CATALOG

Zenith ZTG series Automatic Transfer Switches

ZTG(D) series ATS, 30-1200 A, 200-480 Vac

- Easy to Install and Commission
- Continuous Operation
- Data and Connectivity

WORLDWIDE POWER PRODUCTS

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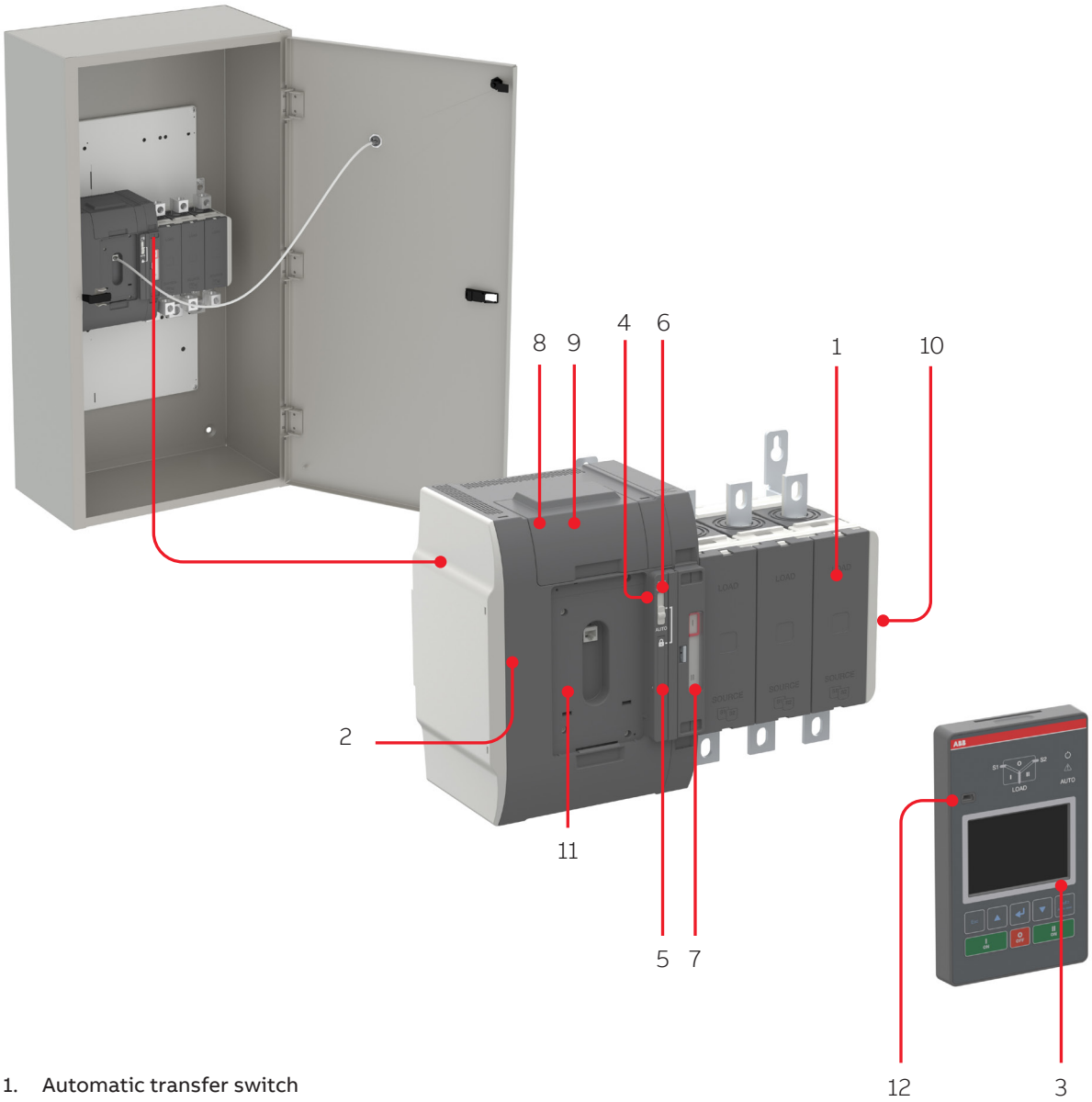
Construction



