

Training Yard Control Panel

Bulletin 1100: User Manual



IMPORTANT USER INFORMATION

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Timpson Electrical & Aerial Services, LLC be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Timpson Electrical & Aerial Services, LLC cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Timpson Electrical & Aerial Services, LLC with respect to use of information, circuits, equipment, or software described in this manual.

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SUMMARY OF CHANGES

This manual may contain new and updated information.
Changes throughout this manual will be listed below:

| TOPIC | PAGE |
|-------------------------------|-------------|
| V2.0; re-write for v2 of unit | All |

NOTES:

Table of Contents

| | |
|---|----|
| 1. Users | 6 |
| a. Intended Users..... | 6 |
| b. Needs That This Unit Satisfies..... | 6 |
| 2. Operational Display..... | 7 |
| 3. Operator Descriptors | 13 |
| 4. Operational Sequence..... | 15 |
| a. System Pre-Check..... | 15 |
| b. System Usage..... | 15 |
| c. System Shut-Down..... | 17 |
| 5. System Alarms..... | 18 |
| a. Critical Alarms | 18 |
| b. Non-Critical Alarms | 18 |
| 6. Troubleshooting..... | 19 |
| a. Troubleshoot the Installation | 19 |
| b. Troubleshoot the Operation | 19 |
| i. Pilot Light Indication | 19 |
| ii. System Operation Issues..... | 20 |
| c. Determining the Software Version | 21 |
| 7. Warranty Statement | 22 |
| 8. Support..... | 24 |
| a. Installation Supervision and Start-Up & Commissioning..... | 24 |
| b. New Product Satisfaction Parts Return/Repair..... | 24 |
| c. Documentation Feedback..... | 24 |

1. Users

a. Intended Users

- This system is intended for the following users:
 - Linemen Trainer
 - Linemen Trainees

b. Needs That This Unit Satisfies

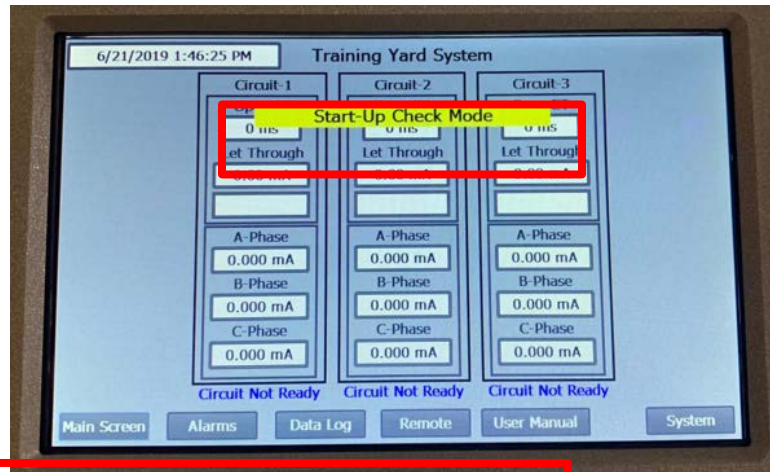
- Provides the Lineman trainer and trainee, with adequate real-world High-Voltage scenarios, while maintaining safety for the trainer, trainee, and the training integrity of the company.

2. Operational Display



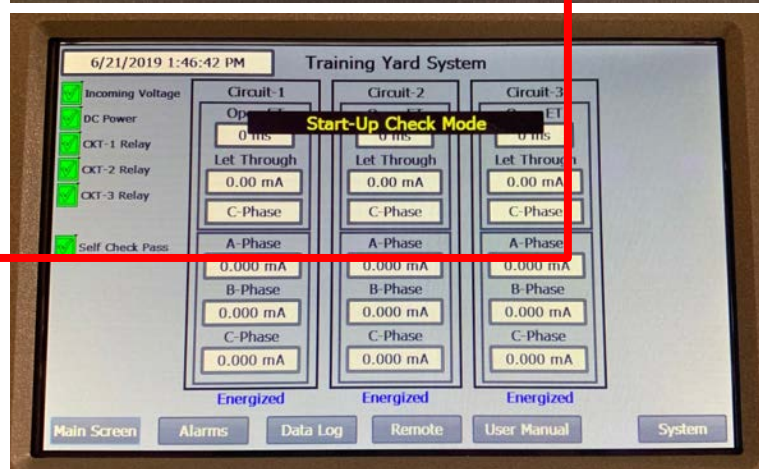
a.

