



# Cutler-Hammer

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

Technical Data TD01602003E

Effective May 2005  
Supersedes TD01602003E  
pages 1 – 12 dated May 2004



### Cutler-Hammer® Transfer Switches



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### Introduction

Cutler-Hammer Wall-Mount Transfer Switches from Eaton’s electrical business 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.
- Integrated equipment designs available with distribution panelboards and/or TVSS.
- 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

240/120 Vac and 208 Vac single-phase systems, automatic operation.

### Automatic: 30 – 1000 Amperes

For systems up to 600 Vac. 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 three 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 600 Vac. 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 600 Vac. 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.

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

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

**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.

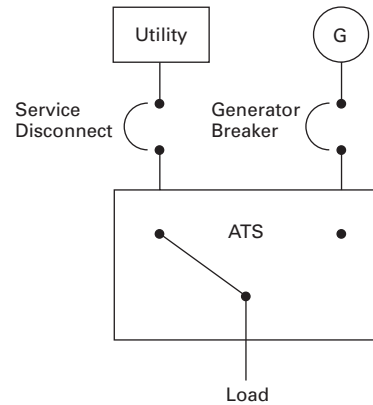
**UBC® and BOCA®:** Uniform Building Code for Seismic Zone 4.

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

## Typical Applications

### Utility — Generator

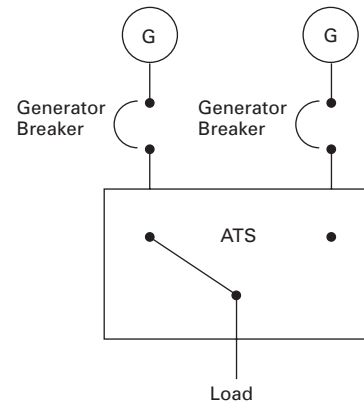
Transfer switches are traditionally applied between a utility and a generator set for emergency and standby power systems.



### Standard Application Utility — Generator

### Generator — Generator

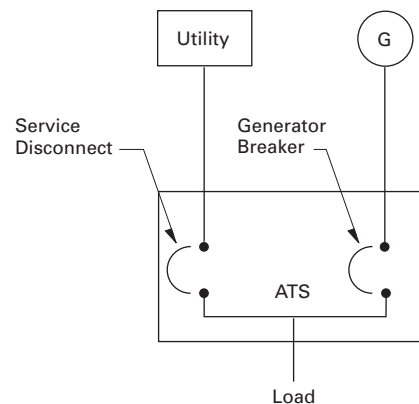
Transfer switches are sometimes applied between two generator sets for prime power use, often in remote installations. In such applications, source power is periodically alternated between the generator sets to equally share run time.



### Standard Application Generator — Generator

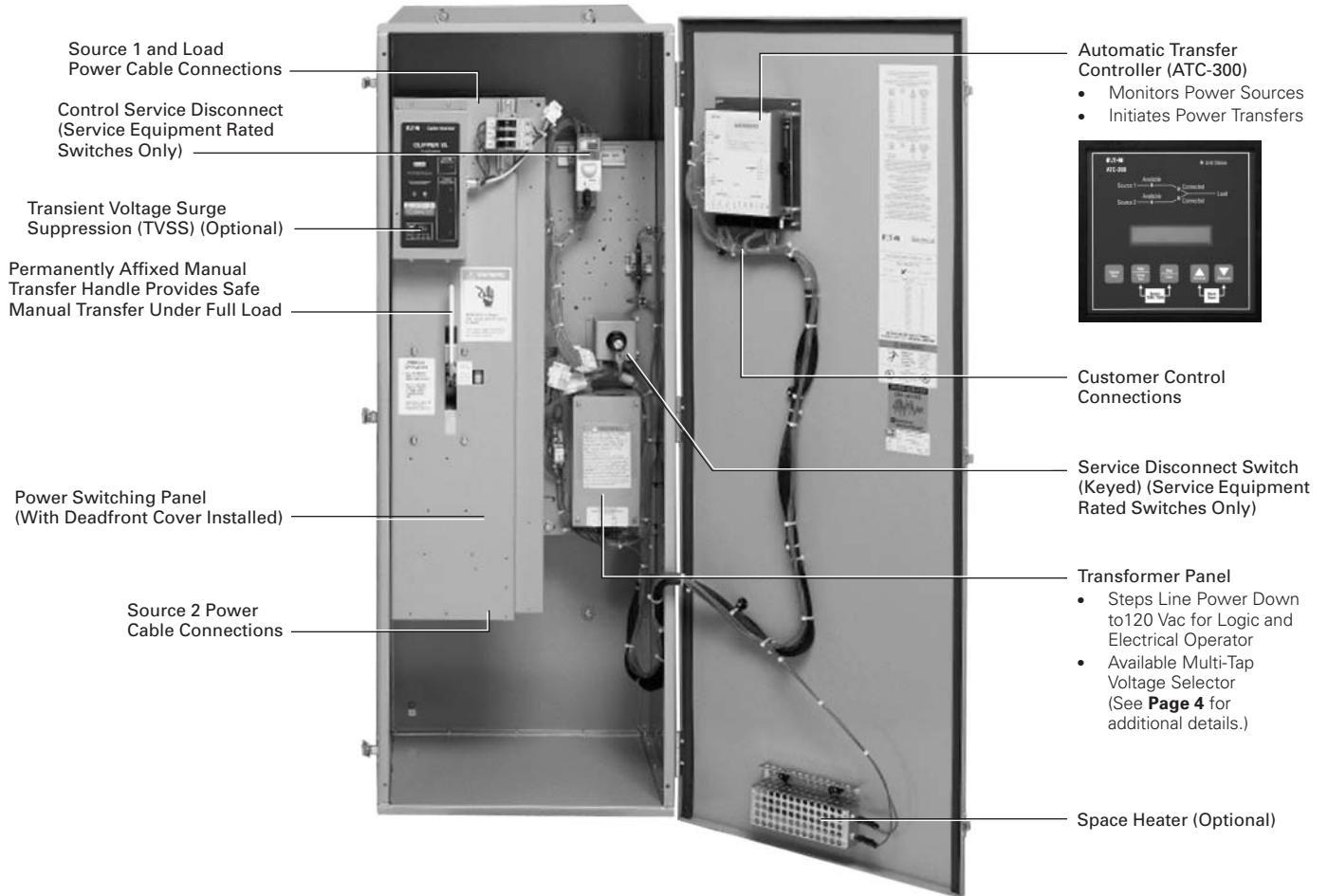
### Service Entrance Equipment

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.



### 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, designed specifically to meet UL 1008.

### 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.

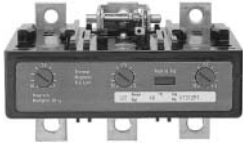
## Molded Case Switch Features



*Molded Case Switch*

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

**Optional Integral Overcurrent Protection Capability**



**Optional Thermal-Magnetic or Electronic Trip Units**

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.

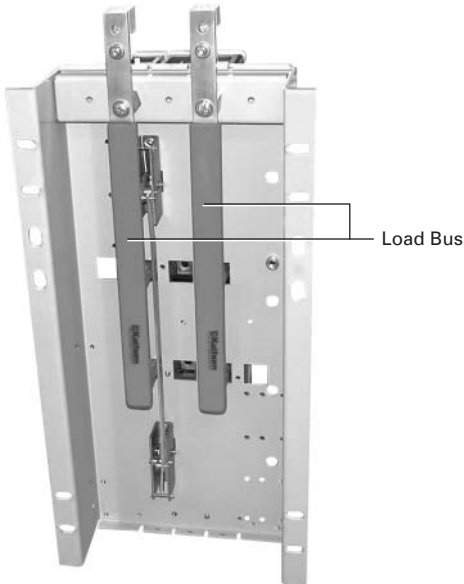
**Mechanical Interlock**



**Triple Interlocks**

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.

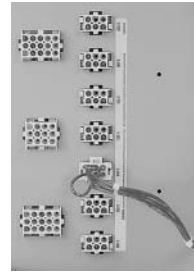
**Load Bus Assembly**



**Load Bus**

The load bus can be oriented for either top or bottom access.

**Multi-Tap Voltage Selector**



**International Voltage Selector**

The industry-exclusive Cutler-Hammer Multi-Tap System Voltage Selector allows our transfer switch to be applied on most system voltages just by proper insertion of the selector plug. Available in two configurations: Worldwide Multi-Tap with 600, 480, 415, 380, 240, 220 and 208 Vac, single- and 3-phase, 50 and 60 Hz taps.

**Ease of Maintenance**

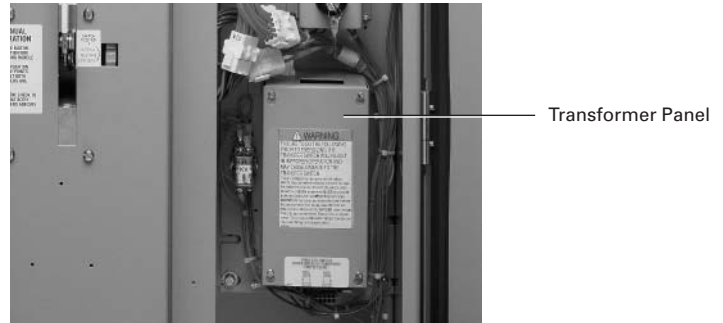


**Logic Disconnect Plugs**

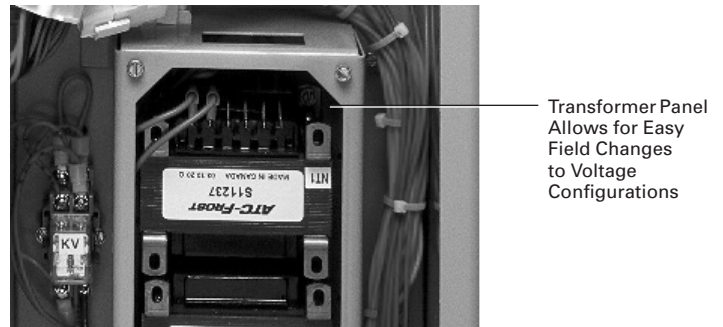
Keyed quick-disconnect plugs are provided for easy and complete isolation of the control circuitry.

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.

**North American Voltage Selector**



**Transformer Panel Location**



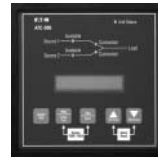
**Transformer Panel Opened**

North American Multi-Tap transformer comes with 600, 480, 240, 208 and 120 Vac, single- and 3-phase, and 60 Hz taps which are all field selectable. Simply remove the steel cover and move the appropriate blue flag terminal to the desired voltage. All switches are shipped with the blue flag in the 600 volt position.

## Wall-Mount Transfer Switch Logic Family

Eaton is the industry leader in transfer switch control technology and offers a full line of automatic transfer controllers. With the basic level ATC-100R, the advanced level ATC-300 and the premium level ATC-600, the Cutler-Hammer family of controllers is ready to meet the requirements of any system.