1. Automatic transfer switch
2. Embedded ATS control unit and mechanism
3. HMI unit, type ZTG LCD
4. Slide switch (Hand - Locking - AUTO) for selection of the operation mode
5. Padlocking the automatic transfer switch to prevent automatic and manual operation
6. Handle for manual operation
7. Position indication
8. Terminals for control circuit connections (behind the cover)
9. Place for connectivity modules (aux power supply, com and signaling)
10. Place for auxiliary contact block
11. Location of product identification label
12. Programming port, only for Ekip Programming module and Ekip Connect software

Features

Main features in the table below.
Consult ABB for more information.

	ZTG Controls
Ampere sizes available	UL: 30-1200 A
Rated voltage	200-480Vac
Rated frequency	50 / 60 Hz
Phase system	Single and Three
Number of poles	2, 3 and 4
Neutral configuration	
Switched	Yes
Product type	
Open transition (I-II)	Yes
Delayed transition (I-O-II)	Yes
Voltage and frequency settings	
Pick up Voltage Source 1	71-99%, 101-119%
Drop out Voltage Source 1 *	70-98%, 102-120%
Pick up Voltage Source 2	71-99%, 101-119%
Drop out Voltage Source 2 *	70-98%, 102-120%
Pick up Frequency Source 1	80.5-99.5%, 100.5-119.5%
Drop out Frequency Source 1	80-99%, 101-120%
Pick up Frequency Source 2	80.5-99.5%, 100.5-119. 5%
Drop out Frequency Source 2	80-99%, 101-120%
Time delay settings	
Override momentary Source 1 Outage, sec	0-60
Transfer from Source 1 to Source 2, sec	0-3600
Override momentary Source 2 Outage, sec	0-60
Transfer from Source 2 to Source 1, min	0-120
Generator stop delay, min	0-60
Center-OFF delay, sec	0-300
Pre-transfer delay S1 to S2, sec	0-300
Post-transfer delay S1 to S2 , sec	0-300
Pre-transfer delay S2 to S1, sec	0-300
Post-transfer delay S2 to S1, sec	0-300
Elevator Pre-signal delay S1 to S2, sec	0-60
Elevator Post-signal delay S1 to S2, sec	0-60
Elevator Pre-signal delay S2 to S1, sec	0-60
Elevator Post-signal delay S2 to S1, sec	0-60
Load shed delay, sec	0-300
Source failure detections	
No voltage	Yes
Undervoltage	Yes
Overvoltage	Yes
Phase missing	Yes
Voltage unbalance	Yes
Invalid frequency	Yes
Incorrect phase sequence	Yes

* Drop out voltage settings possible as low as 70% for 240V-480V systems.

Features

Main features in the table below.

Consult ABB for more information.

	ZTG controls
Controls	LCD + keys
LED indications for ATS, S1 and S2 status	Yes
Open transition - Standard digital inputs/outputs	1 / 1
Delayed transition - Standard digital inputs/outputs	2 / 1
Programmable digital inputs/outputs	Yes
Auto config (voltage, frequency, phase system)	Yes
Source priority	Source 1/2, No priority
Manual re-transfer	Yes
In-phase monitor (synchro check)	Yes
Genset exercising: on-load, off-load	Yes
In-built power meter module	No
Load shedding	Yes
Real time clock	Yes
Event log	Yes
Predictive maintenance	No
Voltage and current harmonics measuring	No
Field-mount accessories	
Auxiliary contacts for position indication	Yes
Digital input/output modules	Yes
12-24 Vdc aux supply module for controller	Yes
Communication modules	Yes
Connectivity capability	
Modbus RTU (RS-485)	Yes
Modbus/TCP	Yes
Profibus DP	Yes
ProfiNet	Yes
DeviceNet	Yes
Ethernet IP	Yes
Monitoring via ABB Ability™: Energy and Asset Manager	Yes
For applications	
Mains - Mains	Yes
Mains - Generator (minimum size 20kVA)	Yes
UL short circuit withstand ratings	
Coordinated breaker WCR	Yes

