DATA SHEET

XSW: XSW for Bluetooth conversion of standard low voltage light switches

Figure 1: XSW-DIM-01-BK1 Bluetooth converter for 0-10V dimming switches

Figure 2: XSW-LVC-8A-BK1 Bluetooth converter for low voltage contact switches

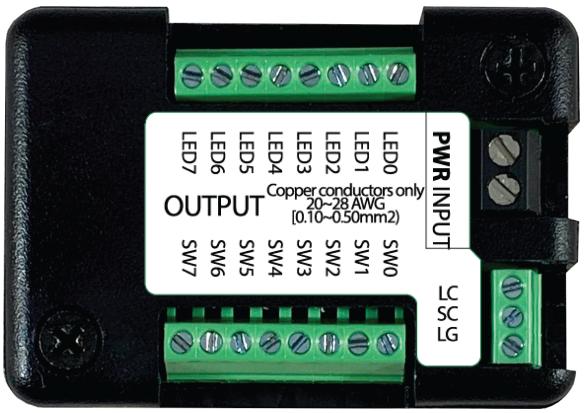

Figure 3: XSW-LVC-8x-BK1 bottom, showing wire connectors

About Xicato

Xicato designs and develops light sources and electronics that enable architects, designers and building managers to create beautiful, smart spaces in which people love to live and work. With thousands of installations around the globe, Xicato continues to be a leading supplier of high quality lighting solutions. Xicato is defining the future of energy efficient, human-centric environments with the Xicato Controls portfolio of intelligent light sources, electronics, software and connectivity. Founded in 2007, Xicato's headquarters is based in Silicon Valley and the company has offices in China, Europe and the US.

For further information, visit www.xicato.com.

ABOUT THIS DOCUMENT

This is just one of many documents and tools available from Xicato to assist lighting designers, specifiers, and luminaire manufacturers in understanding and using Xicato products. These include:

- Datasheets
- Test reports, including third party LM-80, UL, CE, and FCC
- Accessory selection tools for heatsinks, optics, and drivers
- CAD files and drawings
- IES files
- Application and Technical Notes
- Training presentations
- Sales brochures and Technical whitepapers
- … and much more

Visit www.xicato.com/support/documents-and-tools, or contact your local Xicato representative for more information

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GENERAL DESCRIPTION

XSW – XICATO SWITCH CONVERTERS

Part of the Xicato Controls portfolio of Bluetooth wireless devices, Xicato XSW are programmable, field-installable devices that convert standard 0-10V dimming switches or low voltage momentary contact switches into sophisticated Bluetooth controllers.

The Xicato Controls portfolio currently includes Xicato intelligent LED modules (XIM), drivers (XID), IP gateways (XIG), sensors (XIS), switch converters (XSW), protocol translators, and software.

Different XSW models are designed to address specific switch variants:

- XSW-DIM-01 allows any standard single-channel, 0-10V dimming switch to control a single dimmable Xicato Bluetooth mesh-compatible light source or lighting group.
- XSW-LVC converts a standard low voltage contact switch into a programmable Bluetooth controller. Each button is independently programmable to command dim levels for one or more lights, or to command scenes for any number of lights or lighting groups. XSW-LVC provides power to the switch LEDs. Different variants of XSW-LVC accommodate up to 4 or up to 8 buttons, and accommodate either common Anode (4A or 8A) or common Cathode (4C or 8C) LED configurations.

XSW communicates directly with lighting nodes over the Xicato Xbeacon Bluetooth mesh, and will eventually support the Bluetooth SIG standard mesh protocol.

FEATURES

EASY TO INSTALL

XSW is FCC, CE/RED and RCM certified, and is UL Listed for field installation by electricians or do-it-yourselfers. Existing 0-10V or LV contact switches can be retrofitted with XSW, or the user can choose from the huge variety of new, off-the-shelf switches. Simply wire the switch inputs and outputs to the XSW, and it does the rest.

SAFE, INEXPENSIVE WIRING

XSW are DC powered (12-50V, UL Class 2, SELV Class III), which means that they can be installed by anyone using safe, 2-conductor low-voltage wiring. XSW provides the power to the associated switch; powering the 0-10V circuit of a dimmer switch, or powering both the contact closure and LED circuits in a low voltage contact switch.

