TRX-6 Pilot Relay unit

THIS MANUAL CONTAINS IMPORTANT SAFETY INSTRUCTIONS

User manual

RCX-1 system controller rev 6.2.4

TRX-6 Pilot Relay unit

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TRX-6 Pilot Relay unit

01. General Safety Precautions (1)

⚠ IMPORTANT SAFETY INSTRUCTIONS

01. Retain the safety and operating instructions provided with the product for future reference. Familiarize yourself with the instructions and follow them carefully to ensure safe and proper operation of the product.

02. Follow all operating and usage instructions as provided by CTgrow. This includes instructions related to installation, operation, maintenance, and storage of the product. Failure to follow these instructions may result in unsafe operation or damage to the equipment.

03. Observe all warnings on the product and in the operating instructions to reduce the risk of fire, bodily injury, electrical shock, and damage to the equipment. Warnings may include information on potential hazards, safe operation practices, and precautions to take. Pay close attention to any warning labels, symbols, or indicators on the product, and take appropriate action to mitigate any identified risks.

04. Unplug the product from the electrical outlet and take it to a CTgrow authorized service provider under the following conditions:

a. The power cord, on-board connectors, or the system's power inlets are damaged. Do not use the product if any of these components are damaged, as it may pose a risk of electrical shock or other hazards. Contact a CTgrow authorized service provider for inspection and repair.

b. Liquid has been spilled or an object has fallen into the product. If the product comes into contact with liquid or foreign objects, it should be immediately unplugged and taken to a CTgrow authorized service provider for inspection and repair. Do not attempt to power on the product or use it until it has been inspected and deemed safe by a qualified technician.

c. The product has been dropped, exposed to water, or is damaged in any way. Damaged products should not be used, and they should be inspected and repaired by a CTgrow authorized service provider. Using a damaged product may result in unsafe operation or further damage to the equipment.

d. The product does not operate normally when you follow the operating instructions. If the product does not function as expected, it should be taken to a CTgrow authorized service provider for diagnosis and repair. Do not attempt to troubleshoot or repair the product yourself, as it may result in further damage or pose a risk of injury.

05. Do not attempt to service any CTgrow products yourself, except as explained elsewhere in the CTgrow documentation. Opening or removing covers that are marked with warning symbols or labels may expose you to electric shock or other hazards. Service needed on components inside these compartments should be done by a CTgrow authorized service provider to ensure proper repair and avoid potential hazards. Any unauthorized servicing or modifications to the product may void the warranty and compromise the safety of the equipment.

06. Do not use the product on an unstable table, cart, stand, wall, or bracket. The product should be placed on a stable and level surface to prevent it from falling, which could cause serious bodily injury and damage to the product. Avoid placing the product in a location where it may be bumped, jostled, or knocked over during operation or maintenance.

07. Ensure proper ventilation for the product. The product is designed with slots and openings for ventilation, and these should never be blocked or covered. Proper ventilation is necessary to ensure reliable operation and prevent overheating. The product should not be placed in a built-in apparatus such as a bookcase or rack unless it is specifically designed for it and proper ventilation is provided as per the product instructions. Overheating of the product may result in malfunction, damage, or fire hazards.

TRX-6 Pilot Relay unit

01. General Safety Precautions (2)

⚠ IMPORTANT SAFETY INSTRUCTIONS

08. Only use ground fault circuit interrupters (GFCI) on all outlets used to power CTgrow devices. CTgrow products are equipped with a three-wire electrical grounding-type plug that has been designed to provide an additional layer of safety. It is important to use outlets that are protected by ground fault circuit interrupters (GFCI) to reduce the risk of electrical shock. If you do not have GFCI outlets, consider using a portable GFCI adapter or have a qualified electrician install GFCI outlets in the area where the product will be used.

09. Use the product in a dry environment. Avoid using the product in wet or damp conditions, as it may pose a risk of electrical shock or damage to the equipment. If you need to clean the product, follow the instructions provided by CTgrow, and ensure that the product is completely dry before plugging it back in or powering it on.

10. Keep the product away from children and pets. CTgrow products may have small parts, cords, or components that can pose a choking hazard or risk of injury if swallowed or played with by children or pets. Keep the product out of reach of children and pets, and ensure that they do not play with or tamper with the equipment.

11. Do not overload electrical circuits. Ensure that the product is plugged into an outlet that can handle the electrical load of the product. Do not overload extension cords, power strips, or outlets with too many devices, as it may result in overheating, electrical hazards, or damage to the equipment.

12. Follow proper maintenance procedures. Regular maintenance, as recommended by CTgrow, is important to keep the product operating safely and efficiently. This may include cleaning, filter replacement, and other maintenance tasks. Always follow the maintenance instructions provided by CTgrow, and do not attempt to perform maintenance tasks that are not recommended or provided in the product documentation.

13. Use only recommended accessories and replacement parts. CTgrow products are designed to work with specific accessories and replacement parts that have been tested and approved for use with the equipment. Using unauthorized accessories or replacement parts may result in unsafe operation, damage to the equipment, and voiding of the warranty. Always use genuine CTgrow accessories and replacement parts to ensure safe and proper operation of the product.

14. Be aware of potential hazards associated with growing plants. If you are using CTgrow products for indoor gardening or plant cultivation, be aware of potential hazards associated with growing plants, such as electrical hazards, water hazards, use of fertilizers, and exposure to pesticides or other chemicals. Follow safe gardening practices and take appropriate precautions to protect yourself and others from potential hazards associated with plant cultivation.

15. Store the product properly. When not in use, store the product in a dry and cool place, away from direct sunlight, heat sources, and moisture. Avoid storing the product in areas with extreme temperatures, high humidity, or excessive dust, as it may affect the performance and lifespan of the equipment.

16. Familiarize yourself with emergency procedures. In case of an emergency, such as fire, electrical shock, or other hazards, know the location of emergency exits, fire extinguishers, and other safety devices in your vicinity. Familiarize yourself with emergency procedures, and follow them in case of an emergency. Contact emergency services for assistance, if needed.

17. Stay informed about product updates and recalls. CTgrow may release product updates, safety alerts, or recalls for its products. Stay informed about any updates or recalls related to the product you are using, and follow the instructions provided by CTgrow for any necessary actions, such as software updates or component replacements, to ensure continued safe and proper operation of the equipment.

By following these detailed safety precautions, you can help ensure safe and proper operation of CTgrow products, reduce the risk of accidents or damage to the equipment, and protect yourself and others from potential hazards associated with product use. Always refer to the product documentation and follow the instructions provided by CTgrow.
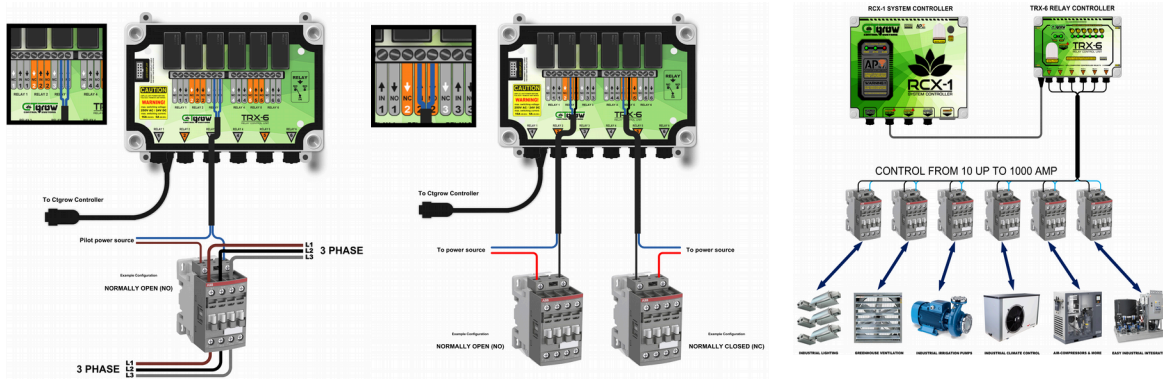
TRX-6 Pilot Relay unit

02. Introduction to the TRX-6 Pilot relay unit

CTgrow's TRX-6 pilot relay unit serves as a pivotal control hub, seamlessly bridging our innovative control system with your electrical network and devices. This state-of-the-art device offers advanced switching and control capabilities, enabling you to effectively manage a wide range of electrical systems and devices.

Designed to be used as a pilot control unit, the TRX-6 is compatible with high-power industrial relays and other devices, enabling you to activate and control demanding loads such as industrial grow lighting, large pumps, and specialized equipment with ease and precision.

The TRX-6 pilot relay unit stands out for its exceptional flexibility in programming and control, offering an extensive array of possibilities to suit your specific needs. With the capability to program up to 50 different switch programs, this unit provides unparalleled versatility, allowing you to create and customize multiple control scenarios. Whether you need to activate different sets of relays at specific times, control various devices based on sensor inputs, or implement complex automation sequences, the TRX-6 empowers you with the tools to tailor your electrical control system precisely.

Programming and managing the TRX-6 pilot relay unit is designed to be intuitive and user-friendly. Through our dedicated control software, you gain effortless control over all six relays. The software allows you to easily configure and monitor the relays, giving you complete command over your electrical systems. You can adjust settings using multiple sensor values, set up timers for precise control, or activate relays manually with a simple button press. The TRX-6 ensures that you have the flexibility and convenience to manage your electrical setup with ease.

At CTgrow, we understand that crop safety is of paramount importance. That's why the TRX-6 is engineered with robust safeguards to protect your valuable plants. In the event of any issues or anomalies, the unit is programmed to automatically initiate a shutdown within 60 seconds, effectively preventing potential damage and ensuring the well-being of your crops. Moreover, the TRX-6 features an automatic recovery function, which guarantees a safe and seamless restoration of operations after a power loss. This feature minimizes disruptions, maintains a stable growing environment, and provides peace of mind for growers.

