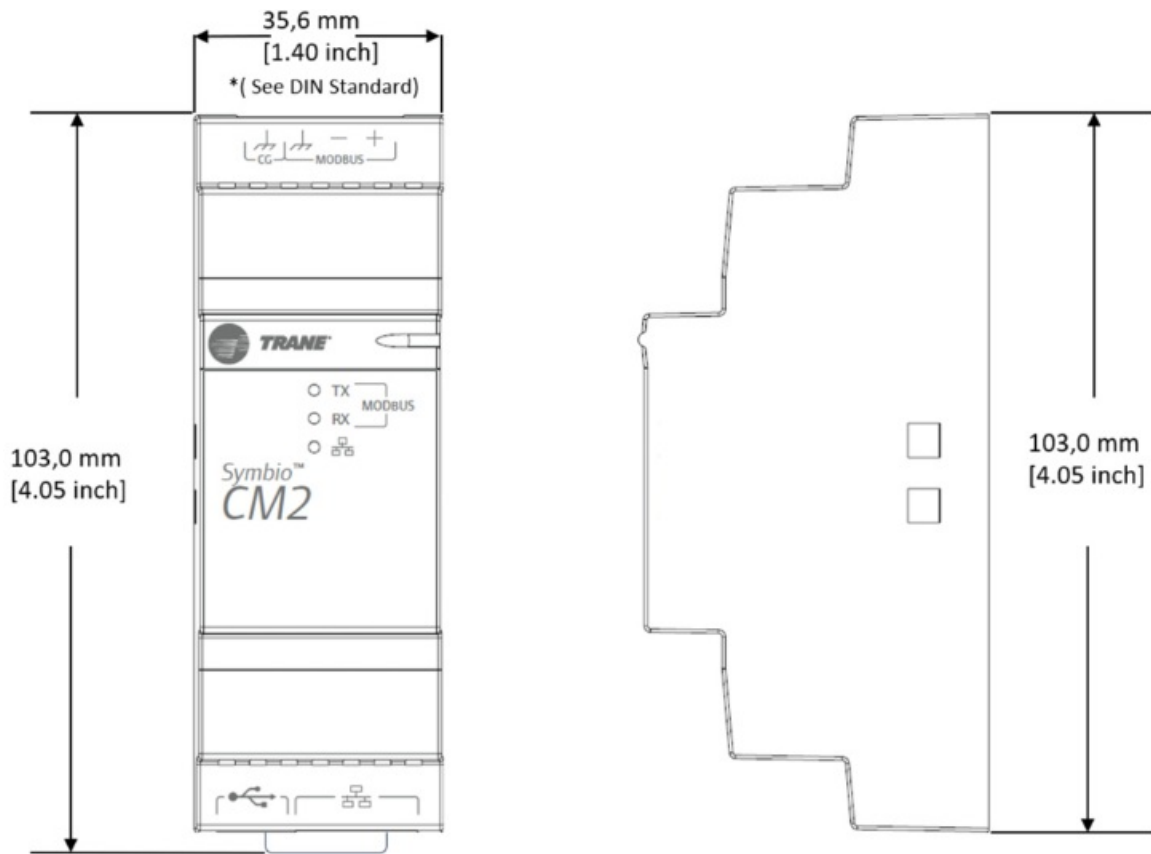
Important: Slotted release clip shown– if removing or repositioning the controller, the user must remove connectors before proceeding.

