Ministab e Sterostab IP21

Electrodynamic Voltage Regulators

Guide to selection and technical data

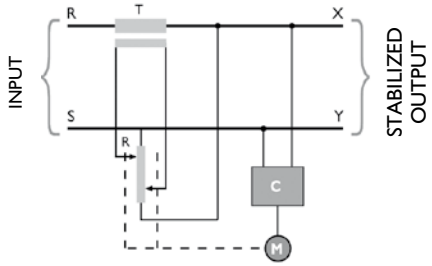
M2 ***Models for SINGLE-PHASE 230V mains***

M2 AS ***Asymmetrical Models for SINGLE-PHASE 230V mains***

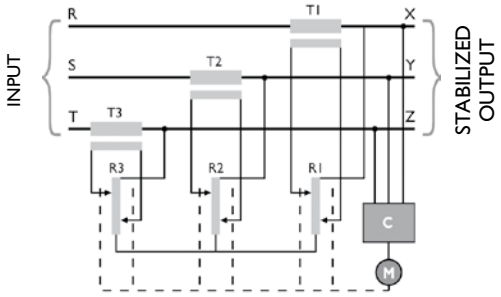
T3 ***Models for THREE-PHASE 400V mains (common regulation of the three phases)***

Y3 ***Models for THREE-PHASE 400V mains (independent regulation of each phase)***

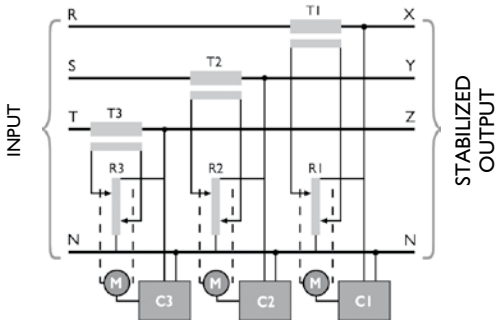
Y3 AS ***Asymmetrical Models for SINGLE-PHASE 400V mains (independent regulation of each phase)***



SINGLE-PHASE M STABILIZERS



THREE-PHASE T STABILIZERS



THREE-PHASE Y STABILIZERS

T = buck-boost transformer
R = variable transformer
C = electronic control circuit
M = servomotor

The following tables only show models for single-phase 230V and three-phase 400V mains. Upon request, stabilizers can be manufactured for 100, 110, 115, 120, 127, 200, 220, 240, 265V single-phase mains, and for 208, 220, 230, 240, 380, 415, 440, 460, 480 and 500V threephase mains.

The single-phase models M204E, M206E, M208E and the threephase models T304E, T306E are fitted with a range selector. Therefore, the power ratings that each model can deliver are selected by means of the switching device available on the cabinet. For all other models, it is necessary to specify the power required.

The models listed in the T3 tables perform the voltage regulation on the average of the three phases and are therefore suitable for lines with balanced voltage and for a maximum unbalance between phases up to 50%. T3 models, being equipped with just one stabilizing circuit ensuring a common regulation of the 3 phases, are less expensive.

They can be connected to input mains without neutral. The models listed in the Y3 tables are equipped with one stabilizing circuit for each phase, hence they are suitable for unbalanced mains and a maximum unbalance between phases up to 100%. For their correct operation, neutral is mandatory. Therefore, the input line must have 4 wires (3 phases + neutral).

The voltage regulators do not transform the voltage and deliver in output the input rated value. When input and output voltages are different, an external transformer is required.

Ministab and Sterostab correctly operate both at 50 and 60 cycles. Special features on request: output accuracy ±0.5% and optional fittings as per list here below must be previously checked with the factory.

All models comply with the requirements of following standards: Electromagnetic Compatibility 89/336/EEC and following amendments – Low Voltage Electrical Equipment 73/23/EEC and following amendments.

Optional fittings & special versions:

Ammeter
Frequency meter
Digital multimeter
Input or output circuit breaker (with or without earth leakage)
Manual or automatic by-pass
Isolating transformer
Step-up / step-down transformer
Surge arrester (lightning protection)
Over/under voltage protection
Thermal relay
Soft start
Reversed phase sequence and phase failure protection
Tropicalized versions
IP54 indoor or outdoor versions
Customized colour.