With the TRX-6 Pilot Relay Unit from CTgrow, you can experience the unmatched versatility and reliability of electrical control. Seamlessly integrating into your existing setup, this advanced device empowers you to optimize your operations, implement complex control scenarios, and effectively safeguard your crops. By embracing the TRX-6, you can unlock new levels of efficiency, productivity, and precision in your electrical control system. Trust in the TRX-6 to lead you into the future of electrical control, where possibilities are endless, and crop success is within your grasp.

TRX-6 Pilot Relay unit

The TRX-6 Relay control unit explained

TRX-6 UNIT OUTSIDE VIEW

TRX-6 UNIT INSIDE VIEW
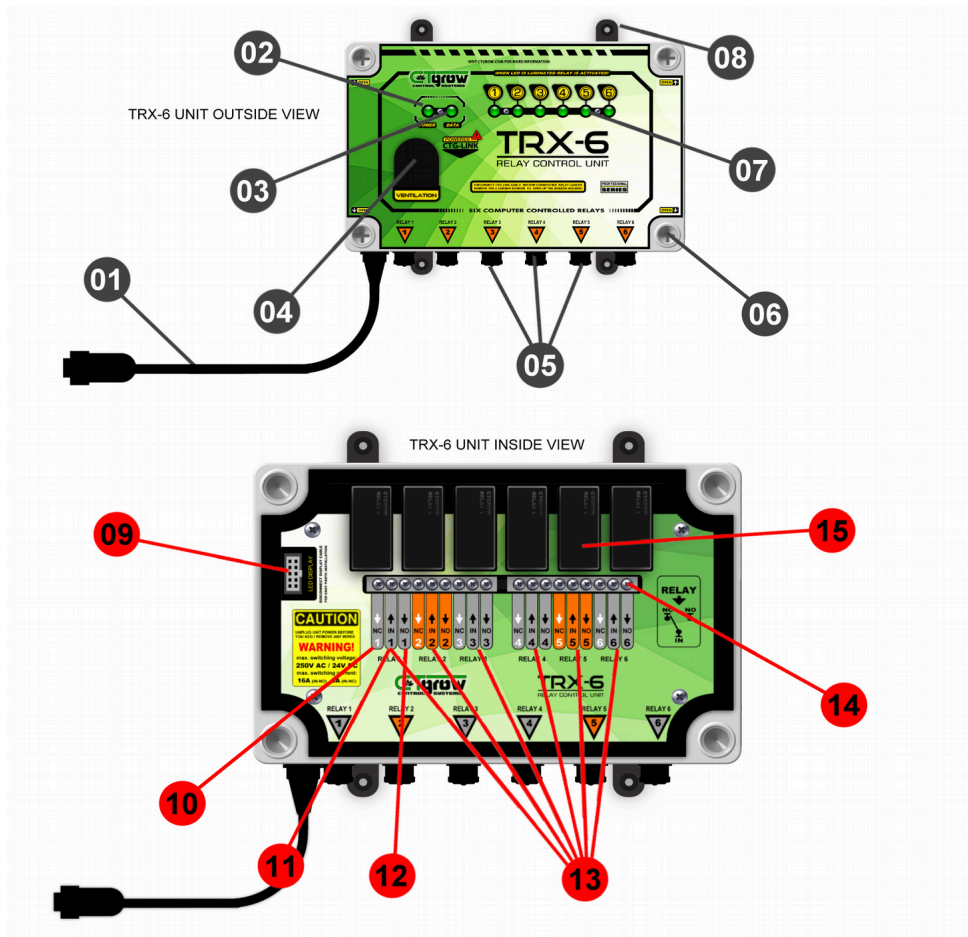
01:	CTG-LINK cable to connect TRX-6 unit to the master controller
02:	Power ON LED light (when "ON" the relay unit power is connected)
03:	Data LED light (indicates connection state with the controller)
04:	Air ventilation port (do not cover or obstruct !, keep open)
05:	Cable glands 6x for electrical wiring to the 6 independent relays
06:	Screw for opening the unit's cover to access the terminal connectors
07:	Relay ON/OFF indicator LEDS (when lit Relay/switch NO is ON)
08:	Mounting tabs for easy installation on walls and other constructions
09:	LED display cable Connector (can be disconnected for easy installation)
10:	Screw terminal for (NO-out) wiring (Normally Open) (same for relays 1-6)
11:	Screw terminal for incoming wiring (same for relays 1-6)
12:	Screw terminal for (NC-out) wiring (Normally Connected) (same for relays 1-6)
13:	Visual indication for connections to all six computer controlled relay's
14:	In/Out Screw terminal for all six computer controlled relay's
15:	Computer controlled relay's (6x) (max 230v~12A)

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TRX-6 Pilot Relay unit

04. TRX-6 Unit installation procedure (part 1)

IMPORTANT INSTALLATION NOTICE !! **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

1. Mounting the TRX-6 Pilot relay unit

For ease of use, the TRX-6 Pilot relay unit is thoughtfully designed with mounting tabs on the top and bottom sides of the unit. The mounting tabs provide you with the flexibility to position the TRX-6 unit according to your specific location preferences and requirements. By utilizing the provided mounting holes, you can securely attach the TRX-6 unit to a desired surface, ensuring a stable and reliable installation. **(See Figure 4.0.1-1)**

When mounting the TRX-6 unit on a safe and firm location, make sure to select a location that's close to both the system controller and the electrical control panel or devices you want to control. **(See Figures 4.0.2 and 4.0.3).**
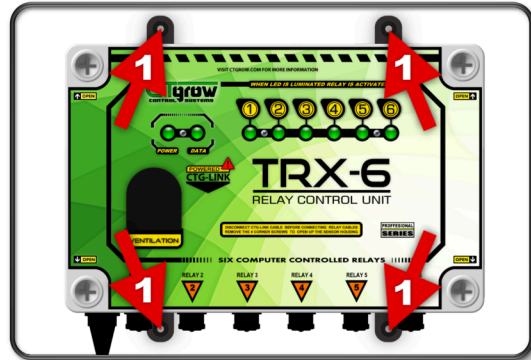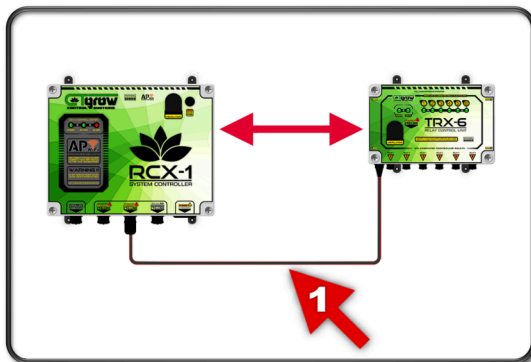

Figure 4.0.1

The TRX-6 unit's cable has an approximate length of 3 meters, providing ample reach for connecting the relay unit to a NPX-5 unit extender or directly to the CTgrow system controller. **(See Figure 4.0.2).**

If additional cable length is required, it can be easily extended using an official CTG-link extension cable up to a maximum of 10 meters **(See Figure 4.0.2).**

During the installation process, it is crucial to ensure proper positioning of the TRX-6 relay unit and the associated cables. It is important to avoid bundling the CTG-LINK cable together with any power cables **(See Figure 4.0.3-1/2).**
This helps to minimize the risk of electromagnetic interference, which could affect the performance of the unit.

Figure 4.0.2

In addition to proper cable management, the placement of the TRX-6 relay unit itself should be done with careful consideration of the distance to the devices that need to be controlled. **(See Figure 4.0.3).**

It is important to position the relay unit in close proximity to the devices it will be controlling, while also ensuring an appropriate separation from any AC or DC power devices.

By locating the TRX-6 relay unit near the devices it will control, you can minimize the length of the control wiring, reducing the chances of signal degradation or interference. However, it is equally important to maintain a sufficient distance from AC or DC power devices to prevent electromagnetic interference. **(See Figure 4.0.3).**
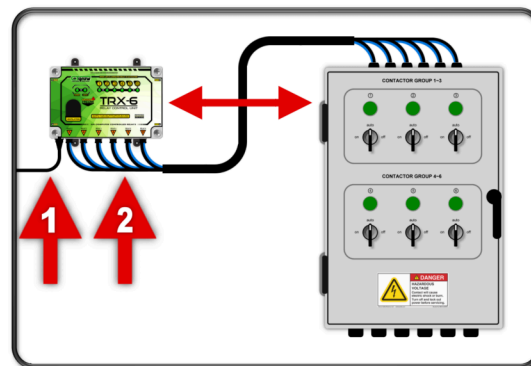

Figure 4.0.3

TRX-6 Pilot Relay unit

04. TRX-6 Unit installation procedure (part 2)

IMPORTANT INSTALLATION NOTICE !! **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

2. Opening the TRX-6 unit cover lid (part 1)

To access the inside connector panel of the TRX-6 unit, you will need to unscrew the four plastic screws that secure the cover-lid. **(See Figure 4.0.4)**

These screws are located on all four corners of the cover-lid. By carefully turning them counterclockwise, you can release the cover-lid and gain access to the unit's internal components. **(See Figure 4.0.4-1)**

Take care to unscrew all four plastic screws evenly to prevent any damage to the cover-lid or the unit itself. Once all the screws have been removed, you can carefully lift the cover-lid off the TRX-6 unit, providing you with access to the inside connector panel. **(See Figure 4.0.4-1)**
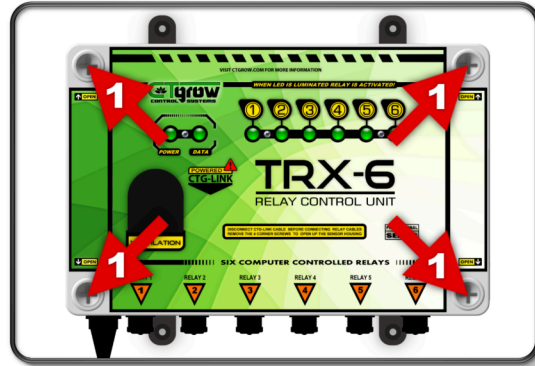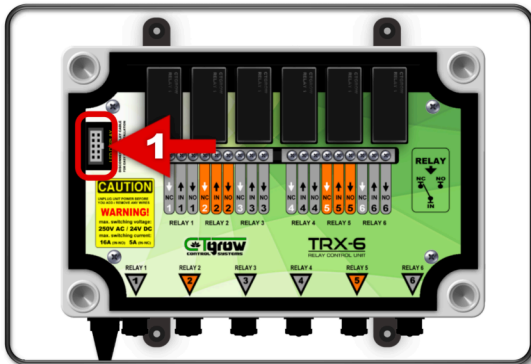

Figure 4.0.4

Figure 4.0.5

After unscrewing the TRX-6 cover-lid, carefully lift it off to gain access to the unit's interior. Disconnect the black flat-cable connector from the display, which is located on the right side of the unit's interior **(See Figure 4.0.5-1)**.

