ACSP20-GTF Series

Multi 20A Circuit Surge Suppressor with Ground Transient Filter

GTF is a RECOGNIZED COMPONENT Electromagnetic Interference filters (ANSI/UL 1283 - 4th Edition, 6/1998; rev 2/2004) and (CSA C22.2 No. 8-M1986).

ACSP20-GTF Series Surge Suppressor
(Model ACSP20-3C-GTF with (3) 20A circuits and 3 Ground Transient Filters (GTF) shown)

Features & Benefits

- Multi 20A circuit surge suppressor ***plus*** ground transient filter.
- ETL Listed 1449-2 Adjunct.
- ANSI C62.41 Compliant.
- GSA Grade **A** - Mode **1** - Class **1** Endurance tested.
- Protects Line to Neutral - No ground wire contamination.
- Defeats surges up to 72,000A using Lowell's TCR *(Triple Clamping Redundancy™)* technology.
- Ground Transient Filter (GTF) attenuates damaging high frequency transients.
- Selection includes assemblies with up to six 20A circuits.
- May be used stand-alone or with an AC loadcenter.

Description

Surge Suppressor / Ground Transient Filter Assemblies
ACSP20-GTF Series assemblies feature Lowell's ETL listed multi 20A circuit surge suppressor Series ACSP20 with a factory installed Ground Transient Filter (GTF) added to each circuit (up to six 20A circuits per assembly). The assemblies are ideal for protecting sensitive equipment used in telecommunications, security, fire, audio/visual, broadcast, sound recording and reinforcement, DSP, data storage, test & monitoring, process control, as well as business/retail PC's and point of sale terminals.

Versatile, multi-circuit assemblies may be used as stand-alone surge suppressor/ground filter devices or in conjunction with an AC loadcenter to provide protection to specific circuits. For large installations, more than one assembly may be connected to a single loadcenter. Additionally, the assemblies may be used with Lowell's sequence controlled AC loadcenters (Series ACLC) to provide time sequenced power activation/deactivation with the added protection of surge suppression and ground filtering at the main box (see installation on page 4).

The multi-circuit assemblies are available with two, three, four, five or six 20A circuit modules, each with its own 20A GTF filter installed in a 14"W x 14.5"H x 4"D enclosure with screw terminal outputs, knockouts on all sides, assorted bushings to protect wiring, a front cover and an end cover kit for use in stand-alone applications. The front cover is punched to expose each module's three LEDs that provide visual circuit status indication without opening the device. For future expansion needs, a 20A circuit surge suppressor module with ground transient filter is available; order Model ACSP20M-GTF. A maximum of six modules will fit in each enclosure.

Surge Suppressor
The 20A surge suppressor in Series ACSP20-GTF is ETL Listed (1449-2) and endurance tested to meet government GSA Grade **A** - Mode **1** - Class **1** requirements for surge suppressors. It meets ANSI C62.41 and protect Line to Neutral without ground wire contamination. It is ideal for protecting sensitive equipment from transient voltages, spikes and surges. Far exceeding UL requirements, these suppressors defeat surges up to 72,000 amps using Lowell's *Triple Clamping Redundancy™* (TCR) technology and have a response time of less than 5 nanoseconds. Additionally, 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 (GTF)
Lowell's 20A Ground Transient Filter (GTF) in assembly Series ACSP20-GTF is a patented and ETL recognized technology. The GTF installs in series with the ground line of electrical circuits to attenuate high frequency transients without impeding 60Hz fault current (see Dia. 2 on page 2). It introduces less than 0.1 ohm at 60Hz to the ground circuit thereby assuring proper operation of any and all overcurrent protection devices (circuit breakers, fuses, etc.).

At higher frequencies however, 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, Lowell's ACSP20-GTF Surge Suppressor with Ground Transient Filter (GTF) provides a cost effective and easy-to-install 20A *CleanPowerSolution* for sensitive equipment of all types.

