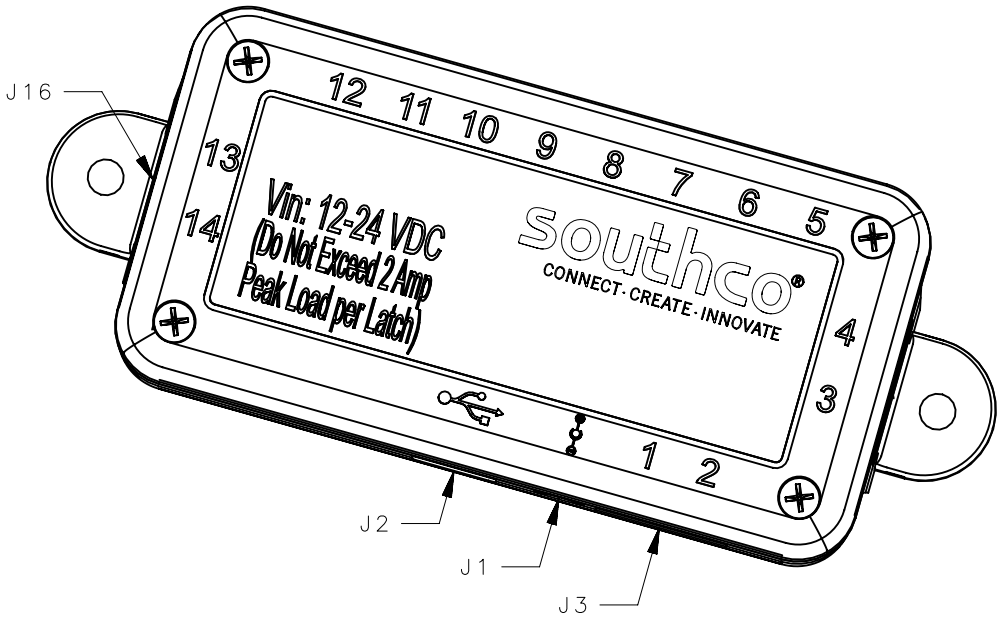
REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
J	28AUG2018	DJK/WJB	PRN:P2018-2022



NOTES:
1. MATERIALS ARE RoHS COMPLIANT
   1. HOUSING- ABS
   2. PRINTED CIRCUIT BOARD- FR4
2. ELECTRICAL SPECIFICATIONS
   1. OPERATING VOLTAGE: 12-24 VDC
   2. MAX OUTPUT PER LATCH: 2 AMPS
   3. DO NOT EXCEED MAX LATCH VOLTAGE
3. J1 POWER CONNECTOR, CUI
   CONN PWR JACK 2.0 X 6.0mm, SHIELDED
   PART NUMBER: PJ-051A
   FOR USE WITH 2.1 X 5.5mm OD MATING CONNECTOR
4. J2 CONNECTOR,TYCO, MINI USB
   PART NUMBER: 1734035-2
5. J3 THRU J16 LATCH CONNECTORS(INDICATED AS 1-14 ON ENCLOSURE)
   HIROSE, CONN HEADER 6 POS 2mm RT ANG TIN
   PART NUMBER: DF11-6DP-2DS(24)
6. ASSEMBLED CONTROLLER IS SEALED IN INDIVIDUAL ESD BAG THEN PLACED IN A POLY BAG WITH THE 1 METER USB CABLE AND OPERATING INSTRUCTIONS (J-EA-A06-001-M).
7. POWER SOURCE SHOULD BE SIZED BASED ON THE REQUIREMENTS OF THIS CONTROLLER AND THE CONNECTED LATCH(S).
8. MOUNTING HARDWARE NOT PROVIDED- RECOMMENDED M4 OR #6 SCREWS. DO NOT OVER TIGHTEN.

NO	PART NUMBER	PART NAME	QTY
2	1 METER USB CABLE (NOT SHOWN)	USB CABLE	1
1	J-EA-A06-001-M (NOT SHOWN)	OPERATING INSTRUCTIONS	1
-	EA-A06-001	USB CONTROLLER	1

THIRD ANGLE PROJECTION

MILLIMETERS [IN]

TOLERANCES UNLESS OTHERWISE NOTED

ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.

