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AV ATS 02/25



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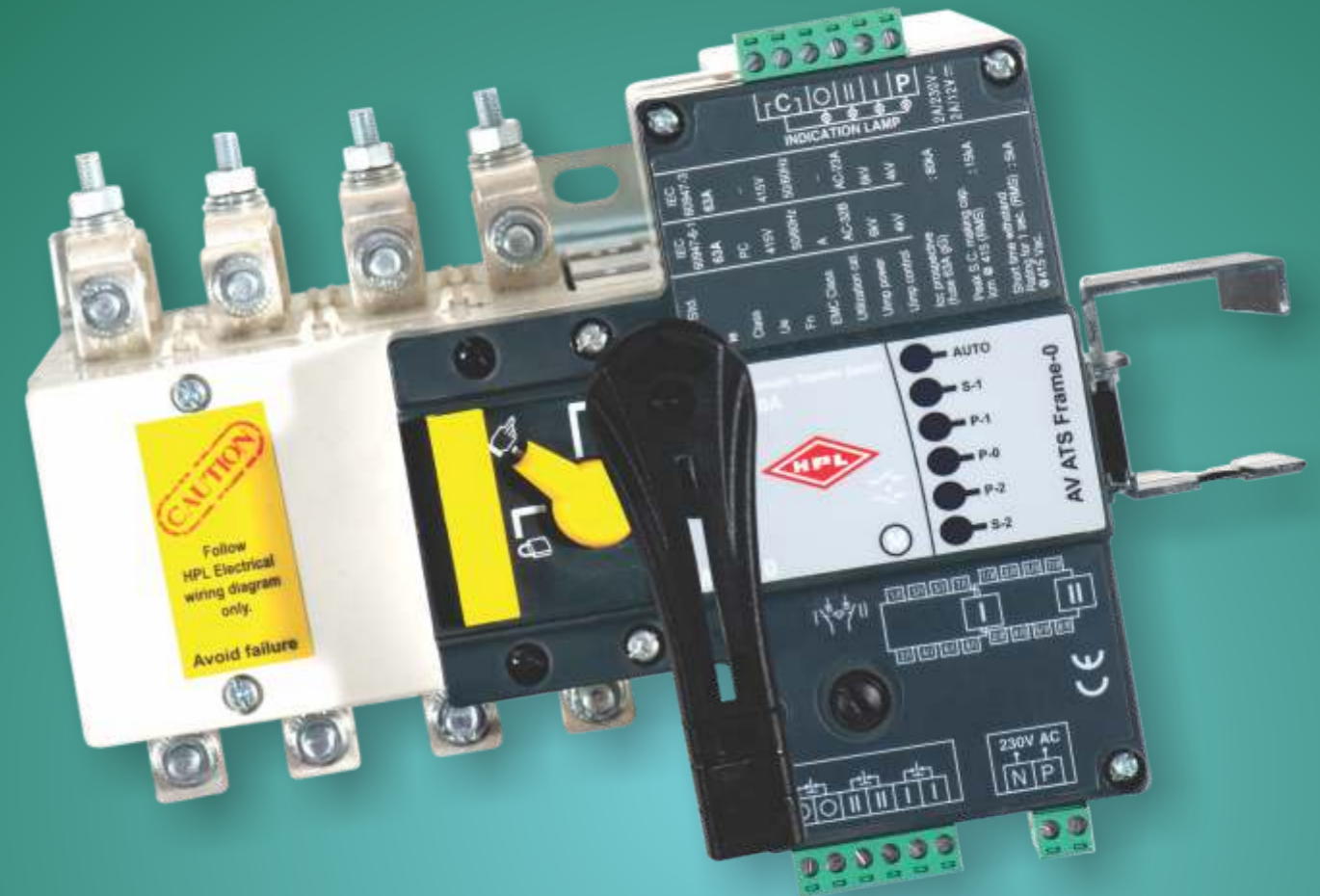
Customer Care No.: 18004190198
E-mail: customercare@hplindia.com
For online Complaint Registration:
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AV ATS

Advance Version Automatic load Transfer Switch

Changeover applications 40A-1600A



www.hplindia.com



AV ATS
Advance Version Automatic Load Transfer Switch
From 40A-1600A

Founded in 1956, the HPL Group is a major player in Indian Electrical Industry with commitment to the state of art technology, manufacturing world class products. HPL Group has been serving Indian Industry since last 55 years with time tested, reliable and well-proven products in the field of Switchgears, Protection Devices, Electronic Energy Meters, Energy Management Systems, Luminaries, Wire & Cable, LED Lighting, Modular Switches & Solar.

HPL Group has created niche for it self in Electrical Industry. Upgradation of existing technology and introduction of new products with innovative ideas and new technology are the main driving force here.

HPL brings to you, **AV ATS** range of True 4 pole motor operated changeover switches with positive break indication. They enable the on load transfer of two three-phase supplies via remote volt-free contacts, from either external automatic controllers, using pulse logic or push button station.

They are intended for use in low voltage power systems where interruption of the load supply is acceptable during transfer.

The solution for

- > Generator manufacturers.
- > Heating.
- > Air conditioning.
- > Ventilation.
- > Telecommunications.



Strong points

- > Extensive power supply range.
- > Safety and reliability.
- > Easy integration.
- > Simplified maintenance.
- > ATyS Sd Dual power supply.

Conformity to standards

- > IEC 60947-6-1
- > IEC 60947-3
- > CE Marked
- RoHS Compliant



Salient Features:

- A simple strong and reliable mechanism to provide a safe changeover of sources remotely.
- The only Switch with RoHS Compliance studded with protections like Phase Barriers, Source Separators, Terminal Cover.
- The only ATS with Protection against Arc.
- The FR molding material of the switch is having high thermal withstand capacity.
- AV ATS is True 4 Pole switch available in 4 frame sizes with AC 23A & AC-31B Load switching duty.
- AV ATS is available with 3 positions I-O-II Manual & Electrical Operations with non defeatable mechanical interlock.
- The AV ATS can be put in 'O' position both by manual operation through emergency handle & Electrical Operation through emergency switch.
- In the AV ATS the contacts opening / closing is within self extinguishing reinforced fiberglass body with arc chutes for quick & better arc extinguishing.
- For all versions, the quick make and quick break feature independent of the operating speed enables the switches to close and open circuits under the most severe conditions (e.g. highly inductive loads-AC 23A duty).
- The manual and electrical operation are interlocked and the manual operation is done with the handle provided with.
- The motor module is detachable & wide range of spares allow on site repair solutions.
- The Basic Controller & Higher Version Controller are available for advance auto switching with Communication facility.

Applications

- Healthcare
- Internet Data Centers
- Commercial Buildings
- Industrial Buildings
- Residential Buildings
- Telecom Central Office
- Process Manufacturing
- Distribution Power / Load Management
- HVAC
- Telecommunications BMS

AV ATS
Advance Version Automatic Load Transfer Switch
From 40A - 1600A

Installation

- Changeover switches are ideal choice for installation in A.M.F. panel or for remote operation.
- Connection on terminal is very easy, as they are large & accessible.

Conformity

IS/IEC: 60947-3 & IEC: 60947-6-1.
CE Marked.
RoHS Compliant.

Range

AC 23A 415VAC 4 Pole 40A to 1600A in 4 frame sizes.

General Characteristics

The ideal conception in HPL AV ATS changeover switch incorporate 3 stable positions (I-O-II) changeover ensuring isolation of 2 asynchronous power supply.

Positions:

- O - Circuit I and II Open (Neutral Position).
- I - Circuit -I close and circuit II open (transformer supply "ON" and generator supply "OFF").
- II - Circuit I open and Circuit II close (generator supply "ON" and transformer supply "OFF").

All positions are interlocked.

Functions

AV ATS CHANGEOVER SWITCHES 'operate as a Changeover giving three stable positions I-O-II and help in supply changeover from one source to another' remotely.