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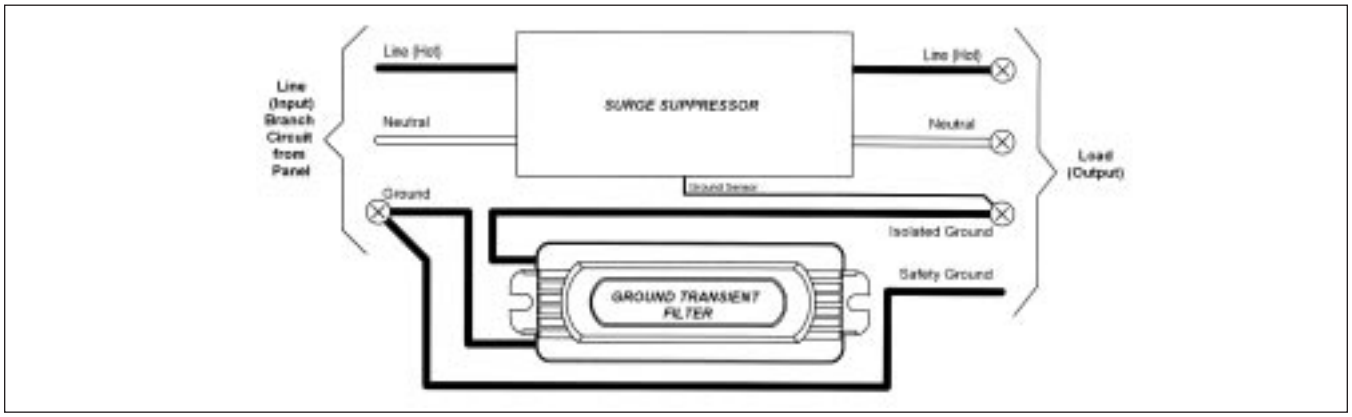
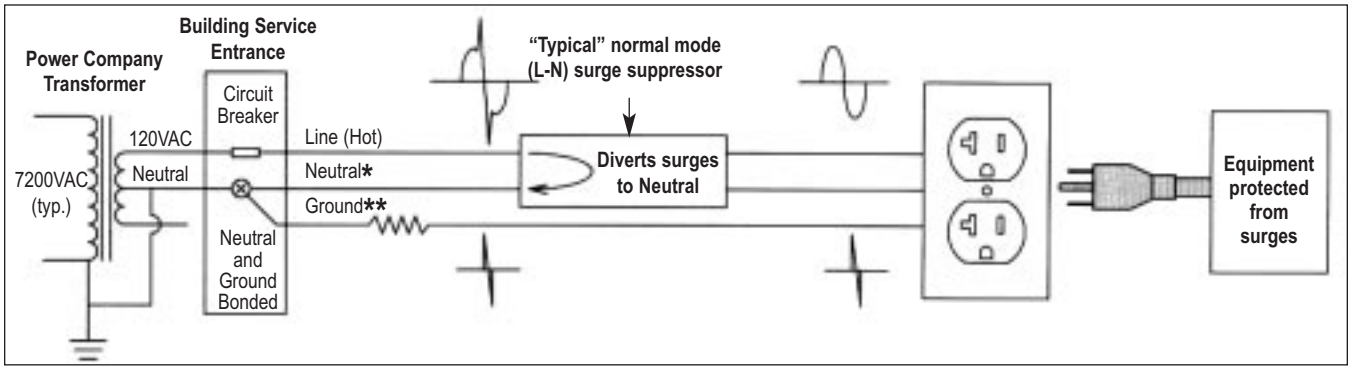
Assembly Model	Description	Circuit Qty Installed	GTF Installed	Enclsoure Size	Extra Circuit (Order separately)	Compatible w/loadcenter
ACSP20-2C-GTF	Multi-circuit surge suppressor + GTF	(2) 20A circuits	(2) 20A	14"Wx14.5"Hx4"D	**ACSP20M-GTF**	**ACLC Series***
ACSP20-3C-GTF	Multi-circuit surge suppressor + GTF	(3) 20A circuits	(3) 20A	14"Wx14.5"Hx4"D	**ACSP20M-GTF**	**ACLC Series***
ACSP20-4C-GTF	Multi-circuit surge suppressor + GTF	(4) 20A circuits	(4) 20A	14"Wx14.5"Hx4"D	**ACSP20M-GTF**	**ACLC Series***
ACSP20-5C-GTF	Multi-circuit surge suppressor + GTF	(5) 20A circuits	(5) 20A	14"Wx14.5"Hx4"D	**ACSP20M-GTF**	**ACLC Series***
ACSP20-6C-GTF	Multi-circuit surge suppressor + GTF	(6) 20A circuits	(6) 20A	14"Wx14.5"Hx4"D	**-**	**ACLC Series***
ACSP20M-GTF	Extra circuit plug-in module - (1) 20A surge suppressor with (1) GTF (no enclosure)					