PER ASME Y14.5M-1994

SURFACE AREA

VOLUME

southco®
CONNECT·CREATE·INNOVATE

DESCRIPTION: USB ASSEMBLY

SIZE	SYSTEM	DWG NO.	
A4	NX	J-EA-A06-001	

DRAWN BY	DATE	SCALE	SHEET
ZNP	10/10/2011	1:1	1 OF 2

REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
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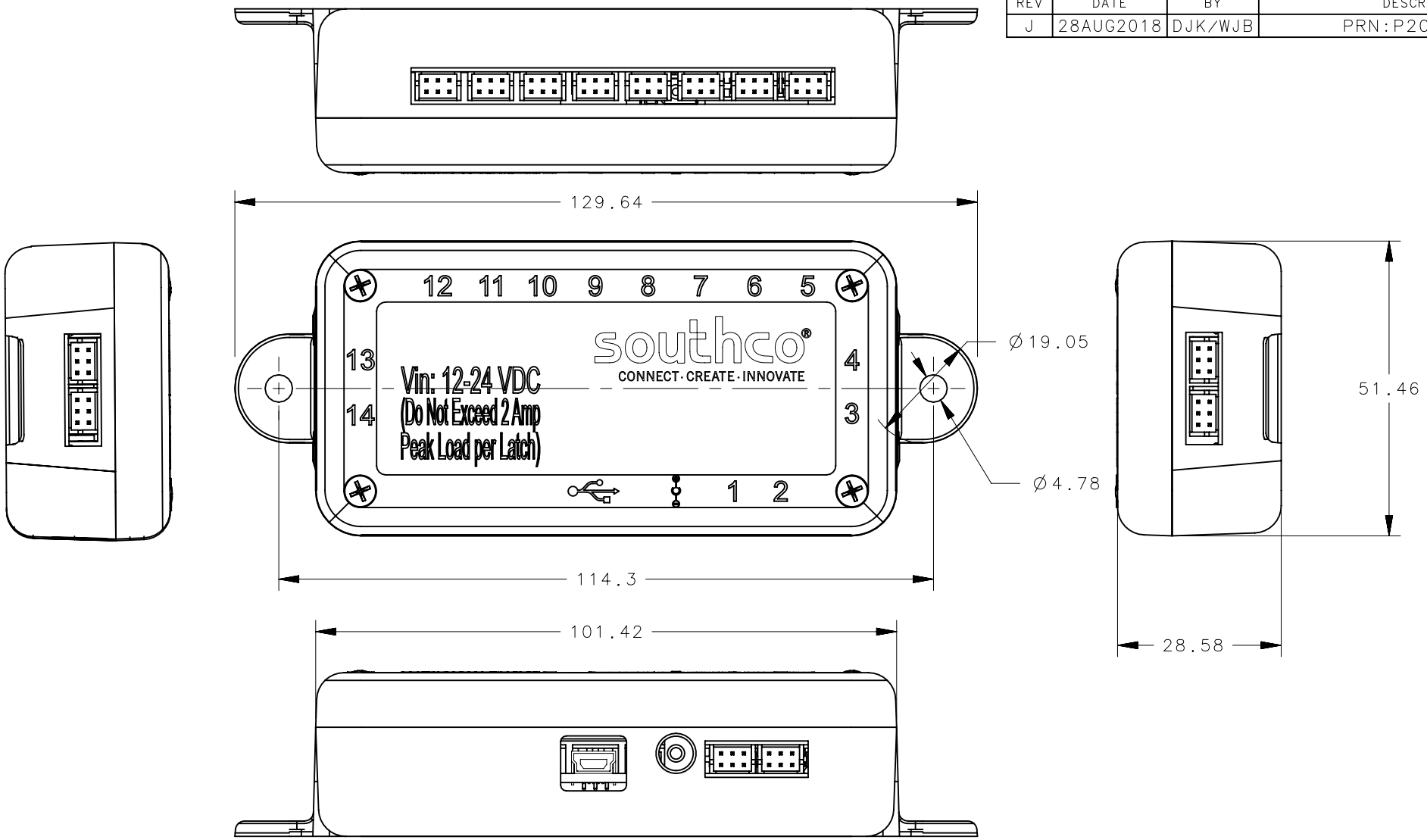


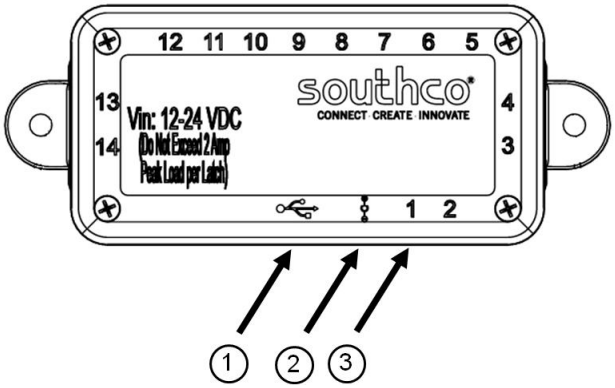
	THIRD ANGLE PROJECTION	southco® CONNECT·CREATE·INNOVATE
	MILLIMETERS [IN]	
SURFACE AREA	TOLERANCES UNLESS OTHERWISE NOTED	DESCRIPTION: USB ASSEMBLY
VOLUME	ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.	SIZE A4 · SYSTEM NX · DWG NO. J-EA-A06-001
PROPRIETARY ITEM	PER ASME Y14.5M-1994	DRAWN BY ZNP · DATE 10/10/2011 · SCALE 1:1 · SHEET 2 OF 2