**Table 1. ATC Controller Selection Chart**



DESCRIPTION	ATC-100R	ATC-300	ATC-600
<b>System Application Voltage</b>	120/240 V, 208 V Single-Phase	Up to 600 Vac	Up to 600 Vac
<b>Voltage Specifications</b>			
Voltage Measurements of:	Source 1 and 2	Source 1 and 2 — VAB, VBC and VCA	Source 1, 2 and Load — VAB, VBC and VCA
Voltage Measurement Range	120 – 240 Vac	0 – 790 Vac rms	0 – 790 Vac rms
<b>Frequency Specifications</b>			
Frequency Measurements of:	Source 2	Source 1 and 2	Source 1 and 2
Frequency Measurement Range	50 – 60 Hz	40 – 70 Hz	40 – 80 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 and Program Mode. Source 1 and 2 — Available, Connected and Preferred. Load Energized (10 Total)
Main Display	N/A	LCD-Based Display	LED Display
Display Language	N/A	English, French	English
<b>Communications Capable</b>	N/A	N/A	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>Operating Environmental Range</b>	Operation -20°C to +70°C, Storage 30°C to +85°C, Humidity 0% – 95% Relative (Non-Condensing)	Operation -20°C to +70°C, Storage 30°C to +85°C, Humidity 0% – 95% Relative (Non-Condensing)	Operation -20°C to +70°C, Storage 30°C to +85°C, Humidity 0% – 95% Relative (Non-Condensing)
<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 Source 2 (Emergency) Fail	N/A	0 – 6 Seconds	0 – 6 Seconds
Time Delay Voltage Unbalance	N/A	10 – 30 Seconds	N/A
Voltage Unbalance	N/A	5% – 20% (DO) Dropout -2% to 3% (PU)	N/A
Phase Reversal	N/A	Disabled, ABC, CBA	N/A
In Phase	N/A	Enabled or Disabled	Enabled or Disabled
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
Commitment to Transfer in TDNE	N/A	N/A	Enabled or Disabled
Re-Transfer Mode	N/A	N/A	Automatic or Manual
Auto Daylight Savings Time Adjustment	N/A	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	PA01600002E	TD01602006E	TD.15A.05.T.E

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



## Switch and Feature Selection

Cutler-Hammer 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 2**, 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 “Standard 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 2** 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 3**, 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, ATC-300 Transfer Controller, NEMA 3R, 100 watt space heater (Feature 41A), 600 ampere, 480Y/277 Vac, 60 Hz, 3-phase, 4-wire system, solid neutral, UL 1008 listed.

**Specify Number:** ATV3MDA30600XRU – 41A

**Table 2. Wall-Mount Transfer Switch Family Standard and Optional Features**

FEATURE NUMBER	DESCRIPTION	RTHM MOLDED CASE	RLCM CONTACTOR	ATH3/ATV3 MOLDED CASE	ATC3 CONTACTOR	ATHI/ATVI MOLDED CASE	NTHE/NTVE MOLDED CASE	MTHX/MTVX MOLDED CASE
		AUTOMATIC RESIDENTIAL LIGHT COMMERCIAL WITH ATC-100R CONTROLLER	AUTOMATIC RESIDENTIAL TRANSFER SWITCH WITH ATC-100R CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-600 CONTROLLER	NON-AUTOMATIC TRANSFER SWITCH	MANUAL TRANSFER SWITCH
1	<b>Time Delay Source 1 (Normal) to Source 2 (Emergency) (TDNE)</b> Fixed 3 Seconds Adjustable 0 – 1800 Seconds	S —	S —	— S	— S	— S	— —	— —
2	<b>Time Delay Engine Start (TDES)</b> Fixed 10 Seconds Adjustable 0 – 120 Seconds	S —	S —	— S	— S	— S	— —	— —
3	<b>Time Delay Source 2 (Emergency) to Source 1 (Normal) (TDEN)</b> Fixed 7 Minutes Adjustable 0 – 1800 Seconds	S —	S —	— S	— S	— S	— —	— —
4	<b>Time Delay Engine Cooldown (TDEC)</b> Fixed 5 Minutes Adjustable 0 – 1800 Seconds	S —	S —	— S	— S	— S	— —	— —
5	<b>Source 2 (Emergency) Sensing</b>							
5H	Phase Reversal	—	—	S	S	S	—	—
5J	3-Phase Undervoltage/Underfrequency	—	—	S	S	S	—	—
5K	3-Phase Overvoltage/Overfrequency	—	—	S	S	S	—	—
5L	3-Phase Voltage Unbalance/Loss	—	—	S	S	S	—	—
6	<b>System or Engine Test</b>							
6B	System Test Pushbutton	—	—	S	S	S	—	—
6D	Maintained 2-Position Test Switch	—	—	—	—	O	—	—
6H	Maintained 4-Position Test Switch	—	—	—	—	O	—	—
7	<b>Time Delay Source 2 (Emergency) Fail (TDEF)</b> Adjustable 0 – 6 Seconds	—	—	S	S	S	—	—
8	<b>Bypass Time Delays (Pushbutton)</b>							
8C	Bypass TDEN	—	—	S	S	O	—	—
8D	Bypass TDNE	—	—	S	S	O	—	—
9	<b>Maintenance Selector Switch</b>							
9B	Electrical Operator Isolator Switch	—	—	O	O	O	—	—
10	<b>Preferred Source Selector Switch</b>							
10B	Utility to Utility or Utility to Generator	—	—	—	—	O	—	—
10D	Generator to Generator	—	—	—	—	O	—	—
12	<b>Pilot Lights</b>							
12C	Source 1 (Normal) Connected	—	—	S	S	S	O	—
12D	Source 2 (Emergency) Connected	—	—	S	S	S	O	—
12G	Source 1 (Normal) Available	—	—	S	S	S	O	—
12H	Source 2 (Emergency) Available	—	—	S	S	S	O	—
12L	Source 1 (Normal) Tripped (Requires Feature 16)	—	—	S	S	S	S	—
12M	Source 2 (Emergency) Tripped (Requires Feature 16)	—	—	S	S	S	S	—

**Note:** S = Standard, O = Optional, — = Not Available.

**Table 2. Wall-Mount Transfer Switch Family Standard and Optional Features (Continued)**

FEATURE NUMBER	DESCRIPTION	RTHM MOLDED CASE	RLCM CONTACTOR	ATH3/ATV3 MOLDED CASE	ATC3 CONTACTOR	ATHI/ATVI MOLDED CASE	NTHE/NTVE MOLDED CASE	MTHX/MTVX MOLDED CASE
		AUTOMATIC RESIDENTIAL LIGHT COMMERCIAL WITH ATC-100R CONTROLLER	AUTOMATIC RESIDENTIAL TRANSFER SWITCH WITH ATC-100R CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-600 CONTROLLER	NON-AUTOMATIC TRANSFER SWITCH	MANUAL TRANSFER SWITCH
14	<b>Auxiliary Relay Contacts</b>							
14C	Source 1 (Normal) Available 4NO & 4NC	—	—	—	—	S	—	—
14D	Source 2 (Emergency) Available 4NO & 4NC	—	—	—	—	S	—	—
14E	Source 1 (Normal) Available 1NO & 1NC	—	—	—	—	—	—	—
14F	Source 2 (Emergency) Available 1NO & 1NC	—	—	—	—	—	—	—
14G	Source 1 (Normal) Present 2NO & 2NC	—	—	0	0	—	—	—
14H	Source 2 (Emergency) Present 2NO & 2NC	—	—	0	0	—	—	—
15	<b>Switch Position Indication Contacts</b>							
15E	Source 1 (Normal) Position 1NO & 1NC	—	—	S	S	0	—	—
15F	Source 2 (Emergency) Position 1NO & 1NC	—	—	S	S	0	—	—
16	<b>Integral Overcurrent Protection</b>							
16N	Source 1 (Normal) Switch Only	—	0	0	—	0	0	0
16E	Source 2 (Emergency) Switch Only	—	0	0	—	0	0	0
16B	Source 1 (Normal) and Source 2 (Emergency) Switches	—	0	0	—	0	0	0
18	<b>Metering — Connection Point</b>							
18O	IQ Analyzer — Source 1 (Normal)	—	—	0	0	0	0	—
18P	IQ Analyzer — Source 2 (Emergency)	—	—	0	0	0	0	—
18Q	IQ Analyzer Switch Selectable (Source 1) & (Source 2)	—	—	0	0	0	0	—
18V	IQ Analyzer — Load Side	—	—	0	0	0	0	—
18R	IQ DP-4000 — Source 1 (Normal)	—	—	0	0	0	0	—
18S	IQ DP-4000 — Source 2 (Emergency)	—	—	0	0	0	0	—
18T	IQ DP-4000 Switch Selectable — (Source 1) & (Source 2)	—	—	0	0	0	0	—
18U	IQ DP-4000 — Load Side	—	—	0	0	0	0	—
18W	Ammeter — Load Side (Digital, All Phases Metered)	—	—	0	0	0	0	—
21A	<b>Non-Standard Terminals</b>	—	—	S	S	0	0	0
23	<b>Automatic Plant Exerciser</b>							
23C	Automatic No Load Exerciser (7 Day)	S	S	—	—	—	—	—
23J	Selectable — Disabled or 7-Day Interval, 0 – 600 Minutes, Load/No Load, with Fail-Safe	—	—	—	—	0	—	—
23K	Selectable — Disabled, 1, 7, 14, 28-Day Interval, 0 – 600 Minutes, Load/No Load, with Fail-Safe	—	—	S	S	—	—	—
26	<b>Source 1 (Normal) Sensing</b>							
26D	Go to Source 2 (Emergency) Input	—	—	S	S	S	—	—
26H	Phase Reversal Protection	—	—	S	S	S	—	—
26J	3-Phase Undervoltage/Underfrequency	S	S	S	S	S	S	S
26K	3-Phase Overvoltage/Overfrequency	S	S	S	S	S	S	S
26L	3-Phase Voltage Unbalance/Loss	—	—	S	S	—	—	—
29	<b>Alternate Transfer Modes of Operation</b>							
29A	Automatic Transfer and Retransfer	S	S	S	S	S	—	—
29G	Automatic or Non-Automatic Operation Selector Switch (Switch must be Labeled as Non-Automatic)	—	—	0	0	0	—	—
29J	Automatic Transfer Operation with Selectable (Via Programming) Automatic or Non-Automatic Retransfer Operation with Fail-Safe	—	—	—	—	0	—	—

