



**TSC**

**Model: 1500XL**



**Installation Instructions**

.....  
**Please read all instructions before attempting installation or operation of these units**  
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**SAVE THESE INSTRUCTIONS FOR FUTURE USE**

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## TSC 1500XL

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## TSC 1500XL

### ***Introduction***

The TSC 1500XL system is comprised of multiple components, a Master Node that provides the interface for the operator and a Touchscreen that provides the control for the devices.

The TSC 1500XL is equipped from the factory with a default password for the administrator and the operator. The system administrator can easily reprogram each of the passwords to fit their individual security requirements. Further, the administrator can change the passwords as frequently as necessary.

TSC 1500XL was designed with the capability to control each device independently or control multiple devices for predetermined court setups. The predetermined programs can be edited, as necessary.

The TSC 1500XL is also equipped with a Manual Control Override and can be used for troubleshooting by hooking it directly into the relay board inside the Node panels.



## TSC 1500XL

### **CAUTION**

ONLY TRAINED AND AUTHORIZED PERSONNEL SHOULD OPERATE THIS EQUIPMENT. OPERATION BY UNTRAINED OR UNAUTHORIZED PERSONNEL MAY RESULT IN DAMAGE TO THE EQUIPMENT OR STRUCTURE AND/OR INJURY TO ANYONE NEAR THE EQUIPMENT.

OPERATION OF MORE THAN ONE DEVICE AT A TIME REQUIRES SPECIAL ATTENTION BY THE OPERATOR. THE OPERATOR SHOULD BE TRAINED IN OBSERVING MULTIPLE DEVICES IN MOTION AND FAMILIAR WITH THE TSC2000X KEYPAD OPERATION.

ALWAYS MAKE SURE AREA AROUND AND BELOW THE EQUIPMENT IS CLEAR OF PERSONNEL AND OBSTACLES BEFORE OPERATING THE DEVICES.

### **CAUTION**

DO NOT ATTACH THE COMMON OR 24V WIRE TO THE "L" OR "N" TERMINALS OR THE MOTOR TERMINALS IN THE RELAY BOX.

THE SYSTEM WILL NOT FUNCTION PROPERLY AND DAMAGE COULD RESULT TO THE CONTROL SYSTEM IF THE COMMON OR 24V WIRE ARE NOT CONNECTED TO APPROVED BOARD OR PLC OUTPUT TERMINALS

### **CAUTION**

PLC AND CONTROL EQUIPMENT IS SENSITIVE TO SUPPLIED VOLTAGE.

INCORRECT OR INCONSISTANT VOLTAGES CAN AND WILL CAUSE ISSUES WITH OPERATION OF CONTROL SYSTEM.

VOLTAGE SPIKES AND BROWNOUTS CAN CAUSE UNFORESEEN ISSUES.

IF QUALITY OF SUPPLY IS IN QUESTION OR IF BOX IS OVERLOADED, SUGGEST ADDITION OF TSC-UPS

### **WARNING**

Do not drill relay box. Sensitive equipment contained inside are susceptible to damage from metal shavings.

### **WARNING**

DC COMMUNICATION LINES SHOULD NEVER CROSS ANY AC LINES. THEY MUST BE IN THEIR OWN CONDUIT AND RUN SEPARATE FROM ANY AC CONDUIT.

### **WARNING**

DO NOT MOUNT RELAY BOX UPSIDE DOWN IN CEILING. SYSTEM IS NOT DESIGNED TO BE INSTALLED IN THIS MANNER. SYSTEM FAILURE WILL OCCUR.



## TSC 1500XL

### **INSTALLATION INSTRUCTIONS**

#### **Tools Required:**

Drill  
0# Phillips screwdriver  
1/8" Blade screwdriver  
2mm Blade screwdriver  
Ratchet with sockets

#### **Wire Required:**

Communication cable between Node panels: Serial Data cable equivalent to Carol C0842A or Belden 9842 (120-ohm impedance). CAT Ethernet cable cannot be used. **No Substitutions.**

Communication cable for Touchscreen: Cat 6 (Size based on job) **No Substitutions.**

#### **Installation Procedure**

System consists of a Master Node panel and one or more Secondary Node panels, dependent on the size of the job, and one touchscreen supplied by Performance Sports Systems.