Description of basic functionality

Operation of time delays and corresponding relay output signals

Example for SOURCE 1 Priority, SOURCE 2 = Generator

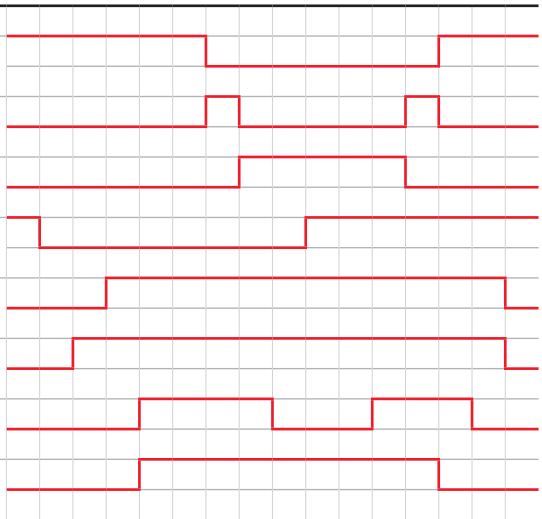
The automatic switching sequence can be summarized in the following steps:

- An anomaly occurs on the SOURCE 1
- Override momentary S1 outage delay
- Generator start
- SOURCE 2 OK
- Transfer from S1 to S2 delay
- Pre-transfer signal on
- Load shed signal on
- Pre-transfer S1 to S2 delay
- Load shed delay
- Transfer switch (SOURCE 1) to the position O
- Center-off delay
  (only with Delayed transition I - O - II type)
- Transfer switch (SOURCE 2) to the position II
- Post-transfer S1 to S2 delay
- Pre-transfer signal off

The re-transfer sequence can be summarized in the following steps:

- The SOURCE 1 is restored
- Transfer from S2 to S1 delay
- Pre-transfer signal on
- Pre-transfer S2 to S1 delay
- Transfer switch (SOURCE 2)
  to the position O
- Center-off delay
  (only with Delayed transition I - O - II type)
- Transfer switch (SOURCE 1) to the position I
- Load shed signal off
- Generator stop delay
- Post-transfer S2 to S1 delay
- Pre-transfer signal off
- Generator stop
- SOURCE 2 off

SOURCE 1 priority (SOURCE 2 = generator)



Override momentary S1 outage delay
Transfer from S1 to S2 delay
Override momentary S2 outage delay
Transfer from S2 to S1 delay
Generator stop delay
Center-off delay, I - O - II 1)
Pre-transfer S1 to S2 delay
Post-transfer S1 to S2 delay
Pre-transfer S2 to S1 delay
Post-transfer S2 to S1 delay
Load shed delay

1) Off position included in sequence for delayed transition only

Accessories

16	Auxiliary power supply module Connectivity modules Communication modules
17	Signaling modules Ekip Programming module Ekip Bluetooth wireless communication unit
18	Ekip Com Hub Auxiliary contacts

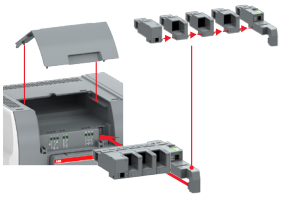
Accessories

Automatic transfer switches

OXEA1

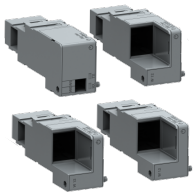
Auxiliary power supply module

The OXEA1 auxiliary power supply module is used for: a) connecting connectivity modules (signaling and communication) to the switch b) powering the ATS controller and connectivity modules from auxiliary 12-24 Vdc power supply, to keep them operational during power failures. A 12-24Vdc power supply is not required when line power is available but it is necessary to keep the modules operational during power failures. Auxiliary power supply module is included automatically when Ekip Com modules are selected in a Zenith order code.



