

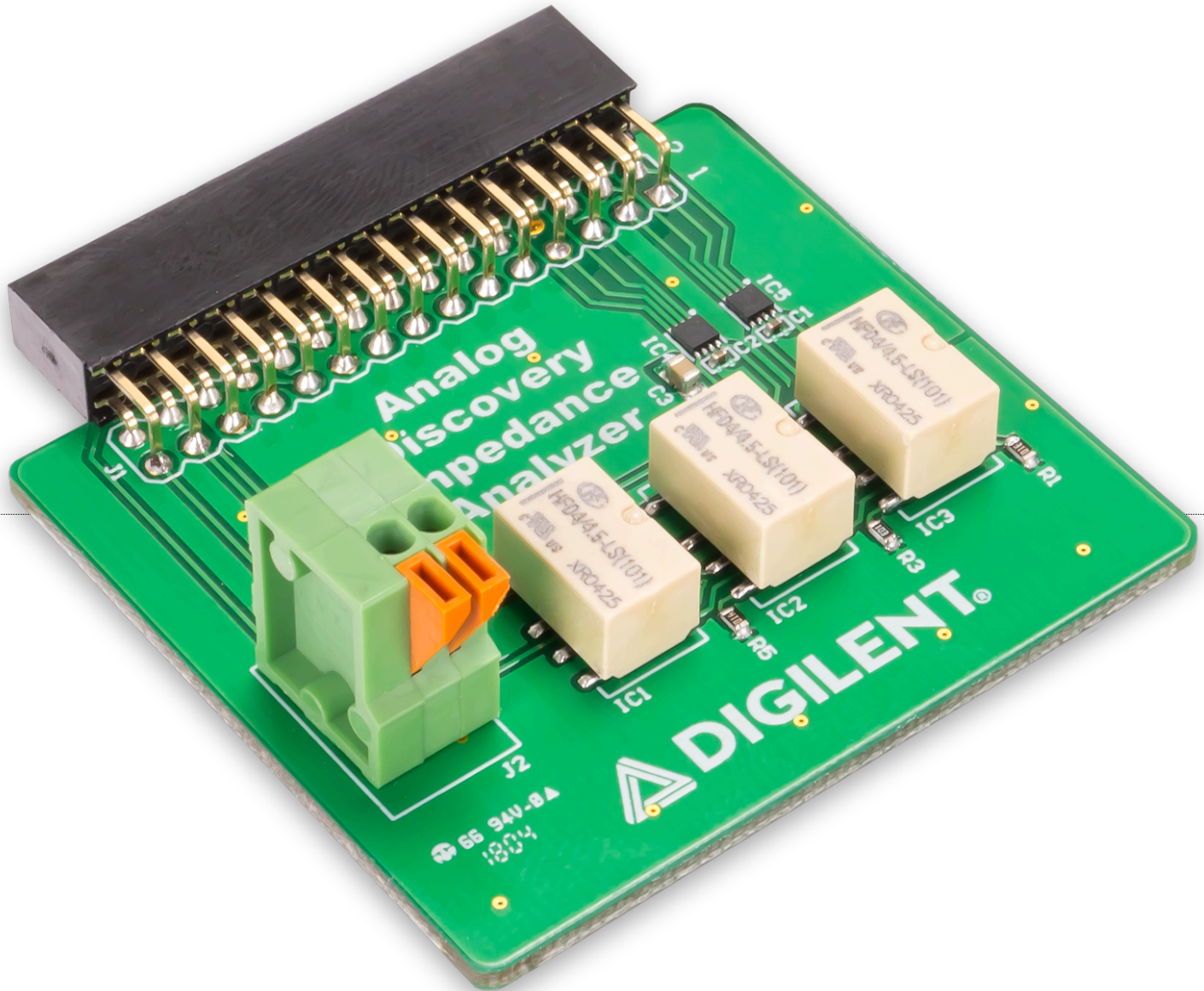
Analog Discovery Impedance Analyzer Reference Manual

The Impedance Analyzer Adapter helps you measure complex electrical impedance as a function of the test frequency. The impedance of an electrical circuit or an electronic component is an important measurement to take.

