

Tandem

Installation & Programming Guide

PLC  **Multipoint**



Quick Start

Tandem Installation

This Quick Start Guide will provide you with the information you need to get your new Tandem operational. Below is an overview of all the hardware associated with your Tandem.

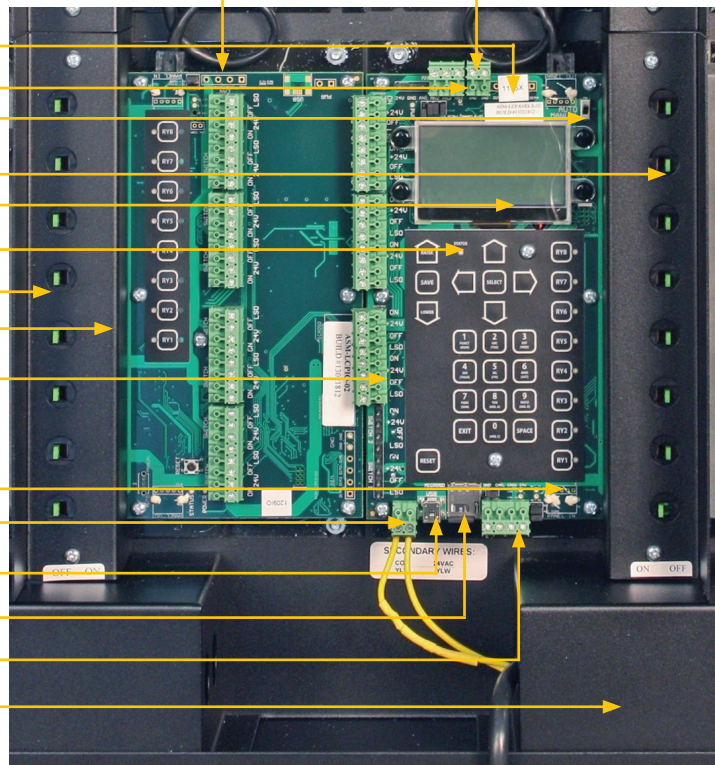
- Dimming
- Photo Sensor Inputs
- Auto/Manual Switch
- Relay Overrides
- Backlit LCD/Programming Prompt
- Logic Status/LED
- Latching Relays
- High/Low Voltage Separator
- Low Voltage Switch Inputs & Lighted Switch Outputs
- Network
- Power
- Micro SD Slot
- USB Port
- CANbus
- Multi-Tap Transformer

I/O Board

Number of boards determined by number of relays

Master Board

One board per Tandem lighting control panel



Mounting Enclosure to Wall

Take off the cover by removing the cover screws. Attach the enclosure(s) to the wall (hardware not included) using mounting holes in rear of enclosure. The enclosure should be level, plumb and rigidly installed.

Placement of Conduit Holes in Enclosure

Determine the appropriate wire entry locations. Make sure all line and low voltage entry locations are in the appropriate compartments. Drill openings to bring wiring into the enclosure.

DO NOT GET METAL SHAVINGS ON THE ELECTRONICS.

Transformer Wiring

1. Connect incoming power to the transformer. The transformer is multi-tapped with the voltages color coded. A dedicated circuit for the transformer must be provided.
2. Verify supply line voltage (120V or 277V) and wire to the correct tap of the Tandem transformer. Wiring to the incorrect tap may result in damage to the transformer and/or Tandem, and will void the product warranty. **CAP-OFF UNUSED WIRES BEFORE APPLYING POWER TO THE TRANSFORMER.**

Relay Wiring

Before making any connections to the relays, make sure none of the load circuits are shorted. Connect de-energized control circuits in series between the breakers and the loads through the terminal blocks. Recommended tightening torque is 7.0 in.- lbs.

Test Relays

1. Apply power to transformer only.
2. Put the AUTO/MANUAL switch in the AUTO mode.
3. Press the Relay control button, on the logic board.
The corresponding relay should turn ON or OFF and the LED corresponding to RY button should do the same.

Apply Power

With power applied to the Tandem panel, there are two green LED indicators to view panel status. Located in the upper left hand corner of the Tandem Master Board is the +24V Power LED. This LED is always ON, indicating proper power is applied. The second LED, on the keypad to the right of the RAISE key, indicates system status. This LED flashes ON and OFF every second, indicating the processor is operating correctly. For the I/O boards these LEDs are located together, next to the PANEL OUT connector. Each relay output also has a green LED that indicates current relay status. These LEDs are part of the RY1- RY8 buttons. The LED will be on when the relay is on, and off when the relay is off. The only exception is if the AUTO/MANUAL switch is in the MANUAL mode.

