SPI-620 Switch Panel Interface

1.   Intent & Scope

This document describes the installation procedures for the SPI-620 Switch Panel Interface.

2.   Description

The SPI-620 Switch Panel Interface is a companion product to the MAI-625 VoIP Master Audio Interface that facilitates the integration of switch based control panels with LED status indicators. The SPI-620 provides 16 switch inputs that can be used for the direct selection of page zones or intercom stations, as well as 16 discrete outputs that can be used for status indication via panel mounted LEDs.

The system also allows a page call to be made to a group of individual zones, simply by pressing several zone select switches in sequence. A separate input for a call cancel switch allows all of the selected zones to be canceled with a single button press. One additional switch input has also been included for a lamp test function.

Two versions of the SPI-620 are available, with the SPI-620-1X providing open-drain LED drivers (external current limiting required), and the SPI-620-2X providing LED drivers with built in current limiting (10mA/output nominal). Both versions include a regulated 5V@500mA output that can be used to power the external LEDs.

The SPI-620 connects to the MAI-625's status input via a single wire pair, allowing switch and LED data to be serially transferred between the two units. The SPI-620 can be powered by an external +24 Vdc power supply, or the included AC/DC power adapter.

3.   Mounting the PC Board

The pc version of the SPI-620 has four mounting holes that allow the pc board to be mounted on a backboard or a metal panel with appropriate spacers to prevent the pc board from touching the surface. The hole positions are shown in Figure 1. The PC board can also be mounted on a DIN rail (Wego 210 Series with 209-188 Mounting foot) or snap in track (Elkor TR3 or CurtisTR3).

4,   Electrical Connections

4.1   Power Connection

The SPI-620 requires a 24Vdc (22.6-39.6Vdc) 2.5 watt power supply. The power supply can be either an independent 24 Vdc supply connected to the terminal block labeled +24 Vdc and Gnd or a wall mount 24 Vdc supply with a center positive 2.1mm plug (shown as CN1 in Figure 1). A single wall mount power supply can supply sufficient power for both a primary and secondary SPI-620. The power input connectors are connected in

parallel and if used with a wall mount 24 Vdc supply the terminal block can be used as a 24 Vdc source to power other devices.
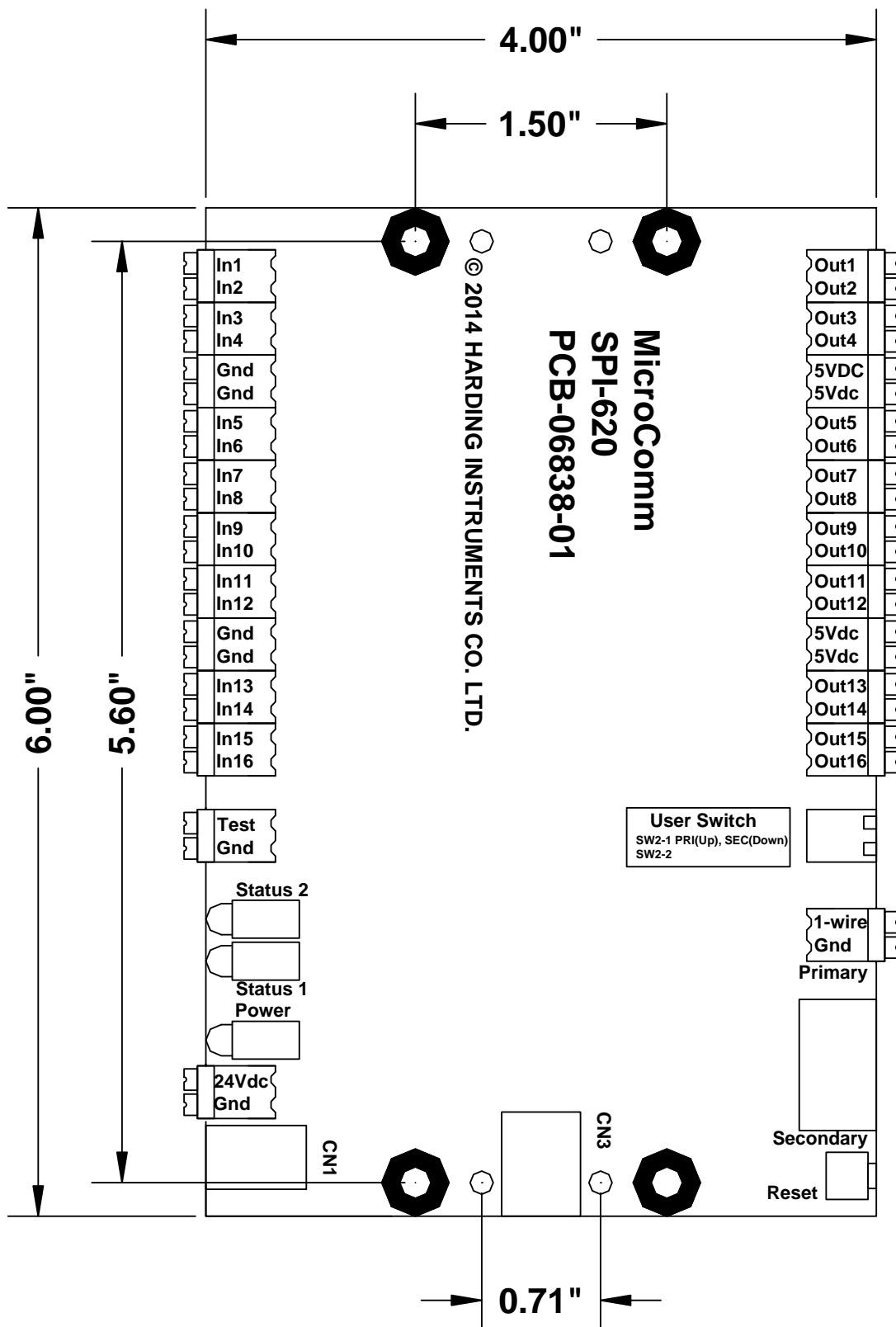

