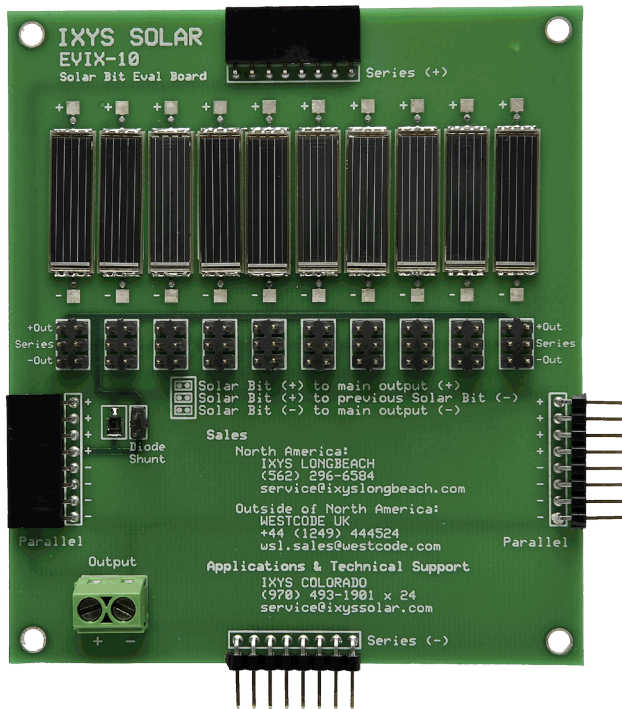


# EVIX-10 SolarBIT Evaluation Board

## Introduction

The EVIX-10 is a two-layer, 3.5-inch by 4-inch PC board created for easy and flexible evaluation of the IXYS XOB17-12x1 SolarBIT product.



Each SolarBIT is connected to a 6-pin header. Using the included push-on shunts, the user can arrange the ten SolarBITS into various series/parallel combinations. To achieve maximum current, for example, all ten SolarBITS can be connected in parallel to yield 0.5 V at 400 mA. For maximum voltage, all ten SolarBITS can be connected in series to yield 5 V at 40 mA.

A screw terminal block is located near the bottom of the board for easy wire connection to the load.

An 8-pin right-angle header is located at each edge of the board for expansion purposes. The right (male) and left (female) headers connect additional EVIX-10 boards in parallel, and the upper (female) and lower (male) headers connect additional boards in series.

A Schottky diode isolates the Solar Bit array from those on other boards and allows experiments in battery charging. The user can install a push-on shunt to short the diode and eliminate its voltage drop.

A 0.125-inch mounting hole is provided in each corner.

## SolarBIT Description

XOB17-12x1 SolarBITS are monocrystalline, high-efficiency solar cells in a surface mount package that can be reflow soldered. They're extremely robust and can be used in harsh environments.

SolarBITS have a very high (17%) power conversion efficiency, which means that 17% of the light energy is converted into electrical energy. They're extremely useful in applications requiring solar power generation in a limited space.

IXYS cells can be used in indoor and outdoor applications because they have a wide spectral sensitivity, 300 to 1100 nm. However, the output power of a solar cell is proportional (over a wide range) to the incoming light energy, and irradiance is generally much higher outdoors. The values in the data sheet are measured at "standard condition" of 1 sun, which is equal to 1000W per square meter sunlight irradiance at a defined light spectrum (air mass of 1.5) and 25°C cell temperature.

The SolarBIT comes in several different voltage and current configurations. Please see the website for further information. [www.ixys.com](http://www.ixys.com)

## SolarBIT Description, continued

XOB17 SolarBITs are built using XOD17 solar cell die products. The XOB17 datasheet can be downloaded at [http://ixdev.ixys.com/DataSheet/XOB17-Solar-Bit-Datasheet\\_Mar-2008.pdf](http://ixdev.ixys.com/DataSheet/XOB17-Solar-Bit-Datasheet_Mar-2008.pdf), and the XOD17 datasheet can be downloaded at [http://ixdev.ixys.com/DataSheet/XOD17-Solar-Cell-Die-Datasheet\\_Mar-2008.pdf](http://ixdev.ixys.com/DataSheet/XOD17-Solar-Cell-Die-Datasheet_Mar-2008.pdf).

