Instructions UNSS

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The UNSS is the most simple, versatile, and reliable step-start system available. Depending on the parts options, it offers the following features:

1. AC or DC triggered from 5 to 250V trigger voltage
2. Internally fused
3. Reliable high current high voltage contact
4. Interruption of only one amplifier supply side wire for simple two-terminal mains insertion
5. One or two external trigger wires
6. Selection of 11-, 22-, or 44-ohm inrush start resistance

Note:

The trigger voltage always must follow the voltage rise of the protected transformer. This unit triggers at about 60-75% of run voltage. The start relay holds solid unless a drop to 10-20% of the run voltage occurs, then the start relay releases, the resistors are in line, and the trigger threshold or higher trigger voltage is reached again.

Connections are simple. Either three or four external connections are required:

1. The power mains feed is interrupted and connected through the outer larger “J1 X Line” terminals. The center is an unconnected pad. The line interruption is normally on the “hot” line side, although the step start resistors are equally effective on either supply line side
2. This line interruption inserts a shunt-selected resistance of 11, 22, or 44 ohms in that line until RY1 closes. The selections are:

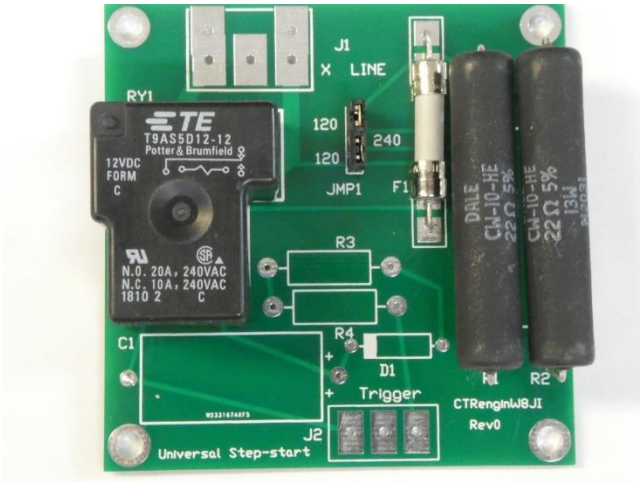

Figure 1 basic board UNSS

both 120 shunted = 11 ohms 26W
only 240 (center) shunted=44 ohms 26W
either 120 shunted = 22 ohms 13W

3. The outer two pads or terminal pins labeled “Trigger” accept the trigger voltage, which can be factory supplied for any voltage between 5Vdc and 200Vdc or 10Vac and 250Vac (other adaptations are possible). ***This trigger voltage must approximately track the high voltage rise.*** This is easy to do, occurring naturally if a filament or control winding shares primary voltage with the HV transformer winding primary
4. The trigger winding side of the system is completely isolated from ground or primary up to 1kV or higher. This allows multiple connection methods and wiring schemes

Typical Schematics

UNSS120ac operating on 240 Vac line with dual primary transformer:

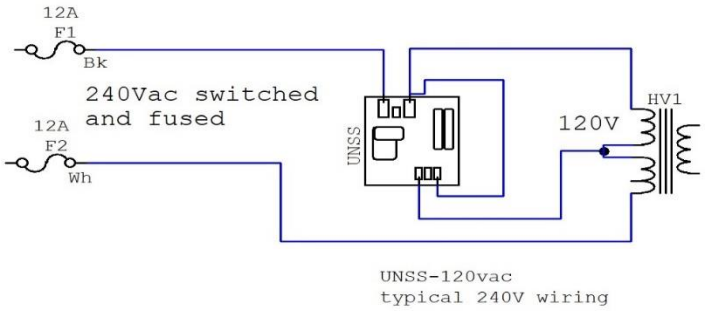

Figure 2 UNSS120ac

UNSS120ac operating on 120Vac line:

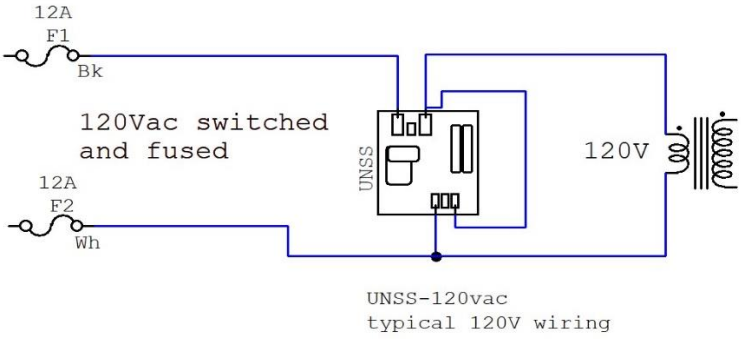

Figure 3 UNSS120ac on 120V

UNSS240ac operating on 240Vac primary Plate Transformer

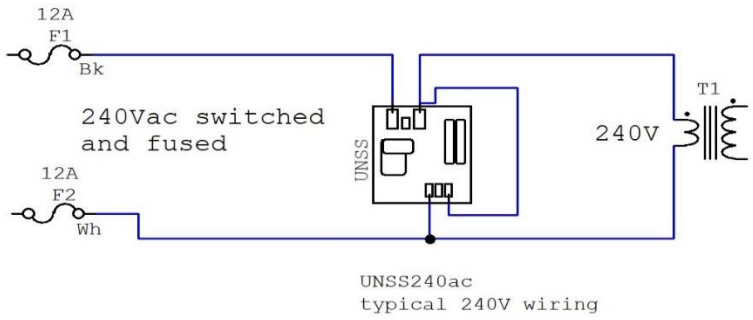

Figure 4 UNSS240ac on single 240V primary

UNSS120dc operating on primary-shared 120V bias supply (the UNSS12dc and another dc share this wiring, just at a different rectified voltage)