To ensure a smooth and secure disconnection, gently wiggle and detach the display connector, taking great care not to cause any damage to the connector or the cable. It is crucial to handle these components delicately to maintain their integrity **(refer to Figure 4.0.5-1)**.

It is advisable to store the TRX-6 cover-lid in a secure location until the entire wiring process of the unit has been completed. This will help prevent any accidental damage or misplacement of the cover-lid **(see Figure 4.0.5-1)**.

Upon opening the unit, you will find the six replaceable relays located on the top side **(see Figure 4.0.6-1)**. The relays are easily accessed for replacement or maintenance.

Below the relays, you will find the screw terminals for the relay connections **(see Figure 4.0.6-2)**. The screw terminals provide a secure and convenient way to connect all the required wiring to the relays, ensuring reliable and stable electrical connections. **(see Figure 5.0.6-2)**.

If you have any doubts or concerns about the wiring process, it is highly recommended to seek the assistance of a qualified electrician. They possess the knowledge and expertise to guide you through the installation, ensuring that all safety measures are followed and in compliance with safety regulations.
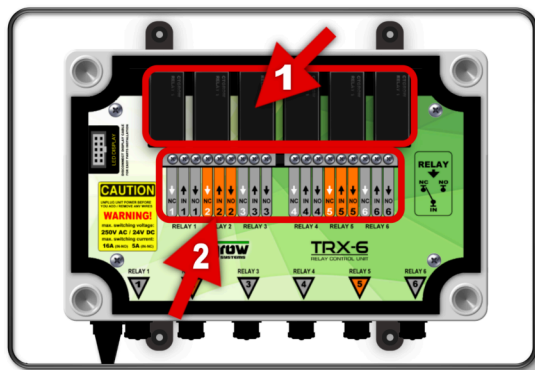

Figure 4.0.6

TRX-6 Pilot Relay unit

05. Contactor wiring procedure (part 1)

IMPORTANT INSTALLATION NOTICE !!   **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

1. Basic relay wiring (Normally Open)

It is crucial to understand that the TRX-6 relay's have limitations when it comes to controlling high-power or inductive/capacitive devices, such as High Power HID lights or electrical motors. In such scenarios, the TRX-6 acts solely as an electrical pilot switch, responsible for controlling a separate remote heavy-duty switch known as an industrial contactor **(refer to Figures 5.0.2 and 5.0.3).**

Always refer to the documentation and guidelines provided by the contactors manufacturer. It contains important information regarding proper wiring, operating voltages, and maximum load capacity. Following these instructions is essential for safe and effective installation and operation.
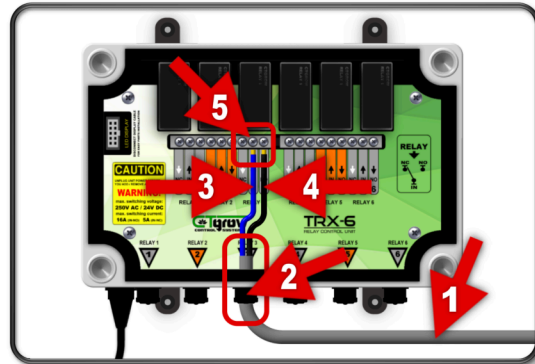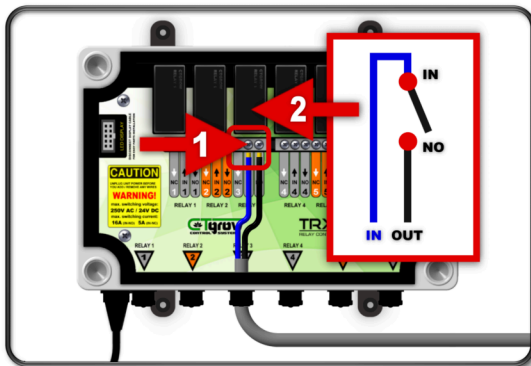

Figure 5.0.1

In this wiring example, we will demonstrate the step-by-step process of connecting and utilizing the TRX-6 relay number (3) in a basic on/off setup to control an industrial contactor for high power electrical installations.

This procedure can be used for any available relay. To begin, loosen the black cable gland to create a passage for the electrical control wires/cable (See Figure 5.0.1-1/2).

Carefully guide the cable/wires through the cable gland **(refer to Figure 5.0.1-1/2)**, ensuring a clean and secure installation. Once the cable/wires are inside the unit, securely close the cable gland to firmly hold them in position **(refer to Figure 5.0.3-2)**.Next, locate the appropriate screw terminal for the relay switch **(See Figure 5.0.1-5).**

Figure 5.0.2

Insert the incoming **(blue)** wire into the **(3-IN)** terminal **(See Figure 5.0.1-3 and 5.0.3-2)**, and secure it in position by rotating the terminal screw clock-wise **(See Figure 5.0.1-5).**

Next take the **(black)** return wire and inserting it into the available **(3-NO)** terminal **(See Figure 5.0.1-4 and 5.0.3-1).** and secure it in position. **(See Figure 5.0.1-5).**

Once the wiring is completed, the relay will function as a simple on/off switch **(See Figure 5.0.2-1/2).** When the relay is activated (ON), it connects the two wires together, allowing the current to flow through the circuit. **(See Figure 5.0.2-1/2).**

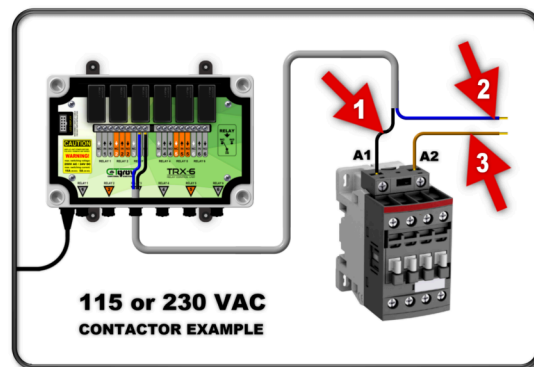**115 or 230 VAC**
CONTACTOR EXAMPLE

Figure 5.0.3

TRX-6 Pilot Relay unit

05. Contactor wiring procedure (part 2)

IMPORTANT INSTALLATION NOTICE !! **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

2. Single-phase (NO) contactor explained

In horticultural and greenhouse environments, contactors play a crucial role in maintaining control over electrical equipment while ensuring optimal performance and safety.

By utilizing the TRX-6 relay unit as an electrical pilot switch for an industrial contactor, you can safely and reliable control of high-power devices within your electrical installation **(see Figure 5.0.4-1/2).**

Whether it's controlling large motors, heavy machinery, or other high-power equipment, contactors offer the necessary load capacity and functionality to handle the demanding requirements of such devices. **(see Figure 5.0.4-1/2).**
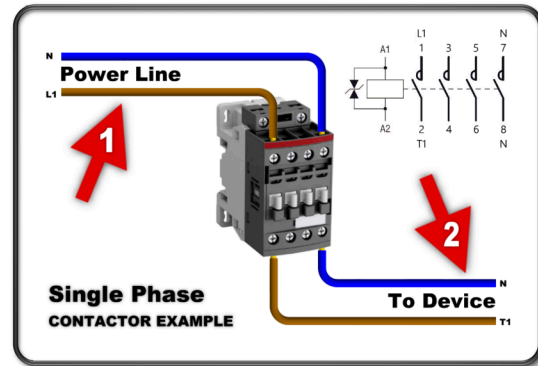

Figure 5.0.4

Single-phase contactors are commonly used to control light motors, small lighting circuits, air conditioning units, and other similar loads. **(see Figure 5.0.6-1/2).**

Multi-phase contactors are specifically designed to handle lines with Multi-phase power, which is commonly found in industrial and commercial settings. **(see Figure 5.0.7-1/2).**

By incorporating contactors into your electrical system, you can manage the power supply to various equipment, ensuring the smooth operation of your horticultural or greenhouse setup. Whether it's controlling lighting systems, ventilation fans, or irrigation pumps, contactors provide a dependable means of switching power on and off, allowing for precise control and efficient operation.
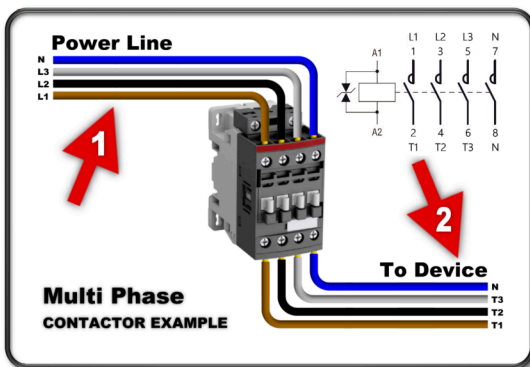

Figure 5.0.5

To enhance safety, contactors are often bundled and installed within electrical control cabinets. These cabinets serve as centralized control centers, providing a designated space for housing and organizing the contactors along with other electrical components. **(see Figure 5.0.6).**

Agricultural control cabinets typically also feature switches that allow for manual on/off or automatic configurations, providing flexibility in managing the electrical system. This enables operators to easily control the equipment, activate or deactivate specific devices, and implement automation based on predetermined settings. The bundling of contactors within control cabinets not only facilitates a more organized and accessible wiring system but also simplifies maintenance and troubleshooting procedures. **(see Figure 5.0.6).**
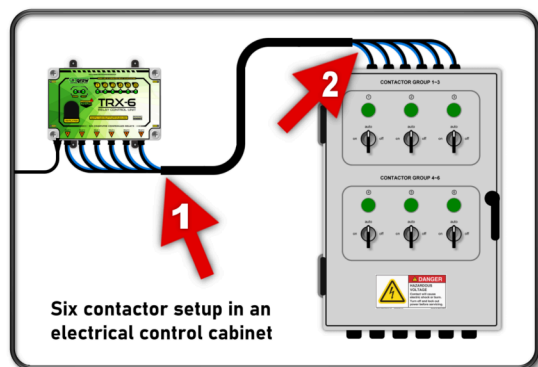

Figure 5.0.6

If you have any uncertainties, it is recommended to consult a qualified professional electrician. Always refer to the relevant documentation and follow the guidelines provided by both this TRX-6 manual and the industrial contactor manufacturer for proper wiring, operating voltages, and maximum load.

