12.3 Transfer Switches

Breaker-Based Designs

Standards and Certifications

They are listed under Underwriters Laboratories UL 1008 Standard for transfer switch equipment and are optionally available as suitable for emergency and standby systems as defined in NFPA 99 for health care facilities.

- UL 1008 listed
- CSA C22.2 No. 178 certified

Listed

Catalog Number Selection

Molded Case Transfer Switch

AT H I KD B 3 0200 E K C

Type
AT = Automatic
BI = Bypass isolation

Orientation
H = Horizontal
V = Vertical
C = Contactor

Logic
1 = ATC-100
3 = ATC-300
I = ATC-600

Frame Size (Amperes)
Molded case device ①
FD = 30–150
KD = 225–300
LD = 400
MD = 600 (three-pole only)
NB = 800–1000 ③

Switch ④
A = S1 (MCS) S2 (MCS)
B = S1 (MCB) S2 (MCB)
C = S1 (MCB) S2 (MCS)
D = S1 (MCS) S2 (MCB)
X = Fix mounted contactor

Number of Poles
2 = Two-pole
3 = Three-pole
4 = Four-pole ③

Amperes ②
0030 = 30A
0070 = 70A
0100 = 100A
0150 = 150A
0200 = 200A
0225 = 225A
0300 = 300A
0320 = 320A
0400 = 400A
0600 = 600A ③
0800 = 800A
1000 = 1000A
1200 = 1200A

Voltage
A = 120V, 60 Hz
B = 208V, 60 Hz
E = 600V, 60 Hz
G = 220V, 50/60 Hz
H = 380V, 50 Hz
K = 600V, 50 Hz
M = 230V, 50 Hz
N = 401V, 50 Hz
O = 415V, 50 Hz
W = 240V, 60 Hz
X = 480V, 60 Hz
Z = 365V, 50 Hz

Enclosure
K = Open
S = NEMA 1
J = NEMA 12
R = NEMA 3R
L = NEMA 4 ⑤
D = NEMA 4X ⑤

Certification
U = UL listed
R = UL recognized
X = No listing

Notes

① HFD = 200 and 225A, HLD = 600A, HMD = 800A for 240/120 Vac single-phase, three-wire and 208Y/120 Vac three-phase, four-wire systems only.
② The contactor-based transfer switch is currently available in 100, 200, 320, 400 and 600A only. Contact the factory for availability on the 800, 1000 and 1200A switch.
③ Four-pole 600A will use an NB breaker.
④ MCB = Molded Case Breaker, MCS = Molded Case Switch.
⑤ NEMA 4 and NEMA 4X requires an ATC-600 controller.

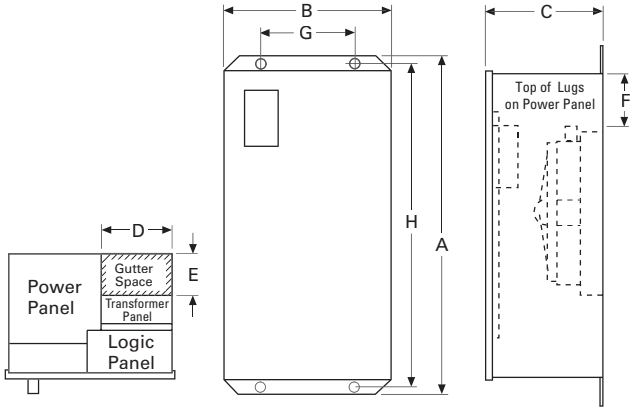
12.3 Transfer Switches

Breaker-Based Designs

Dimensions

Approximate Dimensions in Inches (mm)