HMI Boot Screen



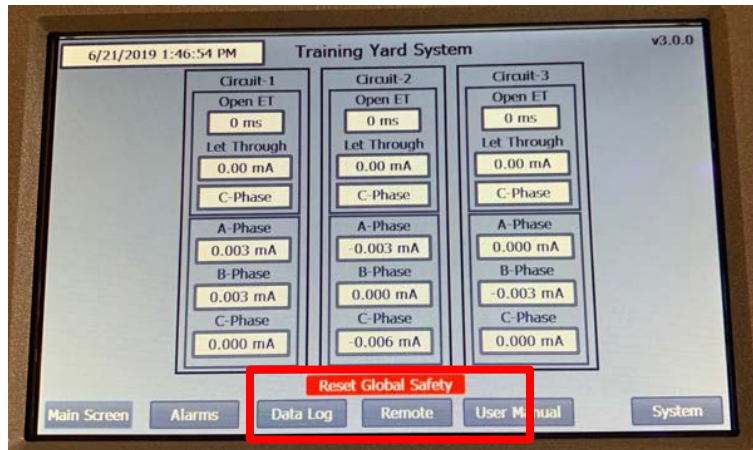
b.

System in Start-Up Mode. This mode performs a self-test on all safety components.



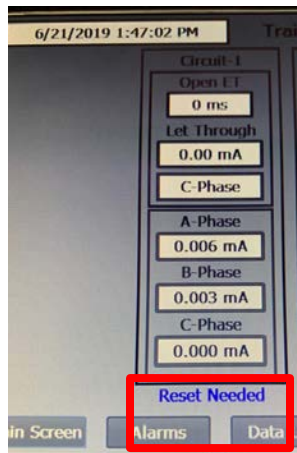
c.

Self-check complete and pass



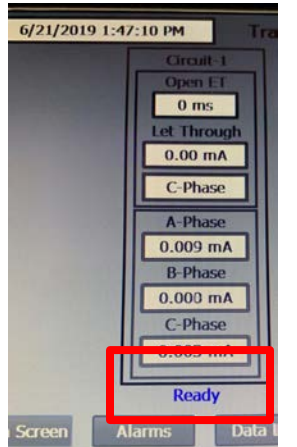
d.

Global Safety Reset Needed



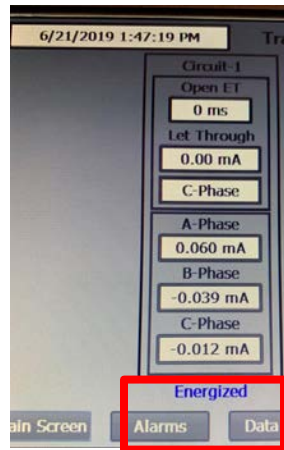
e.