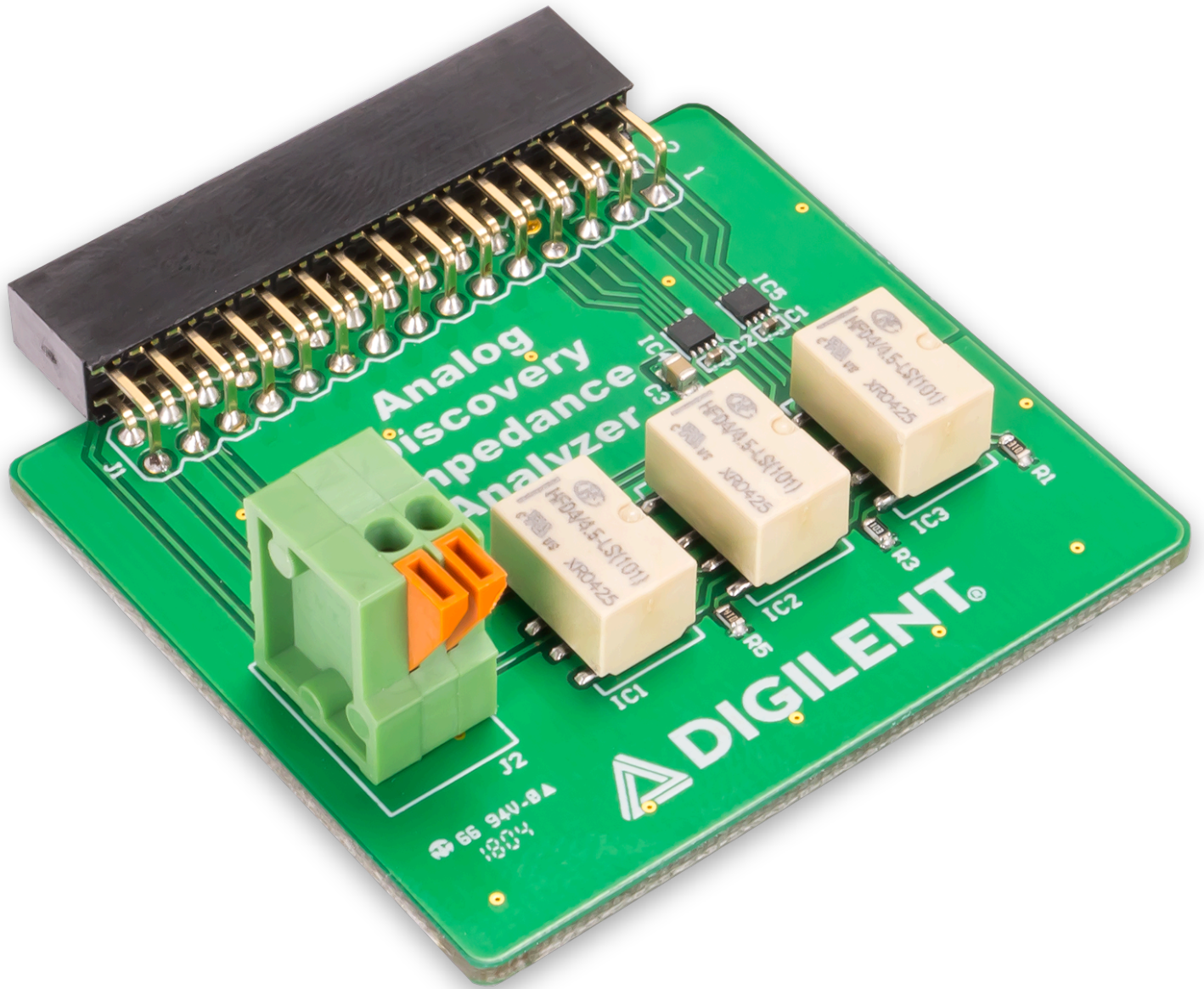
An impedance analyzer is a type of electronic test equipment used to measure complex electrical impedance as a function of test frequency. An impedance analyzer takes sensitive measurements of both current and voltage are applied to the device under test (DUT) while the measurement frequency is varied.