INSTANT LIGHTING RESPONSE

XSW broadcasts data directly to lighting nodes using Bluetooth – no central controller, gateway, hub or extra hops required except to extend the command to distant nodes. This means instant response and maximum reliability using minimum power.

PROGRAMMABLE COMMANDS

XSW-LVC programming can be as simple as “button one pressed / button one released,” or as powerful as “Group 75, Recall Scene 14,” or even, “All Nodes in network ‘Living Room’, go into Sensor Response state.” Because of the distributed intelligence of the Xicato Bluetooth mesh network, the lighting nodes know what to do according to their individual programs.

ORDERING GUIDE

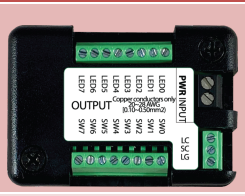
GUIDE TO PART NUMBERING

Product family	-	Switch Compatibility	-	Circuits	Form factor
XSW		DIM = 0-10V dimmer LVC = Low Voltage Contact switch		01 = 1 circuit 4A = 4 button, common anode LEDs 4C = 4 button, common cathode LEDs 8A = 8 button, common anode LEDs 8C = 8 button, common cathode LEDs	BK1 = black plastic housing

AVAILABLE PARTS

Part Number	Description
XSW-DIM-01-BK1	XSW, 0-10V dimmer, 1 circuit, black plastic housing
XSW-LVC-4A-BK1	XSW, low voltage contact, 4 button, common anode, black plastic housing
XSW-LVC-4C-BK1	XSW, low voltage contact, 4 button, common cathode, black plastic housing
XSW-LVC-8A-BK1	XSW, low voltage contact, 8 button, common anode, black plastic housing
XSW-LVC-8C-BK1	XSW, low voltage contact, 8 button, common cathode, black plastic housing

MECHANICAL & ELECTRICAL SPECIFICATIONS

	XSW-DIM-01-BK1	XSW-LVC-4x-BK1	XSW-LVC-8x-BK1
Note: XSW-LVC photos are of 8-button version			
Form factor	Standalone black ABS plastic housing (UL94 HB)		
Dimensions	50mm x 25mm x 15.5mm	50mm x 35mm x 15mm	
Weight	14g (including wire leads)	20g	20g
Operating temp	0˚C to +40˚C	0˚C to +40˚C	0˚C to +40˚C
Storage temp	-40˚C to +60˚C	-40˚C to +60˚C	-40˚C to +60˚C
Recommended input voltage	15V to 48V DC	15V to 48V DC	15V to 48V DC
Maximum input voltage range*	12V to 50V DC	12V to 50V DC	
Output voltage	0-10V DC[1]	12V DC[2]	
Output current	100µA	4mA per LED[3]	
Power connection	Red & black flying leads	2 wire screw-down terminal	
Power consumption – typical idle	12.5mA	11mA	
Power consumption - minimum	1mA depending on configuration		
Power consumption – active max	12.5mA	30mA with all LEDs illuminated[4]	

