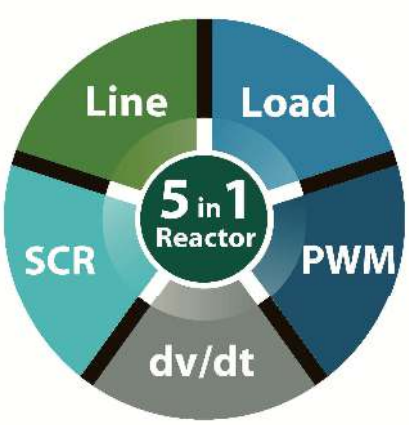
Type ACL Reactors

Line / Load / dv/dt / PWM / SCR Notch Reactors

For use on either line or load side of drives



The Engineer's Choice for Reactors

Power Protection for Adjustable Speed Drive Systems

c UL US

Up to 690 Vac

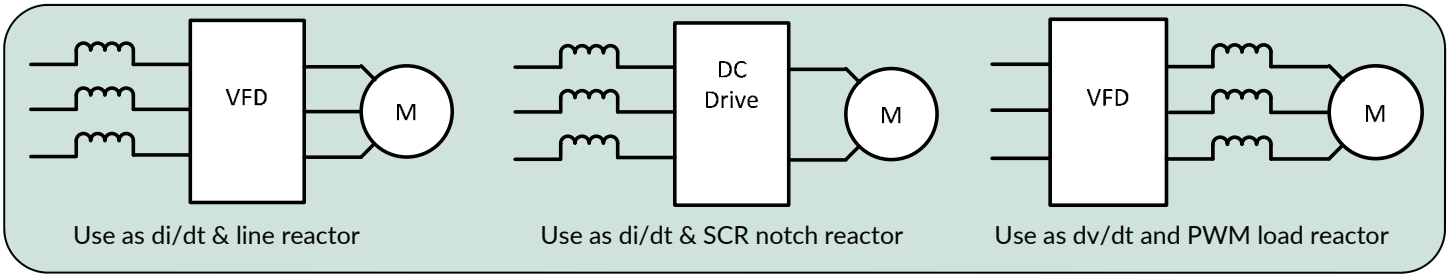
German Engineering & Quality

Stocked in USA and Canada

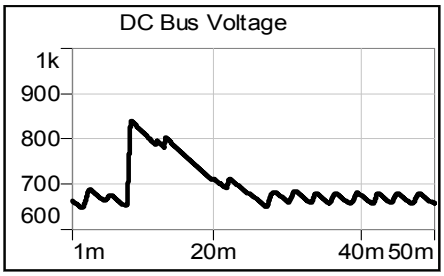
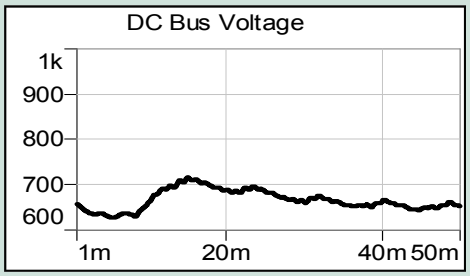
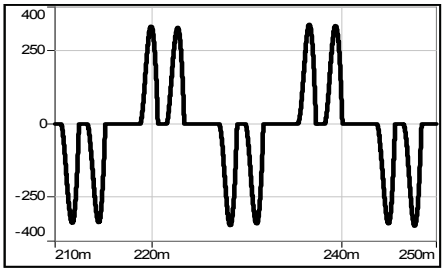
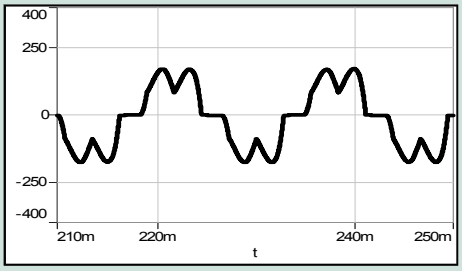
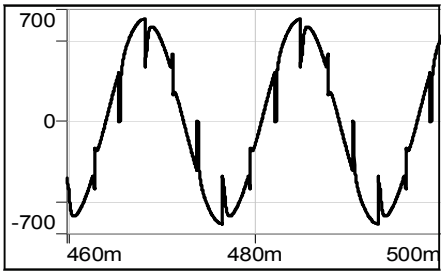
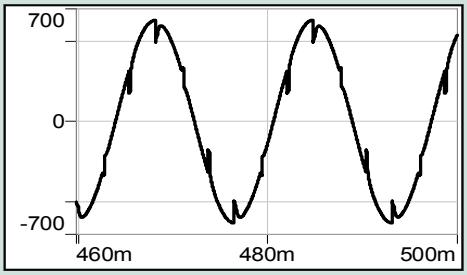
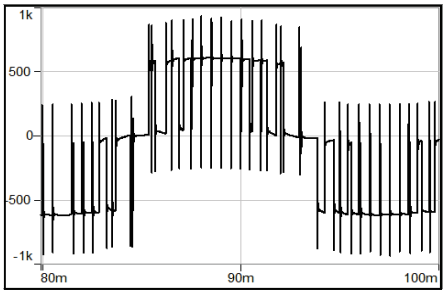
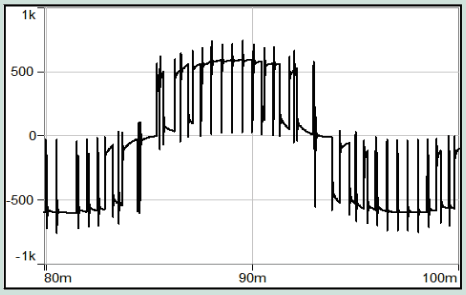
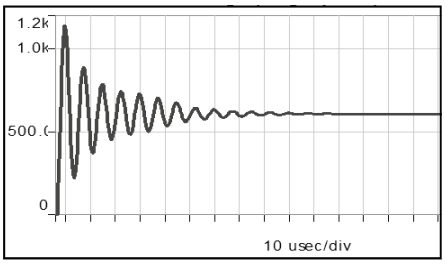
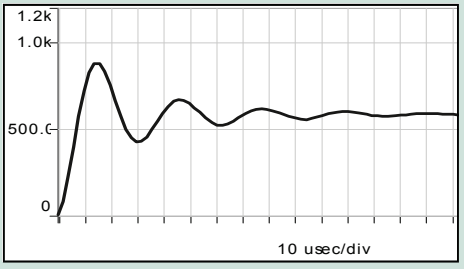
Factory support located in Wisconsin

