

**Type HND Electronic Circuit Breakers with Non-interchangeable Trip Units**

Order as individual components: Breaker Frame, Rating Plug, Terminals.

**Table 12-131. Type HND Electronic Circuit Breakers with Non-interchangeable Trip Units ①**

Maximum Continuous Ampere Rating @ 40°C	Digitrip RMS 310 Circuit Breaker Frame Only				Digitrip RMS 310 Rating Plug Only			Standard Terminals Only ②  See Page 12-95 for Optional Terminals
	High Interrupting Capacity 600V AC Rated 65 kAIC @ 480V AC				Ampere Rating	Fixed Rating Plugs	Adjustable Rating Plug  Adjustable Ampere Ratings	
	Standard	Options						
	Adjustable Short Time Pickup with I <sup>2</sup> t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I <sup>2</sup> t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection				
Catalog Number				Catalog Number				
<b>2-Pole</b>								
800	HND2800T33W	HND2800T32W	HND2800T35W	HND2800T36W	400 450 500 600 700 800	8NES400T 8NES450T 8NES500T 8NES600T 8NES700T 8NES800T	Adjustable Settings are: 400, 500, 600, 800 A8NES800T1	TA700NB1 TA700NB1 TA700NB1 TA700NB1 TA700NB1 TA1000NB1
<b>3-Pole</b>								
800	HND3800T33W	HND3800T32W	HND3800T35W	HND3800T36W	400 450 500 600 700 800	8NES400T 8NES450T 8NES500T 8NES600T 8NES700T 8NES800T	Adjustable Settings are: 400, 500, 600, 800 A8NES800T1	TA700NB1 TA700NB1 TA700NB1 TA700NB1 TA700NB1 TA1000NB1
<b>4-Pole ③</b>								
800	HND4800T33W	HND4800T32W	—	—	400 450 500 600 700 800	8NES400T 8NES450T 8NES500T 8NES600T 8NES700T 8NES800T	Adjustable Settings are: 400, 500, 600, 800 A8NES800T1	TA700NB1 TA700NB1 TA700NB1 TA700NB1 TA700NB1 TA1000NB1
<b>2-Pole</b>								
1200	HND212T33W	HND212T32W	HND212T35W	HND212T36W	600 700 800 900 1000 1200	12NES600T 12NES700T 12NES800T 12NES900T 12NES1000T 12NES1200T	Adjustable Settings are: 600, 800, 1000, 1200 A12NES1200T1	TA700NB1 TA700NB1 TA1000NB1 TA1000NB1 TA1000NB1 TA1200NB1
<b>3-Pole</b>								
1200	HND312T33W	HND312T32W	HND312T35W	HND312T36W	600 700 800 900 1000 1200	12NES600T 12NES700T 12NES800T 12NES900T 12NES1000T 12NES1200T	Adjustable Settings are: 600, 800, 1000, 1200 A12NES1200T1	TA700NB1 TA700NB1 TA1000NB1 TA1000NB1 TA1000NB1 TA1200NB1
<b>4-Pole ③</b>								
1200	HND412T33W	HND412T32W	—	—	600 700 800 900 1000 1200	12NES600T 12NES700T 12NES800T 12NES900T 12NES1000T 12NES1200T	Adjustable Settings are: 600, 800, 1000, 1200 A12NES1200T1	TA700NB1 TA700NB1 TA1000NB1 TA1000NB1 TA1000NB1 TA1200NB1

① See Table 12-132 on Page 12-82 for prices.

② Two terminals are required per pole.

③ Neutral is in right pole.

**Note:** Instruction Leaflet/FRED Number 29C106

## Product Line Description

Cutler-Hammer Molded Case Circuit Breakers are designed to provide circuit protection for low voltage distribution systems. They are described by NEMA as, "... a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions," and furthermore as, "... a breaker assembled as an integral unit in a supporting and enclosing housing of insulating material." The NEC describes them as, "A device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating."

So designed, Cutler-Hammer circuit breakers protect conductors against overloads and conductors and connected apparatus, such as motors and motor starters, against short circuits.