Dimension Views



Top View **Front View** **Side View**

Breaker-Based and Molded Case Transfer Switches

Switch Rating Amperes	Switch Type	Enclosure A Height	B Width	C Depth	Gutter Space D Width	E Depth	Bolt Pattern G Horizontal	H Vertical	Standard Terminals ① Line Side (Normal Load and Standby Source) Connection	Neutral Connection	Weight Lbs (kg)
Molded Case											
30–100	HFD ②	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	10.75 (273.0)	46.44 (1180.0)	—	—	232 (105)
150–225	HFD ②	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	10.75 (273.0)	46.44 (1180.0)	—	—	232 (105)
30–100	HFD ③	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	10.75 (273.0)	46.44 (1180.0)	—	—	240 (190)
150	HFD ③	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	10.75 (273.0)	46.44 (1180.0)	—	—	240 (190)
150–225	HFD ②	35.61 (904.0)	20.06 (509.5)	13.34 (339.0)	8.00 (203.2)	4.00 (101.6)	10.75 (273.0)	34.31 (904.0)	—	—	150 (68)
150–225	HKD	56.00 (1422.4)	20.81 (528.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	11.00 (279.4)	45.50 (1155.7)	—	—	305 (134)
300	HKD	53.00 (1346.2)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	11.00 (279.4)	53.50 (1358.9)	—	—	295 (134)
400	HLD	53.00 (1346.0)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	16.00 (406.4)	51.50 (1308.0)	—	—	425 (193)
600	HLD ②	64.00 (1625.6)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	16.00 (406.4)	62.50 (1588.0)	—	—	475 (214)
600	HMDL	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	16.00 (406.4)	75.15 (1908.8)	—	—	480 (218)
800	HMDL ②	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	16.00 (406.4)	75.15 (1908.8)	—	—	510 (232)
800–1000	HNB	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	16.00 (406.4)	75.15 (1908.8)	—	—	540 (245)

Notes

① Suitable with copper only.
② 240/120V, single-phase, three-wire or 208V, three-phase, four-wire systems only.
③ With multi-tap voltage selection panel.

EATON ELECTRICAL
ATS TRANSFER SWITCH

PAGE	DESCRIPTION	DRAWING CHANGES ×
1	INDEX/BIDMAN FILE	A
2	ATS/DIMENSIONAL LAYOUTS	A
3	ATC-600 SCHEMATIC DIAGRAM	A
4	TRANSFORMER WIRING DIAGRAM	A

REV#	PAGES	REVISION REMARKS
A	ALL	ISSUED FOR APPROVAL

SPECIAL NOTES

OPEN STYLE
2 UNITS

AMPERES	200
VOLTAGE	600/347
POLES	3
WIRES	4
BREAKER TYPE	B

IMPORTANT

IT IS THE PURCHASERS RESPONDSIBILITY TO OBTAIN ANY NECESSARY LOCAL AND/OR PROVINCIAL INSPECTION AUTHORITY APPROVAL. WHEN RETURNING DRAWINGS THE PURCHASER SHOULD CONFIRM THAT SUCH APPROVAL HAS BEEN OBTAINED OR IS NOT REQUIRED.

2 Automatic Transfer Switches
Catalog Number ATHIKDB30200EKC,
Standard Features: 1a, 2a, 3a, 4a, 5j, 5k, 6b, 7a, 8c, 8d, 12c, 12d, 12g, 12h, 15a, 15b, 23j, 26d, 26j, 26k, 32a, 36
Optional Features: 5h, 6h, 9d, 12cc, 12dd, 12gg, 12hh, 12l, 12m, 14g, 14h, 16b, 26h, 35b, 37, 80a
Open Transition, 600/347v, 60hz, 3 Phase, 4 Wire, 3 Poles
Controller Type: ATC-600
Continuous Current: 200 Amps
Withstand 42 KA
Normal Source Terminals: (2) 2/0-250 OR (1) 2/0-500 CU/AL
Emergency Source Terminals: (2) 2/0-250 OR (1) 2/0-500 CU/AL
Load Side Source Terminals: (1) 3/0-750MCM AL/CU OR (2) 3/0-250MCM
Neutral Source Terminals: (3) 3/0-750MCM AL/CU OR (6) 3/0-250MCM