*DIN Standard 43 880, Built-in Equipment for Electrical Installations, Overall Dimensions and Related Mounting Dimensions
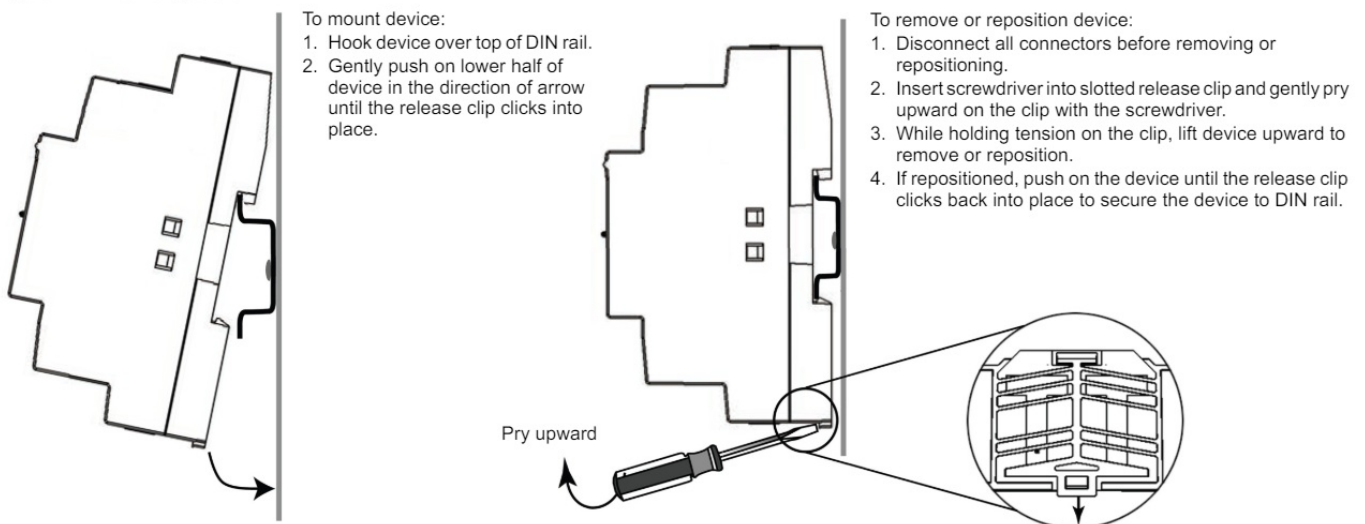
Mounting or Removing the CM2

To mount or remove the CM2 from the DIN rail, follow the instructions below.

NOTICE

Avoid Equipment Damage! Do not use excessive force to install device on to the DIN rail. Excessive force could result in damage to the plastic enclosure.

Figure 2.   Mounting the CM2

To mount device:
1. Hook device over top of DIN rail.
2. Gently push on lower half of device in the direction of arrow until the release clip clicks into place.

To remove or reposition device:
1. Disconnect all connectors before removing or repositioning.
2. Insert screwdriver into slotted release clip and gently pry upward on the clip with the screwdriver.
3. While holding tension on the clip, lift device upward to remove or reposition.
4. If repositioned, push on the device until the release clip clicks back into place to secure the device to DIN rail.

Pry upward

Important: Follow recommended installation procedures if using another manufacturer's DIN rails and enclosures.

Location Guidelines
Before installing the CM2, choose a location that is:

- In an environment protected from weather elements
- Restricted from public access to minimize tampering and vandalism
- Near the controlled equipment to reduce wire usage
- In an area easily accessible by service technicians.

Installation Instructions

1. Connect the USB-C end of the cable to the CM2 module.
2. Connect the USB-A end of the cable to a USB port on the controller.

   Important:

   Route the USB cable so that it will not be damaged by panel doors or similar obstructions. Severely kinked, cut, or otherwise damaged cables should be replaced even if they appear to be in working order. • Do not route the USB cable in close proximity with electrically noisy cables such as AC power (24, 120, 240 VAC), or wires that are switched by relays or contactors. Maintain a minimum distance of 150 mm between the USB cable and these types of cables and wires.

3. Mount on DIN rail horizontally or vertically (allow for proper ventilation clearance).

Modbus RTU Device Network Wiring Configurations
For proper network communication, select an appropriate cable length:

- The maximum length of a 18 AWG network wire is 4,000 feet.
- The maximum length of a 22 AWG network wire is 2,000 feet.

  Wire runs longer than the recommended length may experience communication issues.

Daisy-chain Configuration
Modbus wiring must use daisy-chain configuration:

1. Attach the communication wire between two adjacent devices on the link and verify that polarity of the wires is maintained.
2. At each unit controller, join the shield wires together and insulate the connection with electrical tape to prevent accidental shorting of the wire.
3. Repeat steps 1 and 2 for each unit controller on the link.

Note: For more information about the specific unit controller, see the installation guide for the unit controller. Follow these steps to connect the communication wiring as shown below.

