

THREE PHASE LINE REACTOR TYPE MLR OPEN STYLE

2 Amps - 500 Amps

GENERAL INTRODUCTION

By adopting a Marcus Line Reactor (MLR), most line problems listed below should be eliminated:

- Harmonic distortion in current and voltage
- Nuisance tripping (such as overvoltage tripping of AC Pulse Width Modulated drives)
- Line notching
- Line noise
- Surge current

In addition, the performance and the life expectancy as well as operating efficiency of the related solid state devices, such as motor and the drive itself are significantly enhanced. More details are as follows:

- Extending the life of switching components in power electronic circuits.
- No more saturation due to the application of advanced grade laminations. Marcus Line Reactor will not saturate under the most tough line condition, even in extreme overload at double current value.
- Extending the life of the motor. Line reactor (applied in the output side of the drive) will improve the waveform; avoid failures due to output circuit faults. In the return of its application, motor operating temperatures are supposed to be reduced around 10⁰C to 20⁰C.

Also the motor noise is obviously reduced due to the removal of certain high frequency harmonic currents.

- Low heat dissipation, which means low power losses. This is due to the great attention has been taken in the design and testing process.
- Minimize harmonic distortion. By applying a Marcus Line Reactor, the inrush current to the rectifier in the drive can be limited, and the peak current is reduced. Typically current distortion is probably reduced to 30%. Furthermore, the voltage distortion (such as "flat-topping" voltage waveform) can also be minimized.
- Short circuit ability. Marcus Line reactor can withstand current under any kinds of short circuit conditions. Marcus Transformers Ltd. has sufficient experience in designing and testing dry-type power and control transformers to withstand short circuits for the most required applications, and this particular experience has been applied to Marcus Line Reactor both design and testing in production line.

Impedance rating and Selection of the Line Reactor: (3% or 5%)

Definition: $Z \% = (VD \times 100) \times \sqrt{3} / VS$

Z = Impedance

VD = Voltage drop across reactor at rated current to flow through it

VS = Voltage supply

Usually by choosing 3 % impedance line reactors can meet need for the most solid state applications in North America. Where there are high line disturbances in the involved circuits, a 5 % impedance reactor may be required. Normally these units are used in the particular occasion where there are strict limitation concerning harmonic distortion and noise level.



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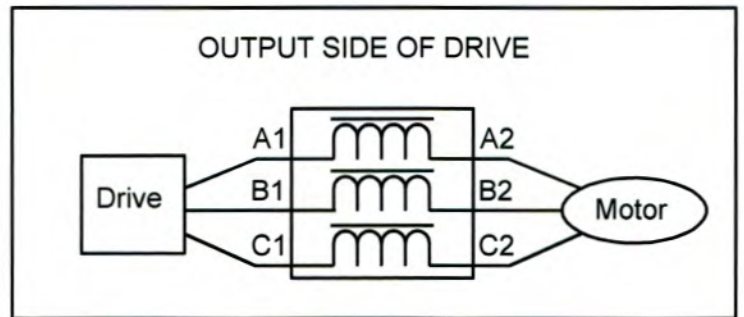
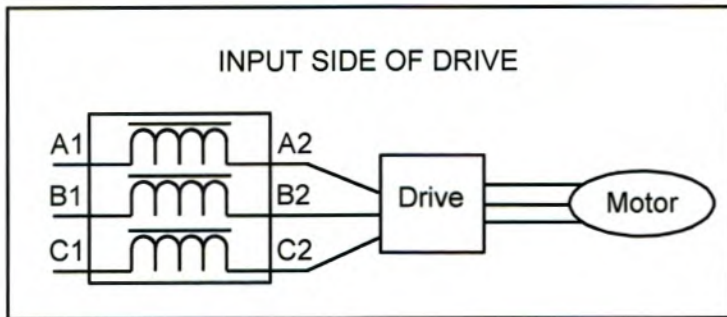
FEATURES

- Terminal Block (Figure 1), Screw stud (Figure 2), Copper Bus Bar (Figure 3) facilitate wiring.
- Built with heat-proof insulation for compact size, long life
- Unique bobbin-wound coils for greater efficiency, compact structure
- Vertical or horizontal mounting
- All units CSA certified (2 Amps – 500 Amps), RU Components Recognized (2 Amps -110Amps)

