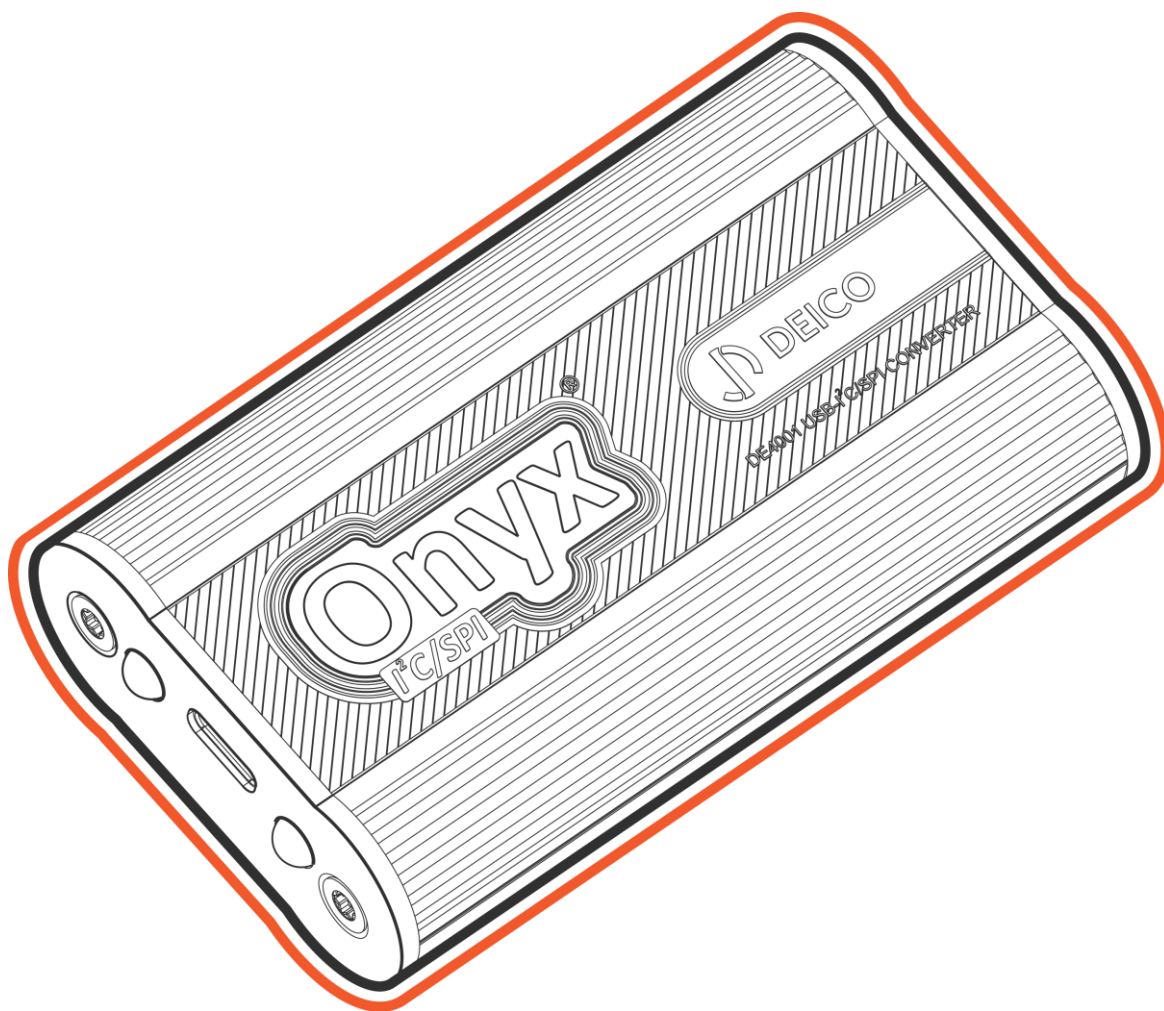


DE4001 DATASHEET

DEICO ONYX
USB - I²C/SPI CONVERTER



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DESCRIPTION

DE4001 DEICO Onyx is an I²C bus and SPI bus host adapter which allows to communicate with any I²C or SPI devices via USB. DEICO Onyx is powered directly from the PC's USB port. DEICO Onyx can be used as a master or slave for I²C and SPI. I²C and SPI pins can also be used as GPIO or combined with I²C or SPI functionality.

