



# Cutler-Hammer

## Automatic, Non-Automatic and Manual Wall-Mount Transfer Switches — 30 – 1000 Amperes

Technical Data

New Information

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# Automatic, Non-Automatic and Manual Wall-Mount Transfer Switches — 30 – 1000 Amperes



## Introduction

Eaton's Cutler-Hammer Wall-Mount Transfer Switches are available in Automatic, Non-Automatic and Manual transfer configurations to manage all levels of distribution system control from advanced to basic.

Cutler-Hammer Wall-Mount Transfer Switches are designed for a variety of standby power applications for critical loads. They provide the utmost in flexibility, reliability and value in a compact package. In the event of a primary power source interruption, a transfer switch provides an effective means to transfer the load circuits to an alternate power source while reducing the possibility of injury or property damage. Cutler-Hammer Transfer Switches are designed for applications where total system coordination must be accomplished while achieving a high level of withstand, interrupting and closing performance.

## Industrial Design Highlights

- Compact wall-mount design for easy installation, inspection and maintenance.
- Safe manual operation under full load.
- Superior withstand, interrupting and closing ratings.
- Molded case devices designed specifically for UL® 1008.
- Optionally rated as suitable for use as service equipment.
- Available with integral overcurrent protection.
- Field-selectable multi-tap transformer panel permits operation on a wide range of system voltages (on select switches).
- ANSI 61 powder-coated, baked-on paint enclosure.

## Wall-Mount Transfer Switch Family

### Residential: 30 – 225 Amperes

240/120V AC and 208V AC single-phase systems. Automatic operation.

### Automatic: 30 – 1000 Amperes

For systems up to 600V AC. An Automatic Transfer Switch (ATS) continuously monitors the primary power source. When the utility power source is interrupted, the ATS automatically starts the engine/generator set and transfers the load circuits after the generator has reached the correct voltage and frequency. When the utility power is restored, the ATS automatically re-transfers the load circuits and shuts down the engine/generator set. Cutler-Hammer Automatic Transfer Switches are available with four different levels of automatic transfer controllers which enable the user to select the standard feature package best suited for their particular application. Combined with a wide selection of available options, these transfer switches are ready to address the needs of any system.

### Non-Automatic: 30 – 1000 Amperes

For systems up to 600V AC. Cutler-Hammer Non-Automatic Transfer Switches are manually initiated, electrically operated transfer switches that are typically applied in non-emergency systems. Pushbutton control is standard for transfer and re-transfer operations.

### Manual: 30 – 1000 Amperes

For systems up to 600V AC. Cutler-Hammer Manual Transfer Switches are engineered for those applications requiring manual transfer of power. They include a permanently affixed operating handle and provide safe transfer and re-transfer operation under full load.

## Standards

Cutler-Hammer Wall-Mount Transfer Switches meet or exceed all industry standards for endurance, reliability and performance. They are listed under UL 1008 Standard for Transfer Switch Equipment and optionally available as suitable for emergency and standby systems as defined in NFPA 99 for health care facilities.

Cutler-Hammer Wall-Mount Transfer Switches are designed and built as standard or with required options in accordance with the following standards where applicable.

**UL 1008:** UL Standard for Safety for Transfer Switch Equipment.

**CSA® 22.2 No. 178:** Canadian Standards Association.

**UL 489:** UL Standard for Circuit Breakers and Molded Case Switches.

**NEC® Articles 517, 700, 701, 702:** Code Sections Applicable to Transfer Switch Equipment.

**NFPA 110:** Emergency and Standby Power Systems.

**NFPA 99:** Health Care Facilities.

**EGSA® 100S:** Standard for Transfer Switches.

**NEMA® ICS10:** Standard for Transfer Switch Equipment.

**UBC® and BOCA®:** Uniform Building Code for Seismic Zone 4.

**ISO® 9001 and 14001:** International 9002 Organization for Standardization.

UL is a federally registered trademark of Underwriters Laboratories Inc. Quincy, Mass.

The National Electrical Code and NEC are registered trademarks of the National Fire Protection Association.

UBC is a trademark of the International Conference of Building Officials (ICBO).

BOCA is a registered trademark of Building Officials and Code Administrators International, Inc.

CSA is the registered trademark of the Canadian Standards Association.

NEMA is the registered trademark and service mark of the National Electrical Manufacturers Association.

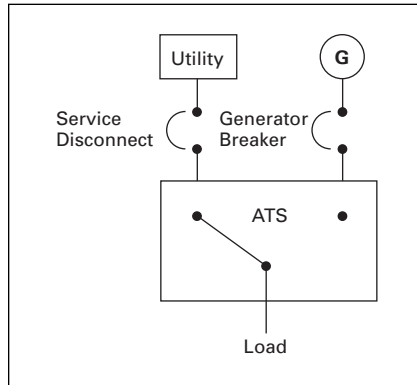
ISO is the registered trademark and sole property of the International Organization for Standardization.

EGSA is a registered trademark of Electrical Generating Systems Association.

**Typical Applications**

**Utility — Generator**

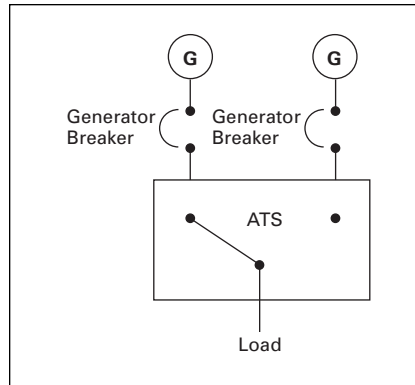
Transfer switches are traditionally applied between a utility and a generator set for emergency and standby power systems.



**Figure 1. Standard Application Utility — Generator**

**Generator — Generator**

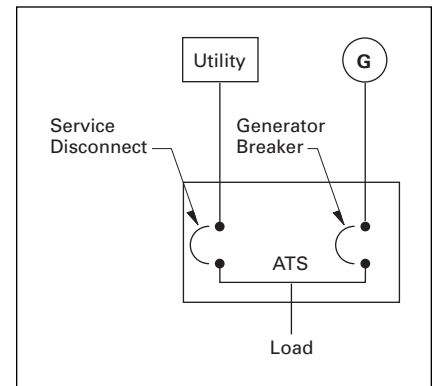
Transfer switches are sometimes applied between two generator sets for prime power use, often in remote installations. In such applications, source power is periodically alternated between the generator sets to equally share run time.