Figure 3. Communication wiring

Figure 3. Communication wiring

Tap wire and tape shields together
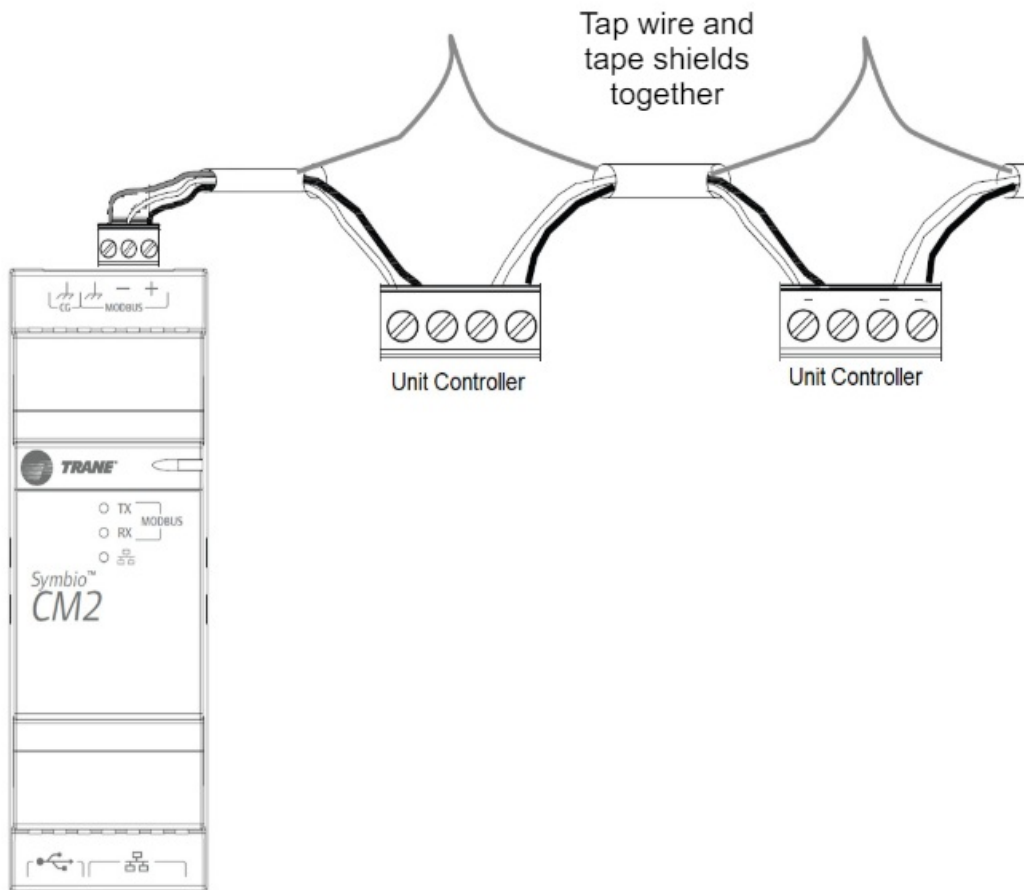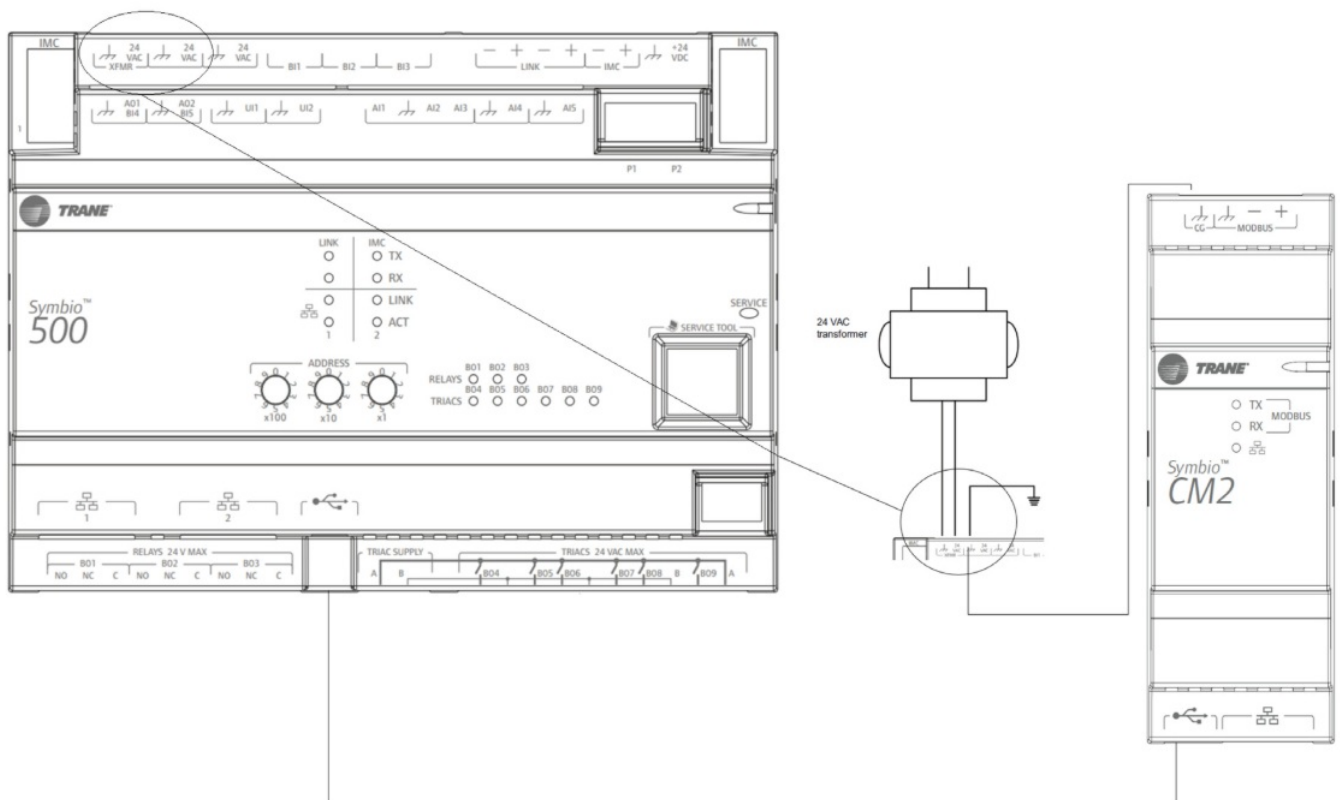
Unit Controller

