

PIC16F1937 Breakout Board

MK-60555

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IONOTRONICS Corporation

<http://www.ionotronics.com>

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1 Introduction

Full breakout of the PIC16F1937 with Hirose DF11 Series connectors. Support for I2C Bus interconnect. The board fully supports ICSP programming and debug through the PICKit3 or ICD-3. Also the device supports programming using CCS IDE and the ICD-U64 programmer.

2 Specifications

- PIC16F1937 Based
- 16 MHz Clock
- Multiple GPIO DF11 Series Connectors (36 GPIO)
- ICSP Support
- UART Support (Tx and Rx)
- Two I2C 4-pin Hirose DF11 Series Connector
- 1.250 x 1.000 Inches (31.75 mm x 25.4 mm)

3 Overview

The PIC16F1937 Breakout Board can be used in many applications. For example, as an I2C GPIO expander. Or as an I2C to Serial (UART) bridge. Using the many cores in the SoC, various capabilities can be provided as an I2C slave.

The processor can act as a controller in its own right as an I2C Master also providing control of serial devices. Some potential Applications:

- 1-I2C GPIO Expander
- 2- I2C to UART bridge.
- 3- PWM 50 Hz 1500 uSec Servo Control
- 4- PWM DC Motor Control
- 5- RPM Measurement using Optical Encoders for Motors
- 6- Text to Morse Code (dot/dash single GPIO).
- 7- SPI Master to Read and Write to SPI EEPROM (MK-78171)

