

Installation / Technician Instructions

The following Installer Instructions document contains instructions for the **Installer** of our **Products**. For your safety, and to keep your **Products** working most efficiently and as designed, encourage you to read these Installer Instructions carefully and thoroughly, and follow all instructions it contains. If you have any questions, please call us at 866-919-9092.

DEFINITIONS:

- **End User:** Refers to the person or persons who will ultimately use or are intended to use the **Product**. This typically refers to the owner(s) or user(s) of the recreational vehicle (RV) in which the **Product** is installed. All references to “you”, “your”, “owner” or “user” refer to the **End User** of our **Products**.
- **Distributor:** Refers to the party which purchases the **Product** from the **Manufacturer** and sells it to the **End User**. **Distributor** may be the recreational vehicle (RV) **OEM** or a party distributing **Product** on behalf of the **Manufacturer**.
- **Installation and User Guides:** Refer to all installation instructions and/or **End User** instructions provided with the unit from the **Distributor** or RV **OEM**, or available on the **Manufacturers** website. Most current **Product** information will be located on the **Manufacturers** website: www.SpyderTC.com.
- **Installer:** Refers to the individual or entity who installs the **Product** for **End User** use. This is typically the **Product** installation technician at the RV **OEM**, but in some cases could be an **End User**.
- **Manufacturer:** Refers to the party who designs, manufactures, and sells **Product** to the **Distributor**; or in some cases directly to the **End User**. In the context of this document, the **Manufacturer** is Spyder Controls Corp. for all **Product**. Any references to “Spyder Controls”, “Spyder”, “we”, “us”, and “our”, refer to the **Manufacturer**.
- **OEM:** Refers to the original equipment manufacturer of the recreational vehicle (RV) in which **Product** is installed.
- **Operator:** Any person or persons who uses the **Product** including any **Manufacturer**, **Distributor**, or sales staff, who operate the product other than the **End User**.
- **Product or Products:** Refers to all electronic components and related supplies which are made or supplied by the **Manufacturer**.
- **Terms and Conditions:** The agreed to specifications, procedures, use, and limitations, as well as all legal limitations or **Manufacturer** disclaimers; which by installation or use of any **Product**, the **Installer** and **End User** consent to and agree to abide by.
- **Terms and Conditions Placards:** All physical (labels) or electronic notification placed on **Product** to notify the **Installer** or **End User** of the **Terms and Conditions** for installation and/or use of the **Product**.
- **Third Party:** Refers to the manufacturers or suppliers of any parts other than those developed and supplied by Spyder Controls.

A. GENERAL REQUIREMENTS:

- 1) Documents and **Installation and User Guides** are updated periodically or on an as-required basis. **If you have not checked the Manufacturers Website for the latest documents, this document may be outdated, and new information may be available. You must check Manufacturers Website to verify that the most recent documents are being used.**

- a. Become completely familiar with the system, read all **Installation and User Guides**, and be familiar with all warnings, and limitations prior to operating any **Product**.
- 2) Failure to follow outlined specifications and warnings could lead to **Product** or RV damage, physical injury, or death. **Manufacturer** shall not be responsible for any unsafe acts or misuse of the **Product**.
- 3) **Product** must not be altered, and must not be used in violation of any code or legal requirement.
- 4) **Manufacturer** does not certify the **Product** to any regulatory or environmental standards[‡].
- 5) All trademarks and patents must be honored.
- 6) All **Terms and Conditions Placards** must remain permanently affixed to all **Product**[‡]. Removing these placards voids any warranty and liability associated with the **Distributor** and **Manufacturer**.
- 7) **Terms and Conditions Placards** may or may not be present on the **Product**, however all **Terms and Conditions** shall apply.

B. ELECTRICAL REQUIREMENTS:

- 1) Circuit protection must be used for DC power source for all **Product**, and must not exceed the maximum rating of the **Product**. External current protection is required, and must not exceed max operational current.
 - a. Fuses or breakers are to be of appropriate size and type, and secured in a way which is readily viewable and/or accessible.
 - b. Auto-reset breakers may not be used for circuit protection, unless appropriately de-rated and approved by **Manufacturer**.
 - c. All power to the **Product** must go through a single circuit protection device. **Product** is not to be used as a junction point with two power input sources.
- 2) **Product** must not be connected to loads that exceed output ratings[†].
- 3) **Product** supply voltage must not exceed voltage operating range[†]. This can include, but is not limited to, batteries, chargers, solar controls, and alternators.
 - a. Battery Placards outlining safety precautions are to be placed in a prominent place near the battery location(s).
- 4) Proper connector and/or proper ring size terminals must be used on all electrical connections.
 - a. All electrical connectors (ring terminals, spade terminals, pluggable connectors, etc.) are to be installed as per the connector **Manufacturer's** instructions.
- 5) Electrical connections on the **Product** must not be used as junction points to supply power or ground to other devices.
- 6) **Product** torque specifications[†] must be followed, verified, and marked for all threaded electrical attachment points using a calibrated torquing tool.
- 7) All wire gauge sizes must follow RVIA or more stringent governing standards.
- 8) All DC circuit wiring must use stranded copper wire.
- 9) Each electrical connection to **Product** must have correct polarity and must not exceed the rating(s) for the corresponding **Product** input/output.
- 10) Input signals must not be "stacked" and are not to be shared with other devices (Ignition, Park, etc.).
- 11) Electrical connections must be tested at the time of **Product** installation. The use of dielectric grease or other corrosion inhibitor is highly recommended at each electrical connection point that could be prone to corrosion.

