

Inverter power filters

Technical Specifications, Installation Guide

UMI-S0xxx

General Description

This guide provides basic installation information for the UMI-S0xxx series of input and output power filters intended for use with Unitronics series of inverters.

The UMI-S0xxx series of power filters offer high insertion loss and low leakage current. Proper filter selection, along with adequate installation and wiring, can help achieving compliance with IEC/EN 61800-3 emission levels for C2 or C3 environments for Unitronics inverter installations.

You may find additional documentation in the Technical Library in the Unitronics website:

<https://unitronicsplc.com/support-technical-library/>

Alert Symbols and General Restrictions

When any of the following symbols appear, read the associated information carefully.

Symbol	Meaning	Description
	Danger	The identified danger causes physical and property damage.
	Warning	The identified danger could cause physical and property damage.
Caution	Caution	Use caution.

- Before using this product, the user must read and understand this document.
- All examples and diagrams are intended to aid understanding, and do not guarantee operation. Unitronics accepts no responsibility for actual use of this product based on these examples.
- Please dispose of this product according to local and national standards and regulations.
- Only qualified service personnel should open this device or carry out repairs.

	▪ Failure to comply with appropriate safety guidelines can cause severe injury or property damage.
	▪ Do not attempt to use this device with parameters that exceed permissible levels. ▪ To avoid damaging the system, do not connect/disconnect the device when power is on.

Environmental Considerations

	▪ Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration, in accordance with the standards given in the product's technical specification sheet.
	▪ Do not place in water or let water leak onto the unit.
	▪ Do not allow debris to fall inside the unit during installation.
	▪ Ventilation: 10mm space required between controller's top/bottom edges & enclosure walls.

Electrical Specifications

Filter	Line Voltage	Current [A]	For inverter Side	IEC/EN 61800-3 Environment
UMI-S0020	1Ph 220VAC	10	Input	C2
UMI-S0021	1Ph 220VAC	25	Input	C2
UMI-S0022	3Ph 380VAC	6	Input	C2
UMI-S0023	3Ph 380VAC	16	Input	C2

Filter	Line Voltage	Current [A]	For inverter Side	IEC/EN 61800-3 Environment
UMI-S0024	3Ph 380VAC	32	Input	C2
UMI-S0025	3Ph 380VAC	45	Input	C2
UMI-S0026	3Ph 380VAC	65	Input	C2
UMI-S0027	3Ph 380VAC	100	Input	C2
UMI-S0028	3Ph 380VAC	150	Input	C2
UMI-S0029	3Ph 380VAC	240	Input	C2
UMI-S0030	1Ph 220VAC	4	Input	C3
UMI-S0031	3Ph 380VAC	7	Input	C3
UMI-S0032	3Ph 380VAC	6	Output	C2
UMI-S0033	3Ph 380VAC	16	Output	C2
UMI-S0036	3Ph 380VAC	32	Output	C2
UMI-S0037	3Ph 380VAC	45	Output	C2
UMI-S0038	3Ph 380VAC	65	Output	C2
UMI-S0039	3Ph 380VAC	100	Output	C2
UMI-S0040	3Ph 380VAC	150	Output	C2
UMI-S0041	3Ph 380VAC	240	Output	C2
UMI-S0250	3Ph 380VAC	400	Input	C2
UMI-S0251	3Ph 380VAC	600	Input	C2
UMI-S0300	3Ph 380VAC	400	Output	C2
UMI-S0301	3Ph 380VAC	600	Output	C2

Filter Selection

The following table lists the suitable filters according to inverter model and IEC/EN 61800-3 environment:

Inverter Model	IEC/EN 61800-3 environment		
	C3	C2	
	Input Filter	Input Filter	Output Filter
UMI-0004BE-B1	UMI-S0030	UMI-S0020	UMI-S0032
UMI-0007BE-B1	UMI-S0030	UMI-S0020	UMI-S0032
UMI-0015BE-B1	UMI-S0030	UMI-S0021	UMI-S0033
UMI-0022BE-B1	UMI-S0030	UMI-S0021	UMI-S0033
UMI-0007EE-B1		UMI-S0022	UMI-S0032
UMI-0015EE-B1		UMI-S0022	UMI-S0032
UMI-0022EE-B1		UMI-S0022	UMI-S0032
UMI-0040EE-B1		UMI-S0023	UMI-S0033
UMI-0055EE-B1		UMI-S0023	UMI-S0033
UMI-0075EE-B1		UMI-S0024	UMI-S0036
UMI-0110EE-B1		UMI-S0024	UMI-S0036
UMI-0150EE-B1		UMI-S0025	UMI-S0037
UMI-0185EE-B1		UMI-S0025	UMI-S0037
UMI-0220EE-B1		UMI-S0026	UMI-S0038
UMI-0300EE-B1		UMI-S0026	UMI-S0038
UMI-0370EE-B1		UMI-S0027	UMI-S0039
UMI-0450EE-B1		UMI-S0027	UMI-S0039