**Determine location for Master Node, all nodes should be securely mounted in a location that is easily accessible for maintenance and operation of the Manual Control Override.**

**Once the relay box has been properly mounted, wiring of the system can be accomplished.**

**Refer to System Wiring Configuration drawing (Page 5) from Performance Sports Systems, Model TSC 1500XL.**

### - Connection of power to the Master and Secondary Nodes are as follows:

Electrical Service Requirements - 120V, 15A, 1PH service

Power can be run directly to the Node panel. Feed line should be sized appropriately for the length of run to meet the electrical service requirements.

1. Connect the power wires to the Node panel as follows (see Figure 1).
  - Incoming hot to Black terminal block on the left side of the power supply.
  - Incoming neutral to be landed on terminal 40.
  - Ground to be landed on terminal 8.

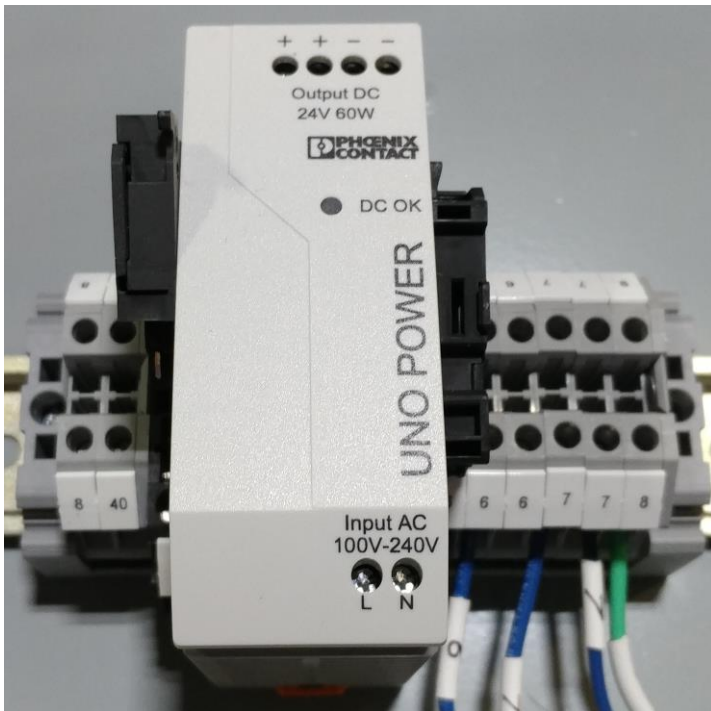


Figure 1

**Note:** All AC wiring should be routed away from DC Communication and Control wiring and should never intersect or cross.

**- Connect power for the devices**

1. A separate power line for each device is recommended.
2. Wire neutrals together at another location per local electrical codes.
3. Bring the hot wire into the Node panel and land at the **IN** location at the terminal. (See figure 2)

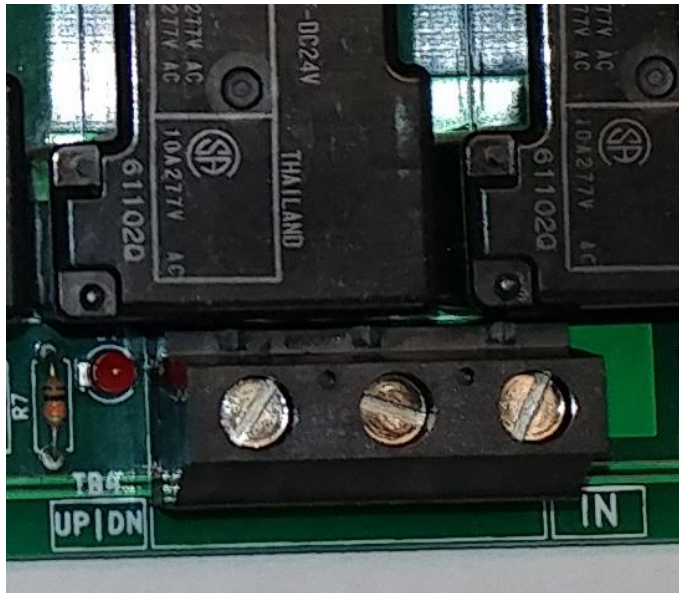


Figure 2

**- Connect device motors to Relay Board as follows:**

Requires a 4-wire line sized appropriately for the length of run (minimum recommended size as follows):

- 12 AWG for up to 90 feet of run
  - 10 AWG for 90 feet to 140 feet of run
  - 8 AWG for 140 feet to 240 feet of run
  - 6 AWG for 240 feet to 380 feet of run
1. Connect the motor wires from the devices to the Relay Board as noted in the design form. Land all other devices as noted in the design form.
    - a. Terminal blocks on relay board only accept 10 AWG wires. If wire coming into box is too large it must be stepped down in size to connect.
    - b. Device wires will land on the **UP** and **Down** locations at each terminal blocks.



