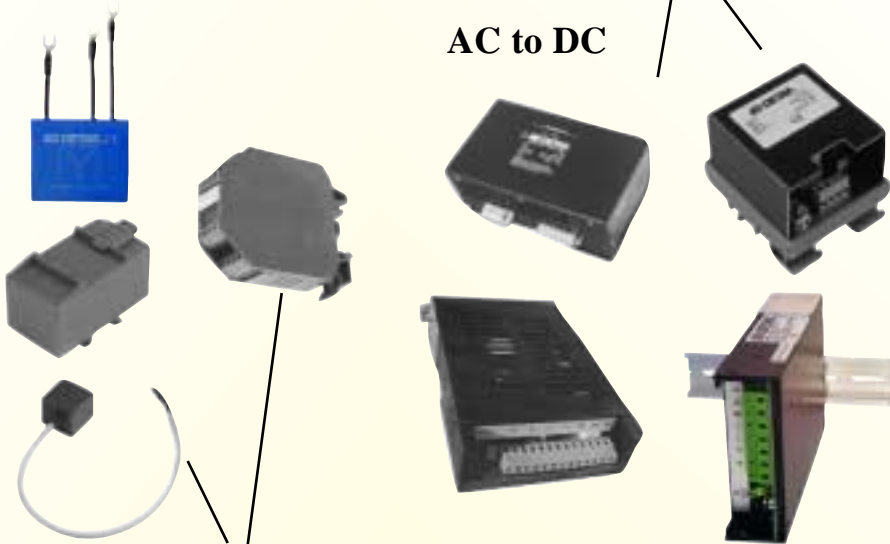


# Power Supplies

AC to DC



**Motor Transient Voltage Suppressors**  
Electric Noise Suppression

Line Filters



**Coil Transient Suppressors**  
Electric Noise Suppression

## POWER SUPPLIES

AC to 24VDC  
Regulated Primary Switching

SINGLE PHASE 115 / 230 VAC 24VDC  
5 VDC  
12VDC  
10 AMP TO 20 AMP

THREE PHASE 480 VAC 24VDC  
10 AMP TO 50 AMP

- DIN RAIL MOUNT
- COMPACT DESIGN

## TRANSIENT VOLTAGE SUPPRESSORS

*Industrial Design*

*MINI*

*UNIVERSAL MOUNT*

## MOTOR SURGE SUPPRESSORS

*(Voltage Suppressors)*

Single Phase, Three Phase

## LINE POWER FILTERS

120 / 230 / 480 VOLT

SINGLE PHASE

THREE PHASE

ONE AMP TO 200 AMP

SINGLE & DOUBLE STAGE



ELECTRICAL & ELECTRONIC  
CONTROLS, INC.

7 WEST CROSS STREET

HAWTHORNE, NY 10532

914-769-5000 FAX 914-769-3641

E-MAIL: eec@eecontrols.com

EE CONTROLS, LTD  
17 STEWART COURT  
ORANGEVILLE, ONTARIO  
CANADA L9W 3Z9



## VOLTAGE TRANSIENTS

“NOISE”

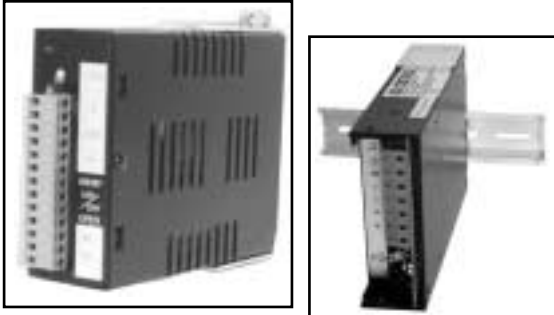


**Note:** It is **BEST** to Extinguish the transient **at** it's source to avoid instantaneous transfer to the rest of the system, i.e. thru the line, or thru inductive line to line.

**Extinguish Electrical Noise at the Source**



## Single Phase Power Supply Type GSA-SWLC



**Din Rail Mount**

**Compact Size**  
**Conform to CE**  
**EN 55011 c. B**  
**Standard Sizes:**

<b>24 Volt DC Output</b>	
1.5 Amp	
2.5 Amp	
3 Amp	
4.5 Amp	
6.25 Amp	

**Normal Input Voltages:**  
 115 / 230VAC

**Output Voltages:**  
 24V DC  $\pm$  10% Adjustable  
 (5 V DC Output)  
 (12V DC Output)

## Three Phase Power Supply Type GSA-TOP



**Compact Size**  
**Conform to CE**

**Din Rail Mount**

**EN 55011 c1. B (EN 61000-3-2 on request)**  
**Standard Sizes: 24Volt DC Output**

10 Amp
20 Amp
30 Amp
40 Amp
50 Amp

**Normal Input Voltage:**  
 360 Volt thru 500 Volt

**Output Voltages:**  
 24V DC  $\pm$  10% Adjustable

**Designed for Parallel Connection**  
**Negative Connection can be grounded**

DETAS  
POWER SUPPLIES

## Other Power Supplies Available

### AC to DC



**Type TLM**  
 $\varnothing$  230V, 460V



**Type TRC**  
 $3\varnothing$  400V



**Type TRTL**  
 $3\varnothing$  400V



**Type TLT**  
 $3\varnothing$  380/400/415



**Type LCC**  
 24VAC



**Type LCF**  
 $\varnothing$  24VAC



**Type LCL**  
 $\varnothing$  400/230/115



**Type SW**  
 AC or DC  
 Input



**Type SWL**  
 $\varnothing$  115/230/400

## SERIES GSA POWER SUPPLIES

### **DESCRIPTION - DETAS POWER SUPPLIES**

Type GSA Power Supplies are components used to convert incoming voltage AC power to 24 volt DC output, either single phase or 3 phase regulated depending on the unit selected. The 24 volt DC standard size outputs are available 2.5 Amp to 120 Amp.

