

Accessories

The characteristics described so far are relevant to the standard voltage stabilisers.

Accessories to perform specific tasks are available on request.

Combinations or one or more of the accessories listed in the following might result in an increase of the stabiliser overall dimensions and weight.

Accessories
Interrupting devices
Load protection against over/undervoltage
Manual by-pass line
Total protection kit
Input isolating transformer
Integrated automatic power factor correction system
SPD surge arrestor
EMI/RFI filters
Neutral point reactor
IP54 protection degree for indoor and outdoor installation

Interrupting devices

Every voltage stabiliser can be fitted with an automatic circuit breaker with thermal and magnetic release on the input and/or on the output. The input breaker protects the stabiliser and the downstream line against potential short-circuits on the input line. The output breaker protects the stabiliser against potential overload. The input breaker is sized according to the maximum input current, whilst the output one is sized in relation to the stabiliser rated current.

Nominal current	Breaking capacity	Additional module	
		Length	Weight
[A]	[kA]	[mm]	[kg]
10	6	not needed	
16	6	not needed	
20	6	not needed	
25	6	not needed	
32	6	not needed	
40	6	not needed	
50	6	not needed	
63	6	not needed	
80	10	not needed	
100	16	not needed	
125	18	not needed	
160	25	not needed	
200	36	not needed	
250	36	not needed	

Nominal current	Breaking capacity	Additional module	
		Length	Weight
[A]	[kA]	[mm]	[kg]
320	36	not needed	
400	36	not needed	
500	36	not needed	
630	36	not needed	
800	50	not needed	
1000	50	not needed	
1250	50	not needed	
1600	50	not needed	
2000	65	600	90
2500	65	600	90
3200	85	600	90
4000	85	600	90
5000	100	1200	200
6300	100	1200	200



Load protection against over/undervoltage

This circuit offers a double protection by:

- delaying the connection to the load each time the stabiliser switches on, so that the user can undergo a smooth start-up with an already stabilised voltage;
- protecting the load from surges, sags and overload by disconnecting the load from the stabiliser.

The protection intervenes when the output voltage is outside the set range (with regard to the rated value). When the supply goes back to the regular value, the load is automatically re-connected. Up to 320A, the protection is obtained with contactors. From 400A upwards, an automatic motorised circuit breaker is used.

The protection must be sized according to the stabiliser nominal current.

Nominal current	Additional module	
	Length	Weight
[A]	[mm]	[kg]

10	not needed
16	not needed
20	not needed
25	not needed
32	not needed
40	not needed
50	not needed
63	not needed
80	not needed
100	not needed
125	not needed
160	not needed
200	not needed
250	not needed

Nominal current	Additional module	
	Length	Weight
[A]	[mm]	[kg]

320	not needed	
400	not needed	
500	not needed	
630	not needed	
800	not needed	
1000	600	80
1250	600	80
1600	600	80
2000	600	90
2500	600	90
3200	600	90
4000	1200	200
5000	1200	200
6300	1200	200



Manual by-pass line

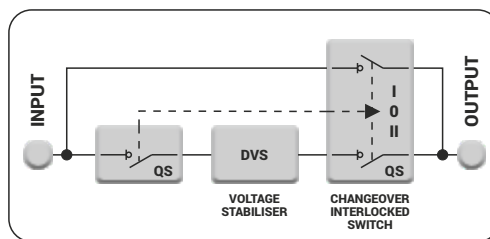
The bypass circuit enables the stabiliser to be segregated from the line supplying the load.

The operator can therefore access the internal components and perform maintenance or repairing sessions without having to disconnect the load.

For the duration of the bypass condition, the load is directly fed by the mains: the voltage is therefore not stabilised.