Connectivity modules

The connectivity modules are used in combination with OXEA1 auxiliary power supply module to enable communication capabilities (Ekip Com modules) and increase the number of digital inputs and outputs (Ekip Signaling modules). The maximum number of additional modules depends on the Zenith ZTG switch size: 30-260 Amp sizes can fit three additional modules and 400-1200 Amp sizes can fit four additional modules. These modules are available on Zenith ZTG up to 1200A.



EKIP COM

Communication modules

The Ekip Com modules enable Zenith ZTG to be integrated in an industrial communication network for remote supervision and control of the switch. Several Ekip Com modules can be installed at the same time, thereby enabling connection to communication systems that use different protocols. The Ekip Com modules for Modbus RTU, Profibus-DP and DeviceNet contain a terminating resistor and dip switch for optional activation to terminate the serial network or bus. The Profibus-DP module also contains a polarization resistor and dip switch for its activation.

Available com modules:

- Modbus RTU
- Modbus TCP
- Profibus DP
- Profinet
- EtherNet / IP
- DeviceNet

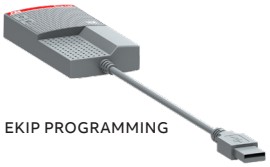
Accessories

Automatic transfer switches

EKIP 2K SIGNALING

Signaling modules

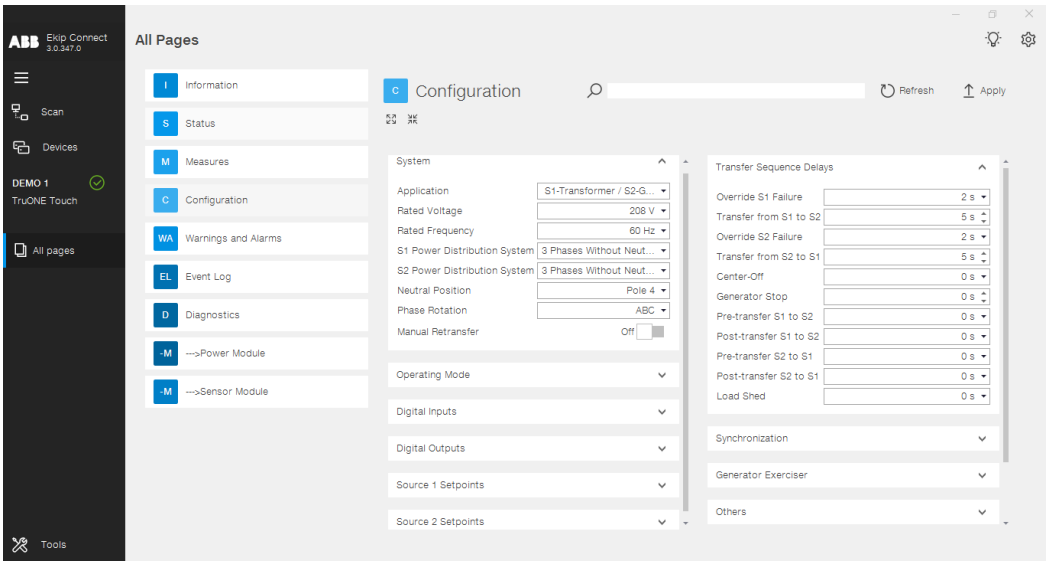
Each Ekip 2K Signaling module adds two input and two output contacts for controlling and remote signaling. They can be programmed from the HMI or with the Ekip Programming module and free Ekip Connect software. Zenith ZTG can be configured with up to 3 Ekip Signaling modules, for a total of 6 additional inputs and 6 additional outputs. If ordered separately, the Signaling modules have 3 different part numbers, associated with the DI/DO numbering. More than one of the same type should not be used on the same switch simultaneously.