Other DC output voltages down to 5 V DC are also available.

#### **Single Phase GSA Type SWLC**

Seven different styles are packaged for space saving, easy mounting, and fast wiring. DIN RAIL mount power supplies have wide input voltage range of 100 thru 240Volt AC, (50/60Hz) with optional outputs of 5Volt DC to 24Volt DC. Output power range from 36 watts to 150 watts.

#### **Three Phase GSA Type TOP**

GSA Type TOP are available in 5 sizes, 400 thru 500Volt 50/60Hz. Output is 24Volt DC, adjustable +10%. Output current range options from 10Amp to 50Amp.

#### **Other Power Supply Designs**

Optional Series GSA Power Supplies are available with 5Volt DC thru 24Volt DC outputs thru 120Amp.

### **INTERNATIONAL DIRECTIVES CE**

Two European Directives are relevant to the manufacturer of power supplies: The low voltage Directive n.73/23/EEC and the EMC Directive 89/336/EEC. Both Directives must be applied in conjunction with the amending Directive 93/68/EEC for CE marking. These Directives are now in force and all the related products placed in the European union must carry the CE marking.

### ***TWO CATEGORIES OF POWER SUPPLIES***

#### **COMPONENT POWER SUPPLIES**

Component Power Supplies for OEM are designed and produced to be "professionally installed" into a final product. "Professionally installed" means that the installer is technically competent and able to satisfy the requirements of the Directive applicable to the final product. The Component Power Supplies are intended to be incorporated in electrical panel equipment, as they are not complete in themselves.

As components they cannot fully comply with the requirements of all applicable Directives. This is dependent on the Professional Installer.

#### **STAND ALONE POWER SUPPLIES**

Stand Alone Power Supplies are intended for free standing operation in industries, laboratories, workshops and other areas. As such these power suppliers are field installed by the final user and his contactor.

Typical examples include bench units, free standing and wall mounted types.

### **LOW VOLTAGE DIRECTIVE 73/23/EEC**

This Directive applies to almost all electrical and electronic equipment, designed to operate in the voltage range 50-1000VAC or 75-1500VDC. There are some exceptions such as elevators, equipment used in explosive atmospheres, and equipment used on ships, aircraft and railways.

According to the Directive the equipment must be "safe" and manufactured in accordance with the Principle Elements of the Safety Objective.

Stand Alone Power Supplies and Component Power Supplies shall be CE marked under the Low Voltage directive. Furthermore, a confirming Declaration of Conformity must be kept in a technical file for ten years following the manufacture of the last unit.

### **EXAMPLES of Harmonized Safety Generic Standards for the Power Supplies include:**

#### **-EN 60950 (UL1950)**

(Information Technology, Business and Communication Equipment)

#### **-EN 60204**

(Safety of Machinery - Electrical Equipment of Machines)

Other more recent standards include:

#### **-IEC 61508 (UL508) Functional safety: safety related systems**

**-IEC 61000-1-2 Ed. 1.0** Methodology for the achievement of functional safety of electrical and electronic equipment.

### **CE, EU-EUROPEAN REQUIREMENT FOR POWER SUPPLIES**

(Revision to EN-61000)

#### **EN-61000-3-1 (IEC 1000-3-1)**

An EMC Electric Noise Specification Restriction.  
Effective in 2001.

#### **EN-61000-3-2**

**An important CE requirement: A Power Factor Correction Specification Requires PF correction to 99%.**

## SERIES GSA SWLC POWER SUPPLY (SINGLE PHASE)

### 24 VOLT DC OUTPUT

DIN RAIL MOUNT      1.5 AMP TO 6.25 AMP  
 COMPACT SIZE      36 WATT TO 150 WATT  
 REGULATED OUTPUT



#### FEATURES

Single phase input  
 Wide Input Range 115-230VAC

#### SPECIFICATIONS

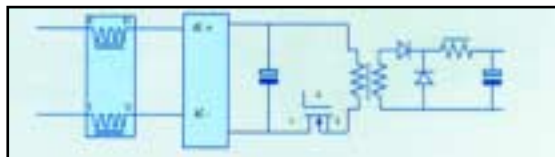
Input Voltage	115 - 230 VAC	<b>CE</b>
Frequency	47 - 63 Hz	
Output voltage	Select: 24 VDC	
Output voltage adj.	+/- 10%	
Min. Efficiency	76% (60) / 82% (100 W)	
Temperature rating	0°C + 50°C	
Protection Type	Short circuit Autorecovery, Overcurrent	
Safety Specification	EN60950	
EMC Specification	EN55011 EN50082	
Transformer Isolation	3,750 VAC 1 MIN	
Connection	Terminal Blocks	
UL Filters	02, 03, 06	

Selection Catalog Number	GSA SWLC 01 D 0021 99	GSA SWLC 02 D 0022 03	GSA SWLC 03 D 0022 00	GSA SWLC 04 D 0022 06	GSA SWLC 06 D 0021 98
Output Voltage	24VDC	24VDC	24VDC	24VDC	24VDC
Output Current	1,5A	2,5A	3A	4,5A	6,25A
Noise in mV	150	100	150	100	150
Dimensions mm Inch	L    D    H	L    D    H	L    D    H	L    D    H	L    D    H
	35   129   99 (1.4") (5.1") (3.9")	35   150   99 (1.4") (5.9") (3.9")	35   142.5   97 (1.4") (5.6") (3.8")	35   198   99 (1.4") (7.8") (3.9")	50   190   106 (2.0") (7.5") (4.2")