Design

AV ATS Changeover Switches are manufactured from AV Changeover moulded case on load switches. In case of control supply failure, Emergency Handle arrangement is provided for manual operation of switch in "OFF" position or selecting the supply. The switch frames are back to back. The whole range is motor operated.

Contact System

- Clearly apparent operation.
- High thermal and dynamic strength to withstand rated fused short circuit current level 80KA rms.
- Are rated for AC-23A utilisation category.

Factory Fitted Auxiliary Contacts

- Auxiliary contacts are of "CO" type, they provide position signal or prebreak control.
- Auxiliary contacts are pre-wired for more convenience during installations.
- Auxiliary contacts 1NO 1NC and 2NO 2NC are available.

Approvals & Test

- Time tested
- Customer Accepted
- CPRI Tested
- ISO 9001 Certified



Globally Accepted
exporting to over
25 countries





Characteristics according to IEC 60947-3 and IEC 60947-6-1

40 to 1600A

Specification	Current Rating											
	Frame-0					Frame-1			Frame-2		Frame-3	
Frame Sizes	40A	63A	80A	100A	125A	125A	160A	200A	250A	320A	400A	630A
Thermal Current (Ith) 40°C	40A	63A	80A	100A	125A	125A	160A	200A	250A	320A	400A	630A
Rated Insulation voltage Ui (Vac)	750	750	750	750	750	1000	1000	1000	1000	1000	1000	1000
Dielectric strength (Vac) 50 Hz 1 minute	4000	4000	4000	4000	4000	5000	5000	5000	5000	5000	8000	8000
Impulse voltage (KV)	6	6	6	6	6	6	6	8	8	8	12	12
Number of Poles	4	4	4	4	4	4	4	4	4	4	4	4

Rated Operational Current Ie (A) According to IS/IEC: 60947-3

415 Vac: AC 23A	40	63	80	100	125	125	160	200	250	320	400	630
500 Vac: AC 23A	40	55	55	55	55	100	130	160	200	250	315	315
260V dc: DC 21A	40	63	80	100	125	125	160	200	250	320	400	630
260V dc: DC 22A	40	63	80	100	125	125	160	200	250	320	400	500
260V dc: DC 23A	40	63	63	63	63	125	160	160	200	250	400	500
440V dc: DC 21A	40	63	80	100	125	125	160	200	250	320	400	500
440V dc: DC 22A	40	63	80	100	125	125	130	160	200	250	400	500
440V dc: DC 23A	40	63	63	63	63	125	130	160	200	250	400	500

Rated Current & Voltage of motor

Current / Voltage	0.25A/230VAC & 0.25A/12VDC	0.25A/230VAC & 0.25A/48VDC
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Overload Capacity

Short circuit current with fuses (kA RMS)	80	80	80	80	80	80	80	80	80	80	80	80
Associated Fuse Rating	40	63	80	100	125	125	160	200	250	315	400	630
Peak short circuit making capacity (kA RMS)	15	15	15	15	15	20	20	20	30	45	45	45
Admissible short time current 1 sec (kA RMS)	5	5	5	5	5	7	7	7	13	13	13	13

Making & Breaking Characteristics

Breaking capacity (A RMS) 415 Vac pf=0.35	320	504	640	800	1000	1000	1280	1600	2000	2520	3200	5040
Making capacity (A RMS) 415 Vac pf=0.35	400	630	800	1000	1250	1250	1600	2000	2500	3150	4000	6300

Endurance

Mechanical Life (No. of Operations)	10000	10000	10000	10000	10000	8000	8000	8000	8000	5000	5000	5000
Electrical Life (No. of Operations)	2500	2500	1500	1500	1500	1000	1000	1000	1000	1000	1000	1000
Operating Torque (N-m)	3.5	3.5	3.5	3.5	3.5	9.5	9.5	9.5	11	11	17	17

Switching Time

I - II or II - I (s)	0.5	0.5	0.5	0.5	0.5	0.75	0.75	0.75	1.3	1.3	1.3	1.3
I - 0 or II - 0 (s)	0.25	0.25	0.25	0.25	0.25	0.45	0.45	0.45	0.85	0.85	0.85	0.85
Duration of "electrical blackout" I - II (s)	0.25	0.25	0.25	0.25	0.25	0.3	0.3	0.3	0.6	0.6	0.6	0.6

Power Connection

(Details of Copper Conductors)

Min.Cu. Cable/Bus bar size (mm ²)	10	16	25	35	50	50	70	95	120	185	240	2x185
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(Details of Aluminum Conductors)

Min.Al. Cable/Bus bar size (mm ²)	16	25	35	50	70	70	95	150	185	240	300	640
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Weight (Kgs) 4P	2.8	2.8	2.8	2.8	2.8	7.5	8	8	10.5	10.5	19	22
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Characteristics according to IEC 60947-3 and IEC 60947-6-1

40 to 1600A

Specification	Current Rating			
	Frame Sizes			
Frame Sizes	800A	1000A	1250A	1600A
Thermal Current (Ith) 40°C	800A	1000A	1250A	1600A
Insulation voltage Ui (Vac)	1000	1000	1000	1000
Dielectric strength (Vac) 50 Hz 1 minute	8000	8000	10000	10000
Impulse voltage (KV)	12	12	12	12
Number of Poles	4	4	4	4

Rated Operational Current Ie (A) According to IS/IEC: 60947-3

415 Vac: AC 23A	800	1000	1000	1000
500 Vac: AC 23A	400	630	800	800
260V dc: DC 21A	800	1000	1250	1250
DC 22A	800	1000	1250	1250
DC 23A	800	1000	1250	1250
440V dc: DC 21A	800	1000	1250	1250
DC 22A	800	1000	1250	1250
DC 23A	800	1000	1250	1250

Rated Current & Voltage of motor

Current / Voltage	0.25A/230VAC & 0.25A/48VDC			
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Overload Capacity

Short circuit current with fuses (kA RMS)	80	80	80	80
Fuse Rating	800	1000	1250	2 x 800
Peak short circuit making capacity (kA RMS)	55	105	105	110
Admissible short time current 1 sec (kA RMS)	26	50	50	50

Making & Breaking Characteristics

Breaking capacity (A RMS) 415 Vac pf=0.35	6400	8000	8000	8000
Making capacity (A RMS) 415 Vac pf=0.35	8000	10000	10000	10000

Endurance

Mechanical Life (No. of Operations)	4000	4000	4000	3000
Electrical Life (No. of Operations)	500	500	500	500
Operating Torque (N-m)	40	40	40	40

Switching Time

I - II or II - I (s)	1.5	1.5	1.5	1.5
I - 0 or II - 0 (s)	0.86	0.86	0.86	0.86
Duration of "electrical blackout" I - II (s)	0.7	0.7	0.7	0.7

Power Connection

Min. Cu. Cable / Bus bar size (mm ²)	50x5x2	60x5x2	80x5x2	100x5x2
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Min. Al. Cable / Bus bar size (mm ²)	50x8x2	50x10x2	63x12x2	100x8x2
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Weight (Kgs) 4P	35.2	43.3	45.0	69.0
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Versions of ATS

- ATS without Controller
- ATS without Controller but with LED CME 310
- LED would indicate - availability of Source
 - Switch position I-0-II
 - Auto/ Manual (to be set by the operator)
 - Main source sensing
 - DG Stop Start
 - Main source return
 - No external wiring
 - Fire Linkage
- ATS with Controller CM 331
- ATS with Controller CM335
- ATS with Controller CME 360

