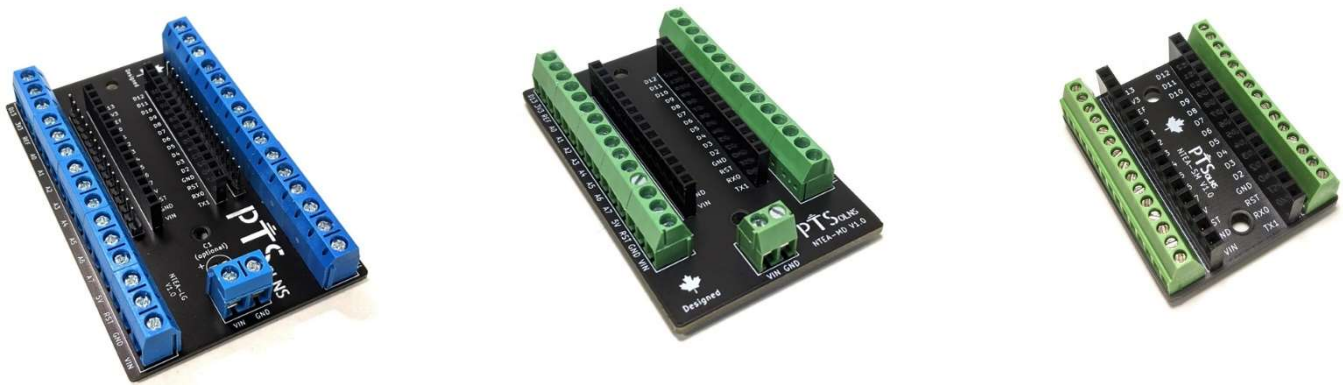# NTEA Series Kits

1   DESCRIPTION

The *NTEA Series Kits* are an unassembled set of kits that consist of the *NTEA-LG Kit*, the *NTEA-MD Kit*, and the *NTEA-SM Kit*. NTEA stands for **N**ano **T**erminal **E**xpansion **A**dapter, which come in three sizes (LG for Large, MD for Medium, and SM for Small). These boards are designed to interface with the common Nano microcontroller and allow for quick prototyping. The three sizes offer different features, which are discussed in this document.

Table of Contents

2   DOCUMENT REVISION HISTORY

Current document revision is Rev 0.

3   PRODUCT FEATURES

This section highlights notable features of the *NTEA Series Kits*.

3.1   Compatibility

All three NTEA PCBs are designed to be compatible with the common Nano microcontroller. This controller has two rows for 15pins, with a pitch of 2.54mm. Figure 1 shows a comparison chart of the most notable features.

	NTEA-LG	**NTEA-MD**	**NTEA-SM**
Footprint	Large	Medium	Small
Screw terminal pitch	5.08mm/0.2in	3.50mm/0.14in	2.54mm/0.1in
Two sided printing	Yes	Yes	Yes
Multiple configurations	Yes	Yes	Yes
Extra Vin & GND	Yes	Yes	No
Male header breakout	Yes	No	No
Decoupling cap through-holes	Yes	No	No

Figure 1: Comparison chart of the NTEA Series.

3.2 Features of the NTEA-LG

The features of the *NTEA-LG* are graphically shown in Figure 2. This board has the largest footprint of the *NTEA Series*, with the most amount of breakout pins. All of the pins are broken out on either side of the Nano with a row of male header pins as well as a row of screw terminals. Additionally, there is an extra 2-pin screw terminal breakout for the Vin and GND, that includes the footprint for an optional THT smoothing capacitor (not included).
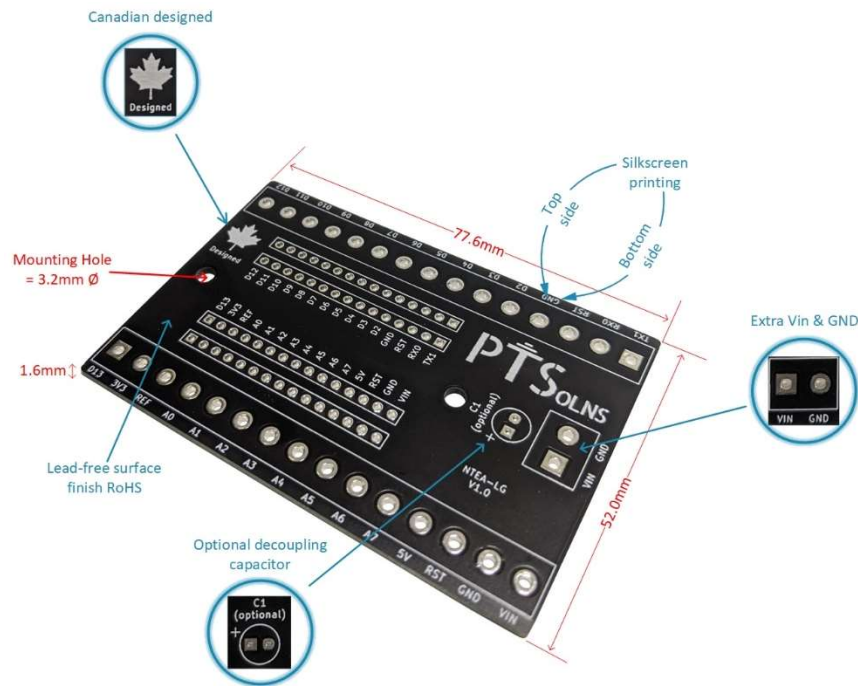