Figure 1. PC Board SPI-620

4.2   Inputs

Both the SPI-620 primary and secondary have provisions for 16 inputs. A simplified schematic diagram (not showing the protection circuitry) of a typical input circuit is shown in Figure 2.
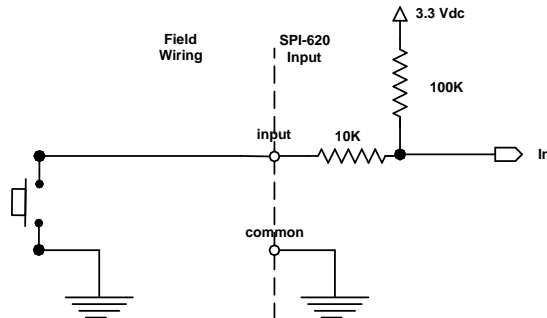

Figure 2. Typical Input Circuit

When connecting several switches to the SPI-620 a ground wire can be daisy chained to connect the switch grounds and minimize the number of ground wires that need to be connected to the SPI-620.

4.3   Outputs

When ordering an SPI-620 an optional selection allows for two different output circuits. One provides a current limiting resistor while the other requires an external current limiting resistor. The output circuits are designed to turn on LED indicator lights. The output stage with an internal current limiting resistor is shown in Figure 3 and limits the LED current to *approximately 6 mA.*
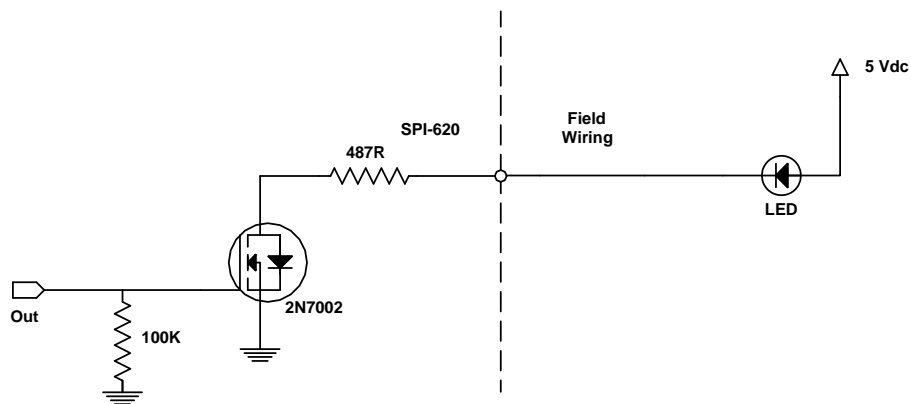

Figure 3. Output Circuit with Internal Current Limiting Resistor

The 5 Vdc is available from the SPI-620 and can be daisy chained to minimize the number of 5 Vdc wires connected to the PSI-620

A typical connection of an output circuit with an external current limiting resistor is used to limit the current when a power supply other than 5 Vdc is used. A 24 Vic supply would be available from an SPI-620 powered from a wall mount 24 Vdc power supply.
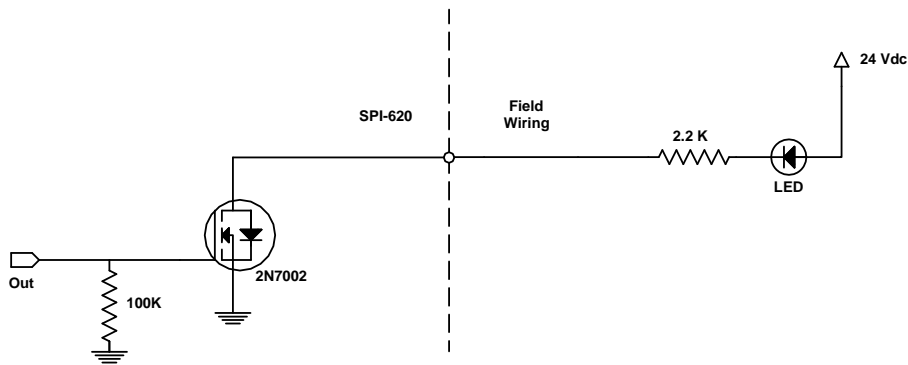
Figure 4. Output Circuit with External Current Limiting Resistor