EKIP PROGRAMMING

Ekip Programming module

The Ekip Programming module is used for programming ZEAEKPPGM is a separate accessory used for programming Zenith ZTG via USB to a PC using the Ekip Connect software that can be downloaded library.abb.com. It enables both online (line power available) and offline (no line power available) programming.



Accessories

Automatic transfer switches

EKIP COM HUB

Ekip Com Hub

Zenith ZTG is ABB Ability™ Energy and Asset Manager compatible using Ekip Com Hub module ZEAEKIPHUB with an internet connection. For further information related to ABB Energy and Asset Manager, please visit the dedicated website https://new.abb.com/about/our-businesses/electrification/abb-ability/energy-management

OA1G10

OA3G01

Auxiliary contacts

Auxiliary contacts are configurable with Zenith ZTX and ZTG series automatic transfer switches. The aux contacts mount on the right side of the switch, with up to contacts available for both Source 1 and Source 2 position indication contacts total. See ordering information and technical information sections of this catalog for more information.

Function table for auxiliary contacts / Source 1 position (max. 2+2)

Switch position	Main contacts	OA1G10 NO	OA3G01 NC
I	closed	closed	open
0	open	open	closed
II	closed	open	closed

Function table for auxiliary contacts / Source 2 position (max. 2+2)

Switch position	Main contacts	OA1G10 NO	OA3G01 NC
I	closed	open	closed
0	open	open	closed
II	closed	closed	open

Zenith ZTG ordering information

Part number codes

Understanding the type code keys below will help you quickly identify the correct product for your needs. The simple naming system allows you to see the products type, Ampere rating, standard classification and number of poles, all in one glance.

Explanation of the types ZTG Series

Z	G	D	M	3	X	X	1	2	-	C	X	3	X	E	4	X	X
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

1	**Zenith**
	Z
2	**Product Family**
G	ZTG
3	**Transition Type**
O	Open Transition
D	Delayed Transition
4	**Amperage**
A	30 Amps
B	60 Amps
C	100 Amps
D	125 Amps
F	160 Amps
G	200 Amps
J	260 Amps
K	400 Amps
L	600 Amps
M	800 Amps
N	1000 Amps
P	1200 Amps
5	**Phase**
1	1 Phase
3	3 Phase
6	**Neutral**
S	Switched neutral
X	No neutral
B	Solid neutral bar
7	**System voltage (Line to Line)**
X	T1 Panel - Voltage agnostic
8	**Enclosure**
1	Nema 1
2	Nema 12 / 4
3	Nema 3R
4	Nema 4X
5	Nema 3R w/ 208V heater/thermostat
6	Nema 3R w/ 240V heater/thermostat
7	Nema 3R w/ 480V heater/thermostat
9	**Panel Assembly**
2	Std application, Sources on Bottom

10	**(open)**
-	
11	**Aux Contacts**
X	No Aux Contacts
A	2 NO
B	2 NO and 2 NC
C	4 NO and 4 NC
D	8 NO
E	8 NC
12	**Metering Options**
X	No meter
A	M90 meter (120-240V)
B	M90 meter (480V)
C	M91 meter (120-240V)
D	M91 meter (480V)
13	**Ground Bar**
X	No ground bar, lug on cabinet
1	(3) #8-1/0 cables
2	(6) #8-1/0 cables
3	(6) #6-250MCM
4	(12) #6-250MCM
5	(8) #2-600MCM
14	**Lugs**
X	Mech Standard on ZTG
15/16	**Ekip Modules**
XX	See Table of values on Ekip table (next page)
17	**Open**
X	
18	
X	Standard design

Zenith ZTG extended range includes the following which are based upon the Zenith contactor-based ATS and MX150 controller. Please reference Zenith documents PB-1201 and PB-1301 for technical and ordering information.