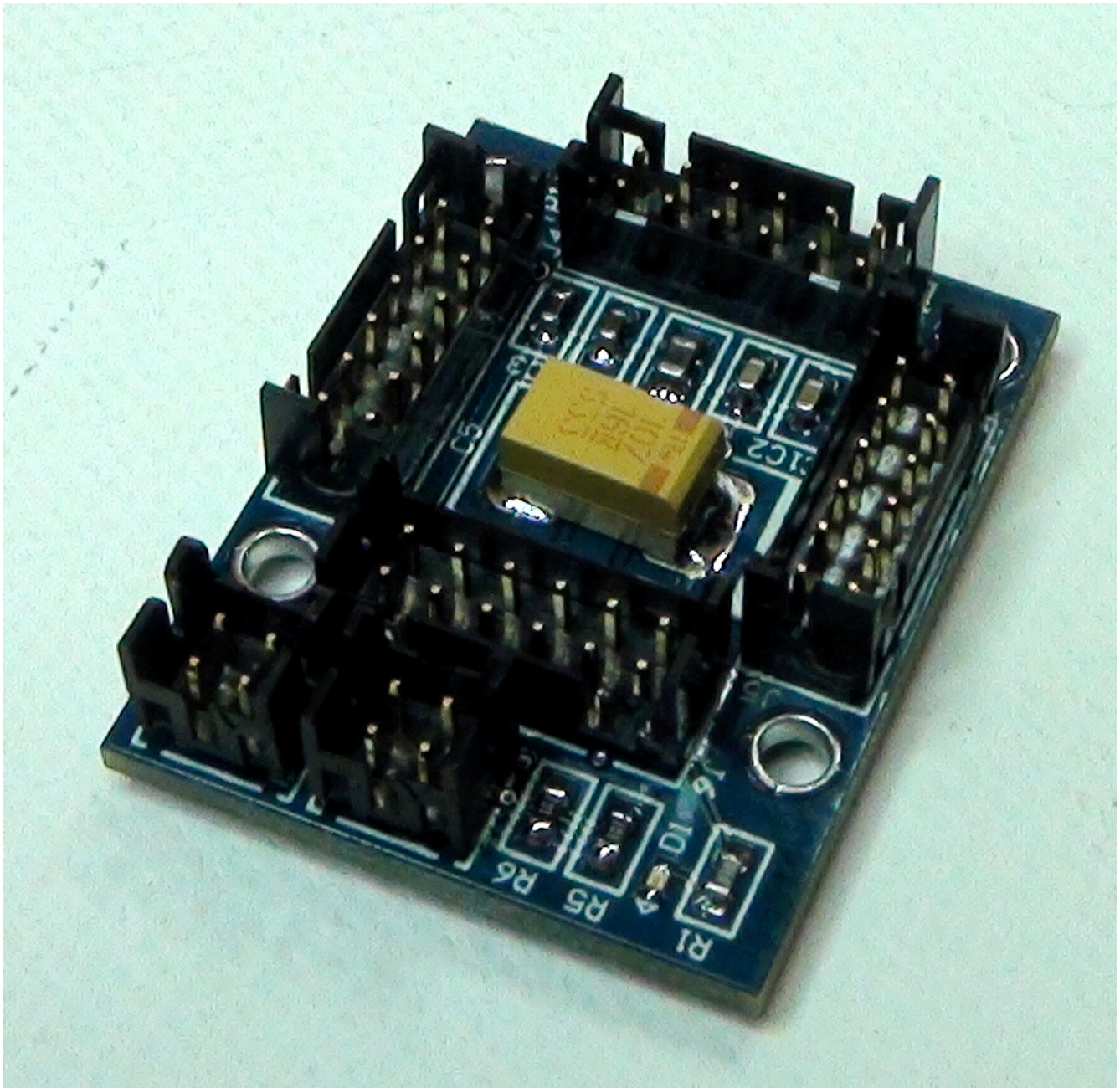


Figure 1 Top view MK-60555 illustrating DF11 Hirose Connectors for GPIO and 4 Pin I2C Bus