MANGOLDT

Mangoldt Reactors Protect Drive Systems



Use as di/dt & line reactor | Use as di/dt & SCR notch reactor | Use as dv/dt and PWM load reactor

5-in-1 Protection	Without Mangoldt Reactor	With Mangoldt Reactor
Transient over-voltage can cause drives to "trip off" unexpectedly, or damage diode rectifiers. Use Mangoldt 3% impedance line/ load reactors to absorb AC voltage transients and stop nuisance tripping.		
Drives cause harmonic current and voltage distortion which can harm electrical and electronic equipment. Use Mangoldt 5% impedance line/ load reactors to reduce motor drive input harmonic distortion.		
SCRs and Thyristors cause voltage notches/extra zero crosses that can interfere with electronic equipment. Use Mangoldt 3% impedance line/ load reactors to reduce SCR voltage notches.		
VFDs produce PWM voltage that can increase motor heat and noise. Reflected pulses can cause motor peak voltage to double. Mangoldt 5% impedance line/load reactors reduce motor stress, peak voltage, temperature and noise.		
VFDs produce fast rising PWM pulses that can increase dv/dt and can stress motor winding insulation. Mangoldt 5% impedance line/load reactors reduce dv/dt, motor stress and peak voltage due to reflection.		

Mangoldt Reactor General Specifications

Phases	3-phase
Voltage Rating	690 Vac max
Frequency	Suitable for 50Hz or 60Hz systems (ie: 480V/60Hz, 400V/50Hz)
Current Ratings	3 A_{rms} to over 1200 A_{rms}
Conductor Material	PolyGap® reactors: Aluminum Foil; Small reactors: copper wire
Inductance Tolerance	- /+ 3% in all three phases (PolyGap® reactors)
Inductance Linearity	5% Z: ≥ 95% inductance at ≥ 190% current 3% Z: ≥ 95% inductance at ≥ 210% current
Dielectric Strength	3kV (1 minute) coil-coil, coil–core
Current Spectrum (see below)	Calculated using %Z and fundamental current (I_1)
Surrounding Air Temperature	50°C maximum
Temperature Rise	115°C, in 50°C surrounding air temperature
Insulation System	Class H, 180°C
Terminations	Solid copper bar or tin-plated copper pressure plate terminal
Relative Humidity	Maximum 95% non-condensing
Agency Approvals	CUL Listed (E173113), IEC/EN60076-3, VDE0532-76-6, CE marked

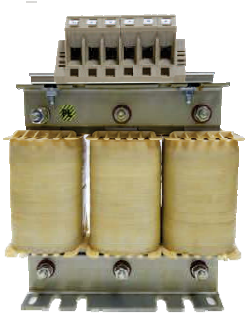
Harmonic Current: Mangoldt line/load reactors can reduce the magnitude of harmonic current caused by motor drive systems. The harmonic current that remains is dependent upon the total effective percent impedance including reactor and power source. The tables below indicate the residual harmonic currents for 3% and 5% impedance reactors. These harmonic currents, in addition to the fundamental current, are responsible for reactor heating. Mangoldt watts loss data is based upon the current spectrum in the tables below. Mangoldt line/load reactors were UL tested and approved with actual harmonic currents flowing.