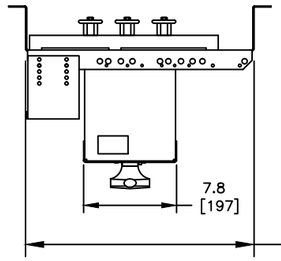
ATS Logic Instruction IBATS-1005.PDF
ATS Logic Technical Data TD15A05TE.PDF
ATHIKD 3 Poles 200 Amps
AT No Enclosure
1a. Time Delay Normal to Emergency Adj. 0-1800 sec
2a. Time Delay Engine Start Adj. 0-120 sec
3a. Time Delay Emergency to Normal Adj. 0-1800 sec
4a. Time Delay Engine Cool-off Adj. 0-1800 sec
5h. Emergency (S2) Sensing Phase Reversal
5j. Emergency (S2) Sensing All Phase Under Voltage/Under Freq
5k. Emergency (S2) Sensing All Phase Over Voltage/Over Freq
6b. Test Pushbutton
6h. Maintained 4 Position Test Switch
7a. Time Delay Engine Fail Adj. 0-6 sec
8c. Time Delay Bypass Emergency to Normal
8d. Time Delay Bypass Normal to Emergency
9d. Keyed Maintenance Selector Switch Isolates Elec. Op.
12c. LED Indicator Normal Position
12d. LED Indicator Light Emergency Position
12g. LED Indicator Normal Source Available
12h. LED Indicator Emergency Source Available
12cc. Source1 Connected (30mm Pilot Light)
12dd. Source2 Connected (30mm Pilot Light)
12gg. Source1 Available (30mm Pilot Light)
12hh. Source2 Available (30mm Pilot Light)
14g. Source1 Available (2NO/2NC Form C)
14h. Source2 Available (2NO/2NC Form C)
15a. Source1 Connected (1NO/1NC Form C)
15b. Source2 Connected (1NO/1NC Form C)
16b. 80% Overcurrent Protection Normal. 200A Trip Emerg. 200A Trip
Normal Trip Amps - 200 Emergency Trip Amps - 200
23j. Auto Plant Exerciser Timer Select Load /No Load w/Fail Safe
26d. Go To Source 2
26h. Normal (S1) Sensing Phase Reversal
26j. Normal (S1) Sensing All Phase Under-voltage/Under-frequency
26k. Normal (S1) Sensing All Phase Over-voltage/Over-frequency
32a. Time Delay Neutral Adjustable 0 - 120 seconds
35b. Pre-transfer Signal Contacts (2NO/2NC)
36. Emergency Load Shed from Remote
37. Go to "Isolated" Position (Not SE Rated)
80a. Emergency (S2) Inhibit Contact
Bus material - Silver Plated Copper
Special BAR relay
Special Remote Local switch
Special Local Test switch
Special OR relay
Special RO pilot light
Special breaker tripped pilot lights
Comments to Spec 16225. Item 2.10.3.4. All power switching devices and control components are accessible from the front of the ATS.
Item 2.10.5. Current transformers are not shown on schematic or single line diagrams and are not included.
Standard Eaton ATS wiring colours will be provided.

REVISION 01

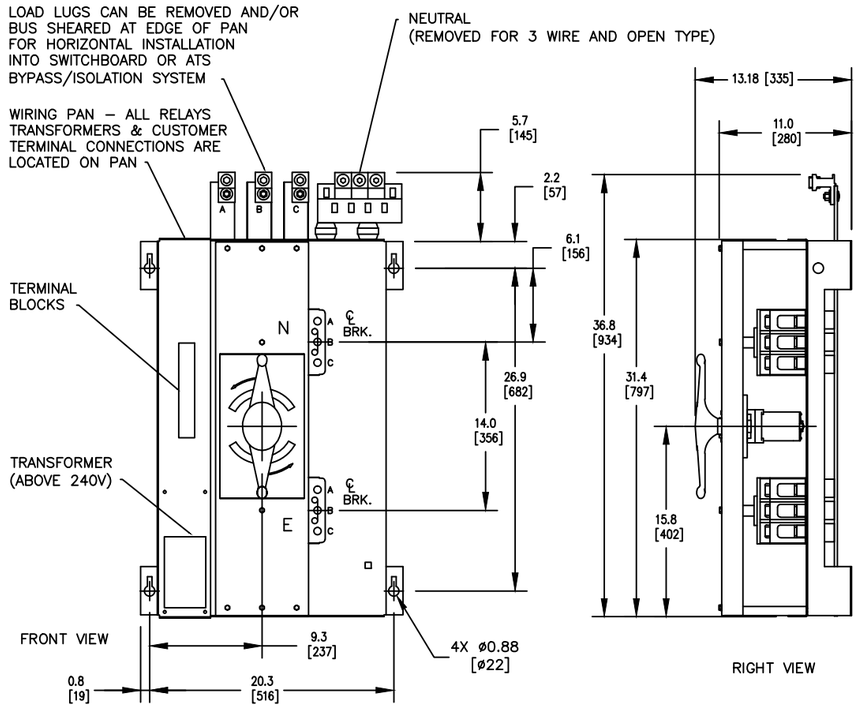
Issued For Approval
The information on this document is intended to convey and document that the contract specification has been accurately interpreted and may not be accurate for construction purposes.