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### – Connect Communication and Power for Touch Screen

1. From the Master Node to the Touch Screen run Cat 6 and three 14ga or 12ga wires, in its own conduit free from high voltage lines.
2. Connect the Cat 6 cable at the Master Node panel and at the Touchscreen. This uses a standard RJ-45 connection on both ends. The Master Node connection will connect on an open spot on the Ethernet Switch. (See figure 3) The Touch Screen connection will connect to the Ethernet port labeled “Ethernet”.



Figure 3

3. At the Master Node panel, run a line from terminals 6,7, & 8 to the Touch Screen. At the Touchscreen land, the wire from terminal 6 on the Positive (+) terminal, then land the wire from terminal 7 on the negative terminal (-) and lastly land the wire from terminal 8 to (FG) terminal. (See figure 4)



Figure 4





## TSC 1500XL

### - Connecting the Master Node to Secondary Node panels.

- Serial Data cable equivalent to Carol C0842A or Belden 9842 (120-ohm impedance). CAT Ethernet cable cannot be used. **No Substitutions.**
- Requires RJ-45 connector (Included per Node panel).

### - Master Node connections.



Figure 5

Signal Name	Master PLC
TSC Cable Termination Example.	
NC	No Connection
CAN.H	OR/WH
Shield	BARE SH
CAN.L	OR
GND	GR/ WH

**NOTE:** Strip Serial Data cable no more than 2” from the end. Clip off any unused wires. Route Serial Data cable away from any high voltage lines when connecting to secondary node panels.

1. Connect the Serial Data cable to the Master PLC as shown in Figure 5. Use the chart for correct wire assignments.
2. Make sure Serial Data cable shielding is landed on the shield terminal at the PLC.
3. When connecting to Secondary Nodes, use the supplied RG-45 connector.
4. See page 9 for Pin assignments for the supplied RJ-45 connector.

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## -Cable connection at Secondary Node panels.



Figure 6



Figure 7

Pin N°	Signal	Description
1	CAN_H	CAN_H bus line (High)
2	CAN_L	CAN_L bus line (Low)
3	CAN_GND	CAN 0 Vdc
4	N.C.	No Connection
5	N.C.	No Connection
6	N.C.	No Connection
7	N.C.	No Connection
8	N.C.	No Connection



**Note:** Follow installation below for connecting the RJ-45 connector to Serial Data cable (this guide is also included with RJ-45 connector). Ethernet cable is shown as an example.

**Installation Guide**  
Ruggedized metal body RJ45 Connector Cat6A Shielded/Unshielded IP20  
Doc # PX105479 release D Page 1 of 1

**AWG22-24 R301601-R301602**  
**AWG24-26 R301603-R301604**

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**Connection Table:**

Colour code: T568		PROFINET		RIS P/Nb		10BT/10BT		10 Giga Ethernet		Ethernet		T568A / T568B		T568A / T568B	
A	B	PROFINET	RIS P/Nb	10BT/10BT	10 Giga Ethernet	Ethernet	T568A / T568B	T568A / T568B	T568A / T568B	T568A / T568B	T568A / T568B	T568A / T568B	T568A / T568B	T568A / T568B	T568A / T568B
W-G	W-O	YE	1	•	•	•	•	•	•	•	•	•	•	•	•
W-O	W-G	OR	2	•	•	•	•	•	•	•	•	•	•	•	•
W-BL	W-BL	BL	3	•	•	•	•	•	•	•	•	•	•	•	•
W-BL	W-BL	BL	4	•	•	•	•	•	•	•	•	•	•	•	•
W-ER	W-BR	BR	5	•	•	•	•	•	•	•	•	•	•	•	•
W-ER	W-BR	BR	6	•	•	•	•	•	•	•	•	•	•	•	•
W-ER	W-BR	BR	7	•	•	•	•	•	•	•	•	•	•	•	•
W-ER	W-BR	BR	8	•	•	•	•	•	•	•	•	•	•	•	•