**Figure 2. Standard Application Generator — Generator**

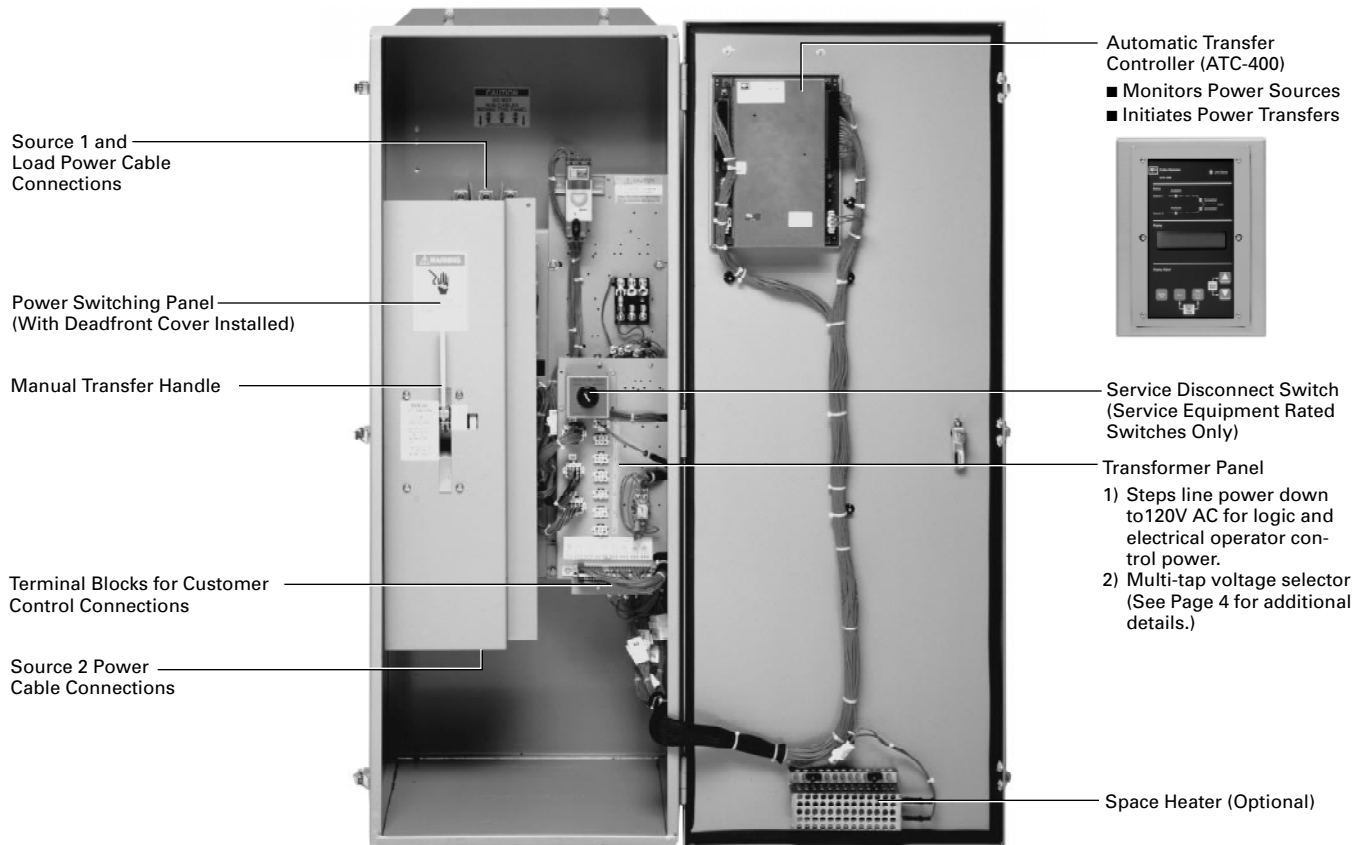
**Service Entrance Equipment**

Service Equipment rated transfer switches are utilized when the entire load of a facility is critical and needs to be backed up by an alternate power source. Cutler-Hammer Service Equipment rated transfer switches with integral overcurrent protection may be installed at the point of Service Entrance without the need for separate upstream disconnect devices and their respective power interconnections.



**Figure 3. Service Entrance Applications**

**Basic Components of Automatic Transfer Switches**



**Basic Components of Automatic Transfer Switches**

## Cutler-Hammer Superior Design Transfer Switch Characteristics

### Unmatched Performance and Versatility

The Cutler-Hammer family of Wall-Mount Transfer Switches offers unmatched performance, versatility and value for power switching applications. At the heart of these designs is the Cutler-Hammer Molded Case Switch.

### Superior Main Contact Structure

All Cutler-Hammer Wall-Mount Transfer Switches meet or exceed the standards set forth in UL 1008 and UL 489. No other transfer switch manufacturer has met the rigid testing requirements of this combination of standards. Completely enclosed contacts add a measure of safety and reliability. It also ensures the integrity of the contact assemblies and minimizes the need for periodic maintenance of the contacts, reducing downtime.

### Fast, Powerful and Safe Power Switching Mechanism

The power panel utilizes a uni-directional gear motor mechanism. The power panel can be operated manually under a FULL LOAD.

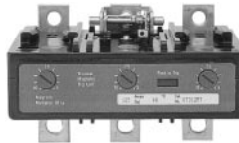
## Molded Case Switch Features



**Molded Case Switch**

- True 4-pole switched neutral availability.
- Totally enclosed contact assembly.

## Optional Integral Overcurrent Protection Capability



**Optional Thermal Magnetic Trip Unit**

For service entrance and other applications, trip units can be integrated into the power switching section. This eliminates the need for separate upstream protective devices, saving cost and space.