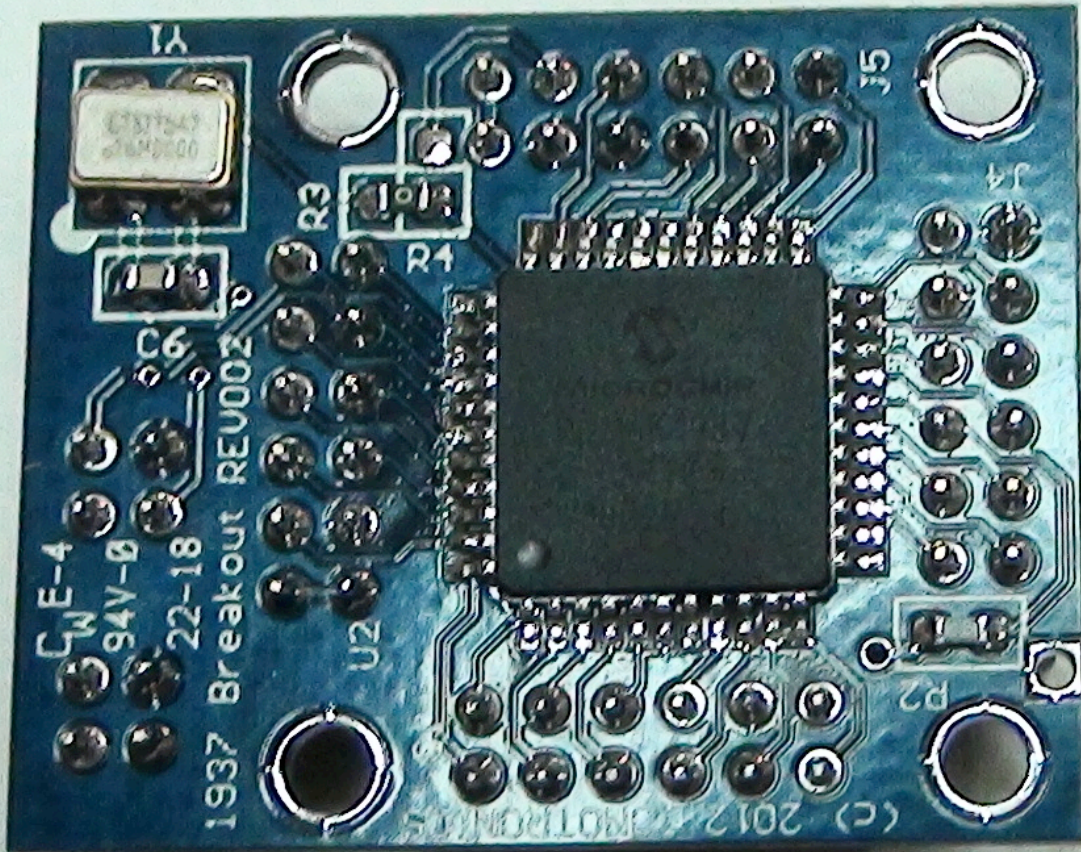


Figure 2 Bottom view of MK-60555 showing PIC16F1937 and 16 MHz clock

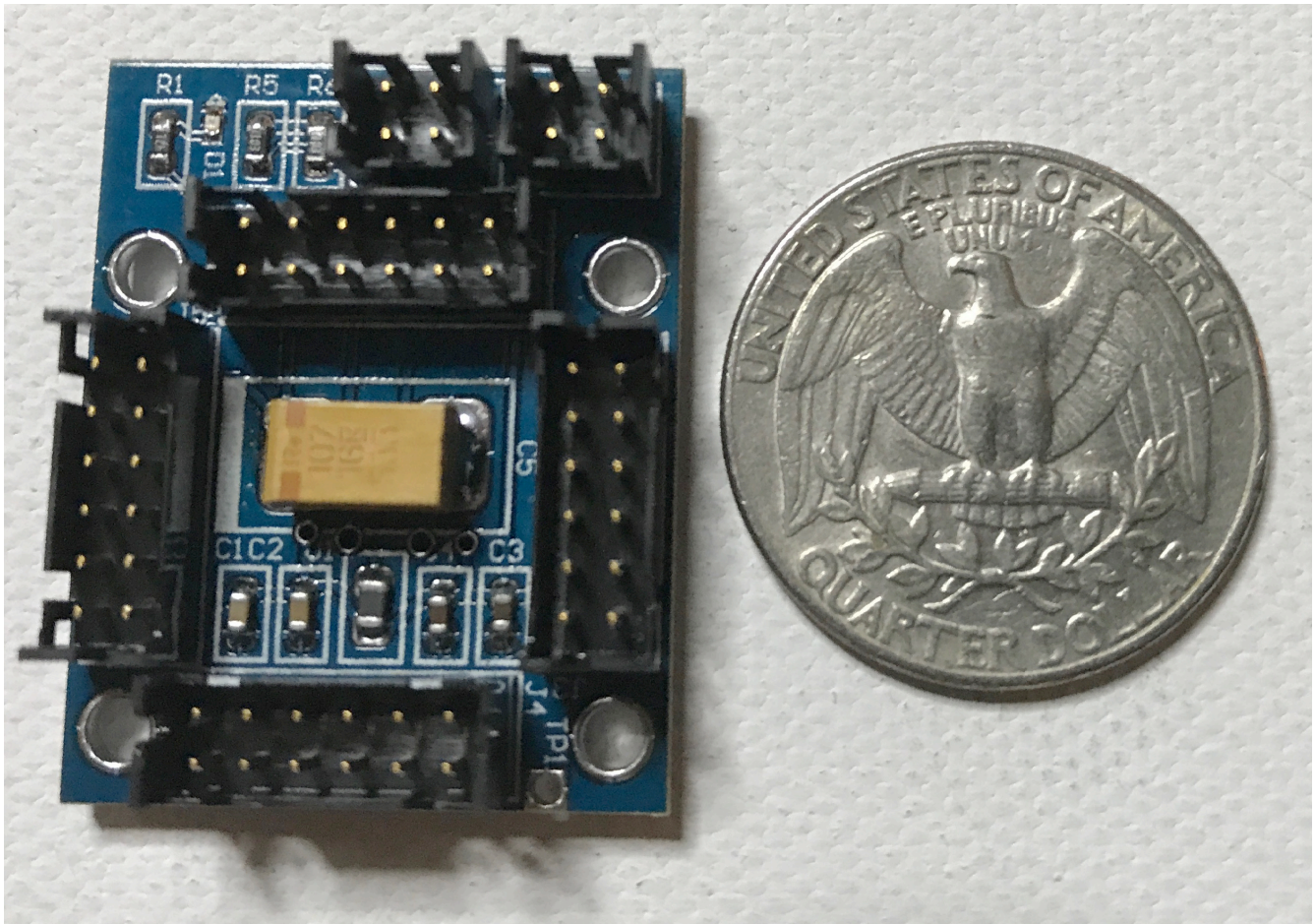


Figure 3 MK-60555 Size Comparison

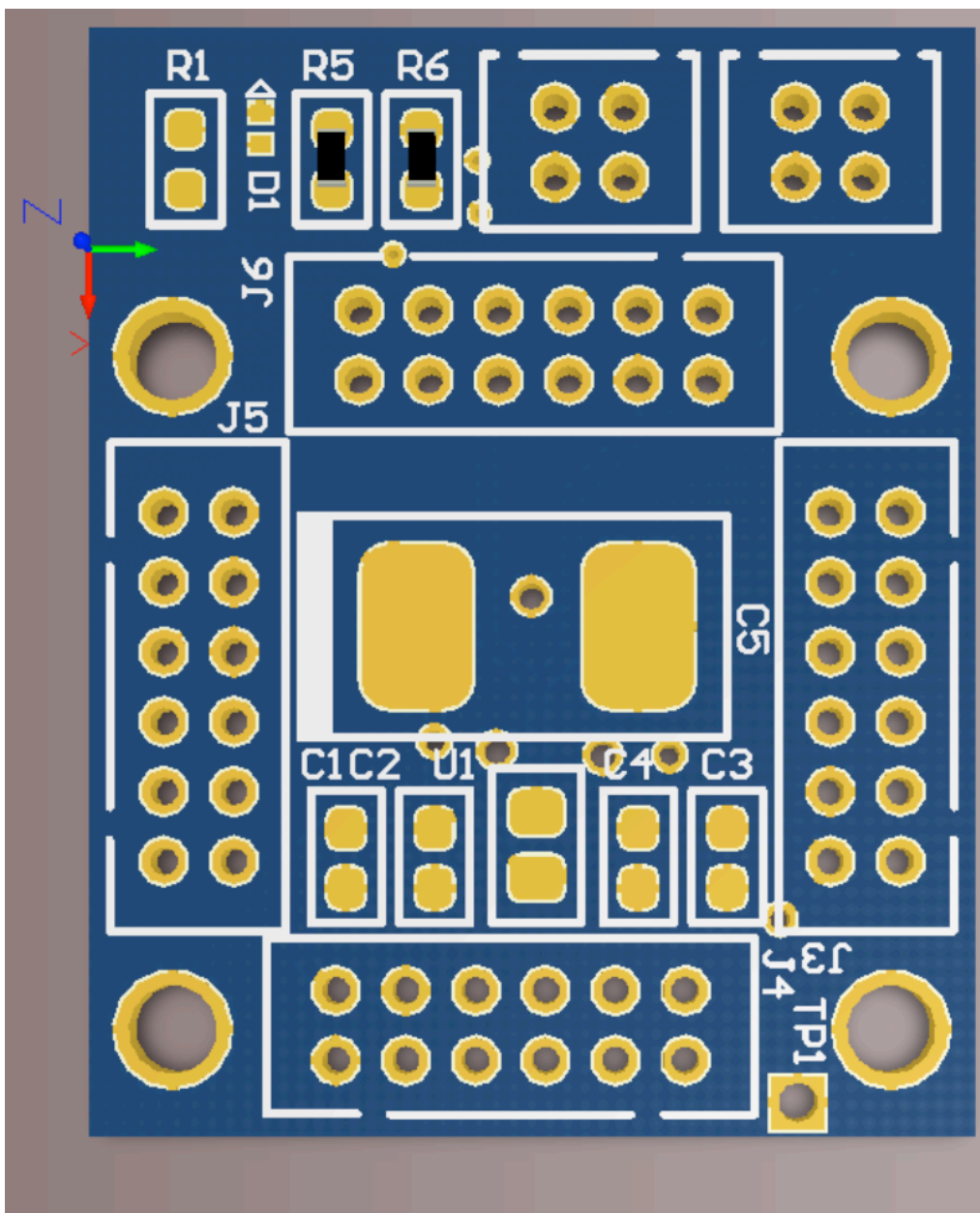


Figure 4 Board Jumpers Top View. Upper Right Are Two I2C Connectors.

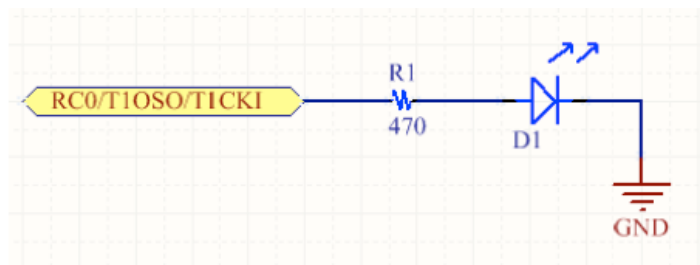


Figure 5 Port RC0 Drives an LED That Can be Used for Tests and Status. When Using RC0 as Timer Input Provide a Buffer. For Example Optical Encoders Need a buffer to Drive the LED.