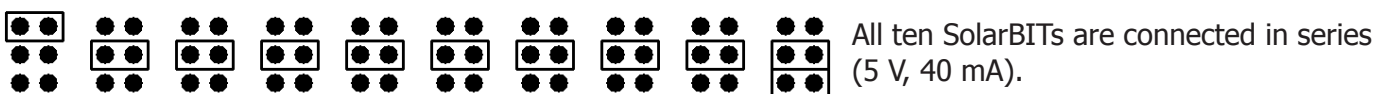
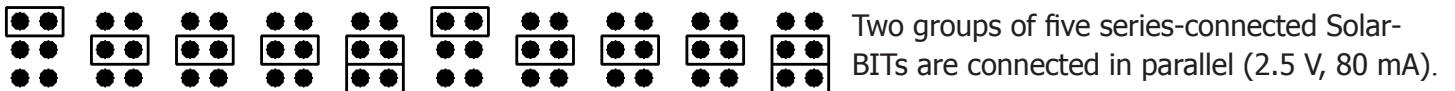
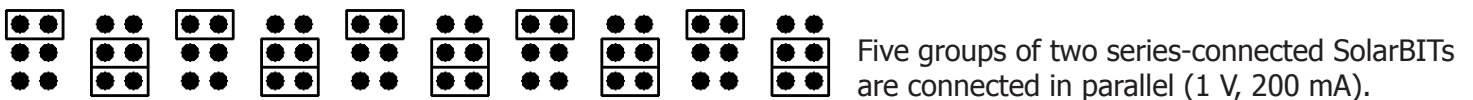
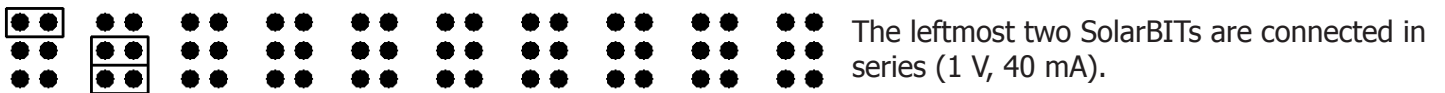
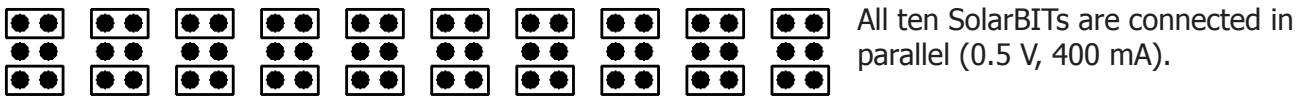
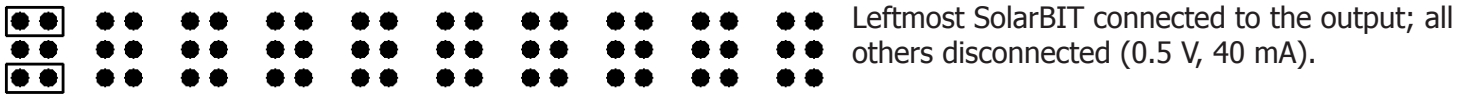
### Configuration Jumpers

Placing a shunt across the top two pins connects the (+) terminal of the Solar Bit to the (+) terminal of the output connector.