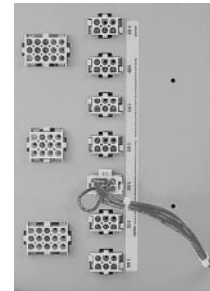
## Mechanical Interlock



**Mechanical Interlock**

Wall-Mount Transfer Switches feature a rear-mounted, patented fail-safe mechanical interlock to prevent paralleling of sources. This is, in addition to, software interlocking and the interlocking inherently provided by the transfer mechanism.

## Multi-Tap Voltage Selector



**Multi-Tap Voltage Selector**

The industry exclusive Cutler-Hammer Multi-Tap Voltage Selector allows our transfer switch to be readily applied on most system voltages worldwide by proper insertion of selector plug. Available system voltages include 208, 220, 240, 380, 415, 480 or 600V AC, 50 or 60 Hz.

## Transfer Switch Withstand Ratings

**Table 1. Systems Coordination Information — Withstand, Closing and Interrupting Ratings ①**

Standard UL 1008 3-Cycle						
ATS Ampere Rating	Ratings When Used with Upstream Breaker (kA)			Ratings When Used with Upstream Fuse (kA)		
	240 Volts	480 Volts	600 Volts	Maximum Fuse Rating	Fuse Type ②	600 Volts
<b>Residential/Light Commercial</b>						
30	100	—	—	—	—	—
70	100	—	—	—	—	—
100	100	—	—	—	—	—
150	100	—	—	—	—	—
200	100	—	—	—	—	—
<b>Horizontal and Vertical Industrial</b>						
30	100	65	25	200	J,T	200
70	100	65	25	200	J,T	200
100	100	65	25	200	J,T	200
150	100	65	25	400	J,T	200
200	100	65	25	400	J,T	200
225	100	65	25	400	J,T	200
300	100	65	25	400	J,T	200
400	100	65	25	600	J,T	200
600	100	65 ③	25	800/1200	J,T	100/200
800	100	50 ③	25	1200/1600	L	100/200
1000	65	50 ③	25	1600	L	200

① For maximum breaker ratings in circuits when the transfer switch is evaluated as a "Motor Branch Circuit Conductor" refer to the NEC Section 430-25 for sizing.

② Class RK5 fuse with 100 kA rating.

③ 4-pole units rated 35 kA.

## Ease of Maintenance



**Logic Disconnect Plugs**




Keyed quick-disconnect plugs are provided for easy and complete isolation of the control circuitry.

Maintenance can be performed on the logic independent from the power sections and still allow the user to manually transfer power under full load conditions.

## Wall-Mount Transfer Switch Logic Family

The Cutler-Hammer business is the industry leader in transfer switch control technology and offers a full line of automatic transfer controllers. With the basic level ATC-100R, ATC-400 and the premium level ATC-600, the Cutler-Hammer family of controllers is ready to meet the requirements of any system.

**Table 2. ATC Controller Selection Chart**

Description	ATC-100R 	ATC-400 	ATC-600 
<b>System Application Voltage</b>	120/240V, 208V 1-Phase	Up to 600V	Up to 600V
<b>Product Specifications</b>			
<b>Voltage:</b>	Source 1 and 2	Source 1, 2 and Load — VAB, VBC and VCA	Source 1, 2 and Load — VAB, VBC and VCA
Voltage Measurement Range	120 – 240V AC	0 – 790V AC rms	0 – 790V AC rms
Voltage Measurement Accuracy	±2% of Nominal	±1% of Nominal	±2% of Nominal
Undervoltage Dropout Range	80% of Nominal	50% – 97% of Nominal	50% – 97% of Nominal
Undervoltage Pickup Range	90% of Nominal	Dropout ±2% to 99% of Nominal	Dropout ±2% to 99% of Nominal
Overvoltage Dropout Range	N/A	105% – 120% of Nominal	105% – 120% of Nominal
Overvoltage Pickup Range	N/A	103% of Nominal to Dropout -2%	103% of Nominal to Dropout -2%
<b>Frequency:</b>	Source 2	Source 1 and 2	Source 1 and 2
Frequency Measurement Range	50 – 60 Hz	40 – 70 Hz	40 – 80 Hz
Frequency Measurement Accuracy	±0.3 Hz	±0.3 Hz	±0.1 Hz
Underfrequency Dropout Range	56 Hz	90% – 97% of Nominal	90% – 97% of Nominal
Underfrequency Pickup Range	58 Hz	Dropout +1 Hz to 99% of Nominal	Dropout +1 Hz to 99% of Nominal
Overfrequency Dropout Range	N/A	103% – 110% of Nominal	100% – 120% of Nominal
Overfrequency Pickup Range	N/A	101% of Nominal to Dropout -1 Hz	101% of Nominal to Dropout -1 Hz
<b>Front Panel Indication:</b>			
Mimic Diagram with LED Indication	N/A	Unit Status. Source 1 and 2 — Available and Connected (5 total)	Automatic, Test & Program Mode. Source 1 and 2 – Available, Connected & Preferred. Load Energized. (10 total)
Main Display	N/A	LCD Display	LCD Display
<b>Communications Capable</b>	N/A	PONI	PONI/INCOM
<b>Enclosure Compatibility</b>	NEMA 1 and 3R	NEMA 1, 12 and 3R, UV Resistant Faceplate	NEMA 1, 12, 3R and 4X UV Resistant Faceplate
<b>Programming Selections</b>			
Time Delay Normal to Emergency	3 Seconds — Fixed	0 – 1800 Seconds	0 – 1800 Seconds
Time Delay Emergency to Normal	7 Minutes — Fixed	0 – 1800 Seconds	0 – 1800 Seconds
Time Delay Engine Cooldown	5 Minutes — Fixed	0 – 1800 Seconds	0 – 1800 Seconds
Time Delay Engine Start	10 Seconds — Fixed	0 – 120 Seconds	0 – 120 Seconds
Time Delay Neutral	N/A	0 – 120 Seconds	0 – 120 Seconds or Based on Load Voltage Decay of 2% – 30% of Nominal
Time Delay Engine Fail	N/A	0 – 6 Seconds	0 – 6 Seconds
Load Sequencing	N/A	N/A	Up to 10 Devices (Via Sub-network)
Pre-Transfer Signal	N/A	1 – 120 Seconds (Form "C" Contact)	0 – 120 Seconds (Up to 10 Devices Via Sub-network)
Plant Exerciser	Selectable Day, 7 Day Interval, 15 Minutes Run Time, No Load	Selectable – Disabled, Daily or 7, 14, 28 Day Intervals, 0 – 600 Minutes, Load or No Load	Selectable – Disabled or 7 Day Interval, 0 – 600 Minutes, Load or No Load
Preferred Source Selection	N/A	N/A	Source 1 or 2 or None
Number of Generators	0 or 1	0 or 1	0 to 2
Commitment to Transfer in TDNE	N/A	Enabled or Disabled	Enabled or Disabled
System Selection	Utility/Generator or Dual Utility	Utility/Generator or Dual Utility	Utility/Generator or Dual Utility or Dual Generator
Additional Information	N/A	TD01602004E	TD.15A.05.TE