M2 *Models for SINGLE-PHASE 230V 50/60Hz mains*

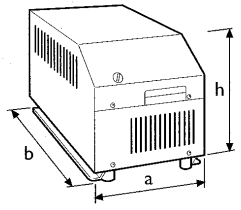


figure A

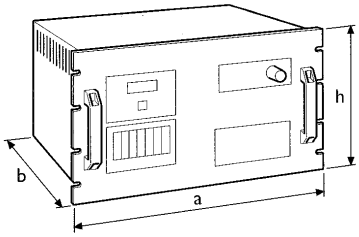


figure B

Ministab

Model	*Rated power kVA*	*Rated current Amps*	*Voltage variation %*	*Response time ms/V*	*Accuracy ±%*	*Standard fittings*	*Protection Degree IP*	*Size mm a x b x h*	*Weight kg*	*Figure*
M202E-1	1	4,3	±30	13	±1,5	CG	20	210x385x200	18	A
M204E-1	1	4,3	±25	14						
M204E	2	8,7	±20	15					20	
	2,5	11	±15	18						
M204E-3	3	13	±10	25						
M206E-2	2	8,7	±30	20	±1,5	CG	20	235x410x240	30	A
M206E-3	3	13	±25	21						
M206E	4	17,4	±20	23						
	5	22	±15	27						
M206E-8	8	35	±10	33						
M208E-3	3	13	±30	24	±1,5	CG	20	275x425x265	37	A
M208E-4	4	17,4	±25	25						
M208E	6	26	±20	27					38	
	7	30	±15	30						
M208E-10	10	43	±10	35						
M210E-6	6	26	±30	24	±1,5		20	290X505X285	53	A
M210E-8	8	35	±25	25						
M210E-10	10	43	±20	27					54	
M210E-15	15	65	±15	30						
M210E-20	20	87	±10	35					55	
M211E-10	10	43	±30	34	±1,5		20	560X396X320	78	A
M211E-11	11	48	±25	24						
M211E-14	14	61	±20	28					80	
M211E-21	21	91	±15	31						
M211E-33	33	143	±10	36						
M206L-2	2	8,7	±30	20	±0,5	I, L,V FG,PZ, BT*, BS*, PS*	20	485x500x275	36	B
M206L-3	3	13	±25	20						
M206L-4	4	17	±20	23						
M206L-5	5	22	±15	27						
M206L-8	8	35	±10	33						
M208L-3	3	13	±30	24	±0,5	I, L,V FG,PZ, BT*, BS*, PS*	20	485x500x275	46	B
M208L-4	4	17,4	±25	25						
M208L-6	6	26	±20	27					47	
M208L-7	7	30	±15	30						
M208L-10	10	43	±10	35					48	
M210L-6	6	26	±30	24	±0,5	I, L,V FG,PZ, BT*, BS*, PS*	20	485x500x275	58	B
M210L-8	8	35	±25	23						
M210L-10	10	43	±20	27					60	
M210L-15	15	65	±15	30						
M210L-20	20	87	±10	35					61	
M212AN12	12	52	±30	20	±1	V, L	21	650x650x1300	105	D
M212AN15	15	65	±25	26						
M212AN21	21	91	±20	42						
M212AN30	30	130	±15	58						
M212AN40	40	174	±10	64						