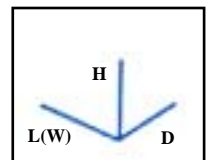


**Din Rail Mount  
SWLC 02**

#### SWITCH MODE ELECTRIC SCHEMATIC



**115 V - 230 VAC to 24 VDC**



**Dimensions  
Approx.**

## SWITCH MODE POWER SUPPLY GSA SWL (Primary switched)



**OUTPUT**  
24 Volt DC  
7.5 Amp to 16 Amp  
180 Watt to 400 Watt

### SPECIFICATIONS

Input Voltage	Nominal voltage $\pm 15\%$
Frequency	47 - 63 Hz
Output voltage	24VDC (adjustable 22 - 26VDC)
Insulation voltage	3750 VAC acc. EN60950
Protection	INPUT protection: EMI/RFI filter, Varistor against overvoltage; OUTPUT 10 WS Varistor against inductive loads surges, "Constant current" overload and short circuit protection.
Switching Frequency	150 KHz
Efficiency	90%
Temperature Rating	0°C + 50°C
Connection	Screw connectors
EMC	EN55011 Class A / EN 50082-2

REGULATED OUTPUT  
SINGLE PHASE  
ELECTRIC SCHEMATIC

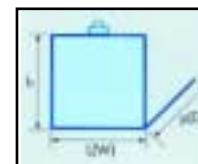


115 / 230 Volt AC to 24 VDC  
DIN RAIL MOUNT

Dimensions Approx.

Selection	GSA SWL07	GSA SWL12	GSA SWL15
115/230 VAC	GSA SWL07	GSA SWL12	GSA SWL15
AC Input Voltage	115 / 230V	115 / 230V	115 / 230V
Catalog Number	<b>D 0022 07</b>	<b>D 0022 12</b>	<b>D 0022 15</b>
Output Voltage	<b>24VDC</b>	<b>24VDC</b>	<b>24VDC</b>
Output rated Current	7A	12A	15A
Max output current	7,5 A	13 A	16 A
Ripple & Noise		50 mV p-p	
Line regulation		100mV	
Load regulation		50 mV	
Weight		1,5 Kg	

L(W)	H	(D)
186	128	81
(7.32")	(5.04")	(3.19")



## 24 VOLT REGULATED POWER SUPPLY GSA LCF

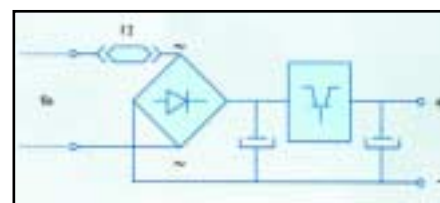
24 VOLT AC TO 5, 12, 15, 18, 24 VOLT DC



### SPECIFICATIONS

Input Voltage	Nominal voltage $\pm 10\%$
Output Current	1,5 A
Frequency	50 - 60 Hz
Temperature Rating	0° ... + 50°C
Ripple	15 mV (@1,5 A)
Load Regulation	100 mV
Protection	Overload and overvoltage
Connections	Screw Connectors
EMC	EN55011 Classe A / EN 50082-2

### ELECTRIC SCHEMATIC



24 Volt AC to DC

Selection	GSA LCF 5	GSA LCF 12	GSA LCF 15	GSA LCF 18	GSA LCF 24
AC Input Voltage	8 VAC	12 VAC	15 VAC	18 VAC	24 VAC
Catalog Number	<b>D 0016 90</b>	<b>D 0016 93</b>	<b>D 0016 94</b>	<b>D 0016 95</b>	<b>D 0016 97</b>
Output Voltage	<b>5VDC</b>	<b>12VDC</b>	<b>15VDC</b>	<b>18VDC</b>	<b>24VDC</b>
Ripple			15 mV		
Max output current			1,5 A		
Fuse Sec. F2			2,5 A		
Weight			Kg 0,145		
Dimensions Approx.	L(W)		H		D
	68,5		66		80
	(2.7")		(2.6")		(3.1")

## SERIES GSA SWLC POWER SUPPLY(SINGLE PHASE)

### 5 & 12 VOLT DC OUTPUT

DIN RAIL MOUNT  
COMPACT SIZE  
REGULATED OUTPUT

5 AMP TO 20 AMP



<b>FEATURES</b>	
Single phase input	
Wide Input Range 100-230VAC	
<b>SPECIFICATIONS</b>	
Input Voltage	115 - 230 VAC
Frequency	47 - 63 Hz
Output voltage	Select: 5VDC, 12VDC
Output voltage adj.	+/- 10%
Min. Efficiency	76% (60 W) / 82% (100 W)
Temperature rating	0° + 50°C
Protection Type	Short circuit Autorecovery, Overcurrent
Safety Specification	EN60950
EMC Specification	EN55011 EN50082
Transformer Isolation	3,750 VAC 1 MIN
Connection	Terminal Blocks