**Note:** S = Standard, O = Optional, — = Not Available.

**Table 2. Wall-Mount Transfer Switch Family Standard and Optional Features (Continued)**

FEATURE NUMBER	DESCRIPTION	RTHM MOLDED CASE	RLCM CONTACTOR	ATH3/ATV3 MOLDED CASE	ATC3 CONTACTOR	ATHI/ATVI MOLDED CASE	NTHE/NTVE MOLDED CASE	MTHX/MTVX MOLDED CASE
		AUTOMATIC RESIDENTIAL LIGHT COMMERCIAL WITH ATC-100R CONTROLLER	AUTOMATIC RESIDENTIAL TRANSFER SWITCH WITH ATC-100R CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-600 CONTROLLER	NON-AUTOMATIC TRANSFER SWITCH	MANUAL TRANSFER SWITCH
32	<b>Programmed Transition Transfer Operation Modes</b>							
32A	Time Delay Neutral	S	—	S	—	0	—	—
32B	Load Voltage Decay	—	—	—	—	0	—	—
32C	Inphase Monitor Default Load Voltage Decay	—	—	—	S	—	—	—
32E	Time Delay Neutral (3 – 60 Seconds)	—	—	—	—	0	S	—
33	<b>Remote Shunt Trip</b>							
33A	Source 1 120 Vac Shunt Trip	—	—	—	—	0	—	—
33B	Source 2 120 Vac Shunt Trip	—	—	—	—	0	—	—
34	<b>Logic Extender Cable</b>							
34A	48 Inches (1219 mm)	—	—	—	—	0	0	—
34C	96 Inches (2438 mm)	—	—	—	—	0	0	—
34E	144 Inches (3658 mm)	—	—	—	—	0	0	—
35A	<b>Pretransfer Signal Contacts 1NO/1NC</b>	—	—	S	S	0	—	—
36	<b>Load Shed from Source 2 (Emergency)</b>	—	—	—	—	S	—	—
37	<b>Rated as Suitable for Use as Service Equipment <sup>Ⓢ</sup> (Requires 16B or 16N)</b>							
37A	Without Ground Fault Protection 30 – 1000 Amperes	—	0	0	—	0	0	0
37B	With Ground Fault Protection 30 – 1000 Amperes	—	0	0	—	0	0	0
38	<b>Stainless Steel Device Covers</b>							
38A	SS Cover for Device Plate or Service Equipment Disconnect	—	—	0	0	0	—	—
38B	SS Cover for Controller	—	—	0	0	0	—	—
39	<b>Distribution Panel (For 240/120 V, AT_3 Switches Only)</b>							
39A	200 A with (2) 200 A Feeders	—	—	0	0	—	—	—
39B	300 A with (3) 200 A Feeders	—	—	0	0	—	—	—
39C	400 A with (4) 200 A Feeders	—	—	0	0	—	—	—
41	<b>Space Heater with Thermostat</b>							
41A	100 Watts	—	—	0	0	0	0	—
41C	400 Watts	—	—	—	—	—	—	—
42	<b>Seismic Zone 4 Certified</b>	S	S	S	S	S	S	S
45	<b>Load Sequencing Contacts</b>							
45A	Load Sequencing Contacts (1)	—	—	—	—	0	—	—
45B	Load Sequencing Contacts (2)	—	—	—	—	0	—	—
45C	Load Sequencing Contacts (3)	—	—	—	—	0	—	—
45D	Load Sequencing Contacts (4)	—	—	—	—	0	—	—
45E	Load Sequencing Contacts (5)	—	—	—	—	0	—	—
45F	Load Sequencing Contacts (6)	—	—	—	—	0	—	—
45G	Load Sequencing Contacts (7)	—	—	—	—	0	—	—
45H	Load Sequencing Contacts (8)	—	—	—	—	0	—	—
45I	Load Sequencing Contacts (9)	—	—	—	—	0	—	—
45J	Load Sequencing Contacts (10)	—	—	—	—	0	—	—
48	<b>Communications</b>							
48A	IPONI Module	—	—	—	—	0	—	—
48B	IPONI Module and PMCOM5	—	—	—	—	0	—	—
48C	IPONI Module, PMCOM5 and Null Modem Cable	—	—	—	—	0	—	—
48D	EPONI Module (10Base-T Only)	—	—	—	—	0	—	—
48E	EPONI Module (10Base-T and 10Base-FL)	—	—	—	—	0	—	—
48F	MPONI Module (Modbus <sup>®</sup> )	—	—	—	—	0	—	—

<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.

**Note:** S = Standard, O = Optional, — = Not Available.



**Table 2. Wall-Mount Transfer Switch Family Standard and Optional Features (Continued)**

FEATURE NUMBER	DESCRIPTION	RTHM MOLDED CASE	RLCM CONTACTOR	ATH3/ATV3 MOLDED CASE	ATC3 CONTACTOR	ATHI/ATVI MOLDED CASE	NTHE/NTVE MOLDED CASE	MTHX/MTVX MOLDED CASE
		AUTOMATIC RESIDENTIAL LIGHT COMMERCIAL WITH ATC-100R CONTROLLER	AUTOMATIC RESIDENTIAL TRANSFER SWITCH WITH ATC-100R CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-300 CONTROLLER	AUTOMATIC TRANSFER SWITCH WITH ATC-600 CONTROLLER	NON-AUTOMATIC TRANSFER SWITCH	MANUAL TRANSFER SWITCH
51	<b>Transient Voltage Surge Protection (Listed Rating is per Phase)</b>							
51D1	50 kA — Connected to Source 1	—	—	0	0	—	0	0
51E1	80 kA — Connected to Source 1	—	—	0	0	—	0	0
51F1	100 kA — Connected to Source 1	—	—	0	0	—	0	0
51G1	50 kA — Connected to Source 1 (240/120 Vac Systems Only)	—	0	0	0	—	0	0
51H1	75 kA — Connected to Source 1 (240/120 Vac Systems Only)	—	0	0	0	—	0	0
51J4	Telephone/Modem/DSL (4 Lines Total)	—	0	0	0	—	0	0
51K4	Cable TV/Satellite Cable/Cable Modem (2 Lines Total)	—	0	0	0	—	0	0
51M4A	12 Vdc Generator Start Circuit Protection	—	0	0	0	—	0	0
51M4B	24 Vdc Generator Start Circuit Protection	—	0	0	0	—	0	0

**Note:** S = Standard, O = Optional, — = Not Available.

## Transfer Switch Controllers



### Standard and Optional Features

**Note:** All features or combinations of features may not be available on specific transfer switches. All features/accessories are UL listed unless noted.

#### TIMERS

##### 1. Time Delay Normal to Emergency (TDNE)

Provides a time delay to allow for the generator to warm up before transferring the load from the Normal Source to the Emergency Source. Timing begins only after the Emergency Source becomes available and deemed good based on the programmable voltage and frequency set points in the controller.

##### 2. Time Delay Engine Start (TDES)

Provides a time delay before initiating the generator start cycle. This is to account for momentary power outages or voltage fluctuations of the Normal Source. Provides a Form "C" contact to the generator starter circuit.

##### 3. Time Delay Emergency to Normal (TDEN)

Provides a time delay of the re-transfer operation to permit stabilization of the Normal Source. Timing begins only after the Normal Source becomes available and deemed good based on the programmable voltage and frequency set points in the controller. This function is fail-safe protected.

##### 4. Time Delay Engine Cooldown (TDEC)

Provides a time delay before initiating the generator stop cycle after the re-transfer operation. This allows the generator to cool down by running unloaded. Timing begins on completion of the re-transfer cycle.

##### 7. Time Delay Emergency Fail (TDEF)

Provides a time delay that prevents a connected emergency source from being declared "Unavailable" based on the customer's set points. This is to account for momentary generator fluctuations. If the Source 2 remains in a failed state, then 0.5 second after the TDEF timer expires, the transfer switch will proceed with the programmed sequence for re-transfer if Source 1 is available. This time delay is only implemented when Source 2 is a generator.

**Note:** This feature is also enabled when large loads cause generator output to drop below customer set points.

## ENGINE EXERCISER

### 23J. Plant Exerciser (PE) With Fail-safe

Provides a means for automatic testing of the engine generator set or standby power system. All programmed time delays in the controller will be performed during the plant exerciser operation.

Programmable set points for test interval, are start time, either disabled or 7 days, and engine test time.

Test may be performed with or without a load transfer. Test may be manually cancelled during the operation. This is a fail-safe operation.

### 23K. Plant Exerciser With Fail-safe

Provides a means for automatic testing of the engine generator set or standby power system. All programmed time delays in the controller will be performed during plant exerciser operations.

Programmable set points for test intervals are start time, either disabled, daily, 7, 14 or 28 days, engine test time.

Test may be performed with or without load transfer. Test may be manually cancelled during the operation. This function is fail-safe protected.

## SOURCE 1 SENSING

### 26. Source 1 — Monitoring and Protection

Provides Source 1 monitoring and protection functions. If Source 1 fails, then the Automatic Transfer Controller will begin the sequence of operations necessary to transfer the load to Source 2. All **Feature 26** monitoring and protection functions are fail-safe operations.

### 26H. Three-Phase Rotation Protection

Provides three-phase reversal sensing in order to protect against transferring to an out of phase source. The controller will treat the opposite source as unavailable if the sources are out of phase, based on programmable set points in the controller.

### 26J. All-Phase Undervoltage/Underfrequency Protection

Provides all-phase undervoltage/underfrequency monitoring and protection based on programmable set points in the controller.

### 26K. All-Phase Overvoltage/Overfrequency Protection

Provides all-phase overvoltage/overfrequency monitoring and protection based on programmable set points in the controller.

### 26L. Three-Phase Voltage Unbalance/Loss

Provides phase loss detection from blown fuses on Source 1.

## SOURCE 2 SENSING

### 5. Source 2 — Monitoring and Protection

Provides monitoring and protection based on the Source 2 voltage and/or frequency set points. All **Feature 5** monitoring and protection functions are fail-safe operations.

### 5H. Three-Phase Rotation Protection

Provides three-phase reversal sensing in order to protect against transferring to an out of phase source. The controller will treat the opposite source as unavailable if the sources are out of phase, based on programmable set points in the controller.

### 5J. All-Phase Undervoltage/Underfrequency Protection

Provides undervoltage/underfrequency monitoring and protection based on programmable set points in the controller.

### 5K. All-Phase Overvoltage/Overfrequency Protection

Provides overvoltage/overfrequency monitoring and protection based on programmable set points in the controller.

### 5L. Three-Phase Voltage Unbalance/Loss

Provides phase loss detection from blown fuses on the Source 2 supply circuit.

## MANUAL CONTROLS

### 6B. Test Operators

Automatic Transfer Switches are provided with a test pushbutton that simulates a loss of the Source 1 as standard. All programmed time delays (TDNE, TDEN, etc.) will be performed as part of the test. Engine run time of the test is equal to the plant exerciser programmed set point. All tests are fail-safe protected.

### 6H. 4-Position Test Selector Switch (FPSS)

Provides a 4-position, maintained contact selector switch marked "Auto," "Test," "Engine Start," and "Off." The FPSS is fail-safe protected, except for the "Off Position." Transfer Switch operation is determined by the switch position. Transfer Switch operations are as follows:

- "Auto" — Automatic operation mode.
- "Test" — A Load test is performed until the switch is moved to another position.
- "Engine Start" — A No-Load test is performed until the switch is moved to another position.
- "Off" — The Automatic Transfer Controller and engine start contact are disabled. A white pilot light is provided to indicate that the FPSS is in the "Off" position.

**Note:** This option will force the switch to be marked as non-automatic based on UL 1008.

### 8. Time Delay Bypass Pushbutton

Provides a momentary contact pushbutton to bypass the TDNE (**Feature 1**) and/or TDEN (**Feature 2**) time delays. The Time Delay Bypass Pushbutton contact, when closed, will reduce any or all of the programmed time delay to zero. Must be executed when TDNE or TDEN timer is displayed on the controller.

### 9B. Maintenance Selector Switch (MSS)

Provides a 2-position, maintained contact selector switch marked "Operate" and "Disable." When the MSS is placed in the "Disable" position, the controller logic will be disconnected from the transfer motor circuit. The MSS is placed in the "Operate" position for normal automatic operation.

## TRANSFER OPERATION MODES

Provides standard or optional transfer modes, mode selection devices and operational methods for transfer switches.

### 29G. Automatic/Manual Operation With Selector Switch

Provides 2-position selector switch (labeled Auto/Manual) that permits selection of the Automatic or Manual transfer. When in the "Auto" position, the transfer switch operates with fully automatic transfer, re-transfer, and generator startup and shutdown operations. When in the "Manual" position, manual operation is required to initiate the generator startup or re-transfer with generator shutdown operations.

**Note:** Transfer switches with **Feature 29G** must be labeled as Non-Automatic Transfer Switch equipment.

### 29J. Automatic Transfer or Automatic Transfer With Non-Automatic Re-Transfer Operation

Provides a field-selectable programmable set point that permits the transfer switch to operate in one of the following two transfer modes (A or B).