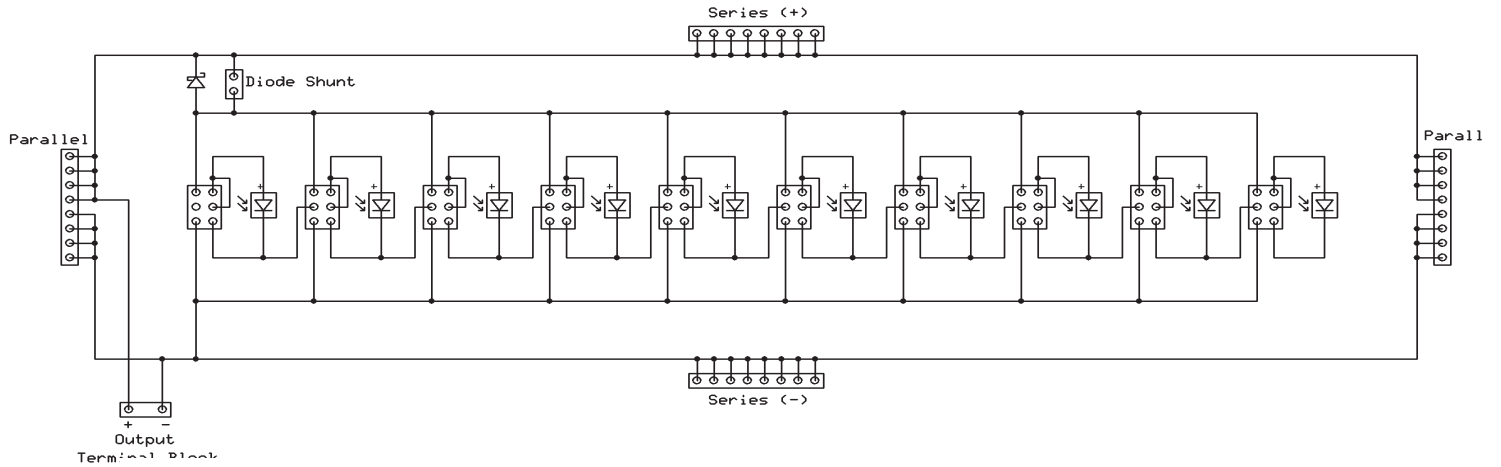
Placing a shunt across the middle two pins connects the (+) terminal of the Solar Bit to the (-) terminal of the previous Solar Bit, connecting them in series.

Placing a shunt across the bottom two pins connects the (-) terminal of the Solar Bit to the (-) terminal of the output connector.

The typical single-cell output voltage at max power is 0.51 V and the short circuit current is 42 mA. Various cell combinations, and the expected output based on these numbers, are shown below. When placing series-connected groups of Solar Bits in parallel, be sure the groups have the same number of cells in series.



# Schematic



### Configuration Header

- ⊖ ⊖ ← Connects Solar Bit (+) to Main Output (+)
- ⊖ ⊕ ← Connects Solar Bit (+) to previous Solar Bit (-)
- ⊕ ⊖ ← Connects Solar Bit (-) to Main Output (-)

## Bill of Materials

Qty	Part Description	Part Number
10	SolarBIT	IXYS XOB17-12x1
1	Schottky Diode	MBRM120LT
1	Terminal block, 2 positions, 5.08mm	On Shore Technology EDZ250/2 (Digi-Key ED1973-ND)
2	Male right-angle header, 8-contact (breakable strip)	Sullins PBC36SBAN (Digi-Key S1111E-36-ND)
2	Female right-angle header, 8-contact	Sullins PPC081LGBN-RC (Digi-Key S5483-ND)
6	2x3 male header, straight	Sullins PBC36DAAN (Digi-Key S2011E-36-ND) or FCI BergStik 67997-272HLF (Digi-Key 609-2220-ND) (breakable strip)
1	1x2 male header, straight	FCI 68001-236HLF (Digi-Key 609-2223-ND)(breakable strip)
1	PC Board	
21	Shunt	FCI 63429-202LF (Digi-Key 609-2997-ND)

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