M2 *Models for SINGLE-PFASE 230V 50/60Hz mains*

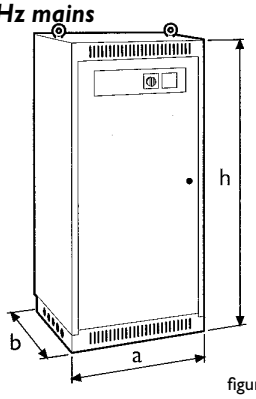


figure D

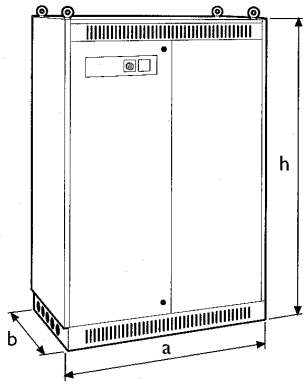


figure E

Sterostab

Model	*Rated power kVA*	*Rated current Amps*	*Voltage variation %*	*Response time ms/V*	*Accuracy ±%*	*Standard fittings*	*Protection Degree IP*	*Size mm a x b x h*	*Weight kg*	*Figure*
M213AN16	16	70	±30	8						
M213AN18	18	78	±25	9						
M213AN25	25	109	±20	10	±1	V, L	21	650x650x1300	168	D
M213AN36	36	157	±15	12						
M213AN56	56	243	±10	18						
M214AN25	25	109	±30	18						
M214AN30	30	130	±25	19						
M214AN42	42	182	±20	21	±1	V, L	21	650x650x1800	220	D
M214AN59	59	257	±15	24						
M214AN87	87	378	±10	31						
M216AN33	33	143	±30	18						
M216AN45	45	195	±25	19						
M216AN59	59	257	±20	21	±1	V, L	21	650x650x1800	250	D
M216AN85	85	370	±15	24						
M216AN117	117	509	±10	31						
M217AN47	47	204	±30	26						
M217AN62	62	270	±25	28						
M217AN82	82	357	±20	29	±1	V, L	21	650x650x1800	320	D
M217AN115	115	500	±15	34						
M217AN177	177	770	±10	45						
M218AN68	68	296	±30	20						
M218AN85	85	370	±25	21						
M218AN115	115	500	±20	23	±1	V, L	21	1100x650x1800	400	E
M218AN164	164	713	±15	26						
M218AN247	247	1074	±10	33						
M219AN93	93	404	±30	27						
M219AN120	120	522	±25	29						
M219AN164	164	713	±20	33	±1	V, L	21	1100x650x1800	625	E
M219AN230	230	1000	±15	38						
M219AN320	320	1391	±10	47						

Standard fittings

V = volmeter
L = pilot lamp
FG = out of range indication
CG = range selector
I = input cicuit breaker
PZ = potentiometer
PS* = surge arresters (optional)
BT* = electronic voltage relay (optional)
BS* = tripping coil (optional)

T3 *Models for THREE-PHASE 400V 50/60Hz mains with regulation on the average of the three phases*

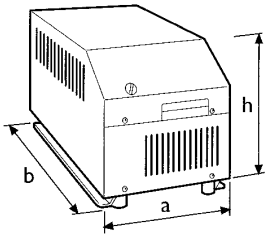


figure A

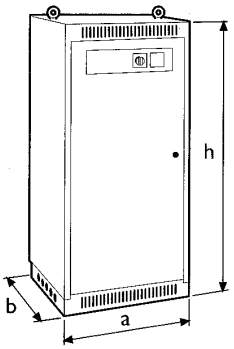


figure D

Ministab

Model	*Rated power kVA*	*Rated current Amps*	*Voltage variation %*	*Response time ms/V*	*Accuracy ±%*	*Standard fittings*	*Protection Degree IP*	*Size mm a x b x h*	*Weight kg*	*Figure*
T304E-3	3	4	±30	13	±1	CG	20	600x300x260	45	A
T304E-3,5	3,5	5	±25	15						
T304E	5	7	±20	18						
	6	9	±15	21						
T304E-9	9	13	±10	30						
T306E-6	6	9	±30	13	±1	CG	20	270x445x480	74	A
T306E-6,5	6,5	9,4	±25	15						
T306E	9	13	±20	18						
	12	17	±15	21						
T306E-17	17	25	±10	30						
T308AN10	10	13	±30	15	±1	V,L	21	650x650x1300	122	D
T308AN13	13	14	±25	16						
T308AN17	17	22	±20	18						
T308AN22	22	30	±15	21						
T308AN31	31	45	±10	21						

Standard fittings
V = volmeter
L = pilot lamp
CG = range selector

T3 *Models for THREE-PHASE 400V 50/60Hz mains with regulation on the average of the three phases*