TRX-6 Pilot Relay unit

06. Trigger-wire setup procedure (part 1)

IMPORTANT INSTALLATION NOTICE !!   DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!

1. Basic Trigger-wire setup (Normally Open)

Some electrical devices, particularly those designed for remote industrial or automated control, come equipped with a remote trigger port or terminal. This feature allows for simplified wire control, enabling the device to be easily integrated into larger systems or controlled from a centralized location. **(See Figure 6.0.3)**.

For example, devices like De-humidifiers or fan-speed controllers may include a remote trigger port/terminal to enable external control over their operation. By connecting the TRX-6 relay unit to these devices using the trigger wiring configuration, you can effectively control their functions and settings remotely, without the need for manual interaction with each individual device. **(See Figure 6.0.2 and 6.0.3)**.
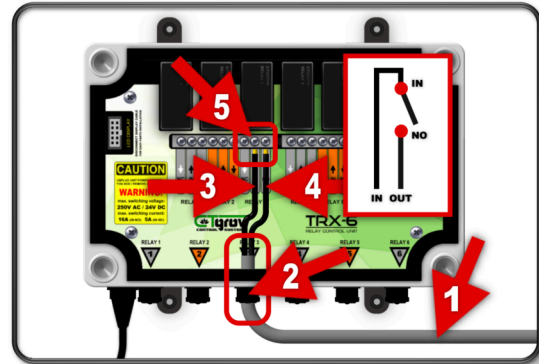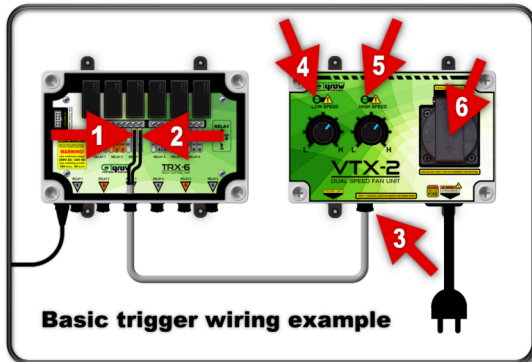

Figure 6.0.1

In this trigger-wiring example, we will connect and use relay number 3 for a basic on/off trigger port setup that will control a device like a De-humidifier or as in this case a CTgrow VTX-2 fan-speed controller. **(refer to Figure 6.0.2)**.

Start by loosening the cable gland to allow the electrical control wires/cable to pass through the correct cable gland Next, guide the cable/wires through the cable gland, Once the cable/wires are inside the unit, securely close the cable gland to lock them in position. **(see Figure 6.0.1-1/2)**.

Figure 6.0.2

Locate the corresponding **(IN)** and **(NO)** terminal screws for the relay switch. The two terminal connectors can be opened easily by rotating the terminal screws in a counter-clockwise direction **(see Figure 6.0.1-5)**.

Take the incoming wire and insert it into the **(IN)** terminal **(see Figure 6.0.2-1)**. Make sure that the wire is fully inserted and tightened within the terminal **(see Figure 6.0.1-5)**. Next, take the return wire and insert it into the available (NO) terminal and lock it in place **(see Figure 6.0.3-4)**.

From this point, whenever the relay switch is set to the (ON) position from within the CTgrow controller's dashboard software, it will activate the connected trigger device, such as the CTgrow VTX-2 fan-speed controller, to perform a preset task, like changing the fan speed from low to high.

This trigger-wire configuration provides a easy, convenient and reliable means of controlling remote industrial devices, allowing you to easily manage their operations using the CTgrow controller's software interface.
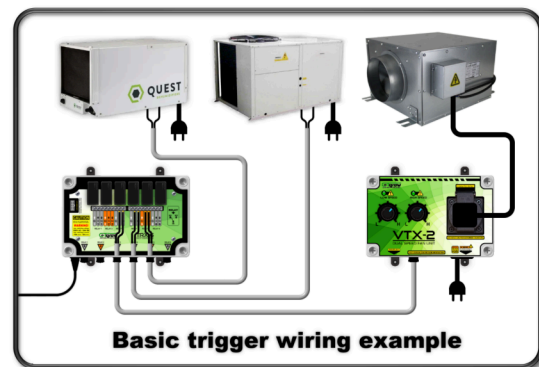

Figure 6.0.3

If you have any uncertainties, it is recommended to consult a qualified professional electrician. Always refer to the relevant documentation and follow the guidelines provided by both this TRX-6 manual and the device manufacturer for proper remote trigger wiring.

TRX-6 Pilot Relay unit

07. Direct device wiring procedure

IMPORTANT INSTALLATION NOTICE !!   **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

1. Directly control electrical devices

With the TRX-6 relays, you have the flexibility to automate and control various small electrical devices directly from within in your CTgrow system, without the need for a special control cabinet. With a maximum load capacity of **500 watts** per individual relay, the TRX-6 can effectively manage the operation of small regular electrical devices up to 250 VAC.

This includes various electrical devices such as small aquarium heaters, incubator heating mats, and more. A good example of such a small electrical device is a 230V-powered dosage pump. These dosage pumps are generally used to control the precise dosing of nutrients or pH regulator liquids in a irrigation reservoir. **(See Figure 7.0.1).**
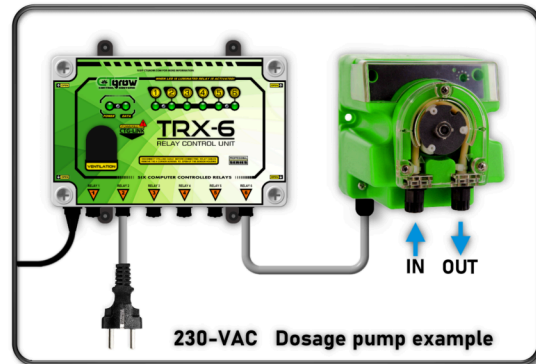

IN   OUT

230-VAC   Dosage pump example

Figure 7.0.1

230-VAC   Dosage pump example

Figure 7.0.2

2. Wiring an small electrical device (Part 1)

Before proceeding, ensure that the device is disconnected from any power source and does not exceed the maximum load capacity of 500 watts.

In order to prepare the devices electrical setup, begin by cutting off the electrical cable plug (if available) of the device. Carefully strip the insulation of the cable to expose approximately 6 to 10 cm of electrical wires. Use wire strippers or a similar tool for this task. Take caution to avoid damaging the wires within. **(See Figure 7.0.2-1/3).** Next, take an electrical cable with a power plug that is long enough to reach a nearby power outlet for permanent use. **(See Figure 7.0.2-4).**
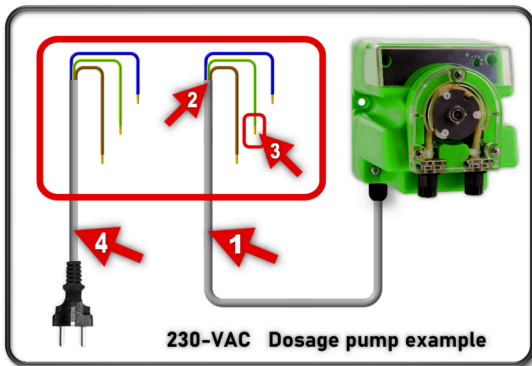
Once the TRX-6 unit is opened, you can proceed to feed the power cable coming from the device into the corresponding TRX-6 cable gland and fasten it. **(See Figure 7.0.3-1).**

Next, take the brown (Line) wire from the device cable and connect it to a separated terminal block. **(See Figure 7.0.3-2).** If available, Do the same for the grounding cable (green / yellow) **(See Figure 7.0.3-3).** Next, take the blue (Neutral) wire from the device cable and connect it to the (NO) wire terminal on the TRX-6 unit. **(See Figure 7.0.3-5/7).**

Next, obtain a piece of (black) wire, and connect one end to the (IN) terminal on the TRX-6 unit **(See Figure 7.0.3-6/7).** Route the other end of the black switch wire to a separated terminal block. **(See Figure 7.0.3-5).**
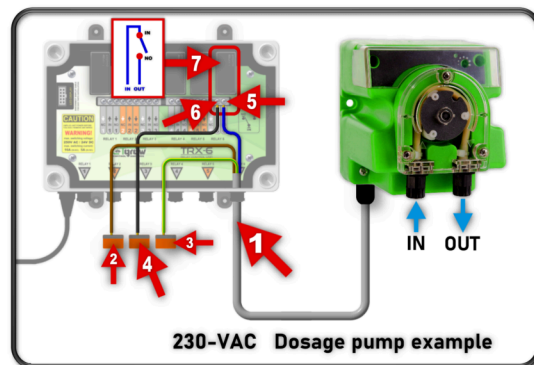
Continue to page 11 for more information!