Current Spectrum for 3% Impedance Reactors at full load

3%	I_1	I_5	I_7	I_{11}	I_{13}	I_{17}	I_{19}	I_{23}	I_{25}	I_{rms}
% rms	94.0%	35.7%	16.0%	6.8%	4.4%	2.6%	2.1%	1.4%	1.0%	100.0%
% fund	100%	39.0%	17.4%	7.4%	4.8%	2.9%	2.3%	1.5%	1.1%	109.2%

Current Spectrum for 5% Impedance Reactors at full load

5%	I_1	I_5	I_7	I_{11}	I_{13}	I_{17}	I_{19}	I_{23}	I_{25}	I_{rms}
% rms	94%	30.2%	11.7%	5.5%	3.7%	2.1%	1.6%	1.0%	0.8%	100.0%
% fund	100%	32.0%	12.4%	5.8%	3.9%	2.2%	1.7%	1.1%	0.9%	106.0%



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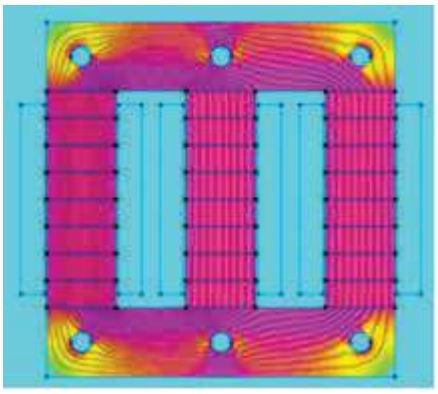
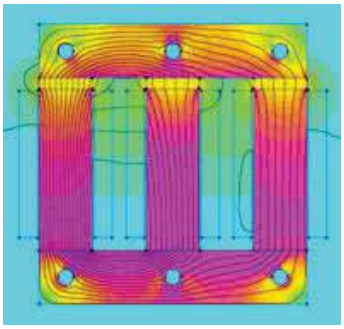
Review the Facts – Unique features provide

PolyGap®

Mangoldt PolyGap® cores are constructed using many tiny air gaps as opposed to cores with a single or only a few air gaps. The use of many tiny air gaps (PolyGap®) virtually eliminates stray magnetic fields emanating from the air gaps that cause circulating currents in the coil windings. PolyGap® reduces heat losses and audible noise associated with harmonics. Mangoldt line/load reactors are constructed using PolyGap® core technology except where small reactor size is a limiting factor.



Mangoldt PolyGap® reactor cores minimize power losses, circulating currents and stray magnetic fields, which results in optimized reactor performance and efficiency.



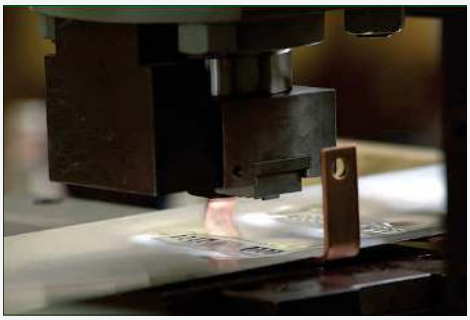
Typical reactors have a single air gap that causes magnetic fields and circulating currents in coil windings. The magnetic field for typical reactors also strays outside the reactor where it may interfere with electronic equipment.

Vacuum and over-pressure impregnation

Long life and quite operation are the key benefits of Mangoldt's varnish impregnations process. All Mangoldt reactors are impregnated with UL Class H varnish in a process involving vacuum, varnish, apply over-pressure and then baked. The result is a long life and a quiet operating reactor.

Copper terminals are cold pressure welded

Copper terminals are attached to the winding conductors using a cold pressure welding process pioneered by Mangoldt over two decades ago. Permanently attached terminals, with minimal contact resistance, offer a lifetime of trouble free and low power loss connections.



Balanced inductance in all three phases

Reactors with PolyGap® construction offer Inductance that is balanced in all three phases. Inductance values achieve the full percent impedance at rated voltage and rated fundamental current. Actual inductance is within -/+ 3% of rated inductance in all three phases for reactors having PolyGap® cores.

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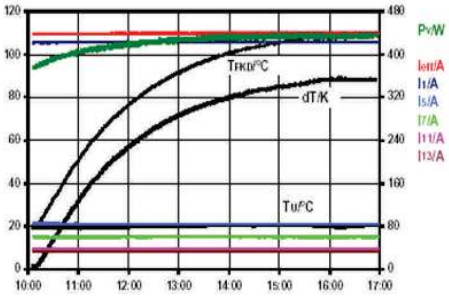
benefits that set Mangoldt above the rest!

Programmable harmonic current generator

Our 1MVA, IGBT based power supply injects specified harmonic currents into a reactor for testing with the same harmonic currents as it will be subjected to in its real world application. The UL testing of Mangoldt reactors was also performed in this manner.

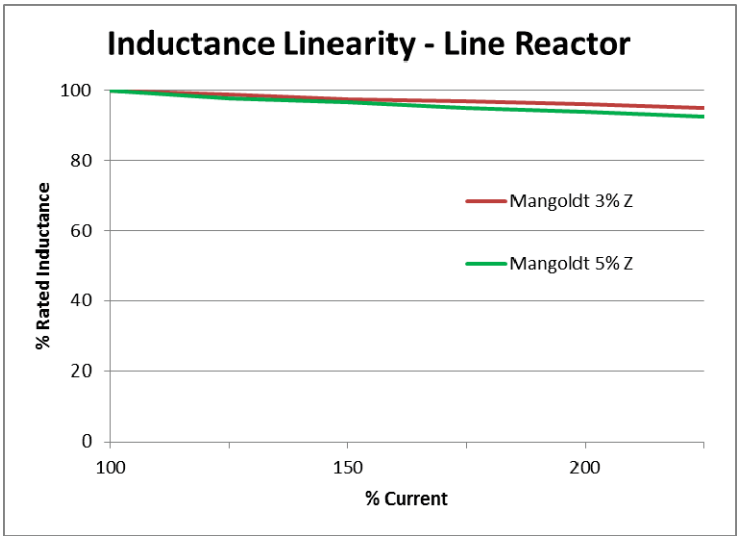


Computerized winding, core production & testing

Production & testing are highly automated, enabling Mangoldt to offer high-performance reactors with precise inductance, at economical prices. All Mangoldt reactors are 100% tested and serialized. Test reports are always available for individual serial numbers upon request.