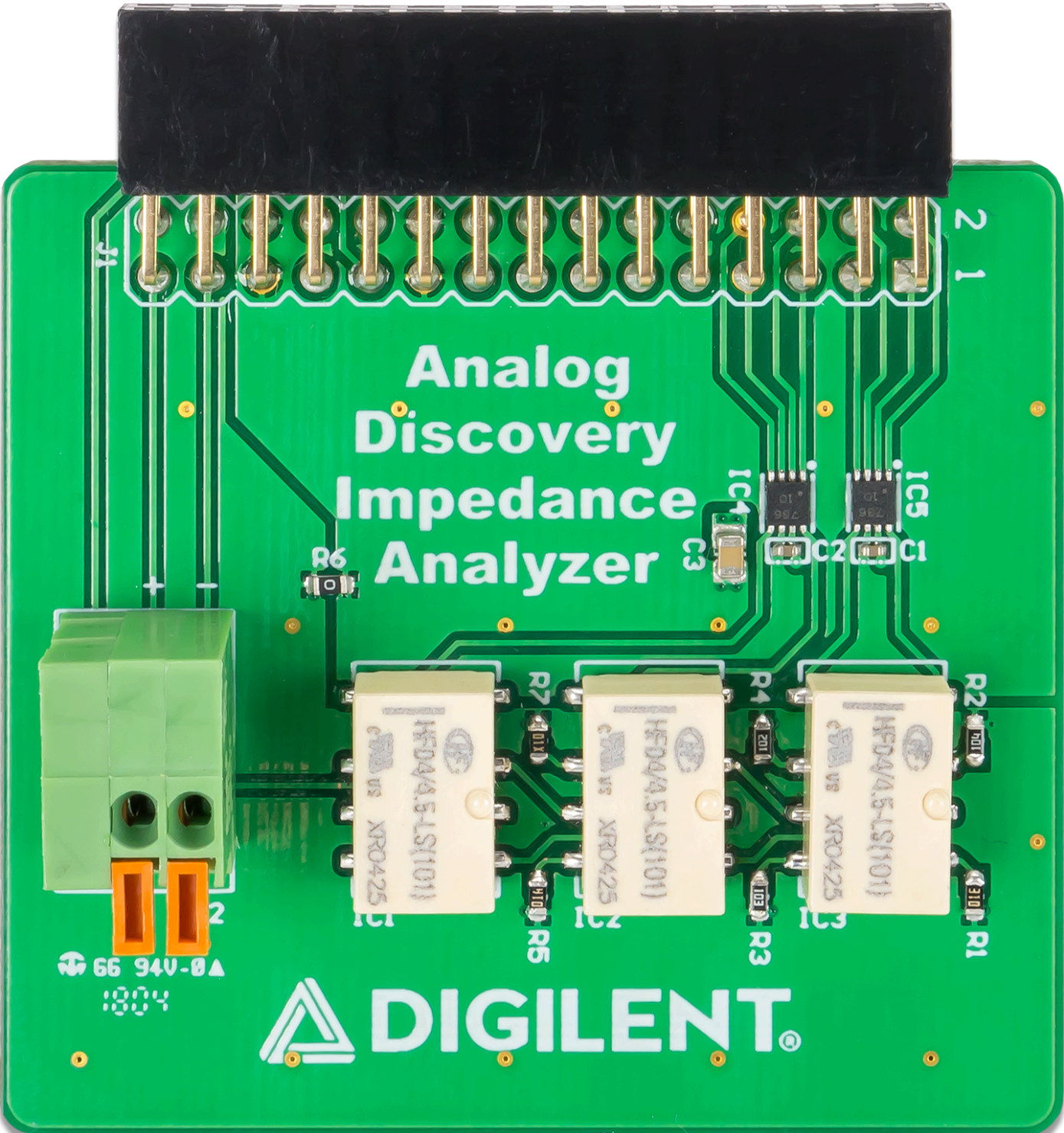
The Impedance Analyzer Adapter is equipped with the 2x15 Analog Discovery connector, which makes it compatible with Analog Discovery 3, Analog Discovery 2, Analog Discovery (Legacy).