Figure 2: Features of the NTEA-LG.

3.3 Features of the NTEA-MD

The features of the *NTEA-MD* are graphically shown in Figure 3. This board has the most common footprint of the *NTEA Series*. All of the pins are broken out on either side of the Nano with a row of screw terminals. Additionally, there is an extra 2-pin screw terminal breakout for the Vin and GND.
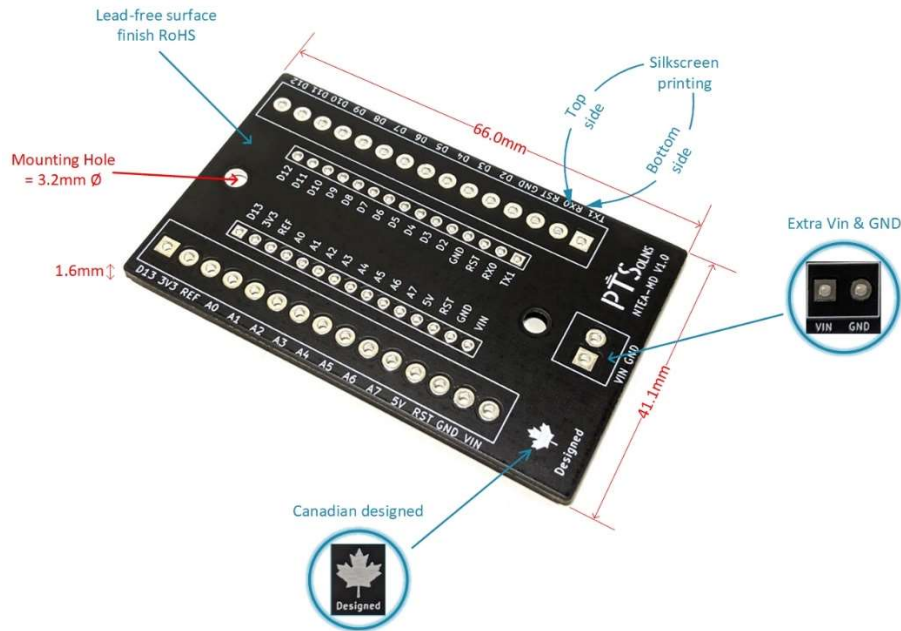

Figure 3: Features of the NTEA-MD.