AUTO/MANUAL Switch

When the AUTO/MANUAL switch is in the AUTO position, the relays are controlled by the Tandem programming. The MANUAL mode disables the Bantam from controlling the relays. When the user switches from MANUAL to AUTO mode, the relays will automatically update to their current programmed state. MANUAL mode can be used to override the relays in a known state, and disable program control.

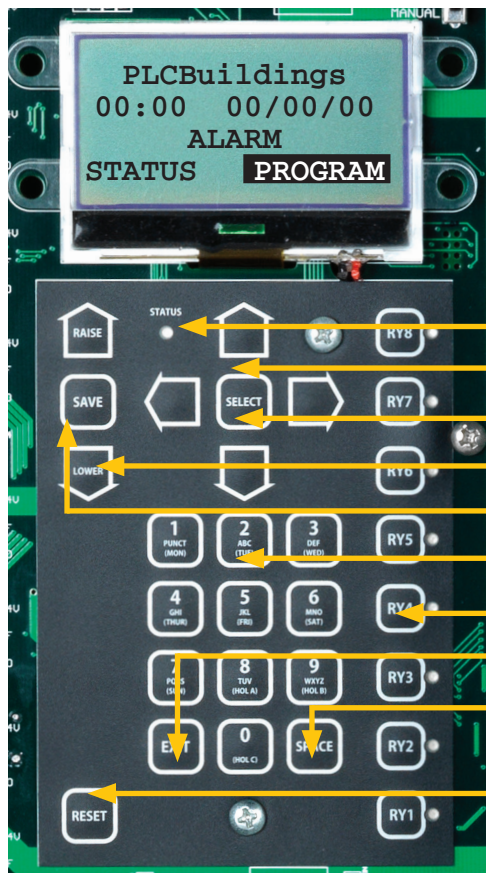
Tandem Changes Using Keypad

Changes

Your Tandem is easy to operate. When your installation is complete and power is connected to the controller, the Logic Status LED should be ON (steady flash). Once this occurs you can begin the step by step programming procedures on the next page.

The highlighted line can be executed with the SELECT button. Move up or down with the ARROW button. When done simply hit the SAVE button.

Using Keypad Interface



Logic Status LED

UP, DOWN, LEFT, RIGHT Move the active field (highlighted area) around the screen.

SELECT Selects current highlighted item.

RAISE, LOWER Scroll thru entries in a highlighted field or move to the next entry in list.

SAVE Save the data on the current screen.

0, 1-9 Input numeric, alphanumeric and day of week (Mon-Sun) entries.

RY1 – RY8 Change relay states.

EXIT Leave current screen and return to previous screen.

SPACE Add blank space in a name or used to scroll thru entries in a toggle field.

RESET Reset the controller and return to main screen.

Tandem Basic Setting Changes

To allow the Tandem controller to operate properly, a group must be assigned to a relay(s). Beyond the initial factory settings, additional assignments can be established to incorporate photo sensors and remote switches. If an installation requires different on/off or open/close times for several areas, each area will need a separate group with appropriate relays assigned. When changes are made, press 'SAVE' to store those changes.

CHANGE TIME & DATE

This action will set the system time and date.

PLCBuildings 08:00 00/00/00 ALARMS STATUS PROGRAM	5. SYSTEM SETUP	1. TIME & DATE 2. LOCATION 3. HOLIDAYS 4. WARN/SWEEP	TIME: 08:50:04 DATE: 00/00/00 ENABLE DST: YES EDIT DST DATES
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Scroll Down

CHANGE A SCHEDULE Start Time/Stop Time

This action will add a Schedule Start/Stop time for Group01.

NOTE: The Start/Stop time can be either a specific "Hour and Minute" entry or an offset of OPEN/CLOSE or SUNUP/SUNDN time.