DFTR	DATE	EATON | Cutler-Hammer	MILTON, ON
TR	10/20/11		
APPD	DATE	TITLE INDEX/BIDMAN FILE KING PARK WS	
.	.		
FILENAME ATS		TYPE	ATS

FEDERAL ID NO.	PRODUCT CODE	REVISION	DWG SIZE	G.O.	DWG	SHEET
88725	PG 230	1	B	CSOT029247	23E2869	1 OF 4



VOLTS (AC)	240V	480V	600V
AMPS (MAX)	400A	300A	300A



WIRE SIZE FOR STANDARD TERMINALS PER PHASE				
AMP. RATING	SWITCHING DEVICE	LINE	LOAD	NEUTRAL
150, 200, 225, 250	K	(1) #3–350 MCM AL/CU	(1) 3/0–750 MCM AL/CU OR (2) 3/0–250MCM	(3) 3/0–750 MCM AL/CU OR (6) 3/0–250MCM
300,350 400 (240V MAX.) 400 (TYPE B)	K	(1) 2/0–500 MCM AL/CU OR (2) 2/0–250MCM	(1) 3/0–750 MCM AL/CU OR (2) 3/0–250MCM	(3) 3/0–750 MCM AL/CU OR (6) 3/0–250MCM

NO ENCLOSURE

REVISION					
01					

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DFTR	DATE	APPD	DATE	FILENAME
TR	10/20/11	.	.	ATS

