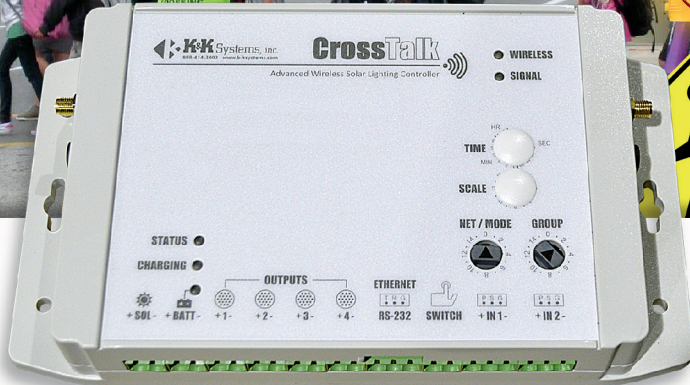




K&K Systems, inc.
Traffic Safety Products Manufacturer



SCHOOL ZONE

CROSSTALK-10

OPERATING MANUAL



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1. The manufacturer warrants that all products manufactured by K&K Systems, Inc. will be free from defects in material and workmanship for a period of one (1) year from date of shipment, subject to the conditions and restrictions contained herein.
2. This warranty does not apply to a product that has not been installed or maintained in accordance with the manufacturer's instructions, has been subjected to damage in an accident, abused or neglected during operation, repaired or modified by persons other than manufacturer, its employees or authorized agents, or failed to have normal maintenance.
3. The buyer expressly agrees that the buyer's sole remedy and the manufacturer's sole responsibility, in respect to a warranty claim, is exclusively limited to repair or replacement at the manufacturer's option, of product or a portion thereof found by the manufacturer to be defective. The manufacturer is not responsible for labor or other expended charges by buyer including transportation charges, and shall not be liable for any incidental or consequential damages connected with repair of a product deemed to be defective or with installation or replacement of repaired product. Further, the manufacturer disclaims any liability for any incidental or consequential damages, including lost or duplicated time or expense accruing for any reason, to the owner or user or any products sold by the manufacturer, whether claim is made in contract or in tort or under any theory of warranty, negligence or otherwise.
4. The manufacturer reserves the right to make changes in its products from time to time, without incurring any obligation to incorporate such improvements in any products previously sold or in service.
5. The terms and conditions of the warranty cannot be altered without the written consent of the manufacturer.
6. The foregoing warranty is exclusive and in lieu of all other express, statutory and implied warranties **INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.** There are no warranties which extend beyond the language in the previous six (6) paragraphs.

If you have any further questions, please feel free to call us at our toll-free number, 888-414-3003, email info@k-systems.com or look us upon the internet at www.k-systems.com.



Thank you for your business!

To Our Valued Customer,

K&K Systems, Inc. is excited that you have purchased our product.

Our company has been serving the traffic industry since 1997. Since that time we have risen to become a leader in the traffic industry. We offer a complete line of traffic safety products that include message boards, arrow boards, radar speed monitors, solar school zone flashers, solar 24-hour flashers and many other quality products that serve our industry today.

At K&K Systems, Inc., we strive to improve the quality of our products. We are dedicated to the concept that our customers are our most valuable resource. We strive to serve our customers as we would want to be served.

Tim Keith,
President

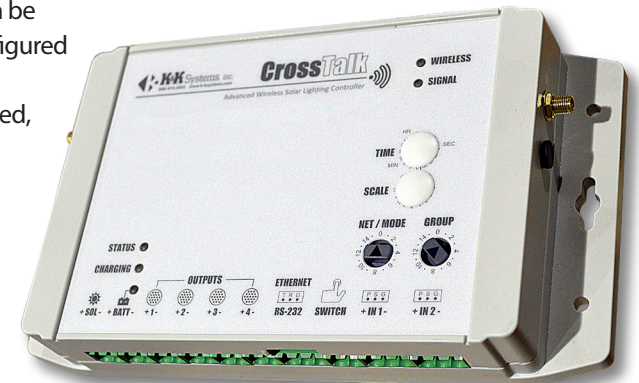


INTRODUCTION

WHAT IS THE CROSSTALK-10

The CrossTalk is an Advanced, Solar-Powered Lighting Controller. On-board cellular technology provides a secure cloud server connection offering real-time access from almost anywhere. Designed for multiple applications, CrossTalk controllers are used for a variety of traffic & safety applications including school zone safety systems, bridge navigation beacons, cross-walk/pedestrian systems, speed/radar systems and more. Utilizing solar power and both cellular and short-range wireless connectivity, CrossTalk applications can be setup quickly and provide more functionality and flexibility than traditional “wired” systems. A single CrossTalk can control multiple nodes across an entire campus and provide web connectivity for schedules, status monitoring, diagnostics, and real-time control.