IN   OUT

230-VAC   Dosage pump example

Figure 7.0.3

TRX-6 Pilot Relay unit

07. Direct device wiring procedure

IMPORTANT INSTALLATION NOTICE !! **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

2. Wiring an small electrical device (Part 2)

To complete the wiring setup of a single small electrical device within the TRX-6 unit, follow these steps:

Feed the power cable through any available cable gland on the TRX-6 unit and securely fasten it **(See Figure 7.0.4-1).** Connect the brown (Line) wire from the power cable to the terminal block already connected to the device's brown (Line) cable **(See Figure 7.0.4-3).**

Next, connect the green/yellow (Ground) wire from the power cable to the ground terminal block already connected to the device's ground wire **(See Figure 7.0.4-2).** Finally, connect the remaining blue (Neutral) wire from the power cable to the terminal block connected to the black (switch) wire **(See Figure 7.0.4-4).**
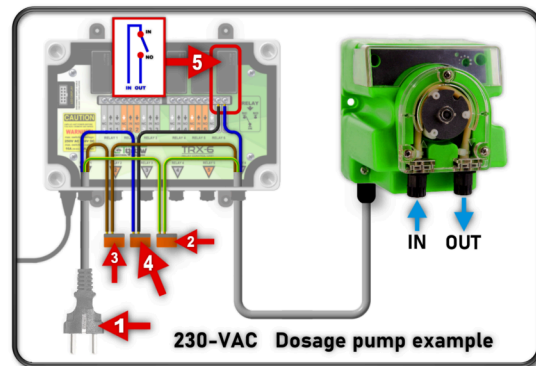

IN OUT

230-VAC Dosage pump example

Figure 7.0.4

After making all the wire connections, carefully fold the wire terminals to fit within the TRX-6 unit. Ensure that all connections are properly tightened to prevent any potential hazards. Finally, close the unit for safety reasons.

Once you plug the power plug into a wall outlet, you can control the device, such as the example pump mentioned, by turning the corresponding relay on or off using the controller software. **(See Figure 7.0.4-5).**

3. Wiring additional small electrical devices

To add additional small electrical devices to the TRX-6 unit, you can follow a similar procedure as mentioned before, with the only difference being that you don't need to add an extra power cable. **(See Figure 7.0.5).**
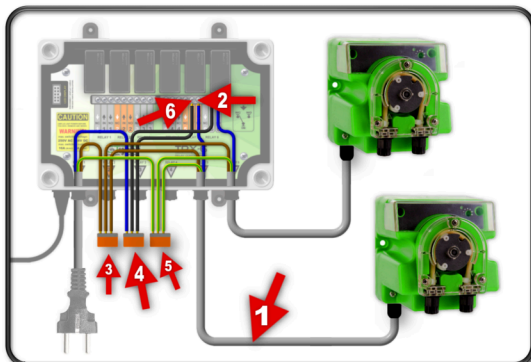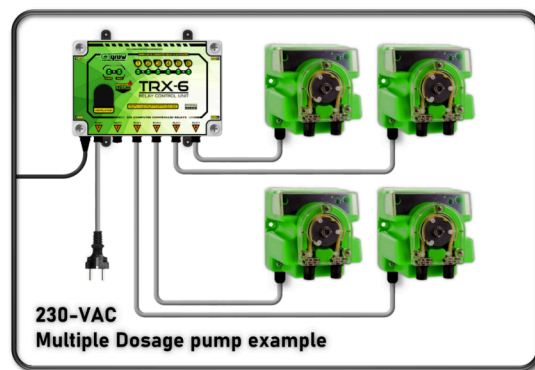

Figure 7.0.5

Let's take the additional device and wire it **(See Figure 7.0.5).** Connect the wires from the additional device to their corresponding terminals or relay positions on the TRX-6 unit. Follow the color-coding **(See Figure 7.0.5-3/6)** to connect the wires.

Repeat this process for each additional small electrical device you want to connect, following the same procedure and referring to the specific wiring example for each device.

By following these steps, you can easily add additional small electrical devices to the TRX-6 unit. **(See Figure 7.0.6)**

Remember to adhere to proper wiring practices and consult the provided wiring documentation or diagrams, such as the example shown in Figure 7.0.5, to ensure correct and safe connections.

230-VAC
Multiple Dosage pump example

Figure 7.0.6

TRX-6 Pilot Relay unit

08. Advanced wiring (relay bridging)

IMPORTANT INSTALLATION NOTICE !! **DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!**

1. Wiring two relays together (relay bridging)

By combining two or more relays together, you can expand the capabilities of controlling electrical devices to achieve a much wider range of control parameters. This advanced wiring technique, known as relay bridging, unlocks new possibilities for configuring trigger cables, contactors, or direct device control **(see Figure 8.0.2).**

In this specific example of dual relay trigger wiring, we will utilize two relays to effectively control a single device based on two individual programmable parameters.

By programming the desired settings for both relays on the system dashboard, you can ensure that the connected device operates only when both relays are activated or turned on **(see Figure 8.0.2-3).**
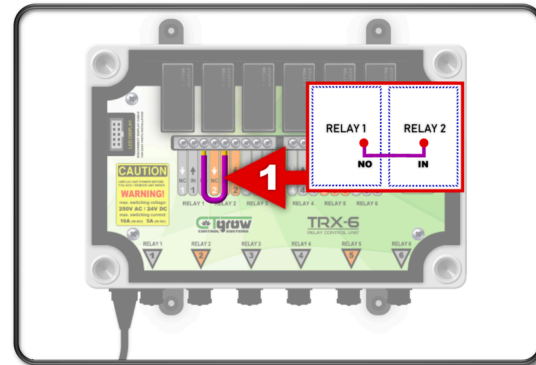

Figure 8.0.1

Figure 8.0.2

To begin the relay bridge wiring procedure, we will connect two relay terminals together using a suitable piece of electrical wire **(refer to Figure 8.0.1-1).** Firstly, locate the terminal screws for **relay-1 (NO)** and **relay-2 (IN)** on both relays. Carefully loosen their terminal screws, creating an opening for the wire connection.
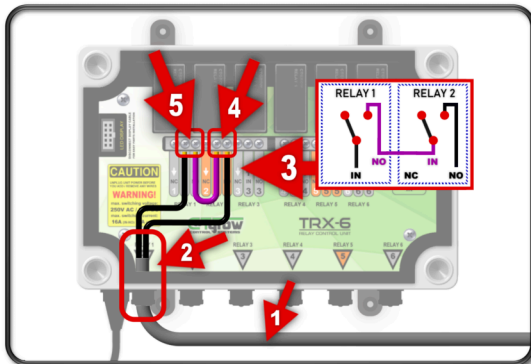
With both the terminal screws opened, proceed to insert the (purple) bridging wire **(see Figure 8.0.1-1)** into the terminals, ensuring a secure and proper connection. Once inserted, fasten the terminal screws to firmly hold the bridging wire in place **(see Figure 8.0.1-1).** To finalize this bridge connection, take the two black trigger wires that come from the trigger cable **(See Figures 8.0.2-1/5)** and connect one end of the black trigger wire to the **relay-1 (IN)** terminal and the other

end of the trigger wire to the **relay-2 (NO)** terminal **(refer to Figures 8.0.2-3/4/5).** To ensure reliable optimal operation, it is crucial to secure and tighten the connections properly. By following the steps above, you will successfully initiate the relay bridge wiring, enabling synchronized control and enhanced functionality of your connected electrical devices.

If you need to use three or more bridging options, simply repeat the same procedure described earlier. Follow the steps mentioned previously to establish additional bridging connections. By extending the wiring process and replicating the steps, you can create multiple bridge connections, expanding the control capabilities of your system. **(see Figure 8.0.1-1).**
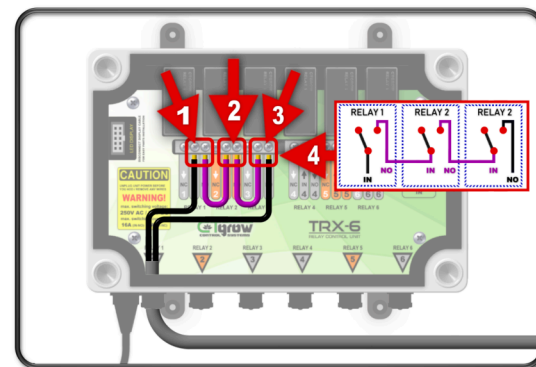

Figure 8.0.3

If you have any uncertainties, it is recommended to consult a qualified professional electrician. Always refer to the relevant documentation and follow the guidelines provided by both this TRX-6 manual and the industrial contactor manufacturer for proper wiring, operating voltages, and maximum load.

TRX-6 Pilot Relay unit

08. Advanced wiring (Directional control)

IMPORTANT INSTALLATION NOTICE !!   DO NOT MOUNT ANY OF THE PRODUCTS BEFORE READING THE FULL INSTALLATION PROCEDURE !!

1. Directional 2-way control wiring

The TRX-6 relays offer a versatile solution for controlling directional devices such as motorized greenhouse windows, blackout systems, valves, pumps, and solar screens.

3-wire control cables are commonly used in various directional automation systems, ventilation management systems, industrial control systems, and similar applications where directional control is required **(See Figure 8.0.4-3)**.

By integrating the TRX-6 relays with the 3-wire cables, you can effectively manage the movement and functionality of directional devices, ensuring synchronized control and enhanced operation **(See Figure 8.0.4-1/3)**.
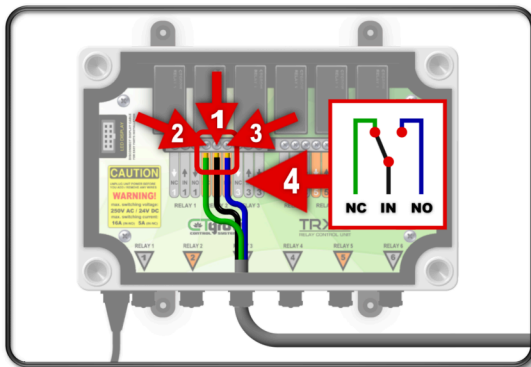

Figure 8.0.4

Figure 8.0.5

2. Basic 2-way (Open/Close) wiring

The TRX-6 relays enable easy control of window and screen opening or closing by connecting the relay's IN terminal to either the NC (Closed) or NO (Open) terminals. This setup is ideal for automating electrical greenhouse windows and solar screens. **(See Figure 8.0.4-3)**.