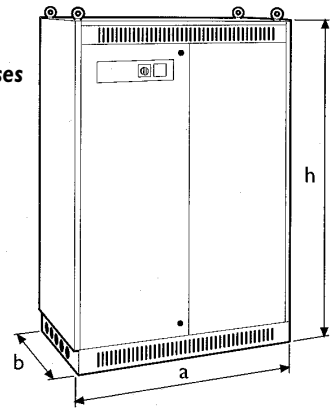


figure E

Sterostab

Model	*Rated power kVA*	*Rated current Amps*	*Voltage variation %*	*Response time ms/V*	*Accuracy ±%*	*Standard fittings*	*Protection Degree IP*	*Size mm a x b x h*	*Weight kg*	*Figure*
T310AN22	22	31	±30	10						
T310AN30	30	43	±25	11						
T310AN40	40	58	±20	12	±1	V, L	21	650x650x1300	250	D
T310AN55	55	79	±15	14						
T310AN85	85	123	±10	18						
T312AN35	35	51	±30	10						
T312AN46	46	67	±25	11						
T312AN58	58	84	±20	12	±1	V, L	21	650x650x1300	300	D
T312AN85	85	123	±15	14						
T312AN115	115	167	±10	18						
T314AN50	50	72	±30	10						
T314AN63	63	91	±25	11					310	
T314AN85	85	123	±20	12	±1	V, L	21	650x650x1300		D
T314AN122	122	177	±15	14						
T314AN190	190	275	±10	18					365	
T315AN70	70	101	±30	14						
T315AN85	85	123	±25	16						
T315AN110	110	159	±20	17	±1	V, L	21	650x650x1800	450	D
T315AN165	165	239	±15	20						
T315AN260	260	377	±10	26						
T316AN100	100	145	±30	12					620	
T316AN135	135	196	±25	13						
T316AN170	170	246	±20	14	±1	V, L	21	1100x650x1800	660	E
T316AN230	230	333	±15	17						
T316AN380	380	551	±10	22					680	
T318AN140	140	203	±30	12						
T318AN180	180	261	±25	14					990	
T318AN240	240	348	±20	16	±1	V, L	21	1100x650x1800		E
T318AN340	340	493	±15	18						
T318AN540	540	783	±10	30					1040	
T319AN210	210	304	±30	21					1420	
T319AN270	270	391	±25	23						
T319AN355	355	514	±20	26	±1	V, L	21	1100x1100x1800		E
T319AN510	510	739	±15	29					1480	
T319AN780	780	1130	±10	46						

Standard fittings
V = volmeter
L = pilot lamp
CG = range selector

Y3 *Models for THREE-PHASE 400V 50/60Hz mains with independent regulation on each phase*

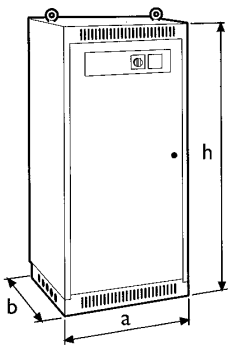


figure D

Ministab

Model	*Rated power kVA*	*Rated current Amps*	*Voltage variation %*	*Response time ms/V*	*Accuracy ±%*	*Standard fittings*	*Protection Degree IP*	*Size mm a x b x h*	*Weight kg*	*Figure*
Y304AN3	3	4	±30	13						
Y304AN4.5	4,5	7	±25	14						
Y304AN6	6	9	±20	16	±1	V, L	21	650x650x1300	110	D
Y304AN7.5	7,5	11	±15	18						
Y304AN10	10	14	±10	21						
Y306AN6	6	9	±30	11						
Y306AN9	9	13	±25	12						
Y306AN12	12	17	±20	14	±1	V, L	21	650x650x1300	120	D
Y306AN15	15	22	±15	16						
Y306AN24	24	35	±10	19						
Y308AN9	9	13	±30	13						
Y308AN15	15	22	±25	14						
Y308AN18	18	26	±20	16	±1	V, L	21	650x650x1300	145	D
Y308AN21	21	30	±15	18						
Y308AN30	30	43	±10	21						
Y310AN18	18	26	±30	13						
Y310AN24	24	35	±25	14						
Y310AN30	30	43	±20	16	±1	V, L	21	650x650x1300	195	D
Y310AN45	45	65	±15	18						
Y310AN60	60	87	±10	21						
Y311AN30	30	43	±30	13						
Y311AN33	33	48	±25	14						
Y311AN44	44	64	±20	16	±1	V, L	21	650x650x1300	295	D
Y311AN63	63	91	±15	18						
Y311AN100	100	145	±10	21						
Y312AN36	36	52	±30	14						
Y312AN45	45	65	±25	15						
Y312AN60	60	87	±20	24	±1	V, L	21	650x650x1300	300	D
Y312AN90	90	130	±15	33						
Y312AN120	120	174	±10	37						