ENGINEERING SPECIFICATIONS

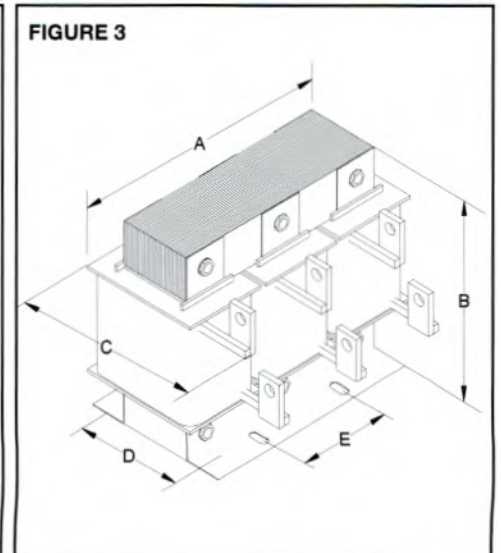
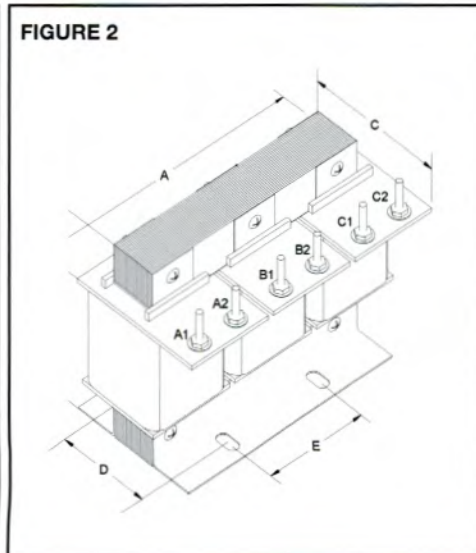
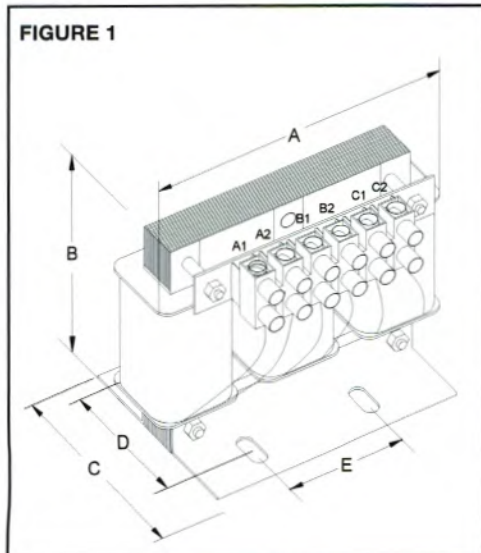
- Rated parameters: Nominal Inductance +/- 10 % tolerance at rated current. 95 % of nominal inductance at 150 % rated current
- System Voltages: 600 Volts Maximum
- Contact factory for other inductance and current
- Operating frequency: 60 Hz Fundamental Current Maximum
- Insulation: Class F(155°C) or ClassH(180°C, 200Amps above), with low temperature rise.
- Sound level: 2 - 25 amps <= 55 dB;
35 - 110 amps <= 60 dB; 130 - 500 amps <= 70 dB

CONNECTION DIAGRAMS



DIMENSION TABLE

Please refer to the page “Standard 3 Phase Line Reactors Specification Charts”. All dimensions are +/- 0.06 inch except for “C” which is +/- 0.25 inch.