The CrossTalk device is a rugged, integrated unit which provides a built-in solar controller with Maximum Power-Point Tracking (MPPT), battery management with low-voltage disconnect (LVD), on-board cellular connectivity (3G / 4G), short-range wireless (900MHz), multi-function programmable lighting control, support for up to (4) beacons, auto-dimming, and a scheduler all in one compact enclosure. CrossTalk units can be accessed and configured with K&K Systems’ CrossTalk web-based, cloud interface using any internet connected device.

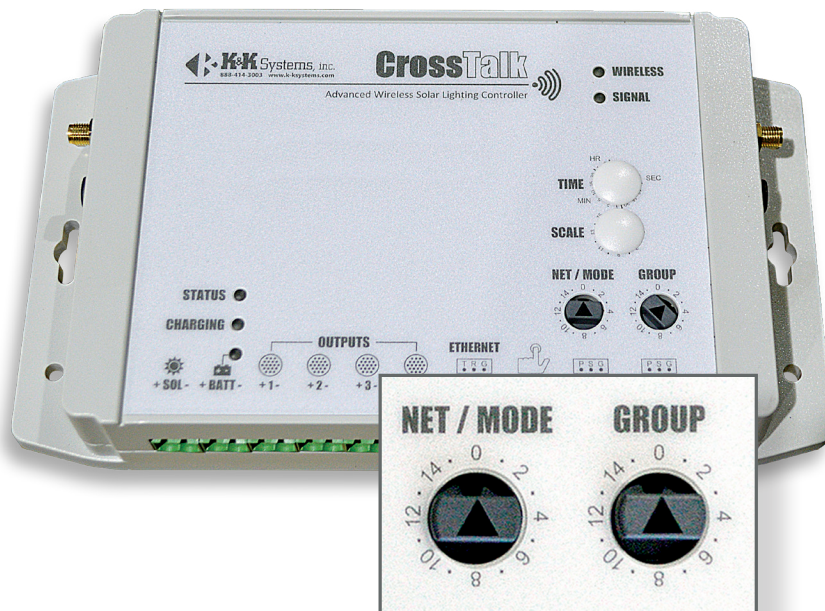




NETWORKING

NET ADDRESS

Each CrossTalk unit has a NET ADDR switch setting that provides each CrossTalk unit with a unique network address (0-15) and which can be set easily by hand with no programming required. This unique address allows other devices (laptops, desktop computers, etc.) to communicate with a specific CrossTalk unit. This setting also allows the user to designate a specific CrossTalk in a group as the Primary link of communication to other CrossTalk controllers. **The NET ADDR for the Primary CrossTalk unit should be set to “zero” (0).** All other CrossTalk Secondary devices in that same group must have their own unique NET ADDR without duplication (1-15).



GROUPING MULTIPLE CROSSTALK CONTROLLERS

A single CrossTalk controller can monitor and control up to 15 additional CrossTalk units (for a total of 16 units in a “group”). In addition to the NET ADDR switch, each CrossTalk unit also has a GROUP switch (0-15) which allows CrossTalk units to be “grouped” together. All devices with same group number can communicate with each other. This grouping function allows multiple, separate CrossTalk applications to operate in the same general location (e.g, multiple crosswalks or schools on the same street) yet provide independent control of each CrossTalk “group”.

In most school lighting applications, for example, there is a designated “Primary” CrossTalk unit (the unit typically equipped with a cellular modem) and one or more “Secondary” CrossTalk units. The Secondary units will receive instructions from and be managed by the Primary CrossTalk unit. As noted above, the NET ADDR for the Primary CrossTalk unit should be set to “zero” (0). All other CrossTalk Secondary devices in that same group must have their own unique NET ADDR without duplication (1-15). To associate or “group” the Primary unit with the Secondary units set the GROUP switch to the same setting for all units.

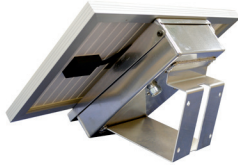




CONTROL CABINET AND COMPONENTS

CONTROL CABINET

The control box is steel fabricated with lockable rotary latches and hinged at the top to protect the batteries and the controller. Mounting hardware for lower heights for easier access is available.



POWER SOURCE

Our products incorporate a battery pack wired for 12V operation, depending on the requirements of the design. The battery bank is regulated by and protected by a solid-state charge controller/low voltage disconnect. This prevents gassing and over discharging of the batteries, which can result in premature failure. Thermal compensation and related circuitry adjusts the charge rate of the system with variances in temperature.



SOLAR PANELS

During operation, keep the solar panel clean of excessive dirt and debris by using soapy water and a soft cloth or sponge only. Periodically check the integrity of wiring connections in the junction box. Inspect for signs of damage to the solar panel glass or frame.



