



Data Sheet

VI-IAM™, VE-IAM™ Input Attenuator Modules



Features

- Inputs: 24, 48 and 300 Vdc
- High surge withstand:
 - Bellcore
 - British Telecom BTR 2511
 - IEC-60801-5
- EMI/RFI specifications:
 - Bellcore TR-TSY-000513
 - British Telecom BTR 2511
 - FCC Level “A”
 - EN55022 Level “B”
- cULus, CTÜVus
- 97% efficiency
- Logic disable
- Expansion output for arrays
- Size: 2.28" x 2.4" x 0.5"
(57,9 x 61,0 x 12,7)
- CE Marked
- RoHS Compliant (VE-IAM)

Product Highlights

The Input Attenuator Module (VI-IAM) is a component-level, DC input front end filter designed to occupy minimum board space while providing maximum protection for today’s sophisticated electrical systems. The VI-IAM, in combination with Vicor 24, 48 and 300 Vdc input modules, provides a highly efficient, high density power system with outputs from 1 to 95 Vdc and power expandable from 25 to 800 W. Your system will benefit from the small size, efficiency and inherent reliability of Vicor’s component-level converters, while meeting the toughest demands of Telecommunications and Industrial power applications.

This combination provides compliance with the transient requirements of Bellcore, British Telecom and IEC standards, and meets the EMI/RFI specifications of Bellcore, British Telecom and FCC Part 15, Subpart B and EN55022.

Compatible Products

- VI-200, VE-200, VI-J00, VE-J00
(Inputs: 1, W, 3, N and 6)
- Mega Modules
(Inputs: 1, W, 3, N and 6)

[For additional information see Section 14 of the VI-200 & VI-J00 Design Guide.](#)

VI-IAM Specifications

(Typical at T_{BP} = 25°C, nominal line, 75% load, unless otherwise specified)

Input Characteristics

Parameter	Min	Typ	Max	Units	Notes
24 Vdc modules					
Steady state input	21	24	32	Vdc	–A11– models
Input spike limit			300	Vdc	Per BTNR2571 issue 4
			2500	Vdcpk	Ringwave 0.5 µs rise 100 kHz
Input surge limit			100	Vdc	Figure 1
Overtoltage shut down ^[a]	34		38	Vdc	100 ms, automatic recovery
Recommended fuse			20	Amps	32 V ACG-20
24 Vdc modules					
Steady state input	18	24	36	Vdc	–AWW– models
Input spike limit			300	Vdc	Per BTNR2571 issue 4
			2500	Vdcpk	Ringwave 0.5 µs rise 100 kHz
Input surge limit			100	Vdc	Figure 1
Overtoltage shut down ^[a]	37		42	Vdc	100 ms, automatic recovery
Recommended fuse			20	Amps	36 V ACG-20
48 Vdc modules					
Steady state input	42		60	Vdc	–A33– models
Input spike limit			300	Vdc	Per BTNR2571 issue 4
			2500	Vdcpk	Ringwave 0.5 µs rise 100 kHz
Input surge limit			160	Vdc	Figure 1
Overtoltage shut down ^[a]	62		67	Vdc	100 ms, automatic recovery
Recommended fuse			20	Amps	60 V 3AB-20
48 Vdc modules					
Steady state input	36		76	Vdc	–ANN– models
Input spike limit			300	Vdc	Per BTNR2571 issue 4
			2500	Vdcpk	Ringwave 0.5 µs rise 100 kHz
Input surge limit			276	Vdc	Figure 1
Overtoltage shut down ^[a]	77		83	Vdc	100 ms, automatic recovery
Recommended fuse			20	Amps	80 V 3AB-20
300 Vdc modules					
Steady state input	200		400	Vdc	–A66– models
Input spike limit			1000	Vdc	DM, 2 Joule, IAW IEC-801-5
			2000	Vdc	CM, 2 Joule, IAW IEC-801-5
Input surge limit			800	Vdc	Figure 1
Overtoltage shut down ^[a]	402		424	Vdc	100 ms, automatic recovery
Recommended fuse			5	Amps	250 V Bussman PC-Tron
All models					
No load power dissipation		0.5	1.5	Watts	
Inrush current		110	125	% I _{IN}	Steady state, I _{IN} 10 ms

^[a] The VI-IAM disables downstream converters and clamps the converter input voltage at a safe level.

