

RLW Reactors

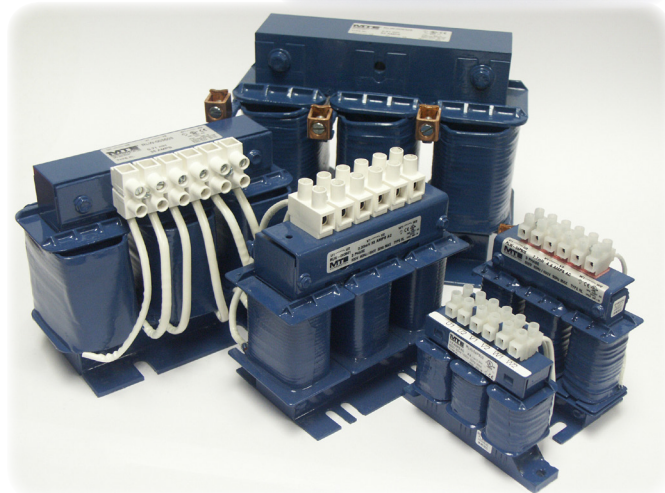
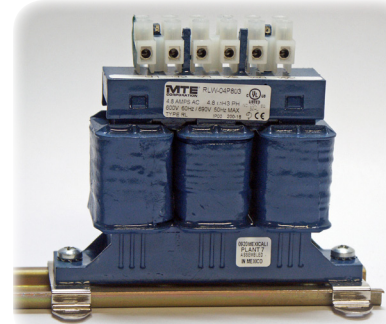
Selection Table, Technical Details & Product Application Guide

The **MTE RLW REACTOR** is MTE's newest reactor line that, like our RL Reactor product line, keeps equipment running longer by absorbing many of the power line disturbances which otherwise damage or shut down inverters, variable frequency drives (VFDs), variable speed controllers, and other sensitive equipment. They are a state-of-the-art filtering solution for virtually any 4 or 6 pulse rectifier or power conversion unit.

The RLW is primarily applied to **LINE SIDE** applications, where the majority of reactors are used, but it can be applied to **LOAD SIDE** uses as well. For load side applications, contact MTE's Application Engineering group for sizing recommendations and complete application support based on your system requirements.

KEY FEATURES of the MTE RLW Reactor Include:

- Optimized design for peak performance in a compact and lightweight package
- Small footprint, ideal for OEM's, Integrators, and Panel Builders
- Smaller size and weight than other standard reactor products available in the industry
- Adapter plate allows for drop-in replacement of other reactors (available on most models)
- DIN Rail mounting option
- Expanded inductance values and low current offerings to support both NEC and IEC world-wide motor applications
- Suitable for application to single phase drives to provide transient protection as well
- Crossover Tables available for other standard reactors
- Ratings from 0.5A through 750A available



Functional Features Include:

- Virtual Elimination of Nuisance Tripping
- Extension of Semiconductor Life
- Reduction in Harmonic Distortion

Appropriately applied output features include motor protection from long leads, output dV/dT, reduced motor temperatures and reduced audible noise.



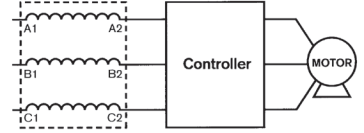
MTE RLW Reactor shown on line side of drive