Note: Use of the Impedance Analyzer Adapter requires WaveForms version 3.8.2 or later.



https://digilent.com/reference/_media/reference/add-ons/impedance-analyzer/analog_discovery_impedance_analyzer_oblic.png





Analog Discovery Impedance Analyzer

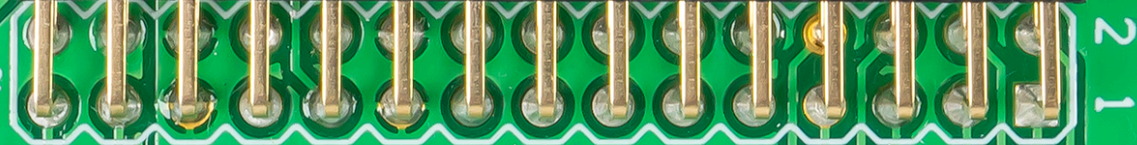
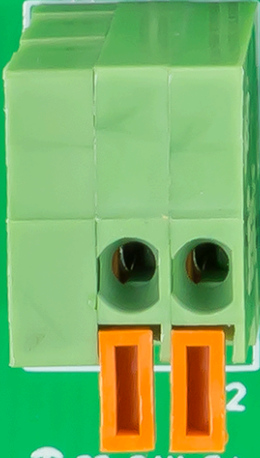
 **DIGILENT**®