Circuit-x Reset Needed



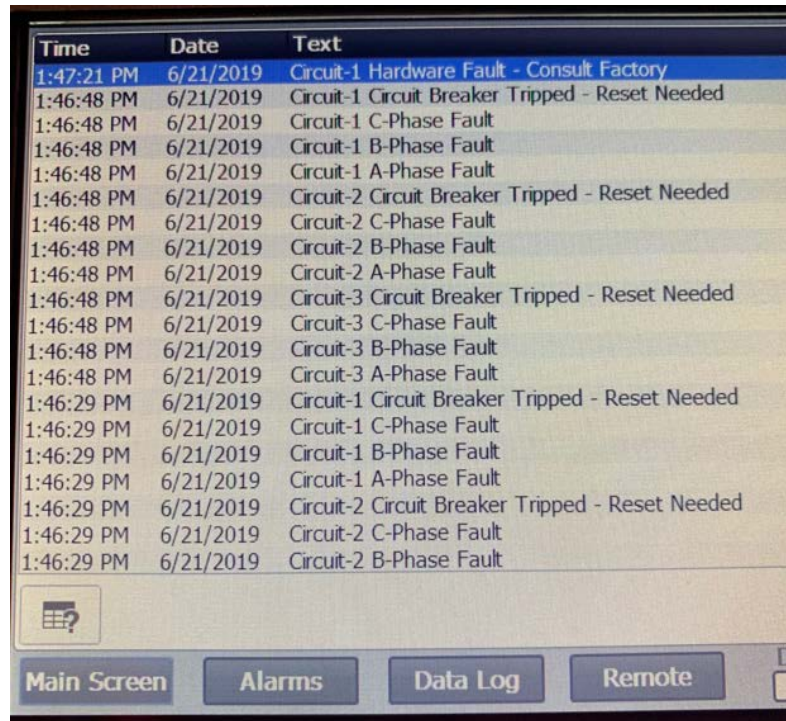
f.

Circuit-x Ready



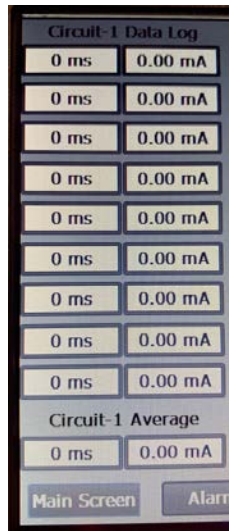
Circuit-x Energized

g.



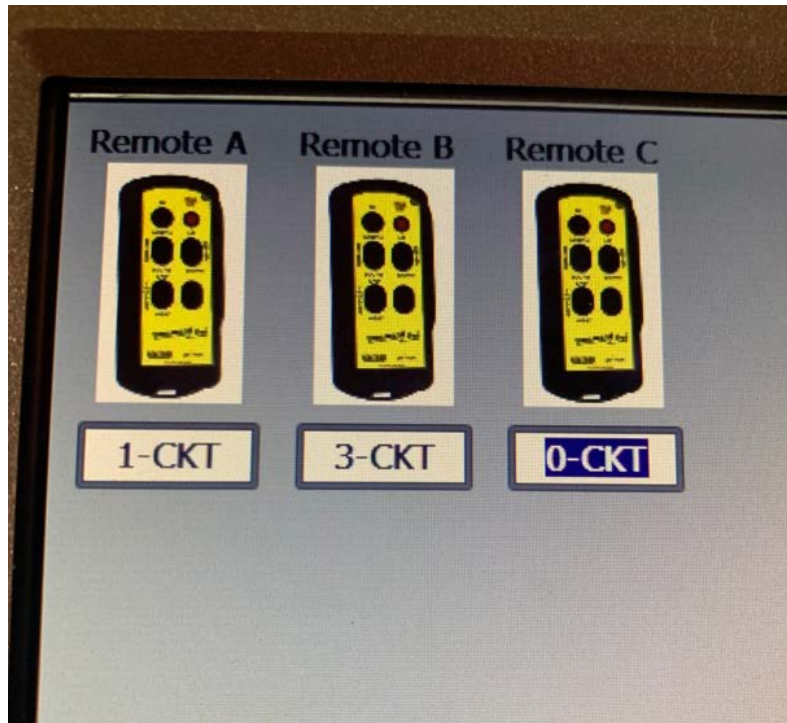
Alarm Screen

h.



Data Log. Showing last ten trip times and let-thought currents

i.