Selection Table RLW Electrical Data & Application Notes

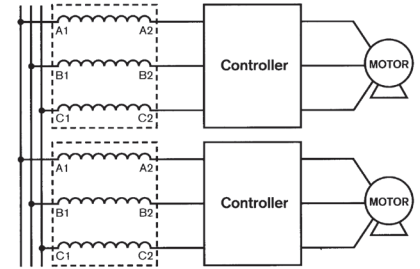
RMS Amps	Open PN	NEMA 1	Inductance mH	Watts Loss	
0.5	RLW -00P501	RLW -00P511	22	2.3	
	RLW -00P503	RLW -00P513	46	3.6	
	RLW -00P505	RLW -00P515	74	4.8	
	RLW -00P506	RLW -00P516	92	5.4	
0.75	RLW -0P7501	RLW -0P7511	15	4.2	
	RLW -0P7503	RLW -0P7513	31	6.6	
	RLW -0P7505	RLW -0P7515	49	8.8	
	RLW -0P7506	RLW -0P7516	61	10.1	
1.1	RLW -01P101	RLW -01P111	10	4.8	
	RLW -01P103	RLW -01P113	21	7.8	
	RLW -01P105	RLW -01P115	33	10.1	
	RLW -01P106	RLW -01P116	42	11.9	
1.6	RLW -01P601	RLW -01P611	6.9	6.9	
	RLW -01P603	RLW -01P613	14	10.9	
	RLW -01P605	RLW -01P615	23	15	
	RLW -01P606	RLW -01P616	29	17.7	
2.1	RLW -02P101	RLW -02P111	5.3	9	
	RLW -02P103	RLW -02P113	11	14.3	
	RLW -02P105	RLW -02P115	18	19.6	
	RLW -02P106	RLW -02P116	22	22.3	
3.4	RLW -03P401	RLW -03P411	3.2	12.3	
	RLW -03P403	RLW -03P413	6.8	19.6	
	RLW -03P405	RLW -03P415	11	26.5	
	RLW -03P406	RLW -03P416	1.4	31.5	
4.8	RLW -04P801	RLW -04P811	2.3	13.8	
	RLW -04P803	RLW -04P813	4.8	23	
	RLW -04P805	RLW -04P815	7.7	37.5	
	RLW -04P806	RLW -04P816	10	40.1	
7.6	RLW -07P601	RLW -07P611	1.5	19.2	
	RLW -07P603	RLW -07P613	3	37.2	
	RLW -07P605	RLW -07P615	4.8	47.8	
	RLW -07P606	RLW -07P616	6	53.8	
11	RLW -001101	RLW -001111	1	26.8	
	RLW -001103	RLW -001113	2.1	40.9	
	RLW -001105	RLW -001115	3.3	54.4	
	RLW -001106	RLW -001116	4.3	59.1	
14	RLW -001401	RLW -001411	0.79	32.7	
	RLW -001403	RLW -001413	1.6	48.2	
	RLW -001405	RLW -001415	2.6	60.6	
	RLW -001406	RLW -001416	3.3	66	
21	RLW -002101	RLW -002111	0.53	38.3	
	RLW -002103	RLW -002113	1.1	57.4	
	RLW -002105	RLW -002115	1.8	73.5	
	RLW -002106	RLW -002116	2.2	78	
28	RLW -002801	RLW -002811	0.39	48.2	
	RLW -002803	RLW -002813	0.82	66.8	
	RLW -002805	RLW -002815	1.3	93.8	
	RLW -002806	RLW -002816	1.6	110.6	
35	RLW -003501	RLW -003511	0.35	68	
	RLW -003503	RLW -003513	0.71	102	
	RLW -003505	RLW -003515	1.2	121	
	RLW -003507	RLW -003517	2.12	204	
46	RLW -004601	RLW -004611	0.3	77	
	RLW -004603	RLW -004613	0.55	99	
	RLW -004605	RLW -004615	0.98	179	
	RLW -004607	RLW -004617	1.6	250	
55	RLW -005501	RLW -005511	0.27	67	
	RLW -005503	RLW -005513	0.48	109	
	RLW -005505	RLW -005515	0.75	149	
	RLW -005507	RLW -005517	1.33	283	
65	RLW -006501	RLW -006511	0.19	87	
	RLW -006503	RLW -006513	0.38	105	
	RLW -006505	RLW -006515	0.64	214	
	RLW -006507	RLW -006517	1.1	191	
83	RLW -008301	RLW -008311	0.17	119	
	RLW -008303	RLW -008313	0.29	155	
	RLW -008305	RLW -008315	0.51	197	
	RLW -008307	RLW -008317	0.91	240	
104	RLW -010401	RLW -010411	0.12	94	
	RLW -010403	RLW -010413	0.23	200	
	RLW -010405	RLW -010415	0.375	208	
	RLW -010407	RLW -010417	0.67	256	
130	RLW -013001	RLW -013011	0.095	132	
	RLW -013003	RLW -013013	0.18	152	
	RLW -013005	RLW -013015	0.3	197	
	RLW -013007	RLW -013017	0.56	480	
160	RLW -016001	RLW -016011	0.08	110	
	RLW -016003	RLW -016013	0.155	195	
	RLW -016005	RLW -016015	0.26	309	
	RLW -016007	RLW -016017	0.47	561	
200	RLW -020001	RLW -020011	RLW -020031	0.06	159
	RLW -020003	RLW -020013	RLW -020033	0.115	224
	RLW -020005	RLW -020015	RLW -020035	0.2	293
	RLW -020007	RLW -020017	RLW -020037	0.34	509
250	RLW -025001	RLW -025011	RLW -025031	0.05	275
	RLW -025003	RLW -025013	RLW -025033	0.095	284
	RLW -025005	RLW -025015	RLW -025035	0.16	402
	RLW -025007	RLW -025017	RLW -025037	0.27	465
322	RLW -032201	RLW -032211	RLW -032231	0.05	300
	RLW -032203	RLW -032213	RLW -032233	0.07	383
	RLW -032205	RLW -032215	RLW -032235	0.13	494
	RLW -032207	RLW -032217	RLW -032237	0.225	780
414	RLW -041401	RLW -041411	RLW -041431	0.093	333
	RLW -041403	RLW -041413	RLW -041433	0.066	531
	RLW -041405	RLW -041415	RLW -041435	0.11	588
	RLW -041407	RLW -041417	RLW -041437	0.185	1007
515	RLW -051501	RLW -051511	RLW -051531	0.025	314
	RLW -051503	RLW -051513	RLW -051533	0.05	496
	RLW -051505	RLW -051515	RLW -051535	0.08	695
	RLW -051507	RLW -051517	RLW -051537	0.15	1096
600	RLW -060001	RLW -060011	RLW -060031	0.02	375
	RLW -060003	RLW -060013	RLW -060033	0.04	747
	RLW -060005	RLW -060015	RLW -060035	0.065	780
	RLW -060007	RLW -060017	RLW -060037	0.12	1190
750	RLW -075001	RLW -075011	RLW -075031	0.017	468
	RLW -075003	RLW -075013	RLW -075033	0.035	858
	RLW -075005	RLW -075015	RLW -075035	0.055	858
	RLW -075007	RLW -075017	RLW -075037	0.095	1426