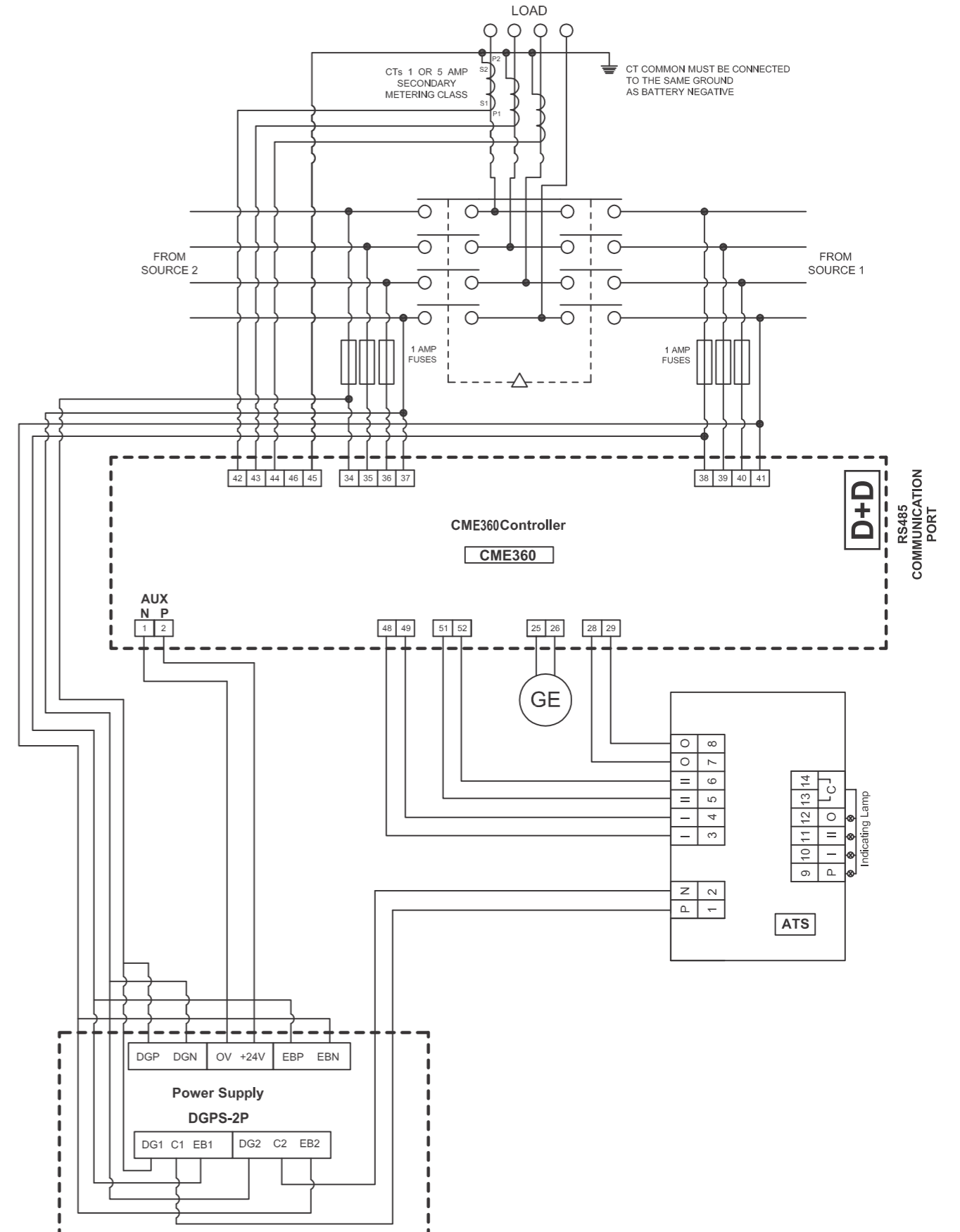


ATS with Controller CME 360
Key Features of CME 360

- Controller would control over - Over Voltage & Under Voltage
 - Over Frequency & Under Frequency
 - Over Current & Under Current
- Controller would measure – Energy Active & Reactive
- Controller would provide - Total ON hours of ATS
 - Individual ON hours of Preferred source & Emergency source
 - Power Factor of both sources
 - Power Factor of System
 - Maximum Demand – measurement at both sources
 - maximum current at fault date & time
 - Event Recording of last 10 Faults
 - Communication - RS485 MODBUS
 - optional Modem for EtherNet Communication
 - Operating voltage 24V DC with DGPS or 230V ac without DGPS
 - Remote operation through PLC/ SCADA/ EMS
 - Password Protection
 - DG Stop/ Start potential free contacts
 - Cloud/ IoT connected with Software
 - Phase loss switch to rest on '0' position
 - No CT required up to 5A
 - Option for CT over 5A current



ATS Frame 0 with CME 360 Controller Connection



Controllers

Advance Version Automatic
load Transfer Switch



CM 331 & CM335 is an Automatic Transfer Switch Controller. Controller will monitor the voltage and frequency of the incoming AC supply from two different sources, which could be from both generator or mains (utility), or a combination of both. The module will monitor S1 (Source 1) and in the event of failure will issue a start command to S2 (Source 2).

Once S2 is available and producing an output within limits, the module will control the transfer device and switch the load from S1 to S2. Once the S1 supply returns to within limits, the module will command a load return S1 and shut down S2.

Specification

CM 331 & CM 335

• CRANKING DROPOUTS

Able to survive 0 V for 50mS, proving supply was atleast 10V before dropout and supply recovers to 5V. This is achieved without the need for internal batteries. LED's and backlight will not be maintained during cranking.

• CRANKING DROPOUTS

168mA at 12V, 80mA a 24V in CM 331
1480mA at 12V, 30 mA at 24V in CM 335.

• MAXIMUM STANDBY CURRENT

39mA at 12V, 20 mA at 24V in CM 331
1126mA at 12V, 96 mA at 24V in CM 335.



Key Benefits of CM 335

- Configurable inputs(12).
- Configurable volt-free outputs (6).
- Configurable DC outputs (6).
- 4 Line back-lite LCD text display.
- Five key menu navigation.
- Front panel editing with PIN protection.
- LED & LCD alarm indication.
- Source 1 / Source 2 control.
- Start & Load Inhibit.
- Manual restore to S1.
- Configurable timers and alarms.
- Multiple date and time scheduler.
- Power monitoring (kW h, kV Ar, kV A h, kV Ar h).
- USB Connectivity.
- Backed up real time clock.
- Fully configurable via Controller.
- Configuration Suite PC software.
- Configurable display languages.
- User selectable Rs232 and Rs485 communications.
- Expansion compatible.



- SMS messaging (additional external modem required)
- Integral PLC editor.
- Modules can be integrated into buildings management systems (BMS).

Key Features of CM 331

- Configurable inputs(4)
- Configurable volt-free outputs (4)
- Configurable DC outputs (4)
- Icon or English text display
- LED indicator
- Front Panel / PC configuration
- Source 1 / Source 2 control
- Configurable Timers
- Start inhibit
- Load inhibit
- Manual restore to S1
- Automatic switch-over between supplies
- Single event scheduler
- 3-phase display



General Characteristics of ATS CM 331 & CM 335

- General Characteristics of ATS CM 331.
- Switches power when mains (utility) supply fails and switches back when mains (utility) supply returns.
- Allows flexible control of source inputs.
- Provides multiple installation options.
- Provides alternator breaker type control.
- Allows flexible control of source inputs.
- Ensures the smoothest possible transfer is achieved.
- Gives true on screen information for all 3-power phases.
- Provides complete user-friendly configuration and easy-to-use high-level system control & monitoring.

- General Characteristics of ATS CM 335.
- Allows flexible control of source inputs.
- Provides multiple installation options.
- Provides clear accurate power measurement information.
- Allows flexible control of source inputs.
- Ensures the smoothest possible transfer is achieved.
- Ensures additional applications are easily integrated into the system.
- Provides secure and simple off site monitoring. All ports are continuously active.
- Provides alternator breaker type control.
- Provides complete user-friendly configuration and easy-to-use high-level system control & monitoring.
- Provides access to historical alarms and operational status.