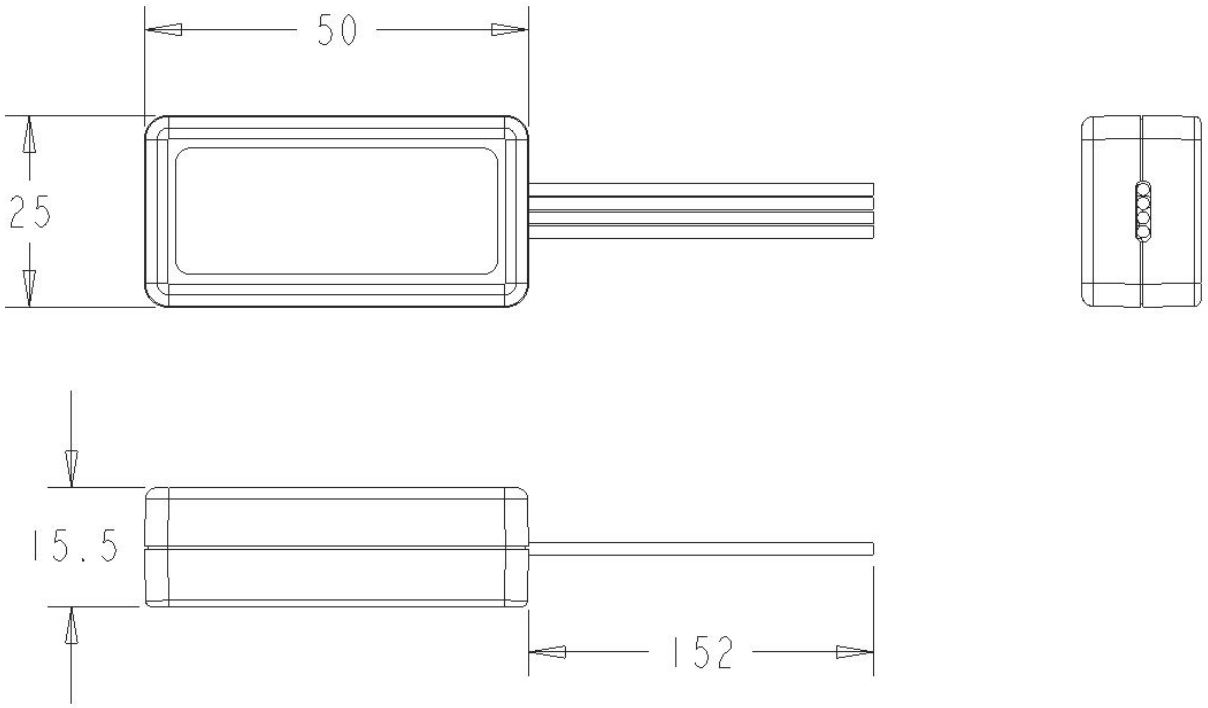
See XSW application notes for conditions under which maximum limits are acceptable.

WIRELESS SPECIFICATIONS

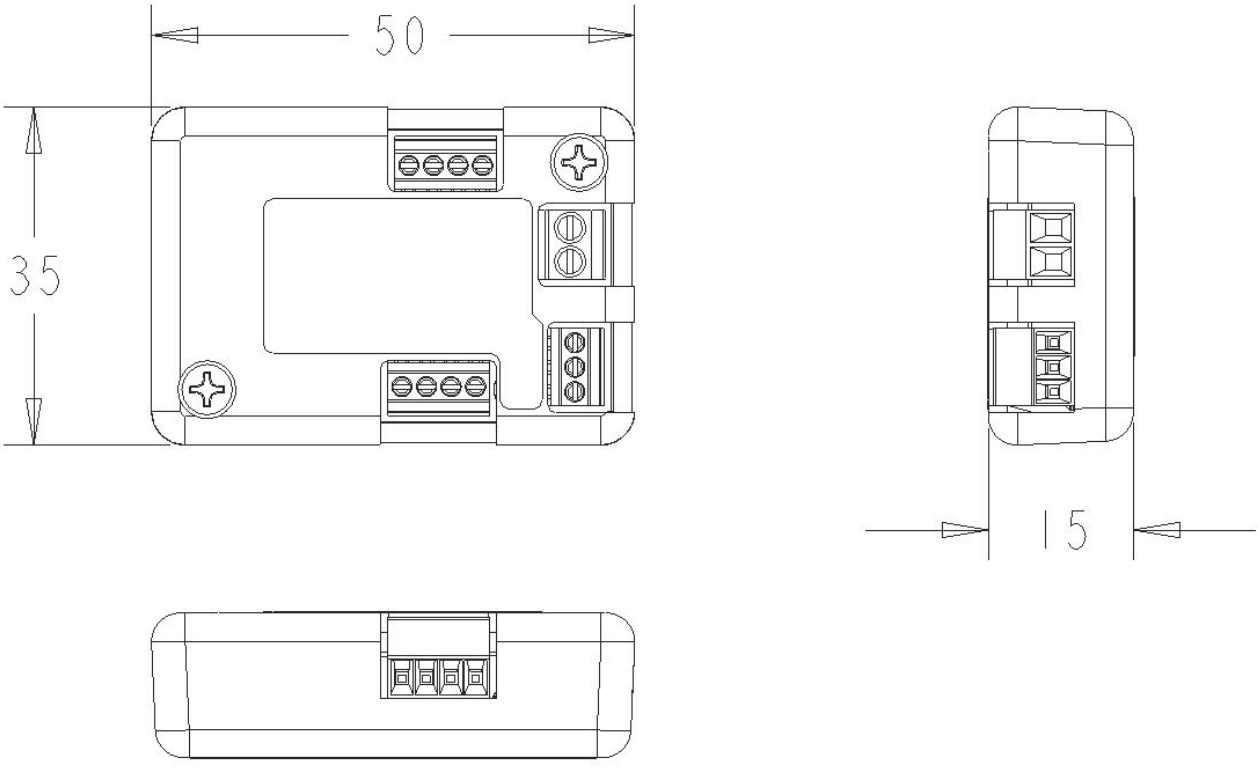
Processor	ARM® Cortex® M4F, 32-bit, 64 MHz
Encryption	AES HW Encryption
Memory	512 kB flash, 64 kB RAM
Wireless Protocol	Bluetooth Low Energy v4.2. Bluetooth 5 Ready
Wireless Spectrum	2.4 GHz ISM band
Bandwidth	1 Mbps
Channels	40
Transmit Power	-20 dBm to +4dBm
Receive Sensitivity	-96 dBm
RSSI Resolution	1 dBm