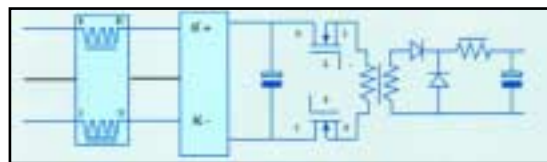


Selection	GSA SWLC 02/5	GSA SWLC 02/12	GSA SWLC 04/5	GSA SWLC 04/12	GSA SWLC 06/12			
Catalog Number	D 0022 01	D 0022 02	D 0022 04	D 0022 05	D 0021 97			
List Each								
Output Voltage	5VDC	12VDC	5VDC	12VDC	12VDC			
Output Current	12 A	5A	20A	8.0A	12.5A			
Noise in mV	100	100	100	100	100			
Dimensions (approx) mm (Inch)	L	D	H	L	D	H		
	35 (1.4")	150 (5.9")	99 (3.9")	35 (1.4")	198 (7.8")	99 (3.9")	50 (2.0")	190 (7.5")

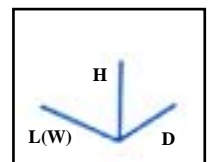


Din Rail Mount  
SWLC 04/5

### SWITCH MODE ELECTRIC SCHEMATIC



115 V - 230 VAC to 5V and 12 VDC



Dimensions  
Approx.

**SERIES GSA TOP POWER SUPPLY (THREE PHASE)**  
**PRIMARY SWITCH MODE**  
**24 VOLT DC OUTPUT**  
**DIN RAIL MOUNT (10 & 20A ONLY)**  
**COMPACT SIZE**  
**REGULATED OUTPUT**



**FEATURES**

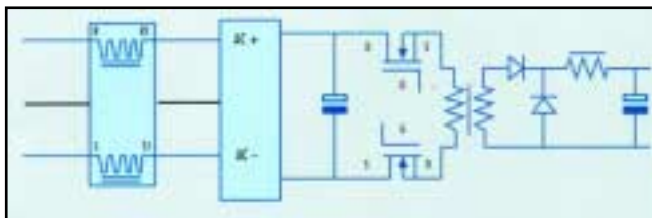
Three phase input 480 Volt, 3Ø

**SPECIFICATIONS**

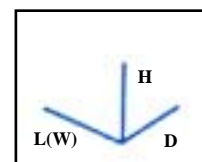
Input Voltage	360 - 500 VAC ± 15%	<b>CE</b>
Frequency	47 - 63 Hz	
Output voltage	Select: 24 VDC	
Output voltage adj.	+/- 10%	
Min. Efficiency	90%	
Temperature rating	0°C + 60°C	
Protection Type	Short circuit Autorecovery, Overcurrent	
Safety Specification	EN60950	
EMC Specification	EN55011 Class B EN50082	
Transformer Isolation	3,750 VAC 1 MIN	
Connection	Removable Terminal Blocks	

Selection Catalog Number	GSA TOP 10 D 00 2260	GSA TOP 20 D 00 2270	GSA TOP 30 D 00 2275	GSA TOP 40 D 00 2280	GSA TOP 50 D 00 2285
Output Voltage	<u>24VDC</u>	<u>24VDC</u>	<u>24VDC</u>	<u>24VDC</u>	<u>24VDC</u>
Output Current	10 A	20 A	30 A	40 A	50 A
Noise in mV	100mV	100mV	100mV	100mV	100mV
Mounting	Din Rail	Din Rail	Panel	Panel	Panel
Dimensions (approx) mm (Inch)	L D H	L D H	L D H	L D H	L D H
	230 140 85 (9.0") (5.5") (3.3")	230 140 135 (9.0") (5.5") (5.3")	294 181 175 (11.6") (7.1") (6.9")	294 181 175 (11.6") (7.1") (6.9")	294 181 175 (11.6") (7.1") (6.9")

**SWITCH MODE**  
**ELECTRIC SCHEMATIC**



480 VAC 3Ø TO 24 VDC

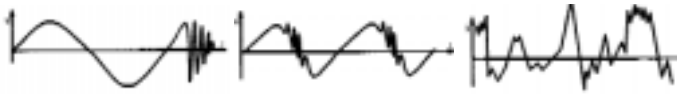


**Dimensions**  
**Approx.**

## GENERAL DESCRIPTION

### Transient Voltage Suppression in the Control Circuit

The opening and the closing of every electric device generates various random circuit phenomena depending on the type of loading, connected gears, cables, screens, etc. and their effect on command devices, both electro-mechanical and electrical. The mixed overvoltages, so generated, result from the disconnecting of these inductive loads. The electrical “noise” generated by these inductive loads varies dramatically. Typical diagrams include:



Every load represents a combination of factors such as, resistance, capacitive and inductive loads, type of input, temperature variations, etc., which determines the variables to consider in the choice of the most suitable transient voltage suppressor to avoid random malfunction or direct, the destruction of the connected device.

The suppression, which can operate at different circuit levels, is obtained using a module, mounted in parallel to the inductive load.

**This module must perform two functions:  
The elimination of the voltage increase and the fastest discharge of the accumulated magnetic energy.**

**Another important consideration is that the suppressor device itself must not generate noise, or modify, in any way, the normal function of the circuit.**

The positioning of the suppressor module in the circuit is another important factor. **The best solution is to mount the module as near as possible to the origin of the noise itself. This avoids the involving of other devices in the phenomenon such as cables.**

#### SOLUTION

Solutions include the use of diodes as DC current “dumping” circuit, the use of combinations resistance-capacitor (RC) for alternating current, and varistors, effective in both types of circuits. In addition, DETAS has developed combination devices RC + Varistors, in order to reach the best solution in difficult cases.

The wide choice available by DETAS permits you to find the type of suppressor suitable to your requirements. Finally, the DETAS and EE CONTROLS design departments can assist further with more detailed information about specific circuit needs voltage suppressors.