High inductance linearity

Many reactors lose 50% of their inductance during a 200% current surge. As a line reactor, Mangoldt ACL reactors maintain at least 95% of rated inductance when current surges to as much as 200% of rated current. This high inductance linearity assures that adequate inductance is there to protect drives from transient over-voltage. These transients are common during capacitor switching, Mangoldt reactors protect motor drive input rectifiers and the DC bus charging components and can prevent nuisance over-voltage tripping.



Low losses, especially due to harmonics

Mangoldt reactors incorporate three key design elements including: PolyGap® cores, special coil design plus flux density control. This unique combination minimizes the power losses due to harmonics as well as PWM frequencies. Reactors produce heat (losses) based on the square of the current (copper losses), plus the square of the frequencies (iron losses), plus stray losses. Mangoldt's reactor design minimizes the stray losses and total reactor power losses to achieve an average efficiency above 99.5%.

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Selection Tables — 480V, 60Hz

For 240V applications, use 480V, 3% reactor selected by FLA

Mangoldt line/load reactors may be selected by motor full load amperes (FLA) or by horsepower (HP). Choose from 3% or 5% impedance to achieve the desired performance level. See page 2 for examples of applications, suggested impedance and typical performance. Mangoldt reactors may be used at any voltage up to 690 Vrms. When using reactors at higher voltages than shown in selection tables, their effective percent impedance will be lower and therefore the current spectrum will be more severe. See Page 8 or contact our Technical Support Office for advice when applying reactors at other voltages or frequencies.

3% Impedance, 480V, 60Hz

Cat No	Max. Amps	HP	mH	%Z	Losses (watts)	Weight (kg / lbs)	
ACL43-0003	3	1.5	8.000	3.3%	20	2.6	5.7
ACL43-0005	5	3	4.700	3.2%	25	2.6	5.7
ACL43-0008	8	5	2.950	3.2%	30	4.2	9.2
ACL43-0011	11	7.5	2.200	3.3%	40	4.2	9.2
ACL43-0014	14	10	1.700	3.2%	45	5.1	11.2
ACL43-0022	22	15	1.100	3.3%	50	6.8	15.0
ACL43-0028	28	20	0.860	3.3%	70	7.7	16.9
ACL43-0035	35	25	0.700	3.3%	80	9.3	20.5
ACL43-0040	40	30	0.580	3.2%	90	9.7	21.3
ACL43-0052	52	40	0.460	3.3%	120	12.9	28.4
ACL43-0066	66	50	0.370	3.3%	120	15.4	33.9
ACL43-0081	81	60	0.300	3.3%	140	16.6	36.5
ACL43-0100	100	75	0.240	3.3%	160	18.6	41
ACL43-0125	125	100	0.190	3.2%	190	20.0	44
ACL43-0158	158	125	0.150	3.2%	200	24.5	54
ACL43-0185	185	150	0.130	3.3%	240	28.7	63
ACL43-0242	242	200	0.100	3.3%	270	36.2	80
ACL43-0302	302	250	0.080	3.3%	330	41.2	91
ACL43-0365	365	300	0.066	3.3%	380	50.8	112
ACL43-0415	415	350	0.058	3.3%	420	52.0	114
ACL43-0480	480	400	0.050	3.3%	460	57.0	125
ACL43-0515	515	450	0.047	3.3%	500	65.0	143
ACL43-0594	594	500	0.040	3.2%	560	73.1	161
ACL43-0731	731	600	0.033	3.3%	730	80.0	176
ACL43-0841	841	700	0.029	3.3%	830	100.0	220
ACL43-0961	961	800	0.025	3.3%	920	100.0	220
ACL43-1089	1089	900	0.022	3.3%	980	119.0	262
ACL43-1210	1210	1000	0.020	3.3%	1050	139.0	306