Standard fittings
V = volmeter
L = pilot lamp
CG = range selector

IREM

Y3 *Models for THREE-PHASE 400V 50/60Hz mains with independent regulation on each phase*

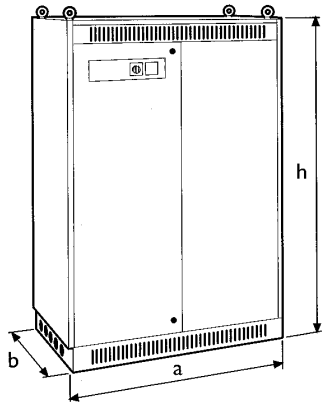


figure E

Sterostab

Model	*Rated power kVA*	*Rated current Amps*	*Voltage variation %*	*Response time ms/V*	*Accuracy ±%*	*Standard fittings*	*Protection Degree IP*	*Size mm a x b x h*	*Weight kg*	*Figure*
Y313AN48	48	69	±30	5						
Y313AN55	55	79	±25	6						
Y313AN75	75	108	±20	6	±1	V, L	21	1100x650x1800	460	E
Y313AN110	110	159	±15	7						
Y313AN170	170	245	±10	11						
Y314AN75	75	109	±30	10						
Y314AN90	90	130	±25	11						
Y314AN125	125	181	±20	12	±1	V, L	21	1100x650x1800	570	E
Y314AN175	175	254	±15	14						
Y314AN260	260	377	±10	18						
Y316AN100	100	145	±30	10						
Y316AN135	135	196	±25	11						
Y316AN175	175	254	±20	12	±1	V, L	21	1100x650x1800	670	E
Y316AN255	255	370	±15	14						
Y316AN350	350	507	±10	18						
Y317AN140	140	203	±30	15						
Y317AN185	185	268	±25	16						
Y317AN245	245	355	±20	17	±1	V, L	21	1100x650x1800	1030	E
Y317AN345	345	500	±15	20						
Y317AN530	530	768	±10	26						
Y318AN205	205	297	±30	11						
Y318AN255	255	370	±25	12					1200	
Y318AN345	345	500	±20	13	±1	V, L	21	1100x1100x1800		E
Y318AN490	490	710	±15	15					1250	
Y318AN740	740	1072	±10	19						
Y319AN280	280	406	±30	16					1700	
Y319AN360	360	522	±25	17						
Y319AN490	490	710	±20	19	±1	V, L	21	1100x1100x1800	1750	E
Y319AN690	690	1000	±15	22						
Y319AN960	960	1391	±10	27					1800	
Y320AN380	380	551	±30	13						
Y320AN500	500	725	±25	14				3 cabinets 1100x1100x1800	2770	
Y320AN690	690	1000	±20	16	±1	V, L	21			3E
Y320AN1000	1000	1449	±15	27				3 cabinets 1100x650x1800	2520	
Y320AN1500	1500	2165	±10	44						
Y322AN520	520	754	±30	18						
Y322AN690	690	1000	±25	20						
Y322AN920	920	1333	±20	23	±1	V, L	21	3 cabinets 1100x1100x1800	2520	3E
Y322AN1300	1300	1884	±15	27						
Y322AN1900	1900	2754	±10	36						
Y324AN770	770	1116	±30	18						
Y324AN1000	1000	1449	±25	20						
Y324AN1330	1330	1928	±20	23	±1	V, L	21	3 cabinets 1100x1100x1800	4650	3E
Y324AN1800	1800	2609	±15	27						
Y324AN2800	2800	4058	±10	36				T. B. A.		

Standard fittings **V** = volmeter **L** = pilot lamp

MAS *Asymmetrical Models for SINGLE-PHASE 230V 50/60Hz mains*

Y3AS *Asymmetrical Models for THREE-PHASE 400V 50/60Hz mains with independent regulation on each phase*