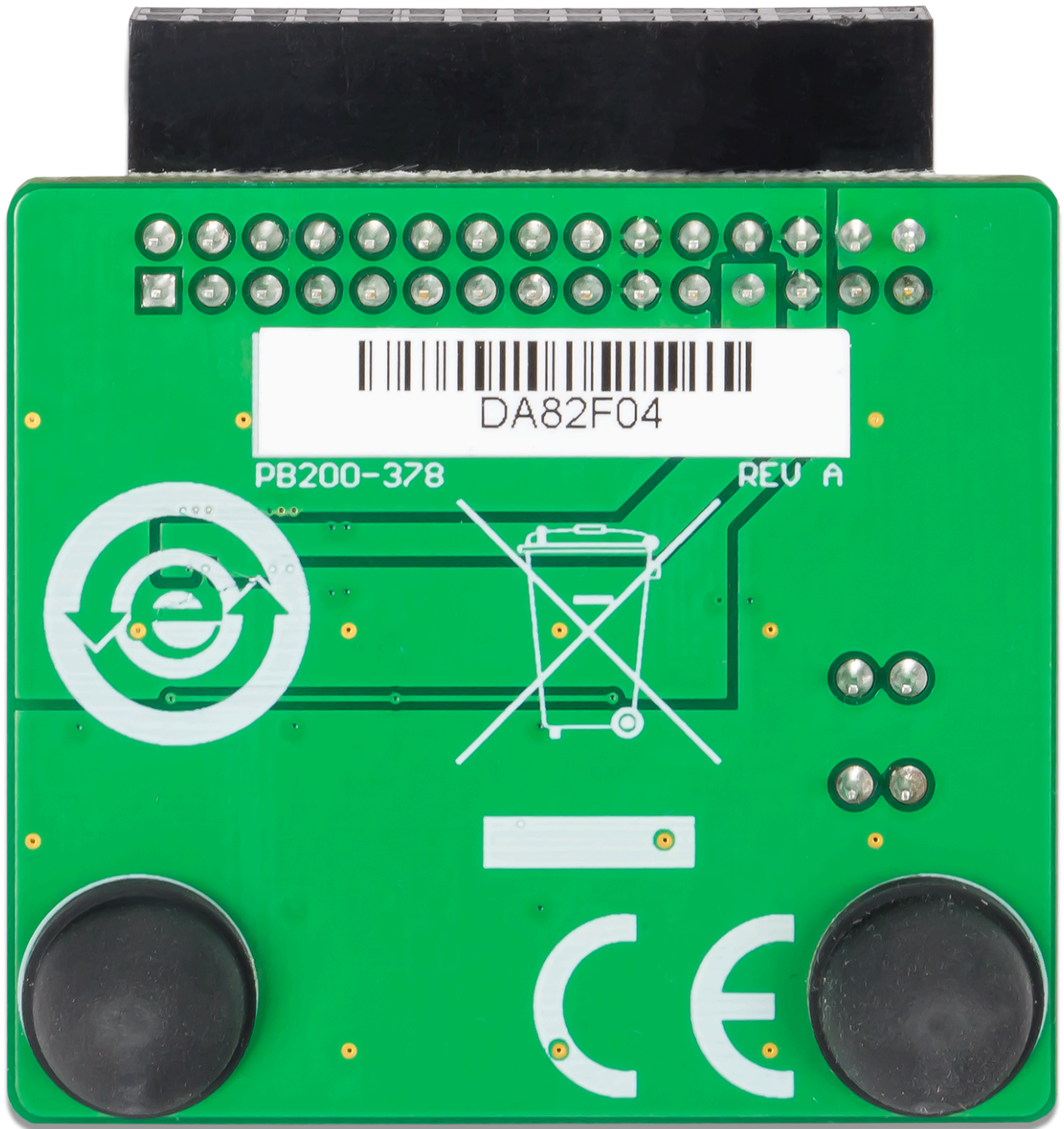
66 94V-8A
1804

HF04/4.5-LS(101)
©2014 vs XR04/25

HF04/4.5-LS(101)
©2014 vs XR04/25

HF04/4.5-LS(101)
©2014 vs XR04/25






Overview

Features

- Equipped with automatically selectable reference resistances
- Compatible with the Analog Discovery 3, Analog Discovery 2, Analog Discovery (Legacy)
- Allows auto-scaling

Compatible Products

The *Analog Discovery Impedance Analyzer Adapter* is compatible with the following:

-  Analog Discovery 3 (<https://digilent.com/shop/analog-discovery-3/>)
- Analog Discovery 2
- Analog Discovery (Legacy)

About this Document

This reference manual applies to Revision A of the *Analog Discovery Impedance Analyzer Adapter*.

Functional Description

Connectors and Jumpers

J1 - 2x15 Analog Discovery connector - Interfaces the Impedance Analyzer Adapter with the Analog Discovery

J2 - 1x2 Terminal Bloc - Used for connecting in circuit the unknown impedance

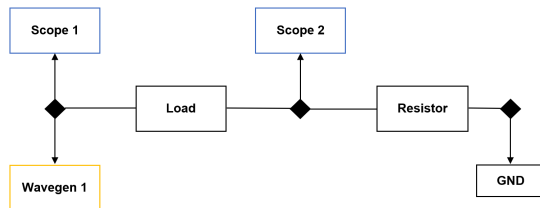
Digital Pins used for configuration

The Analog Discovery's digital I/O pins are used to control the relays in order to select the needed value for the reference impedance. Each relay driver uses two I/Os to control one relay.

Measuring the impedance

The *Analog Discovery Impedance Analyzer Adapter* is used to analyze capacitive and inductive elements. It uses the WaveGen 1, Oscilloscope device instruments, and a reference resistor.