5% Impedance, 480V, 60Hz

Cat No	Max. Amps	HP	mH	%Z	Losses (watts)	Weight (kg / lbs)	
ACL45-0003	3	1.5	13.000	5.3%	20	3.2	7.0
ACL45-0005	5	3	7.800	5.3%	35	3.2	7.0
ACL45-0008	8	5	4.900	5.3%	40	5.2	11.4
ACL45-0011	11	7.5	3.500	5.2%	45	5.2	11.4
ACL45-0014	14	10	2.700	5.1%	50	6.8	15.0
ACL45-0021	21	15	1.850	5.3%	70	9.2	20.2
ACL45-0027	27	20	1.450	5.3%	80	11.2	24.6
ACL45-0034	34	25	1.150	5.3%	110	11.0	24.2
ACL45-0040	40	30	0.960	5.2%	120	12.0	26.4
ACL45-0052	52	40	0.750	5.3%	130	18.0	39.6
ACL45-0065	65	50	0.600	5.3%	140	19.0	41.8
ACL45-0080	80	60	0.490	5.3%	180	20.0	44.0
ACL45-0106	106	75	0.370	5.3%	210	23.0	51
ACL45-0129	129	100	0.300	5.3%	235	30.5	67
ACL45-0159	159	125	0.245	5.3%	260	35.0	77
ACL45-0185	185	150	0.210	5.3%	295	41.0	90
ACL45-0243	243	200	0.159	5.3%	390	44.0	97
ACL45-0302	302	250	0.130	5.3%	440	51.0	112
ACL45-0366	366	300	0.106	5.3%	510	58.0	128
ACL45-0429	429	350	0.092	5.4%	570	58.0	128
ACL45-0488	488	400	0.080	5.3%	660	74.0	163
ACL45-0530	530	450	0.074	5.3%	750	97.0	213
ACL45-0615	615	500	0.065	5.4%	800	103.0	227
ACL45-0731	731	600	0.053	5.3%	870	123.0	271
ACL45-0848	848	700	0.046	5.3%	990	125.0	275
ACL45-0975	975	800	0.040	5.3%	1050	152.0	334
ACL45-1081	1081	900	0.036	5.3%	1300	154.0	339
ACL45-1224	1224	1000	0.032	5.3%	1300	180.0	396

Note: Catalog numbers in italics are physically too small for PolyGap® core construction.

*Effective % impedance may be reduced by using a reactor with a larger current rating.

Ex: % Zeff = Z% x I(actual)/ I(rated). [5% x 65/80 = 4.06%]

Selection Tables — 600V, 60Hz

For 240V applications, use 480V, 3% reactor selected by FLA

50/60Hz Capability

Mangoldt reactors may be used on 50Hz or 60Hz power systems. When using 60Hz reactors on a 50Hz system, unless the voltage is also lower by the ratio of 50/60, their percent impedance will be about 17% lower. Therefore, the current spectrum will be more severe. Consult our Technical Support Office for advice about use on 50Hz.

Exception: 480V, 60Hz reactors may be applied at the same current on 400V, 50Hz systems.

3% Impedance, 600V, 60Hz

Cat. No.	Max. Amps	HP	mH	%Z	Losses (watts)	Weight (kg / lbs)	
ACL63-0003	3	2	10.000	3.3%	20	3.4	7.48
ACL63-0006	6.1	5	5.000	3.3%	40	3.4	7.48
ACL63-0009	9	7.5	3.200	3.1%	40	5.2	11.44
ACL63-0011	11	10	2.700	3.2%	50	5.1	11.22
ACL63-0017	17	15	1.700	3.1%	60	7.2	15.84
ACL63-0022	22	20	1.350	3.2%	70	9.1	20.02
ACL63-0028	28	25	1.100	3.4%	90	9.7	21.34
ACL63-0035	35	30	0.860	3.3%	110	11	24.2
ACL63-0043	43	40	0.710	3.3%	120	15	33.0
ACL63-0053	53	50	0.560	3.2%	130	16	35.2
ACL63-0067	67	60	0.450	3.3%	150	19	41.8
ACL63-0082	82	75	0.360	3.2%	180	19	41.8
ACL63-0104	104	100	0.290	3.3%	220	23	50.6
ACL63-0131	131	125	0.230	3.3%	260	29	63.8
ACL63-0144	144	150	0.210	3.3%	290	28	61.6
ACL63-0198	198	200	0.150	3.2%	320	38	83.6
ACL63-0247	247	250	0.120	3.2%	400	42	92.4
ACL63-0300	300	300	0.100	3.3%	440	50	110
ACL63-0344	344	350	0.088	3.3%	490	57	125.4
ACL63-0388	388	400	0.077	3.3%	580	68	149.6
ACL63-0420	420	450	0.071	3.2%	680	72	158.4
ACL63-0480	480	500	0.060	3.1%	650	78	171.6
ACL63-0579	579	600	0.052	3.3%	740	80	176
ACL63-0677	677	700	0.044	3.2%	910	109	239.8
ACL63-0775	775	800	0.039	3.3%	910	122	268.4
ACL63-0873	873	900	0.034	3.2%	1150	128	281.6
ACL63-0972	972	1000	0.031	3.3%	1200	151	332.2
ACL63-1168	1168	1200	0.026	3.3%	1250	175	385