EA-A06-001 USB Controller
Operating Instructions

Package Contents

- EA-A06-001 USB Controller
- USB 2.0 Cable (USB Mini 5P Male <-> A Male, 1 meter)
- Operating Instructions

EA-A06-001 USB Controller



1. Mini USB Connector
2. Power Supply Connector
3. Latch Connector (numbered 1-14)

Features

- 14 independent latch outputs
- Compatible with Windows® operating system
  (Contact Southco if using with other operating systems)

Specifications

Supply Voltage:	12V - 24VDC ± 10% (**NOTE**: Do not exceed maximum latch operating voltage)
Standby Current:	20mA (max, no attached devices)
Operating Current:	30mA (max, no attached devices)
Max Latch Current:	2A peak (each)

NOTE: For indoor use only.

⚠ **WARNING:** The controller's circuit board is an ESD-sensitive device. Observe ESD best practices when handling the controller.

Default Settings

- All latches closed
- Status mode 1 enabled
- Power mode enabled

Default settings will be restored when power is removed.

USB Drivers

The EA-A06-001 USB Controller uses the FTDI USB-to-Serial Converter Driver. This creates a Virtual COM port to be used to operate the USB Controller.

The drivers can be downloaded from http://www.ftdichip.com/Drivers/VCP.html.

NOTE: Be sure to select the appropriate drivers for the host operating system and follow the instructions from the FTDI website when installing.

COM Port Settings

The COM port must be configured with the following settings:

parameter	setting
Bits per second	38400
Data bits	8
Parity	None
Stop bits	1
Flow Control	None

Commands

The table below summarizes the commands that can be issued to the controller.

command	action	return
`openX\r`	Turns on control signal to latch	n/a
`closeX\r`	Turns off control signal to latch	n/a
`statusX\r`	Returns latch status as open or closed	`\r\nopenedX\r\n` OR `\r\nclosedX\r\n`
`changemode\r`	Toggles status mode for monitoring latch status inputs	`\r\nMode1\r\n` OR `\r\nMode2\r\n`
`power\r`	Toggles power to all latches off or on	`\r\nPower On\r\n` OR `\r\nPower Off\r\n`

where:

- "\r" = carriage return
- "\n" = new line
- "X" = 1 thru 14 (latch number)

NOTE: Commands are case sensitive.

openX Command

The openX command will result in the command signal being asserted to the latch connected to latch connector X. The latch will then open. The command signal will remain asserted until a closeX command is issued.

⚠ **WARNING:** To minimize power consumption, a 200msec delay must follow each openX command.

Example: Issuing command "open5" will result in the command signal to open latch #5 to be asserted.

closeX Command

The closeX command will result in the command signal being removed from the latch connected to latch connector X.

⚠ **WARNING:** To minimize power consumption, a 200msec delay must follow each closeX command.

Example: Issuing command "close5" will result in the command signal to latch #5 to be removed.

changemode Command

There are two modes the controller uses to monitor the latch status inputs: status mode1 and status mode 2. The changemode command can be used to toggle between the two modes.

⚠ **NOTE:** The selected mode will apply to all connected latches. See the ***statusX Command*** section for additional information on how latch status is returned in these two modes.

Status mode 1 should be used when using a Southco R4-EM or EM-05 latch. In status mode 1, the controller will report a status of 'closed' if the latch status input (pin 5) is GND. The H3-EM Mechanical Lock Status input (pin 6) is ignored in this mode.

Status mode 2 should be used when using a Southco H3-EM or EM-10 latch. In status mode 2, the controller will report a status of 'open', if either the latch status (pin 5) or H3-EM Mechanical Lock Status (pin 6) input is GND.