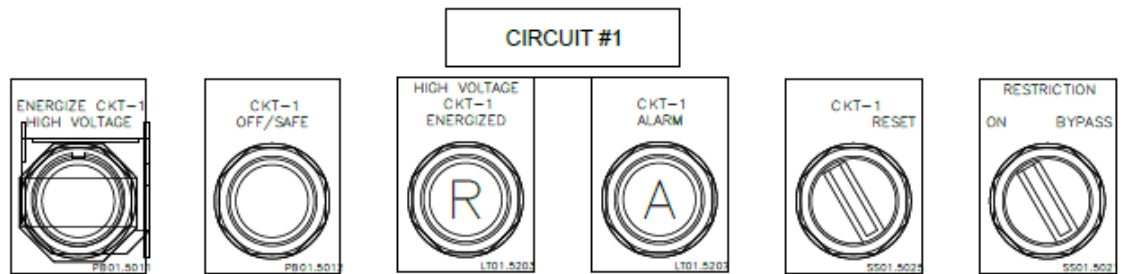
Remote Mapping Screen: Here the user can map Remote-A to any of the three circuits. This screen is not used when the user has one remote for each circuit.

j.



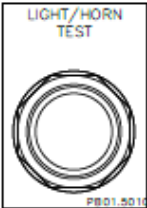
Variable Transformer:
 User can adjust the voltage of their system using this. We recommend testing on the secondary side of a 120/240-volt step down transformer and using this Variac to dial in the voltage as close to 120/240-volt as possible.

k.



l.

Circuit-x Operators



Global Operators

m.

3. Operator Descriptors



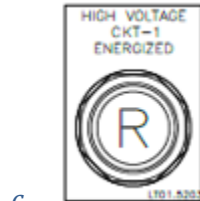
Circuit-x Energize High Voltage Pushbutton:

After circuit-x shows ready on the HMI, press to energize the circuit.



Circuit-x Off/Safe Pushbutton:

Press to de-energize Circuit-x.



Circuit-x Energized Pilot Light:

Illuminates and flashes when Circuit-x is energized.



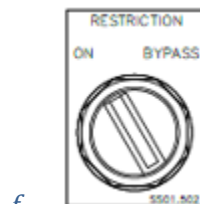
Circuit-x Alarm/Reset Pilot Light:

Illuminates and flashes when Circuit-x requires a reset.



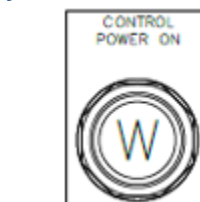
Circuit-x Reset Selector Switch:

Using the key, index this switch to the right to reset Circuit-x when the HMI shows "Reset Needed."



Circuit-x Restriction Bypass Selector Switch:

Using the key, index this switch to the right to bypass the 1.5mA restriction on Circuit-x. Used when adding current to a circuit.



Control Power On Pilot Light:

When illuminated, indicates there is 120v and 24v power in the panel.



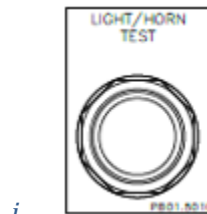
Heartbeat Pilot Light:

Based on flashing rate, used to determine the health status of the unit.



Alarm Silence Pushbutton:

Press to silence the audible horns when a Critical Alarm has been received.



Light/Horn Test Pushbutton:

Press to illuminate all Pilot Lights and Beacons, and also to sound all horns.



Global Safety Reset Selector Switch:

Using the key, index switch to the right position when HMI shows "Global Reset Required."



Global Safety Enabled Pilot Light:

When illuminated, indicates that all Circuits are de-energized and incapable of starting.



Emergency Stop Mushroomhead Pushbutton:

Depress to engage the Global Safety and de-energize all circuits simultaneously. Pull button outward to reset Emergency Stop button.