The by-pass line configuration can be:

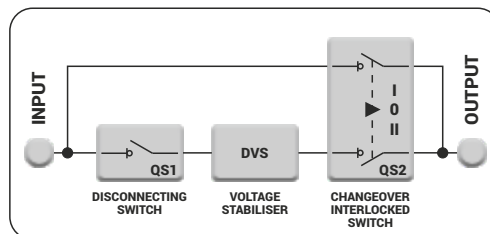
1. – I-0-II changeover interlocked switch (QS)



Nominal current [A]	Additional module	
	Length [mm]	Weight [kg]
10	not needed	
16	not needed	
20	not needed	
25	not needed	
32	not needed	
40	not needed	
50	not needed	
63	not needed	
80	not needed	
100	not needed	

10	not needed
16	not needed
20	not needed
25	not needed
32	not needed
40	not needed
50	not needed
63	not needed
80	not needed
100	not needed

2. – Input disconnecting switch (QS1)
– Output I-0-II changeover interlocked switch (QS2)



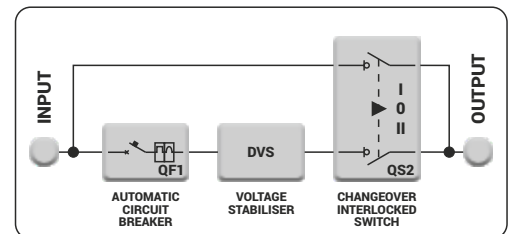
Nominal current [A]	Additional module	
	Length [mm]	Weight [kg]
125	400	70
160	400	70
200	400	70
250	400	70

125	400	70
160	400	70
200	400	70
250	400	70

Nominal current [A]	Additional module	
	Length [mm]	Weight [kg]
320	400	70
400	400	70
500	600	90
630	600	90
800	600	90
1000	600	90
1250	600	90
1600	600	90
2000	1600	200
2500	1600	200

320	400	70
400	400	70
500	600	90
630	600	90
800	600	90
1000	600	90
1250	600	90
1600	600	90
2000	1600	200
2500	1600	200

3. – Input automatic circuit breaker (QF1)
– Output I-0-II changeover interlocked switch (QS2)



Nominal current [A]	Additional module	
	Length [mm]	Weight [kg]
125	400	70
160	400	70
200	400	70
250	400	70
320	400	70
400	400	70
500	600	90
630	600	90
800	600	90
1000	600	90
1250	600	90
1600	600	120
2000	1600	200
2500	1600	200

125	400	70
160	400	70
200	400	70
250	400	70
320	400	70
400	400	70
500	600	90
630	600	90
800	600	90
1000	600	90
1250	600	90
1600	600	120
2000	1600	200
2500	1600	200

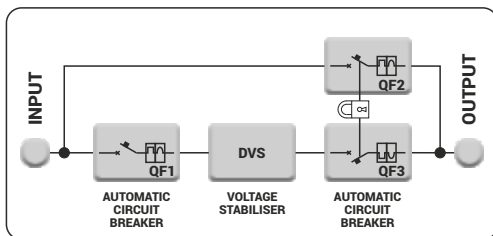
Total protection kit

The total protection kit includes:

- Input automatic circuit breaker (QF1).
- Bypass switch made of an interlocked automatic circuit breaker (QF2).
- Output interlocked motorized automatic circuit breaker (QF3).

The input automatic circuit breaker protects against potential faults and/or short-circuits inside the unit. The bypass switch with automatic circuit breaker protects the load supplying line against overload and short-circuits in bypass condition. The output motorized circuit breaker (interlocked with the bypass circuit breaker) protects against overload, shortcircuit, overvoltage, undervoltage, phase sequence error and phase failure

The total protection kit must be chosen according to the stabiliser maximum input current



QF1: Input automatic circuit breaker.

QF2: Bypass switch made of an interlocked automatic circuit breaker.

QF3: Output automatic circuit breaker.

QF3 is interlocked with QF2 by means of an individual key. When one of the breakers is closed, the other one is open and the closing spring cannot be manually loaded.

Current		Additional module	
Input [A]	Output [A]	Length [mm]	Weight [kg]
200	160	400**	100
250	200	400**	100
320	250	400**	110
400	320	400**	125
500	400	400**	125
630	500	400**	125
800	630	600**	170
1000	800	600**	200
1250	1000	600**	200
1600	1250	600**	200
2000	1600	1200***	630
2500	2000	1200***	640
3200	2500	1200***	650
4000	3200	1200***	730
5000*	4000	2000***	1100
6300*	5000	2000***	1200

* Neutral wire sized for 50% of the rate current

** In case of stand alone by-pass add 400mm

*** In case of stand alone by-pass add 600mm





Input isolating transformer

The input isolation transformer is the best solution to provide for:

- galvanic separation between the stabiliser and the mains;
- delta/star or delta/zig-zag connection in order to cancel the 3rd and triplen harmonics and improve the balance of the phase voltages;
- generation of a fixed and steady neutral point;
- protection from overvoltage generated by connecting/disconnecting manoeuvres on the line.