- 1600-3000A ratings for full voltage range (120-600Vac)
- 40-1200A ratings for 120Vac and 600Vac
- Service entrance rated from 40-3000A, all voltages (ZTGSE and ZTGDSE)

Zenith ZTG ordering information

Ekip options

15/16	Ekip Modules
No Ekip adders	
XX	No additonal options
No communication	
XA	Aux Power Module Only
X2	2 additional I/O
X4	4 additional I/O
X6	6 additional I/O
1 communication module	
R2	Modbus RTU + 2 IO
R4	Modbus RTU + 4 IO
R6	Modbus RTU + 6 IO (only 400 Amps +)
T2	Modbus TCP + 2 IO
T4	Modbus TCP + 4 IO
T6	Modbus TCP + 6 IO (only 400 Amps +)
P2	Profibus + 2 IO
P4	Profibus + 4 IO
P6	Profibus + 6 IO (only 400 Amps +)
E2	Ethernet + 2 IO
E4	Ethernet + 4 IO
E6	Ethernet + 6 IO (only 400 Amps +)
D2	DeviceNet + 2 IO
D4	DeviceNet + 4 IO
D6	DeviceNet + 6 IO (only 400 Amps +)
N2	Profinet + 2 IO
N4	Profinet + 4 IO
N6	Profinet + 6 IO (only 400 Amps +)

Loose accessories

Zenith ZTG loose accessories order codes

Suitable for switches ZTG(D) 30-1200 A, 200-480 Vac			
Type	**Qty (pcs)**	**Order code**	**Weight (lb)**
12-24 Vdc auxiliary supply module	1	OXEA1	0.09
Ekip Com Modbus RTU-OX	1	ZEAMOD485	0.44
Ekip Com Modbus TCP-OX	1	ZEAMODTCP	0.44
Ekip Com Profibus	1	ZEAPRFIBUS	0.44
Ekip Com Profinet	1	ZEAPRFINET	0.44
Ekip Com EtherNet / IP	1	ZEAETHRNT	0.44
Ekip Com DeviceNet	1	ZEADEVICNET	0.44
Ekip Com Hub	1	ZEAEKIPHUB	0.44
Ekip Signalling 2K-1-OX	1	2K-1-OX	0.44
Ekip Signalling 2K-2-OX	1	2K-2-OX	0.44
Ekip Signalling 2K-3-OX	1	2K-3-OX	0.44
Ekip Programming Module	1	ZEAEKPPGM	0.44
Ekip Bluetooth Programming Module	1	ZEABT	0.44
Normally Open Auxiliary Contact	10	OA1G10	0.07
Normally Closed Auxiliary Contact	10	OA3G01	0.07

[1] Packing materials must be added to weights provided

Technical data

26 Zenith ZTG series 30-1200 A, 200-480 Vac

Technical data

Zenith ZTG series 30-1200 A, 200-480 Vac

Zenith ZTG series technical data

			Zenith switch size (A)					
Data according to UL1008			**30**	**60**	**100**	**125**	**160**	**200**
Rated operational voltage		Vac	200 - 480					
Operating voltage range		Vac	160 - 576					
Rated frequency		Hz	50-60					
Emergency systems - Motor loads or total system		A	30	60	100	125	160	200
Optional standby systems - Motor loads or total system		A	30	60	100	125	160	200
Short-circuit withstand/closing and short-time current ratings		kA	See table A					
Contact transfer time I-II, II-I	Load interrupting time	ms	<50					
Operating transfer time I-II, II-I		ms	<500					
ATS current draw during transfer / time duration		A / ms	35 / <110					
Mechanical endurance	No. of operating cycles		6050	6050	6050	6050	6050	6050
Suitable for applications			Transformer - Transformer, Transformer - Generator					