### Series D-9011 Electrical Noise Suppressors

Common sources of **electrical noise** are contactor coils and solenoids, both AC & DC, and AC Motors.

**Type D-9011** are electrical noise suppressors available in three types, Diode, Varistor, and RC Circuit. Each is encapsulated in a Mini housing to be wired in parallel with the inductance or contactor coil. Important advantages include compact size, low cost, and versatile mounting.

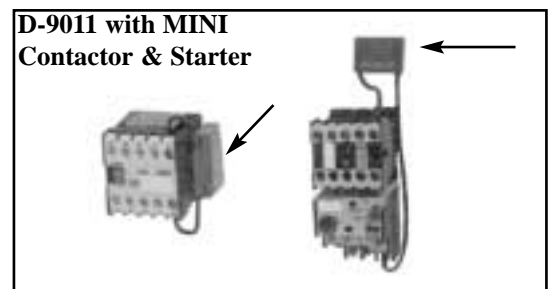
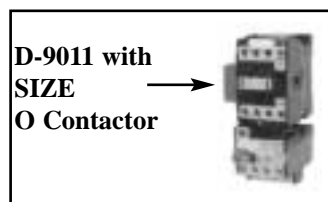
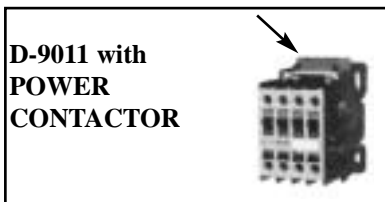
Mounting includes an industrial adhesive backing with cut-to-length 8 inch leads. Type D-9011, then, mounts with any manufactures’ contactors, reducing inventory, with both cost and space savings.

#### D-9011 DESIGN FEATURES

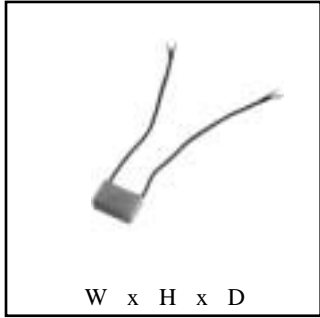
- \* Versatile Mounting
- \* UL Varistors Approved
- \* Compact Size
- \* Polycarbonated Class V2 Housing
- \* Low Cost
- \* Epoxy Resin per sec. UL94VO
- \* 7.8” Wire Leads with Fork types terminals



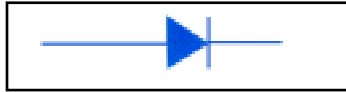
#### Mounting and Wiring Options



## (Mini Size) Series D9011 For Coils



W x H x D  
(1.26" x .87" x .43")  
\* 7.8"



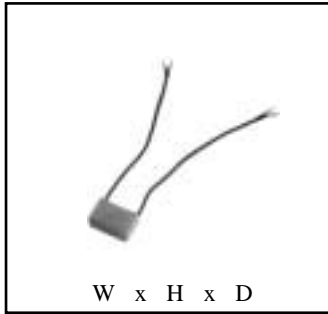
**DIODE**

24 - 230 v / DC	
Diode 1 Amp	Diode 3 Amp
<b>Catalog No. D 9011 00</b>	<b>Catalog No. D 9011 03</b>

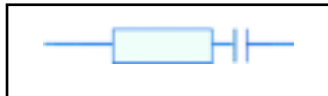


**VARISTOR**

24v / AC / DC	120v / AC	230v / AC	400v / AC
<b>Catalog No. D 9011 30</b>	<b>Catalog No. D 9011 35</b>	<b>Catalog No. D 9011 40</b>	<b>Catalog No. D 9011 45</b>



W x H x D  
(1.26" x .87" x .43")  
\* 7.8"



**RC**

400 v / AC max .47 uf 220 ohm
<b>Catalog No. D 9011 99</b>



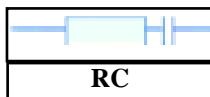
**VARISTOR (VDR)+ RC**

24v / AC / DC	120v / AC	230v / AC	400v / AC
<b>Catalog No. D 9011 90</b>	<b>Catalog No. D 9011 91</b>	<b>Catalog No. D 9011 92</b>	<b>Catalog No. D 9011 93</b>

## TRANSIENT SUPPRESSORS SERIES 9050 CONTACTOR MOUNT SIEMENS & KM



(1.06" x .43" x 1.10")  
\* 7.8"



**RC**

24-48v / AC 1.6 uf 110 ohm	115-230v / AC .22 uf 220 ohm
<b>Catalog No. D 9050 48</b>	<b>Catalog No. D 9052 50</b>



**VARISTOR**

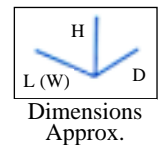
24v / AC / DC
<b>Catalog No. D 9052 24</b>



**DIODE**

24v - 230v DC
<b>Catalog No. D 9051 24</b>

For Allen Bradley or Square D (Tele)  
Use above Mini Series



\* Wire Lead Length -- Inches

## FOR 3 PHASE MOTORS

**For Electrical Noise Suppression** industrial procedures dictate, to maximum results, mount the suppressor near the single phase or 3 phase motor.



**Electrical Noise from Motors**

Three Phase MOTOR SUPPRESSOR sizes range from 5HP to 60HP with each usable on 230 Volt, 460 Volt, and 575 Volt motors.