Standard Application of RLW Reactors:

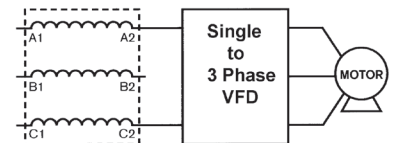
On the input of motor VFD controller or six-pulse nonlinear load, RLW Reactors protect sensitive electronic equipment from electrical noise created by the drive or inverter (notching, pulsed distortion or harmonics). RLW Reactors protect the controller from surges or spikes on the incoming power lines and reduce harmonic distortion. They help to reduce VFD produced non-linear current harmonics that may cause voltage distortion and affect other devices powered from the same AC mains.



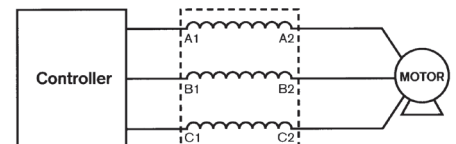
Multiple drives or inverters on a common power line require one reactor per controller. Individual reactors provide filtering between each controller (reducing crosstalk) and also provide optimum surge protection for each unit. A single reactor serving several controllers does not provide adequate protection, filtering or harmonic reduction when the system is partially loaded.



Single Phase input configured drives can be protected from spikes and transient voltage by using standard 3-phase RLW World Reactors for 1- phase applications by routing each of the two supply conductors through an outside coil and leaving the center open. Application Note AN0102 details this use. Note that the single drive input current is $\sqrt{3}$ (SQRT 3) times the 3-phase motor values.