Model Selection Chart

Model Number	Nominal Input Voltage	Input Range	Compatible DC-DC Converter	Converter
VI-A11-CU/VE-A11-CU	24 Vdc	21 – 32 Vdc	VI-21x-Cx and VI-J1x-Cx	C-grade
VI-AWW-CU/VE-AWW-CU	24 Vdc	18 – 36 Vdc	VI-2Wx-Cx and VI-JWx-Cx	C-grade
VI-A33-CQ/VE-A33-CQ	48 Vdc	42 – 60 Vdc	VI-23x-Cx and VI-J3x-Cx	C-grade
VI-ANN-CQ/VE-ANN-CQ	48 Vdc	36 – 76 Vdc	VI-2Nx-Cx and VI-JNx-Cx	C-grade
VI-A66-CQ/VE-A66-CQ	300 Vdc	200 – 400 Vdc	VI-26x-Cx and VI-J6x-Cx	C-grade

Note: For alternative product grades change the “C” in the part number to “E”, “I”, or “M”.

SPECIFICATIONS

(typical at $T_{BP} = 25^{\circ}\text{C}$, nominal line and 75% load, unless otherwise specified)

■ OUTPUT CHARACTERISTICS

Parameter	Min	Typ	Max	Units	Test Conditions/Notes
Clamp voltage					
24 Vdc input	36.0		44.0	Vdc	–A11– models
	40.5		50.0	Vdc	–AWW– models
48 Vdc input	62.0		71	Vdc	–A33– models
	80.0		90.0	Vdc	–ANN– models
300 Vdc input	400		435	Vdc	–A66– models
Output power					
24 V models			250	Watts	Output of IAM
48 V models			510	Watts	Output of IAM
300 V models			510	Watts	Output of IAM
Internal voltage drop					
24 Vdc	0.6		0.85	Vdc	
48 Vdc	0.6		0.95	Vdc	
300 Vdc	1.7		3.5	Vdc	
Overload protection					
24 Vdc input	–AWW–	20		Amps	Foldback threshold; auto recovery with latched shut down after 2 ms
	–A11–	15		Amps	
48 Vdc input	–ANN–	20		Amps	
	–A33–	15		Amps	
300 Vdc input	–A66–	4		Amps	

■ ISOLATION CHARACTERISTICS

Parameter	Min	Typ	Max	Units	Test Conditions
Input to base		1,500		Vrms	1 minute
Output to base		1,500		Vrms	1 minute

■ THERMAL CHARACTERISTICS

Parameter	Min	Typ	Max	Units	Test Conditions
Efficiency		97		%	
Baseplate to sink		0.14		$^{\circ}\text{C}/\text{Watt}$	
Operating temperature, baseplate			100	$^{\circ}\text{C}$	See product grade specifications
Storage temperature			125	$^{\circ}\text{C}$	See product grade specifications

■ MECHANICAL SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Test Conditions
Weight		3.0 (85)		ounces (grams)	

■ PRODUCT GRADE SPECIFICATIONS

Parameter	E	C	I	M
Storage Temp. (Baseplate)	-20°C to $+105^{\circ}\text{C}$	-40°C to $+105^{\circ}\text{C}$	-55°C to $+105^{\circ}\text{C}$	-65°C to $+105^{\circ}\text{C}$
Operating Temp. (Baseplate)	-10°C to $+100^{\circ}\text{C}$	-25°C to $+100^{\circ}\text{C}$	-40°C to $+100^{\circ}\text{C}$	-55°C to $+100^{\circ}\text{C}$

■ EMI CHARACTERISTICS

EMI/RFI (conducted emissions)	Meets Bellcore TR-TSY-000513, Issue 2, Rev. 1 (24 and 48V Input); British Telecom BTR 2511, Issue 2 (24 and 48V Input); FCC Part 15, Class A, EN55022 Class B
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■ TRANSIENT PROTECTION

