

# Multi-circuit Surge Suppressor with Filter - 20A Hardwired

## Description:

The ACSP20---GTF features a multi-circuit 20A surge suppressor with a factory-installed Ground Transient Filter (GTF) added to each circuit. It's ideal for protecting sensitive equipment used in telecommunications, security, fire, audio/visual, broadcast, sound recording and reinforcement, DSP, data storage, test and monitoring, process control, as well as business or retail computers and point-of-sale terminals. The assembly can be used as stand-alone surge suppressor/ground filter device or in conjunction with an AC loadcenter to provide protection to specific circuits. For large installations, more than one assembly can be connected to a single loadcenter. The assembly can also be used with Lowell's sequentially controlled AC loadcenter (ACLC-series) to provide time sequenced power activation/deactivation with the added protection of surge suppression and ground filtering at the main panel (see installation pg 4). The multi-circuit assembly is available with up to six 20A circuit modules (each with its own 20A GTF filter) installed in a 14"H x 14.3"H x 4"D enclosure with screw terminal outputs, knockouts on all sides, assorted bushings to protect wiring, a front cover and end cover kit for use in stand-alone applications. The front cover is punched to view each module's LED status indicators without opening the unit.

- **Surge Suppressor:** 20A surge suppressor is ETL Listed, endurance tested and UL1449 3rd edition compliant. It meets ANSI C62.41 and protects the line to neutral without ground wire contamination. It's ideal for protecting sensitive equipment from transient voltages, spikes and surges. Exceeding UL requirements, the surge suppressor defeats surges up to 72,000 amps using Triple Clamping Redundancy™ (TCR) technology and has a response time of less than 5 nanoseconds. The surge suppressor ensures reliable performance of connected analog or digital equipment through transient noise reduction (filtering) of 25dB@100kHz, 50dB@1MHz.
- **Ground Transient Filter:** The GTF is an ETL recognized technology. It installs in series with the ground line of electrical circuits to attenuate high frequency transients without impeding 60Hz fault current (Dia. 2, pg. 2). It introduces less than 0.1 ohm at 60Hz to the ground circuit, assuring proper operation of any overcurrent protection devices (circuit breakers, fuses, etc.). At higher frequencies where the most damaging transients exist; the GTF provides significant attenuation. At 1MHz, for example, the GTF attenuates ground noise by 25dB which can be the difference between a sensitive system functioning continuously or having an interruption or reset/reboot occurrence. As illustrated in Dia. 2, the ACSP20-GTF surge suppressor with GTF provides a cost effective and easy-to-install 20A clean power solution for sensitive equipment of all types.

## Features:

- Surge suppressor with multiple 20A circuits.
- Protects Line to Neutral - No ground wire contamination.
- Defeats surges up to 72,000A with TCR technology.
- ETL Listed
- UL1449 3rd Edition Compliant
- ANSI C62.41 Compliant



- Use as stand-alone surge suppressor or with an AC loadcenter.
- Ground Transient Filter (GTF) attenuates damaging high frequency transients.
- Made in the USA
- Ten Year Warranty

## Optional:

- **ACSP20M-GTF:** extra 20A circuit surge suppressor module with GTF (for future expansion).