### MOUNTING OPTIONS

**Series D9001** is epoxy encapsulated with three long 11 to 17 inch wire leads for convenient connections.

**Series D9003** is DIN rail mount with contactor mounting on top of the Series 9003 suppressors.

**Series D9002** is DIN rail mount with screw terminals.

Selected ratings include use with 5HP to 60HP, 3 phase motors.

### MOUNTING / WIRING OPTIONS - Electrical Noise Suppressors



**5HP Max**



**5 to 40HP**



**DIN RAIL  
(Mount Under  
Contactor)  
5-40HP**



**DIN RAIL  
5-10HP**



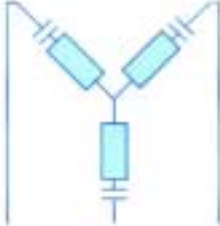
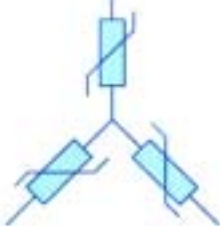







**DIN RAIL  
10-60HP**

### Features / Specifications

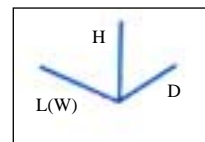
- \* Compact Size
- \* Low Cost
- \* Wire Leads for fast Connections
- \* DIN RAIL MOUNT
- \* Mount Option with Industrial Adhesive
- \* Polycarbonate Class V2 Housing

- \* Epoxy Resin per UL94 VO
- \* UL Varistors Approved
- \* -20° C to +70° C Ambient
- \* 50/60Hz
- \* Max 1 operation per sec.
- \* Capacitors-Non Inductive  
metalized film polypropylene type

## VOLTAGE TRANSIENT SUPPRESSORS - SERIES D9000, D9001 FOR 3 PHASE MOTORS 460 VOLT AND (575V)

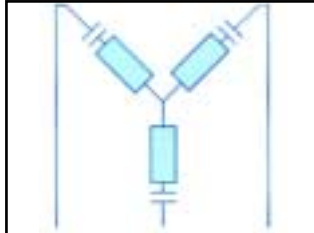
MOUNTING WIRING SYSTEM	Dimension Approx. W x H x D (inch)					
	<b>5HP</b>	W    H    D (2" x 1.7" x 0.5") *11.8"	<b>Catalog No. D 9000 50</b> (MAX 575 V)	<b>Catalog No. D 9000 40</b> (MAX 480 V)		
			<b>RC WYE CONNECTED ALL MAX 575 VOLT</b>	<b>VARISTOR (VDR) WYE CONNECTED</b>	<b>VARISTOR *(VDR) + RC WYE CONNECTED</b>	
	<b>5HP</b>	W    H    D (1.6" x 1.2" x 1.6") *17.7	<b>Catalog No. D 9001 20</b> (MAX 575 V)	<b>Catalog No. D 9001 47</b> (MAX 480 V)		
	<b>10HP</b>	W    H    D (1.6" x 1.6" x 1.6") *17.7	<b>Catalog No. D 9001 27</b> (MAX 575 V)			
	<b>15HP</b>	W    H    D (1.6" x 1.6" x 1.6") *17.7		<b>Catalog No. D 9001 45</b> (MAX 480 V)	<b>Catalog No. D 9001 35</b> (MAX 480 V)	
	<b>25HP</b>	W    H    D (1.6" x 1.6" x 1.6") *17.7		<b>Catalog No. D 9001 60</b> (MAX 480 V)	<b>Catalog No. D 9001 80</b> (MAX 480 V)	
	<b>40HP</b>	W    H    D (1.6" x 1.2" x 1.6") *17.7		<b>Catalog No. D 9001 90</b> (MAX 480 V)		

\* Wire Lead Length -- Inches

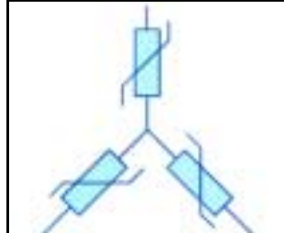


**Dimensions  
Approx.**

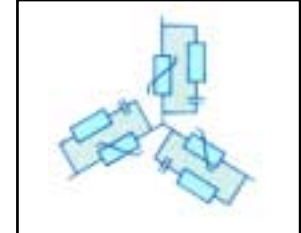
## DIN RAIL MOUNT SERIES D9003



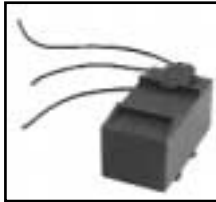
**RC**



**VARISTOR (VDR)**



**VARISTOR  
\*(VDR) + RC**

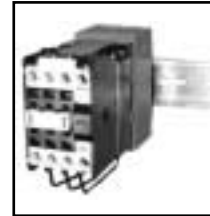


**DIN RAIL MOUNT**  
MOUNT UNDER CONTACTOR  
WIRE LEADS

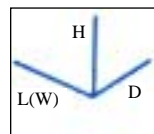
5HP W H D (1.8 x 3.3 x 2.1)	<b>Catalog No. D 9003 04</b> (MAX 575 V)
10HP W H D (2.2 x 1.8 x 3.1)	<b>Catalog No. D 9003 07</b> (MAX 575 V)
15HP W H D (2.2 x 1.8 x 3.1)	<b>Catalog No. D 9003 19</b> (MAX 575 V)
25HP W H D (2.1 x 3.3 x 2.1)	<b>Catalog No. D 9003 20</b> <b>Catalog No. D 9003 25</b> <b>MAX 575v</b>
40HP	

**Catalog No. D 9003 14**  
(MAX 480V)

**Catalog No. D 9003 30**  
(MAX 480V)



<b>Catalog No. D 9003 24</b> (MAX 480V)
<b>Catalog No. D 9003 35</b> (MAX 480V)



Dimensions  
Approx.