	Meets Bellcore TA-TSY-001003, Issue 1, 9/89 British Telecom BTR 2511, IEC61000-4-5 Level 2 (VI-A66 only)
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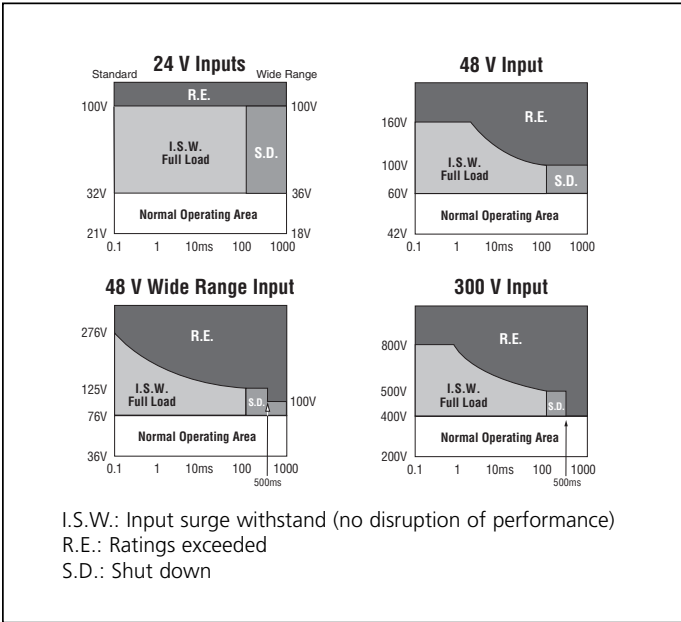


Figure 1 — Safe operating area based on input voltage of IAM (1% duty cycle max., $Z_s=0.5\Omega$, for short duration transient capability refer to specifications.)

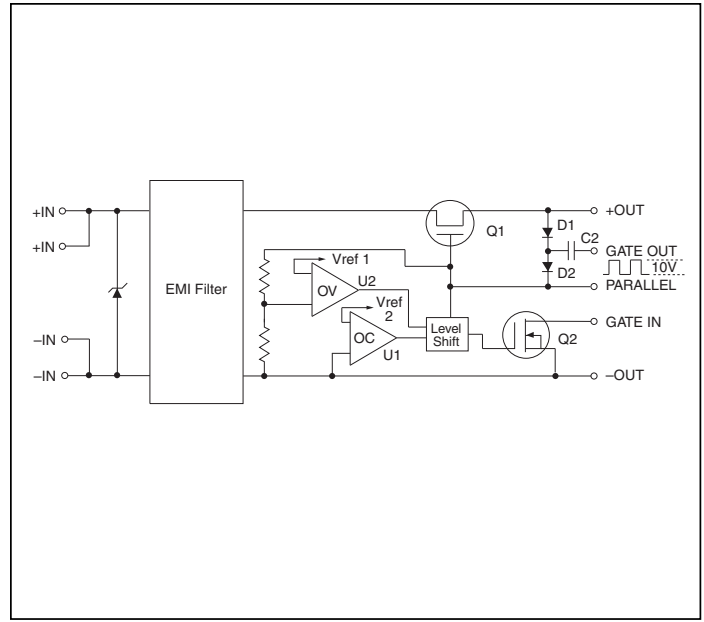


Figure 2 — Block diagram of Input Attenuator Module (IAM)

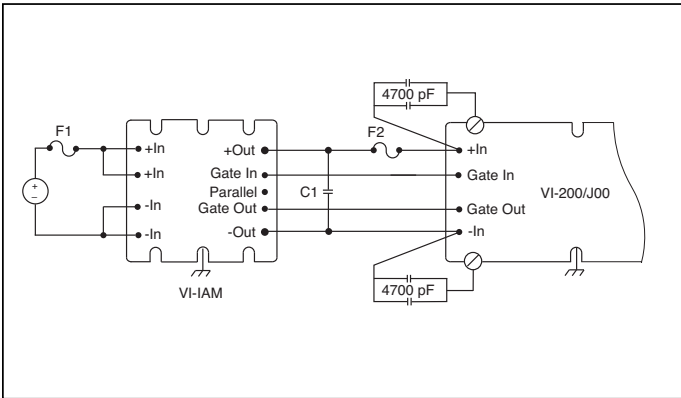


Figure 3 — Typical connection diagram. For recommended fuse (F2) see [VI-200 / VI-J00 application manual](#).