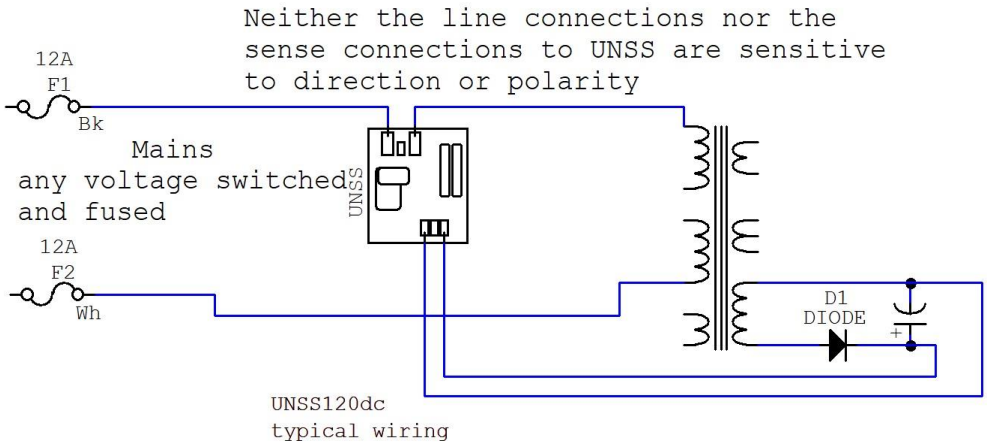

Figure 5 UNSS120dc wiring

UNSS12ac Relay System and other low-voltage or medium-voltage ac operated (no HV!)

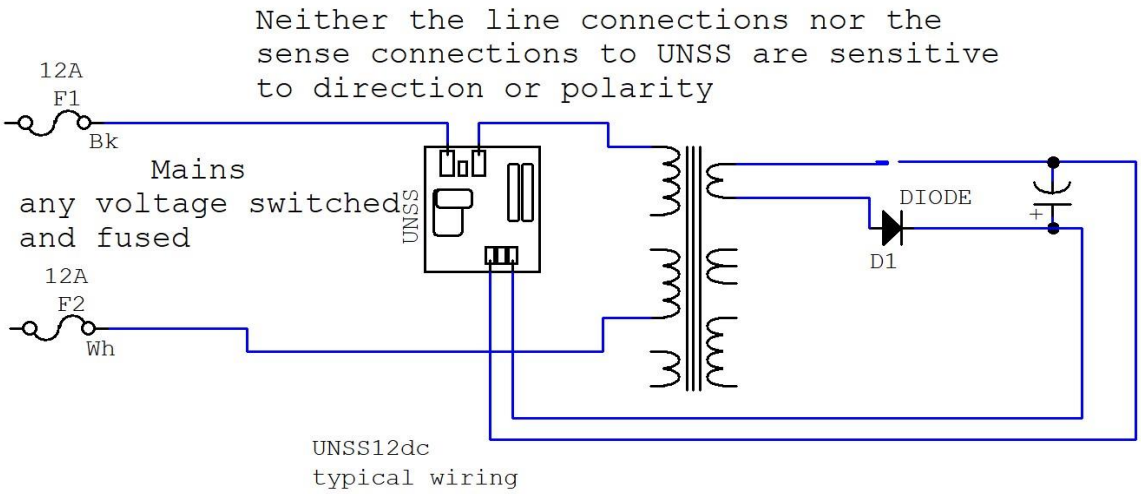

Figure 6 UNSS12dc typical installation

Note:

The trigger voltage always must follow the voltage rise of the protected transformer. This unit triggers at about 60-75% of run voltage. The start relay holds solid unless a drop to 10-20% of the run voltage occurs, then the start relay releases, the resistors are in line, and the trigger threshold or higher trigger voltage is reached again.

Fuse

1. The UNSS has a white 250V-rated pigtail line fuse on the board. Fuse rating always compromises speed, reliability, and resistor damage. The fuse is generally selected to be large enough to not fatigue, but small enough to protect the resistors.

   This unit comes with a Bel Fuse 0659P3150-13 fuse. This is a delayed action 3.15-ampere fuse. If this fuse fails, there is likely a short circuit, perhaps a gassy tube. It can also fail if the supply capacitance is too large. The one-second failure is approximately 11 amperes. This is a few kilowatts in a start resistor. Please contact us if a fuse fails without a known reason.