## DIN RAIL MOUNT SERIES D9002



5HP  
W H D  
(0.9 x 3.1 x 4.1)

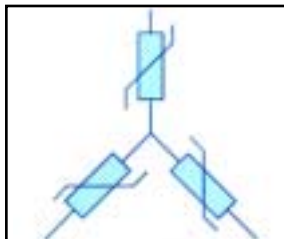
10HP  
W H D  
(3.5 x 1.8 x 5.1)



10HP  
W H D  
(2.2 x 1.8 x 3.1)

40HP  
W H D  
(3.5 x 1.8 x 5.1)

60HP  
W H D  
(3.9 x 1.8 x 3.1)



**VARISTOR (VDR)**

### DIN RAIL MOUNT SCREW TERMINAL

**Catalog No. D 9002 00**  
(MAX 575V)

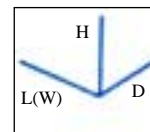
**Catalog No. D 9002 10**  
(MAX 575V)

### DIN RAIL MOUNT HIGH POWER SCREW TERMINAL

**Catalog No. D 9002 16**  
(MAX 575 V)

**Catlog No. D 9002 30**  
(MAX 480 V)

**Catalog No. D 9002 45**  
(MAX 480 V)



Dimensions  
Approx.

## DESCRIPTION

**Drastic variations in load currents, on power lines, generate radio frequency interferences.**

Normally defined as "conducted" emission noise, interference through the power line wires, flows throughout all the line. Additionally the "radiated" emission noise is transmitted by the wires through the air, as if these were antennas.

This difference is only theoretical because the voltage and currents, changing though time, correspond with the radiated noise. Every radiated noise induced on the power wires, work as receiving antennas, producing an equivalent conducted signal. LC filters, then, are key in power line distribution to avoid these interferences in the electrical network.

The typical LC filter has circuit configuration, as noted in the following catalog pages.

L1 = Compensated Coil  
Cx = Class X Capacitor  
R = Resistor

L2-L3 = Black Coil  
Cy = Class Y Capacitor

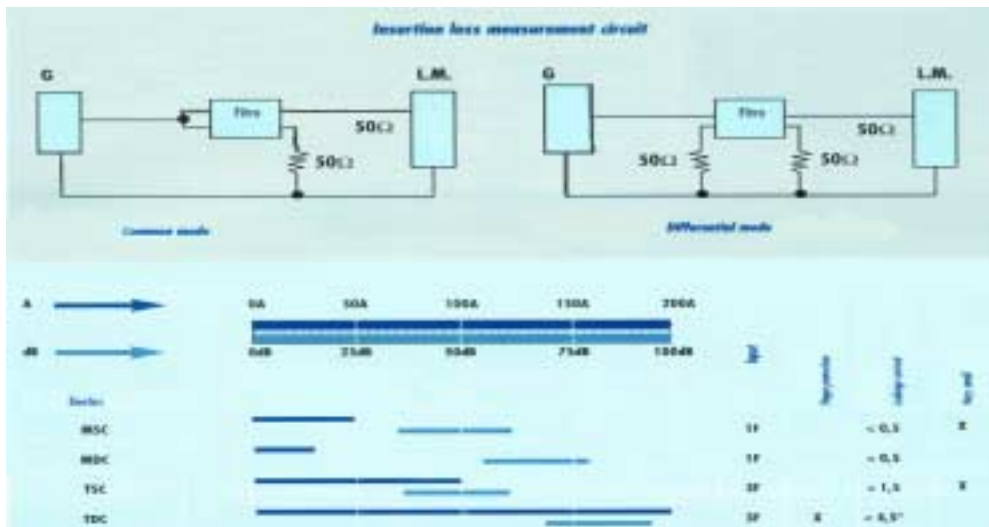
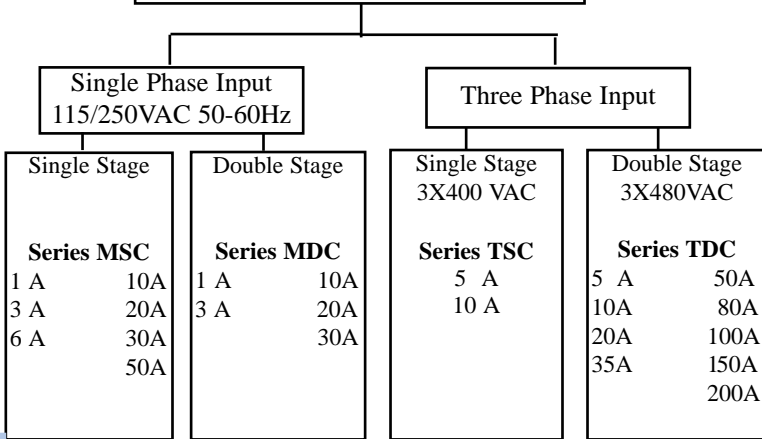
L1 and Cx are used for suppression of the different mode noise. L2, L3, Cy and L. are included for noise in the command mode.

The typical insertion loss of the single stage filter is approximately 30 to 50 dB. Values around 80 dB result from double stage filters. Extremely important is the connection to the ground, which must be very low impedance. Without a low independence ground the filter suppression is reduced.

Advantages of each DETAS power line filter is it's design with wide input voltage and wide output current range. Another advantage is the very high insertion loss and the very low leakage current to ground, as caused by the y capacitors. These allow the DETAS filters to meet the UL544-UL1286 and EN60335-1 standards.