SAFETY / WARNINGS / PRECAUTIONS

The following are K&K Systems' recommendations for the safe and responsible use.

PRECAUTIONS

Inspect your unit upon delivery. Wires and plugs may have loosened during shipment which will cause operational issues. Please inspect all components and test before installation. The system arrives ready to run. Connect the batteries and test the unit before installation for convenient working conditions.



Connect batteries and test components before erecting the pole system.



Check cardinal directions with a compass to ensure the solar panel is **facing South** for proper charging.

MAINTENANCE

- K&K recommends that the user clean the solar panels every 6 months. Over time the solar panels may build up a thin layer of dust/dirt/road grime that can adversely affect their efficiency significantly.
- Check the battery every 6 months to ensure proper charging. If below 12.3 volts, charge to keep power reserves high. Check solar system by cleaning the panel and inspecting wiring for wear and secure connection.
- Check that the mounting is secure and has not shifted as the solar panel may shift direction over time. Ensure the panel is facing South.
- Check the system a few days after installation to ensure proper charging and operation.



DESCRIPTION OF CROSSTALK-10 CONTROLS

Cell Modem

Net/Mode Setting
Unique address setting for each unit in a group

Status Light
The status light represents cellular connection.
Green = Good Cellular Connection
Red = No Cellular Connection

Charging Light
Solar controller status indicator shows when the battery is being charged:
Green = Charged
Amber = Charging

Solar Port

Battery Light
Battery status light for safe accurate connections:
Green = Good connection

LED Outputs 1,2,3,4
Load: 12V LED/DC flasher outputs/switches (x4).
Maximum load 50W per output.

Ethernet RS-232
Communication Port / Laptop Connection

Switch Attachment
Sensor connection port. Connect any sensor for use in conjunction with sign alerts.
Sensor options:
• Push Button
• Moisture Sensor
• Water Level Sensor
• Motion Sensor
• Overspeed Sensor

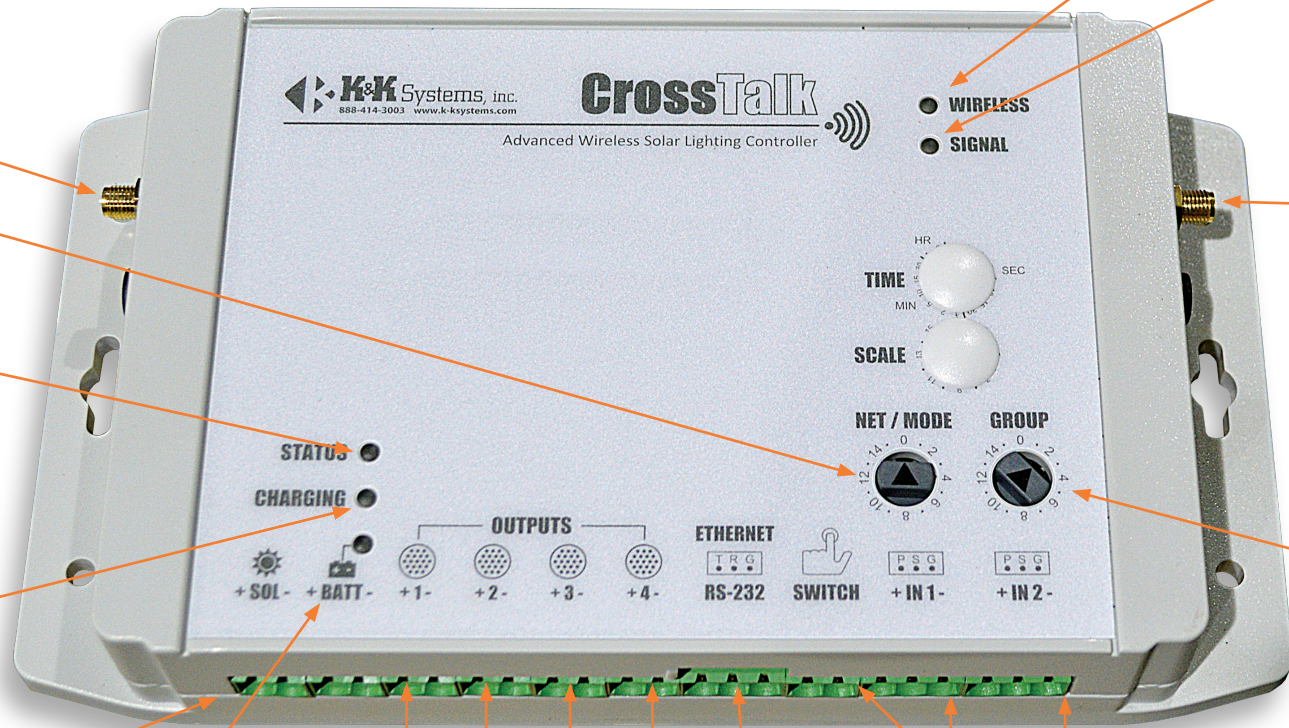
Wireless Light
When lit, indicates that a wireless device is connected

Signal Light
Indicates the strength of wireless signal during communication

900 mhz Antenna port

Group Setting
All devices with the same GROUP setting can communicate with each other.