- A. Fully automatic operation.
- B. Automatic engine/generator startup and automatic transfer operation from Source 1 to Source 2. Manual pushbutton operation is required to initiate the re-transfer operation and engine/generator shutdown. The pushbutton for manual re-transfer operation is included. This is fail-safe protected.

### 10. Preferred Source Selector

Provides a means to designate either Source 1 or Source 2 as the "Preferred" Source. The "Preferred" Source is the source that the transfer switch will connect the load to if it is available.

**Note:** This is a programmable software feature not an actual switch.

### 10B. Preferred Source Selector

Provides a programmable source selector for use on systems comprised of dual utility or utility and engine/generator power sources.

### 10D. Preferred Source Selector

Provides a programmable source selector for use on systems comprised of dual engine/generator power sources. (Dual engine starting circuits are provided.)

## INDICATIONS/AND STATUS DISPLAY

### 12C. Source 1 — Load Connected

Provides a green indication that indicates the load is connected to Source 1 when lit.

### 12D. Source 2 — Load Connected

Provides a red indication that indicates the load is connected to Source 2 when lit.

### 12G. Source 1 — Present

Provides a white or amber indication "Depending on the Controller" that Source 1 has power, however this does not indicate whether Source 1 is acceptable.

### 12H. Source 2 — Present

Provides an amber indication that Source 2 has power, however this does not indicate whether Source 2 is acceptable.

### Overcurrent Trip Indication

Available only with Integral Overcurrent Protection (**Feature 16**). (Shown on Automatic Transfer Controller Display.)

### 12L. Source 1 Trip Indication

The Automatic Transfer Controller display will read "Lockout" if the Source 1 circuit breaker is in the "tripped" position.

### 12M. Source 2 Trip Indication

The Automatic Transfer Controller display will read "Lockout" if the Source 2 circuit breaker is in the "tripped" position.

## CUSTOMER OUTPUTS

### 14. Relay Auxiliary Contacts

Provides Form "C" relay auxiliary contacts.

### 14C. Source 1 Present

Provides 4 Form "C" relay auxiliary contacts. The relay is energized when Source 1 is present.

### 14D. Source 2 Present

Provides 4 Form "C" relay auxiliary contacts. The relay is energized when Source 2 is present.

### 14E. Source 1 Available

Provides 1 Form "C" relay auxiliary contact. The relay is energized when Source 1 is available and within the controller's programmable set points.

### 14F. Source 2 Available

Provides 1 Form "C" relay auxiliary contact. The relay is energized when Source 2 is available and within the controller's programmable set points.

### 14G. Source 1 Available

Provides 2 Form "C" relay auxiliary contacts. The relay is energized when Source 1 is available and within the controller's programmable set points.

### 14H. Source 2 Available

Provides 2 Form "C" relay auxiliary contacts. The relay is energized when Source 2 is available and within the controller's programmable set points.

### 15. Switch Position Indication Contact

Provides a contact that indicates if the power switching device is in the "open" or "closed" position.

### 15E. Source 1 Position Indication Contact

Provides 1 Form "C" contact that indicates the position of the Source 1 power switching device.

### 15F. Source 2 Position Indication Contact

Provides 1 Form "C" contact that indicates the position of the Source 2 power switching device.

### 15M. Source 2 Load Shed Contacts

Provides 4 Form "C" contacts to initiate a load circuit disconnect while on Source 2. This gives the user the capability of selectively choosing not to run certain loads while on Source 2.

### 35A. Pre-Transfer Signal With 1NO & 1NC Contacts

Provides a signal prior to the transferring of the load. Will not transfer until the programmable delay set point in the controller is reached. If both sources are not available, this option will ignore the time delay set in the controller.

## CUSTOMER INPUTS

### 26D. Go to Emergency (Source 2)

Provides the capability for an external contact closure to initiate a transfer to the Source 2 power source. This includes starting the generator, performing the programmed time delays and the transfer operation. Re-transfer will occur when the external contact is opened. This is a fail-safe function.

### 36. Load Shed From Emergency

Provides the capability for an external NC contact to initiate a load circuit disconnection from the Source 2 power source. If the load circuit is connected to Source 2 and the contact is opened, then a re-transfer to Source 1 is completed if Source 1 is available. If Source 1 is not available, then the transfer switch will transfer to neutral. If the load circuit is connected to Source 1 and the contact is open, then a transfer Source 2 is prohibited.

### 16. Integral Overcurrent Protection

Provides thermal-magnetic overcurrent protection integral to the power switching device(s). All **Feature 16** options include a "Lockout" function. If the power switching breaker trips on an overcurrent condition, then "Lockout" is displayed on the Automatic Transfer Controller display and automatic operation is prevented until the appropriate source is manually reset. On non-automatic switches, a blue light is supplied to indicate the "lockout."

### 16B. Integral Overcurrent Protection on Both Power Source Switching Devices

Provides integral overcurrent protection on both Source 1 and Source 2 power switching devices.

### 16E. Integral Overcurrent Protection on the Source 2 Power Switching Device

Provides integral overcurrent protection on the Source 2 power switching device.

### 16N. Integral Overcurrent Protection on the Source 1 Power Switching Device

Provides integral overcurrent protection on the Source 1 power switching device.

### 18. Metering

The IQ family of microprocessor-based multi-function monitoring and display devices features the latest technological advances in metering and communications capabilities.

The IQ family is available with an optional communications interface for data collection, storage and printout via the Cutler-Hammer PowerNet™ system. (See **Feature 48** on communications for available communication modules.)

**Feature 18** metering options include all required external devices (CTs etc.) for a fully functioning metering system.

### IQ DP-4000

The IQ DP-4000 is an rms sensing, multi-function microprocessor-based monitoring and display device that provides simultaneous monitoring of current, voltage, frequency, power (real, reactive and apparent), energy (real, reactive and apparent), power factor and percent THD (current and voltage).

### 18R. IQ DP-4000 — Source 1 Line Side Metering

Provides an IQ DP-4000 for monitoring the Source 1 line side circuit.

### 18S. IQ DP-4000 — Source 2 Line Side Metering

Provides an IQ DP-4000 for monitoring the Source 2 line side circuit.

### 18T. IQ DP-4000 with Selector Switch for Source 1 or Source 2 Line Side Metering

Provides an IQ DP-4000 with a source selector switch for monitoring the Source 1 or Source 2 line side circuit.

### 18U. IQ DP-4000 — Load Side Metering

Provides an IQ DP-4000 for monitoring the load side circuit.

### IQ Analyzer

The IQ Analyzer is an rms sensing, multi-function microprocessor-based monitoring and display device with waveform capture that provides simultaneous monitoring of current, voltage, frequency, power (real, reactive and apparent), energy (real, reactive and apparent), demand (forward, reverse and net), harmonics (magnitude and phase angle), power factor and percent THD (current and voltage).

### 18O. IQ Analyzer — Source 1 Line Side Metering

Provides an IQ Analyzer for monitoring the Source 1 line side circuit.

### 18P. IQ Analyzer — Source 2 Line Side Metering

Provides an IQ Analyzer for monitoring the source 2 line side circuit.

### 18Q. IQ Analyzer with Selector Switch for Source 1 or Source 2 Line Side Metering

Provides an IQ Analyzer with a source selector switch for monitoring the Source 1 or Source 2 line side circuit.

### 18V. IQ Analyzer — Load Side Metering

Provides an IQ Analyzer for monitoring the load side circuit.

### 18W. Ammeter Side Metering

Provides an ammeter for monitoring the load side circuit.

### 20A. Rear Bus Provisions

Provides Source 1, Source 2 and Load Circuit rear accessible bus stabs with provision for bus bar connection. Cutler-Hammer Transfer Switches are provided with either front or rear (dependant on switch type) connected solderless screw-type terminals for power cable connection as standard.

### 21A. Optional Power Cable Connection Terminals

Cutler-Hammer Transfer Switches are provided as standard with Source 1, Source 2 and Load Circuit solderless screw-type terminals for power cable connection. Alternate terminal wire sizes, and compression lug provisions may be available dependant on transfer switch type and ampere rating.

### 32. Delayed Transition Transfer Modes for Open Transition Transfer Switches

Provides delayed transition transfer modes for an open transition transfer switch. Often used in systems with inductive loads, a delayed transition transfer switch may prevent or reduce inrush currents due to out of phase switching of inductive loads.

### 32A. Time Delay Neutral

Provides a time delay in the neutral position during the transfer and re-transfer operations during which both Source 1 and Source 2 are disconnected from the load circuit. This allows inductive loads time to reach a safe voltage and eliminate back EMF. The time delay is programmable and is the same for both transfer and re-transfer operations. This is a passive feature which requires the consulting engineer/installer to determine the settings based on how the user will operate the facility. Adjustable 0 – 120 seconds.

### **32B. Load Voltage Decay**

Provides load voltage measurement to sense back EMF that is generated when the transfer switch is in the neutral position. It provides a delay in transfer in either direction if an unacceptable level is sensed as established by a programmed set point. This is an active feature that adapts to how the facility is operating in order to minimize neutral position wait time, but ensure safety. Adjustable 2 – 30% of nominal voltage.

### **32C. In-Phase Transition With Default to Load Voltage Decay**

Provides In-Phase transition, which is a feature that will permit a transfer or re-transfer between two available sources that have a phase angle difference near zero. The In-Phase transition feature includes permissible frequency difference and synchronization time set points. In the event Source 1 and Source 2 fail to synchronize within the permitted frequency difference and time, then the controller defaults to the Load Voltage Decay operation as described in **Feature 32B**. Adjustable Frequency Difference 0.0 – 3.0 Hz. Adjustable Synchronization Time Allowance 1 – 60 minutes.

### **32D. In-Phase Transition With Default to Time Delay Neutral**

Provides In-Phase transition, which is a feature that will permit a transfer or re-transfer only between two available sources that have a phase angle difference near zero. The In-Phase transition feature includes permissible frequency difference and synchronization time set points. In the event Source 1 and Source 2 fail to synchronize within the permitted frequency difference and time, then the controller defaults to the Time Delay Neutral operation as described in **Feature 32A**. Adjustable Frequency Difference 0.0 – 3.0 Hz. Adjustable Synchronization Time Allowance 1 – 60 minutes.

### **32F. In-Phase Transition**

Provides In-Phase transition, which is a feature that will permit a transfer or re-transfer between two available sources that have a phase angle difference of 8 degrees or less. The In-Phase transition feature includes permissible frequency difference and synchronization time set points. In the event Source 1 and Source 2 fail to synchronize within the permitted frequency difference and time, the Alarm relay will energize and “Failed to Sync” will be displayed on Line 1 of the controller. After resetting the alarm, another in-phase transition may be attempted or a non-synchronized transfer may be initiated by failing the connected source. The adjustable frequency difference is 0.0 to 3.0 Hz. If the synchronization does not occur within a specified amount of time, the Alarm relay will energize and the failure will be logged into the Transfer History as either “Sync Fail - Freq” or “Sync Fail - Phase” depending on whether the frequency difference or the phase difference was excessive.

## **LOGIC EXTENDER CABLE**

### **34A. 48 Inches (1219 mm)**

Provides logic extension cable with connectors.

### **34C. 96 Inches (2438 mm)**

Provides logic extension cable with connectors.

### **34E. 144 Inches (3658 mm)**

Provides logic extension cable with connectors.