## A & E Specifications:

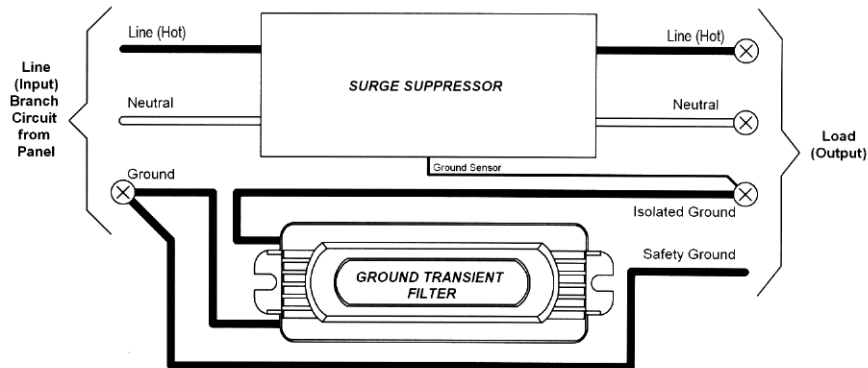
The 20A multi-circuit surge protection device with ground transient filter shall be Lowell Model \_\_\_\_\_. It shall have \_\_\_\_\_ (2, 3, 4, 5, 6) 20A circuits with the same quantity of ground transient filters installed. The surge suppressor/ground filter assembly shall be ETL Listed, endurance tested, and UL1449 third edition compliant. It shall meet ANSI C62.41 and protect line to neutral without ground wire contamination. It shall be capable of protecting audio, video, broadcast, computer, DSP, sound recording and reinforcement equipment from transient voltages, spikes and surges. It shall include Triple Clamping Redundancy™ (TCR) technology to defeat surges up to 72,000 amps and have a response time of less than 5 nanoseconds. It shall include Transient Noise Reduction (filtering) of 25dB@100kHz, 50dB@1MHz. Additionally, it shall include Lowell's GTF ground filter technology to attenuate high frequency transients. The filter shall be compliant with the Standards for Electromagnetic Interference filters (ANSI/UL 1283 - 4th Edition, 6/1998; rev 2/2004) and (CSA C22.2 No. 8 - M1986). The filter shall have a current rating of 20A and impedance of 0.06 ohms at 60Hz. The front shall include three LEDs per circuit with openings in the cover for visual ground verification and diagnostics without opening the assembly. The assembly shall install to an AC loadcenter, time sequenced loadcenter (such as Lowell's ACLC-series), or as a stand-alone device. Stand-alone applications shall require the open end of the enclosure to be covered with the end cover kit (included).

Assembly Model	Description	Circuits Installed	GTF Installed	Enclosure Size	Compatible with Lowell loadcenter
ACSP20-2C-GTF	Multi-circuit surge suppressor + GTF	(2) 20A circuits	(2) 20A	14"Hx14.3"Hx4"D	ACLC-series*
ACSP20-3C-GTF	Multi-circuit surge suppressor + GTF	(3) 20A circuits	(3) 20A	14"Hx14.3"Hx4"D	ACLC-series*
ACSP20-4C-GTF	Multi-circuit surge suppressor + GTF	(4) 20A circuits	(4) 20A	14"Hx14.3"Hx4"D	ACLC-series*
ACSP20-5C-GTF	Multi-circuit surge suppressor + GTF	(5) 20A circuits	(5) 20A	14"Hx14.3"Hx4"D	ACLC-series*
ACSP20-6C-GTF	Multi-circuit surge suppressor + GTF	(6) 20A circuits	(6) 20A	14"Hx14.3"Hx4"D	ACLC-series*
ACSP20M-GTF	Extra circuit plug-in module (one 20A surge suppressor with one GTF)				

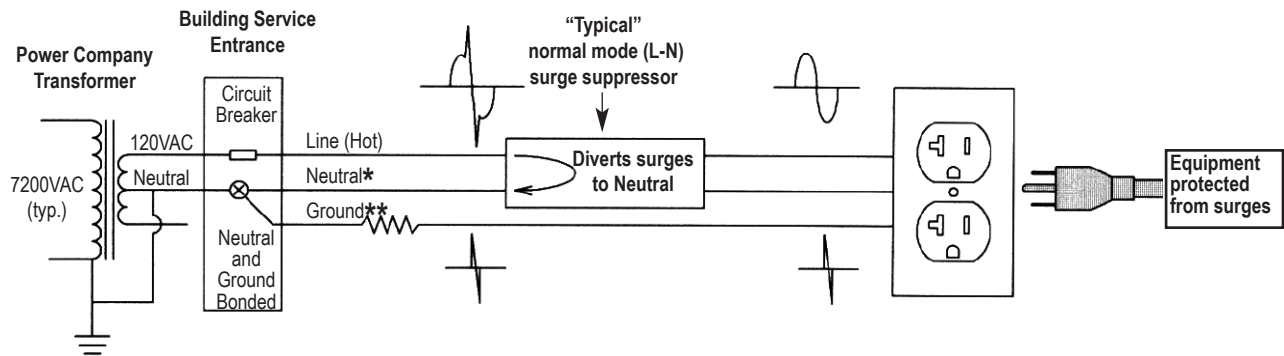
\*ACLC Series time sequenced loadcenters include choice of Cutler Hammer loadcenter packaged with a 24 circuit 8-step sequencer with multiple switches, transformer and accessories.