4 DF-11 Connectors

The MK-60555 supports three 12 pin DF11 Hirose connectors and two I2C 4 pin DF11 Hirose Connectors. The two I2C 4 pin connectors are bussed together. The Figures below provide all the information that is needed for how signals from the PIC16F1937 are mapped to the connectors.

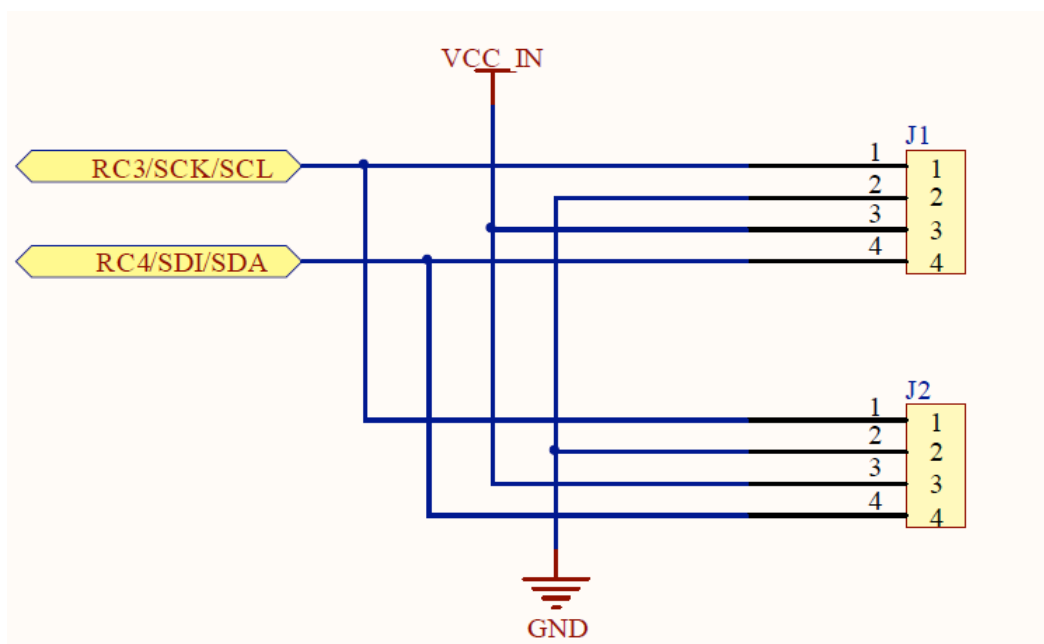


Figure 6 I2C Bus J2 and J1 4 Pin Hirose DF1 Series Connectors

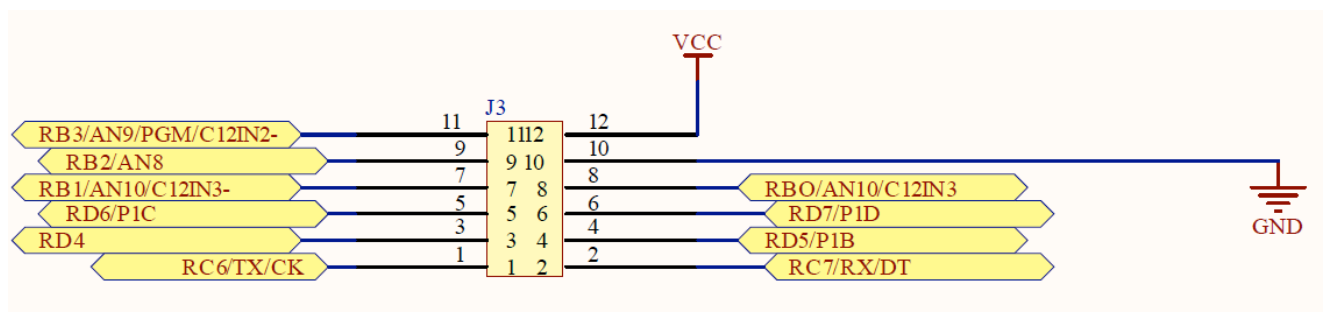


Figure 7 J3 12 Pin Hirose DF11 Series. Note UART Signals RC7 (RX) and RC6 (TX)