**Note:** Features are order specific. Not all features are supplied as standard.

### Switch and Feature Selection

Cutler-Hammer’s Transfer Switch Equipment Catalog and Feature Numbering Systems permit at-a-glance specification and complete ordering information for custom transfer switch configurations built to meet your application requirements.

The Feature Numbering System allows the specifier to easily identify the required standard and optional features. As shown in **Table 3**, each feature is assigned a specific “**Feature Number**.” A brief description of the feature has been provided. For a detailed description of Cutler-Hammer Transfer Switch Features, refer to Technical Data TD01602005E “Stan-

dard and Optional Features of Cutler-Hammer Transfer Switches.” For each type of transfer switch, the feature status is shown as “S” Standard or “O” Optional. If neither “S” nor “O” is indicated, the feature is not available for that particular switch.

**To order a transfer switch**, review **Table 3** to select the transfer switch with the standard feature group and available optional features that meet the application requirements. Then use the Transfer Switch Equipment Catalog Numbering System shown in **Table 4**, to construct the 15-digit catalog number. The 15-digit catalog number combined with the desired

Feature Number(s) provides the complete information necessary to order or specify a Cutler-Hammer Transfer Switch.

**Example:** To order or specify: Automatic Transfer Switch, Feature Group FG424, ATC-400 Transfer Controller, NEMA 3R, 100 watt space heater (Feature 41A), 600 ampere, 480Y/277V AC, 60 Hz, 3-phase, 4-wire system, solid neutral, UL 1008 listed. (Specify 3-pole for unswitched neutral or 4-pole for switched neutral.)

**Specify Number:** ATV4MDA30600XRU – FG424, 41A

**Table 3. Wall-Mount Transfer Switch Family — Standard and Optional Features**

Feature Number	Description	RTHM	ATH2/ ATV2	ATH4/ ATV4	ATHI/ ATVI	NTHS/ NTVS	MTHX/ MTVX
		Automatic Residential Transfer Switch with ATC-100R Controller	Automatic Transfer Switch with ATC-400 Controller (240/120V and 208Y/120V Systems Only)	Automatic Transfer Switch with ATC-400 Controller	Automatic Transfer Switch with ATC-600 IQ Transfer	Non-Automatic Transfer Switch	Manual Transfer Switch
FG222	Includes: 1, 2, 3, 4, 5B/5J, 6B, 7, 8C, 8D, 12C, 12D, 12G, 12H, 14E, 14F, 15E, 15F, 23J, 26A, 26D, 29A, 32A		S				
FG425	Includes: 1, 2, 3, 4, 5B/5J, 6B, 7, 8C, 8D, 12C, 12D, 12G, 12H, 14E, 14F, 15E, 15F, 21A, 23J, 26A, 26D, 29A, 32A, 35A, 42			S			
FG613	Includes: 1, 2, 3, 4, 5B/5J, 6B, 12C, 12D, 12G, 12H, 14C, 14D, 42				S		
FG814	Includes: 1, 2, 3, 4, 5B/5J, 6B, 12C, 12D, 12G, 12H, 14C, 14D, 42, 47						
1	Time Delay Normal to Emergency (TDNE) Fixed 3 Seconds Adjustable 0 – 1800 Seconds	S	S	S	S		
2	Time Delay Engine Start (TDES) Fixed 10 Seconds Adjustable 0 – 120 Seconds	S	S	S	S		
3	Time Delay Emergency to Normal (TDEN) Fixed 7 Minutes Adjustable 0 – 1800 Seconds	S	S	S	S		
4	Time Delay Engine Cooldown (TDEC) Fixed 5 Minutes Adjustable 0 – 1800 Seconds	S	S	S	S		
5	Emergency (S2) Source Sensing	S	S	S	S		
5B	1-Phase Undervoltage/Underfrequency		S				
5C	1-Phase Overvoltage/Overfrequency		O		O		
5D	1-Phase Undervoltage				O		
5E	1-Phase Overvoltage				O		
5F	3-Phase Undervoltage				O		
5G	3-Phase Overvoltage				O		
5H	Phase Reversal				O		
5J	3-Phase Undervoltage/Underfrequency		S	S	S		
5K	3-Phase Overvoltage/Overfrequency		O		O		
6	System or Engine Test		S	S	S		
6B	System Test Pushbutton		S				
6D	Maintained 2-Position Test Switch		O		O		
6H	Maintained 4-Position Test Switch		O		O		
7	Time Delay Emergency Fail (TDEF Adjustable 0 – 6 Seconds)		S	S	S		

**Legend:** “S” = Standard  
“O” = Optional

Table 3. Wall-Mount Transfer Switch Family — Standard and Optional Features (Continued)