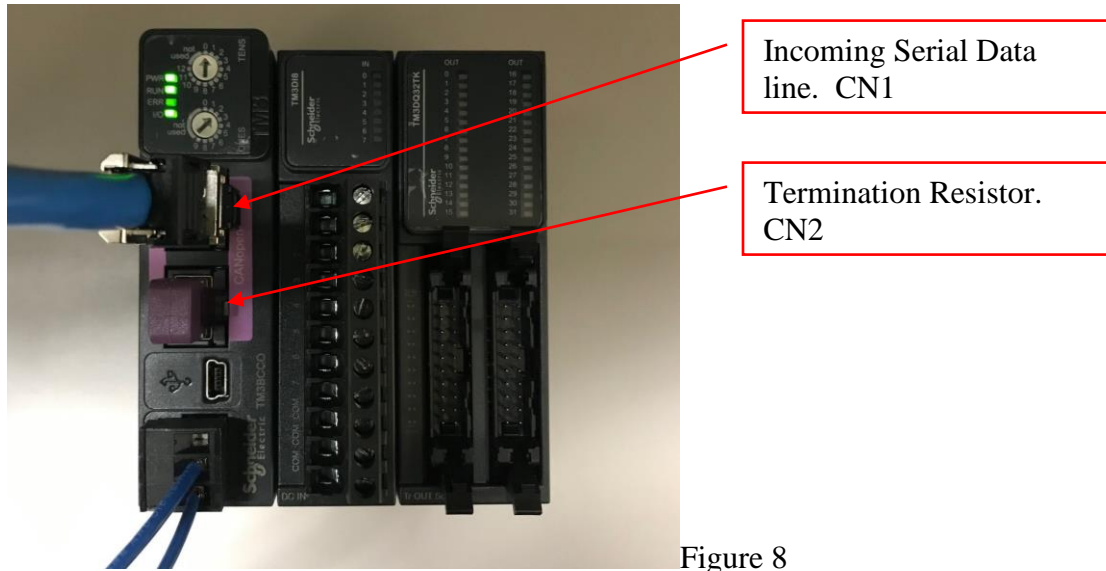
Shielded termination shown as a reference only. The connector is also suitable for unshielded termination. Pinning errors and technical changes reserved.

Une version française du guide d'installation est disponible sur notre site web de BELDEN dans la section „Information Center“ www.belden.com. Pour plus d'informations techniques, composez le 1 800 BELDEN. Copyright 2011. Belden Inc.

## TSC 1500XL

### -Cable connection at Secondary Node panels (cont.).

- Incoming Serial Data cable will plug into the CN1 port on the Secondary Node panel.
- The CN2 port is reserved for out going signal to additional node panels or the Termination Resistor for the last node panel.



Termination Resistor

**NOTE:** For safe and reliable communication between the system components it is imperative that the interconnected wiring be installed correctly and according to these instructions. Failure to do this can result in an inoperative system, sluggish response, or inability to reliably control the system components.

**NOTE:** Do not run communications cable through conduits or junction boxes with any other wires except the low voltage wires between TSC system components. Do not run low voltage wires through conduits or junction boxes containing any of the 120v motor wires from the field devices such as backstops or curtains.

**NOTE:** Make note of wire color attached to each terminal. This may vary depending on brand of twisted pair shielded cable in use.



## TSC 1500XL

### **-Proper Grounding and Shielding**

Proper grounding and shielding are essential for reliable system operation. Low voltage DC and communication wiring must be protected from electrical noise introduced by 120v AC wiring, other voltages and signals which may be present in the building infrastructure.

1. The main 120v power feeds from the breaker panel to the RB should have a separately pulled Green ground wire. This should be bonded to the breaker panel source.

**Note: Supplied voltage must be constant. If not, constant errors can occur.**

### **Plug all open holes.**

- 1) After installation of conduit and wire, all open holes must be plugged by electrician.

### **Wiring Practices:**

All AC wiring should be routed away from DC, Communication, and Control wiring and should never intersect or cross. Failure to do so can cause communication issues with an installed system.

Ideally locate the Master and Secondary Nodes somewhere easily accessible such as in an electronics room or catwalk. The reason for this is access to the Manual Control Override feature and for any service needs.

**Do not install the box on the ceiling.** It is not designed to be installed in this manner and doing so will cause operation problems.

**Contact Performance Sports Systems at 800-848-8034 extension 236 for questions or additional information concerning the TSC 1500-WiFi installation**



**Performance Sports Systems  
9200 E. 146<sup>th</sup> Street  
Noblesville, IN 46060**

**800-848-8034  
[www.perfsports.com](http://www.perfsports.com)**