To begin, connect the black wire that is representing the control/signal to the **(IN)** terminal **(See Figure 8.0.4-5)**. Next, connect the blue wire (indicating the open or up position) to the **(NO)** terminal and secure the connection **(See Figure 8.0.4-5)**. Finally, attach the green wire (representing the close or down position) to the **(NC)** terminal **(See Figure 8.0.4-5)**. These steps will enable you to open or close your windows or screens by activating or De-activating the relay.

3. (Open/Close) wiring with (Open) protection

To protect directional window and screens from any unwanted opening, additional protective measures can be implemented. For instance, when using a CTgrow weather station that detects rain or high wind speeds, this setup becomes ideal for automating and weather-protecting greenhouse windows **(see Figure 8.0.6-5)**.

In this wiring demonstration, we utilize the first relay to basically control the windows, and the second relay is exclusively activated (opening the window) when the relay's settings permit it, ensuring that window opening only occurs under specific criteria. For more comprehensive details or specific information on special wiring requirements, please feel free to contact CTgrow's customer service at ctgrow.com
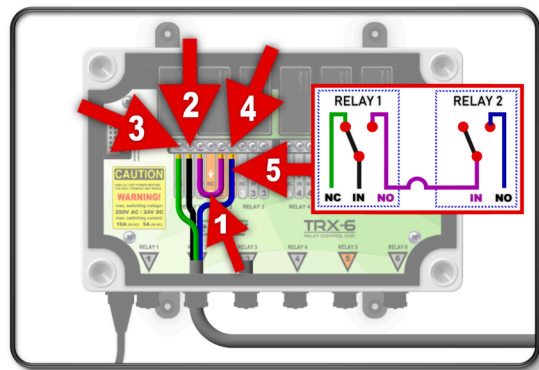

Figure 8.0.6

TRX-6 Pilot relay Unit

09. TRX-6 Connection & dashboard setup (part 1)

01. Setup the TRX-6 on the system dashboard

Adding the TRX-6 pilot relay unit to a CTgrow controller is a straightforward process. You can connect up to 4 relay units in total to a CTgrow controller. If you need to connect a TRX-6 pilot relay unit, simply follow the steps outlined on this page for each unit until the TRX-6 unit is connected and functioning.

The connected TRX-6 pilot relay unit will be automatically recognized and displayed in room 1 on the controller's dashboard. To add more TRX-6 units to the controller, repeat this procedure step by step until all units are installed correctly. To begin, please ensure that the system controller is powered on **(See Figure 9.0.1-1)** and that the green active light is illuminated, indicating that the controller is operational **(See Figure 9.0.1-2).**
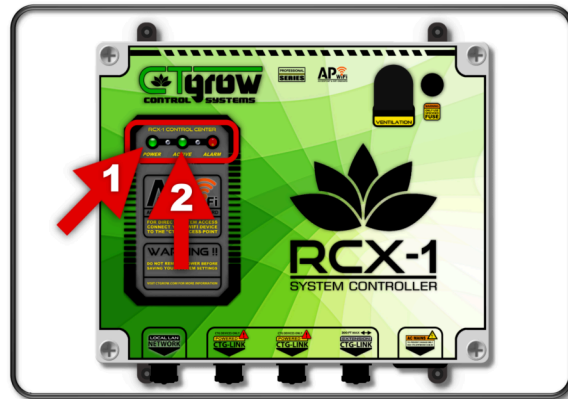

Figure 9.0.1

Once your new TRX-6 unit has been securely mounted in its designated location, as per the instructions provided in the previous chapter in this manual, you can proceed to connect it to the Master controller **(See Figure 9.0.2-1/2).**

Carefully remove the waterproof protection cap from one of the two on-board **POWERED CTG-LINK** port on the controller. Be carefully to avoid any damage to the connector or the controller itself. **(See Figure 9.0.2-1).**

Gently and unscrew the cap counter-clock wise. It is recommended to use clean and dry hands to prevent any moisture or debris from coming into contact with the connector, as this may affect the performance or longevity of the pilot relay unit and the controller.
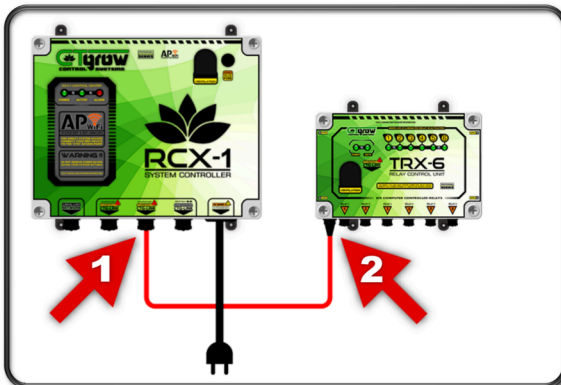

Figure 9.0.2

Gently plug in and fasten the **POWER CTG-link** connector provided with the TRX-6 pilot relay unit, **(See Figure 9.0.3-1)** into a **[POWERED CTG-LINK]** ports on the controller, as shown in **(See Figure 9.0.3-1).** Ensure that the connection is tight and secure, but avoid to over-tighten to prevent any damage to the connector or the connector port.

TIP!! Make sure that the TRX-6 pilot relay unit's screw connector is straight on the treads when you start to fasten it. If you cant get the connector straight on to the **[POWERED CTG-LINK]** port, try turning it the opposite direction for a few turns until you feel a click, then try to screw it straight back on again!
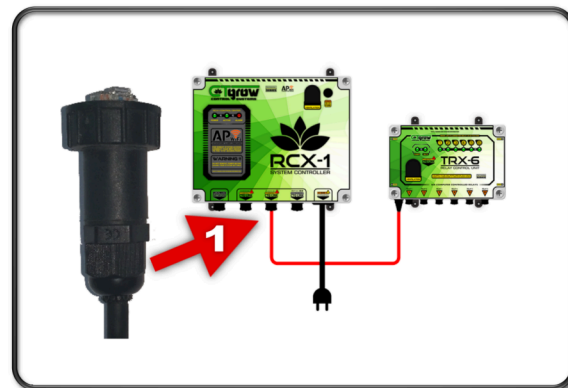
See the next page for more information!

Figure 9.0.3

TRX-6 pilot relay Unit

09. TRX-6 Connection & dashboard setup (part 2)

02. Adding a pilot relay unit to the dashboard

When installing a new TRX-6 unit, it is crucial to also follow the specific installation recommendations outlined in the System controller's manual. Each controller may have unique procedures to follow.

Once the pilot relay unit has been successfully connected to one of the controller's powered CTG-LINK ports, the power light on the TRX-6 pilot relay unit should turn on **(see Figure 9.0.4-1)**. Keep in mind that it may take up to 30 seconds for the controller to fully recognize and install the TRX-6 pilot relay unit. Once the TRX-6 starts transmitting data to the controller, the green data LED should light up for one second every few seconds. **(see Figure 9.0.4-2)**.
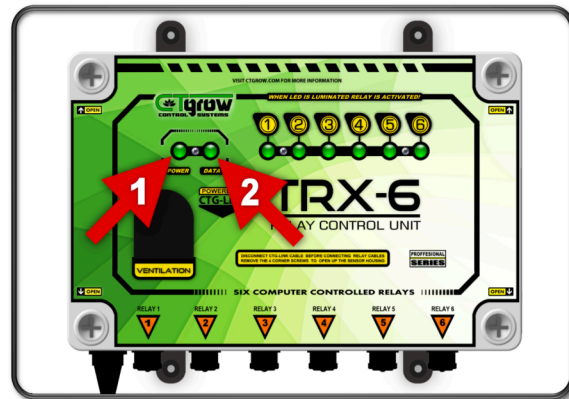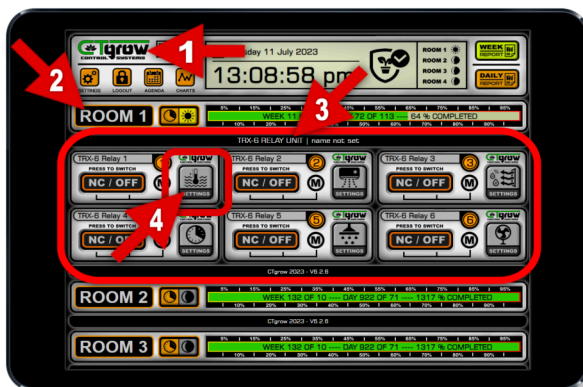

Figure 9.0.4

To confirm that the TRX-6 pilot relay unit is functioning properly, you can refresh the controller's dashboard by clicking on the CTgrow logo on the top left corner of the screen, **(See Figure 9.0.5-1)**. Once the TRX-6 unit is detected, it will be automatically added to room/zone-1 and shown on the dashboard. **(See Figure 9.0.5-2/3)**

To access the pilot relay settings menu, simply locate and press the [pilot relay menu] button on the pilot relay This button can be found on all relays. **(See to Figure 9.0.5-4)**.

From within the pilot relay menu, you will be able to easily configure and program each pilot relay according to your desired settings. Further details and instructions on programming the pilot relay will be provided in the next chapter. **(for more information see chapter 10)**

Figure 9.0.5

03. Change the relay unit's name and room

To access the TRX-6 pilot relay unit settings menu on the controller's dashboard, simply click on **[SETTINGS]** button **(See to Figure 9.0.6-1)** located on the left-hand side of the dashboard. Then, click on **[UNIT SETUP]** and select **[SWITCH UNITS]** to enter the pilot relay unit menu **(refer to Figure 9.0.6)**.