5% Impedance, 600V, 60Hz

Cat No	Max. Amps	HP	mH	%Z	Losses (watts)	Weight (kg / lbs)	
ACL65-0003	3	2	16.500	5.4%	20	4.1	9.02
ACL65-0006	6.1	5	8.000	5.3%	40	4.1	9.02
ACL65-0009	9	7.5	5.400	5.3%	50	6.7	14.74
ACL65-0011	11	10	4.500	5.4%	60	6.7	14.74
ACL65-0017	17	15	2.900	5.4%	80	8.8	19.36
ACL65-0022	22	20	2.200	5.3%	90	10	22.0
ACL65-0027	27	25	1.800	5.3%	110	13	28.6
ACL65-0034	34	30	1.400	5.2%	120	15	33.0
ACL65-0041	41	40	1.190	5.3%	140	17	37.4
ACL65-0052	52	50	0.950	5.4%	170	19	41.8
ACL65-0066	66	60	0.750	5.4%	190	23	50.6
ACL65-0081	81	75	0.610	5.4%	220	28	61.6
ACL65-0106	106	100	0.460	5.3%	260	29	63.8
ACL65-0129	129	125	0.380	5.3%	300	35	77.0
ACL65-0148	148	150	0.330	5.3%	340	38	83.6
ACL65-0192	192	200	0.250	5.2%	400	44	96.8
ACL65-0244	244	250	0.200	5.3%	500	49	107.8
ACL65-0291	291	300	0.165	5.2%	590	68	149.6
ACL65-0339	339	350	0.145	5.3%	670	74	162.8
ACL65-0382	382	400	0.130	5.4%	660	78	171.6
ACL65-0424	424	450	0.115	5.3%	710	93	204.6
ACL65-0488	488	500	0.100	5.3%	810	103	226.6
ACL65-0577	577	600	0.083	5.2%	940	102	224.4
ACL65-0673	673	700	0.073	5.3%	1100	122	268.4
ACL65-0774	774	800	0.063	5.3%	1050	150	330.0
ACL65-0869	869	900	0.056	5.3%	1150	172	378.4
ACL65-0975	975	1000	0.050	5.3%	1400	175	385.0
ACL65-1166	1166	1200	0.042	5.3%	1650	201	442.2

Note: Catalog numbers in italics are physically too small for PolyGap® core construction.

*Effective % impedance may be reduced by using a reactor with a larger current rating.

Ex: % Zeff = Z% x I(actual)/ I(rated). [5% x 67/82 = 4.08%]

MANGOLDT

Application Data

Apply reactors at lower voltage

Mangoldt line/load reactors may be applied as line or load reactors at a lower voltage, within their rated current. Power losses (watts loss) will be equal to or lower than the published data.

Apply reactors at lower frequency

Mangoldt line/load reactors may be applied as line or load reactors at a lower frequency (ie: 50Hz), within their rated current. Power losses (watts) will be equal to or lower than the published data.

Apply reactors at higher voltage

Mangoldt line/load reactors may be applied at up to 690V volts, within their rated current. At 690V, a 600V reactor, at rated current, will have effective impedance that is 87% (600/690) of their 600V rated % impedance and power losses (watts) may increase by up to 10%.

Apply reactors at higher frequency

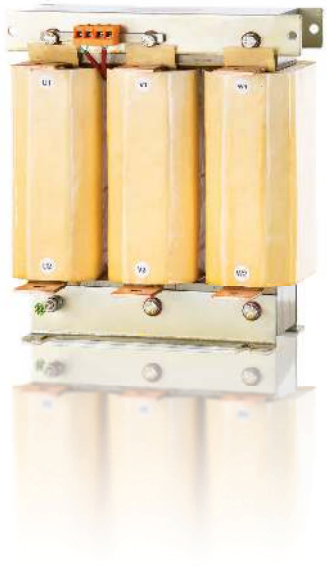
Mangoldt line/load reactors must be derated if used at frequencies above 60Hz. Consult our Technical Support Office for assistance.

Inductive Reactance: $X_L = 2 \pi f L$ (Ohms)

Reactors have the natural ability to impede the flow of harmonic current. This is accomplished by inductive reactance (X_L). Inductive reactance, expressed in ohms, is proportional to frequency. The higher the frequency, the higher its ohms.

Effective % Impedance: %Z x (I_1 actual / I_1 rated)

Line/load reactors are most effective when operating at or near their rated current. For a motor drive, the effective % impedance is proportional to the ratio of the actual fundamental (60Hz) current to the reactor rated current. Input harmonic current distortion (%THD-i) for an individual drive/reactor typically is lowest at rated current, even though actual amperes of harmonic current may decrease as load is reduced.



3-phase Reactor with optional temperature switch.

IEEE-519-2014 Limits	
I_{SC} / I_L	TDD
<20	5%
20 < 50	8%
50 < 100	12%
100 < 1000	15%
1000 +	20%

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First Line of Defense Against Harmonics

Line reactors are the lowest cost means of reducing harmonic current and voltage distortion in drive systems. Under full-load operating conditions, for an individual drive, line reactors can reduce input current distortion from as much as 60% to 100% to as little as 35% THD-i. Although in many cases, line reactors alone will not be sufficient to comply with IEEE-519, they will reduce the cost of an overall harmonic mitigation solution.

When each drive includes a 5% impedance line reactor, and if all other loads are linear (non-harmonic producing) loads, it is possible to achieve compliance with the %TDD limits established by IEEE-519. The chart below demonstrates that IEEE-519 compliance is possible under certain conditions, using only line reactors.