# Multi-circuit Surge Suppressor with Filter - 20A Hardwired

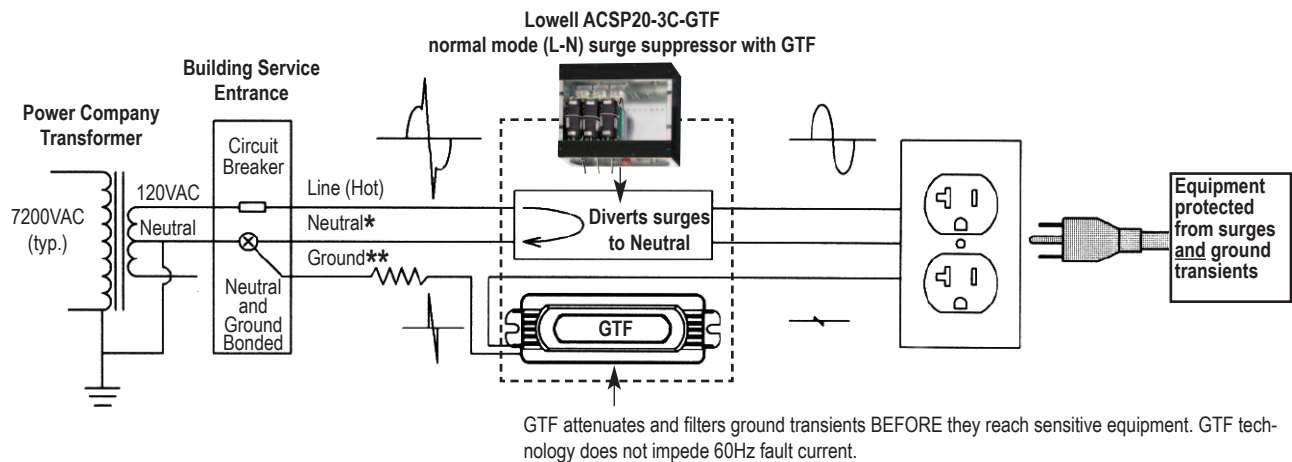
Block Diagram: ACSP20----GTF series



Signal Flow Diagram 1: Normal Mode (L-N) Surge Suppressor without GTF - (Typical)



Signal Flow Diagram 2: Normal Mode (L-N) Surge Suppressor with GTF filter protection (Model ACSP20-3C-GTF shown)



\* Neutral is a dedicated current carrying, grounded conductor. It is bonded directly to the center tap of the power company transformer which is bonded to the grounded side of the supply line.

\*\* Ground does not carry current except during a 'fault' condition. Ground connections inside a building may be made through metal conduit, junction boxes, building structural steel, water pipes, etc. They are NOT always a direct connection to the service entrance, therefore the impedance of the ground can be much higher than the neutral. Transients CAN be induced on ground circuits and CAN find their way into sensitive equipment.

# Multi-circuit Surge Suppressor with Filter - 20A Hardwired

## Specifications:

### Performance - Surge Suppressor

Operating Voltage/ Current	120 VAC nominal / 20A
Maximum Surge Current	72,000A (exceeds UL1449-3 6000V, 3000A).
Initial Clamping Voltage	205V, UL rating 330V
Endurance	IEEE C62.41-1991, B3 (C1), Pulses (lifetime): 1kv≥1,000,000; 3kv≥100,000; 6kv≥5000
Transient Noise Reduction	25dB@100kHz, 50dB@1MHz
Response Time	Less than 5 nanoseconds
Protection Mode	Line to neutral, zero ground leakage
UL1449-2 Adjunct Results	1000 surges, 6000 volts, 3000A, C1 and B3 waveforms (IEEE C62.41), No failures
Diagnostic LED's	Top (Green): On = Ground verified, Center (Green): On = Protection active, Bottom (Red): On = Protection reduced*.
Applicable Standards	IEEE standard 587-80 A & B, IEEE standard C62.41-1991, IEC 1000-4-5-1995 (IEC 801-5).
Safety Agency Approvals	ETL Listed, UL1449 3rd Edition; US and Canada