Within the pilot relay-unit menu, you can view all the connected pilot relay unit's numbers and models **(refer to Figure 9.0.6-2)** and customize the pilot relay unit's name **(See Figure 9.0.6-3)** and it's room assignment **(See Figure 9.0.6-4)**. To assign a new name and room for the pilot relay unit, enter the desired information and click save **(See Figure 9.0.6-9)**.
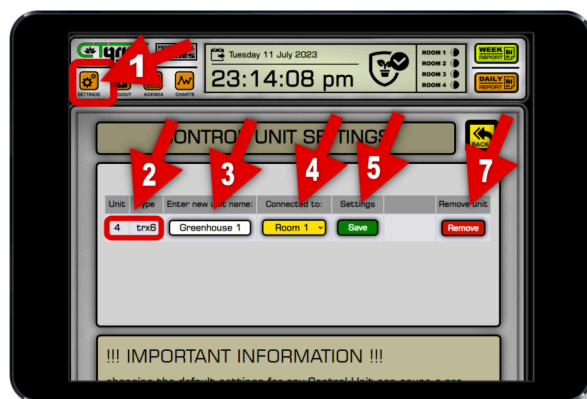
Continue to the next page!

Figure 9.0.6

TRX-6 pilot relay Unit

09. TRX-6 Connection & dashboard setup (part 3)

04. Permanently remove a pilot relay-unit

To ensure a safe removal of a TRX-6 pilot relay unit, it is crucial to prioritize safety by disconnecting any cables and wires that are attached to the TRX-6 unit.

Once all the cables and wires are safely disconnected, you can start with the unit removal. **(See Figure 9.0.8)**.

Start by accessing the switch unit settings menu and locate the specific TRX-6 pilot relay unit that you wish to remove or delete. **(See Figure 9.0.7-1)**.

Once you have located the unit, look for the **[REMOVE]** button associated with it. This button will be your key to removing the pilot relay unit. **(See Figure 9.0.7-1/2)**.
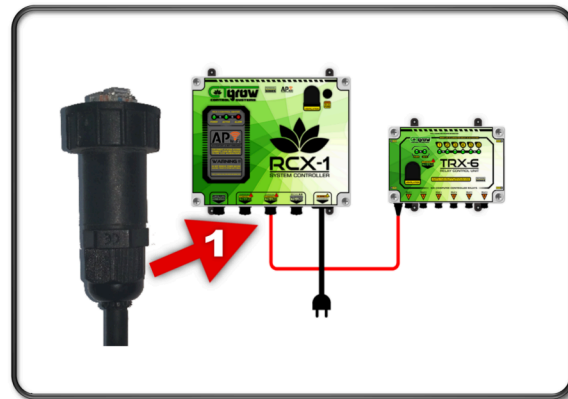

Figure 9.0.7

Figure 9.0.8

By pressing the **[REMOVE]** button, you will initiate the removal procedure. After pressing the **[REMOVE]** button, you will get a confirmation screen asking if you are sure to remove this unit **(See Figure 9.0.9-1)**.

This action will result in the permanent deletion of the TRX-6 unit from the dashboard, including all it's stored settings. During the removal process, exercise caution and ensure that all necessary precautions are taken to prevent any potential damage or accidents.

By following these instructions and emphasizing safety measures, you can confidently proceed with the removal of the TRX-6 pilot relay unit, knowing that you have taken the necessary steps for a successful operation.
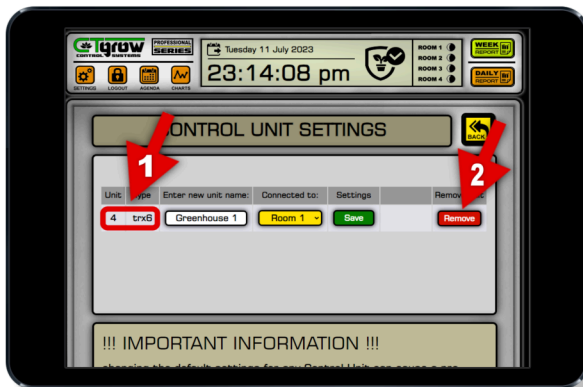
REMINDER!

To maintain proper protection against water damage, it is crucial to screw the waterproof caps back on any CTG-LINK PORT that is not in use. This precautionary measure ensures that the ports remain sealed and safeguarded against potential water damage.

When removing or deleting a pilot relay unit, it is important to be aware that all of its settings will be completely removed from the RCX-1 controller. This action should be approached with extreme caution, as it will result in the permanent deletion of the unit's settings. To avoid any potential loss of important settings, it is highly recommended to back up any critical configurations before proceeding with the removal or deletion of a pilot relay unit.

Figure 9.0.9

TRX-6 pilot relay Unit

10. TRX-6 relay setup and programming (part 1)

(Applies to all of the TRX-6 relay's)

01. TRX-6 dashboard functions explained

After successfully connecting the pilot relay unit to the system controller, it will become visible in the main dashboard **(See Figure 10.0.1)**.

Within the controller's dashboard, each of the six relays will be displayed with their respective names on top of the corresponding switch display **(See to Figure 10.0.1-1)**.

Pay attention to several other important indicators displayed on the dashboard. Of particular significance is the on/off position, which is clearly visible in green when the relay is activated (on) **(See Figure 10.0.1-2)**.

These dashboard functions provide essential information regarding the status and activation of the TRX-6 relays.

Figure 10.0.1

In manual mode, the operation of a relay switch is straightforward and can be done by pressing the on/off button **(refer to Figure 10.0.1-2)**.

To activate or deactivate a relay switch, simply press the button and wait for a second for the switch to refresh. Once switched, the color and state of the switch will change accordingly. **(See Figure 10.0.1-2)**.

It is important to note that switches will remain in their state after a system restart.

However, if a relay switch has been set to a programmed timer mode or is controlled by an attached sensor unit, it will be in a locked state. This locked state is indicated by the appearance of the lock symbol and the switch state **(See Figure 10.0.2-1/2 and Figure 10.0.3-1/2)**.
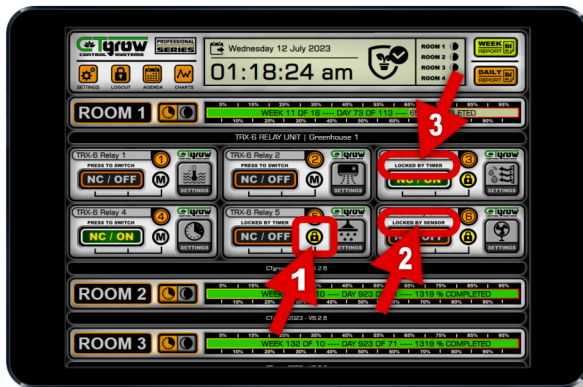

Figure 10.0.2

02. TRX-6 relay switch control menu (part 1)

The TRX-6 relay switches offer versatile control options, allowing you to operate them each in four different ways: **MANUAL** mode, dual **SENSOR** mode, **TIMER** mode, and **FOLLOW** mode.

To set up your relays for optimal operation, follow the procedure outlined below. This process applies to all six TRX-6 relays.

Access the relay switch control menu of the relay you want to configure by pressing the **[relay menu button]** on that particular relay **(See Figure 10.0.3-3)**. This will take you to the corresponding relay switch settings menu. menu, customize its name and icon, and ensure seamless operation according to your preferences.

Continue to the next page!

Figure 10.0.3

TRX-6 pilot relay Unit

10. TRX-6 relay setup and programming (part 2)

(Applies to all of the TRX-6 relay's)

02. TRX-6 relay switch control menu (part 2)

As mentioned on the previous page, you can enter the relay switch control menu by pressing the **[relay menu button]** **(see previous page Figure 10.0.3-3)** on the corresponding relay to enter it's settings menu.

From within the relay switch control menu there are several important factors to notice. First is the current switch mode that is presented in green **(See Figure 10.0.4-1)**. to change the relay switch mode simply press the preferred mode and start to set up your preferred settings. **(See Figure 10.0.4-1/4)**.

On the bottom side of this menu its possible to change the Relays name and select your preferred icon for it **(See Figure 10.0.4-5/6)**. once the save button has been pressed both the new name and the selected icon will become visible on the relay on the system dashboard.

03. TRX-6 relay switch modes explained

Within the TRX-6 relay switch control menu, you will discover four distinct control modes that offer a wide range of flexibility in managing the relays. **(See Figure 10.0.4-1/4)**.

These control modes cater to various automation needs, empowering you to achieve optimal and responsive control over your connected devices. Let's delve deeper into each of these modes:

Figure 10.0.4

MANUAL MODE: This mode grants you direct control over the relays, allowing for manual activation or deactivation according to your commands. With a simple press of a button, you can easily toggle the relays on or off, providing immediate control over your devices. **(See Figure 10.0.4-1)**.

SENSOR MODE: The Sensor Mode takes advantage of multiple sensor values to control the relays. By incorporating inputs from various sensors, such as temperature, humidity, motion, or light sensors, you can program the relays to respond and activate based on specific sensor readings. This mode enables automation based on environmental conditions, ensuring efficient and responsive device control. **(See Figure 10.0.4-2)**.

TIMER MODE: In the Timer Mode, the relays can be programmed to operate according to multiple timers. By setting specific time intervals or schedules, you can automate the activation or deactivation of the relays at predetermined times. Whether you need devices to turn on or off at specific hours or follow a cyclic pattern throughout the day, this mode provides precise control over the timing of relay operations. **(See Figure 10.0.4-3)**.

FOLLOW MODE: The Follow Mode, also known as Follow Room mode, allows the relays to synchronize with the programmed day and night cycles of the room. By aligning the relay operations with the natural lighting conditions, the relays automatically turn on during the programmed day period and switch off during the night period. This mode is particularly useful for applications where precise coordination with room lighting cycles is desired, promoting energy efficiency and seamless integration with the environment. **(See Figure 10.0.4-4)**.