Example: if every drive has a 5% line reactor and drives comprise 20% of the electrical load, (the balance being linear loads), the harmonic current distortion at the PCC would be only 7% TDD (35% THD-i x 20% = 7% TDD).

VFDs as % of total load	14% VFDs	20% VFDs	33% VFDs	42% VFDs	57% VFDs
Expected % THD-i at PCC	4.9% THD-i	7% THD-i	11.55% THD-i	14.7% THD-i	19.95% THD-i

Precise, balanced inductance in all 3-phases.

Typical Harmonic Current Distortion (%THD-i)

The harmonic current spectrum that will be measured for a single drive is very predictable based upon the effective % impedance, which varies with load. You should expect the measured %THD-i to be the lowest at the reactor rated current and to increase as current is reduced below reactor rated current. Although the %THD-i increases as load is reduced, typically the amperes of harmonic current will decrease as load current is reduced.

%Z	25% Load	50% Load	75% Load	100% Load
3%	82%	60%	50%	44%
4%	72%	52%	44%	39%
5%	65%	47.5%	40%	35%

Application Engineering Support

Mangoldt has been producing reactors for a wide variety of applications for many decades. If you have any questions regarding an application - please feel free to contact our Technical Support Office.

Dimensions & Weight
480V

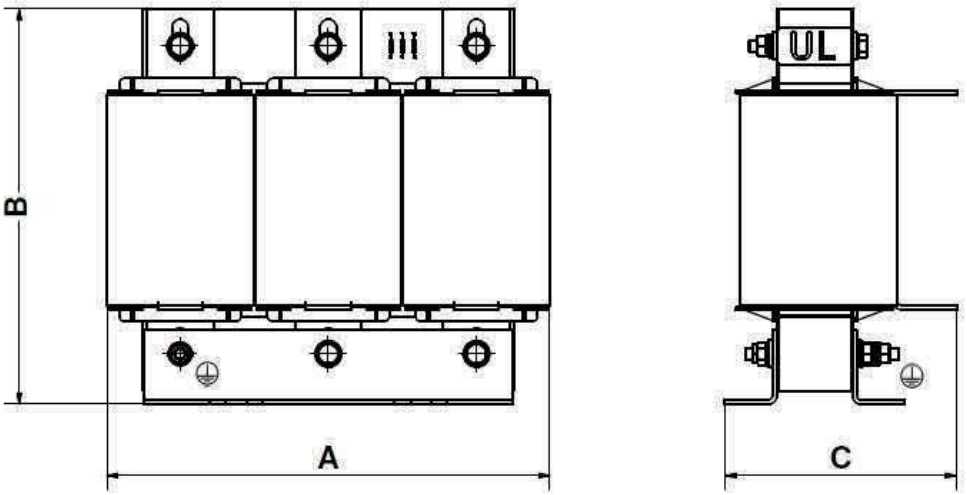
2D & 3D drawings

Mangoldt can provide both 2D and 3D drawings. Please contact the Technical Support Office or the Stocking Partner Sales Office for PDF, DWG or STP files.

480V, 3% Impedance					
-/+5mm	Fig.	A (mm)	B (mm)	C (mm)	Weight (kg)
ACL43-0003	1	94	105	62	2.6
ACL43-0005	1	94	105	62	2.6
ACL43-0008	1	117	125	68	4.2
ACL43-0011	1	117	125	68	4.2
ACL43-0014	1	125	152	86	5.2
ACL43-0022	1	125	152	101	7
ACL43-0028	1	174	213	93	7.7
ACL43-0035	1	176	213	103	9.3
ACL43-0040	1	178	159	122	9.7
ACL43-0052	1	200	179	131	13
ACL43-0066	1	223	162	141	16
ACL43-0081	1	223	177	141	17
ACL43-0100	1	223	202	141	19
ACL43-0125	1	239	212	149	20
ACL43-0158	1	240	212	165	25
ACL43-0185	1	261	233	170	29
ACL43-0242	1	300	236	186	37
ACL43-0302	1	300	268	194	41
ACL43-0365	1	300	297	209	51
ACL43-0415	1	300	298	216	53
ACL43-0480	1	300	330	215	58
ACL43-0515	1	300	329	226	65
ACL43-0594	1	300	422	215	73
ACL43-0731	1	300	455	219	80
ACL43-0841	2	330	517	234	100
ACL43-0961	2	330	550	234	100
ACL43-1089	2	394	575	244	119
ACL43-1210	2	394	662	244	139

480V, 5% Impedance					
-/+5mm	Fig.	A (mm)	B (mm)	C (mm)	Weight (kg)
ACL45-0003	1	117	125	58	3.2
ACL45-0005	1	117	125	58	3.2
ACL45-0008	1	144	152	86	5.2
ACL45-0011	1	144	152	86	5.2
ACL45-0014	1	147	152	101	6.8
ACL45-0021	1	175	213	103	9.2
ACL45-0027	1	175	213	113	11
ACL45-0034	1	202	179	121	11
ACL45-0040	1	202	179	131	13
ACL45-0052	1	224	177	142	19
ACL45-0065	1	226	201	142	19
ACL45-0080	1	239	212	139	20
ACL45-0106	1	239	212	150	23
ACL45-0129	1	263	251	159	31
ACL45-0159	1	297	235	181	35
ACL45-0185	1	300	236	199	41
ACL45-0243	1	300	297	182	44
ACL45-0302	1	300	297	201	52
ACL45-0366	1	300	300	211	58
ACL45-0429	1	300	329	243	75
ACL45-0488	1	300	423	217	75
ACL45-0530	1	300	421	249	97
ACL45-0615	2	330	515	230	103
ACL45-0731	2	394	533	238	123
ACL45-0848	2	394	566	247	125
ACL45-0975	2	452	591	258	152
ACL45-1081	2	394	662	258	154
ACL45-1224	2	452	686	262	180