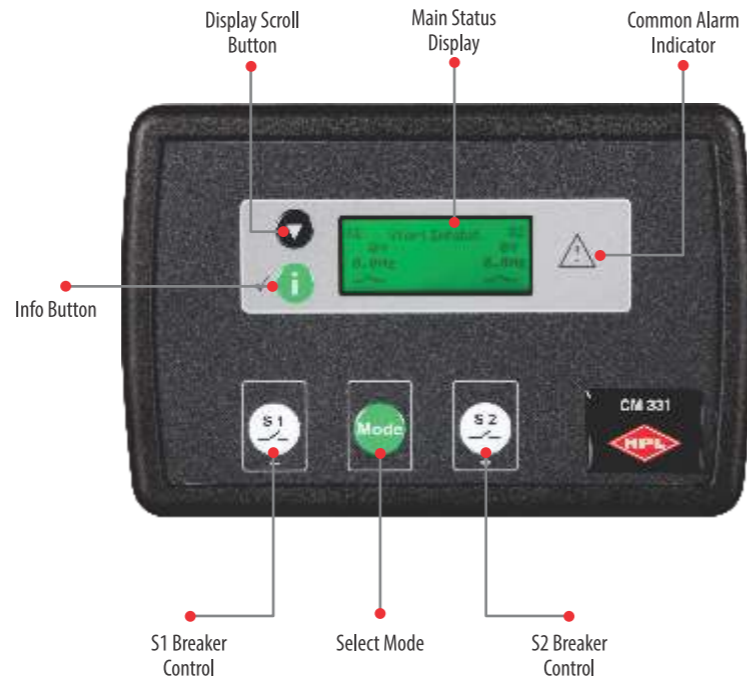
Functions of ATS CM 331 & CM 335

- **ATSCM 331**
- Automatic switch over between supplies.
- Manual restore to S1.
- Configurable inputs/outputs (4/8). 4 configurable volt-free outputs & 4 configurable DC outputs.
- Rotary ATS configuration.
- Source 1/source 2 control.
- 3-phase display.
- Panel editor/Configuration PC suite licence free.

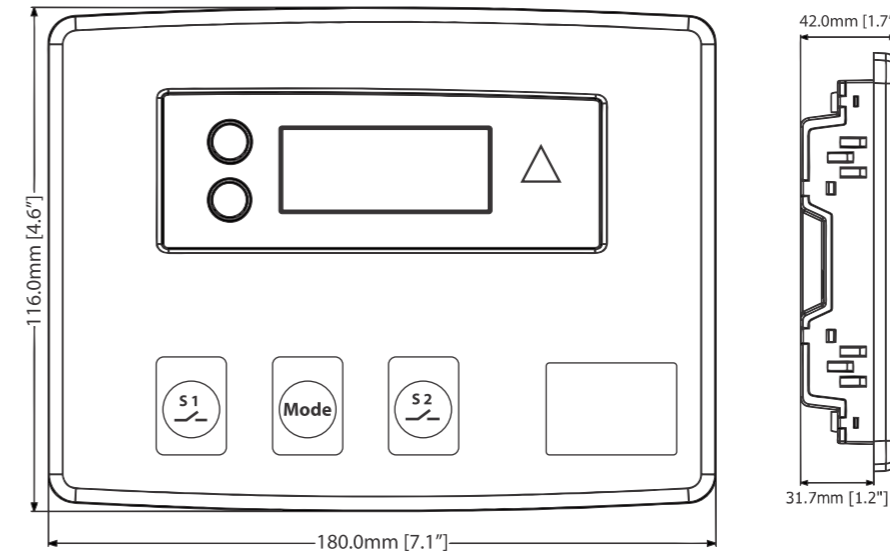
- **ATSCM 335**
- Automatic switch over between supplies.
- Manual restore to S1.
- Configurable inputs/outputs (12/12) 6 configurable volt-free outputs & 6 configurable DC outputs.
- Power & Energy Parameters monitoring (kWh, kVAh, kVAh, kVAh).
- Source 1/source 2 control.
- Integral PLC editor.
- RS232 & RS485 communications (user selectable).
- Rotary ATS configuration.
- Configurable event log (250).
- Panel editor/Configuration PC suite licence free.



Description of CM 331 Controller



Dimensions of CM 331 & CM 335



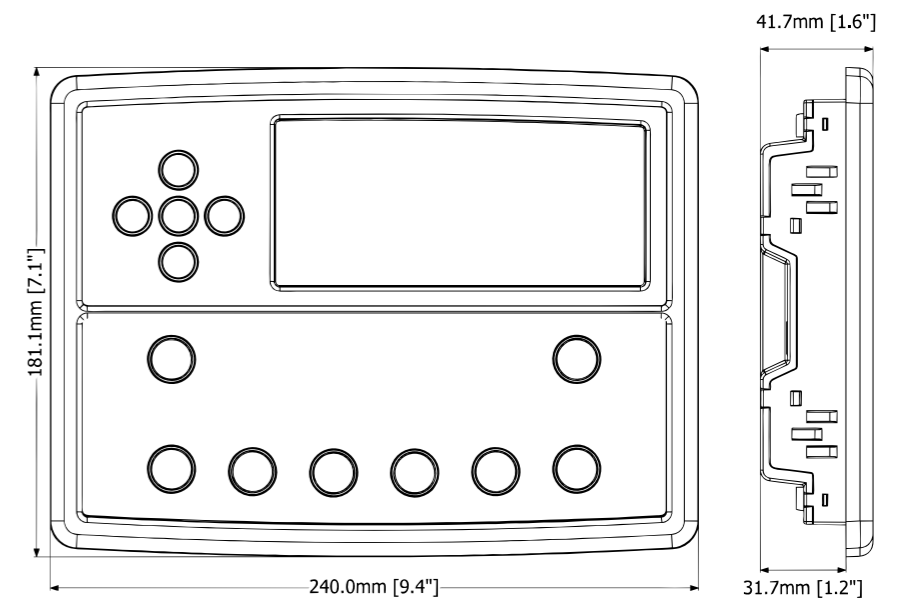
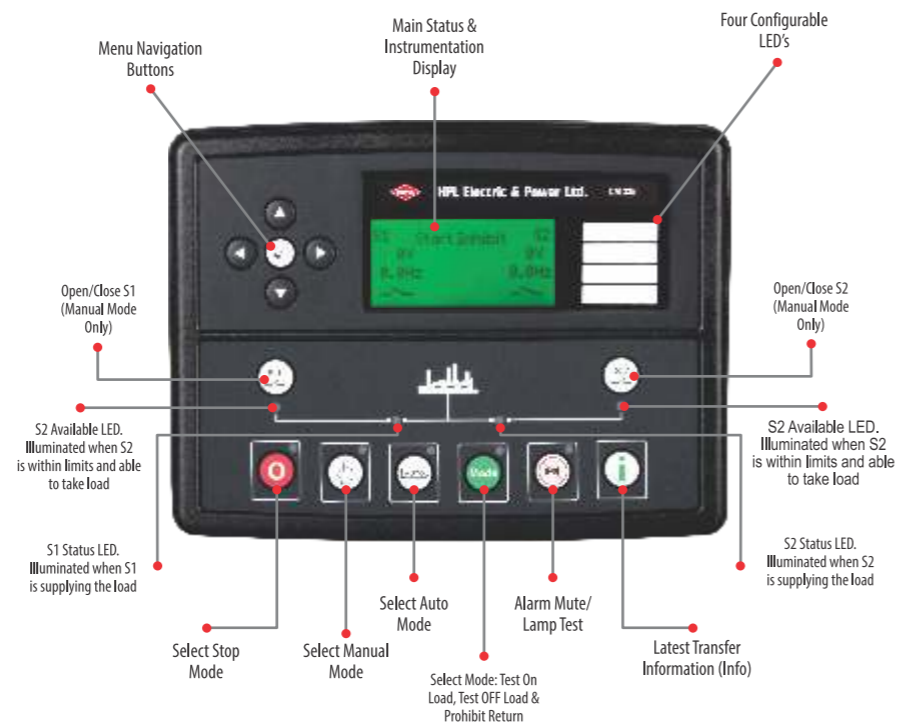
Fixing Clip fitted to Module