3.4 Features of the NTEA-SM

The features of the *NTEA-SM* are graphically shown in Figure 4. This board has the smallest footprint of the *NTEA Series*. Indeed, the *NTEA-SM* is smaller in length than the actual Nano microcontroller. All of the pins are broken out on either side of the Nano with a row of screw terminals.
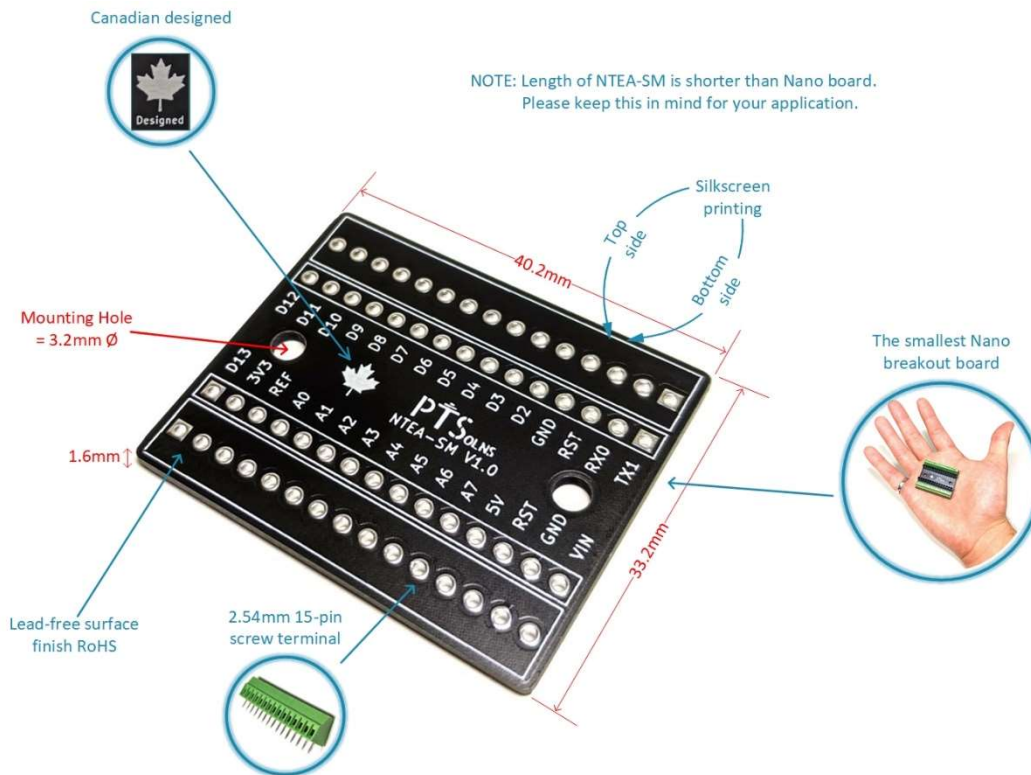

Figure 4: Features of the NTEA-SM.

3.5 Mark of Authenticity

Authentic PTSolns PCBs have a black solder mask color and are marked with the "PTSolns" logo in white silkscreen printing. The "Canadian Designed" symbol, consisting of the Canadian Maple Leaf with the word "Designed" underneath, can also be found on the PCB in white silkscreen printing. The "PTSolns" trademark and the "Canadian Designed" symbols are shown in Figure 5.
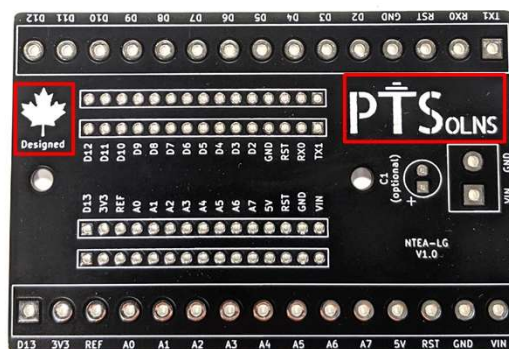

Figure 5: The "Canadian Designed" symbol found on authentic PTSolns PCBs.

4   USAGE AND APPLICATION

This section presents some usages and applications of the *NTEA Series Kits*. Since all of the NTEA PCBs have silkscreen printing on both sides, the user has multiple configuration options. Some of these configurations are shown in the following sections.

4.1   NTEA-LG Typical Application
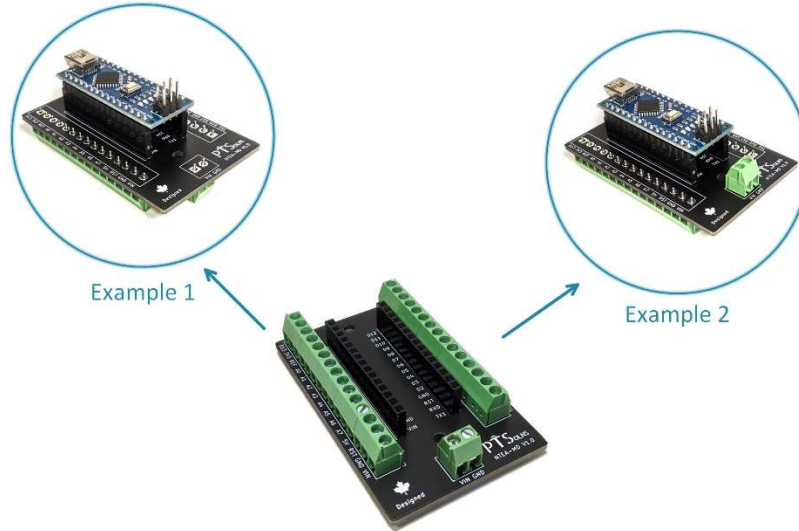
Some example configurations are shown in Figure 6.
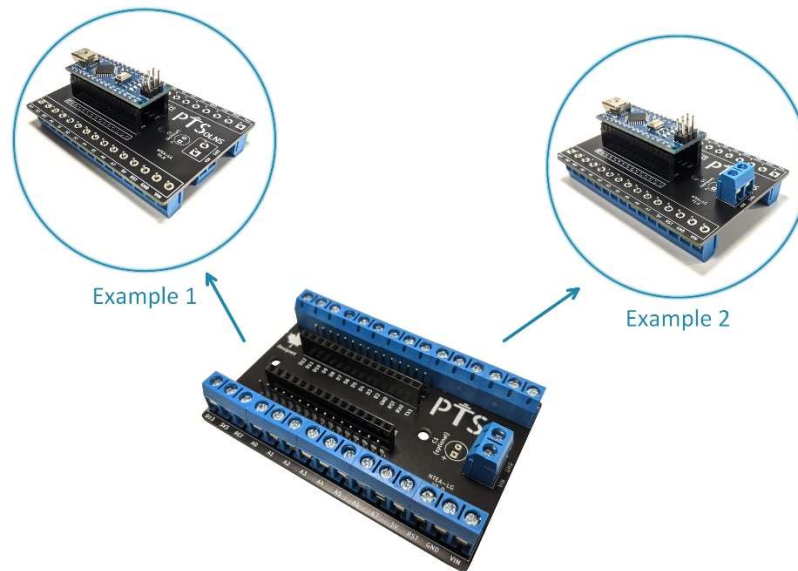
Figure 6: NTEA-LG typical application.