In 1 / In 2
Digital input range 5-24V DC for radar, advance warning, and more



PROBLEM	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
ERROR = Timeout Message = No response from remote device	<ul style="list-style-type: none"> Repeat attempt to get the status. <i>Occasionally the CrossTalk will not connect on the first attempt.</i> 	Flashing RED <ul style="list-style-type: none"> Check the CrossTalk Disconnect Power Wait 30 seconds Reconnect Power 	<ul style="list-style-type: none"> Confirm antennas are on tight. Short Antenna, White wire on the left. (Cell, only applies to Primarys) Large Antenna, black wire, on the right. (900Mhz) 	If Antennas are on correctly: <ul style="list-style-type: none"> Open up the CrossTalk and ensure the SIM card is seated correctly, clean and undamaged 	If you still cannot connect: <ul style="list-style-type: none"> Please call us
Lights are not turning ON as scheduled	<ul style="list-style-type: none"> Make sure your schedule is accurate 	<ul style="list-style-type: none"> Ensure you are loading your new schedule onto the CrossTalk Refer the Schedules portion on this manual. 	<ul style="list-style-type: none"> Under Status, check what time the CrossTalk is set to. If clock is incorrect they are turning on at different time. 	If Status shows lights are ON, but lights are not flashing: <ul style="list-style-type: none"> Check light connections at the CrossTalk 	If low or no voltage: <ul style="list-style-type: none"> Follow the wires to the panel and check for damage. Ensure wires are connected with correct polarity
Device ID Error	Under Device ID/Port: <ul style="list-style-type: none"> Check that Device ID matches the CrossTalk you want to communicate with 	If ID does not match: <ul style="list-style-type: none"> Please call us 	Under Device ID/Port: <ul style="list-style-type: none"> Check that Device ID matches the CrossTalk you want to communicate with 	If ID does not match: <ul style="list-style-type: none"> Please call us 	
Lights come on at the wrong time	<ul style="list-style-type: none"> Check the time the CrossTalk is set to under status. 	<ul style="list-style-type: none"> Check schedule to make sure it is accurate 	If Clock is accurate: <ul style="list-style-type: none"> Confirm CrossTalk is set to correct group and NET/ MODE 		
Battery keeps dying	<ul style="list-style-type: none"> Check Battery Level, Must be at least 12V. If not please charge to proceed with troubleshooting. Load test battery. A bad battery will not hold a charge. 	If the solar voltage is negative, the polarity is backwards: <ul style="list-style-type: none"> Switch the position of the wires and check the polarity again. If voltage is positive: <ul style="list-style-type: none"> Reinstall wires 	If voltage is low or none: <p><i>Depending on the time of day it may be low. Dusk or Dawn will produce low voltage.</i></p> <ul style="list-style-type: none"> Check voltage at the connection behind the panel and at the end of the wires. They must match. If different, the wires are bad: <ul style="list-style-type: none"> Replace and retest. 	Is the solar panel facing south? If it is not, charging efficiency is decreased and the battery charges slowly: <ul style="list-style-type: none"> Check the solar panel direction with a compass. 	If problem persists: <ul style="list-style-type: none"> Please call us



FUSE LOCATION & REPLACEMENT

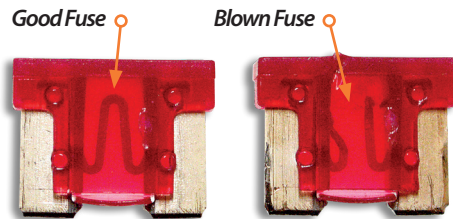
Access the CrossTalk components by removing the CrossTalk from the control box. Turn the CrossTalk onto the face to reveal 4 screws on the backside of the housing on the corners. Loosen each screw until the face cover easily separates from the back of the housing. The screws will remain in the housing.

Carefully lay the cover over as to not to break the connection of the aerial wire.

Locate the 10 amp Low Profile Mini Fuse at the bottom left of the control panel.

Remove the fuse by grasping with fingers and gently rocking the fuse side to side.