STANDARD THREE PHASE LINE REACTORS SPECIFICATION CHART

Current (Amps.)	Model (Part Number)	Inductance Millihenry	Losses (Watts)	Dimension (Inches)					Mounting		SHIP WT LBS	List	Figure
				A Length	B Height	C Width	D	E	Holes	Inches			
2	MLR0002M12	12.00	6	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	3	\$113.00	1	
2	MLR0002M20	20.00	8	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$122.00	1	
2	MLR0002M32	32.00	12	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$131.00	1	
4	MLR0004M12	12.00	20	4.40	3.25	3.50	2.40	2.00	0.28 x 0.56	5	\$154.00	1	
4	MLR0004M22	22.00	24	4.40	3.25	3.50	2.40	2.00	0.28 x 0.56	6	\$160.00	1	
4	MLR0004N30	3.00	6	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	3	\$122.00	1	
4	MLR0004N65	6.50	12	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$127.00	1	
4	MLR0004N91	9.10	15	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$145.00	1	
8	MLR0008N15	1.50	9	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$136.00	1	
8	MLR0008N30	3.00	22	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$140.00	1	
8	MLR0008N50	5.00	30	4.40	3.25	3.50	2.40	2.00	0.28 x 0.56	5	\$172.00	1	
8	MLR0008N75	7.50	30	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	10	\$184.00	1	
12	MLR0012N13	1.30	22	4.40	3.25	2.85	1.75	2.00	0.28 x 0.56	4	\$142.00	1	
12	MLR0012N25	2.50	25	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	9	\$158.00	1	
12	MLR0012N31	3.10	28	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	10	\$167.00	1	
12	MLR0012N42	4.20	30	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	11	\$197.00	1	
12	MLR0012N51	5.10	33	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	12	\$201.00	1	
18	MLR0018N15	1.50	26	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	10	\$180.00	2	
18	MLR0018N25	2.50	35	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	12	\$214.00	2	
18	MLR0018P80	0.80	17	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	7	\$163.00	2	
25	MLR0025N12	1.20	40	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	9	\$210.00	2	
25	MLR0025N20	2.00	52	9.00	6.75	4.25	2.75	3.00	0.35 x 0.788	22	\$261.00	2	
25	MLR0025P50	0.50	20	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	7	\$197.00	2	
35	MLR0035N12	1.20	55	9.00	6.75	4.25	2.75	3.00	0.35 x 0.788	24	\$300.00	2	
35	MLR0035N17	1.70	65	9.00	6.75	4.25	2.75	3.00	0.35 x 0.788	26	\$313.00	2	
35	MLR0035P40	0.40	32	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	12	\$210.00	2	
35	MLR0035P80	0.80	45	9.00	6.75	4.25	2.75	3.00	0.35 x 0.788	22	\$302.00	2	
45	MLR0045N12	1.20	70	9.00	6.75	6.00	4.25	3.00	0.35 x 0.788	40	\$343.00	2	
45	MLR0045P30	0.30	29	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	12	\$257.00	2	
45	MLR0045P70	0.70	46	9.00	6.75	4.25	2.75	3.00	0.35 x 0.788	23	\$266.00	2	
55	MLR0055P25	0.25	36	7.20	5.40	3.60	2.58	2.40	0.28 x 0.56	13	\$274.00	2	
55	MLR0055P50	0.50	55	9.00	6.75	4.25	2.75	3.00	0.35 x 0.788	23	\$291.00	2	
55	MLR0055P85	0.85	72	9.00	6.75	6.00	4.25	3.00	0.35 x 0.788	40	\$351.00	2	
80	MLR0080P20	0.20	60	9.00	6.75	4.50	2.75	3.00	0.35 x 0.788	24	\$386.00	2	