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In low voltage distribution systems, there are many varied applications of molded case circuit breakers. Cutler-Hammer offers the most comprehensive family of molded case circuit breakers in the industry.

This family of circuit breakers includes:

- Thermal Magnetic Trip Breakers
- Electronic rms Trip Breakers
- Molded Case Switches
- Motor Circuit Protectors
- Current Limiting Breakers
- Special Application Breakers
- World Breakers

### Special Calibration

Special non-UL-listed calibrations are available for certain ambient temperatures other than 40°C and for frequencies other than 50/60 Hz or DC. Reduced interrupting ratings will apply for 400 Hz applications. Maximum thermal calibration is limited to 135A at 400 Hz.

Suffix <b>H01</b> 400 Hz	20% Adder
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### 50°C Calibration

Add suffix **V** to Catalog Number for complete breaker, listed above, when ordering listed ampere ratings for breakers to be used in 50°C ambients.

## Moisture-Fungus Treatment

All circuit breaker cases are molded from glass-polyester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Suffix <b>J01</b> Fungus Treated	\$325. + 20% Adder
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### Freeze-Tested Circuit Breakers

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at -40°C.

Suffix <b>F01</b> Freeze Tested	20% Adder
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### Marine Applications

F-Frame circuit breakers can be supplied to meet the following marine specifications:

- U.S. Coast Guard CFR 46 ABS — American Bureau of Shipping IEEE 45

These specifications generally require molded case circuit breakers to be supplied with 50°C ambient calibration, special nameplating, and plug-in adapter kits. When plug-in adapter kits are used, no terminals need be supplied.

Circuit breakers can also be supplied to meet UL489 Supplement SA (Marine Use) and UL489 Supplement SB (Naval Use).

UL489 Supplement SA applies to vessels over 65 feet in length. Requirements include 40°C ambient calibration, special labeling, and no use of aluminum conductors or terminals.

Suffix <b>H08</b> "Marine"	10% Adder
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UL 489 Supplement SB requires 50°C ambient calibration, vibration testings, special nameplating and no use of aluminum conductors or terminals.

Suffix <b>H09</b> "Naval"	10% Adder
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## Standards and Certifications

Molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories, Inc., Standard UL489, Molded Case Circuit Breakers and Circuit Breaker Enclosures
- National Electrical Manufacturers Association Standards Publication No. AB1-1993, Molded Case Circuit Breakers
- Australian Standard AS 2184, Molded Case Circuit Breakers
- British Standards Institution Standard BS 4752: Part 1, Switchgear and Control Gear Part 1: Circuit Breakers
- Canadian Standards Association Standard C22.2 No. 5, Service Entrance and Branch Circuit Breakers
- International Electrotechnical Commission Recommendations IEC 157-1, Circuit Breakers
- Japanese T-Mark Standard Molded Case Circuit Breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for Molded Case Circuit Breakers
- Swiss Electro-Technical Association Standard SEV 157-1, Safety Regulations for Circuit Breakers
- Union Technique de l'Electricite Standard NF C 63-120, Low Voltage Switchgear and Control Gear Circuit Breaker Requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, Low Voltage Switchgear and Control Gear, Circuit Breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

**Note:** For further information, see Circuit Breaker, CD-ROM SA.74A.01.T.E.

Table 12-1. Industrial Circuit Breakers (Continued)