## **37. Service Equipment Rated Transfer Switch**

Provides the label “Suitable for use as Service Equipment” and the features necessary to meet the requirements for the label. Includes service disconnect with visible indication and neutral assembly with removable link. **Feature 16B or 16N must be selected separately.**

## **37A. Service Equipment Rated Transfer Switch Without Ground Fault Protection**

Provides Service Equipment rating for an application that does not require ground fault protection.

## **37B. Service Equipment Rated Transfer Switch With Ground Fault Protection**

Provides Service Equipment rating for an application that requires ground fault protection.

## **38. Stainless Steel Cover**

Provides protection for the controller.

## **39. Distribution Panel**

The Distribution Panel feature utilizes a panelboard design with bolt-on circuit breakers. Bolt-on breakers are designed to hold up to the changes in temperature and humidity that an industrial application calls for.

## **41. Space Heater With Thermostat**

Provides a space heater and adjustable thermostat. External control power is not required. Availability is dependent on transfer switch type.

### **41A. Space Heater With Thermostat — 100 Watts**

Provides 100-watt space heater with an adjustable thermostat.

### **41C. Space Heater With Thermostat — 400 Watts**

Provides 400-watt space heater with an adjustable thermostat.

## **42. Seismic Certification**

Provides a seismic certified Transfer Switch with certificate for application is Seismic Zone 4 under the California Building Code (CBC), the Uniform Building Code (UBC) and BOCA, and International Building Code (IBC).

## **45. Load Sequencing Capability**

Provides the capability for sequential closure of up to 10 addressable relays after a transfer. Each Addressable Relay provides 1 Form “C” contact. A single adjustable time delay between each of the relay closures is provided. Operates via a sub-network. Adjustable 1 – 120 seconds.

### **45A. Load Sequencing Contact**

Provides one addressable relay.

### **45B. Load Sequencing Contact**

Provides two addressable relays.

### **45C. Load Sequencing Contact**

Provides three addressable relays.

### **45D. Load Sequencing Contact**

Provides four addressable relays.

### **45E. Load Sequencing Contact**

Provides five addressable relays.

### **45F. Load Sequencing Contact**

Provides six addressable relays.

### **45G. Load Sequencing Contact**

Provides seven addressable relays.

### **45H. Load Sequencing Contact**

Provides eight addressable relays.

### **45I. Load Sequencing Contact**

Provides nine addressable relays.

### **45J. Load Sequencing Contact**

Provides 10 addressable relays.



#### 48. Communication Modules

Provides communications modules for the ATC-400, ATC-600 (IQ Transfer) and ATC-800 (Closed Transition IQ Transfer) transfer switch controllers. These controllers are PowerNet compatible devices. A separately mounted communications module will enable the automatic transfer controller to be remotely monitored controlled and programmed via the network.

##### 48A. Communications Module — IPONI

Provides an IPONI communications module.

##### 48B. Communications Modules — IPONI and PMCOM5

Provides IPONI and PMCOM5 communications modules.

##### 48C. Communications Modules — IPONI, PMCOM5 and Null Modem Cable

Provides IPONI, PMCOM5 communications modules and null modem cable.

##### 48D. Communications Module — EPONI

Provides EPONI communications module. (10Base-T only.)

##### 48E. Communications Module — EPONI

Provides EPONI communications module. (10Base-T and 10Base-FL.)

#### TRANSIENT VOLTAGE SURGE PROTECTION

(Listed rating is per phase, and availability is dependent on transfer switch type.)

**51D1.** 50 kA — Connected to Source 1.

**51E1.** 80 kA — Connected to Source 1.

**51F1.** 100 kA — Connected to Source 1.

**51G1.** 50 kA — Connected to Source 1. (240/120 Vac single-phase systems only.)

**51H1.** 75 kA — Connected to Source 1. (240/120 Vac single-phase systems only.)

**51J4.** Telephone/Modem/DSL (4 Lines Total).

**51K1.** Cable TV/Satellite Cable/Cable Modem (2 Lines Total).

**51M4A.** 12 Vdc Engine control Start Circuit Protection.

**51M4B.** 24 Vdc Engine control Start Circuit Protection.

#### Glossary

With respect to their use in this document and as they relate to switch operation, the following terminology is defined:

**Available** — A source is defined as “available” when it is within its undervoltage/overvoltage/underfrequency/overfrequency (if applicable) set point ranges for the nominal voltage and frequency setting.

**Fail-safe** — If for any reason Source 2 becomes unavailable when connected to the load, and Source 1 is available, the controller will detect this and automatically transfer the load to Source 1.

**Re-Transfer** — “Re-Transfer” is defined as a change of the load connection from the secondary to primary source.

**Source 1** — Is the primary source or Normal Source or Normal Power Source or Normal. (Except when Source 2 has been designated the “Preferred Source.”)

**Source 2** — Is the secondary source or Emergency Source or Emergency Power Source or Emergency or Standby or Backup source. (Except when Source 2 has been designated the “Preferred Source.”)

**Source 1 — Failed or Fails** — Source 1 is defined as “failed” when it is outside of its undervoltage or overvoltage or underfrequency or overfrequency (if applicable) set point ranges for the nominal voltage and frequency setting.

**Source 2 — Failed or Fails** — Source 2 is defined as “failed” when it is outside of its undervoltage or overvoltage or underfrequency or overfrequency (if applicable) set point ranges for the nominal voltage and frequency setting for a time exceeding 0.5 seconds after the Time Delay Emergency Fail (TDEF) time delay expires.

**Transfer** — “Transfer” is defined as a change of the load connection from the primary to secondary source except when specifically used as “Transfer to Neutral.”

**Transfer to Neutral** — “Transfer to Neutral” is defined as when the load circuits are disconnected from both Source 1 and Source 2.



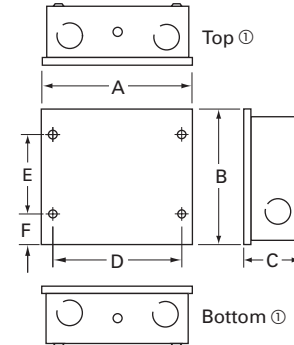
## Technical Data

### Residential/Light Commercial Molded Case Transfer Switch — RTHM



**Table 3. Molded Case Transfer Switch Dimensions in Inches (mm)**

DIMENSIONS	SWITCH RATING	
	30 – 100 AMPERES	150 – 225 AMPERES
A	20.00 (508.0)	20.00 (508.0)
B	18.22 (462.8)	28.22 (716.8)
C	8.00 (203.2)	8.00 (203.2)
D	16.00 (406.4)	16.00 (406.4)
E	11.00 (279.4)	15.00 (381.0)
F	4.33 (110.0)	5.21 (132.3)



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

**Table 4. Molded Case Transfer Switch Weights in Pounds (kg)**

SWITCH RATING	30 – 100 AMPERES	150 – 225 AMPERES
	45 (21)	65 (30)

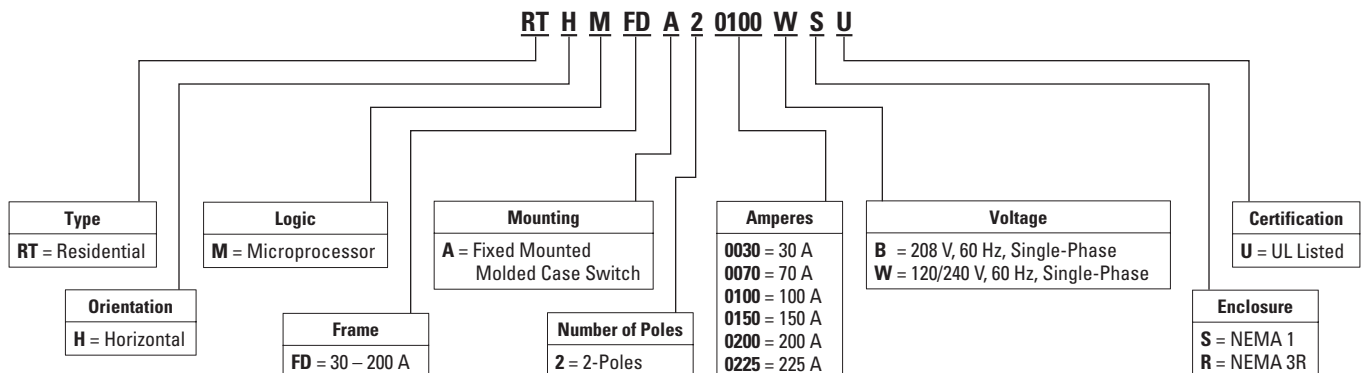
**Table 5. Molded Case Transfer Switch Standard Withstand, Closing and Interrupting Ratings ②**

TRANSFER SWITCH AMPERE RATING (kA)	RATING WHEN USED WITH UPSTREAM CIRCUIT BREAKERS		RATING WHEN USED WITH UPSTREAM FUSE	
	240 V		MAXIMUM RATING (kA)	FUSE TYPE ③
30	100		200	J, T
70	100		200	J, T
100	100		200	J, T
150	100		200	J, T
200	100		200	J, T
225	100		200	J, T

② Tested in accordance with UL 1008. For maximum breaker rating in circuits where the transfer switch is evaluated as a “motor branch circuit conductor,” refer to NEC Section 430-25 for sizing.

③ Class RK Fuse with 100 kA rating can be used.

### Residential/Light Commercial Molded Case Transfer Switch Catalog Numbering System

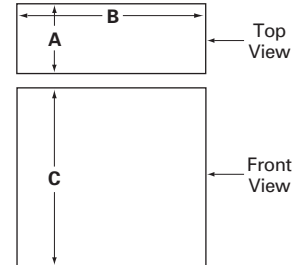


## Residential Contactor-Based Transfer Switch — RLCM



**Table 6. Contactor-Based Transfer Switch Dimensions in Inches (mm)**

RATING	DIMENSIONS			WEIGHT LBS. (KG)
	A	B	C	
<b>Switch Rating</b>				
100 Amperes	5.35 (135.9)	14.46 (367.3)	16.76 (425.7)	26 (11.8)
200 Amperes	5.35 (135.9)	14.46 (367.3)	29.14 (740.2)	38 (17.3)
<b>Service Entrance</b>				
100 Amperes	5.00 (127.0)	14.46 (367.3)	29.20 (741.7)	38 (17.3)
200 Amperes	5.00 (127.0)	14.46 (367.3)	34.20 (868.7)	40 (18.2)



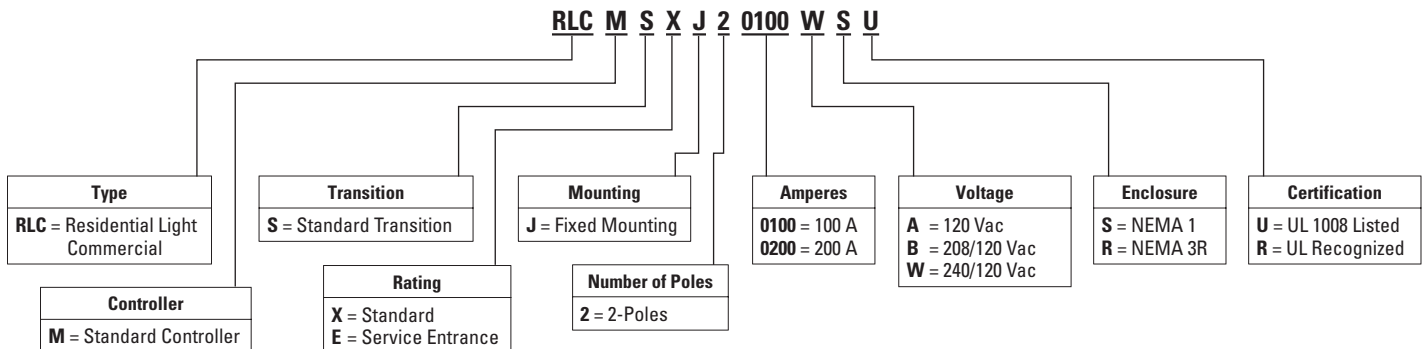
**Table 7. Contactor-Based Transfer Switch Power Cable Connections**