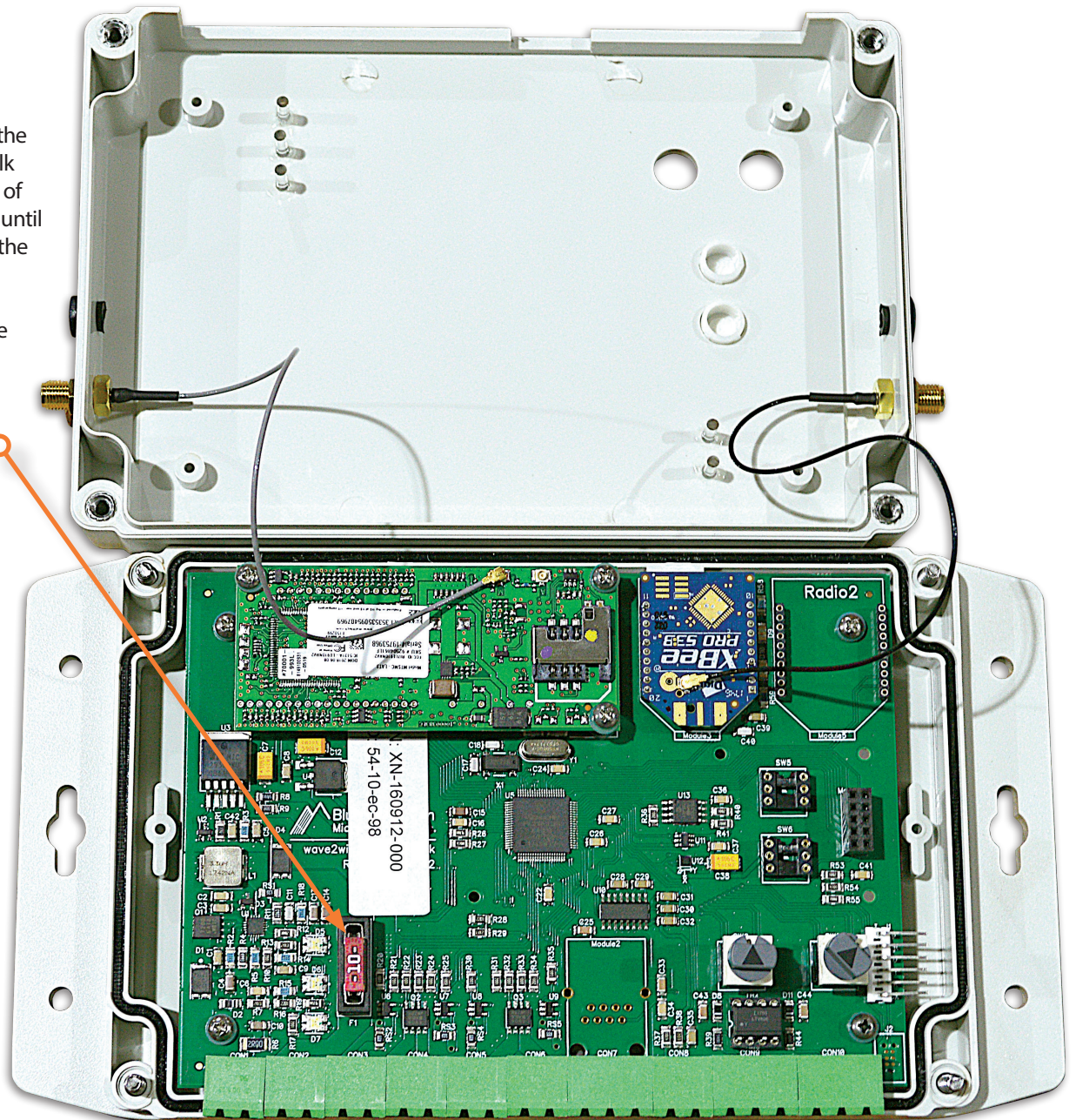
Inspect the fuse by looking through the translucent housing at flat wire in the center. If the wire is solid, the fuse is good. In a blown fuse, the wire will be broken.



Low Profile Mini Fuse

Replace the blown fuse with a new one by inserting into the port and firmly pressing it into place.

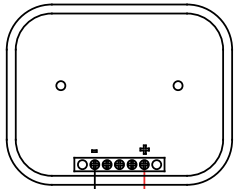
Align the covers and twist the screws until the covers are snug. Remount the CrossTalk to control box.