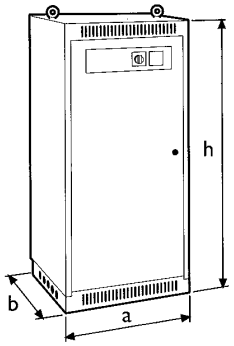


figure D

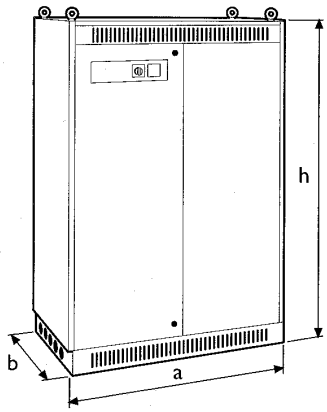


figure E

Ministab

Model	Rated power kVA	Rated current Amps	Voltage variation %	Response time ms/V	Accuracy ±%	Standard fittings	Protection Degree IP	Size mm a x b x h	Weight kg	Figure
M204E-1,1AS	1,1	4,8	+15%, -35%	14	±1.5		20	210x385x200	20	A
M206E-2,5AS	2,5	11	+15%, -35%	20	±1.5		20	235x410x240	28	A
M208E-3,5AS	3,5	15	+15%, -35%	23	±1.5		20	255x425x265	38	A
M210E-7AS	7	30	+15%, -35%	23	±1.5		10	290x685x285	75	A
M211AN10AS	10	43	+15%, -35%	24	±1	V, L	21	650x650x1300	110	D
M212AN14AS	14	60	+15%, -35%	24	±1	V, L	21	650x650x1300	130	D

Sterostab

M213AN18AS	18	78	+15%, -35%	10	±1	V, L	21	650x650x1800	210	D
M214AN29AS	29	126	+15%, -35%	19	±1	V, L	21	650x650x1800	260	D
M216AN40AS	40	174	+15%, -35%	19	±1	V, L	21	650x650x1800	350	D
M217AN59AS	59	257	+15%, -35%	28	±1	V, L	21	1100x650x1800	490	E
M218AN80AS	80	348	+15%, -35%	21	±1	V, L	21	1100x650x1800	540	E
M219AN115AS	115	500	+15%, -35%	30	±1	V, L	21	1100x1100x1800	710	E

Ministab

Model	Rated power kVA	Rated current Amps	Voltage variation %	Response time ms/V	Accuracy ±%	Standard fittings	Protection Degree IP	Size mm a x b x h	Weight kg	Figure
Y304AN3,3AS	3,3	5	+15%, -35%	8	±1	V, L	21	650x650x1300	110	D
Y306AN7,5AS	7,5	11	+15%, -35%	12	±1	V, L	21	650x650x1300	125	D
Y308AN10,5AS	10,5	15	+15%, -35%	14	±1	V, L	21	650x650x1300	140	D
Y310AN21AS	21	30	+15%, -35%	14	±1	V, L	21	650x650x1800	280	D
Y311AN30AS	30	43	+15%, -35%	14	±1	V, L	21	650x650x1800	330	D
Y312AN40AS	40	58	+15%, -35%	15	±1	V, L	21	1100x650x1800	360	E

Sterostab

Y313AN55AS	55	79	+15%, -35%	6	±1	V, L	21	1100x650x1800	560	E
Y314AN85AS	85	123	+15%, -35%	11	±1	V, L	21	1100x650x1800	770	E
Y316AN120AS	120	173	+15%, -35%	11	±1	V, L	21	1100x650x1800	920	E
Y317AN175AS	175	253	+15%, -35%	16	±1	V, L	21	1100x650x1800	1270	E
Y318AN240AS	240	346	+15%, -35%	12	±1	V, L	21	2 cabinets 1100x1100x1800	1150 450	E+E
Y319AN345AS	345	498	+15%, -35%	17	±1	V, L	21	2 cabinets 1100x1100x1800	1650 480	E+E
Y320AN440AS	440	635	+15%, -35%	16	±1	V, L	21	4 cabinets 1100x1100x1800	3300	4E
Y322AN550AS	550	794	+15%, -35%	18	±1	V, L	21	4 cabinets 1100x1100x1800	4400	4E
Y324AN800AS	800	1155	+15%, -35%	20	±1	V, L	21	4 cabinets 1100x1100x1800	5400	4E

Standard fittings **V** = volmeter **L** = pilot lamp

IREM SpA a socio unico - Via Abegg 75 - 10050 Borgone - Torino - ITALY
Tel. ++39 011 9648211 - Fax ++39 011 9648222
e-mail: irem@irem.it - www.irem.it

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