PLCBuildings 08:50 10/29/11 ALARMS STATUS PROGRAM	1 SCHEDULES 2 OUTPUTS 3 SWITCHES 4 PHOTOCONTROL	1 REGULAR 2 OPEN/CLOSE	01 START/STOP START: 06:00 STOP: 18:00 DAYS:MTWTF-----	EDIT OUTPUT LIST EDIT DATES	1 GROUPS 2 RELAYS 3 PATTERN	#01 GROUP01 Y #02 GROUP02 N #03 GROUP03 N #04 GROUP04 N
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▲ Press arrow DN to highlight start time & use RAISE/LOWER to adjust; highlight days & use #keys to adjust; move to next screen

CHANGE OPEN/CLOSE SCHEDULE (SCHEDULE OPEN/SCHEDULE CLOSE - USING A GLOBAL START AND STOP, ON/OFF TIME)

This action will establish when a designated control will activate (OPEN) and de-activate (CLOSE).

PLCBuildings 08:50 10/29/17 ALARMS STATUS PROGRAM	1 SCHEDULES 2 RELAYS 3 SWITCHES 4 PHOTOCONTROL	1 REGULAR 2 OPEN/CLOSE	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----
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▲ Set TIME/DAY or SUNUP/SUNDN or NONE

CHANGE OPEN/CLOSE TIME

This action will establish when a designated control will activate (OPEN) and de-activate (CLOSE).

PLCBuildings 08:50 10/29/17 ALARMS STATUS PROGRAM	1 SCHEDULES 2 RELAYS 3 SWITCHES 4 PHOTOCONTROL	1 REGULAR 2 OPEN/CLOSE	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----	01 OPEN/CLOSE OPEN: 09:00 CLOSE: 17:00 DAYS:MTWTF-----
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▲ Set TIME/DAY or SUNUP/SUNDN or NONE

CHANGE A RELAY GROUP

This action will assign relays to Group01.

PLCBuildings 08:50 10/29/17 ALARMS STATUS PROGRAM	1 SCHEDULES 2 OUTPUTS 3 SWITCHES 4 PHOTOCONTROL	1 GROUPS 2 RELAYS 3 PATTERNS	#01 GROUP 1 SCHED ON/OFF RELAY CARD NO:1 -, -, -, -, -, -, -	01 GROUP01 SCHED ON/OFF RELAY CARD NO:1 1, 2, -, -, -, -, -
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▲ Use number keys to select relays

CHANGE PHOTO CONTROL

This action will associate Sensor-1 to a predefined set of Group01 relays.

PLCBuildings 08:50 10/29/17 ALARM STATUS PROGRAM	1 SCHEDULES 2 OUTPUTS 3 SWITCHES 4 PHOTOCONTROL	#01 PHOTO-01 SENSOR:CESIXX110 EDIT THRESHOLDS	1of8 PHOTO 1 DAYLIGHT HARVEST SET LIMITS EDIT OUTPUT LIST	1 GROUPS 2 RELAYS 3 PATTERNS	#01 GROUP01 Y #02 GROUP02 N #03 GROUP03 N #04 GROUP04 N
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CHANGE SWITCH CONTROL LOCAL

This action will associate Switch1-1 manual alternate action to Group01 relays.

PLCBuildings 08:50 10/29/17 ALARM STATUS PROGRAM	1 SCHEDULES 2 OUTPUTS 3 SWITCHES 4 PHOTOCONTROL	1 LOCAL 2 DIGITAL	1-1 SWITCH 1-1 2 WIRE ALT ACT TIMER: 000 MIN EDIT OUTPUT LIST	1 GROUPS 2 RELAYS 3 PATTERNS	#01 GROUP01 Y #02 GROUP02 N #03 GROUP03 N #04 GROUP04 N
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ADDING OCCUPANCY CONTROL GROUP

This action will add an occupancy sensor to relay control Group01.

PLCBuildings 08:50 10/29/17 ALARM STATUS PROGRAM	1 SCHEDULES 2 OUTPUTS 3 SWITCHES 4 PHOTOCONTROL	1 GROUPS 2 RELAYS 3 PATTERNS	#01 GROUP01 SCHED ON/OFF RELAY CARD NO:1 -, -, -, -, -, -, -	01 GROUP01 MANUAL ON/OFF RELAY CARD NO:1 1, 2, -, -, -, -, -
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ADDING OCCUPANCY CONTROL (LOCAL)

This action will add an occupancy sensor1-1 to control the existing Group01 relays.