The general features of DEICO Onyx are listed below:

- ⇒ Plug and play with DEICO serial center
- ⇒ The device is powered by USB
- ⇒ Master or slave mode
- ⇒ Asynchronous slave transmit and receive
- ⇒ I²C interface supports various speeds from 100kHz to 3.4MHz
- ⇒ I²C interface supports multi-master
- ⇒ I²C interface internal pull-up resistors
- ⇒ SPI interface supports various speeds from 200kHz to 25MHz
- ⇒ SPI interface full duplex transmit and receive
- ⇒ SPI interface software configurable slave select polarity
- ⇒ I²C and SPI pins can be used as GPIO or combined with I²C or SPI

Areas of application include:

- ⇒ EEPROMS
- ⇒ Flash
- ⇒ Temperature Sensors
- ⇒ Accelerometers

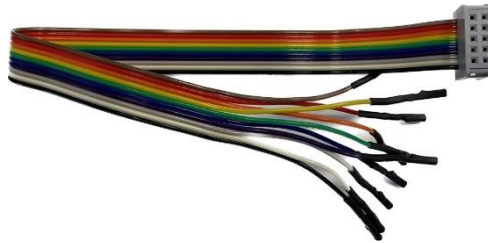
Scope of delivery:



Onyx USB - I²C/SPI Converter



USB Cable



Female Socket to Pin Cable

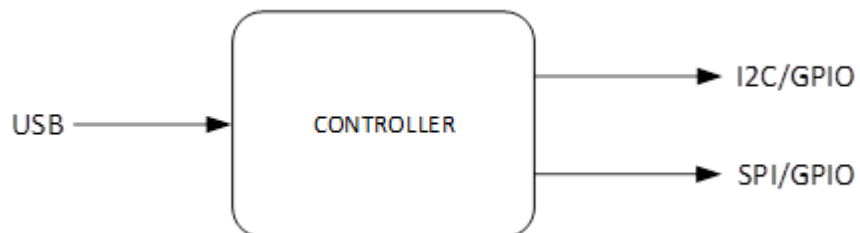


Female Socket to Socket Cable

- ⇒ DEICO Onyx
- ⇒ USB type-A to USB type-C cable
- ⇒ 152.4mm 10 position female socket to socket cable
- ⇒ 225mm 10 position female socket to pin cable

HARDWARE OVERVIEW

Circuitry



Block diagram of DEICO Onyx

Hardware Specifications

Electrical

Electrical Specifications

Specification	Minimum	Typical	Maximum	Notes
Supply Voltage	4.5V	5V	5.5V	—
Supply Current	—	—	0.4A	—
Output Voltage High	2.4V	—	—	—
Output Voltage Low	—	—	0.4V	—
Input High Voltage	2V	—	—	—
Input Low Voltage	—	—	0.8V	—
Output Current	—	—	20mA	Per Signal Pin
VCC 3V3 Output Voltage	3.27V	3.3V	3.33V	—
VCC 3V3 Output Current	—	—	100mA	DC

Physical

Physical Specifications

Parameter	Value	Unit
Dimensions	84.5x49x18.80	cm
Weight	85	g
Host Bus Connector	USB Type-C	USB 2.0
Target Bus Connector	2x5 Male Header (2.54mm) MPN: USB4110-GF-A	

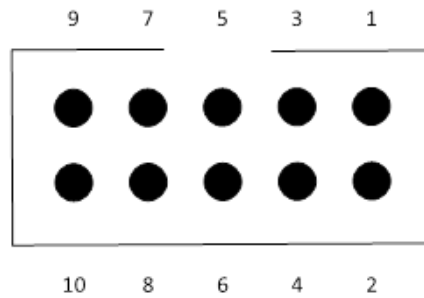
Environmental

Environmental Specifications

Specification	Condition	Value
Operating Humidity	Relative, non-condensing	10% - 90%
Storage Humidity	Relative, non-condensing	5% - 95%
Operating Temperature	—	0°C - 40°C
Storage Temperature	—	-20°C - 85°C