Zenith ZTG series technical data

			Zenith switch size (A)					
Data according to UL1008			**260**	**400**	**600**	**800**	**1000**	**1200**
Rated operational voltage		Vac	200 - 480					
Operating voltage range		Vac	160 - 576					
Rated frequency		Hz	50-60					
Emergency systems - Motor loads or total system		A	260	400	600	800	1000	1200
Optional standby systems - Motor loads or total system		A	260	400	600	800	1000	1200
Short-circuit withstand/closing and short-time current ratings		kA	See table A					
Contact transfer time I-II, II-I	Load interrupting time	ms	<50					
Operating transfer time I-II, II-I		ms	<500					
ATS current draw during transfer / time duration		A / ms	35 / <110	40 / <130				
Mechanical endurance	No. of operating cycles		6050	4050	3050	3050	3050	3050
Weight without accessories	2-pole switch	pounds	29.3	37.2	37.2			
	3-pole switch	pounds	33.9	42.1	42.1	68.6	68.6	68.6
	4-pole switch	pounds	38.6	47.2	47.2	81.1	81.1	81.1
Suitable for applications			Transformer - Transformer, Transformer - Generator[1)]					

[1)] Minimum generator size: 20kVA

ZTG series Coordinated Breaker Withstand and Close-on Ratings (WCR)

ATS Rating (A)	Max Voltage (V)	Max coordinated breaker WCR (A)	Breaker manufacturers
30 - 200	480	150 000	ABB, GE, Schneider, Eaton, Siemens
260	480	200 000	ABB, GE, Schneider, Eaton, Siemens
400	480	150 000	ABB, GE, Schneider, Eaton, Siemens
600	480	200 000	ABB, GE, Schneider, Eaton, Siemens
800 - 1200	480	100 000	ABB, GE, Schneider, Eaton, Siemens

[1)] For detailed WCR ratings by ATS and breaker type, please refer to document number 1SCC303015C0201, Zenith short circuit ratings

Technical data

Zenith ZTG series 30-1200 A, 200-480 Vac

ZTG series Testing and Standards Compliance

Description	Standard
UL, cUL listing	UL 1008
Conducted and radiated emissions	CISPR 11:2009, Class A
ESD immunity test	IEC/EN 61000-4-2 Class B
Radiated RF, electromagnetic field immunity test	IEC/EN 61000-4-3 10 V/m
Electrical fast, transient/burst immunity test	IEC/EN 61000-4-4
Surge immunity test	IEC/EN 61000-4-5 0.5 to 2 kV
Conducted immunity test	IEC/EN 61000-4-6
Voltage dips and interruption immunity	IEC/EN 61000-4-11
Harmonic voltage immunity test	IEC/EN 6100-4-13

ZTG series AL/CU UL Listed Solderless Screw-Type Terminals for External Power Connections

Model	Amperage	Cables per phase & neutral	Range of wire sizes	
ZTG ZTGD	30-60	1	12 - 2/0 AWG	(3 - 67 mm²)
	100-200	1	6 AWG - 300 kcmil	(14 - 152 mm²)
	260	1	2 AWG - 600 kcmil	(34 - 304 mm²)
	400	1 / 2	1x 4 AWG - 600 kcmil / 2x 1/0 – 250 kcmil	(1x 25 – 304 mm² / 2x 55 – 127 mm²)
	600	2	2 AWG - 600 kcmil	(34 - 304 mm²)
	800-1200	4	2 AWG - 600 kcmil	(34 - 304 mm²)

Auxiliary contacts

Technical data for auxiliary contacts according to IEC 60947-5-1, for OA1G_, OA3G_

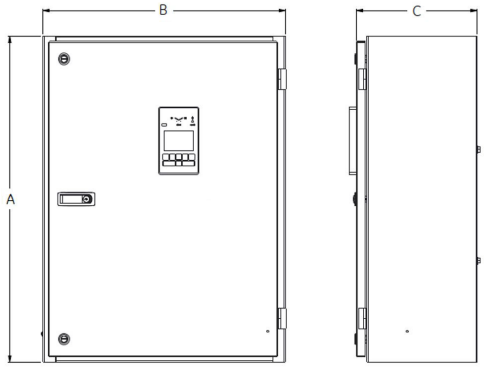
AC15		DC12			DC13	
Ue/[V]	Ie/[A]	Ue/[V]	Ie/[A]	P/[W]	Ie/[A]	P/[W]
230	6	24	10	240	2	50
400	4	72	4	290	0.8	60
415	4	125	2	250	0.55	70
690	2	250	0.55	140	0.27	70
		440	0.1	44		