Inverter Model	IEC/EN 61800-3 environment		
	C3	C2	
	Input Filter	Input Filter	Output Filter
UMI-0550EE-B1		UMI-S0028	UMI-S0040
UMI-0750EE-B1		UMI-S0028	UMI-S0040
UMI-0900EE-B1		UMI-S0029	UMI-S0041
UMI-1100EE-B1		UMI-S0029	UMI-S0041
UMI-0004CE-B1	UMI-S0031	UMI-S0022	UMI-S0032
UMI-0007CE-B1	UMI-S0031	UMI-S0022	UMI-S0032
UMI-0015CE-B1	UMI-S0031	UMI-S0023	UMI-S0033
UMI-0022CE-B1	UMI-S0031	UMI-S0023	UMI-S0033
UMI-0040CE-B1		UMI-S0024	UMI-S0036
UMI-0055CE-B1		UMI-S0024	UMI-S0036
UMI-0075CE-B1		UMI-S0025	UMI-S0037
UMI-0004BU-B1	UMI-S0030	UMI-S0020	UMI-S0032
UMI-0007BU-B1	UMI-S0030	UMI-S0020	UMI-S0032
UMI-0015BU-B1	UMI-S0030	UMI-S0021	UMI-S0033
UMI-0022BU-B1	UMI-S0030	UMI-S0021	UMI-S0033
UMI-0004CU-B1	UMI-S0031	UMI-S0022	UMI-S0032
UMI-0007CU-B1	UMI-S0031	UMI-S0022	UMI-S0032
UMI-0007EU-B1	UMI-S0031	UMI-S0022	UMI-S0032
UMI-0015EU-B1	UMI-S0031	UMI-S0022	UMI-S0032
UMI-0022EU-B1	UMI-S0031	UMI-S0023	UMI-S0033
UMI-0015EU-B5		UMI-S0022	UMI-S0032
UMI-0022EU-B5		UMI-S0022	UMI-S0032
UMI-0040EU-B5		UMI-S0023	UMI-S0033
UMI-0055EU-B5		UMI-S0023	UMI-S0033
UMI-0075EU-B5		UMI-S0024	UMI-S0036
UMI-0110EU-B5		UMI-S0024	UMI-S0036
UMI-0150EU-B5		UMI-S0025	UMI-S0037
UMI-0185EU-B5		UMI-S0025	UMI-S0037
UMI-0220EU-B5		UMI-S0026	UMI-S0038
UMI-0300EU-B5		UMI-S0026	UMI-S0038
UMI-0370EU-B5		UMI-S0027	UMI-S0039
UMI-0450EU-B5		UMI-S0027	UMI-S0039
UMI-0550EU-B5		UMI-S0028	UMI-S0040
UMI-0750EU-B5		UMI-S0028	UMI-S0040
UMI-0007CU-B5		UMI-S0022	UMI-S0032
UMI-0015CU-B5		UMI-S0023	UMI-S0033
UMI-0022CU-B5		UMI-S0023	UMI-S0033
UMI-0040CU-B5		UMI-S0024	UMI-S0036
UMI-0055CU-B5		UMI-S0024	UMI-S0036
UMI-0075CU-B5		UMI-S0025	UMI-S0037
UMI-0110CU-B5		UMI-S0026	UMI-S0038
UMI-0150CU-B5		UMI-S0026	UMI-S0038
UMI-0185CU-B5		UMI-S0027	UMI-S0039
UMI-0220CU-B5		UMI-S0027	UMI-S0039
UMI-0300CU-B5		UMI-S0028	UMI-S0040
UMI-0370CU-B5		UMI-S0028	UMI-S0040

Environmental

Protection	IP20
Operating temperature	-10°C to 50°C (14°F to 122°F)
Storage temperature	-30°C to 70°C (-22°F to 158°F)
Relative Humidity (RH)	5% to 90% (non-condensing)
Operating Altitude	Below 2,000 m (6,562 ft)
Vibration	≤ 5.8m/s2 (0.6g)