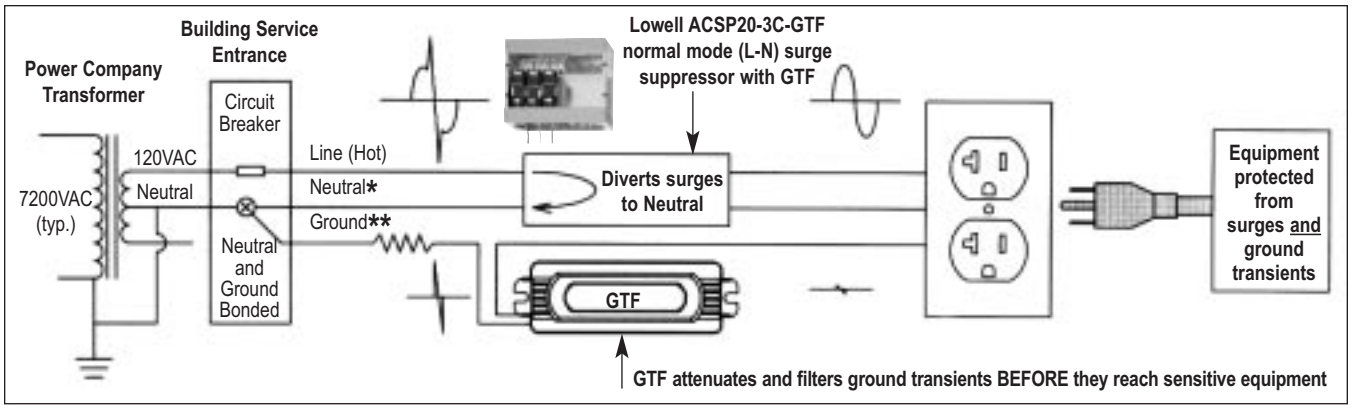
* ACLC Series time sequenced loadcenters include choice of Cutler Hammer loadcenter packaged with a 24 circuit sequencer, two remote switches and transformer.



ACSP20-GTF Series Block Diagram



Dia. 1: Power Flow - Normal Mode (L-N) Surge Suppressor WITHOUT GTF - (Typical)



Dia. 2: Power Flow - Normal Mode (L-N) Surge Suppressor WITH GTF (Lowell ACSP20-3C-GTF shown)

GTF technology attenuates high frequency transients without impeding 60Hz fault current.

* 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.

Specifications ACSP20-GTF Series

Surge Suppressor

Operating Voltage	120 VAC nominal
Operating Current	20A
Maximum Surge Current	72,000A (exceeds UL1449-2 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***
Federal GSA specs (1996)	Grade A, Class 1, Mode 1
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	Assembly is ETL Listed to UL1449 2nd Edition; rev 2/2005 (US and Canada).

Ground Transient Filter (GTF)

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

Mechanical

Dimensions	14"W x 14.5"H x 4"D
Weight	ACSP20-2C-GTF = 12.5lbs, ACSP20-3C-GTF = 15lbs, ACSP20-4C-GTF = 17.5lbs, ACSP20-5C-GTF = 20lbs, ACSP20-6C-GTF = 22.5lbs.
Input Connections	Hardwired pigtail leads, 12 gauge minimum.
Output Connections	3-Point terminal block
Chassis	Galvanized steel backbox with a steel coverplate finished in grey powder epoxy paint to match Cutler Hammer loadcenters.
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 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. Device is endurance tested: Grade A, Class 1, Mode 1.*

A & E Specifications

The multi 20A circuit surge protection device shall be Lowell Series ACSP20-GTF with ground transient filter. The Model shall be _____(ACSP20-3C-GTF, ACSP20-4C-GTF, ACSP20-5C-GTF, ACSP20-6C-GTF) and 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 (1449-2) and endurance tested to meet government GSA Grade **A** - Mode **1** - Class **1** requirements for surge suppressors. 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 Lowell's *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 patented 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 LED's per circuit with LED openings in the cover and labeling 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 install as a stand-alone device. Stand-alone applications shall require the open end of the enclosure to be covered using the supplied end cover kit.