SWITCH RATING	WIRE SIZE RANGE (AWG)
100 Amperes	(1) #14 to 2/0
200 Amperes	(1) #4 to 300

**Table 8. Contactor-Based Transfer Switch Withstand and Close-on Ratings**

SWITCH RATING	WHEN USED WITH CIRCUIT BREAKERS
100 Amperes	22,000
200 Amperes	25,000

## Residential Contactor-Based Transfer Switch Catalog Numbering System



# Manual Wall-Mount — Manual Transfer Switch



**Table 9. Wall-Mount Transfer Switch Standard Terminal Data for Power Cable Connections**

SWITCH AMPERE RATING	BREAKER FRAME	LINE SIDE (NORMAL AND STANDBY SOURCE)	LOAD CONNECTION	NEUTRAL CONNECTION
30 – 100	HFD	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0
150 – 225	HFD	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300
225 – 300	HKD	(1) #3 – 350	(1) #6 – 350	(3) #4 – 350
400	HLD	(1) 4/0 – 600	(2) #1 – 500	(6) 250 – 350
600	HLD	(1) 3/0 – 350	(2) #1 – 500	(6) 250 – 350
600	HMDL	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500
600 (4-Pole)	NB	(3) 3/0 – 400	(3) 3/0 – 400	(3) 3/0 – 400
800	HMDL	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500
800	HNB	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500
1000	HNB	(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.

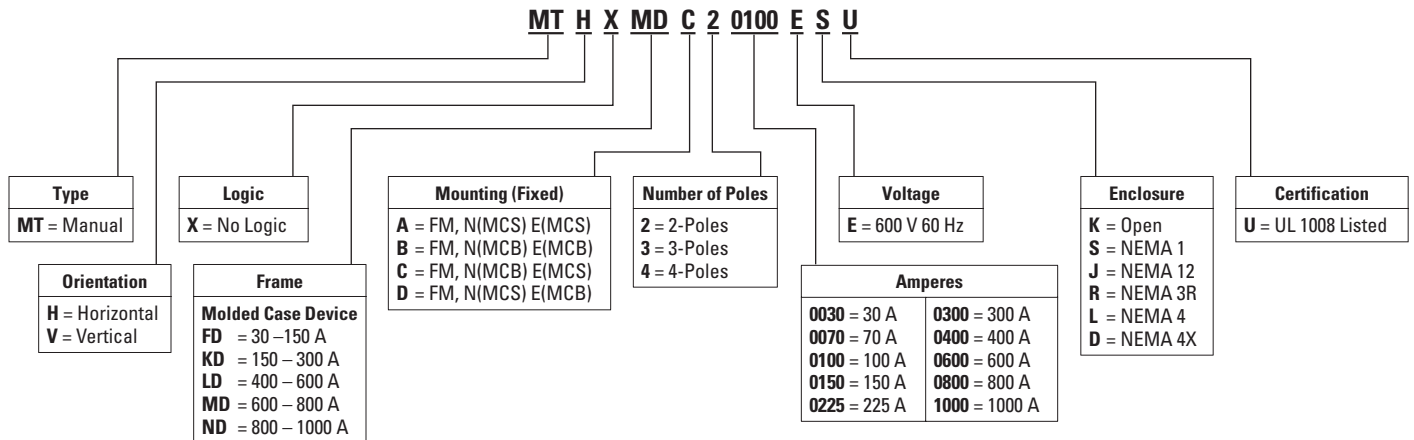
**Table 10. Transfer Switch Ratings — Systems Coordination Information — Withstand, Closing and Interrupting Ratings ①**

**STANDARD UL 1008 3-CYCLE — HORIZONTAL AND VERTICAL INDUSTRIAL**

ATS AMPERE RATING	ANY BREAKER RATING			RATINGS WHEN USED WITH UPSTREAM FUSE (kA)		
	240 VOLTS	480 VOLTS	600 VOLTS	MAXIMUM FUSE RATING	FUSE TYPE ②	600 VOLTS
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	65	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 NEC Section 430-25 for sizing.  
 ② Class RK5 fuse with 100 kA rating.  
 ③ 4-pole units rated 35 kA.

## Manual Wall-Mount Transfer Switch Catalog Numbering System



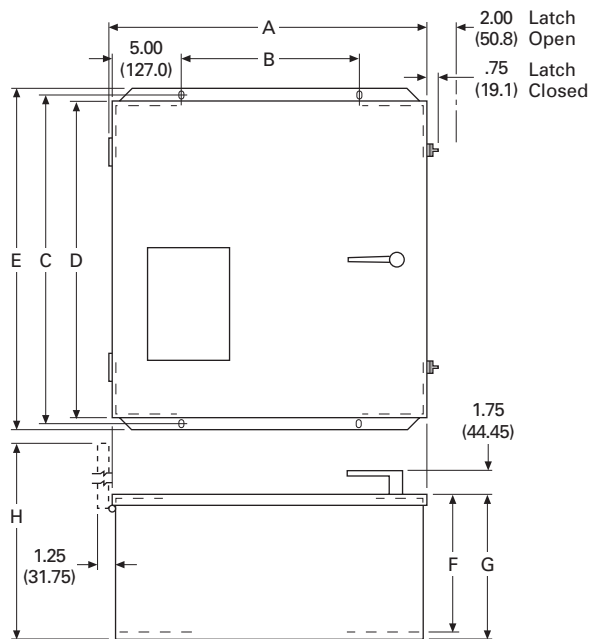
**Table 11. 30 – 1000 Ampere Types ATH3, ATV3, ATH1, ATV1, MTVX, NTHE, NTVE Dimensions in Inches (mm) and Approximate Shipping Weights**

SWITCH TYPE	ENCLOSURE			GUTTER SPACE			BOLT PATTERN		STANDARD TERMINALS ①			WEIGHT LBS. (KG)
	A	B	C	D	E	F	G	H	LINE	LOAD	NEUTRAL	
	HEIGHT	WIDTH	DEPTH	WIDTH	DEPTH	BENDING	HORIZONTAL	VERTICAL				
HKD (150 – 225 A)	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 (300 A)	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 (400 A)	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 (400 A) ②	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 (600 A) ③	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 (600 A) ②③	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 (600 A)	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.73 (450.3)	16.00 (406.4)	75.15 (1908.8)	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500	510 (232)
HMDL (800 A) ③	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.73 (450.3)	16.00 (406.4)	75.15 (1908.8)	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500	510 (232)
NB (800 – 1000 A)	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.58 (446.5)	16.00 (406.4)	75.15 (1908.8)	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500	540 (245)

- ① Suitable for Cu or Al wire. Consult the factory for other available terminal sizes.
- ② Alternate line terminals.
- ③ ATH3 or ATV3 for 240/120 volt, single-phase, 3-wire or 208 volt, 3-phase, 4-wire systems only.

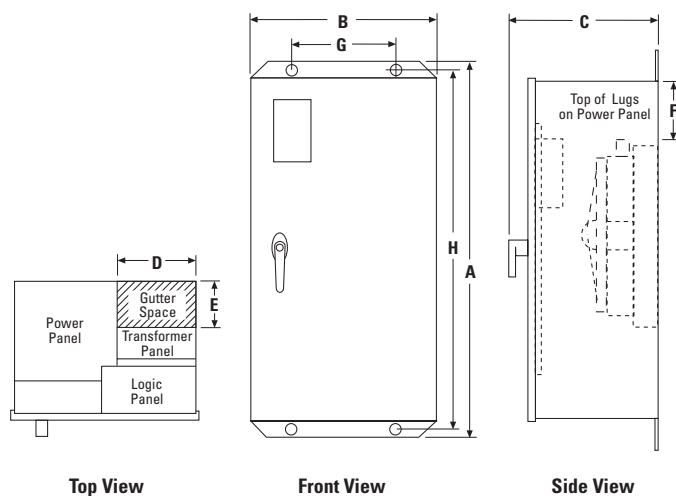
**Table 12. 30 – 150 Amperes Type MTHXFD Manual Dimensions in Inches (mm) and Weights Lbs. (kg)**

AMPERES	DIMENSIONS								WEIGHT LBS. (KG)
	A	B	C	D	E	F	G	H	
30 – 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)



**Table 13. Power Panel and Transformer Panel Dimensions in Inches (mm)**

POWER PANEL TYPE	DIMENSIONS		
	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)



Automatic, Non-Automatic and Manual — Refer to Table 11

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

# Molded Case Switches — Non-Automatic Wall-Mount



**Table 14. Wall-Mount Transfer Switch Standard Terminal Data for Power Cable Connections**

SWITCH AMPERE RATING	BREAKER FRAME	LINE SIDE (NORMAL AND STANDBY SOURCE)	LOAD CONNECTION	NEUTRAL CONNECTION
30 – 100	HFD	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0
150 – 225	HFD	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300
225 – 300	HKD	(1) #3 – 350	(1) #6 – 350	(3) #4 – 350
400	HLD	(1) 4/0 – 600	(2) #1 – 500	(6) 250 – 350
600	HLD	(1) 3/0 – 350	(2) #1 – 500	(6) 250 – 350
600	HMDL	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500
600 (4-Pole)	NB	(3) 3/0 – 400	(3) 3/0 – 400	(3) 3/0 – 400
800	HMDL	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500
800	HNB	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500
1000	HNB	(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.