In extended motor lead applications up to 100 feet use RLW Reactors between the inverter & motor to reduce dV/dT & motor terminal peak voltage, de-rating them to 80% of nominal current. The use of a separate load reactor also protects the controller from surge current caused by a rapid change in the load, & even from a short circuit at the load. MTE Reactors also reduce operating temperature & audible noise in motor loads. For a guaranteed long lead solution up to 1000 feet use the **MTE Series A dV/dT Filter**. More than one motor on a single drive presents a complex load not suited to reactor protection. Use an **MTE Series A Sine Wave Filter** when there is a need to protect more than one motor or for single motor distances to 15,000 feet.



Selection Table RLW Reactor Weight & Dimensions

RMS Amps	Open Part Number			Dimension in inches					
	Open PN	Wt	Fig	A width	B Height	C Depth	D	E	F
0.5	RLW -00P501	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -00P503	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -00P505	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -00P506	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
0.75	RLW -0P7501	1.4	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -0P7503	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -0P7505	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -0P7506	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
1.1	RLW -01P101	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -01P103	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -01P105	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -01P106	1.7	1 - 2	4.5	3.7	1.5	0.0	4	-
1.6	RLW -01P601	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -01P603	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -01P605	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -01P606	1.7	1 - 2	4.5	3.7	1.5	0.0	4	-
2.1	RLW -02P101	1.5	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -02P103	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -02P105	1.7	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -02P106	1.7	1 - 2	4.5	3.7	1.5	0.0	4	-
3.4	RLW -03P401	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -03P403	1.6	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -03P405	2.7	3	4.4	5	2.8	2.0	1.4	-
	RLW -03P406	2.8	3	4.4	5	2.8	2.0	1.4	-
4.8	RLW -04P801	1.7	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -04P803	1.8	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -04P805	2.8	3	4.4	5	2.8	2.0	1.4	-
	RLW -04P806	4	3	4.4	5	3.1	2.1	1.4	-
7.6	RLW -07P601	1.8	1 - 2	4.5	3.7	1.5	0.0	4	-
	RLW -07P603	2.8	3	4.4	5	2.8	2.0	1.4	-
	RLW -07P605	4.1	3	4.4	5	3.1	2.1	1.4	-
	RLW -07P606	4.2	3	4.4	5	3.1	2.1	1.4	-
11	RLW -001101	2.7	3	4.4	5	2.8	2.0	1.4	-
	RLW -001103	4.2	3	4.4	5	3.1	2.1	1.4	-
	RLW -001105	5.3	3	4.4	5	3.5	2.6	1.4	-
	RLW -001106	7.1	3	6	5.8	2.9	2.1	2	-
14	RLW -001401	2.8	3	4.4	5.3	2.8	2.0	1.4	-
	RLW -001403	4.3	3	4.4	5	3.1	2.1	1.4	-
	RLW -001405	7.1	3	6	5.8	2.9	2.1	2	-
	RLW -001406	9.4	3	6	5.8	3.3	2.5	2	-
21	RLW -002101	4.2	3	4.4	5.3	3.3	2.4	1.4	-
	RLW -002103	7.2	3	6	6.1	2.9	2.1	2	-
	RLW -002105	10	3	6	6.1	3.3	2.5	2	-
	RLW -002106	13.3	3	7.2	7	3.8	2.3	3	-
28	RLW -002801	5.1	3	4.4	5.3	3.5	2.6	1.4	-
	RLW -002803	9.5	3	6	6.1	3.3	2.5	2	-
	RLW -002805	10.4	3	6	6.1	3.3	2.3	2	-
	RLW -002806	14.3	3	7.2	7	3.8	2.3	3	-
35	RLW -003501	10	3	6	6	3.5	2.73	2	3
	RLW -003503	13	3	7.2	6	3.75	2.25	3	-
	RLW -003505	18	3	7.2	6	4.3	2.75	3	-
	RLW -003507	16	3	9	8.3	4.6	3.24	3	4.26
46	RLW -004601	13	3	7.2	6	3.75	2.25	3	-
	RLW -004603	17	3	7.2	6	4.3	2.75	3	-
	RLW -004605	24	3	9	8.3	4.8	3.24	3	4.26
	RLW -004607	29	3	9	8.3	5.1	3.5	3	4.26
55	RLW -005501	18	3	7.2	6	4	2.75	3	-
	RLW -005503	20	3	7.2	6	4.25	2.75	3	-
	RLW -005505	26	3	9	7	6.5	3.24	3	4.26
	RLW -005507	35	3	9	7	7.25	3.86	3	4.26