4. Operational Sequence

a. System Pre-Check

- i. Determine that the training yard is free and clear of persons, animals, and misc. debris that are not intended for use as described herein.
- ii. Verify that all PPE and safety protocols & procedures are in place.
- iii. Verify that both doors on the control panel are closed and locked.
- iv. Announce that the Training Yard is in the process of becoming energized.

b. System Usage

- i. Remove the Lock-Out-Tag-Out provisions that are currently on the Main Disconnect handle.
- ii. Index the Main Disconnect handle to the ON position.
 1. Note that the unit, once energized, will enter into a self-check mode before entering into the run mode. This self-check mode, will take approximately 30-seconds after the processor starts.
- iii. Once the unit has successfully exited the Self-Check mode, the Heartbeat pilot light will flash, and the Safety Circuit Enabled light will illuminate.
- iv. Verify that all Emergency Stop pushbuttons are pulled outward and disengaged.
- v. Depress the Light/Horn Test pushbutton to verify all pilot lights and audible horns are operational. It should be noted that the horn will only energize for 2-seconds.
- vi. Insert the Operator Key into the Global Safety Reset selector switch and index toward the Safety position, resetting the main Safety Relay. When the main Safety Relay is energized, the Safety Circuit Disabled pilot light will extinguish.
- vii. Index the Circuit-x Reset selector switch toward the Reset position; resetting any current system alarms.
- viii. At this point the unit should be ready to energize the yard, verify the following:
 1. Heartbeat Pilot Light is flashing at a 1-second interval;
 2. Circuit-x High-Voltage Energized pilot light is OFF;
 3. Circuit-x Alarm pilot light is OFF, and;
 4. Safety Circuit Enabled pilot light is OFF.

- ix. After verification of step viii, remove the pad-lock from the Energize High-Voltage pushbutton.
- x. Verify that the yard and lines are clear, and depress the Energize High-Voltage pushbutton. After the pushbutton is depressed, the following will happen:
 - 1. The Audible Horn will sound four times;
 - 2. The secondary Safety Relay will engage, energizing the yard, and;
 - 3. The High-Voltage Energized pilot light and field Beacons will illuminate.
- xi. The system will continue to energize the High-Voltage until one or more of the following happen:
 - 1. An E-Stop pushbutton is depressed; or,
 - 2. Power is disconnected to the unit; or,
 - 3. The operator depresses the System Off/Safe pushbutton; or,
 - 4. The unit trips out on an overcurrent detection.
- xii. To reset and/or re-energize the unit, use the following instructions:
 - 1. An E-Stop pushbutton is depressed:
 - a. Go to instruction iv
 - 2. Power is disconnected to the unit; or:
 - a. Go to instruction ii
 - 3. The operator depresses the System Off/Safe pushbutton or the unit trips out on overcurrent detection:
 - a. Index the Reset selector switch key to the Reset position to clear the current status.
 - b. You will now be able to re-energize the yard by depressing the Energize High-Voltage pushbutton.

c. System Shut-Down

- i. The system will continue to operate until one or more of the following happen:
 1. An E-Stop pushbutton is depressed;
 2. Power is disconnected to the unit, or;
 3. The operator depresses the System Off/Safe pushbutton;
 4. The unit trips out on overcurrent detection.
- ii. To properly shut-down the Training Yard Panel, follow the steps as outlined below:
 1. Depress the System Off/Safe pushbutton;
 2. Index the Main Disconnect handle to the OFF position;
 3. Replace the pad-lock on the Energize High-Voltage pushbutton cover;
 4. Remove the Operator Key from the Reset selector switch, and;
 5. Replace the Lock-Out-Tag-Out provisions on the Main Disconnect handle.

5. System Alarms

a. Critical Alarms

- i. Critical Alarms are as follows:
 1. Incoming supply voltage is out-of-range (generally 5-10%);
 2. Safety Relay response and/or feedback time is out of spec;
 3. DC Power Supply Health is poor;
- ii. Annunciation of Critical Alarms:
 1. If a Critical Alarm is detected during the Self-Check mode, the unit will enter into a non-permissive mode and will not run until the system is diagnosed and the alarm is cleared.
 2. If a Critical Alarm is detected during system operation, the System Alarm pilot light will flash at 0.5-second intervals. The unit will not run until diagnosed and cleared.
- iii. In the event of a Critical Alarm, please contact the Timpson Electrical & Aerial Services, LLC. Technical Support team at: (443) 553-2250.

b. Non-Critical Alarms

- i. Non-Critical Alarms are as follows:
 1. Overcurrent detection as set during system start-up.
 2. TVSS Cartridge replacement needed
- ii. Annunciation of Non-Critical Alarms:
 1. Audible Horn will sound for 2-seconds;
 2. System Alarm pilot light will flash at a 1-second rate.
- iii. In the event of a Non-Critical Alarm, please refer to section 3.b “System Usage.”