Fig. 1



2D & 3D drawings

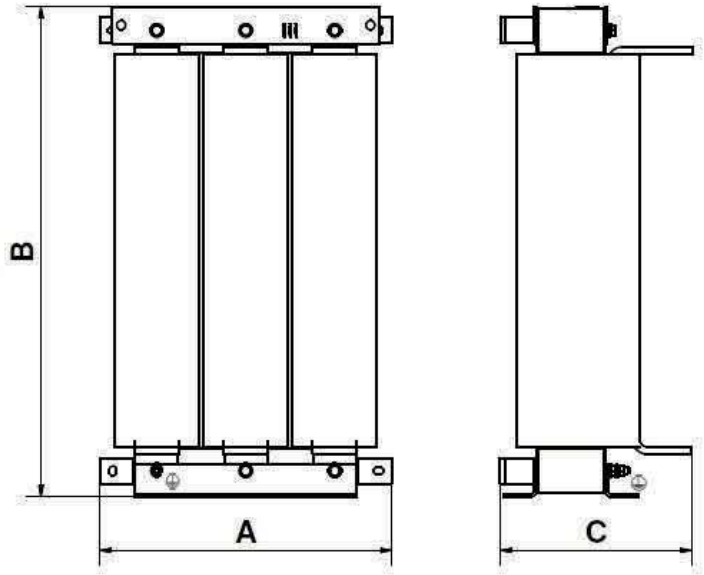
Mangoldt can provide both 2D and 3D drawings. Please contact the Technical Support Office or the Stocking Partner Sales Office for PDF, DWG or STP files.

Dimensions & Weight
600V

600V, 3% Impedance					
-/+5mm	Fig.	A (mm)	B (mm)	C (mm)	Weight (kg)
ACL63-0003	1	117	125	58	3.2
ACL63-0006	1	117	125	58	3.2
ACL63-0009	1	144	152	86	5.2
ACL63-0011	1	144	152	86	5.2
ACL63-0017	1	174	213	93	7.2
ACL63-0022	1	176	213	103	9.1
ACL63-0028	1	178	159	122	9.7
ACL63-0035	1	200	179	122	11
ACL63-0043	1	220	162	139	15
ACL63-0053	1	220	176	139	17
ACL63-0067	1	222	201	140	19
ACL63-0082	1	232	211	137	20
ACL63-0104	1	236	212	149	23
ACL63-0131	1	254	251	164	30
ACL63-0144	1	299	267	156	28
ACL63-0198	1	300	266	180	39
ACL63-0247	1	300	297	180	43
ACL63-0300	1	300	297	198	50
ACL63-0344	1	300	330	209	57
ACL63-0388	1	300	423	193	68
ACL63-0420	1	300	423	219	73
ACL63-0480	1	300	419	219	78
ACL63-0579	1	360	442	228	80
ACL63-0677	2	330	550	209	109
ACL63-0775	2	394	566	252	122
ACL63-0873	2	394	664	235	128
ACL63-0972	2	452	688	231	151
ACL63-1168	2	452	687	259	175

600V, 5% Impedance					
-/+5mm	Fig.	A (mm)	B (mm)	C (mm)	Weight (kg)
ACL65-0003	1	117	125	68	4.2
ACL65-0006	1	117	125	68	4.2
ACL65-0009	1	147	152	101	6.8
ACL65-0011	1	147	152	101	6.8
ACL65-0017	1	176	213	103	8.8
ACL65-0022	1	176	213	103	11
ACL65-0027	1	202	179	132	13
ACL65-0034	1	223	162	141	16
ACL65-0041	1	223	176	141	17
ACL65-0052	1	223	201	141	19
ACL65-0066	1	235	211	148	23
ACL65-0081	1	257	232	156	28
ACL65-0106	1	263	232	168	29
ACL65-0129	1	297	234	181	35
ACL65-0148	1	300	266	176	39
ACL65-0192	1	300	298	183	44
ACL65-0244	1	300	329	184	49
ACL65-0291	1	300	422	194	68
ACL65-0339	1	300	454	195	74
ACL65-0382	1	300	421	219	78
ACL65-0424	1	300	420	247	93
ACL65-0488	1	300	451	247	103
ACL65-0577	1	360	470	233	103
ACL65-0673	2	394	567	233	122
ACL65-0774	2	452	588	240	150
ACL65-0869	2	452	589	266	172
ACL65-0975	2	452	683	250	175
ACL65-1166	2	452	689	275	201

Fig. 2



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- Active Filter Reactors
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