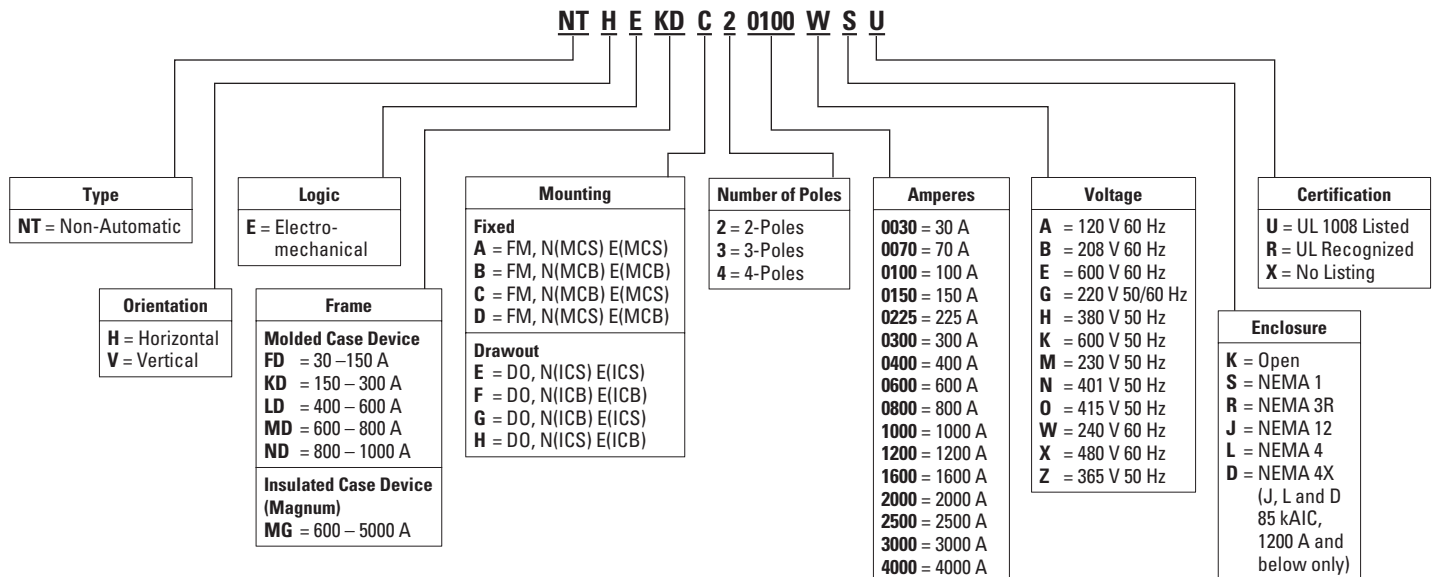
**Table 15. Transfer Switch Ratings — Systems Coordination Information — Withstand, Closing and Interrupting Ratings ①**

## STANDARD UL 1008 3-CYCLE — HORIZONTAL AND VERTICAL INDUSTRIAL

ATS AMPERE RATING	ANY BREAKER RATING			RATINGS WHEN USED WITH UPSTREAM FUSE (KA)		
	240 VOLTS	480 VOLTS	600 VOLTS	MAXIMUM FUSE RATING	FUSE TYPE ②	600 VOLTS
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	65	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 NEC Section 430-25 for sizing.  
 ② Class RK5 fuse with 100 kA rating.  
 ③ 4-pole units rated 35 kA.

## Non-Automatic Wall-Mount Transfer Switch Catalog Numbering System



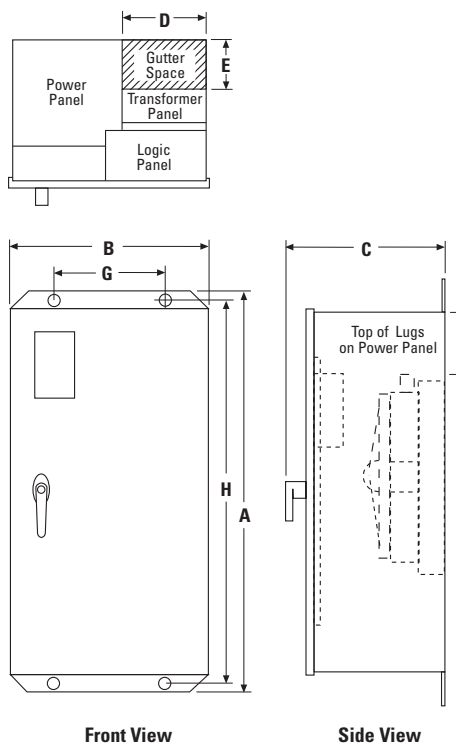
**Table 16. 30 – 1000 Ampere Types ATH3, ATV3, ATH1, ATV1, MTVX, NTHE, NTVE  
Dimensions in Inches (mm) and Approximate Shipping Weights**

SWITCH TYPE	ENCLOSURE			GUTTER SPACE			BOLT PATTERN		STANDARD TERMINALS ①			WEIGHT LBS. (KG)
	A	B	C	D	E	F	G	H	LINE	LOAD	NEUTRAL	
	HEIGHT	WIDTH	DEPTH	WIDTH	DEPTH	BENDING	HORIZONTAL	VERTICAL				
HFD (30 – 100 A) ②	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	6.22 (157.9)	10.75 (273.0)	45.24 (1049.1)	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0	227 (103)
HFD (150 A) ②	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	6.22 (157.9)	10.75 (273.0)	45.24 (1049.1)	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300	227 (103)
HKD (150 – 225 A)	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 (300 A)	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 (400 A)	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 (400 A) ③	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 (600 A) ④	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 (600 A) ③④	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 (600 A)	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.73 (450.3)	16.00 (406.4)	75.15 (1908.8)	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500	510 (232)
HMDL (800 A) ④	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.73 (450.3)	16.00 (406.4)	75.15 (1908.8)	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500	510 (232)
NB (800 – 1000 A)	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.58 (446.5)	16.00 (406.4)	75.15 (1908.8)	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500	540 (245)

- ① Suitable for Cu or Al wire. Consult the factory for other available terminal sizes.
- ② All ATH1, NTHE and ATV3 with multi-tap voltage selection panel.
- ③ Alternate line terminals.
- ④ ATH3 or ATV3 for 240/120 volt, single-phase, 3-wire or 208 volt, 3-phase, 4-wire systems only.

**Table 17. Power Panel and Transformer Panel  
Dimensions in Inches (mm)**

POWER PANEL TYPE	DIMENSIONS		
	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)



**Automatic, Non-Automatic and Manual — Refer to Table 16**

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



# Molded Case Switches — Automatic Wall-Mount



**Table 18. Wall-Mount Transfer Switch Standard Terminal Data for Power Cable Connections**

SWITCH AMPERE RATING	BREAKER FRAME	LINE SIDE (NORMAL AND STANDBY SOURCE)	LOAD CONNECTION	NEUTRAL CONNECTION
30 – 100	HFD	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0
150 – 225	HFD	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300
225 – 300	HKD	(1) #3 – 350	(1) #6 – 350	(3) #4 – 350
400	HLD	(1) 4/0 – 600	(2) #1 – 500	(6) 250 – 350
600	HLD	(1) 3/0 – 350	(2) #1 – 500	(6) 250 – 350
600	HMDL	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500
600 (4-Pole)	NB	(3) 3/0 – 400	(3) 3/0 – 400	(3) 3/0 – 400
800	HMDL	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500
800	HNB	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500
1000	HNB	(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.

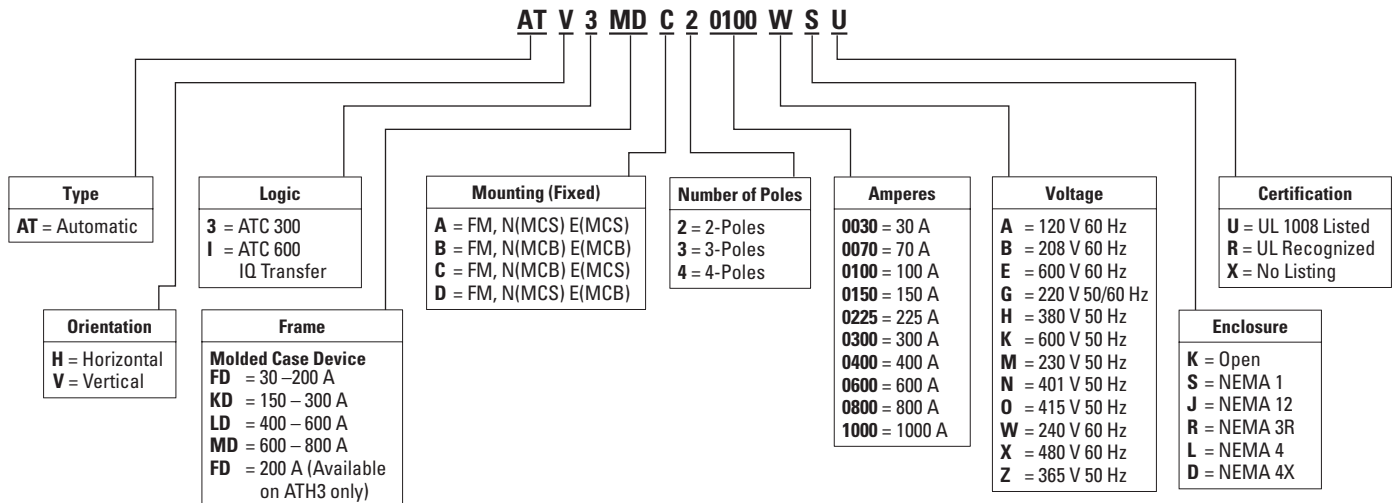
**Table 19. Transfer Switch Ratings — Systems Coordination Information — Withstand, Closing and Interrupting Ratings ①**

**STANDARD UL 1008 3-CYCLE — HORIZONTAL AND VERTICAL INDUSTRIAL**

ATS AMPERE RATING	ANY BREAKER RATING			RATINGS WHEN USED WITH UPSTREAM FUSE (KA)		
	240 VOLTS	480 VOLTS	600 VOLTS	MAXIMUM FUSE RATING	FUSE TYPE ②	600 VOLTS
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	65	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 NEC Section 430-25 for sizing.  
 ② Class RK5 fuse with 100 kA rating.  
 ③ 4-pole units rated 35 kA.

**Automatic Wall-Mount Transfer Switch Catalog Numbering System**



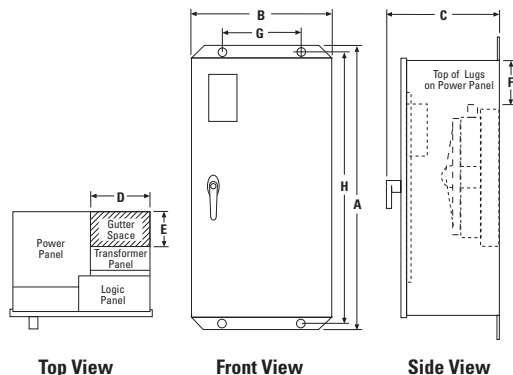
**Table 20. 30 – 1000 Ampere Types ATH3, ATV3, ATH1, ATV1, MTXV, NTHE, NTVE  
Dimensions in Inches (mm) and Approximate Shipping Weights**

SWITCH TYPE	ENCLOSURE			GUTTER SPACE			BOLT PATTERN		STANDARD TERMINALS ①			WEIGHT LBS. (KG)
	A	B	C	D	E	F	G	H	LINE	LOAD	NEUTRAL	
	HEIGHT	WIDTH	DEPTH	WIDTH	DEPTH	BENDING	HORIZONTAL	VERTICAL				
HFD (30 – 100 A) 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	150 (68)
HFD (150 – 225 A) 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	150 (68)
HFD (30 – 100 A) ③	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	6.22 (157.9)	10.75 (273.0)	45.24 (1049.1)	(1) #14 – 1/0	(1) #14 – 1/0	(3) #14 – 1/0	227 (103)
HFD (150 A) ③	47.74 (1213.0)	20.81 (528.6)	17.22 (437.0)	8.00 (203.2)	4.00 (101.6)	6.22 (157.9)	10.75 (273.0)	45.24 (1049.1)	(1) #6 – 300	(1) #6 – 300	(3) #4 – 300	227 (103)
HKD (150 – 225 A)	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 (300 A)	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 (400 A)	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 (400 A) 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 (600 A) 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 (600 A) 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 (600 A)	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.73 (450.3)	16.00 (406.4)	75.15 (1908.8)	(2) #1 – 500	(2) #1 – 500	(12) 4/0 – 500	510 (232)
HMDL (800 A) ②	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.73 (450.3)	16.00 (406.4)	75.15 (1908.8)	(3) 3/0 – 400	(3) 3/0 – 400	(12) 4/0 – 500	510 (232)
NB (800 – 1000 A)	76.74 (1949.2)	25.81 (655.6)	19.50 (495.3)	8.00 (203.2)	4.00 (101.6)	17.58 (446.5)	16.00 (406.4)	75.15 (1908.8)	(4) 4/0 – 500	(4) 4/0 – 500	(12) 4/0 – 500	540 (245)