The transformer is fitted with electrostatic screen between primary and secondary winding. It is also possible to have high insulation level (10kV) between input and output.

The input isolating transformer must be chosen according to the stabiliser maximum input current.

Single-phase transformer for VEGA & ANTARES

Current	Power	Cabinet (TRS+DVS)	Additional weight
[A]	[kVA]	[tipo]	[kg]
8	2	13	48
13	3	13	59
21	5	22	79
34	8	22	95
43	10	23	110
52	12	23	113
65	15	23	115
86	20	23	125
108	25	31	135
130	30	31	150
173	40	40	160
217	50	40	220
273	63	40	240
304	70	40	260
347	80	2x40	285
391	90	2x40	300
435	100	2x41	335
478	110	2x41	355
543	125	2x41	400
770	175	2x41	455

Dyn11 three-phase transformer for ORION

Current	Power	Cabinet (TRS+DVS)	Additional weight
[A]	[kVA]	[tipo]	[kg]
17	12	31	135
21	15	31	145
28	20	31	170
36	25	40	205
43	30	40	225
57	40	40	290
72	50	2x40	335
91	63	2x40	365
101	70	2x40	370
115	80	2x40	395

Dzn0 three-phase transformer for ORION PLUS, SIRIUS & SIRIUS ADVANCE

Current	Power	Cabinet (TRS+DVS)	Additional weight
[A]	[kVA]	[tipo]	[kg]
130	90	51	430
144	100	51	580
158	110	51	600
180	125	51	630
202	140	51	660
231	160	51	710
260	180	51	750
289	200	51	800
325	225	55	910
361	250	55	960
404	280	55	1020
462	320	55	1070
505	350	55	1120
578	400	55	1210
650	450	55	1290
722	500	55	1430
910	630	61	1700
1156	800	61	2000
1445	1000	61	2450
1806	1250	62	3100
2312	1600	62	3600
2890	2x1000	63	4900
3612	2x1250	63	5800
4650	2x1600	80	7200
5780	2x2000	80	8600
7250	2x2500	91	10600

Integrated automatic power factor correction system

A PFC system can be integrated in the same cabinet with a voltage stabiliser, offering the stabilisation and the correction of the power factor of the plant in the same solution. The result is a stabilised supply to the load and a higher power factor of the load itself, with the advantage of having available the maximum active power. ORTEA PFC systems exploit high energy density metallised polypropylene three-phase capacitors ($U_n=525V$) exclusively thus guaranteeing robustness and reliability. Furthermore, the detuned filter (included from 1000kVA) protects the system against possible harmonics generated by non-linear loads.

DVS power [kVA]	PFC power [kvar]	Additional module	
		Length [mm]	Weight [kg]
80	50	400	85
100	50	400	85
125	75	400	115
160	75	400	115
200	100	400	135
250	150	600	160
320	150	600	160
400	200	600	190
500	250	600	220

DVS power [kVA]	PFC power [kvar]	Additional module	
		Length [mm]	Weight [kg]
630	300	600	230
800	350	600	250
1000	500	1600	830
1250	600	1600	890
1600	750	2400	1245
2000	900	2400	1335
2500	1200	3200	1780
3200	1500	4800	2490
4000	2000	6400	3320



SPD surge arrester

SPD arrestors protect the load and the stabiliser against voltage peaks of atmospheric or operational origin by discharging them to ground.

The installation depends on the system configuration. For example, in case of high ratings the suggested sequence would be: spark-gap arresters followed by an isolating device (ideally an isolating transformer) and varistor-based arresters on the output.

Current [A]	Type	Discharge current	
		CLASS I	ORTEA
CLASS I	ORTEA	25kA/pole	4 poles
CLASS II	ORTEA	20kA/pole	2 poles
CLASS II	ORTEA	20kA/pole	4 poles

Current [A]	Type	Discharge current	
		CLASS I	DEHN
CLASS I	DEHN	200kA	4 poles
CLASS II	DEHN	40kA	2 poles
CLASS II	DEHN	40kA	4 poles



EMI/RFI filters

The addition of EMI/RFI filters is a valid solution to remove the electromagnetic interferences generated by many electronic devices (converters, switching power supplies, motor drives, etc.).