The series TDC and NET are specially designed with three phase input and high insertion losses and as such are specially designed for frequency converters. These series can tolerate input voltages over 500 VAC and are protected against the transients on power lines. The very low leakage current, the small dimensions and, as stated, the very high insertion loss makes these models a performance "leader" in this category.

### EMI / EMC POWER LINE FILTERS



**ELECTRONIC & ELECTRICAL  
CONTROLS, INC.**  
7 WEST CROSS STREET  
HAWTHORNE, NY 10532  
USA

EE CONTROLS, LTD.  
19 STEWART COURT  
ORANGEVILLE, ONTARIO  
CANADA L9W 3Z9

## EMI LINE FILTERS SINGLE STAGE SERIES D MSC SINGLE PHASE 115 / 240 VAC

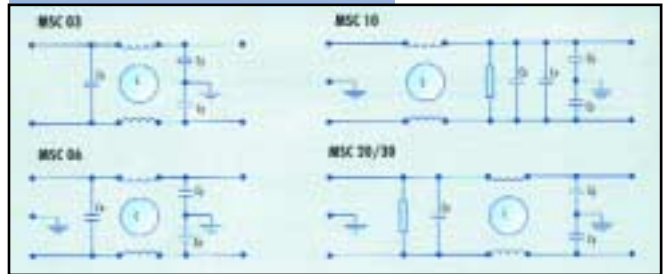


1 Amp to 30 Amp

### Specifications

115/250 VAC 50/60Hz  
 Leakage Current  $\leq 0.5$  mA  
 Test Voltage (1 min)  
 Line to Ground 1500 VAC / 2250 VDC  
 Line to Line 1500 VDC  
 Temperature Range  $-40^{\circ}$  to  $+85^{\circ}$ C  
 UL - Filters 01, 03, 06, 10, 20

### ELECTRIC SCHEMATIC



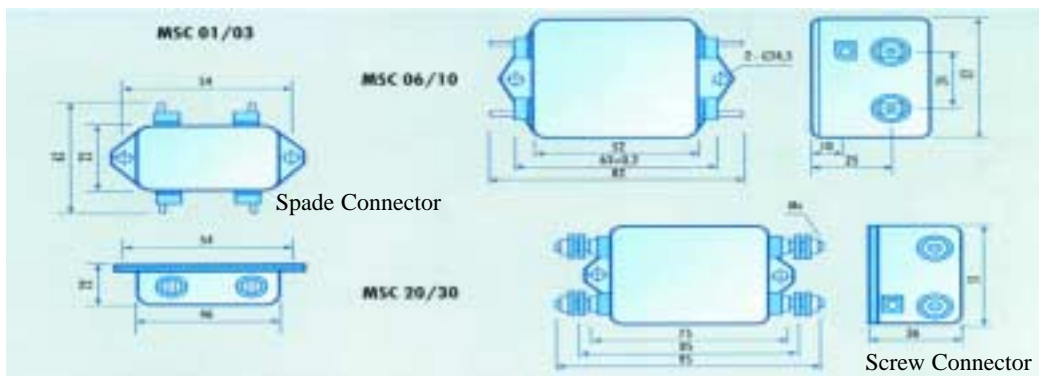
### MINIMUM INSERTION LOSS IN dB (MEASURED IN 50 Ω SYSTEM)

CATALOG No.	RATED CURRENT	COMMON MODE						DIFFERENTIAL MODE					
		FREQUENCY (MHz)						FREQUENCY (MHz)					
		.15	.5	1	5	10	30	.15	.5	1	5	10	30
D-MS 01	1 A	30	40	56	58	60	60	5	40	55	60	60	60
D-MS 03	3 A	25	30	42	50	60	60	-	-	6	45	50	50
D-MS 06	6 A	22	38	45	52	55	48	-	-	15	70	67	62
D-MS 10	10 A	25	41	49	53	57	64	23	38	46	60	60	46
D-MS 20	20 A	9	22	40	40	47	57	10	12	44	69	60	56
D-MS 30	30 A	5	12	30	31	37	54	10	20	26	78	83	58

Note: The above units are CE, but not submitted to U.L.

	D-MS 01	D-MS 03	D-MS 06	D-MS 10	D-MS 20	D-MS 30
RATED CURRENT	1 A	3 A	6 A	10 A	20 A	30 A
L	2x4 mH	2x1, 5 mH	2x4, mH	2x2,4 mH	2x0,44 mH	2x0,3 mH
C (X2)	0,1 μF	0,01 μF	2x0, 47 μF	2x0, 47 μF	2x0, 1 μF	2x0, 1 μF
C (Y)	2x3300 pF	2x4700 pF	2x1000 pF	2x3300 pF	2x3300 pF	2x3300 pF
R				1,5 MΩ	1,5 MΩ	1,5 MΩ

### DIMENSIONS IN MM



For other EMI Designs, check with factory for catalog sheet.

## Extinguish Electrical Noise at the Source

**NOTE:** IT IS **BEST** TO EXTINGUISH THE TRANSIENT AT IT'S SOURCE TO AVOID INSTANTANEOUS TRANSFER TO THE REST OF THE SYSTEM, I.E. THRU THE LINE, OR THRU INDUCTIVE LINE TO LINE



### POWER SUPPLIES



### MOTOR TRANSIENT VOLTAGE SUPPRESSORS



### COIL TRANSIENT SUPPRESSORS



### LINE FILTERS