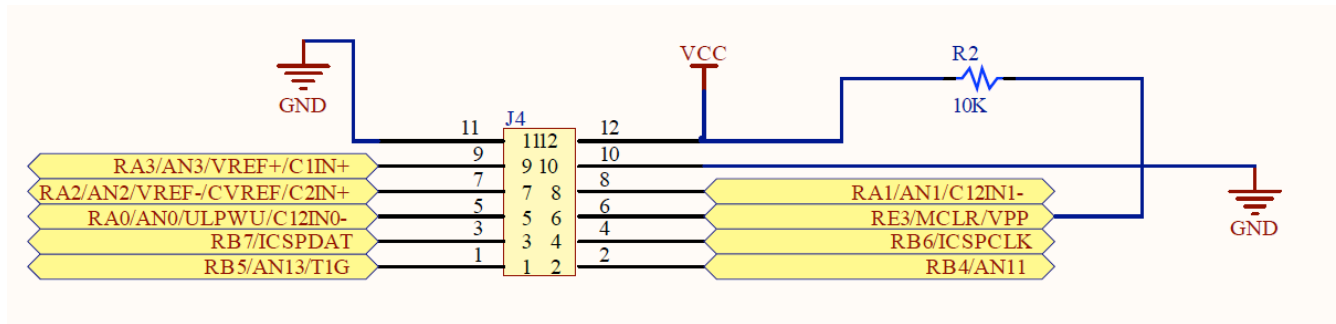


Figure 8 J4 12 pin Hirose DF11 Series. Note In Circuit Programming Pins RB6(ICSP Clock) RB7 (ICSP Data) and RE3 (MCLR)