### Performance - Ground Transient Filter (GTF)

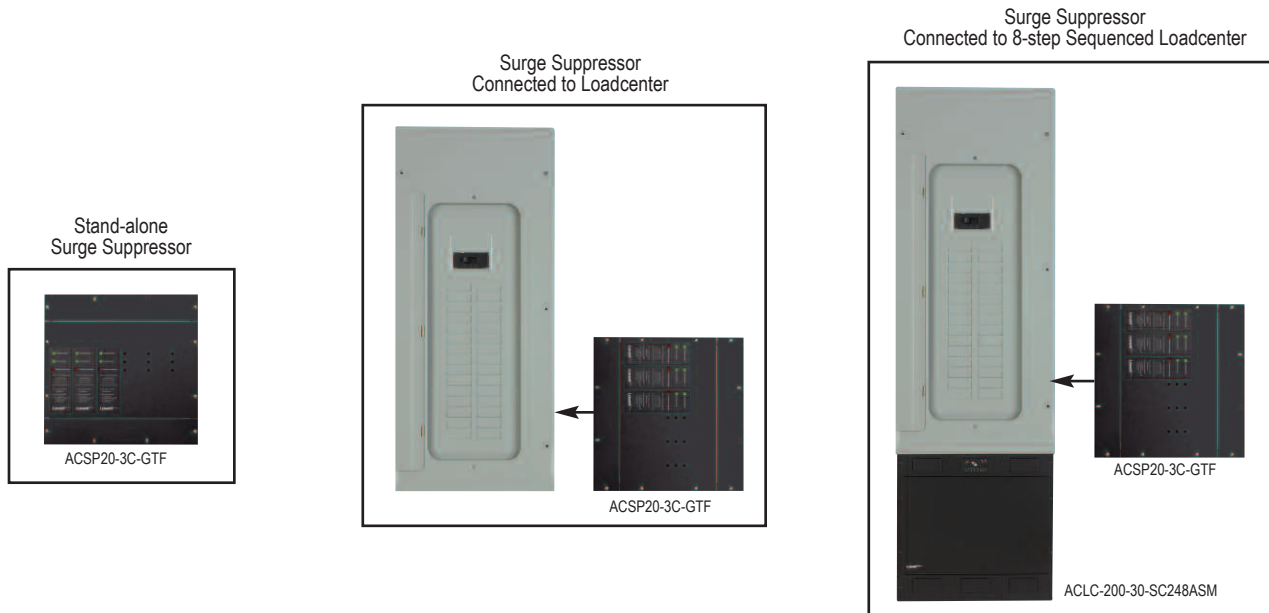
Operating Voltage/Current	125 VAC / 20A
Frequency	60Hz
Impedance@60Hz	0.06 Ohms
Applicable Standards	Electromagnetic Interference filters (ANSI/UL 1283 - 4th Edition, 6/1998; rev 2/2004), (CSA C22.2 No. 8 - M1986).

### Mechanical

Dimensions	14"Hx14.3"Hx4"D
Weight	ACSP20-2C = 9lbs, ACSP20-3C = 9.75lbs, ACSP20-4C = 10.5lbs, ACSP20-5C = 11.25lbs, ACSP20-6C = 12lbs.
Input Connections	Hardwired pigtail leads, 12 gauge minimum.
Output Connections	3-Point terminal block
Chassis	Steel box and cover plate finished in black powder epoxy paint
Mounting Options	Open side mounts to an AC loadcenter or is closed using End Cover Kit (included) in stand-alone applications.

*\*Lowell's Triple Clamping Redundancy TCR™ is exactly that - triple clamping for triple protection. This means that if one section of the suppressor has 'reduced protection', there are two additional sections available to safeguard equipment. The Ground Verified (Green LED), Protection Active (Green LED) should always be ON and the Reduced Protection (Red LED) should be OFF. In the unlikely event the Red LED illuminates; full suppression capability is NOT immediately or even necessarily compromised. The red LED indicates the Overall Life Expectancy of the unit MAY be reduced. Contact Lowell for repair or replacement under Lowell's TEN YEAR WARRANTY.*