The impedance analyzer circuit is constructed as in the circuit below. **Load** represents the inductive or capacitive item to be analyzed and **Resistor** is the reference resistor that is already loaded on the board. The resistor value depends on the load value and frequency.



https://digilent.com/reference/_media/reference/add-ons/impedance-analyzer/circuit1.png

The approximate resistor needed for different loads are the following:

Capacitance	Ref Resistor	Inductance
100 pF	1 MΩ	
1 nF	100 kΩ	
10 nF	10 kΩ	
100 nF	1 kΩ	1 uH
1 uF	1 kΩ	10 uH
10 uF	100 Ω	100 uH
100 uF	10 Ω	1 mH

Power

The device is powered through the 5V user power supply from the Analog Discovery. It requires approximately 25mA

Software Support

You can learn how to use the Impedance Analyzer tool in the following [Getting Started with the Impedance Analyzer](https://digilent.com/reference/add-ons/impedance-analyzer/getting-started-guide). (<https://digilent.com/reference/add-ons/impedance-analyzer/getting-started-guide>)

Additional Information

- WaveForms can be downloaded from the WaveForms Resource Center (<https://digilent.com/reference/software/waveforms/waveforms-3/start>).
- Documentation and installation instructions can be found in the WaveForms Reference Manual (<https://digilent.com/reference/software/waveforms/waveforms-3/reference-manual>).
- The Analog Discovery Impedance Analyzer Schematic can be found here: [Impedance Analyzer Schematic](https://digilent.com/reference/lib/exe/fetch.php?tok=9a948&media=https%3A%2F%2Fdigilent.com%2Freference%2F_media%2Freference%2Ftest-and-measurement%2Fanalog_discovery_impedance_analyzer_sch.pdf) (https://digilent.com/reference/lib/exe/fetch.php?tok=9a948&media=https%3A%2F%2Fdigilent.com%2Freference%2F_media%2Freference%2Ftest-and-measurement%2Fanalog_discovery_impedance_analyzer_sch.pdf).

[doc](https://digilent.com/reference/tag/doc?do=showtag&tag=doc) (<https://digilent.com/reference/tag/doc?do=showtag&tag=doc>), [rm](https://digilent.com/reference/tag/rm?do=showtag&tag=rm) (<https://digilent.com/reference/tag/rm?do=showtag&tag=rm>), [ia](https://digilent.com/reference/tag/ia?do=showtag&tag=ia) (<https://digilent.com/reference/tag/ia?do=showtag&tag=ia>)

Company (<https://digilent.com/company/>)

- About Us (<https://digilent.com/company/#about-digilent>)
- FAQs (<https://digilent.com/company/#faqs>)
- Distributors (<https://digilent.com/shop/distributors/>)
- Shipping & Returns (<https://digilent.com/shipping-returns/>)
- Jobs (<https://digilent.com/company/#jobs>)
- Legal & Privacy (<https://digilent.com/legal-privacy/>)

News (<https://digilent.com/news/>)

- Blog (<https://digilent.com/blog/>)
- Newsletter (<https://digilent.com/news/#newsletter>)
- Events (<https://digilent.com/news/#events>)

Subscribe to our newsletter

Get the latest updates on new products and upcoming sales




Submit

Contact Us

- Technical Support Forum (<https://forum.digilent.com>)
- Support Channels (<https://digilent.com/support/#channels>)

Digilent
1300 NE Henley Ct. Suite 3
Pullman, WA 99163
United States of America

© 2023 Digilent

-  (<http://twitter.com/DigilentInc>)
-  (<http://facebook.com/Digilent>)
-  (<https://www.youtube.com/user/DigilentInc>)
-  (<https://github.com/digilent>)
-  (<https://instagram.com/digilentinc>)
-  (<https://www.linkedin.com/company/1454013>)
-  (<https://www.flickr.com/photos/127815101@N07>)