4.2 NTEA-MD Typical Application

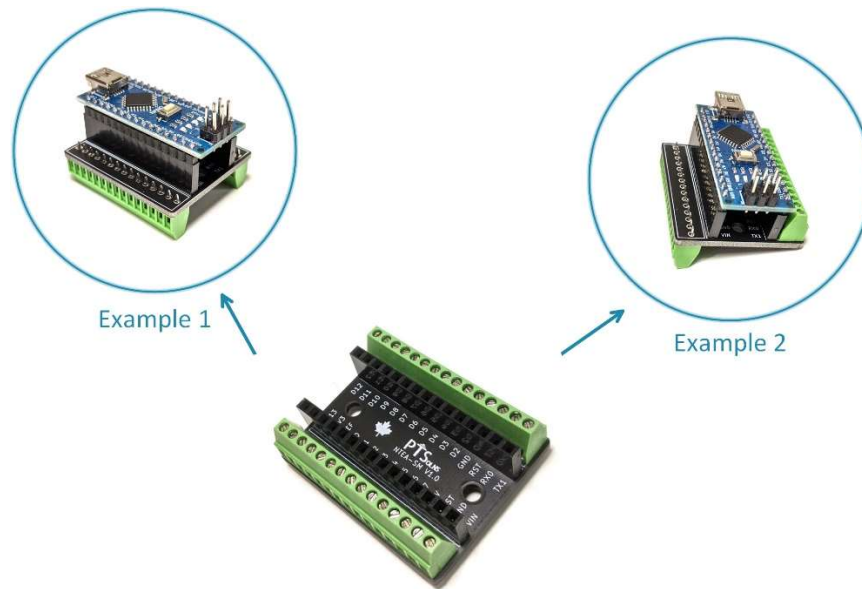Some example configurations are shown in Figure 7.

Multiple configurations made convenient with silkscreen labelling on both sides.

Figure 7: NTEA-MD typical application.

4.3 NTEA-SM Typical Application

Some example configurations are shown in Figure 8.

Multiple configurations made convenient with silkscreen labelling on both sides.

Figure 8: NTEA-SM typical application.

5   KIT PACKAGE CONTENTS

The following items are included in the *NTEA Series Kits*. **All of the kits come unassembled.**

5.1   NTEA-LG Kit Package Contents
This kit includes:

- 1pc PCB PTSolns *NTEA-LG*
- 10pcs 5.08mm 3-pin screw terminals
- 1pc 5.08mm 2-pin screw terminal
- 2pcs 1x15 pin female header
- 1pc 1x40 pin male header
    - User can easily break the full male header pins into the required lengths.

5.2   NTEA-MD Kit Package Contents
This kit includes:

- 1pc PCB PTSolns *NTEA-MD*
- 10pcs 3.5mm 3-pin screw terminals
- 1pc 3.5mm 2-pin screw terminal
- 2pcs 1x15 pin female header

5.3   NTEA-SM Kit Package Contents
This kit includes:

- 1pc PCB PTSolns *NTEA-SM*
- 2pcs 2.54mm 15-pin screw terminals
- 2pcs 1x15 pin female header