[1] Only when operating at or above the recommended minimum input voltage.
[2] Only when operating at or above the recommended minimum input voltage.
[3] LED current must be controlled on the load side: XSW-LVC does not control current to LEDs
[4] If more than 4 LEDs are illuminated, XSW-LVC will apply 50% PWM to the LED output to limit total current

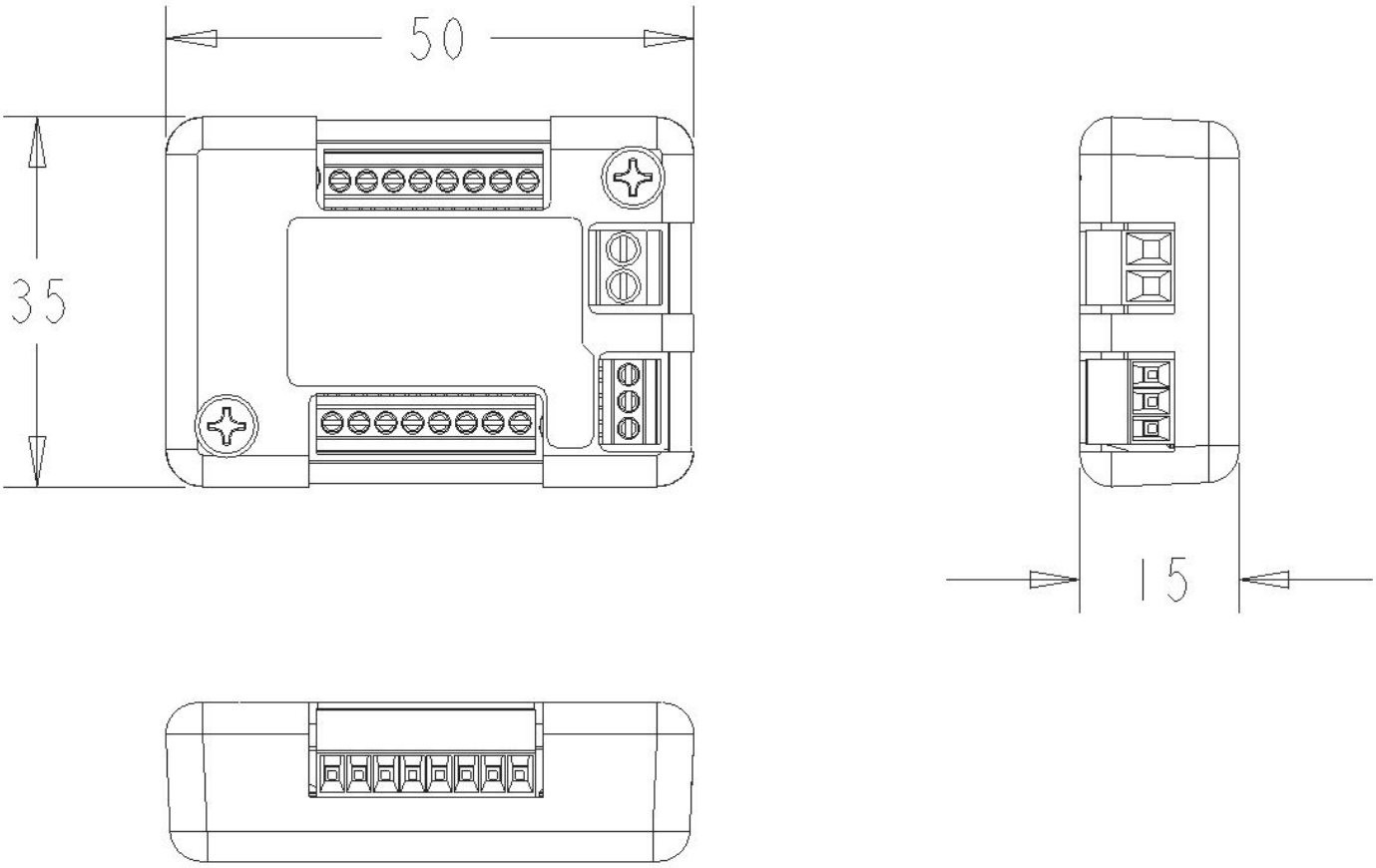
MECHANICAL DRAWING: XSW-DIM



MECHANICAL DRAWING, XSW-LVC-4



MECHANICAL DRAWING, XSW-LVC-8



ENVIRONMENTAL SAFETY

RoHS compliant

Lead content:	None
Mercury content:	None
UV or IRC Emissions:	None

REGULATORY COMPLIANCE

ELECTRICAL SAFETY

XSW-DIM-BK1

UL Listed: The XSW-DIM-BK1 is a Class 2 powered, field-installable Type I Operating Control that is rated for indoor use only within a Pollution Degree 2 environment and it is intended for Overvoltage category I applications. The XSW-DIM-BK1 is UL Listed under filing number E501361 and been found compliant to UL 60730-1 and CAN/CSA-E60730-1.

CE Safety: The XSW-DIM-BK1 is a SELV III powered Type I Operating Control that rated for indoor use only within a Pollution Degree 2 environment and it is intended for Overvoltage category I applications. The XSW-DIM-BK1 has been found compliant to IEC 60730-1:2013.

XSW-LVC (ALL)

UL Listed: The XSW-LVC are Class 2 powered, field-installable Type I Operating Control devices that are rated for indoor use only within a Pollution Degree 2 environment and are intended for Overvoltage category I applications. XSW-LVC are UL Listed under filing number E501361 and have been found compliant to UL 60730-1 and CAN/CSA-E60730-1.

CE Safety: The XSW-LVC are SELV III powered Type I Operating Control device that are rated for indoor use only within a Pollution Degree 2 environment and are intended for Overvoltage category I applications. The XSW-LVC have been found compliant to IEC 60730-1:2013.