Circuit Breaker Type	Cont. Amp. Rating @ 40°C	No. Poles	Volts		Type of Trip ①	Federal Spec. W-C-375b	UL Listed Interrupting Ratings rms Symmetrical Amperes									Page Number
			AC	DC			AC Ratings Volts						DC ②			
							120	120/240	240	277	480	600	125	250	125/250	
<b>J-Frame</b>																
JDB	70 – 250	2, 3	600	250	N.I.T.	22a	—	—	65,000	—	35,000	18,000	—	10,000	—	12-34
JD	70 – 250	2, 3, 4	600	250	I.T.	22a	—	—	65,000	—	35,000	18,000	—	10,000	—	12-33
HJD	70 – 250	2, 3, 4	600	250	I.T.	22a	—	—	100,000	—	65,000	25,000	—	22,000	—	12-33
JDC	70 – 250	2, 3, 4	600	250	I.T.	22a	—	—	200,000	—	100,000	35,000	—	22,000	—	12-33
<b>K-Frame</b>																
DK	250 – 400	2, 3	240	250	N.I.T.	14b	—	—	65,000	—	—	—	—	10,000	—	12-44
KDB	100 – 400	2, 3	600	250	N.I.T.	23a	—	—	65,000	—	35,000	25,000	—	10,000	—	12-44
KD	100 – 400	2, 3, 4	600	250	I.T.	23a	—	—	65,000	—	35,000	25,000	—	10,000	—	12-41, 12-42, 12-46, 12-47
CKD	100 – 400	2, 3, 4	600	250	I.T.	23a	—	—	65,000	—	35,000	25,000	—	10,000	—	12-45, 12-48, 12-49
HKD	100 – 400	2, 3, 4	600	250	I.T.	23a	—	—	100,000	—	65,000	35,000	—	22,000	—	12-41, 12-42, 12-46, 12-47
CHKD	100 – 400	2, 3, 4	600	250	I.T.	23a	—	—	100,000	—	65,000	35,000	—	22,000	—	12-45, 12-48, 12-49
KDC	100 – 400	2, 3, 4	600	250	I.T.	23a	—	—	200,000	—	100,000	50,000	—	22,000	—	12-41, 12-42, 12-46, 12-47
<b>L-Frame</b>																
LDB	300 – 600	2, 3	600	250	N.I.T.	23a	—	—	65,000	—	35,000	25,000	—	22,000	—	12-59
LD	300 – 600	2, 3, 4	600	250	I.T.	23a	—	—	65,000	—	35,000	25,000	—	22,000	—	12-56, 12-57, 12-61
CLD	300 – 600	2, 3, 4	600	250	I.T.	23a	—	—	65,000	—	35,000	25,000	—	22,000	—	12-58, 12-64
HLD	300 – 600	2, 3, 4	600	250	I.T.	23a	—	—	100,000	—	65,000	35,000	—	25,000	—	12-56, 12-57, 12-61
CHLD	300 – 600	2, 3, 4	600	250	I.T.	23a	—	—	100,000	—	65,000	35,000	—	25,000	—	12-58, 12-64
LDC	300 – 600	2, 3, 4	600	250	I.T.	23a	—	—	200,000	—	100,000	50,000	—	25,000	—	12-56, 12-57, 12-62
CLDC	300 – 600	2, 3, 4	600	250	I.T.	23a	—	—	200,000	—	100,000	50,000	—	25,000	—	12-58, 12-65
<b>M-Frame</b>																
MDL	300 – 800	2, 3	600	250	I.T.	23a	—	—	65,000	—	50,000	25,000	—	22,000	—	12-71, 12-72
CMDL	300 – 800	2, 3	600	250	I.T.	23a	—	—	65,000	—	50,000	25,000	—	22,000	—	12-73
HMDL	300 – 800	2, 3	600	250	I.T.	23a	—	—	100,000	—	65,000	35,000	—	25,000	—	12-71, 12-72
CHMDL	300 – 800	2, 3	600	250	I.T.	23a	—	—	100,000	—	65,000	35,000	—	25,000	—	12-73
<b>N-Frame</b>																
ND	600 – 1200	3, 4	600	—	N.I.T.	23A	—	—	65,000	—	50,000	25,000	—	—	—	12-79, 12-91
CND	600 – 1200	3, 4	600	—	N.I.T.	23A	—	—	65,000	—	50,000	25,000	—	—	—	12-85, 12-93
HND	600 – 1200	3, 4	600	—	N.I.T.	23A	—	—	100,000	—	65,000	35,000	—	—	—	12-81, 12-91
CHND	600 – 1200	3, 4	600	—	N.I.T.	23A	—	—	100,000	—	65,000	35,000	—	—	—	12-87, 12-93
NDC	600 – 1200	3, 4	600	—	N.I.T.	23A	—	—	200,000	—	100,000	50,000	—	—	—	12-83, 12-91
CNDC	600 – 1200	3, 4	600	—	N.I.T.	23A	—	—	200,000	—	100,000	50,000	—	—	—	12-89, 12-93

① N.I.T. is non-interchangeable trip unit and I.T. is interchangeable trip unit.