Feature Number	Description	RTHM	ATH2/ ATV2	ATH4/ ATV4	ATHI/ ATVI	NTHS/ NTVS	MTHX/ MTVX
		Automatic Residential Transfer Switch with ATC-100R Controller	Automatic Transfer Switch with ATC-400 Controller (240/120V and 208Y/120V Systems Only)	Automatic Transfer Switch with ATC-400 IQ Transfer	Automatic Transfer Switch with ATC-600 Controller	Non-Automatic Transfer Switch	Manual Transfer Switch
8 8C 8D	Pushbutton Bypass Bypass TDEN Bypass TDNE		S S	S S	O O		
9 9B	Maintenance Selector Switch Electrical Operator Isolator Switch		O		O		
10 10B 10D	Preferred Source Selector Switch Utility to Utility, or Utility to Generator Generator to Generator				O O		
12 12C 12D 12G 12H 12L 12M	Pilot Lights Normal (S1) Source Connected Emergency (S2) Source Connected Normal (S1) Source Connected Emergency (S2) Source Connected Normal (S1) Source Tripped (Requires Feature 16) Emergency (S2) Source Tripped (Requires Feature 16)		S S S S	S S S S	S S S S O O	O O O O O O	
14 14C 14D 14E 14F	Auxiliary Relay Contacts Normal (S1) Source Available 4 NO/4 NC Emergency (S2) Source Available 4 NO/4 NC (14C & 14D are 2NO/2NC on SPB Switches) Normal (S1) Source Available 1 NO/1 NC Emergency (S2) Source Available 1 NO/1 NC		S S	S S	S S	O O	
15 15E 15F	Switch Position Indication Contacts Normal (S1) Position Contact 1 NO/1 NC Emergency (S2) Position Contact 1 NO/1 NC		S S	S S			
16 16N 16E 16B	Integral Overcurrent Protection Normal (S1) Switch Only Emergency (S2) Switch Only Normal (S1) and Emergency (S2) Switches (Double Price of 16N or 16E)		O O O	O O O	O O O	O O O	O O O
17 17C	High Withstand Rating 100 kAIC at 480V AC						
18 18O 18P 18Q 18V 18R 18S 18T 18U	Metering IQ Analyzer Normal (S1) IQ Analyzer Emergency (S2) IQ Analyzer Switch Selectable (S1) & (S2) IQ Analyzer Load Side IQ DP-4000 Normal (S1) IQ DP-4000 Emergency (S2) IQ DP-4000 Switch Selectable (S1) & (S2) IQ DP-4000 Load Side				O O O O O O O O	O O O O O O O	
20A	Rear Bus Connections						
21A	Non-Standard Terminals Molded Case Device		O	S	O	O	O
23 23C 23J ①	Automatic Plant Exerciser Automatic No Load Exerciser (7 Day) Selectable – Disabled/7 Day Interval, 0 – 600 Minutes, Load/No Load, with Failsafe	S	S	S	O		
24 24C 24D	Self-Contained Battery Charger 120V AC Input, 12V DC Output 120V AC Input, 24V DC Output				O O		
26 26A 26C 26D 26E 26F 26H	Normal Source Sensing All Phase Undervoltage All Phase Overvoltage Go to Emergency (S2) Input Underfrequency Protection Overfrequency Protection Phase Reversal Protection	S	S O O O O	S S	S O O O O O		

① The ATC-400 controller provides selectable disabled, 7, 14 or 28 intervals.

Legend: "S" = Standard  
"O" = Optional

**Automatic, Non-Automatic  
and Manual Wall-Mount  
Transfer Switches —  
30 – 1000 Amperes**



**Table 3. Wall-Mount Transfer Switch Family — Standard and Optional Features (Continued)**

Feature Number	Description	RTHM	ATH2/ ATV2	ATH4/ ATV4	ATHI/ ATVI	NTHS/ NTVS	MTHX/ MTVX
		Automatic Residential Transfer Switch with ATC-100R Controller	Automatic Transfer Switch with ATC-400 Controller (240/120V and 208Y/120V Systems Only)	Automatic Transfer Switch with ATC-400 Controller	Automatic Transfer Switch with ATC-600 IQ Transfer	Non-Automatic Transfer Switch	Manual Transfer Switch
29	Alternate Transfer Modes of Operation						
29A	Automatic Transfer and Re-transfer	S	S	S	S		
29G	Selector Switch for Automatic or Non-Automatic Operation (Switch must be Labeled as Non-Automatic)				O		
29J	Automatic Transfer Operation with Selectable (Via Programming) Automatic or Non-Automatic Re-transfer Operation with Failsafe				O		
32	Delayed Transfer Operation Modes						
32A	Time Delay Neutral		S	S	O		
32B	Load Voltage Decay				O		
32C	In-Phase Monitor Defaults to Load Voltage Decay						
32D	In-Phase Monitor Defaults to Time Delay Neutral						
34	Logic Extender Cable						
34A	48 Inches (1219 mm)				O	O	
34B	72 Inches (1829 mm)				O	O	
34C	96 Inches (2438 mm)				O	O	
34D	120 Inches (3048 mm)				O	O	
34E	144 Inches (3658 mm)				O	O	
35A	Pretransfer Signal Contacts 1NO/1NC			S	O		
36	Load Shed from Emergency				O		
37	Rated as Suitable for Use as Service Equipment <sup>Ⓢ</sup> (Requires 16B or 16N)				O		
37A	Without Ground Fault Protection (30 – 1000 Amperes)		O	O	O	O	
37B	With Ground Fault Protection (30 – 1000 Amperes)			O	O	O	
41	Space Heater with Thermostat						
41A	100 Watts			O	O	O	
41B	200 Watts				O	O	
41C	400 Watts				O	O	
42	Seismic Zone 4 Certified			S	S	S	S
45	Load Sequencing Contacts						
45A	Load Sequencing Contacts (1)				O		
45B	Load Sequencing Contacts (2)				O		
45C	Load Sequencing Contacts (3)				O		
45D	Load Sequencing Contacts (4)				O		
45E	Load Sequencing Contacts (5)				O		
45F	Load Sequencing Contacts (6)				O		
45G	Load Sequencing Contacts (7)				O		
45H	Load Sequencing Contacts (8)				O		
45I	Load Sequencing Contacts (9)				O		
45J	Load Sequencing Contacts (10)				O		
47	Closed Transition Operational Modes (User Must Specify Mode)						
47C	Closed Transition/In-Phase/Load Voltage Decay						
47D	Closed Transition						
47E	Closed Transition/In-Phase/Time Delay Neutral						
48	Communications						
48A	IPONI Module				O		
48B	IPONI Module and PMCOM5				O		
48C	IPONI Module, PMCOM5 and Null Modem Cable				O		
48D	EPONI Module (10Base-T Only)				O		
48E	EPONI Module (10Base-T and 10Base-FL)				O		

<sup>Ⓢ</sup> Ground Fault protection is required for Service Disconnects rated 1000 amperes or more if the electrical service is a solidly grounded wye system of more than 150 volts to ground but not exceeding 600 volts phase to phase.