Dimensions

Part Number	L [mm]	L1 [mm]	L2 [mm]	W [mm]	W1 [mm]	H [mm]	Weight [kg]	Hole dim.	Ext. dim.	Wiring	
UMI-S0020	180	158	167	70	40	47	1.0	a	A	Screw terminals	
UMI-S0022	201	164	185	80	65	55	1.5	b			
UMI-S0032											
UMI-S0023	233	196	216	87	65	61	2.5				
UMI-S0033											
UMI-S0024	222	185	204	105	76	94	3.5	c			
UMI-S0036											
UMI-S0025	260	213	243	110	90	104	4.0				
UMI-S0037											
UMI-S0026	310	265	294	125	90	111	4.5				
UMI-S0038											
UMI-S0027	301	265	240	143	102	106	9.0	d	D	Screw terminals	
UMI-S0039											
UMI-S0028	330	290	268	163	104	140	9.0		C	Copper bars	
UMI-S0040											
UMI-S0029	483	386	286	220	200	126	11		B		
UMI-S0041											
UMI-S0250	590	540	508	263	196	210	34		e	C	
UMI-S0300	480	430	398	263	196	210	32				
UMI-S0251	570	520	488	230	120	145	27				
UMI-S0301	480	430	398	230	120	145	22				

Note that figures are for illustrative purposes only.

Hole Dimensions

Figure a

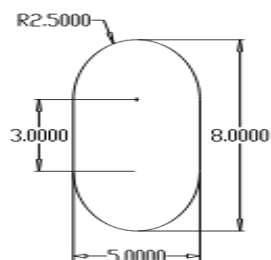


Figure b

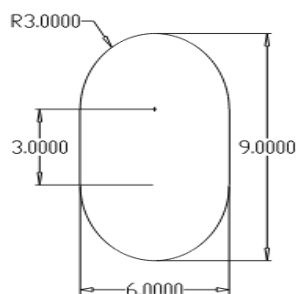


Figure c

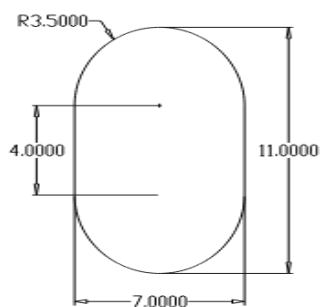


Figure d

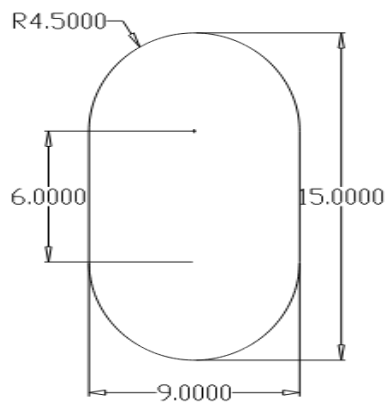
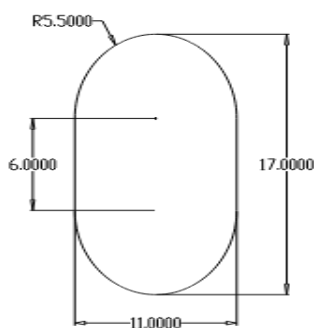