WIRELESS COMPLIANCE

AUSTRALIA AND NEW ZEALAND

ACMA RCM: XSW products have satisfied the requirements for ACMA RCM in Australia and New Zealand. The Supplier's Declaration of Conformity (SDoC) can be supplied upon request

CANADA

ISED NOTICE: The device complies with Canada RSS-GEN Rules. The device meets the requirements for modular transmitter approval as detailed in RSS-GEN. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

L'appareil est conforme aux Règles RSS-GEN de Canada. L'appareil répond aux exigences d'approbation de l'émetteur modulaire tel que décrit dans RSS-GEN. L'opération est soumise aux deux conditions suivantes: (1) Cet appareil ne doit pas causer d'interférences nuisibles, et (2) Cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant entraîner un fonctionnement indésirable.

ISED INTERFERENCE STATEMENT FOR CANADA

This device complies with Innovation, Science and Economic Development (ISED) Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme à la norme sur l'innovation, la science et le développement économique (ISED) norme RSS exempte de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED RADIATION EXPOSURE STATEMENT FOR CANADA

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux radiations ISED prévues pour un environnement incontrôlé.

EUROPE

Declaration of Conformity: Hereby, Xicato declares that the XSW products comply with the essential requirements and other relevant provisions of RED 2014/53/EU.

UNITED STATES

FCC NOTICE: This device complies with Part 15 of the FCC Rules. The device meets the requirements for the modular transmitter approval as detailed in FCC public Notice DA00-1407. Transmitter Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help