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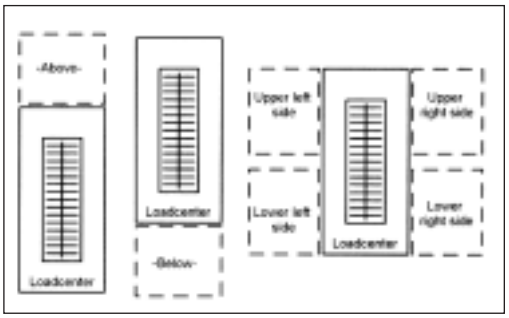
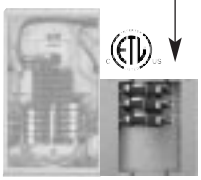
Installation Instructions

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

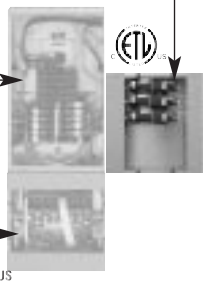


Mounting locations to a loadcenter

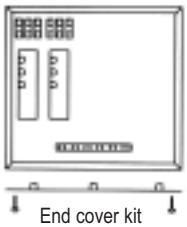


Typical loadcenter

Multi-circuit surge suppressor
Model ACSP20-3C-GTF



Sequenced loadcenter system
ACLC-100-20-SC248

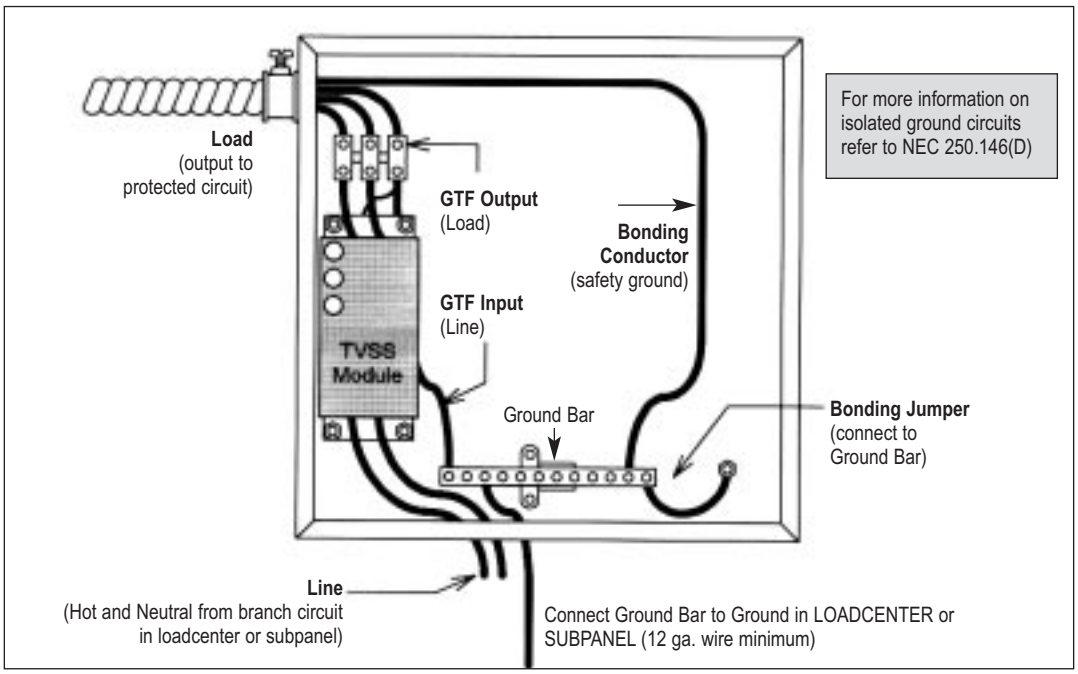


End cover kit

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 (ACLC 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 Wiring
(One circuit shown. Connect remaining circuits the same)