80	MLR0080P23	0.23	65	9.00	6.75	4.50	2.75	3.00	0.35 x 0.788	26	\$405.00	2	
80	MLR0080P40	0.40	86	9.00	6.75	6.00	4.25	3.00	0.35 x 0.788	40	\$410.00	2	
80	MLR0080P70	0.70	120	10.80	8.10	6.00	4.50	3.60	0.35 x 0.788	62	\$715.00	2	
110	MLR0110P15	0.15	73	9.00	6.75	6.00	4.25	3.00	0.35 x 0.788	38	\$500.00	2	
110	MLR0110P18	0.18	80	9.00	6.75	6.00	4.25	3.00	0.35 x 0.788	40	\$533.00	2	
110	MLR0110P30	0.30	101	10.80	8.10	4.80	3.30	3.60	0.35 x 0.788	46	\$700.00	2	
110	MLR0110P45	0.45	124	10.80	8.10	6.00	4.50	3.60	0.35 x 0.788	62	\$727.00	2	
130	MLR0130P10	0.10	90	9.00	6.75	8.00	4.25	3.00	0.35 x 0.788	38	\$841.00	3	
130	MLR0130P20	0.20	110	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	45	\$930.00	3	
130	MLR0130P30	0.30	130	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	55	\$930.00	3	
130	MLR0130P37	0.37	140	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	70	\$953.00	3	
160	MLR0160P15	0.15	120	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	46	\$1,076.00	3	
160	MLR0160P23	0.23	140	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	65	\$1,076.00	3	
160	MLR0160P32	0.32	150	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	90	\$1,076.00	3	
160	MLR0160U75	0.075	90	9.00	6.75	8.00	4.25	3.00	0.35 x 0.788	38	\$930.00	3	
200	MLR0200P11	0.11	110	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	48	\$1,121.00	3	
200	MLR0200P19	0.19	135	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	85	\$1,121.00	3	
200	MLR0200P24	0.24	161	14.40	10.80	8.00	5.00	4.80	0.44 x 0.100	100	\$1,121.00	3	
200	MLR0200U55	0.055	85	9.00	6.75	8.00	4.25	3.00	0.35 x 0.788	40	\$953.00	3	
250	MLR0250P15	0.15	180	14.40	10.93	8.00	5.00	4.80	0.44 x 1.00	115	\$1,357.00	3	
250	*MLR0250P19	0.19	200	14.40	12.00*	8.00	6.00	4.80	0.44 x 1.00	135	\$1,659.00	3	
250	MLR0250U45	0.045	86	10.50	8.50	8.00	3.50	3.60	0.35 x 0.788	40	\$1,233.00	3	
250	MLR0250U90	0.090	128	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	62	\$1,300.00	3	
320	*MLR0320P13	0.13	240	14.40	12.00*	8.00	6.00	4.80	0.44 x 1.00	136	\$1,794.00	3	
320	*MLR0320P16	0.16	265	14.40	12.00*	8.00	6.00	4.80	0.44 x 1.00	156	\$1,973.00	3	
320	MLR0320U40	0.040	90	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	65	\$1,390.00	3	
320	MLR0320U75	0.075	180	14.40	10.90	8.00	5.00	4.80	0.44 x 1.00	85	\$1,525.00	3	
320	MLR0320U96	0.096	210	14.40	10.90	8.00	5.00	4.80	0.44 x 1.00	110	\$1,659.00	3	
400	*MLR0400P11	0.11	275	14.40	12.00*	11.00	6.50	4.80	0.44 x 1.00	165	\$2,040.00	3	
400	MLR0400U30	0.030	128	10.50	8.50	8.00	4.50	3.60	0.35 x 0.788	60	\$1,570.00	3	
400	MLR0400U61	0.061	175	14.40	10.93	9.00	5.00	4.80	0.44 x 1.00	112	\$1,637.00	3	
400	*MLR0400U82	0.082	208	14.40	12.00*	10.00	6.00	4.80	0.44 x 1.00	146	\$2,018.00	3	
500	MLR0500U25	0.025	150	14.40	10.90	9.00	5.00	4.80	0.44 x 1.00	100	\$2,197.00	3	
500	*MLR0500U50	0.050	195	14.40	12.00*	10.00	6.00	4.80	0.44 x 1.00	145	\$2,380.00	3	
500	*MLR0500U57	0.057	215	14.40	12.00*	10.00	6.00	4.80	0.44 x 1.00	150	\$2,690.00	3	
500	*MLR0500U85	0.085	278	14.40	12.00*	12.00	8.00	4.80	0.44x 1.00	225	\$2,915.00	3	