- 12) Inductive loads such as DC motors, solenoids, etc. connected to the module must have clamping diodes installed as close to the device as possible to suppress voltage spikes.
- 13) Digital or analog inputs (rocker switch inputs, tank inputs, thermistors, etc.) must not exceed stated operating voltage ranges, as could be caused by inductive loads connected in parallel.
- 14) Multiple outputs from the **Product** must not be connected in parallel (using two or more outputs to drive one circuit), unless approved by the **Manufacturer**.
- 15) Devices present in the vehicle must not produce excessive electromagnetic interference (EMI), which could interfere with the **Product** operation, or **Product** readings such as tank levels, voltages, etc..

C. CAN-BUS / NETWORK REQUIREMENTS:

- 1) Proper CAN wiring practices must be followed, per RVIA / RV-C guidelines and standards.
 - a. Terminators must be used - two 120 Ohm terminators per network (in the case where a CAN Router is used, the entire network could have 8 or more terminators, but only 2 terminators per sub network are to be used).
 - b. Only **Manufacturer** approved network cable/connectors/taps may be used.
 - i. 3M mini clamp network connectors shall be used:
 1. Plug - 3M P/N: 37104-2165-000 FL 100
 2. Socket – 3M P/N: 37304-2165-000 FL 100
 - ii. 3M mini clamp network connectors cannot be reused.
 - iii. RV-C Cable Requirements
 1. RV-C trunk cable (16/20GA) – by the foot - Part # BSPL74400
 2. RV-C drop cable (24GA) – by the foot - Part # BSPL74600
 3. RV-C drop cable (24GA) 20’ Part # BSPLZL200-20
 4. RV-C drop cable (24GA) 30’ Part # BSPLZL200-30
- 2) Network power must only be used to power **Manufacturer** approved CAN Bus products.
- 3) **Installer** is responsible to ensure that the total power draw for all devices on a specific network does not exceed rated current of the network power source.
- 4) The network should have a single power source with suitable circuit protection.
- 5) For RF receivers, minimum RF signal strength requirement must be validated for each transmitter device paired to the **Product**.
 - a. Signal strength must be tested with the transmitter and receiver in their intended locations of use.
 - b. **Installer** is responsible to verify that the RF performance is not compromised by the **Product**'s surroundings in its intended locations of use.
- 6) Safety critical loads/devices should not be controlled via RF transmitters unless appropriate timeouts and safeties are enforced.

D. Product Suitability and Intended Use:

- 1) Each **Product** has been designed or adapted by the **Manufacturer** to a specific application, and should be used solely in applications where the **Manufacturer** understands the intended use, and has verified that the **Product** is suitable for this use.
- 2) Unless agreed to in writing by the **Manufacturer**, **Product** shall not be used for any unintended application or uses.
- 3) Any third-party system or component additions or changes (including hardware, software or firmware updates or changes) which interact with any **Manufacturers** system or **Products** are

done at your own risk and will not be the responsibility of the Manufacturer if there are any malfunctions.

- 4) **Manufacturer** shall not be liable for ANY unintended use of its **Products**.

E. OPERATING REQUIREMENTS:

- 1) Any load that causes or could cause movement, or could otherwise cause damage or injury must adhere to the following criteria. Such loads include, but are not limited to: slides, lifts, awnings, covers, and jacks.
 - a. Must only be operated by momentary controls (latching, timed or automatic controls must not be used),
 - b. Must only be operated where it can be seen from operating location,
 - c. For motorized RVs, loads such as, but not limited to: bunk lifts, slides, and awnings that could pose harm if they were to malfunction (during the vehicle being in motion or stationary) are to be on a physical lockout that completely removes power from the end controller device or load.
- 2) For motorized RVs, lockout safeties must be used for all dash shades that will prevent the dash shades from operating while the vehicle is in motion.
- 3) Heating & cooling must be mutually exclusive, and may not be used at the same time.
- 4) User accessible safety overrides are required for all critical systems, such as, but not limited to, slides, HVAC, etc.
- 5) PWM outputs (with variable duty cycle enabled) on **Product** must only be used with devices that are suitable to be controlled by PWM at **Product's** rated frequency[†].
- 6) Unless specifically noted, **Product** is not intended to be used in hazardous environments requiring fail-safe operation or in any unintended application where a failure or malfunction could lead to physical or environmental damage, personal injury, or death; and the **Manufacturer** specifically disclaims any express or implied warranty for the fitness of its designs to be used in these types of applications. The **OEM** shall be responsible for implementing fail-safe measures in cases where a failure could lead to physical or environmental damage, personal injury, or death.

F. PHYSICAL INSTALLATION AND ENVIRONMENTAL REQUIREMENTS:

- 1) **Product** must be secured with specified fasteners[†] and should be installed on a rigid flat surface that will not cause the **Product** to become twisted or deflected.
- 2) **Product** must adhere to torque specifications[†], and be validated using a calibrated torque wrench or device.
- 3) **Product** must only be installed in locations where it will not be exposed to liquids or moisture of any kind[‡].
- 4) **Product** must be installed in an easily serviceable location with full access to the **Product** requiring little or no tools.
- 5) **Product** must be installed with adequate ventilation to ensure the **Product** operates within the rated temperature range[†].
- 6) **Product** must not be installed in locations where it will be exposed to temperatures outside of the rated temperature range[†].
- 7) **Product** is not to be installed in a location where it is likely to be exposed to direct sunlight[‡].
- 8) **Product** is not rated for ignition protected applications and must not be used where combustible vapors or gases are present.

9) **Product** must not be installed where exposure to any type of corrosive substance is possible.

We thank you for taking the time to thoroughly read and adhere to these **Installer Instructions**. If there are any questions, please do not hesitate to contact us.

† As specified on **Product** or in **Product** datasheet

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