OPTIONS:
KIT-0038 - DIN rail Mount.
 A DIN rail mounting option is provided to utilize standard panel mounted 35mm DIN rail for securing the reactor via two steel mounting clips.
KIT-0039 - RL base mount converter plate.
 The base plate adapter option will allow the RLW to use existing RL bolt hole mounting patterns.
KIT-0040 - Vibration pads for enclosure mounting.
 Enclosed reactors may be fitted with an optional vibration pad to dampen cabinet vibrations from the reactor.

Specifications continued on next page...

Specifications subject to change without notice

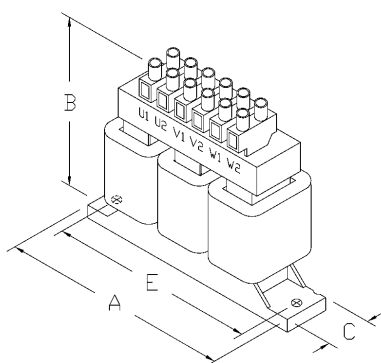


Figure 1 - Snap Base Mount

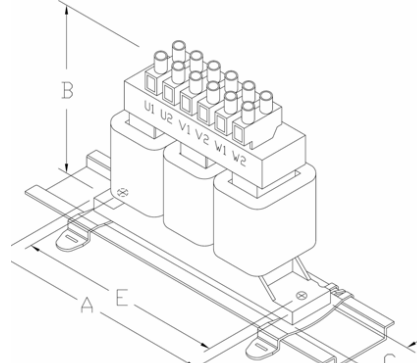


Figure 2 - 35mm DIN Rail Mount

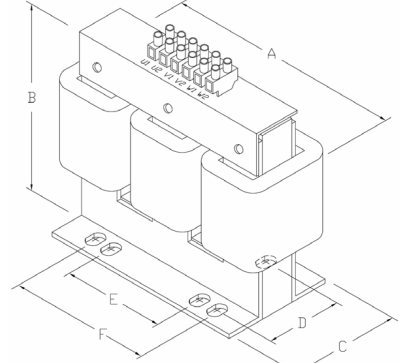


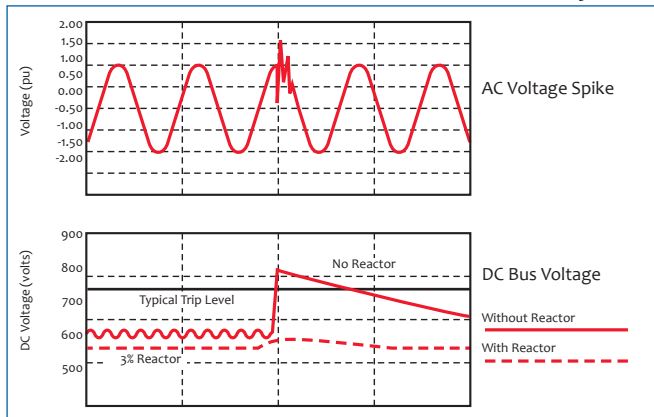
Figure 3 - Standard Mounting

Selection Table RLW Reactor Weight & Dimensions ... Continued

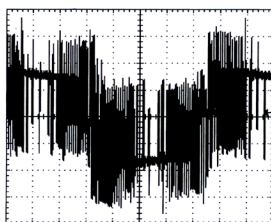
RMS Amps	Open Part Number			Dimension in inches					
	Open PN	Wt	Fig	A width	B Height	C Depth	D	E	F
65	RLW -006501	18	3	7.2	6	4	4.25	3	-
	RLW -006503	22	3	7.2	6	4.25	2.75	3	-
	RLW -006505	26	3	9	7	6.5	3.24	3	4.26
	RLW -006507	44	3	9	7	7.25	4.24	3	4.26
83	RLW -008301	19	3	7.2	6	4.25	2.75	3	-
	RLW -008303	26	3	9	7	6.5	3.24	3	4.26
	RLW -008305	35	3	9	7	6.75	3.74	3	4.26
	RLW -008307	54	3	9	7	7.25	4.74	3	4.26
104	RLW -010401	22	3	7.2	6	6.5	2.75	3	4.26
	RLW -010403	28	3	9	7	7	3.24	3	4.26
	RLW -010405	41	3	9	7	7.25	4.24	3	4.26
	RLW -010407	57	3	9	7	7.75	4.76	3	4.26
130	RLW -013001	26	3	9.25	7.5	6.75	3.25	3	4.26
	RLW -013003	37	3	9.25	7.5	6.75	3.75	3	4.26