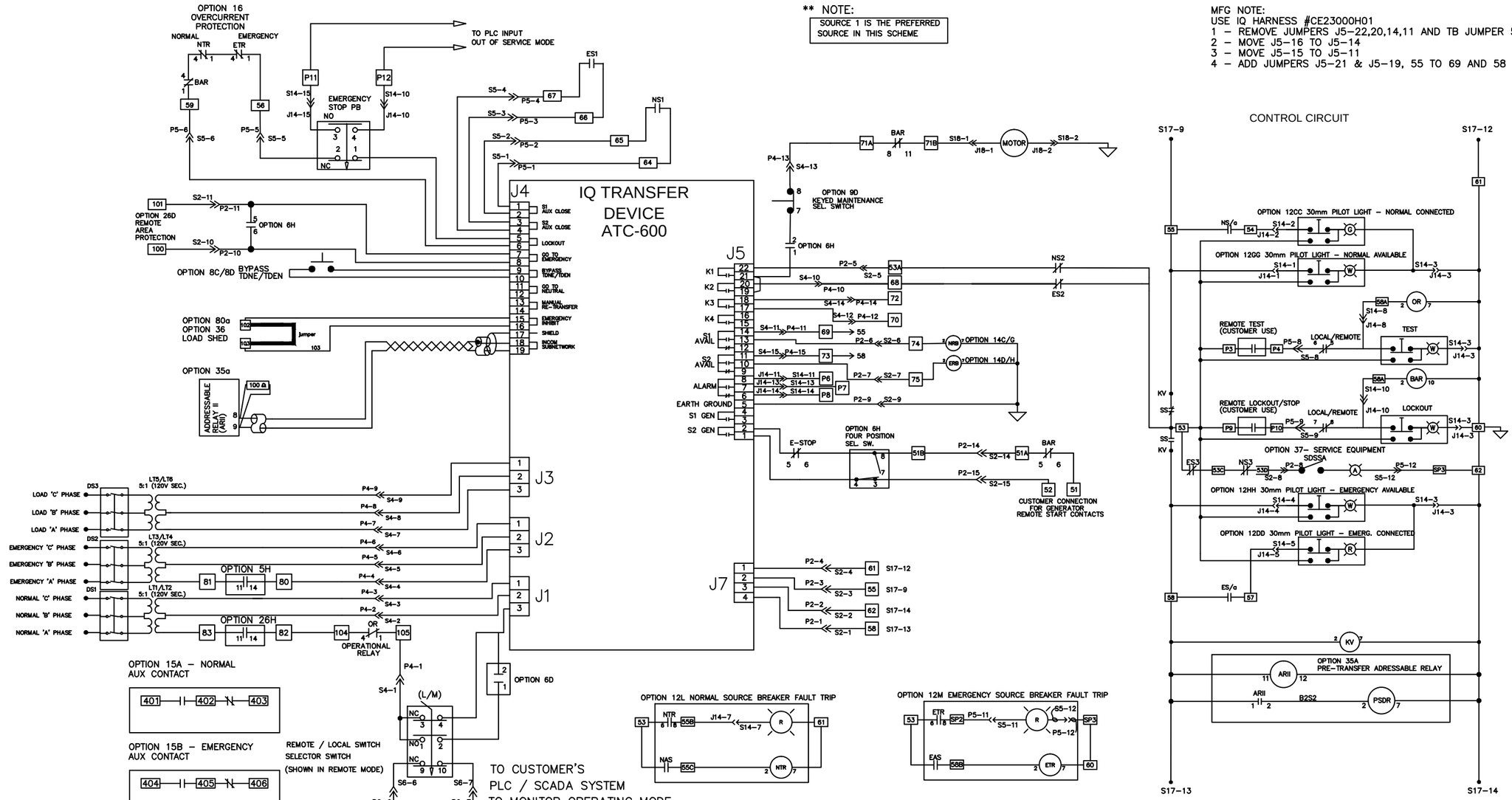
FEDERAL ID NO.	PRODUCT CODE	REVISION	DWG SIZE
88725	PG 230	1	B

EATON | Cutler-Hammer MILTON, ON

TITLE ATS/DIMENSIONAL LAYOUT
KING PARK WS

TYPE ATS

G.O.	DWG	SHEET
CSOT029247	23E2869	2 OF 4



** NOTE:
SOURCE 1 IS THE PREFERRED SOURCE IN THIS SCHEME

MFG NOTE:
USE IQ HARNESS #CE23000H01
1 – REMOVE JUMPERS J5–22,20,14,11 AND TB JUMPER 53,53A
2 – MOVE J5–16 TO J5–14
3 – MOVE J5–15 TO J5–11
4 – ADD JUMPERS J5–21 & J5–19, 55 TO 69 AND 58 TO 73

OPTION 6H – 3A16905H08
4 POS. SELECTOR SWITCH – LOGIC

CONTACT	TEST	AUTO	MAN	ENG. START
1 – 2	X	X		X
3 – 4	X	X		
5 – 6	X			
7 – 8				X
9 – 10		X		
11 – 12		X	X	X

"X" = CONTACT CLOSED

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01	

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DFTR	DATE
TR	10/20/11
APPD	DATE
.	.
FILENAME	
ATS	