PLCBuildings 08:50 10/29/11 ALARM STATUS PROGRAM	1 SCHEDULES 2 OUTPUTS 3 SWITCHES 4 PHOTOCONTROL	1 LOCAL 2 DIGITAL	1-1 SWITCH 1-1 2 WIRE MOTION TIMER: 000 MIN EDIT OUTPUT LIST	1 GROUPS 2 RELAYS 3 PATTERNS	#01 GROUP01 Y #02 GROUP02 N #03 GROUP03 N #04 GROUP04 N
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CHANGE ASTRONOMICAL CONTROL

PLCBuildings
08:50 10/29/17
ALARM
STATUS **PROGRAM**

1 SCHEDULES
2 OUTPUTS
3 SWITCHES
4 PHOTOCONTROL

1 REGULAR
2 OPEN/CLOSE

01 START/STOP
START:**SUNUP**+000
STOP:SUNDN+000

01 START/STOP
START:SUNUP+120
STOP:**SUNDN**+000
DAYS:MTWTF-----

Press Arrow DN

EDIT OUTPUT LIST
EDIT DATES

1 GROUPS
2 RELAYS
3 PATTERNS

#01	GROUP01	Y
#02	GROUP02	N
#03	GROUP03	N
#04	GROUP04	N

CHANGE PHOTO SENSOR CONTROLLED 0-10V DIMMING

PLCBuildings
08:50 10/29/17
ALARM
STATUS **PROGRAM**

1 SCHEDULES
2 OUTPUTS
3 SWITCHES
4 PHOTOCONTROL

#01 PHOTO-01
SENSOR:CESIX110
EDIT THRESHOLDS

1of8 PHOTO-01
OPENLOOP TABLE1
EDIT OUTPUT LIST

1-1	DIM1-1	Y
1-2	DIM1-2	N
1-3	DIM-3	N
1-4	DIM1-4	N

UP/DOWN button to move through the list of patterns. RAISE, LOWER or SPACE buttons to change photo sensor. RAISE/LOWER to select 'Y'.

ADDING MANUAL CONTROLLED 0-10V DIMMING

This action will change factory settings to manually controlled 0-10V dimming.

PLCBuildings
08:50 10/29/17
ALARM
STATUS **PROGRAM**

1 SCHEDULES
2 OUTPUTS
3 SWITCHES
4 PHOTOCONTROL

1 LOCAL
2 **DIGITAL**

#01 STATION01
STATION SETUP
BUTTON SETUP

#01 STATION01
TYPE: **SWCAN01**
SW1: 00
SW2: 00

RAISE, LOWER & SPACE to scroll thru switch station options. Valid options are 1 button, 2 button, 3 button, 4 button & 5 button. DOWN to go to SW1 address.

#01 STATION01
TYPE: CN225
SW1: **00**
SW2: 00

Use 0-9 to enter address of SW1 on digital station. Station SW1 switch goes 0-9, A-F. Enter the number as 0-15. Where 10 is A, 11 is B, 12 is C, 13 is D, 14 is E, 15 is F. Push SELECT to end input. Push down to move to SW2.

#01 STATION01
TYPE: CN225
SW1: 00
SW2: **00**

Use 0-9 to enter address of SW2 on digital station. Station SW2 switch goes 0-9, A-F. Enter the number as 0-15. Where 10 is A, 11 is B, 12 is C, 13 is D, 14 is E, 15 is F. Push SELECT to end input.

CHANGE DIGITAL STATION BUTTONS

This action will change the factory settings for 0-10V dimming using a PLC photo sensor.

PLCBuildings
08:50 10/29/17
ALARM
STATUS PROGRAM

1 SCHEDULES
2 OUTPUTS
3 SWITCHES
4 PHOTOCONTROL

1 LOCAL
2 DIGITAL

#01 STATION01
STATION SETUP
BUTTON SETUP

1 of 5 BUTTON01
RAMP UP/DN
TIMER: 000 MIN
EDIT OUTPUT LIST

RAISE, LOWER and SPACE to scroll to desired button. RAMP UP to increase light output. RAMP DN to decrease light output. RIGHT to move to button name. DOWN to move to button type.