	RLW -013005	52	3	9.25	7.5	8.25	4.75	3	4.26
	RLW -013007	80	3	10.8	8.75	9	5.52	3.63	5.58
160	RLW -016001	34	3	9.25	7.5	6.75	3.75	3	4.26
	RLW -016003	49	3	9.25	7.5	8.25	4.75	3	4.26
	RLW -016005	53	3	9.25	7.5	8.25	4.75	3	4.26
	RLW -016007	75	3	10.8	8.5	8.5	6.37	3.63	5.58
200	RLW -020001	34	3	9.25	7.5	7	0.375	3	4.26
	RLW -020003	49	3	9.25	7.5	8.25	4.75	3	4.26
	RLW -020005	75	3	10.8	8.25	9	5.87	3.63	5.58
	RLW -020007	91	3	10.8	8.75	10	7.12	3.63	5.58
250	RLW -025001	35	3	9.25	7.5	7.5	3.75	3	4.26
	RLW -025003	55	3	9.25	7.5	8.5	4.75	3	4.26
	RLW -025005	75	3	10.8	8.75	9	5.87	3.63	5.58
	RLW -025007	121	3	10.8	8.5	11.75	8.02	3.63	5.58
322	RLW -032201	57	3	9.25	7.5	9	4.75	3	4.26
	RLW -032203	76	3	10.8	8.75	8.5	5.37	3.63	5.58
	RLW -032205	108	3	9	8.75	11	7.37	3.63	5.58
	RLW -032207	172	3	14.4	11.5	12.5	8.08	4.6	7.2
414	RLW -041401	78	3	9	8.75	9.5	5.37	3.63	5.58
	RLW -041403	98	3	9	8.75	11.5	6.87	3.63	5.58
	RLW -041405	125	3	9	8.75	12.5	7.37	3.63	5.58
	RLW -041407	197	3	14.4	11.5	13.5	9.62	4.6	7.2
515	RLW -051501	81	3	9	8.75	9.5	5.37	3.63	5.58
	RLW -051503	118	3	9	8.75	12	6.37	3.63	5.58
	RLW -051505	193	3	14.4	11.5	13.5	9.62	4.6	5.9
	RLW -051507	248	3	14.4	11.5	13.75	8.71	4.6	7.2
600	RLW -060001	86	3	9	8.75	10.5	5.37	3.63	5.58
	RLW -060003	144	3	14.4	11.5	12.5	8.12	4.6	5.9
	RLW -060005	204	3	14.4	11.5	13.75	8.62	3.63	5.58
	RLW -060007	292	3	14.4	11.5	15.5	10.21	4.6	7.2
750	RLW -075001	105	3	9	8.75	11.5	6.87	3.63	5.58
	RLW -075003	179	3	14.4	11.5	12.5	7.62	4.6	7.2
	RLW -075005	245	3	14.4	11.5	15	8.62	4.6	7.2
	RLW -075007	348	3	14.4	11.5	22	11.62	4.6	7.2