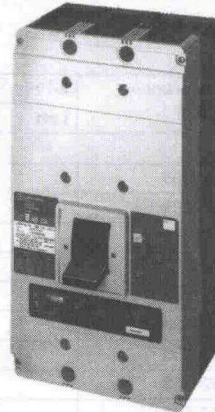
② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250V DC.

N-Frame

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N-Frame



Typical N-Frame Circuit Breaker

Product Description

- All N-Frame Circuit Breakers are suitable for reverse feed use.
- All N-Frame circuit breakers are HACR rated.

Technical Data and Specifications

Table 12-123. UL489 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)				
		Volts AC (50/60 Hz)				
		240	277	480	600	125
ND	2, 3, 4	65	—	50	25	—
CND ②	2, 3, 4	65	—	50	25	—
HND	2, 3, 4	100	—	65	35	—
CHND ②	2, 3, 4	100	—	65	35	—
NDC	2, 3, 4	200	—	100	50	—
CNDC ②	2, 3, 4	200	—	100	50	—

① Utilization Category A circuit breakers.

② 100% rated breakers.

Table 12-124. IEC 947-2 Interrupting Capacity Ratings ③

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) (kA)		
		Volts AC (50/60 Hz)		
		240	415	690
ND	2, 3, 4			
$I_{cu}$		85	50	20
$I_{cs}$		85	50	10
CND ④	2, 3, 4			
$I_{cu}$		85	50	20
$I_{cs}$		85	50	10
HND	2, 3, 4			
$I_{cu}$		100	70	25
$I_{cs}$		100	50	13
CHND ④	2, 3, 4			
$I_{cu}$		100	70	25
$I_{cs}$		100	50	13
NDC	2, 3, 4			
$I_{cu}$		200	100	35
$I_{cs}$		100	50	18
CNDC ④	2, 3, 4			
$I_{cu}$		200	100	35
$I_{cs}$		100	50	18

③ Utilization Category A circuit breakers.

④ 100% rated breakers.

N-Frame

Dimensions/Weights

Table 12-126. Dimensions in Inches (mm)

Number of Poles	Width	Height	Depth
2, 3	8.25 (210)	16 (407)	5.5 (140)
4	11.125 (283)	16 (407)	5.5 (140)

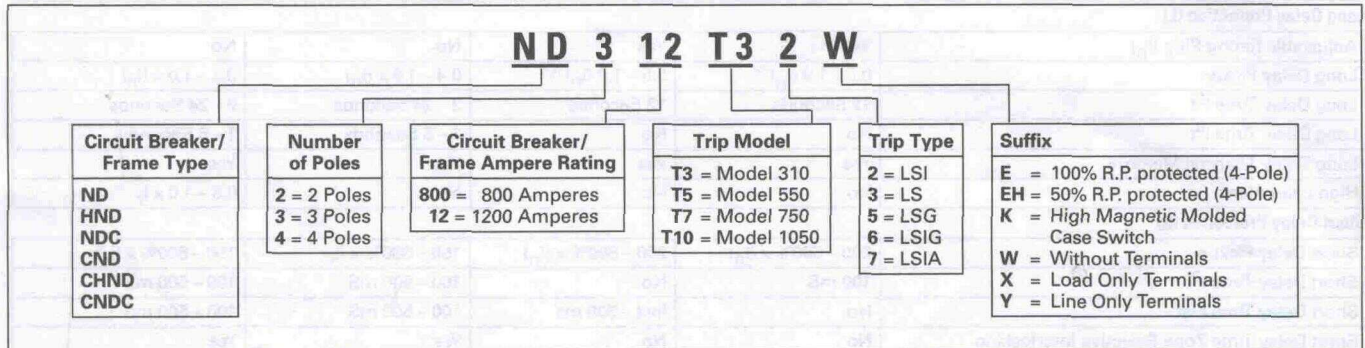
Table 12-127. Approximate Shipping Weight in Lbs. (Kg)