**Legend:** "S" = Standard  
"O" = Optional

**Transfer Switch Product Family**

Cutler-Hammer's Transfer Switch Equipment Catalog and Feature Numbering Systems permit at-a-glance specification and complete ordering information for custom transfer switch configurations built to meet your application requirements.





The Catalog Numbering System allows the specifier to generate a 15-digit catalog number that represents the following information:

- Type
- Orientation
- Logic
- Frame
- Switch
- Poles
- Ampere Rating
- Voltage
- Enclosure Type
- Listing

The Feature Numbering System allows the specifier to easily identify the required standard and optional features.

To order a transfer switch, review **Table 3** to select the transfer switch with the standard Feature Group and available optional features that meet the application requirements. Then use **Table 4** to construct the 15-digit catalog number. The 15-digit catalog number combined with the desired Feature Number(s) provides the complete information necessary to order or specify a Cutler-Hammer Transfer Switch.

**Table 4. Transfer Switch Product Family**

Description	Transfer Switch Equipment Catalog Numbering System									
	Type	Orientation	Logic	Frame	Switch	Poles	Amperes	Voltage	Enclosure	Listing
 Residential (208 – 240V AC 1-Phase) (30A – 200A)	RT = Residential	H = Horizontal (FD)	M = Microprocessor (ATC-100R)	Molded Case Device FD = 30 – 225A	Fixed Mount A = FM, N(MCS) E(MCS)	2 = 2-Poles	0030 = 30A 0070 = 70A 0100 = 100A 0150 = 150A 0200 = 200A	B = 208V 60 Hz Single-Phase W = 240V 60 Hz Single-Phase	S = NEMA 1 R = NEMA 3R	U = UL Listed/ CSA Certified R = UL Recognized X = No Listing
 Manual (600V AC) (30A – 1000A)	MT = Manual	H = Horizontal (FD) V = Vertical (KD, LD, MD, NB)	X = No Logic	Molded Case Device FD = 30 – 150A KD = 150 – 300A LD = 400A MD = 600A NB = 800 – 1000A	Fixed Mount A = FM, N(MCS) E(MCS) B = FM, N(MCB) E(MCB) C = FM, N(MCB) E(MCS) D = FM, N(MCS) E(MCB)	2 = 2-Poles 3 = 3-Poles 4 = 4-Poles	0030 = 30A 0070 = 70A 0100 = 100A 0150 = 150A 0225 = 225A 0300 = 300A 0400 = 400A 0600 = 600A 0800 = 800A 1000 = 1000A	E = 600V 60 Hz	K = Open S = NEMA 1 J = NEMA 12 R = NEMA 3R L = NEMA 4 D = NEMA 4X	U = UL Listed/ CSA Certified R = UL Recognized X = No Listing
 Non-Automatic (600V AC) (30A – 1000A)	NT = Non-Automatic	H = Horizontal (FD) V = Vertical (KD, LD, MD, NB)	S = Solid State	Molded Case Device FD = 30 – 150A KD = 150 – 300A LD = 400A MD = 600A NB = 800 – 1000A	Fixed Mount A = FM, N(MCS) E(MCS) B = FM, N(MCB) E(MCB) C = FM, N(MCB) E(MCS) D = FM, N(MCS) E(MCB)	2 = 2-Poles 3 = 3-Poles 4 = 4-Poles	0030 = 30A 0070 = 70A 0100 = 100A 0150 = 150A 0225 = 225A 0300 = 300A 0400 = 400A 0600 = 600A 0800 = 800A 1000 = 1000A	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	K = Open S = NEMA 1 R = NEMA 3R J = NEMA 12 L = NEMA 4 D = NEMA 4X	U = UL Listed/ CSA Certified R = UL Recognized X = No Listing
 Automatic (Wall Mount) (600V AC) (30A – 1000A)	AT = Automatic	H = Horizontal (FD) V = Vertical (KD, LD, MD, NB)	4 = ATC-400 1 = ATC-600 2 = ATC-400 (For 240/120V and 208Y/120V Systems Only)	Molded Case Device FD = 30 – 225A KD = 150 – 300A LD = 400 – 600A MD = 600 – 800A NB = 800 – 1000A  <b>Note:</b> FD = 200 – 225A, LD = 600A, MD = 800A, on ATH2/ATV2 Only	Fixed Mount A = FM, N(MCS) E(MCS) B = FM, N(MCB) E(MCB) C = FM, N(MCB) E(MCS) D = FM, N(MCS) E(MCB)	2 = 2-Poles 3 = 3-Poles 4 = 4-Poles	0030 = 30A 0070 = 70A 0100 = 100A 0150 = 150A 0200 = 200A 0225 = 225A 0300 = 300A 0400 = 400A 0600 = 600A 0800 = 800A 1000 = 1000A	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	K = Open S = NEMA 1 J = NEMA 12 R = NEMA 3R L = NEMA 4 D = NEMA 4X	U = UL Listed/ CSA Certified R = UL Recognized X = No Listing
Catalog Number Position	<b>A T</b> Position 1-2	<b>V</b> Position 3	<b>4</b> Position 4	<b>M D</b> Position 5-6	<b>A</b> Position 7	<b>3</b> Position 8	<b>0 6 0 0</b> Position 9-12	<b>X</b> Position 13	<b>R</b> Position 14	<b>U</b> Position 15

**Legend:** FM = Fixed Mount  
N = Normal or Source 1  
E = Emergency or Source 2  
MCB = Molded Case Breaker  
MCS = Molded Case Switch

**Example:** To order or specify: Auto-  
matic Transfer Switch, Feature Group  
FG424, ATC-400 Transfer Controller,  
NEMA 3R, 100 watt space heater, 600  
ampere, 480Y/277V AC, 60 Hz, 3-phase,  
4-wire system, solid neutral, UL 1008  
listed. (Specify 3-pole for unswitched  
or 4-pole for switched neutral.)

