

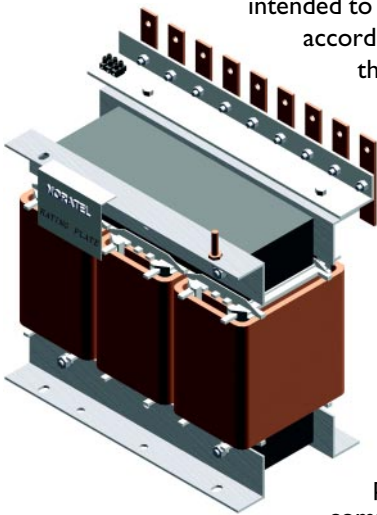
Auto-start transformers

Type 3LT -00/ASFM

Standard range of three phase, dry insulated autotransformer for motor starting. Designed and tested according to EN61558-2-13 (Particular requirements for auto-transformers), IEC 60076 (Transformers) and IEC 60092 (Electrical Installations in ships). Open design, standard degree of protection IP00 – ready for customer build-in. Protective enclosure with relevant degree of protection can be supplied on request. The transformers can be supplied with PTC termistors or other temperature limiting switchers on requests.

Applications:

Motor start with auto-transformers provides a safe and effective start-up. The transformers are intended to start motors at right torque according to the motor specifications, and the design are compact, mechanical strong, stabile and price favourable. Auto-start transformers either contain any electronic devices which can be disturbed or damaged. When starting bow motors on ships, auto starting transformers are generally used to avoid high start current peaks in the installation. Reduced voltages when starting, results in lesser start current and avoid disturbances or non controlled power breaks in installed components.



Technical specifications

- Motorpower: Table (max 2000kW)
- Input voltage: 440VAC (max 1000VAC)
- Output voltage: 242VAC (max 1000VAC)
- Frequency: 60Hz (50-60Hz)
- Vector group: III,a0 (open auto Y)
- Start per hour: 4 (3-5)
- Start time: 5 sec/start
(max 25 sec. hour)
- According to: EN61558-2-13, IEC60076, IEC60092
- Test/insulating voltage: 3kV AC RMS
- Construction class: I (protective earth)
- Insulation class: F (155°C) standard
H (180°C)
- Ambient temp. (t_a): 45°C
- Connections: Cu-bars
- Termistors: 140°C PTC in mid-phase
(100ohm/30V)
- Degree of protection: IP00