Unit Controller

Figure 4. CM2 connections

Figure 4. CM2 connections

Important: Chassis ground must be connected to ground terminal of Symbio controller

Power Up the Symbio Controller

Power up the Symbio controller. They transmitting (TX) and receiving (RX) LEDs blink when communication occurs between the devices. Note the following LED activities on the front of the CM2:

Marquee LED

- Green – if powered, application running, no faults or alarms
- Solid red – low power or malfunction or no application, processor not running
- Sequencing when powered – red and then to green

Modbus TX and RX LED

When Modbus device connection is established:

- TX LED – blinks at the data transfer rate when the unit transfers data to other devices on the link. Regardless of connectivity, this LED constantly blinks as it continually looks for devices to communicate to.
- RX LED – blinks at the data transfer rate when the unit receives data from other devices on the link. If the LEDs are not lit:
- Determine if a CM2 device is trying to talk to a controller or if it is capable of talking to the controller.
- Determine if he communication status shows down all the time.
- Check polarity and baud rate.

Ethernet Port Configuration

1. Open Tracer TU or the Symbio UI
2. Navigate to IP Settings > IP Configuration.
3. If a CM2 is connected to the Symbio controller via USB port, Tracer TU/Symbio UI identifies the communication module.
4. On the Controller Settings page, Tracer CM2 Module Addressing is enabled in the IP Settings panel.
5. Choose any of the Ethernet ports to be configured as either BACnet IP or TD7 Display.

Modbus Client Configuration

The CM2 can be used to add third-part Modbus client capability (communication with third-party downstream Modbus devices such as VFDs and energy meters).

Agency Listings and Compliance

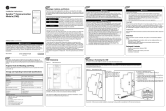The European Union (EU) Declaration of Conformity is available from your local Trane® office.

Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or **tranetechnologies.com**.

Documents / **Resources**

TRANE CM2 Symbio Communication Module [pdf] Installation Guide
CM2 Symbio Communication Module, CM2, Symbio Communication Module, Communication Module, Module

References

- ⊜ **Trane Heating & Air Conditioning**
- **User Manual**