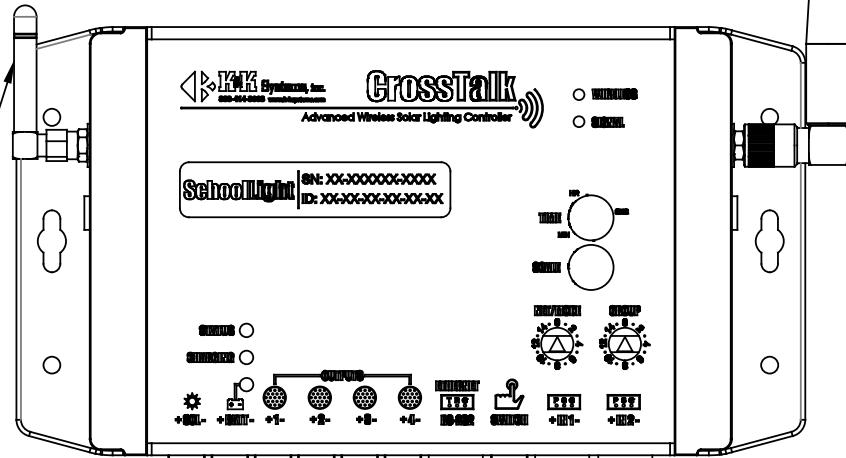


WIRING DIAGRAM CROSSTALK-10

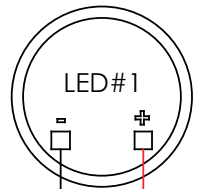
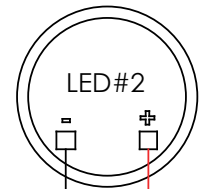
SOLAR JUNCTION /
PHOTOCELL



CELL
ANTENNA



900MHZ RADIO
ANTENNA



RED
BLACK

RED
BLACK

BLACK

RED

BLACK

RED

12 VOLT BATTERY OR AC
CONVERTER

**FOR AC UNITS SOLAR
PANEL FUNCTIONS AS
PHOTOCELL

**CELL ANTENNA ONLY
FOR "10" MODELS

K & K SYSTEMS		Office: (888) 414-3003 www.k-systems.com	
TITLE: SCHOOL SIGN			
DWG. NO. CROSSTALK-10			
DRAWN BY:	WESLEY FUQUA	DATE:	5/1/19
CHECKED BY:	FRANK AVILA	DATE:	5/1/19
PROPRIETARY AND CONFIDENTIAL			
The information contained in this drawing is the sole property of K & K Systems. Any reproduction in part or as a whole without the written permission of K & K Systems is prohibited.			
CHECK LOCAL CODES FOR ALL MEASUREMENTS			
Revision:	Not Scaled	Size: 8.5 x 11	Sheet: 1 of 1



CROSSTALK ONLINE MANUAL

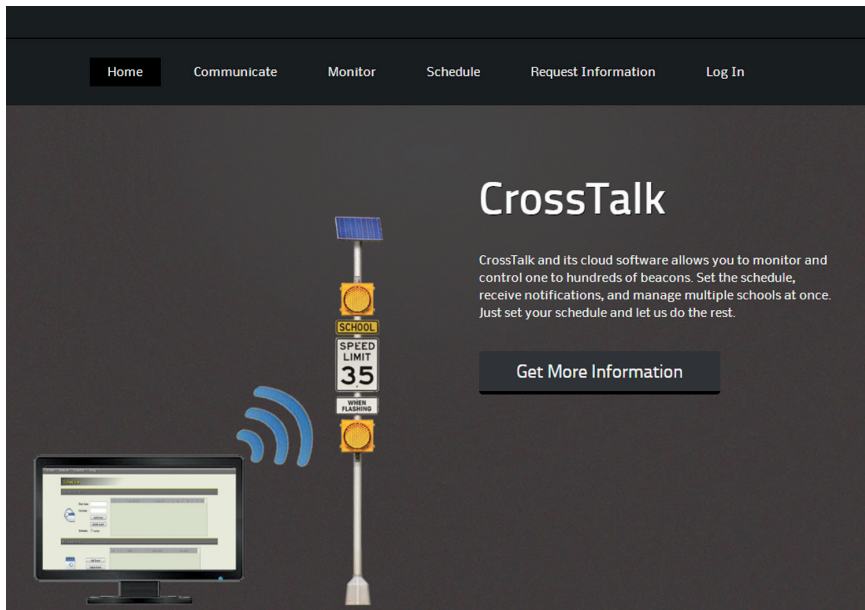
Your **CrossTalk Account** is setup and ready to use upon arrival of your units. To start using the CrossTalk online options, access the login page located at:

<http://www.kkCrossTalk.com/>

In the main menu of the website you will see six quick link tabs including the login tab on the right side. These tabs have detailed information on how the CrossTalk operates and how it communicates through both internet (long range) and radio (short range).

Upon accessing the login tab, you will be taken to a new screen that prompts you to enter a username and password that is provided by K&K Systems. Below is the link to quickly access the login screen without going through the homepage.

<http://www.kkCrossTalk.com/XTLOGIN.php>



LOCATIONS



LOCATIONS

The **Locations** menu is the default page upon login. The available units are listed in the window. The default name of each unit will be displayed. However, the names can be changed at any time to specify units or to better locate them. Only CT-10's will be on this list.