Breaker Type	Complete Breaker		
	Number of Poles		
	2	3	4
ND, HND, NDC	37 (16.8)	45 (20.4)	58 (26.3)

Product Selection

This information is presented only as an aid to understanding Catalog Numbers. It is not to be used to build Catalog Numbers for circuit breakers or trip units.

Table 12-128. Circuit Breaker/Frame Catalog Numbering System



*(This section contains a large, faint table with multiple columns and rows, likely a detailed specification or pricing table, which is mostly illegible due to low contrast and bleed-through.)*

Undervoltage Release Mechanism

Table 12-359. L- and M-Frames Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted								Field Mounted			
	Connection Type and Location								Field Installation Kits ①			
	18-Inch (457.2 mm) Pigtail Leads				Terminal Block				Pigtail Leads		Terminal Block	
	Same Side		Rear ②		Opposite Side		Same Side		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
Suffix Number	Adder U.S. \$	Suffix Number	Adder U.S. \$	Suffix Number	Adder U.S. \$	Suffix Number	Adder U.S. \$					
12V AC	U05	489.	U06	489.	U07	489.	U08	489.	UVH4LP02K	465.	UVH4LT02K	489.
24V AC	U09	489.	U10	489.	U11	489.	U12	489.	UVH4LP03K	489.	UVH4LT03K	489.
48 - 60V AC	U13	489.	U14	489.	U15	489.	U16	489.	UVH4LP05K	489.	UVH4LT05K	489.
110 - 127V AC	U17	489.	U18	489.	U19	489.	U20	489.	UVH4LP08K	489.	UVH4LT08K	489.
208 - 240V AC	U21	489.	U22	489.	U23	489.	U24	489.	UVH4LP11K	489.	UVH4LT11K	489.
380 - 480V AC	U25	489.	U26	489.	U27	489.	U28	489.	UVH4LP15K	489.	UVH4LT15K	489.

Left-Pole Mounting AC Ratings ②

12V AC	U37	489.	U38	489.	U39	489.	U40	489.	UVH4RP02K	489.	UVH4RT02K	489.
24V AC	U41	489.	U42	489.	U43	489.	U44	489.	UVH4RP03K	489.	UVH4RT03K	489.
48 - 60V AC	U45	489.	U46	489.	U47	489.	U48	489.	UVH4RP05K	489.	UVH4RT05K	489.
110 - 127V AC	U49	489.	U50	489.	U51	489.	U52	489.	UVH4RP08K	489.	UVH4RT08K	489.
208 - 240V AC	U53	489.	U54	489.	U55	489.	U56	489.	UVH4RP11K	489.	UVH4RT11K	489.
380 - 480V AC	U57	489.	U58	489.	U59	489.	U60	489.	UVH4RP15K	489.	UVH4RT15K	489.

Right-Pole Mounting AC Ratings ③④

12V DC	T01	489.	T02	489.	T03	489.	T04	489.	UVH4LP20K	489.	UVH4LT20K	489.
24V DC	T05	489.	T06	489.	T07	489.	T08	489.	UVH4LP21K	489.	UVH4LT21K	489.
48 - 60V DC	T09	489.	T10	489.	T11	489.	T12	489.	UVH4LP23K	489.	UVH4LT23K	489.
110 - 127V DC	T13	489.	T14	489.	T15	489.	T16	489.	UVH4LP26K	489.	UVH4LT26K	489.
220 - 250V DC	T17	489.	T18	489.	T19	489.	T20	489.	UVH4LP28K	489.	UVH4LT28K	489.