Input Voltage	Recommended Fuse
24 V	20 A / 32 V (AGC-20)
24 V "W"	20 A / 36 V (AGC-20)
48 V	20 A / 60 V (3AB-20)
48 V "N"	20 A / 80 V (3AB-20)
300 V	5 A / 250 V Bussman PC-Tron

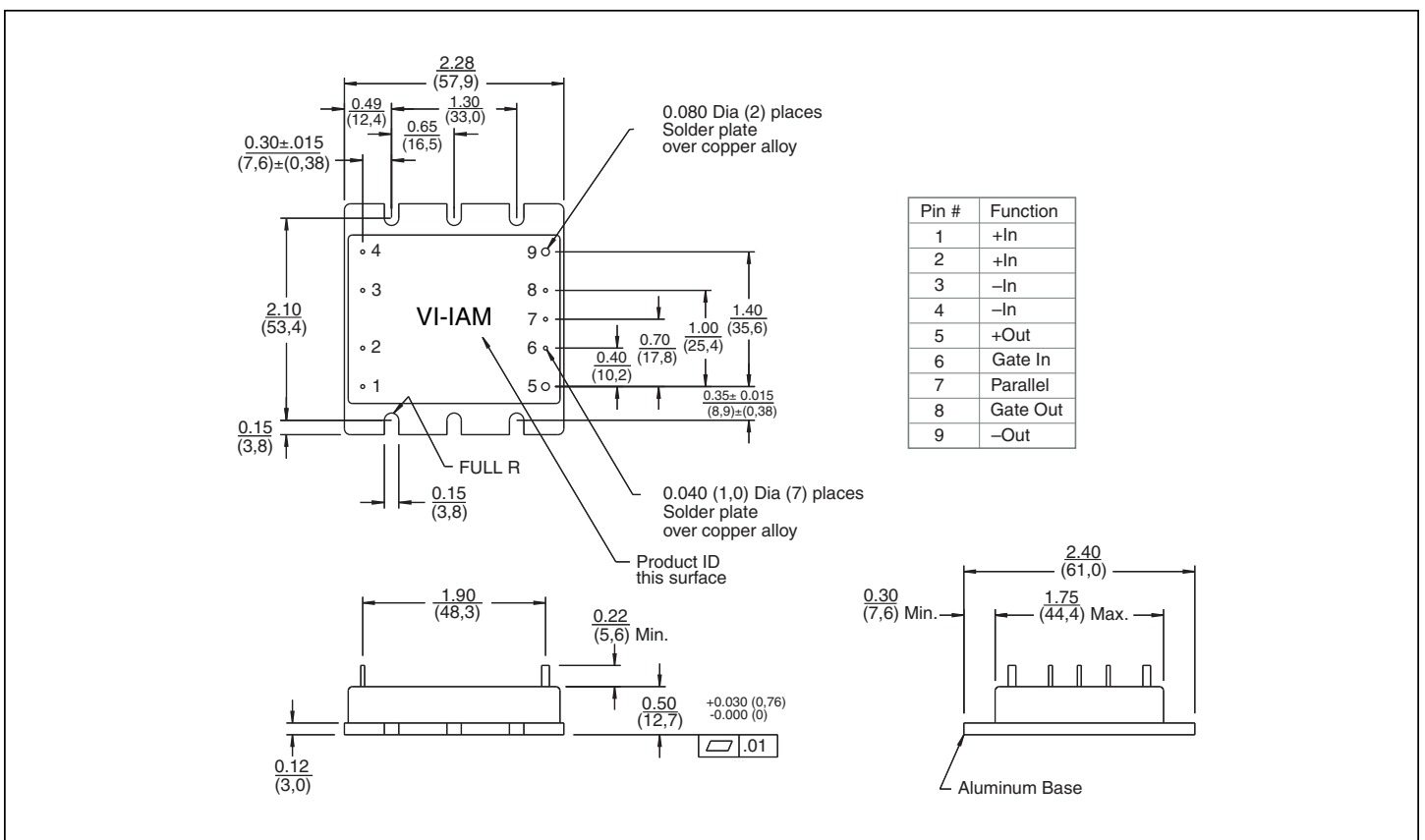
Table 1 — Recommended F1 fusing based on input voltage (see Fig3)

Input Voltage	Maximum Capacitance ^[a]
24 Vdc (21 – 32 V)	470 μ F
24 Vdc (18 – 36 V)	470 μ F
48 Vdc (42 – 60 V)	220 μ F
48 Vdc (36 – 76 V)	120 μ F
300 Vdc (200 – 400 V)	27 μ F

^[a] Capacitance should be distributed across the input of each DC-DC converter. (C1, Figure 3)

Table 2 — Recommended distributed capacitance on input of DC-DC converter(s)

MECHANICAL DRAWING



Note: For alternate packaging options refer to the mechanical drawing page of vicorpower.com

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