DESCRIPTION

In the **Description** column the information can be edited for details that will differentiate that device from others in the same area.

DEVICE ID/IP/PORT

The **Device ID/IP/Port** column displays the information used to communicate to the device via the online server. Although the information can be edited, it should **not** be changed unless needed for changing units or IP settings. Please contact a K&K Systems Customer Representative to assist in the event changes need to be made.

SCHEDULE PROFILE

The **Schedule Profile** column allows the user to set/change schedules of each unit. Most units will use the same schedule if they are in the same Group (i.e.: *school zone*). If different schedules are required, create a new schedule and select the specific units that will use that schedule.

STATUS ICON

The status icon provides a quick link to see the condition of each unit's components functioning status. Click the icon to inspect Lights/Beacons, Battery Voltage, Solar Voltage, Date, Time, Group, Net Address, Last Schedule, and number of times the Modem has reset itself.



SCHEDULE PROFILES



The **Schedule Profiles** tab in the main menu displays (3) three options tiled vertically on the left side that allows the user to **create, delete, and copy** schedules. New units will need to have a schedule created. To create a new schedule simply:

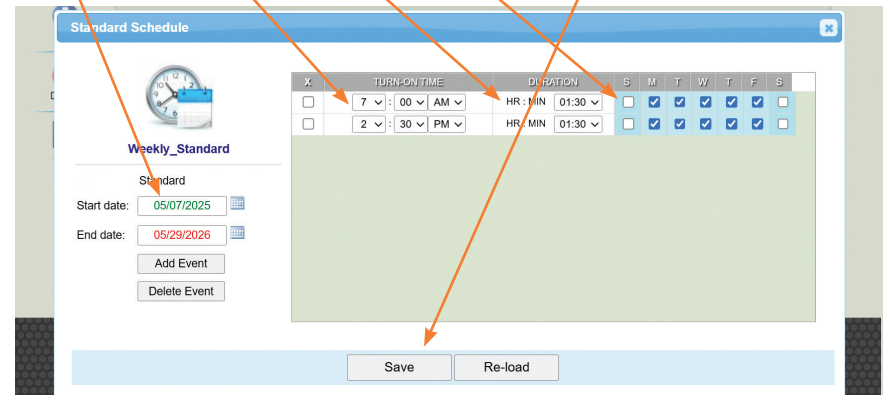
1. Click the **Create** button to begin.
2. Edit the default schedule **Name** to better identify the specific schedule.
(example: *School Year 2017*).
3. Edit the default **Description** to better describe the schedule.
(example: *Regular Day*).
4. The **Schedule** column gives (2) two options for either **Standard** or **Holiday**. Select the appropriate button for the schedule being created.
5. In the selected option pop-up window, select start and end dates. Set the time of day and the duration for unit components to activate. Select the days of the week. Click the **Save**.
Details on pages 8 and 9.
6. The **Exceptions** column is used for days when the schedule is different than normal (i.e.: *schools early release days*). The **Overlay STD** option runs the Standard schedule with the Exception schedule.



STANDARD SCHEDULE

Add events to activate the beacons for a set amount of time on specific days.

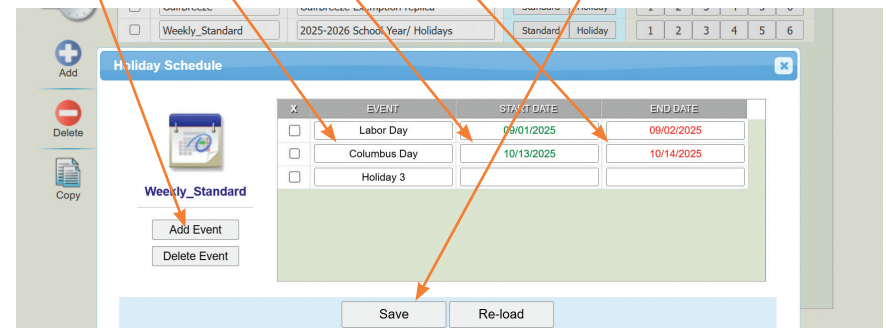
1. Select **Start** and **End** dates of the event. (i.e.: *school year*)
2. Set the **Time** of day
3. Set the **Duration** for activation.
4. Select the **Days of the Week**.
5. Click the **Save** button.



HOLIDAY SCHEDULE

Add holidays to activate the beacons for a set amount of time on specific days.

1. Click **Add Event**
2. Set **Event (Holiday)** name
3. Set the **Start Date**.
4. Set the **End Date**.
5. Click the **Save** button.