Dimension drawings

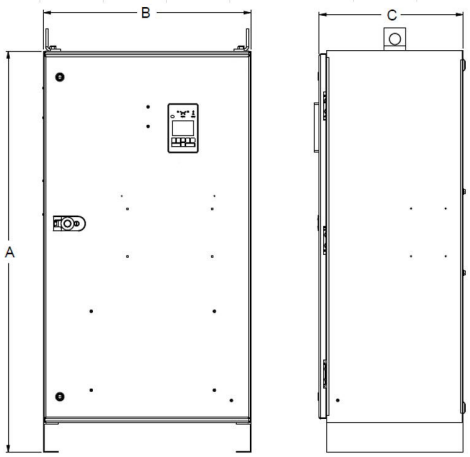
30 Zenith ZTG series 30-1200 A, 200-480 Vac

Dimension drawings

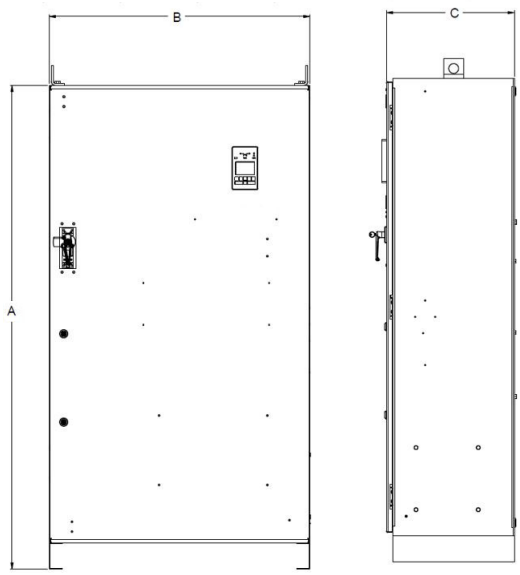
30-400A



600A



800-1200A



ZTG series dimensions and weights, UL Type 1 Enclosure

Model	ATS Rating (A)	Poles	Weight[1] lb (kg)	Dimensions,[2] in (mm) Height (A)	Width (B)	Depth (C)
ZTG ZTGD	30-200	2	89 (40)	32 (813)	24 (610)	12 (305)
		3	93 (42)	32 (813)	24 (610)	12 (305)
		4	98 (44)	32 (813)	24 (610)	12 (305)
	260	2	145 (66)	46 (1168)	24 (610)	14 (356)
		3	150 (68)	46 (1168)	24 (610)	14 (356)
		4	155 (70)	46 (1168)	24 (610)	14 (356)
	400	2	153 (69)	46 (1168)	24 (610)	14 (356)
		3	159 (72)	46 (1168)	24 (610)	14 (356)
		4	290 (131)	54 (1372)	28 (711)	19.5 (495)
	600	2	278 (126)	54 (1372)	28 (711)	19.5 (495)
		3	284 (129)	54 (1372)	28 (711)	19.5 (495)
		4	290 (131)	54 (1372)	28 (711)	19.5 (495)
	800-1200	3	482 (219)	74 (1880)	40 (1016)	19.5 (495)
		4	515 (234)	74 (1880)	40 (1016)	19.5 (495)

[1.] Special Enclosures Type 3R, 12, 4, and 4X weights are up to 22% greater than Type 1 Enclosures/
[2.] Special Enclosures Type 3R, 12, 4, and 4X dimensions differ. Consult Tech Support for details.
[3.] All dimensions and weights are approximate and subject to change without notice.
[4.] Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.