SIGNAL CONNECTIONS

Target Bus Connector

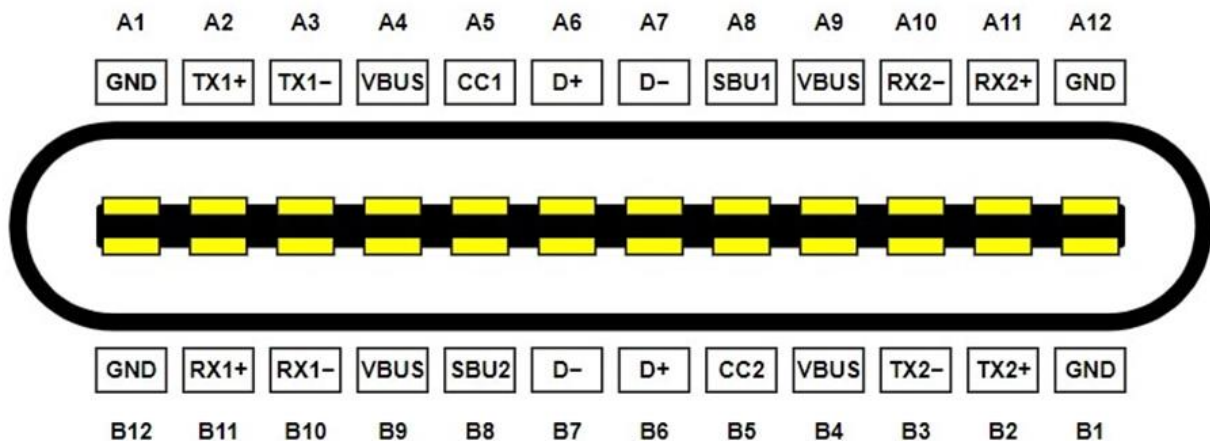


I²C/SPI Connector

Target Bus Connector Pin Assignments

Pin	Pin Name	Description
1	I ² C SCL	I ² C interface clock signal. There is an internal 4.7KOHM pull-up resistor. This pin can be used as GPIO.
2	GND	Ground connection.
3	I ² C SDA	I ² C interface data signal. There is an internal 4.7KOHM pull-up resistor. This pin can be used as GPIO.
4	VCC 3V3	3.3V output.
5	SPI MISO	SPI interface master in slave out signal. This pin can be used as GPIO.
6	VCC 3V3	3.3V output.
7	SPI CLK	SPI interface clock signal. This pin can be used as GPIO.
8	SPI MOSI	SPI interface master out slave in signal. This pin can be used as GPIO.
9	SPI SS	SPI interface slave select signal. This pin can be used as GPIO.
10	GND	Ground connection.

Host Bus Connector



USB Type-C Pinout

XJ2 Connector Pin Assignments

Pin	Pin Name	Description
A1	GND	Ground Connection
A2	NC	Not Connected
A3	NC	Not Connected
A4	VBUS	5V Power Supply
A5	NC	Not Connected
A6	D (+)	USB Data (+)
A7	D (-)	USB Data (-)
A8	NC	Not Connected
A9	VBUS	5V Power Supply
A10	NC	Not Connected
A11	NC	Not Connected
A12	GND	Ground Connection
B1	GND	Ground Connection
B2	NC	Not Connected
B3	NC	Not Connected
B4	VBUS	5V Power Supply
B5	NC	Not Connected
B6	D (+)	USB Data (+)
B7	D (-)	USB Data (-)
B8	NC	Not Connected
B9	VBUS	5V Power Supply
B10	NC	Not Connected
B11	NC	Not Connected
B12	GND	Ground Connection

CONFIGURATION

A setup file will be provided along with the Onyx I²C/SPI Converter to install the Onyx Controller application. See the Onyx I²C/SPI Converter User Manual for details.

SAFETY GUIDELINES



Caution Do not operate the DEICO Onyx in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it for repair.



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