Note: Models with asterisk "*" Line Reactor includes lifting ears.

MLR SERIES

Line Reactor Selection Tables

3-Phase Line Reactor Legend (Part Number Guide)

MLR 0002 M 20

The inductance Value
The inductance value is preceded with a letter to designate the position of the decimal point determining the inductance. The letters are as follows:

"M" XX.X mH
"N" X.X mH
"P" 0.XX mH
"U" 0.0XX mH

For instance: M20 is 20.0 mH.
4 digit rated current value.
MARCUS Line Reactor

Note: All characters of the legend represent only performance value of the reactor, so P/N's are not completely sequential. They are sorted by rated current.

Rated HP	240 VOLTS - 60 Hz			
	3 % Impedance		5 % Impedance	
	P/N	Amps	P/N	Amps
0.5	MLR0004N65	4	MLR0004M12	4
1	MLR0004N30	4	MLR0004N65	4
1.5	MLR0008N30	8	MLR0008N50	8
2	MLR0008N15	8	MLR0008N30	8
3	MLR0012N13	12	MLR0012N25	12
5	MLR0018P80	18	MLR0018N15	18
7.5	MLR0025P50	25	MLR0025N12	25
10	MLR0035P40	35	MLR0035P80	35
15	MLR0045P30	45	MLR0055P50	55
20	MLR0055P25	55	MLR0055P50	55
25	MLR0080P20	80	MLR0080P40	80
30	MLR0080P20	80	MLR0080P23	80
40	MLR0110P15	110	MLR0110P18	110
50	MLR0130P10	130	MLR0130P20	130
60	MLR0160U75	160	MLR0160P15	160
75	MLR0200U55	200	MLR0200P11	200
100	MLR0250U45	250	MLR0250U90	250
125	MLR0320U40	320	MLR0320U75	320
150	MLR0400U30	400	MLR0400U61	400
200	MLR0500U25	500	MLR0500U50	500

Rated HP	480 VOLTS - 60 Hz			
	3 % Impedance		5 % Impedance	
	P/N	Amps	P/N	Amps
1	MLR0002M12	2	MLR0002M20	2
1.5	MLR0004N91	2	MLR0004M12	2
2	MLR0004N65	4	MLR0004M12	4
3	MLR0008N50	8	MLR0008N75	8
5	MLR0008N30	8	MLR0008N50	8
7.5	MLR0012N25	12	MLR0012N42	12
10	MLR0018N15	18	MLR0018N25	18
15	MLR0025N12	25	MLR0025N20	25
20	MLR0035P80	35	MLR0035N17	35
25	MLR0035P80	35	MLR0035N12	35
30	MLR0045P70	45	MLR0045N12	45
40	MLR0055P50	55	MLP0055P85	55
50	MLR0080P40	80	MLR0080P70	80
60	MLR0080P40	80	MLR0080P70	80
75	MLR0110P30	110	MLR0110P45	110
100	MLR0130P20	130	MLR0130P30	130
125	MLR0160P15	160	MLR0160P23	160
150	MLR0200P11	200	MLR0200P24	200
200	MLR0250U90	250	MLR0250P15	250
250	MLR0320U75	320	MLR0320P13	320
300	MLR0400U61	400	MLR0400P11	400
350	MLR0500U50	500	MLR0500U85	500
400	MLR0500U50	500	MLR0500U85	500

Rated HP	600 VOLTS - 60 Hz			
	3 % Impedance		5 % Impedance	
	P/N	Amps	P/N	Amps
1	MLR0002M20	2	MLR0002M32	2
1.5	MLR0002M12	2	MLR0002M20	2
2	MLR0004M12	4	MLR0004M22	4
3	MLR0004N91	4	MLR0004M12	4
5	MLR0008N50	8	MLR0008N75	8
7.5	MLR0012N31	12	MLR0012N51	12
10	MLR0012N25	12	MLR0012N42	12
15	MLR0018N15	18	MLR0018N25	18
20	MLR0025N12	25	MLR0025N20	25
25	MLR0035N12	35	MLR0035N17	35
30	MLR0035P80	35	MLR0035N17	35
40	MLR0045P70	45	MLR0045N12	45
50	MLR0055P50	55	MLR0055P85	55
60	MLR0080P40	80	MLR0080P70	80
75	MLR0080P40	80	MLR0080P70	80
100	MLR0110P30	110	MLR0110P45	110
125	MLR0130P20	130	MLR0130P37	130
150	MLR0160P23	160	MLR0160P32	160
200	MLR0200P19	200	MLR0200P24	200
250	MLR0250P15	250	MLR0250P19	250
300	MLR0320U96	320	MLR0320P16	320
350	MLR0400U82	400		
400	MLR0400U82	400		
500	MLR0500U57	500		