4.4   Connecting SPI-620 and MAI-625

The SPI-620 terminal block labeled Primary with the pin designations 1-wire and Gnd is connected by a wire to the MAI-625 terminal block labeled Status In. The polarity of the connection must be maintained.

Note that the SPI-620 connected to the MAI must be in "primary" mode with user switch SW2-1 in the "up" position.
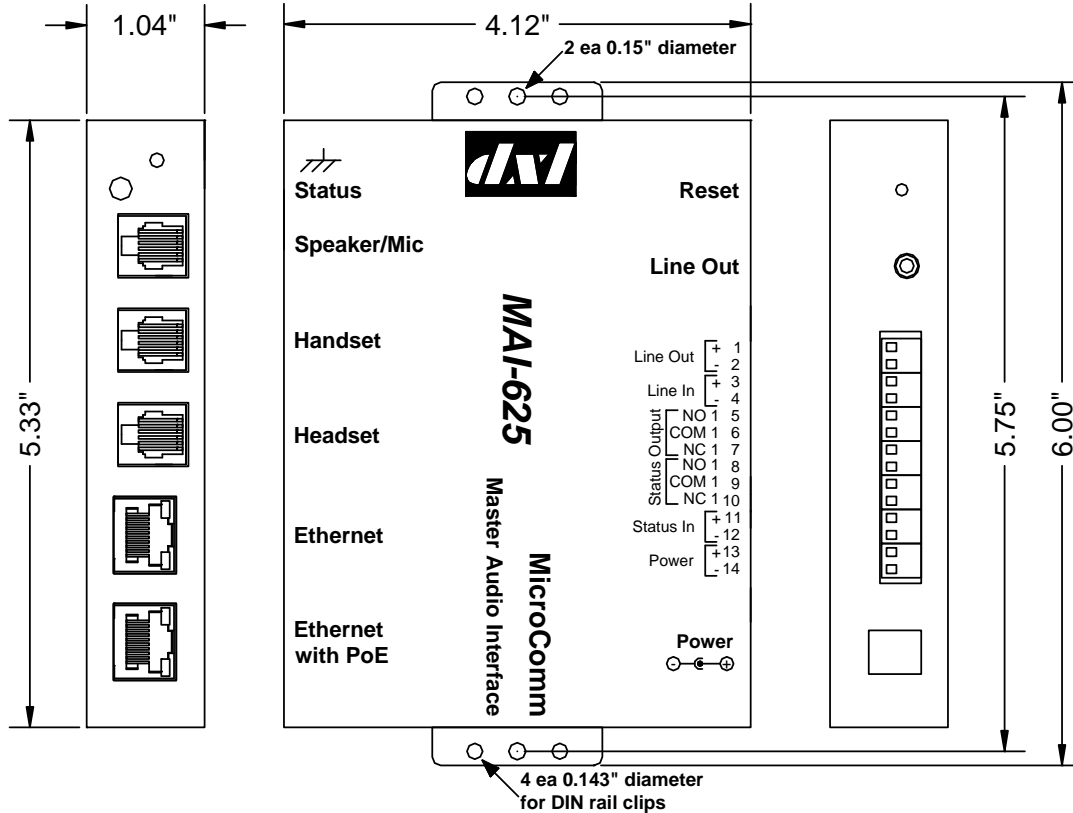
Figure 5. MAI-625 showing terminals

4.5   SPI-620 Keypad Interface

The latest SPI-620 firmware now supports a keypad matrix with approved hardware. This is used to interface to a standard 4x3 telephone dialpad when configured with the latest MAI-625 firmware.

To use this mode, place the primary SPI-620 user switch SW2-2 in the "down" position. Note that In1-In4 and Out1-Out4 points are unavailable for general usage in this mode and must be wired to an approved keypad using the appropriate interface pinout. Contact technical support for details.

4.6   Connecting a Secondary SPI-620

The number of I/O points can be doubled by connecting another SPI-620 board to the primary board using a secondary interface cable (Harding ASM2059400-01). Note that power is also provided to the secondary board via this interconnect).

In this mode, the secondary SPI-620 must be in "secondary" mode with user switch SW2-1 in the "down" position.

NOTE that a secondary SPI-620 is not supported when the keypad interface mode is in use.