Fixing Clip

Dimensions	Panel Cutout	Weight
180mm x 116mm x 42mm (7.1" x 4.6" x 1.7")	154mm x 98mm (6" x 3.9")	400g (0.4kg)

Description of CM335 Controller



Fixing Clip fitted to Module



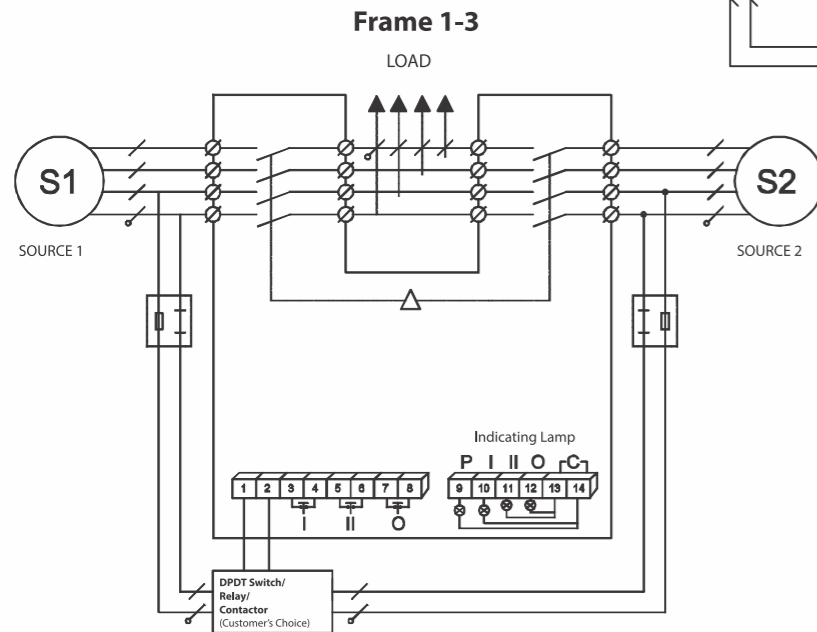
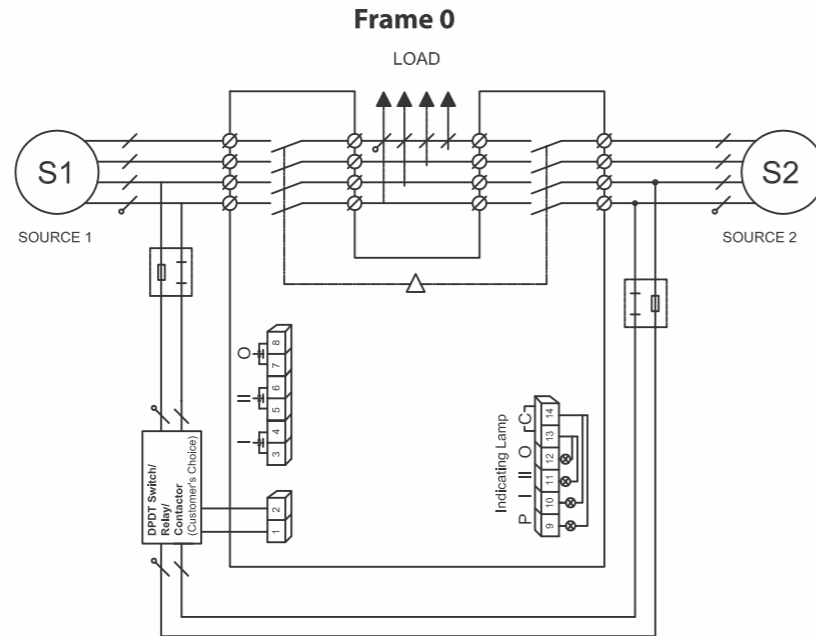
Fixing Clip

Dimensions	Panel Cutout	Weight
240mm x 181.1mm x 41.7mm (9.4" x 7.1" x 1.6")	220mm x 160mm (8.7" x 6.3")	700g (0.7kg)



ATS Switch Connections

- P = Power Indication
- I = Source - 1
- II = Source - 2
- O = Neutral
- C = Common



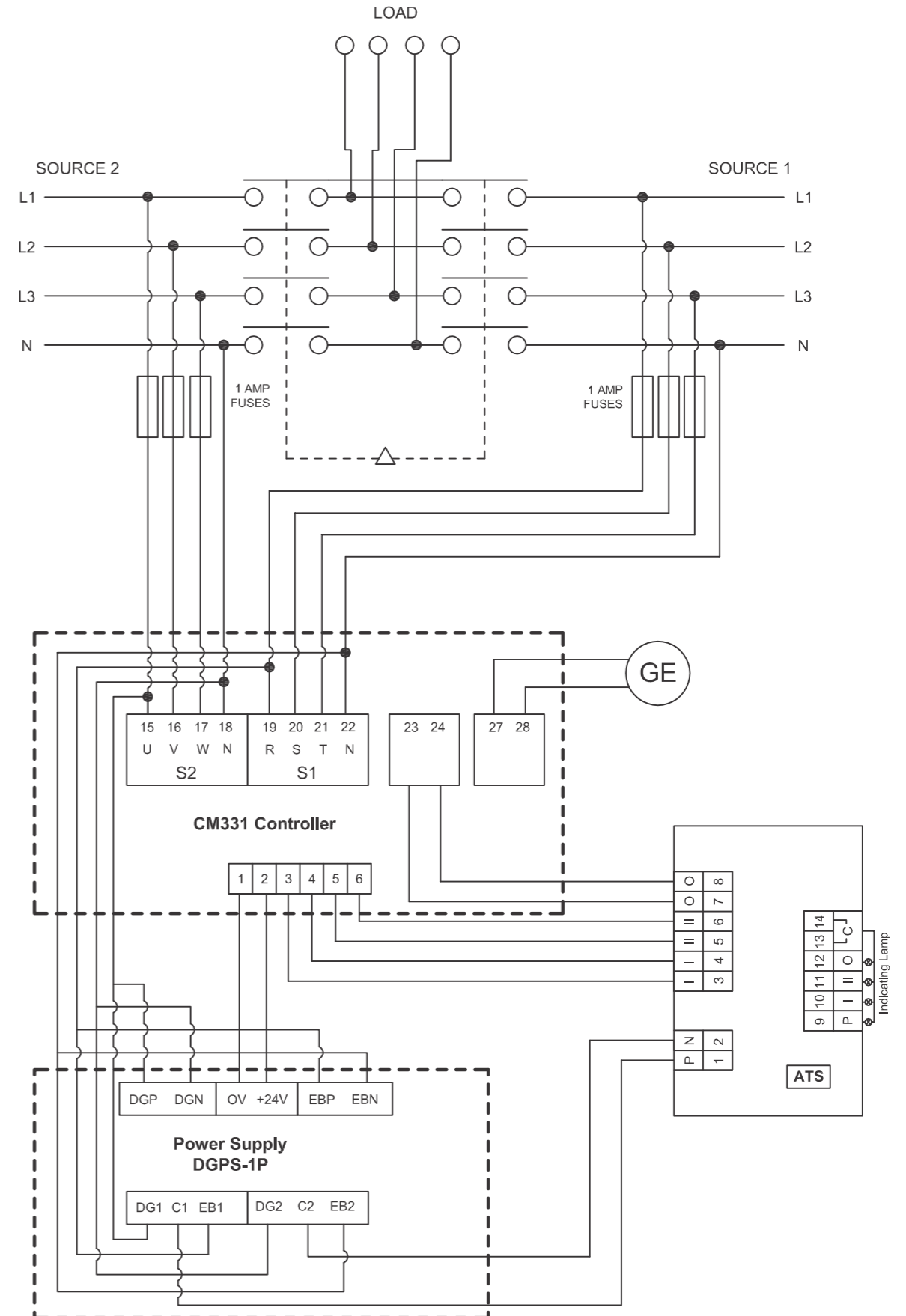
- P = Power Indication
- I = Source - 1
- II = Source - 2
- O = Neutral
- C = Common

DETAILS	TERMINAL No.	DESCRIPTION	PARAMETERS	CABLE SIZE REQD.
Power Supply	①	Power Supply	230 Vac ±20%	1.5 Sq.mm
	②			
Control	③	Position-I Command	 DO NOT CONNECT TO POWER SUPPLY	
	④	Position-II Command		
	⑤	Position-O Command		
	⑥	Position-O Command		
Signaling	⑦	Position-I Indicator	FR0-1A FR1-0.16A FR2-4-0.25A 230 Vac OUTPUT	
	⑧	Position-II Indicator		
	⑨ ~ ⑭	Position-I Indicator		
	⑩ ~ ⑭	Position-II Indicator		
	⑪ ~ ⑬	Position-II Indicator		
	⑬ ~ ⑭	Position-O Indicator		

*FUSE-FST-160mA (Part No.0034.3109.2.G)
 FUSE-FST-250mA (Part No.0034.3111.2.G)
 Shurter German/ Indian recommended.