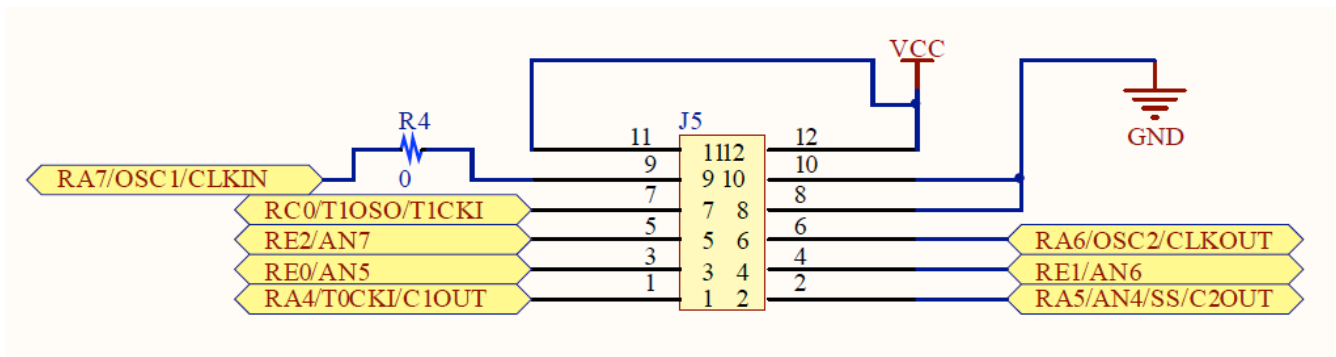


Figure 9 J5 12 pin Hirose DF11 Series Connector

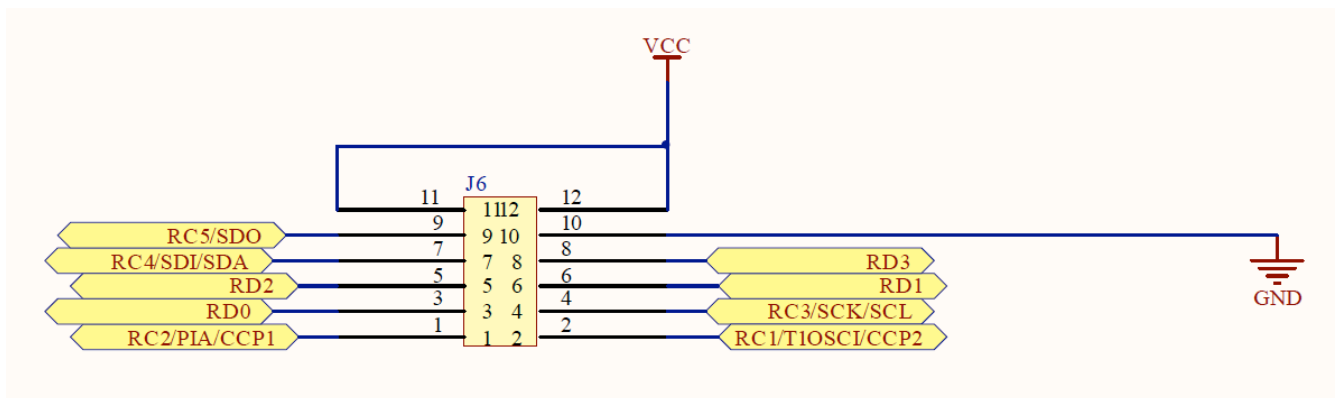


Figure 10 J6 12 pin Hirose DF11 Series Connector

5 Jumper Connections

Table 1 Pin Mapping to Jumpers

Item	Pin	Connector
1	RA0	J4-5
2	RA1	J4-8
3	RA2	J4-7
4	RA3	J4-9
5	RA4	J5-1
6	RA5	J5-2
7	RA6	J5-6
8	RA7	J5-9
9	RB0	J3-8
10	RB1	J3-7
11	RB2	J3-9
12	RB3	J3-11
13	RB4	J4-2
14	RB5	J4-1
15	RB6	J4-4
16	RB7	J4-3
17	RC0	J5-7
18	RC1	J6-2
19	RC2	J6-1
20	RC3	J6-4
21	RC4	J6-7
22	RC5	J6-9
23	RC6	J3-1
24	RC7	J3-2
25	RD0	J6-3
26	RD1	J6-6
27	RD2	J6-5
28	RD3	J6-8
29	RD4	J3-3
30	RD5	J3-4
31	RD6	J3-5
32	RD7	J3-6
33	RE0	J5-3
34	RE1	J5-4
35	RE2	J5-5
36	RE3	J4-6

6 Hirose DF11 Series Connectors

Figure 11 shows a 12 pin Hirose DF11 Series connector. This is useful when building cabling systems. Note pin 1 marker and numbering scheme.

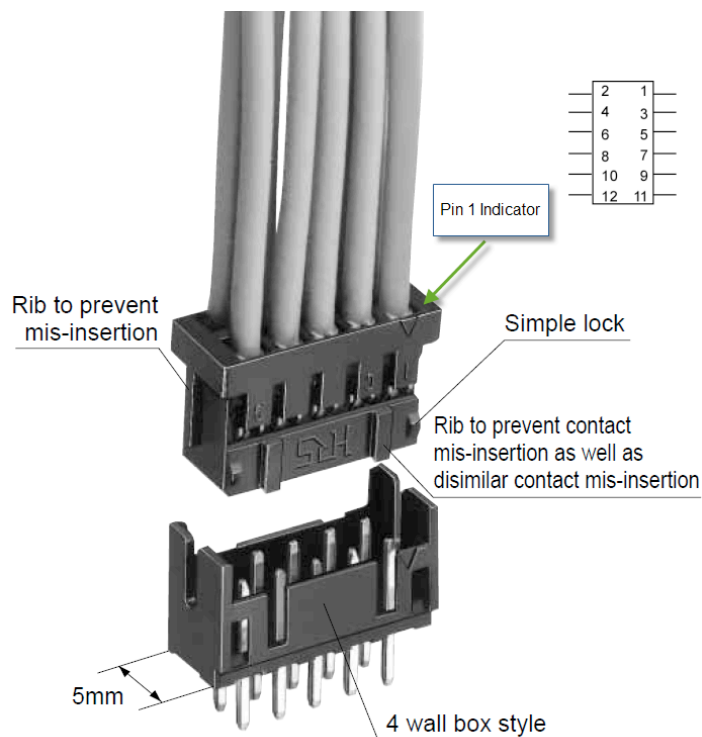


Figure 11 Guide to the Hirose DF11 series connector

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