6. Troubleshooting

a. Troubleshoot the Installation

- i. Unit does not energize when Main Disconnect handle is indexed to the ON position.
 1. Verify incoming voltage is present on all phases. 120/208-volt, 3-phase, 4-wire with Neutral
 2. Test fuses in Main Disconnect switch. If needed, replace with the same class fuses, paying attention to: Class, Voltage, and Amperage.
- ii. Unit does not energize the high-voltage lines when the system indicates “High-Voltage Energized.”
 1. Verify the transformers are wired to the yard correctly per the installation instructions and wiring diagram included with installation documents.

b. Troubleshoot the Operation

i. Pilot Light Indication

1. “Control Power On” – Energized when 24vdc is present inside the control panel.
2. “Heartbeat” - Flash rates below:
 - a. 2-second rate (0.5Hz): System pre-check complete and system is not ready;
 - b. 1-second rate (1.25Hz): System ready;
 - c. 0.5-second rate (2Hz): System critical alarm.
3. “High-Voltage Energized” – 1-second flash rate (1.25Hz), the system detects, either via operator intent, or otherwise sensed, that the High-Voltage is, or could become, energized. Whether or not the operator has intended to energize the High-Voltage, if this pilot light is illuminated, take all necessary precautions.
4. “System Alarm” – Flash rates below:
 - a. 2-second rate (0.5Hz): Safety system acknowledgement required. Index the Reset selector switch to the Alarm position to acknowledge.
 - b. 1-second rate (1.25Hz): Non-critical alarm. Index the Reset selector switch to the Alarm position.
 - c. 0.5-second rate (2Hz): Critical alarm.
5. “Global Safety Enabled” – When illuminated, the global safety relay has been de-energized making all circuits safe.

6. One or more of the pilot lights do not light up when I depress the “Light/Horn Test” pushbutton – All pilot lights are LED, and should not burn out before the life of the system. However, if one or more are not operational during the test, do not continue operating the system. Disable power and contact Timpson Electrical & Aerial Services, LLC technical support.

ii. System Operation Issues

1. System locks up during Self-Check mode - The system will not exit the Self-Check mode if one or more of the following conditions are detected:
 - a. DC Power Supply Health is poor.
 - b. The incoming supply voltage is out of range.
 - c. One or more of the secondary safety relays have failed their feedback test.
2. Cannot close the safety circuit for system use (cannot get “Safety Circuit Enabled” pilot light to extinguish):
 - a. Check that all E-Stop Mushroomhead pushbuttons are pulled outward.
 - b. System is in Critical Alarm mode.
 - c. SIL3 safety block in processor requires acknowledgement. Index the Global Safety Reset selector switch to the Reset position.
3. Cannot energize High-Voltage:
 - a. System is not ready – reset the Main Safety Relay.
 - b. System has a non-critical alarm. Index the Reset selector switch to the Alarm position.
4. In the event of a Critical Alarm, please contact the Timpson Electrical & Aerial Services, LLC. Technical Support team at: (443) 553-2250.

c. Determining the Software Version

- i. The software version is usually located in the upper right-hand corner of the unit HMI.