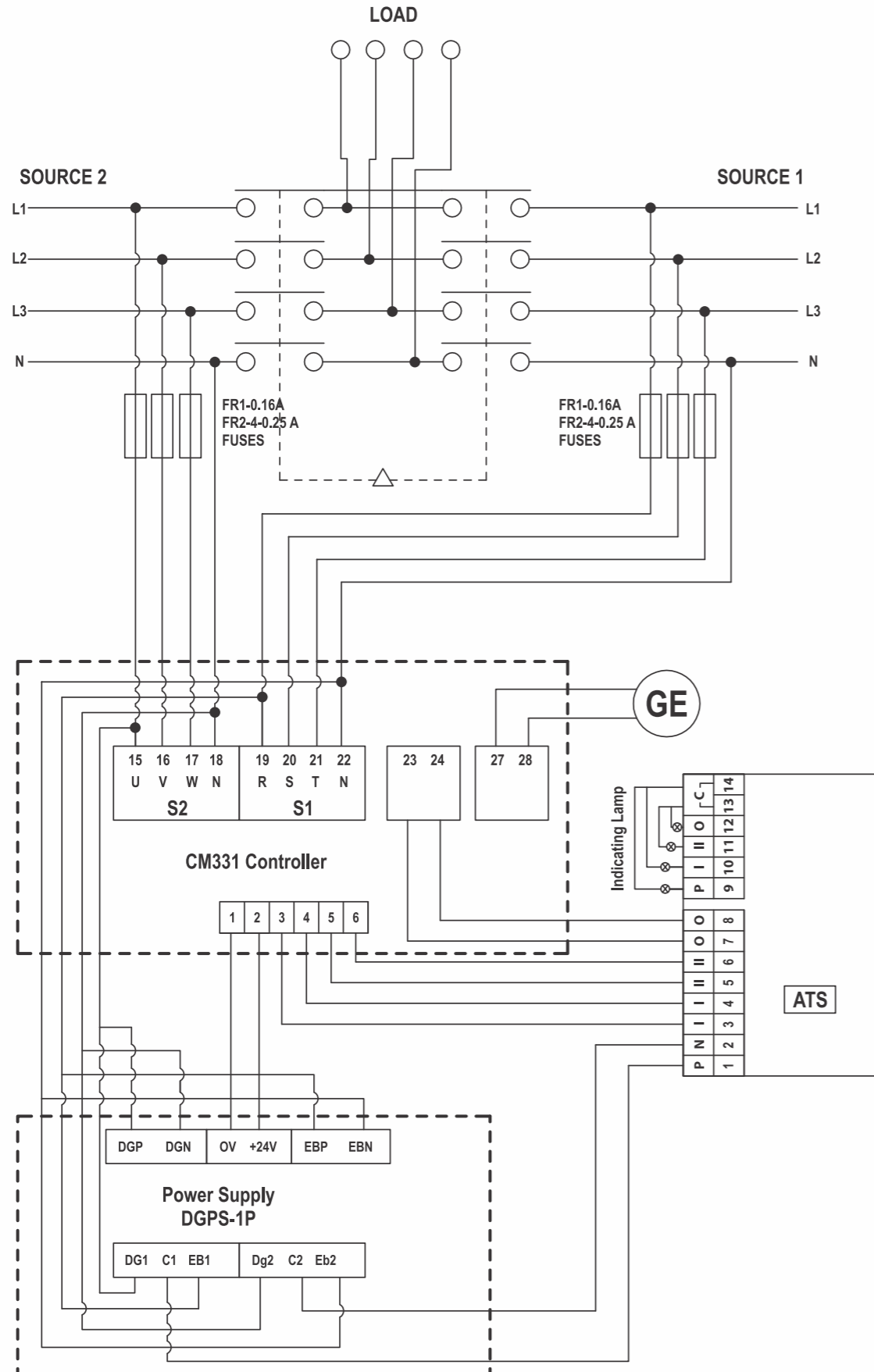


ATS Frame 0 with CM 331 Controller Connection

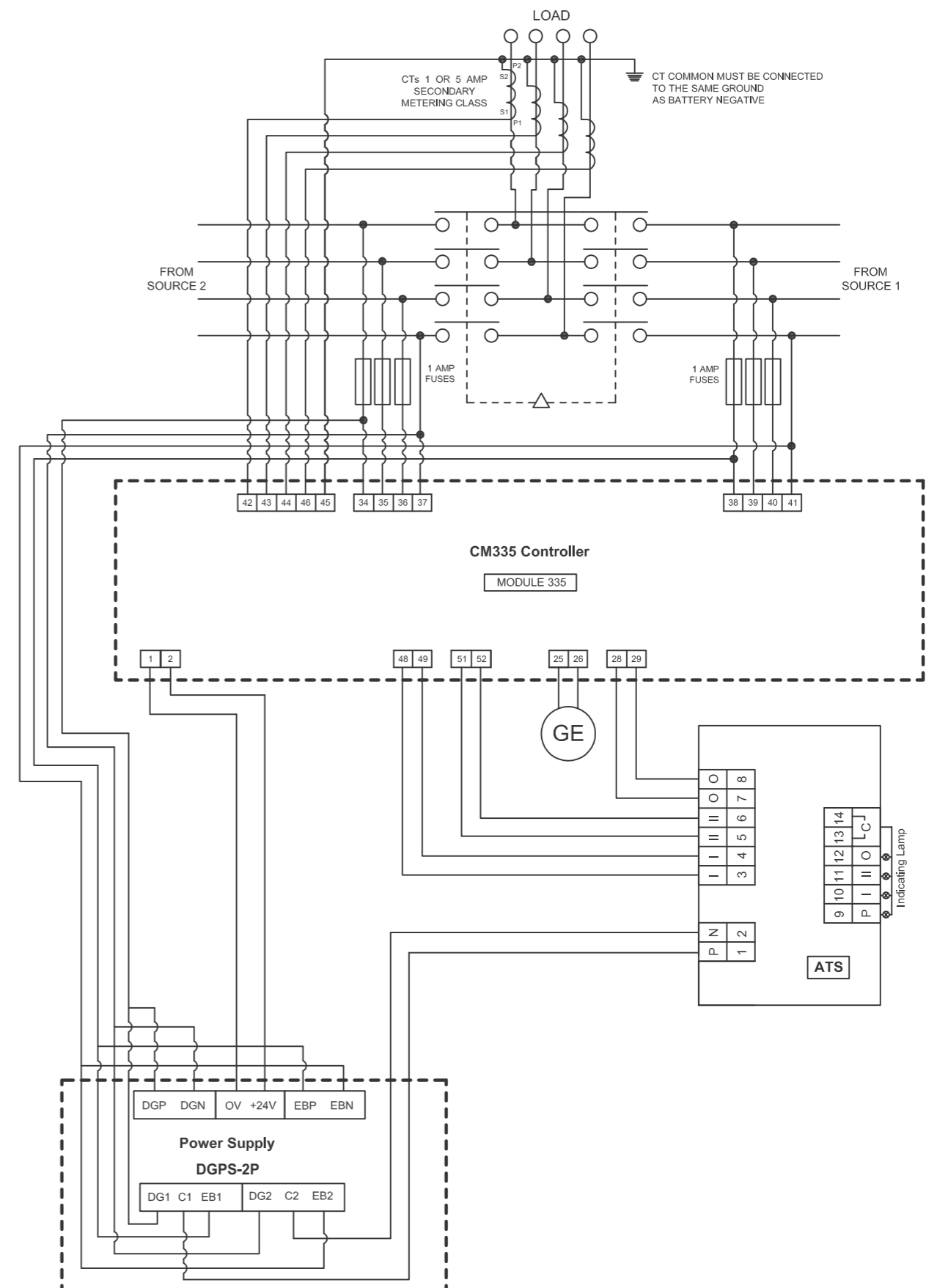




ATS Frame 1-4 with CM 331 