Example: Issuing command "changemode" when in status mode 1 will toggle the mode to status mode 2 and return "Mode2". Issuing command "changemode" when in status mode 2 will toggle the mode to status mode 1 and return "Mode1".

statusX Command

The statusX command will return the status of the latch connected to latch connector X. The table below summarizes the status returned depending on the controller's status mode and inputs from the connected latch. See the ***changemode Command*** section for information on setting the status mode

	status mode 1		status mode 2	
status	**pin 5**	**pin 6**	**pin 5**	**pin 6**
opened	open	X	GND	X
			X	GND
closed	GND	X	open	open

where:

- "X" = any state (no connect, open collector, GND, etc.)
- "open" = no connect, open collector

⚠ **NOTE:** The controller must be in the status mode appropriate for the connected latch **before** issuing the *statusX* command for the correct status to be returned. This is especially important to note when there is a mix of Southco latches used.

Example #1: Only R4-EM or EM-05 latches are connected to the controller. Set the status mode to status mode 1 (*Mode1*). Issuing command *statusX* will return either *openedX* or *closedX*, depending on the latch status input (pin 5) described in the table above.

Example #2: Latch #1 is an H3-EM and Latch #2 is an R4-EM. Set the status mode to status mode 2 (*Mode2*) before issuing the *status1* command. The status returned will be either *opened1* or *closed1*, depending on the status inputs from the H3-EM (pins 5 and 6) described in the table above. To report the status of the R4-EM, set the status mode to status mode 1 (*Mode1*) before issuing the *status2* command. The status returned will be either *opened2* or *closed2*, depending on the latch status input (pin 5) described in the table above.

power Command

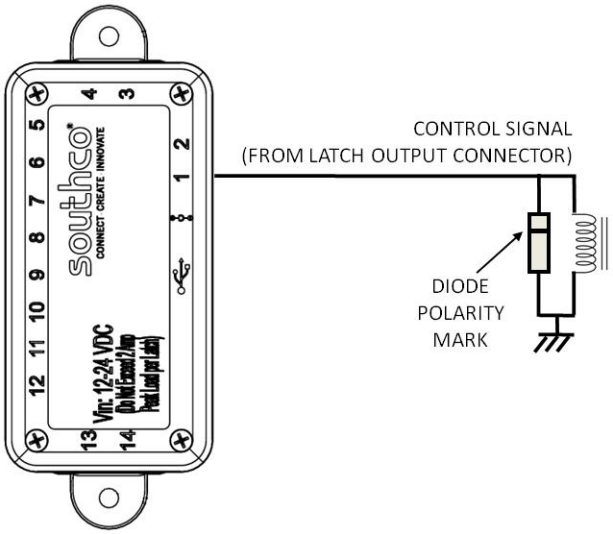
The power command can be used to toggle supply voltage on/off to the latches.

⚠ **NOTE:** The selected mode will apply to all connected latches.

Example: If the controller is providing supply voltage to the latches, issuing the command "power" will turn off supply power to the latches and return "Power Off". If the controller is not providing supply voltage to the latches, issuing the command "power" will turn on supply power to the latches and return "Power On".

Connecting to an Inductive Load

When connecting to a device with an inductive load, a diode should be used to protect the controller from a reverse voltage spike. The diode should be placed in parallel with the load, as shown in the following figure. Observe proper polarity when connecting the diode.

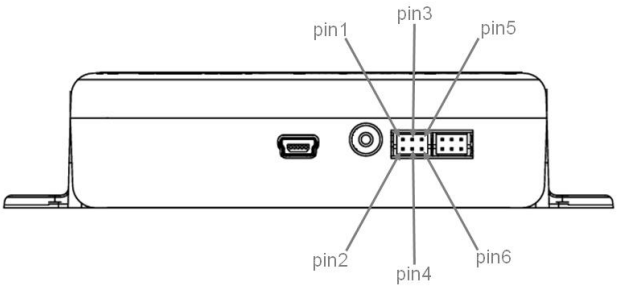


⚠ **NOTE:** Contact Southco if using a non-Southco latch.

Latch Connector Pin Assignment

The controller's latch output connectors provide a power supply and command output for the electromechanical latches. These will be the same voltage level as the controller's power supply voltage (12 to 24VDC). **The controller's power supply input must not exceed the electrical ratings of the latch(es).**

The figure and table below show the pinout of the latch output connectors.



Pin #	Description	Note
1	V_{GND}	ground
2	V_{SUPPLY}	power supply output to latch (same as EA-A06-001 supply voltage)
3	V_{GND}	ground
4	Control Signal	door release command output (same voltage as EA-A06-001 supply voltage)
5	Latch Status	latch status
6	H3-EM Mechanical Lock Status	mechanical lock status from H3-EM (applies only to H3-EM)

For technical support of this product contact: info@southco.com
or visit: www.southco.com

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FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

CET appareil numérique de la classe A est conforme á la norme NMB-003 du Canada.