By leveraging these four control modes, the TRX-6 relays offer exceptional versatility, enabling you to tailor the relay operations to meet your specific automation requirements. Whether you prefer manual control, sensor-based activation, timer-based scheduling, or synchronization with room lighting cycles, the TRX-6 relays empower you with the flexibility and precision needed for efficient device control and automation.
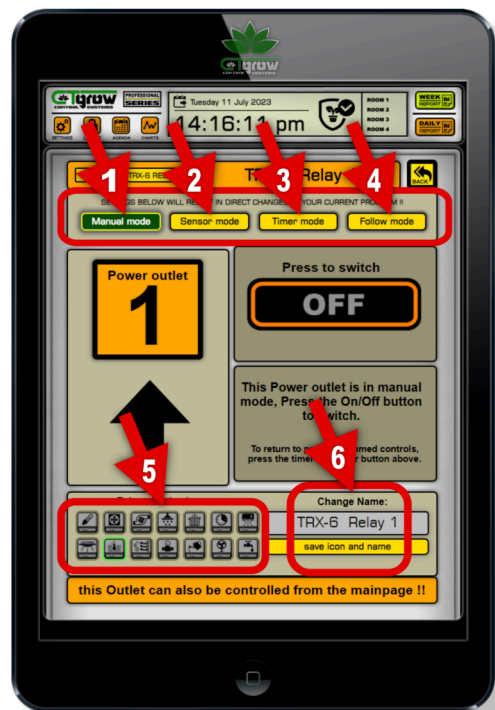
Continue to the next page

TRX-6 pilot relay Unit

10. TRX-6 relay setup and programming (part 3)

(Applies to all of the TRX-6 relay's)

03. TRX-6 sensor switch mode
NOTE !! (you need at least 1 or more sensor unit for this mode to work)

To enter the sensor mode, locate and press the **[SENSOR MODE]** button **(See Figure 10.0.5-1).**

In the sensor mode settings menu, click on the **[SELECT SENSOR 1]** field to view the list of connected sensors available in the system. Select the desired sensor from the list by clicking on it. This sensor will be used to control the relay's ON/OFF status based on its readings. **(See Figure 10.0.5-2).**

After selecting the sensor, go to the **[CONTROL SENSOR 1]** field and choose when you want the relay to turn ON from the provided menu **(See Figure 10.0.5-3).** The menu offers a range of control programs for you to select from, enabling customization of the relay's behavior based on the sensor readings.

If desired, you can set a control delay mode to prevent too frequent on/off switching of devices. Set the delay to a suitable value, considering the specific requirements of your setup. **(See Figure 10.0.5-4).**
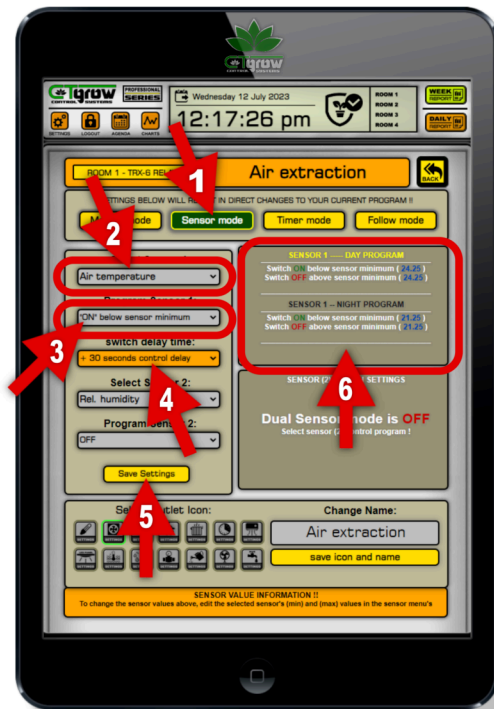

Figure 10.0.5

Once you have made the necessary selections, press the **[SAVE SETTINGS]** button to save the relay values for the sensor mode **(See Figure 10.0.5-5).** The system will directly display the pre-programmed sensor values, as well as the selected ON/OFF values on the right side of the screen **(See Figure 10.0.5-6).**

Carefully review these values to ensure they align with your desired operation. If any changes to the selected sensor's values are required, you need to access the corresponding sensor settings menu directly from the main system's dashboard.

04. Dual sensor switch mode
NOTE !! (you need at least 1 or more sensor unit for this mode to work)

To Program the corresponding relay with 2 sensors simply follow the same procedure as described above for the second sensor options **(See Figure 10.0.6).**

Once both sensors are programmed, the relay will switch to ON whenever at least one of the sensor values falls within the specified switch range. This means that if either of the sensors meets the criteria for the relay to activate, it will automatically do so **(see Figure 10.0.5-6 and Figure 10.0.6-1/4).**

Figure 10.0.6

TRX-6 pilot relay Unit

10. TRX-6 relay setup and programming (part 4)

(Applies to all of the TRX-6 relay's)

05. TRX-6 timer-based mode
NOTE !! (Make sure that the system clock is set up correctly!)

To configure a timer for a relay, Locate the **[TIMER MODE]** button on the relay control menu and press it to access the timer mode settings menu **(See Figure 10.0.7-1)**. In the timer mode settings menu, click on the **[ENTER ON TIME]** field to set the timer's ON time. This is the time at which you want the relay to switch ON. **(See Figure 10.0.7-2)**. Next, click on the **[ENTER OFF TIME]** field to set the timer's OFF time. This is the time at which you want the corresponding relay to switch OFF **(See Figure 10.0.7-3)**.

Finally, select the days of the week on which you want the timer to be active. This allows you to specify the specific days when the relay will follow the timer settings. **(See Figure 10.0.7-4)**. After entering all the timer settings, you can press the save button to confirm and save the timer settings. The set timer values will be displayed on the right side field for reference. you can set up to 24 timers per relay **(See Figure 10.0.7-6)**. The relay will now follow the programmed ON and OFF times on the selected days of the week. **(See Figure 10.0.7-6)**.
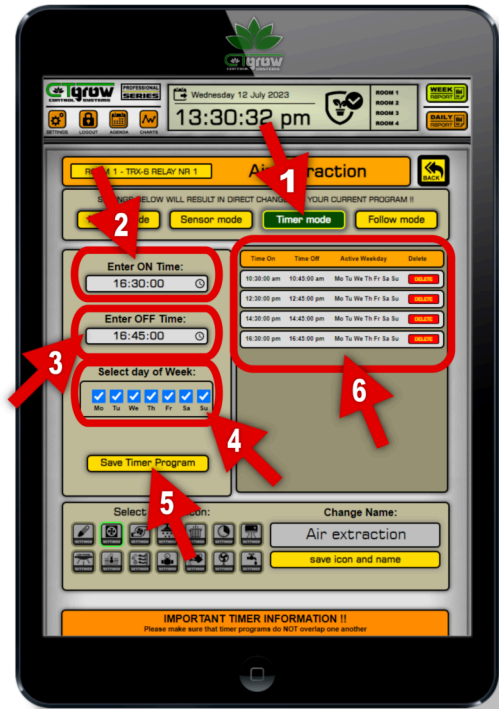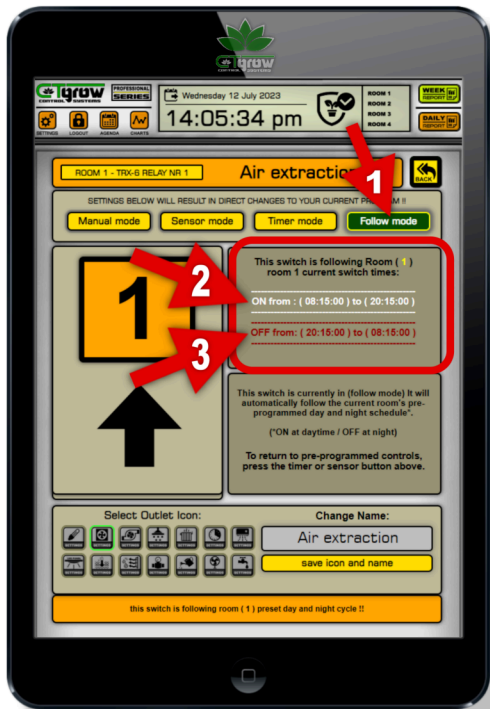
Figure 10.0.7

Figure 10.0.8

06. Follow mode (follow day-time program)
NOTE !! (Make sure that the system and room clock are set up correctly!)

The Follow mode, also known as the Follow Day-Time program, allows the corresponding relay to automatically synchronize its operation with the programmed day and night cycles of the room or zone it is currently located in.

The follow mode is particularly useful for controlling devices that should be activated during the daytime and deactivated during the nighttime. (for example artificial grow-lights)

Press the **[FOLLOW MODE]** button on the relay control menu and to open the follow mode menu **(See Figure 10.0.8-1)**. From this point the menu will refresh and automatically switch the relay according to the room/zone times **(See Figure 10.0.8-2/3)**.

To set up your system controller's room/zone times, please refer to the user manual provided with your specific controller. The user manual will provide detailed instructions and guidelines on how to configure the room/zone times according to your specific controller's features and settings.

TRX-6 Pilot Relay unit

11: TRX-6 Specifications and Dimensions

TRX-6 unit Specifications:

Unit name / model number	: TRX-6 relay control unit	: TRX-6 relay control unit
Dimensions HxWxD (unit only)	: ± 13.5 x 20.0 x 10.0	: ± 5.31 x 7.87 x 3.93 Inch
On-board relays	: 6x (independent controllable)	: 6x (independent controllable)
Relay Contact configuration	: 6x NO or NC	: 6x NO or NC
Single relay maximum AC load	: 15A, 250VAC (resistive load)	: 15A, 115VAC (resistive load)
Single relay maximum DC load	: 15A, 24VDC (resistive load)	: 15A, 24VDC (resistive load)
Relay contact material	: $AgSnO_2$ /TV-5 rated SPST-NO	: $AgSnO_2$ /TV-5 rated SPST-NO
Relay Safety standards	: UL, CSA, VDE, CQC (TV-5)	: UL, CSA, VDE, CQC (TV-5)
POWER-LINK Cable length	: ± 500 CM	: ± 15 Ft.
Working temperature	: 0°C ~ 70°C	: 32°F ~ 158°F
Operating voltage /	: unit is powered by controller / extender	: powered by controller / extender
Avg TRX-6 unit lifespan	: >5 years	: >5 years
TRX-6 unit Warranty	: 1 Year (excl. cables, relays)	: 1 Year (excl. cables, relays)