Controller Connection



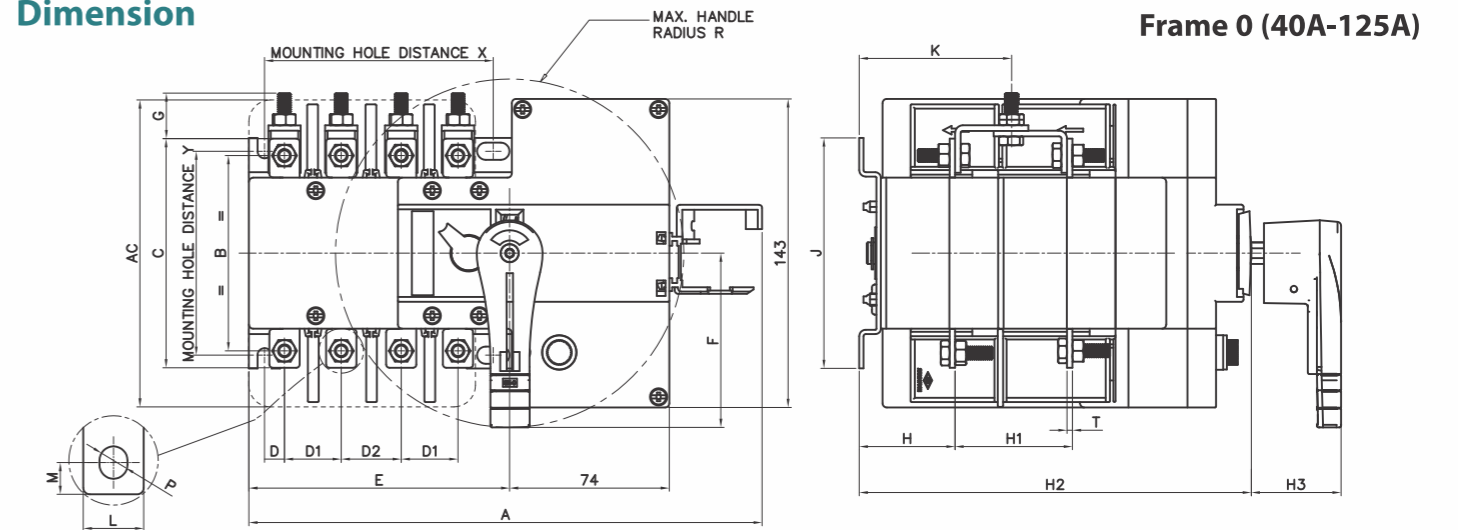
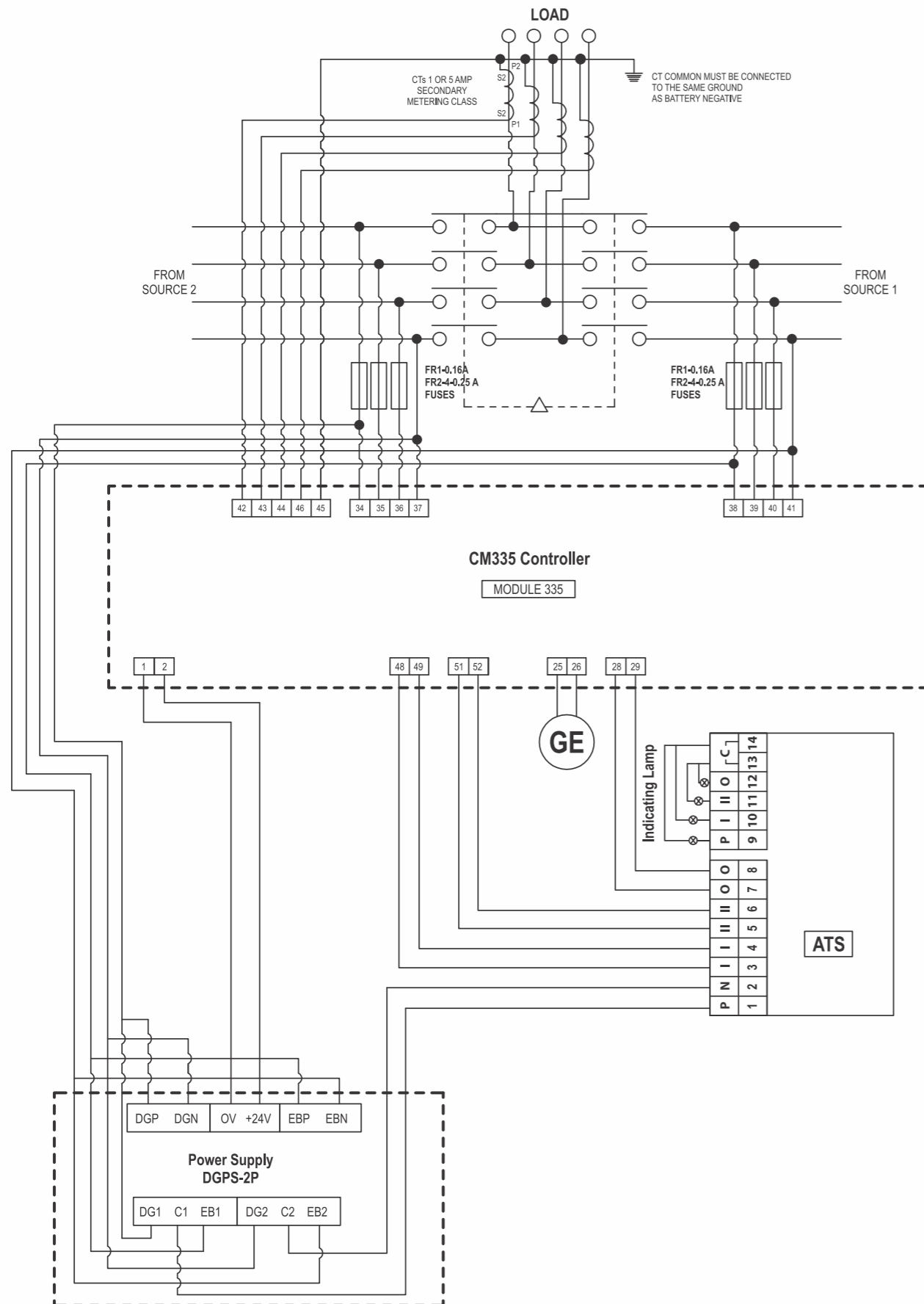
ATS Frame 0 with CM 335 Controller Connection