7. Warranty Statement

Timpson Electrical & Aerial Services, LLC. warrants the equipment manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to replacing at its factory any product, part, or parts thereof which shall, within one year after delivery of such equipment to the original purchaser, be returned, and which Timpson Electrical & Aerial Services, LLC.'s examination shall disclose to its satisfaction to have been defective. Except for the warranty hereinbefore stated TIMPSON ELECTRICAL & AERIAL SERVICES, LLC. MAKES NO WARRANTY EXPRESSED OR IMPLIED; ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS HEREBY DISCLAIMED BY TIMPSON ELECTRICAL & AERIAL SERVICES, LLC. AND EXCLUDED FROM ANY AGREEMENT MADE BY ACCEPTANCE OF ANY ORDER PURSUANT TO OUR QUOTATION. THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. Timpson Electrical & Aerial Services, LLC. neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of its equipment. This warranty will not apply to any equipment which has been modified outside of its factory in any way so as, in Timpson Electrical & Aerial Services, LLC.'s judgment, to affect its stability, or reliability, nor which has been subject to misuse, negligence, or accident or to improper operation or storage, or to other than normal use or service. Timpson Electrical & Aerial Services, LLC. shall not be held liable for damages, direct or consequential, or delays, if such occurs on account of defective materials, or workmanship, or delays in shipment. Timpson Electrical & Aerial Services, LLC. will not grant any allowance for any repairs or alterations made without written consent of an officer of Timpson Electrical & Aerial Services, LLC.. Timpson Electrical & Aerial Services, LLC. will in no way be liable or responsible for injuries or damages to persons or property, arising from or out of use or operation of the equipment within described. Timpson Electrical & Aerial Services, LLC. reserves the right to make changes in design or to make additions to, or improvements in, its product without imposing any obligations upon itself to install them on its products previously installed. Timpson Electrical & Aerial Services, LLC. may provide assistance in the form of recommendations, engineering or technical information and advice but such information is furnished only as an accommodation and Timpson Electrical & Aerial Services, LLC. shall have no liability for incomplete, faulty or inaccurate advice, recommendations or assistance, negligent or otherwise.

IN ADDITION: Timpson Electrical & Aerial Services, LLC.'s liability under this Warranty shall be limited to the repair or replacement of any defective work or material, F.O.B. Havre de Grace, Maryland, USA. Customer shall be responsible for notifying Timpson Electrical & Aerial Services, LLC., in writing, of any claims against this Warranty. Upon receipt of such a written claim, Timpson Electrical & Aerial Services, LLC., shall advise customer as to the warranty action to be taken. Timpson Electrical & Aerial Services, LLC. shall have the sole right to determine what action, if any, is to be taken. Any unauthorized repairs to Timpson Electrical & Aerial Services, LLC. products or systems may cause this warranty to be declared null and void.

Timpson Electrical & Aerial Services, LLC. shall not be liable for any consequential damages including lost sales and profits, injury to person or property, or any other incidental losses.

There are no warranties or remedies for the breach thereof beyond those previously described.

8. Support

Timpson Electrical & Aerial Services provides technical information within this manual, over the phone, and on-site to assist you in using its products.

At www.timpsontraining.com you can find technical assistance measures such as FAQ's and support numbers.

In the event of a unit non-function, please contact the Timpson Electrical & Aerial Services, LLC. Technical Support team at: (443) 553-2250

In addition, we offer multiple support programs for installation and continued use. For more information, contact your local representative or a Timpson Electrical & Aerial Services representative.

a. Installation Supervision and Start-Up & Commissioning

Timpson Electrical & Aerial Services includes in every sale, a minimum of 1-day onsite for Start-Up & Commissioning of your system. Available upon request, are additional days. We can arrive one or more days early to oversee the installation of the system, comment on your training yard set-up, or stay one or more days after start-up for onsite support during your first week of use. Please contact your Timpson sales rep for current pricing.

b. New Product Satisfaction Parts Return/Repair

Timpson Electrical & Aerial Services tests all of its products and systems to help ensure that they are fully operational before they were shipped from our manufacturing facilities. However, if your product is not functioning properly, please contact Timpson directly to discuss parts replacement/repair. Due to the nature of the sensitive electronics, no unit, in part or in whole, may be returned.

c. Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any comments or suggestions on how to improve this document, please contact Timpson customer service.