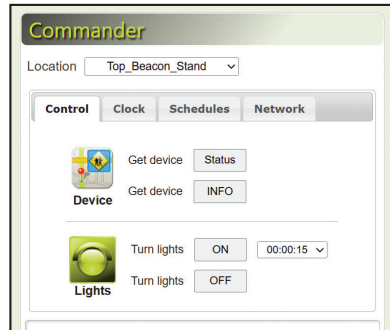


COMMANDER

The **Commander** tab in the CrossTalk main menu provides access to units.

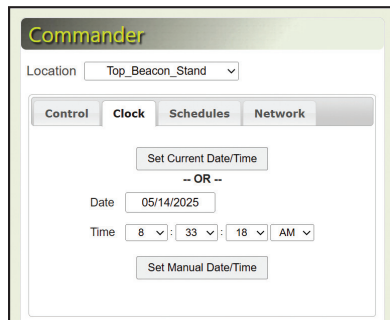
CONTROL Access to the devices for:

- **Status:** summary of functions
- **INFO:** detailed summary of specific elements of the unit such as Hardware, Firmware, Device ID, Date, Time, and Modem Reset Count.
- **Turn Lights ON:** manually activate lights for a set time from 5 seconds to 2 hours. Primarily used for troubleshooting or special requirements. Lights automatically turn off after the duration.
- **Turn Lights OFF:** manual control to deactivate.



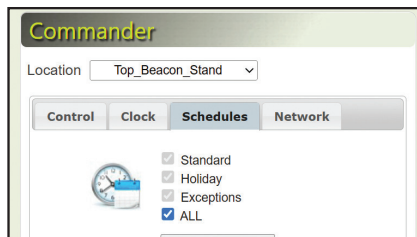
CLOCK

The **Clock** accesses the date and time. The date and time shown should match that of the device being used to access the server. The **Set Time/Date** button can be used to change the time sending the correct date and time to the CrossTalk in such cases as Daylight Savings time change. *Always set your time upon delivery of your system.*



SCHEDULES

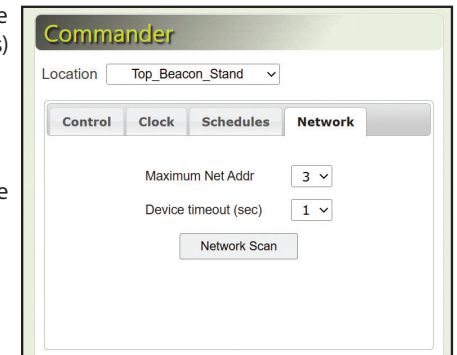
To change schedules click the **Schedules** tab. Select the schedule to be updated by clicking the corresponding box. The default is the **All** option. Click the **Update Schedules** button. *Before updating all Schedules to the CrossTalk, it is recommended that the previous schedules on all units in a group be cleared. Update schedules every time one is modified for each unit.*



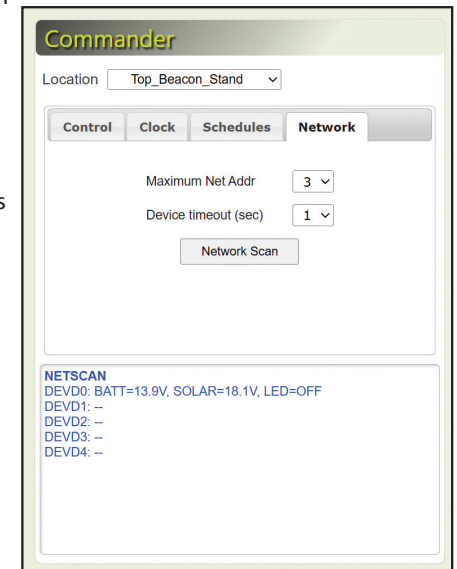
NETSCAN

This window allows the user to communicate from the web-based server to primary unit(s) and the surrounding units. Utilizing radio communication, the CrossTalk does not have the ability to communicate directly to the Server. By using the (radio) short range (900Mhz), the primary CrossTalk accesses the other units in the Group and sends a status message back to the server for the user to review.

To use the Network tab, select the **Location** (i.e.: Primary) at the top and then select the **Maximum Net Address** (default: 3) and the **Device Time Out** (default: 1 second). When communicating with only 1 other CrossTalk, the default (3) should be left as is. *This can be increased or decreased depending on how many units are in the group.*



Click the Network Scan button after selections are made. As the CrossTalk communicates with other local CrossTalks, the status of each device that has been contacted is displayed in the lower window. The first number following DEV is the Group number set on the device whereas the second number will be the Net Address that is also set on the device by dial. (i.e.: DEV00, DEV01, DEV02, DEV03). The Status shown in the Network Scan will list the Battery Voltage, Solar Voltage, and status of the lights if on or off.





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