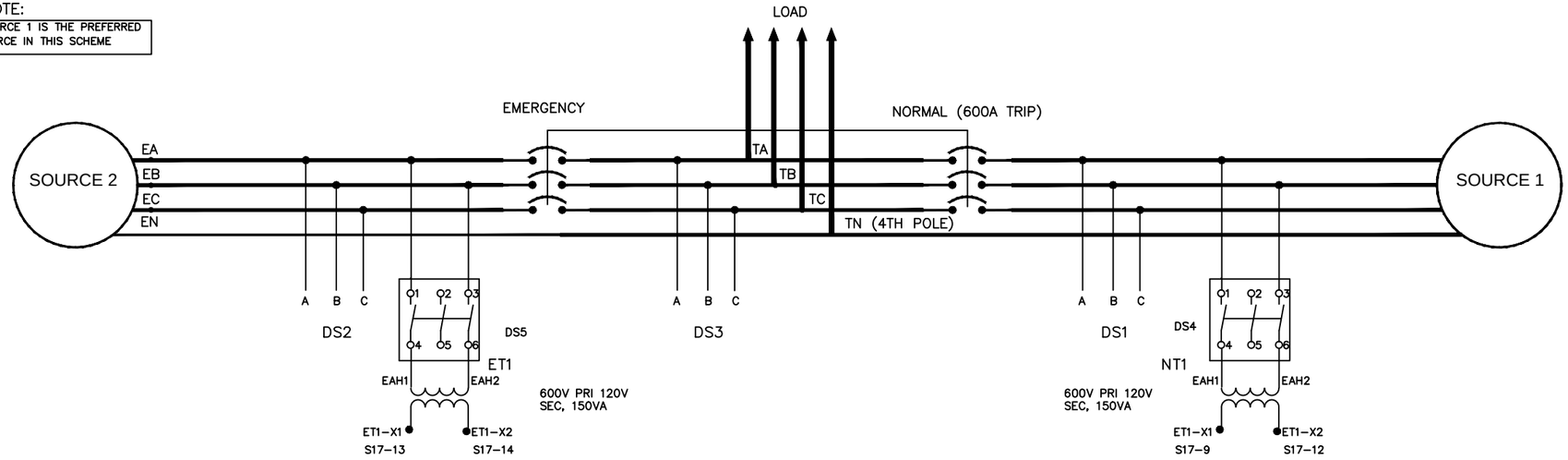
EATON | Cutler-Hammer MILTON, ON

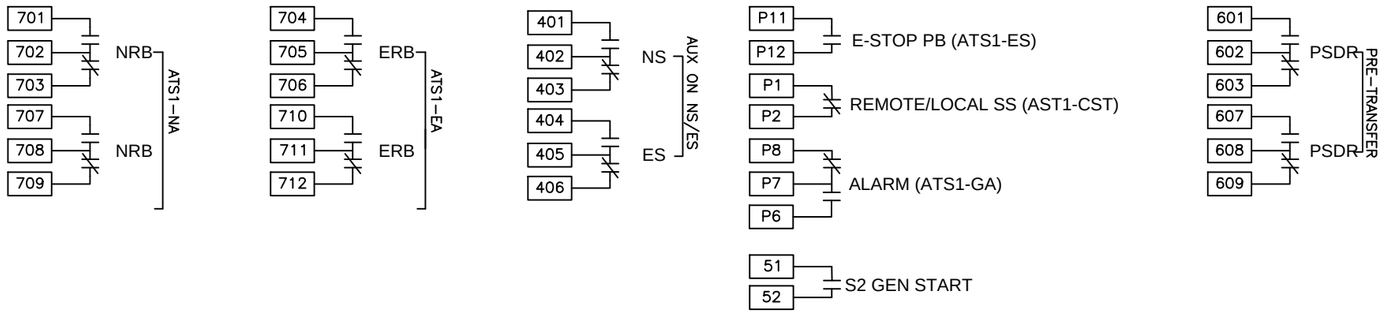
TITLE: ATC–600 SCHEMATIC DIAGRAM
KING PARK WS

TYPE: ATS

FEDERAL ID NO.	PRODUCT CODE	REVISION	DWG SIZE	G.O.	DWG	SHEET
88725	PG 230	1	B	CSOT029247	23E2869	3 OF 4

** NOTE:
SOURCE 1 IS THE PREFERRED SOURCE IN THIS SCHEME





LEGEND & NOTES

- COMMON REFERENCE
- FEMALE CONNECTION
- FIXED MOUNT SWITCHING DEVICE
- INDICATOR LIGHT
- MALE CONNECTION MECHANICAL INTERLOCK
- N.C. PUSHBUTTON
- N.C. SELECTOR SWITCH
- N.C. CONTACT
- N.O. CONTACT
- N.O. PUSHBUTTON
- N.O. SELECTOR SWITCH
- (NRA) RELAY OR TIMER, 120VAC
- [52] TERMINAL BLOCK