The EMI/RFI filters must be chosen according to the stabiliser rated output current.

Type	Rated current
	[A]
FL170.50.00	50
FL170.100.00	100
FL170.150.00	150
FL170.300.00	300
FL170.500.00	500

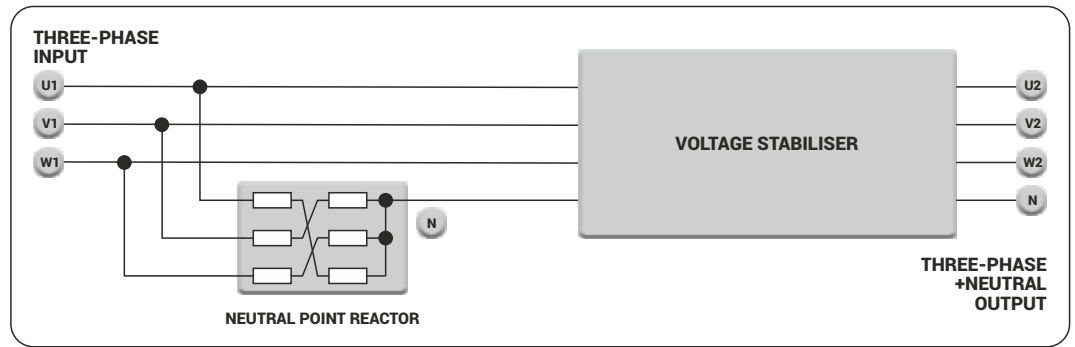
Type	Rated current
	[A]
FL155.800.00	800
FL155.1000.00	1000
FL155.1600.00	1600
FL155.2500.00	2500





Neutral point reactor

The neutral point reactor creates a reference neutral for the system when the input AC mains does not include the neutral connection or when a stable neutral is required to supply the load. The neutral point inductor is available for all the voltage stabilisers.



IP54 protection degree for indoor and outdoor installation

IP54 indoor installation: These units are equipped with air conditioning units to ensure the correct ventilation and cooling of the internal magnetic and electrical components. The cabinet is completely sealed: this makes the stabiliser suitable for operating in damp and dusty environments.

IP54 outdoor installation: ORTEA's stabilisers are also available for outdoor installation.



Type	Dimensions [mm]		
	W	D	H
11	210	400	200
12	300	460	300
13	300	560	300
21	300	500	900
22	410	530	1200
23	410	680	1200
31	600	600	1600
32	600	600	2000
33	800	600	2000
35	800	600	1800
36	1200	600	1600
37	1200	600	2000
40	600	800	1600
41	1000	800	1800
42	800	800	2000
43	1200	800	1600
44	2000	800	2000
46	1800	800	1600
47	1600	800	1800
48	2200	800	1800
49	2200	800	2000
50	2400	800	1800
51	600	800	1800
52	1800	800	2000
53	1200	800	2000
54	600	800	2000
55	1200	800	1800
56	1800	800	1800
57	2400	800	2000
58	3000	800	2000
59	3600	800	2100

Type	Dimensions [mm]		
	W	D	H
60	600	1000	1800
61	1200	1000	1800
62	1800	1000	2000
63	2400	1000	2000
64	3000	1000	2000
65	3600	1000	2000
66	4200	1000	2000
67	1200	1000	2000
70	3600	1000	2100
71	4200	1000	2100
72	4800	1000	2100
73	5400	1000	2100
74	6000	1000	2100
75	6600	1000	2100
76	7200	1000	2100
80	3600	1400	2200
81	4200	1400	2200
82	4800	1400	2200
83	5400	1400	2200
84	6000	1400	2200
85	6600	1400	2200
86	7200	1400	2200
87	7800	1400	2200
90	4200	2000	2400
91	5400	2000	2400
92	6000	2000	2400
93	6600	2000	2400
94	7200	2000	2400
95	8400	2000	2400
C20	6000	2400	2400
C30	9000	2400	2400
HC40	12000	2400	2700