Specifications subject to change without notice

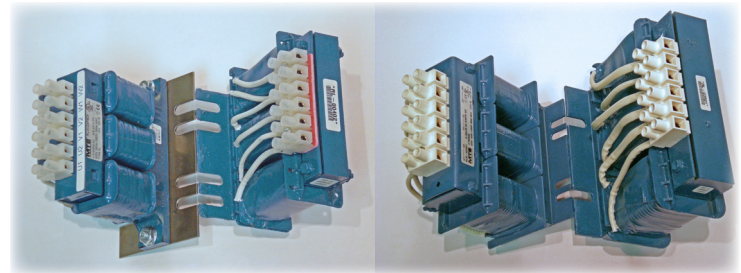
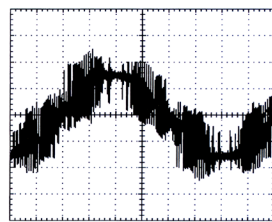
Selection Table RLW Reactor Ancillary Information



Without Reactor



With 5% Impedance Reactor



MTE RLW Reactor with standard mounting compared to RL with same ratings (on right), and RLW reactor with optional adapter plate mounting bracket compared to RL reactor with same ratings (on left)



MTE RLW Reactors connection terminals vary in size by model & rating

THE GLOBAL POWER QUALITY RESOURCE

MTE Corporation - Menomonee Falls, WI - 1-800-455-4MTE - www.mtecorp.com

Product Specifications - MTE RLW Reactors

Refer to the RLW Technical Reference Manual for Detailed Specifications

Standard Impedance Levels:

1.5% - Minimum impedance for reduction of low level voltage transients. RLW reactors may be used as a supplement to already installed reactors.
 3.0% - Helps minimize (95%) most drive nuisance tripping and faults caused by over-voltage and input line disturbances.
 5.0% - MTE recommended value to protect drive components from transient over-voltage, prevents (99.9%) nuisance trips and offers limited harmonic protection to input line power from drive induced harmonics.

Impedance Basis Calculation: Service Factor (continuous): Overload Rating - Line Side:

$\% Z = (I/V) \times 2\pi fL \sqrt{3} \times 100$
 100%
 150% of RMS rating for 1 minute
 200% of RMS rating for 10 seconds

System Voltage: Switching Frequency:

Up to 690 Volts
 Maximum - 20 kHz
 Minimum - 1 kHz

Insulation System: Temperature Rise: Ambient Temperature

200° C
 140° C (average)
 Full Load:
 -40 to 50° C Open
 -40 to 90° C Storage

Altitude (Maximum): Fundamental Frequency (de-rate above 60Hz): Inductance Tolerance: Inductance Curve (Typical):

1000 meters
 50/60 Hz
 +/- 10%
 100% at 100% current
 80% at 150% current
 50% at 200% current

Dielectric Strength: Maximum Audible Level at Two (2) Meters:

4000 volts RMS (2200 volts peak repetitive)
 Line applications: 65 dBA
 Load applications: 76 dBA

Approvals:

Up to 600V: CE, UL-508, Type RL cUL per CSA C22.2
 690V: CE. Consult Factory for UL on 690V

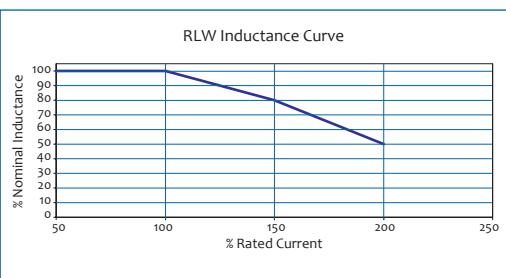
Note: Short Circuit rating not required under Exception No.1 of UL508A SB4.2.1 effective 4/25/06

DIN Rail Mount:

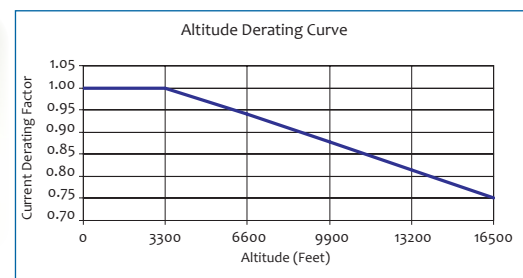
2 spring steel screw mounts for 35mm rail with 10-32 screws



MTE RLW Product Family



RLW-008305



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