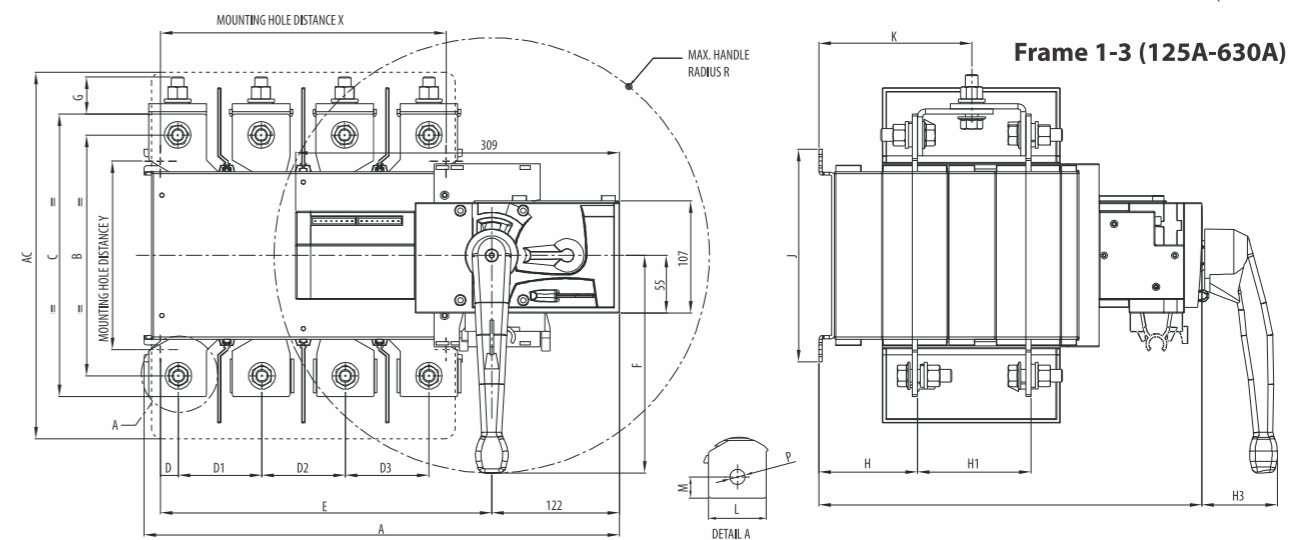
ATS Frame 1-4 with CM 335 Controller Connection

Dimension



Rating	Mounting Hole Dist.		A	B	C	D	D1	D2	E	F	G	H	H1	H2	H3	J	K	L	M	P	R	T	AC
	X	Y																					
40A	106	95	238	91	106	9	26	28	121	81	22	44	54	182	42	107	71	14	8	6.5	81	2.5	142
63A	106	95	238	91	106	9	26	28	121	81	22	44	54	182	42	107	71	14	8	6.5	81	2.5	142
80A	106	95	238	91	106	9	26	28	121	81	22	44	54	182	42	107	71	14	8	6.5	81	2.5	142
100A	106	95	238	91	106	9	28	29	121	81	22	44	54	182	42	107	71	15	8	6.5	81	2.5	142
125A	106	95	238	91	106	9	28	29	121	81	22	44	54	182	42	107	71	15	8	6.5	81	2.5	142

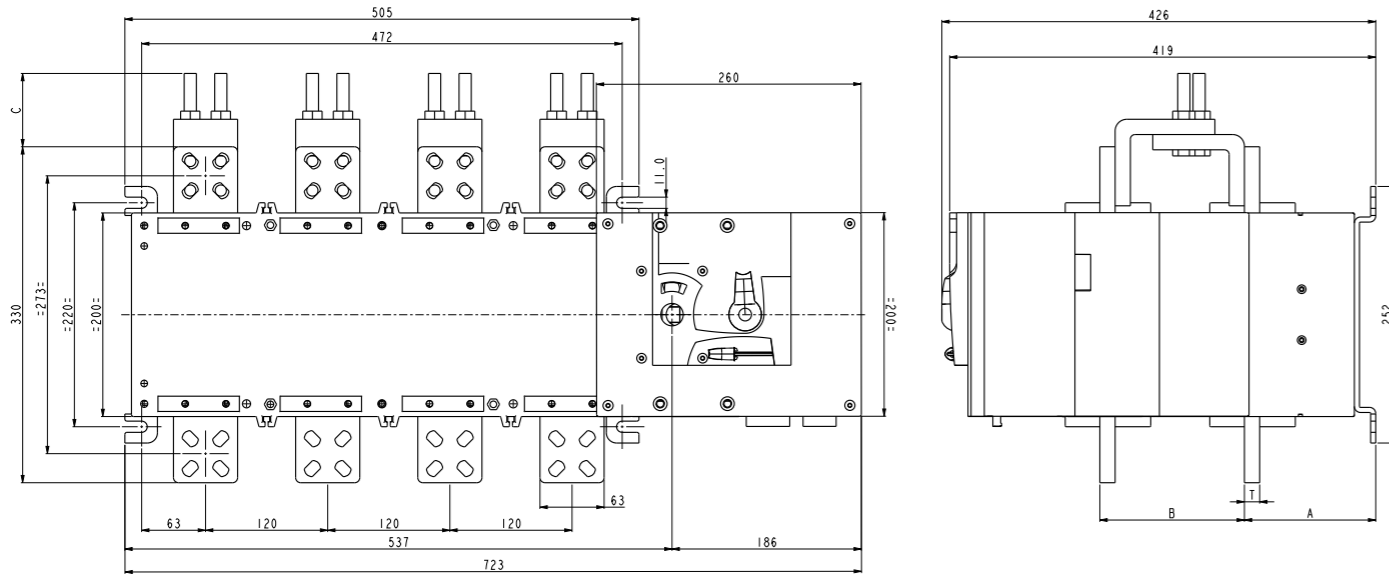
Note: All dimensions in mm (Tolerance ±5%)



Rating	Mounting Hole Dist.		A	B	C	D	D1	D2	E	F	G	H	H1	H2	H3	J	K	L	M	P	R	T	AC
	X	Y																					
125A	158	95	316.5	117	141	12	45	45	183	151	35	64	66	278	54	115	95	22	16	10.5	151	3	195
160&200A	158	95	316.5	123	155	8	48	45	183	151	35	64	66	278	54	115	95	25	16	10.5	151	4	195
250&320A	215	111	375.5	152	192	7	64.5	64.5	240	208	35	72.5	75.5	298	72	130	107.5	32	20	11	208	4.5	240
400A	273	180	454	206	240	27	73	73	317	208	40	94.5	108.5	366	72	203	146	40	20	14.5	208	5	350
630A	273	180	454	230	270	17	80	80	317	208	40	94.5	108.5	366	72	203	146	55	20	14.5	208	5	350

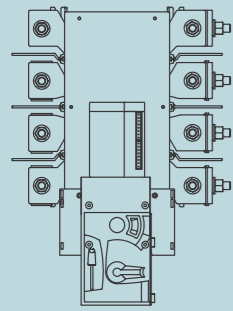
Note: All dimensions in mm (Tolerance ±5%)

AV ATS
 Advance Version Automatic
 Load Transfer Switch
 From 40A - 1600A

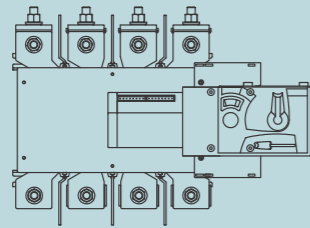


S. NO.	RATING	A	B	C	T
1	800A	124	137	63	6
2	1000A	124	137	63	6
3	1250A	125	138	64	7
4	1600A	129	142	72	15

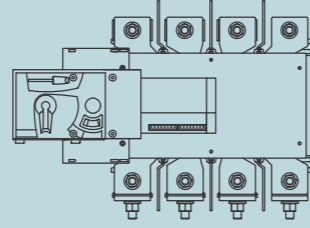
Mounting Orientation



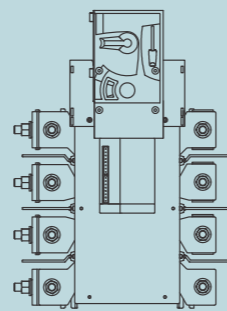
Possible



Recommended



Forbidden



Forbidden

Dimension Enclosure

Rating	L	W	Y	X	H
40A - 125A	350	400	398	350	300
125A - 200A	450	500	497	450	359
250A - 320A	550	600	598	550	399
400A - 630A	650	700	690	600	469

Note: All dimensions in mm (Tolerance $\pm 5\%$)