**Specify Number:** ATV4MDA30600XRU  
– FG424, 41A

Technical Data

Residential ATS

Table 5. Dimensions and Weights — Refer to Figure 4

Ampere Rating	Dimensions in Inches (mm)						Weight Lbs. (kg)
	A	B	C	D	E	F	
30 – 100	20.00 (508.0)	18.22 (462.8)	8.00 (203.2)	16.00 (406.4)	11.00 (279.4)	4.33 (110.0)	45 (21)
150 – 225	20.00 (508.0)	28.22 (716.8)	8.00 (203.2)	16.00 (406.4)	15.00 (381.0)	5.21 (132.3)	65 (30)

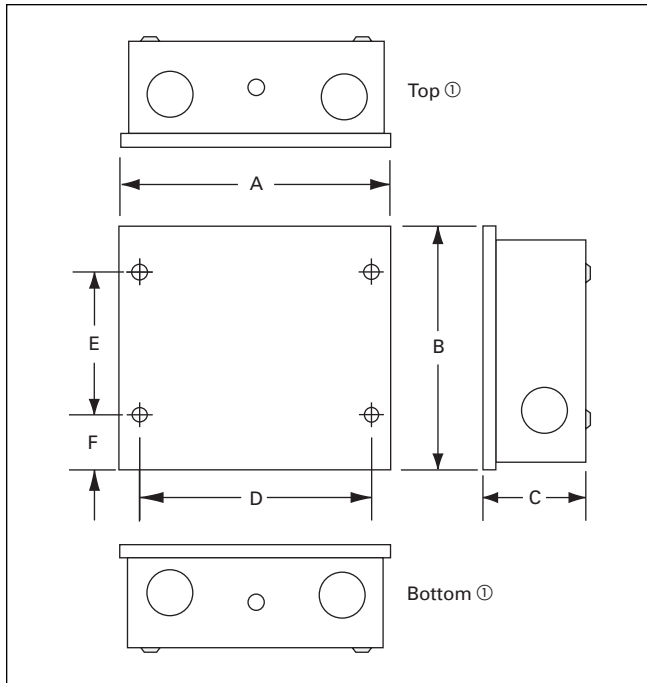


Figure 4. Dimensional Drawing

① Convenient knockouts provided on top, bottom and sides of enclosure.

Manual Transfer Switch

Table 6. 100 – 150A Type MTHXFD Manual — Dimensions in Inches (mm) and Weight in Lbs. (kg) — Refer to Figure 5

Amps	Dimensions								Wgt.
	A	B	C	D	E	F	G	H	
100 – 150	22.88 (581.2)	13.13 (333.5)	22.74 (577.6)	22.62 (574.5)	24.50 (622.3)	9.78 (248.4)	10.28 (261.1)	32.31 (820.7)	143 (65)

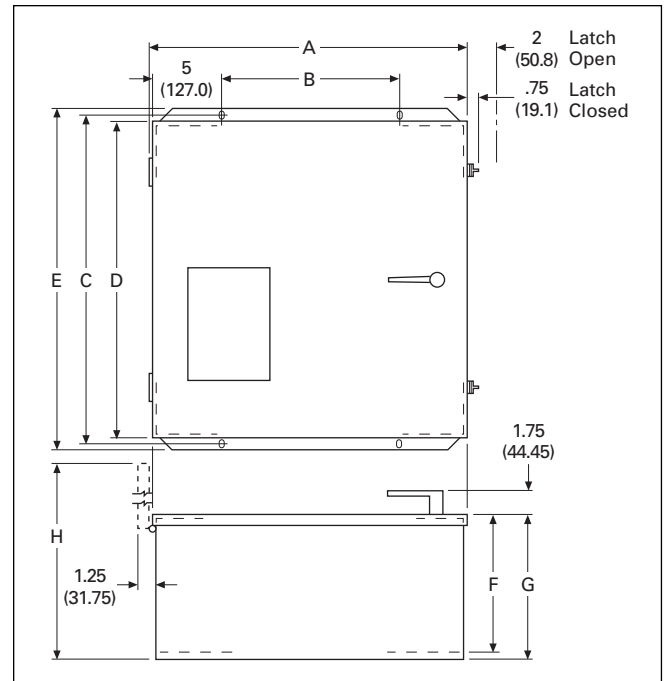


Figure 5. Manual Switches — Dimensions in Inches (mm)

Table 7. Wall-Mount Transfer Switch Standard Terminal Data for Power Cable Connections

Switch Rating (Amperes)	Breaker Frame	Line Side (Normal and Standby Source)	Load Connection	Neutral Connection
30 – 100	HFD	(1) #14 – 1/0	(1) #14 – 1/0	(1) #14 – 1/0
150 – 225	HFD	(1) #6 – 300	(1) #6 – 300	(1) #4 – 300
150 – 300	HKD	(1) #3 – 350	(1) #6 – 350	(1) #4 – 350
400	HLD	(1) #4 – 600	(2) #1 – 500	(6) 250 – 350
600	HLD	(1) #3/0 – 350	(2) #1 – 500	(12) 4/0 – 500
600	HMDL	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500
600 (4-Pole)	NB	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500
800	NB	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500
800	HMDL	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500
1000	NB	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500

Note: All terminals suitable for copper or aluminum conductors.  
 Note: For alternate terminal sizes contact Eaton’s Cutler-Hammer.