Dimensions

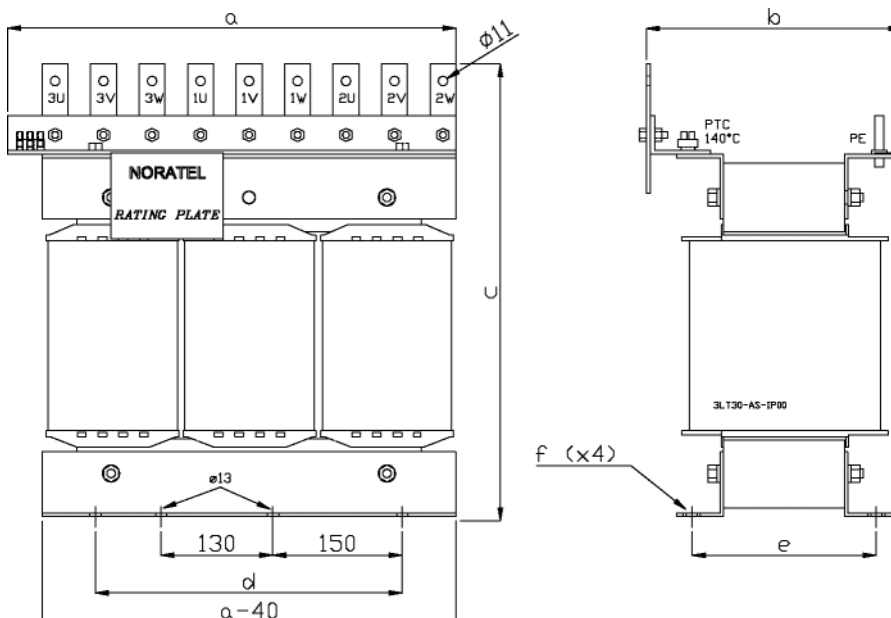


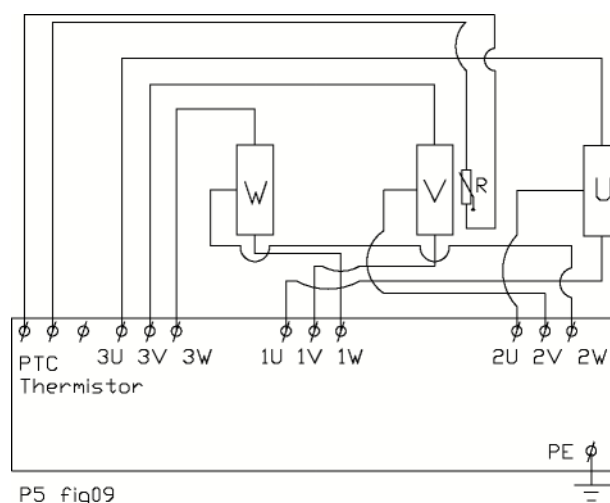
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- I_n : Nominal motor-current at 60Hz
 $I_{s\ dol}$: System current with direct start at 60Hz
 I_{redI} : Reduced system current during start-up
 I_{0I} : Current from neutral-point during start
 I_{motI} : Motor-current during start
 P: Motor power
 Time: Antall sec./hour
 U_n : Nominal voltage
 U_{redI} : Redused motor voltage

Dimensions

Type	Dimensions (mm)						Weight (Kg)
	a	b	c	d	e	f	
3LT10.0	400	243	400	264	157	10x18	72
3LT12.5	460	240	475	316	143	13x20	81
3LT16.0	460	270	475	316	173	13x20	108
3LT20.0	460	300	475	316	203	13x20	134
3LT25.0	520	300	525	356	184	13x20	152
3LT30.0	520	330	525	356	214	13x20	185

Wiring diagram



Auto-start transformers for ABB motors

The following auto-transformer data's refers to ABB-motors.

Noratel can produce auto-start transformers for other motor-types on request.

Tekniske spesifikasjoner

Motor type ABB	P (kW)	Time (s)	U_n (V)	I_n (A)	$I_{s\ dol}$ (A)	U_{redI} (V)	I_{redI} (A)	I_{0I} (A)	I_{motI} (A)	Transformer Noratel	Art. nr.
M2CA280MB	125	20	440	200	1400	242	424	347	770	3LT10.0	3-035-000096
M2CA280MC	150	20	440	234	1685	242	510	417	927	3LT12.5	3-035-000097
M2CA280MD	185	20	440	294	1940	242	587	480	1067	3LT16.0	3-035-000098
M2CA315LA	230	20	440	361	2599	242	786	643	1430	3LT20.0	3-035-000099
M2CA315LB	288	20	440	453	3352	242	1014	830	1844	3LT25.0	3-035-000101
M2CA315LBC	315	20	440	506	3744	242	1133	927	2059	3LT30.0	3-035-000102
M2CA315LC	362	20	440	574	4305	242	1302	1065	2368	3LT30.0	3-035-000103
M2CA315MB	185	20	440	290	1856	242	561	459	1021	3LT12.5	3-035-000104
M2CA315SA	125	20	440	200	1240	242	375	307	682	3LT10.0	3-035-000106
M2CA315SMA	150	20	440	238	1404	242	425	348	772	3LT10.0	3-035-000107
M2CA355LA	380	20	440	590	3835	242	1160	949	2109	3LT30.0	3-035-000094
M2CA355LB	425	20	440	645	4257	242	1288	1054	2341	3LT30.0	3-035-000105
M2CA355LKD	450	20	440	690	4968	242	1503	1230	2732	3LT30.0	3-035-000093
M2CA355MA	320	20	440	502	2912	242	881	721	1601	3LT25.0	3-035-000108
M2CA355SA	270	20	440	422	2659	242	804	658	1462	3LT20.0	3-035-000109
M2FA280MB	183	20	440	289	2052	242	621	508	1129	3LT16.0	3-035-000110
M2FA280SA	126	20	440	204	1183	242	358	293	651	3LT10.0	3-035-000111
M2FA280SMA	152	20	440	243	1434	242	434	355	789	3LT10.0	3-035-000112
M2FA315LA	360	20	440	567	3912	242	1183	968	2152	3LT30.0	3-035-000113
M2FA315LC	420	20	440	706	4448	242	1345	1101	2446	3LT30.0	3-035-000114
M2FA315MB	282	20	440	457	2559	242	774	633	1408	3LT20.0	3-035-000115
M2FA315MB	300	20	440	463	2824	242	854	699	1553	3LT20.0	3-035-000116
M2FA315SA	184	20	440	301	1686	242	510	417	927	3LT12.5	3-035-000117
M2FA315SMA	230	20	440	361	2238	242	677	554	1231	3LT16.0	3-035-000118
M2FA355MA	500	20	440	822	5507	242	1666	1363	3029	3LT30.0	3-035-000119
M2FA355SB	425	20	440	700	3850	242	1165	953	2118	3LT30.0	3-035-000123
M2FA355SC	460	20	440	721	4182	242	1265	1035	2300	3LT30.0	3-035-000124