Left-Pole Mounting DC Ratings ②

12V DC	T21	489.	T22	489.	T23	489.	T24	489.	UVH4RP20K	489.	UVH4RT20K	489.
24V DC	T25	489.	T26	489.	T27	489.	T28	489.	UVH4RP21K	489.	UVH4RT21K	489.
48 - 60V DC	T29	489.	T30	489.	T31	489.	T32	489.	UVH4RP23K	489.	UVH4RT23K	489.
110 - 127V DC	T33	489.	T34	489.	T35	489.	T36	489.	UVH4RP26K	489.	UVH4RT26K	489.
220 - 250V DC	T37	489.	T38	489.	T39	489.	T40	489.	UVH4RP28K	489.	UVH4RT28K	489.

① Listed with Underwriters Laboratories for field installation under E64983.

② Standard mounting location — leads exit rear of breaker.

③ For use with LT (thermal-magnetic) trip units only.

④ Not for use on right pole of 4-pole circuit breaker.

Note: Instruction Leaflet/FRED Number 29C170

Table 12-360. N-Frame Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted								Field Mounted			
	Connection Type and Location								Field Installation Kits ⑤			
	18-Inch (457.2 mm) Pigtail Leads				Terminal Block				Pigtail Leads		Terminal Block	
	Same Side		Rear ⑥		Opposite Side		Same Side		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
Suffix Number	Adder U.S. \$	Suffix Number	Adder U.S. \$	Suffix Number	Adder U.S. \$	Suffix Number	Adder U.S. \$					
12V AC	U05	489.	U06	489.	U07	489.	U08	489.	UVH5LP02K	489.	UVH5LT02K	489.
24V AC	U09	489.	U10	489.	U11	489.	U12	489.	UVH5LP03K	489.	UVH5LT03K	489.
48 - 60V AC	U13	489.	U14	489.	U15	489.	U16	489.	UVH5LP05K	489.	UVH5LT05K	489.
110 - 127V AC	U17	489.	U18	489.	U19	489.	U20	489.	UVH5LP08K	489.	UVH5LT08K	489.
208 - 240V AC	U21	489.	U22	489.	U23	489.	U24	489.	UVH5LP11K	489.	UVH5LT11K	489.
380 - 480V AC	U25	489.	U26	489.	U27	489.	U28	489.	UVH5LP29K	489.	UVH5LT29K	489.

Left-Pole Mounting AC Ratings ⑤

12V DC	T01	489.	T02	489.	T03	489.	T04	489.	UVH5LP20K	489.	UVH5LT20K	489.
24V DC	T05	489.	T06	489.	T07	489.	T08	489.	UVH5LP21K	489.	UVH5LT21K	489.
48 - 60V DC	T09	489.	T10	489.	T11	489.	T12	489.	UVH5LP23K	489.	UVH5LT23K	489.
110 - 127V DC	T13	489.	T14	489.	T15	489.	T16	489.	UVH5LP26K	489.	UVH5LT26K	489.
220 - 250V DC	T17	489.	T18	489.	T19	489.	T20	489.	UVH5LP28K	489.	UVH5LT28K	489.

Left-Pole Mounting DC Ratings ⑥

12V DC	T01	489.	T02	489.	T03	489.	T04	489.	UVH5LP20K	489.	UVH5LT20K	489.
24V DC	T05	489.	T06	489.	T07	489.	T08	489.	UVH5LP21K	489.	UVH5LT21K	489.
48 - 60V DC	T09	489.	T10	489.	T11	489.	T12	489.	UVH5LP23K	489.	UVH5LT23K	489.
110 - 127V DC	T13	489.	T14	489.	T15	489.	T16	489.	UVH5LP26K	489.	UVH5LT26K	489.
220 - 250V DC	T17	489.	T18	489.	T19	489.	T20	489.	UVH5LP28K	489.	UVH5LT28K	489.

⑤ Listed with Underwriters Laboratories for field installation under E64983.

⑥ Standard mounting location — leads exit rear of breaker.

Note: Instruction Leaflet/FRED Number 29C174