BC – BATTERY CHARGER
EAS – EMERGENCY BREAKER BELL ALARM
ERA – EMERGENCY AUXILIARY RELAY
ERB – EMERGENCY SOURCE AUXILIARY RELAY
ESx – EMERGENCY AUXILIARY SWITCH
Ex – EMERGENCY CUSTOMER CONNECTION
ETM – ELAPSED TIME METER
KV – SOURCE VOTING RELAY
MRPB – MANUAL RETURN PUSHBUTTON
MSS – MAINTENANCE SELECTOR SWITCH
NAS – NORMAL BREAKER BELL ALARM
NRA – NORMAL AUXILIARY RELAY
NSx – NORMAL AUXILIARY SWITCH
Nx – NORMAL CUSTOMER CONNECTION
Jx – BOARD EDGE CONNECTOR
Px – FEMALE CONNECTOR
SDSS – SERVICE DISCONNECT SELECTOR SWITCH
Sx – MALE CONNECTOR
TDCL – TIME DELAY CRANK LIMITER
Tx – LOAD CUSTOMER CONNECTION

NOTE A: TERMINALS ARE TO BE CONNECTED TO REMOTE START CONTACT FROM GENERATOR
NOTE B: NEUTRAL SWITCHED ON 4 POLE DEVICE

ATS SHOWN WITH SWITCH DE–ENERGIZED, IN NEUTRAL POSITION

• FOR LIST OF OPTIONS INSTALLED ON PARTICULAR SWITCH, SEE CUSTOMER INFORMATION DRAWING.

FOR FURTHER DESCRIPTION OF OPERATION SEE I.L.15.01.T.K./F

TRANSFER SWITCH – SEQUENCE OF OPERATION

CONSIDER THE TRANSFER SWITCH IN THE NORMAL OPERATING POSITION, WITH NORMAL POWER AVAILABLE AND THE NORMAL INTERRUPTER CLOSED. THE IQTRANSFER MONITORS ALL THREE PHASES OF THE NORMAL POWER.

WHEN IT SENSES A DIP OR LOSS OF VOLTAGE, THIS CAUSES TDES TO TIME OUT AND INITIATE ENGINE STARTUP. WHEN THE EMERGENCY SYSTEM REACHES CORRECT SETPOINT LEVELS OF VOLTAGE AND FREQUENCY, TDNE WILL TIME OUT.

THE K2 CONTACT WILL THEN CLOSE, WHICH INTURN MAKE THE NORMAL INTERRUPTER OPEN. THIS INTURN COMPLETES THE CLOSING CIRCUIT FOR THE EMERGENCY INTERRUPTER WHICH WILL NOW SUPPLY THE LOAD.

UPON RETURN OF STABILIZED NORMAL POWER, TDEN WILL TIME OUT. THE K1 CONTACT WILL THEN CLOSE WHICH INTURN MAKE EMERGENCY INTERRUPTER OPEN. THIS INTURN COMPLETES THE CLOSING CIRCUIT FOR THE NORMAL INTERRUPTER WHICH WILL NOW SUPPLY THE LOAD.

THE TRANSFER SWITCH IS NOW READY TO REACT TO ANOTHER NORMAL POWER FAILURE.

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TR	10/20/11
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.	.
FILENAME	
ATS	

FEDERAL ID NO.	PRODUCT CODE	REVISION	DWG SIZE
88725	PG 230	1	B

EATON | Cutler-Hammer MILTON, ON

TITLE TRANSFORMER WIRING DIAGRAM
KING PARK WS

TYPE ATS

G.O.	DWG	SHEET
CSOT029247	23E2869	4 OF 4