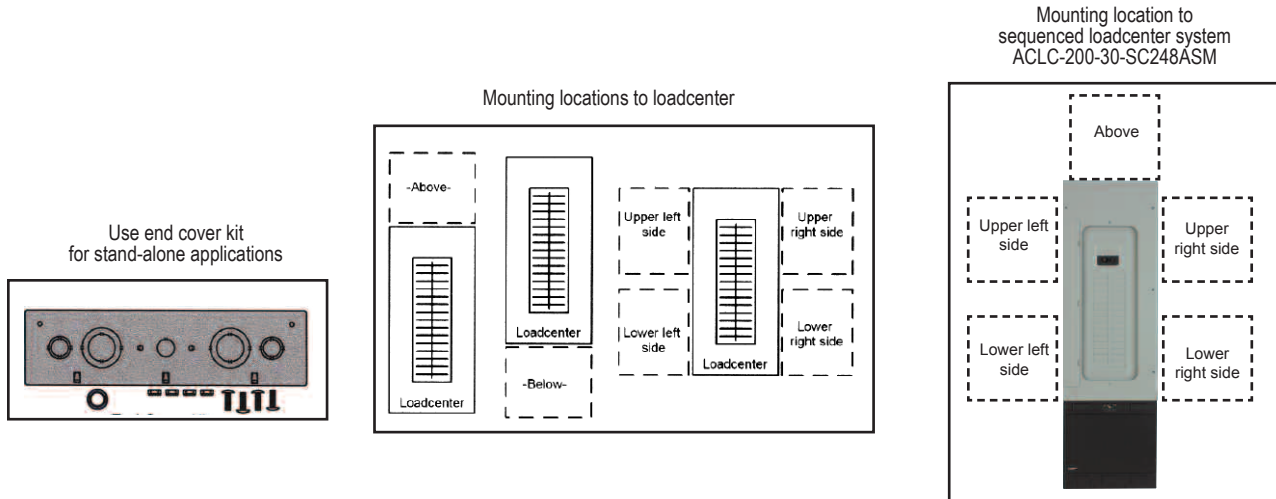
**Applications:** (1) stand-alone, (2) connected to loadcenter or (3) connected to sequenced loadcenter



# Multi-circuit Surge Suppressor with Filter - 20A Hardwired

## Installation Example:

**BEFORE BEGINNING, CHECK WITH LOCAL TRADE REGULATIONS.** Some or all of the following installation may have to be performed by a 'qualified' electrician. Consult with the Authority Having Jurisdiction (AHJ) and/or the General Contractor if there are questions.



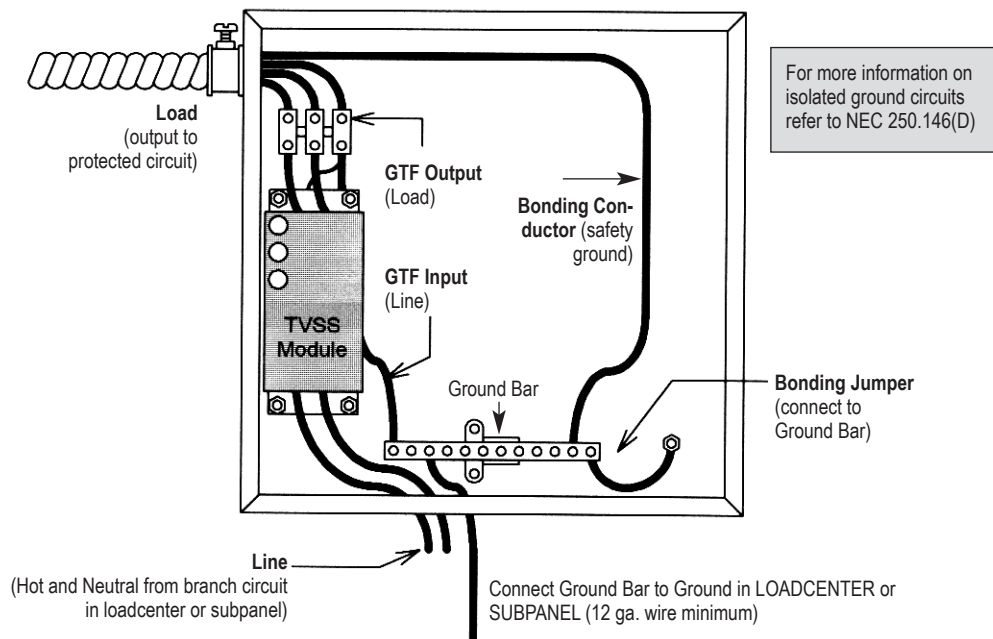
### Stand-alone Installation

To facilitate stand-alone applications (not connected to a loadcenter), the ACSP20-GTF Series includes an 'End Cover Kit' to close the open side of the enclosure. Wiring diagram is shown below.

### Loadcenter Installation

For installation convenience, the ACSP20-GTF Series can be mounted to a loadcenter in a variety of locations as shown above. Additionally, more than one assembly can be connected to a single loadcenter or to Lowell's Sequenced Loadcenter System (ALCL Series). Note: The open side of the ACSP20-GTF Series enclosure must be installed against the side of the loadcenter. When location is determined, remove the appropriate knockouts in the loadcenter and install the bushings (provided/required) to protect wiring between the loadcenter and the ACSP20-GTF Series surge suppressor assembly. Wiring diagram shown below.

## Wiring Diagram - Standard:



### Standard Wiring

(One circuit shown. Connect remaining circuits the same way.)