CHANGE SWITCH TIMER

PLCBuildings
08:50 10/29/17
ALARM
STATUS PROGRAM

1 SCHEDULES
2 OUTPUTS
3 SWITCHES
4 PHOTOCONTROL

1 LOCAL
2 DIGITAL

#01 STATION01
STATION SETUP
BUTTON SETUP

1 of 5 BUTTON01
RAMP UP/DN
TIMER: 000 MIN
EDIT OUTPUT LIST

CHANGE BUTTON GROUP

PLCBuildings
08:50 10/29/17
ALARM
STATUS PROGRAM

1 SCHEDULES
2 OUTPUTS
3 SWITCHES
4 PHOTOCONTROL

1 LOCAL
2 DIGITAL

#01 STATION01
STATION SETUP
BUTTON SETUP

1 of 5 BUTTON01
RAMP UP/DN
TIMER: 000 MIN
EDIT OUTPUT LIST

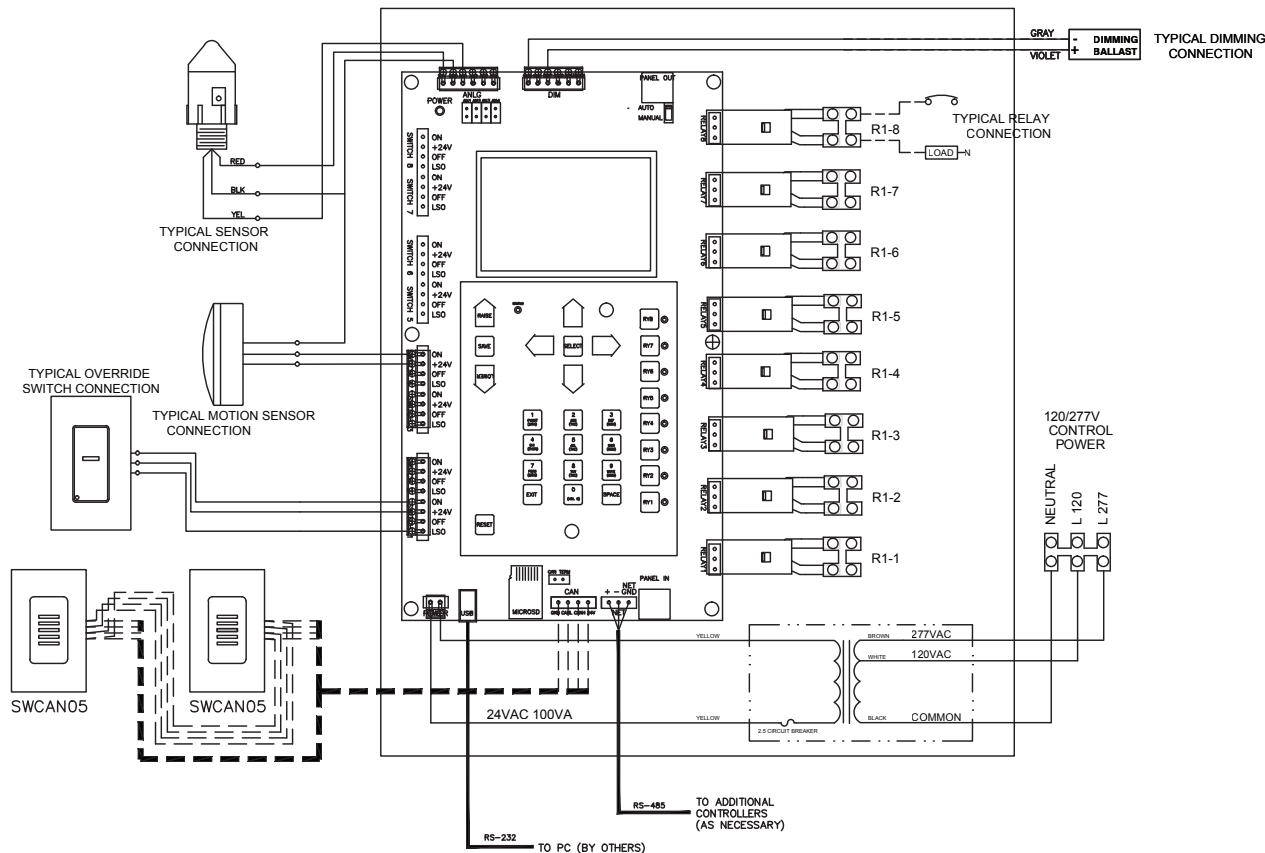
1 GROUPS
RELAYS
PATTERNS
DIMMERS

#01 GROUP01 Y
#02 GROUP02 N
#03 GROUP03 N
#04 GROUP04 N

Push UP/DOWN to move through the list of groups. Push RAISE, LOWER or SPACE to change whether this group will be controlled by this button. Push SAVE to save new control list.

NOTES

Tandem Default Wiring Connections



Technical Support

1-866-998-5483

plcbuildings.com



Lighting Control Systems

3101 111th Street SW • Suite F • Everett, WA 98204
425-353-7552 • Fax: 425-353-3353 • plcmultipoint.com

206 Tandem Rev1