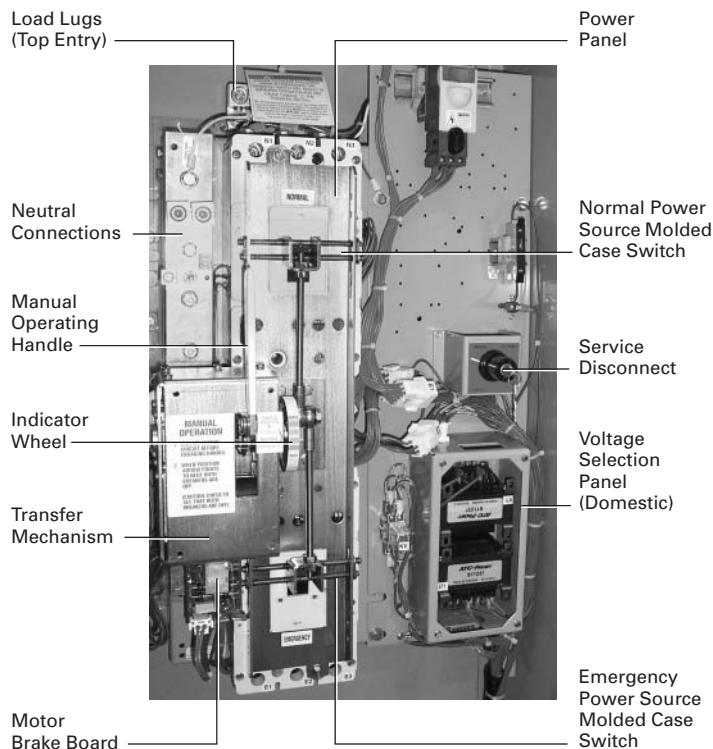
- ① Suitable for Cu or Al wire. Consult the factory for other available terminal sizes.
- ② ATH3 or ATV3 for 240/120 volt, single-phase, 3-wire or 208 volt, 3-phase, 4-wire systems only.
- ③ All ATH1, NTHE and ATV3 with multi-tap voltage selection panel.
- ④ Alternate line terminals.

**Table 21. Power Panel and Transformer Panel  
Dimensions in Inches (mm)**

POWER PANEL TYPE	DIMENSIONS		
	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)



Automatic, Non-Automatic and Manual — Refer to Table 20



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

## Automatic Wall-Mount Contactor



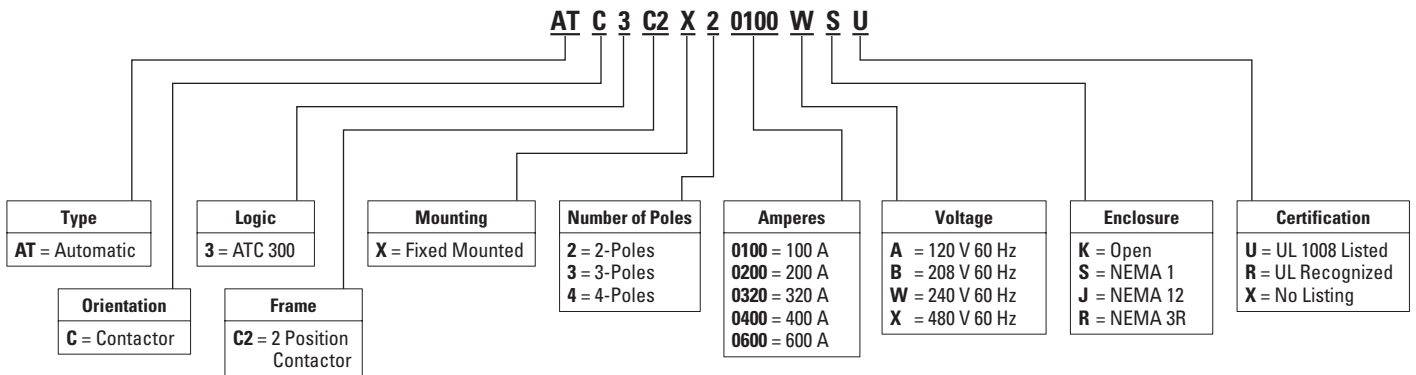
**Table 22. Industrial Contactor-Based Transfer Switch Terminal Data Options for Power Cable Connections**

SWITCH AMPERE RATING	LINE SIDE (NORMAL AND STANDBY SOURCE)	LOAD CONNECTION	NEUTRAL CONNECTION
100	(1) #14 – 2/0	(1) #14 – 2/0	(3) #14 – 2/0
200	(1) #6 – 250	(1) #6 – 250	(3) 1/0 – 250
320	(1) #4/0 – 600 (2) 1/0 – 250	(1) #4/0 – 600 (2) 1/0 – 250	(6) 250 – 500 (12) 4/0 – 500 (9) 500 – 750
400	(1) #4/0 – 600 (2) 1/0 – 250	(1) #4/0 – 600 (2) 1/0 – 250	(6) 250 – 500 (12) 4/0 – 500 (9) 500 – 750
600	(2) #2 – 600	(2) #2 – 600	(12) 4/0 – 500 (9) 500 – 750

**Table 23. Industrial Contactor-Based Transfer Switch UL 1008 Withstand and Close-on Ratings (kA)**

CONTACTOR STYLE	UL 1008 AMPERE RATING	SPECIFIC BREAKER RATING		ANY BREAKER RATING	
		MAXIMUM CIRCUIT BREAKER SIZE AMPERES	CIRCUIT BREAKER	MAXIMUM AMPERES AT 480 VAC (UL)	MAXIMUM AMPERES AT 480 VAC (UL)
61WNU-3FD	100	125	C-H HFD 125 A	30,000	10,000
64WNU-3FD	200	250	C-H HJD 250 A	50,000	10,000
64WNU-3FD	320	600	C-H HKD 400 A, HLD 400 A, HLD 600 A	50,000	10,000
64WNU-3FD	400	600	C-H HLD 600 A	50,000	10,000
66WNU-3FD	600	800	C-H HMDL 800 A	65,000	14,000

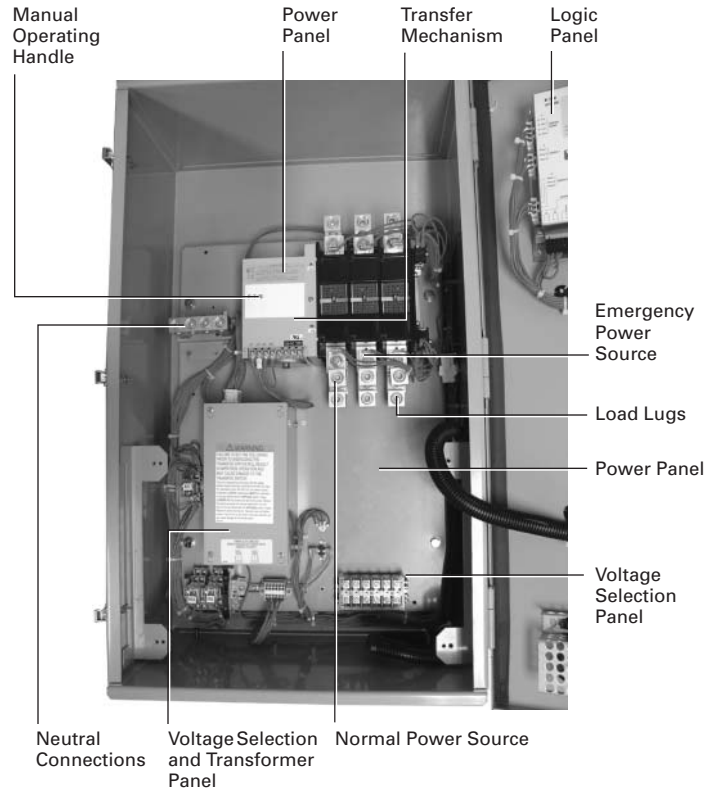
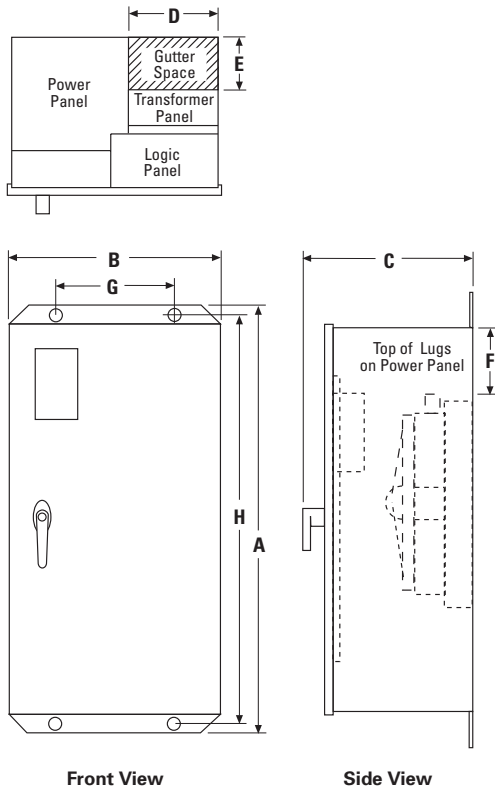
## Automatic Wall-Mount Transfer Switch Catalog Numbering System



**Table 24. Industrial Contactor-Based Transfer Switch 100 – 600 Amperes Type ATC3**  
**Dimensions in Inches (mm) and Approximate Shipping in Lbs. (kg)**

SWITCH TYPE	ENCLOSURE			GUTTER SPACE		BOLT PATTERN		STANDARD TERMINALS			WEIGHT LBS.(KG)
	A HEIGHT	B WIDTH	C DEPTH	D WIDTH	E DEPTH	G HORIZONTAL	H VERTICAL	LINE	LOAD	NEUTRAL	
100 A	35.61 (904.5)	20.06 (509.5)	11.34 (288.0)	2.00 (51.0)	5.00 (127.0)	10.25 (260.4)	34.73 (882.1)	(1) #14 – 2/0	(1) #14 – 2/0	(3) #14 – 1/0	156 (71)
200 A	35.61 (904.5)	20.06 (509.5)	11.34 (288.0)	2.00 (51.0)	5.00 (127.0)	10.25 (260.4)	34.73 (882.1)	(1) #6 – 250 ①	(1) #6 – 250 ①	(3) 1/0 – 250	160 (73)
320 A	53.00 (1346.2)	25.81 (655.6)	16.72 (425.0)	4.00 (101.0)	12.00 (304.0)	16.00 (406.4)	50.48 (1282.2)	(1) #4 – 600	(1) #4 – 600 or (2) 1/0 – 250	(6) 250 – 500 or (2) 1/0 – 250	244 (110)
400 A	53.00 (1346.2)	25.81 (655.6)	16.72 (425.0)	4.00 (101.0)	12.00 (304.0)	16.00 (406.4)	50.48 (1282.2)	(1) #4 – 600 ①	(1) #4 – 600 ① or (2) 1/0 – 250	(6) 250 – 500 or (2) 1/0 – 250	244 (110)
600 A	64.00 (1625.6)	25.81 (655.6)	16.72 (425.0)	3.00 (76.0)	9.00 (228.0)	16.00 (406.4)	61.48 (1561.6)	(2) #2 – 600 ①	(2) #2 – 600 ①	(12) 4/0 – 500	395 (180)

① Suitable with copper only.



**Automatic, Non-Automatic and Manual — Refer to Table 24**

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