**Automatic, Non-Automatic  
and Manual Wall-Mount  
Transfer Switches —  
30 – 1000 Amperes**



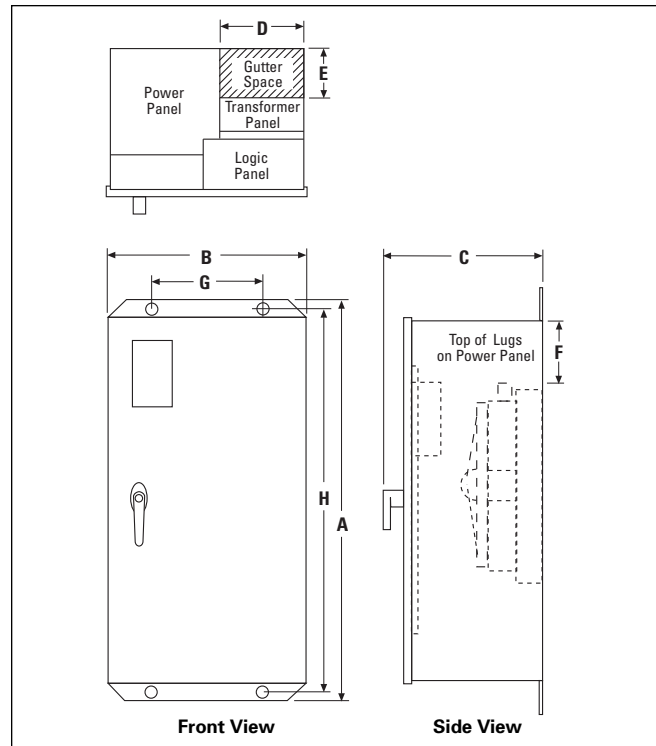
**Table 8. 30 – 1000A Types ATHI, ATVI, ATH2, ATV2, ATH4, ATV4, MTVX, NTHS, NTVS —  
Dimensions in inches (mm) and approximate shipping weight in Lbs. (kg) — Refer to Figure 6**

Switch Type	Enclosure			Gutter Space			Bolt Pattern		Standard Terminals ①			Weight
	A	B	C	D	E	F	G	H	Line	Load	Neutral	
	Height	Width	Depth	Width	Depth	Bending	Horizontal	Vertical				
HFD (30 – 100A) ②	35.61 (904.5)	20.06 (509.5)	13.34 (338.8)	8.00 (203.2)	4.00 (101.6)	9.62 (244.3)	10.25 (260.4)	34.73 (882.1)	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0	185 (84)
HFD (150 – 225A) ②	35.61 (904.5)	20.06 (509.5)	13.34 (338.8)	8.00 (203.2)	4.00 (101.6)	9.62 (244.3)	10.25 (260.4)	34.73 (882.1)	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300	185 (84)
HFD (30 – 100A) ③	47.74 (1213)	20.81 (528.6)	17.22 (437)	8.00 (203.2)	4.00 (101.6)	6.22 (157.9)	10.75 (273)	45.24 (1049.1)	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0	227 (103)
HFD (150A) ③	47.74 (1213)	20.81 (528.6)	17.22 (437)	8.00 (203.2)	4.00 (101.6)	6.22 (157.9)	10.75 (273)	45.24 (1049.1)	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300	227 (103)
HKD (150 – 225A)	48.00 (1219.2)	20.81 (528.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	10.59 (269.0)	11.00 (279.4)	45.50 (1155.7)	(1) #3 – 350	(1) #6 – 350	(3) #4 – 350	305 (138)
HKD (300A)	56.00 (1422.4)	20.81 (528.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	13.59 (345.2)	11.00 (279.4)	53.50 (1358.9)	(1) #3 – 350	(1) #6 – 350	(3) #4 – 350	395 (179)
HLD (400A)	64.00 (1625.6)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	10.54 (267.7)	16.00 (406.4)	61.48 (1561.6)	(1) 4/0 – 600	(2) #1 – 500	(6) 250 – 350	395 (179)
HLD (400A) ④	53.00 (1346.2)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	11.85 (301.0)	16.00 (406.4)	50.48 (1282.2)	(2) 3/0 – 350	(2) #1 – 500	(6) 250 – 350	395 (179)
HLD (600A) ②	64.00 (1625.6)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	10.54 (267.7)	16.00 (406.4)	61.48 (1561.6)	(2) 3/0 – 350	(2) #1 – 500	(12) 4/0 – 500	395 (179)
HLD (600A) ②④	64.00 (1625.6)	25.81 (655.6)	18.40 (467.4)	8.00 (203.2)	4.00 (101.6)	10.54 (267.7)	16.00 (406.4)	61.48 (1561.6)	(2) 400 – 500	(2) #1 – 500	(12) 4/0 – 500	395 (179)
HMDL (600A)	75.74 (1923.8)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.41 (442.2)	16.00 (406.4)	73.48 (1866.4)	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500	510 (232)
HMDL (800A) ②	75.74 (1923.8)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.41 (442.2)	16.00 (406.4)	73.48 (1866.4)	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500	510 (232)
NB (800 – 1000A)	75.74 (1923.8)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.41 (442.2)	16.00 (406.4)	73.48 (1866.4)	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500	570 (259)

- ① Suitable for Cu or Al wire. Consult the factory for other available terminal sizes.
- ② ATH2 only.
- ③ ATHI, ATH4 and NTHS only.
- ④ Alternate line terminals.

**Table 9. Power Panel and Transformer Panel Dimensions in Inches (mm)**

Power Panel Type	Height	Width	Depth
<b>Power Panel</b>			
HFD	11.00 (279.4)	17.00 (431.8)	6.81 (173.0)
HKD	24.50 (622.3)	11.88 (301.8)	17.50 (444.5)
HLD	26.00 (660.4)	16.88 (428.8)	17.50 (444.5)
HMDL	36.25 (920.8)	16.88 (428.8)	17.50 (444.5)
NB	36.25 (920.8)	16.88 (428.8)	19.00 (482.6)
<b>Transformer Panel</b>			
HFD	22.00 (558.8)	16.50 (419.1)	6.50 (165.1)
HKD, HLD, HMDL and NB	28.63 (727.2)	8.25 (209.6)	5.50 (139.7)



*Dimensions are approximate in inches (mm).  
Should not be used for construction purposes.*

**Figure 6. Automatic, Non-Automatic and Manual — Refer to Table 8**

**Automatic, Non-Automatic  
and Manual Wall-Mount  
Transfer Switches —  
30 – 1000 Amperes**

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