Figure e



External Dimensions

Figure A

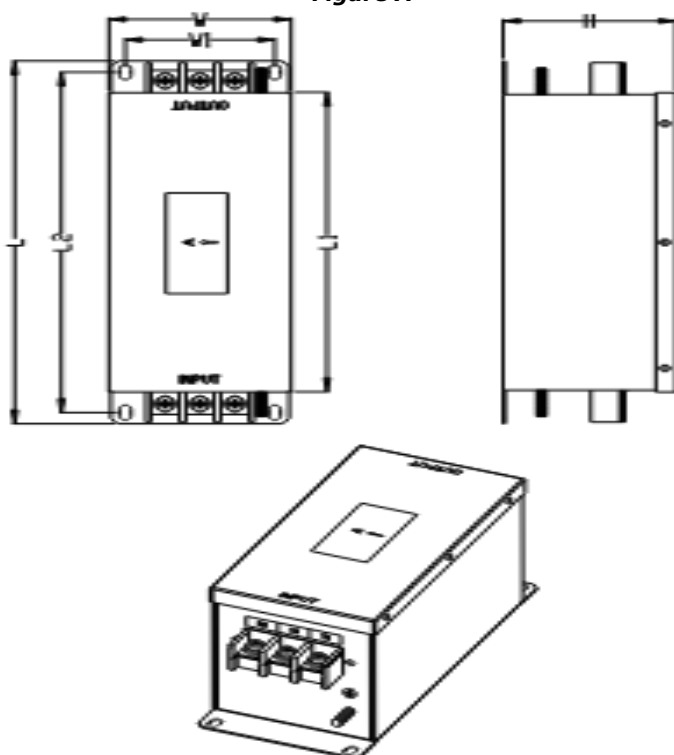


Figure B

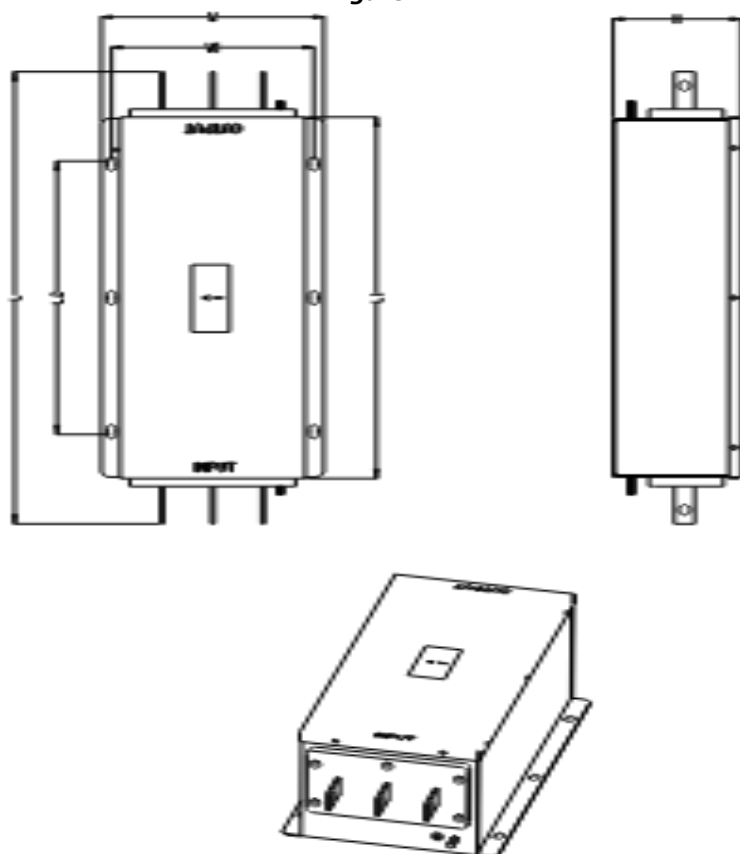


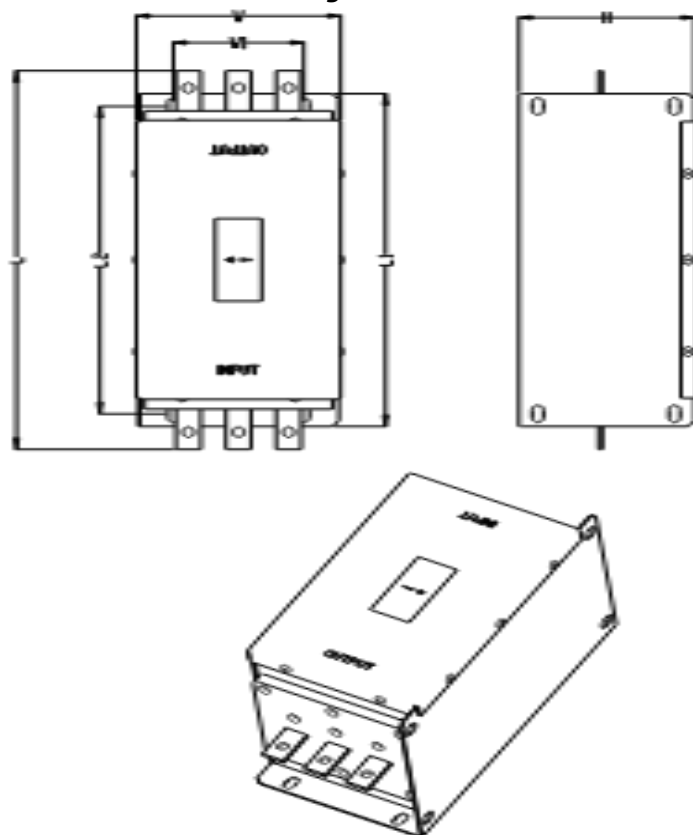
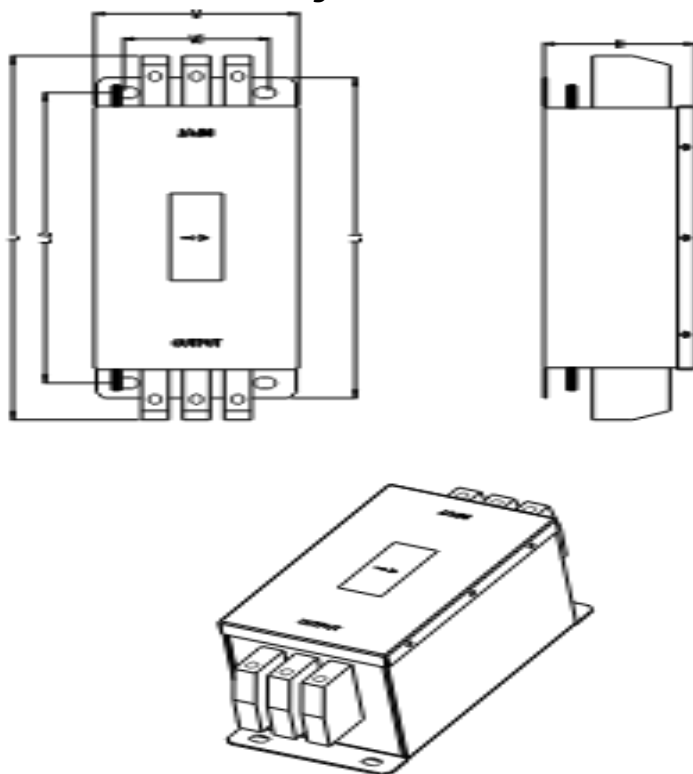
Figure C

Figure D



Installation and Wiring



- Do not install in areas with: excessive or conductive dust, corrosive or flammable gas, moisture or rain, excessive heat, regular impact shocks or excessive vibration, in accordance with the standards given in the product's technical specification sheet.
- Do not place in water or let water leak onto the unit.



- Ventilation: 10mm space required between controller's top/bottom edges & enclosure walls.



- Do not touch live wires.
- All wiring activities should be performed while power is OFF.
- Use over-current protection, such as a fuse or circuit breaker, to avoid excessive currents into the unit.
- Use wires that are properly sized for the load.
- Double-check all wiring before turning on the power to the system.



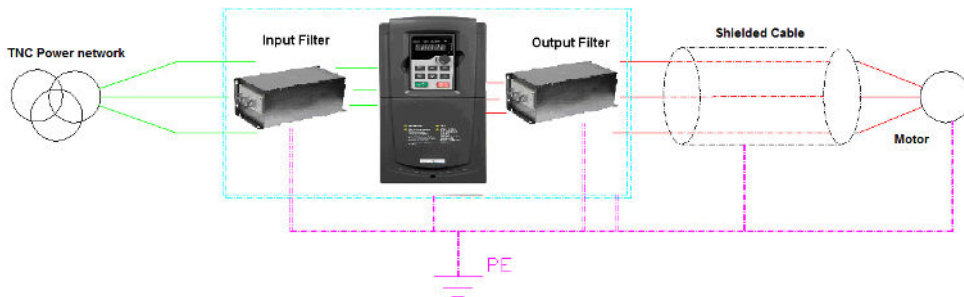
- The filter is recommended to be used in TNC system.

Caution

- The input filter cannot be used as an output filter, and vice versa.
- The input and output ports of the filter cannot be reversed.
- Ensure secure connection of cables to their wiring terminals.

In order to ensure best EMI performance:

- Use a metal cabinet. Make sure the cabinet and its doors are properly earthed.
- The metal enclosure of the input filter and the enclosure of the inverter need to be tightly-grounded.
- The wiring cable of the filter needs to be short and thick enough.
- Input and output cabling of the filter cannot be routed with overlap.
- The input and output cable of the filter cannot be routed in parallel with the control cables.
- Use shielded twisted-pair cables for inverter control signals.
- Use shielded cable for the motor.
- The input filter needs to be installed to the inlet of the metal chassis, but the output filter needs to be installed to the outlet of the metal chassis.



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