

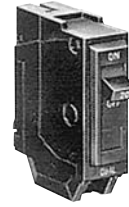
# Molded Case Circuit Breakers

## Q-Line Circuit Breakers

Plug-in Circuit Breakers  
120/240V Class

### TQL and THQL 120/240 Vac

# of Poles	Ampere Rating	Wire Range <sup>1</sup>	120/240 Vac Interrupting Rating	Product Number	List Price GO-138A
1	10 <sup>4</sup>		5kA	TQL1110	\$20.00
1	15 <sup>2</sup>	(1) 14-8 Cu/12-8 Al	10kA	THQL1115	\$20.25
1	20 <sup>2</sup>	(1) 14-8 Cu/12-8 Al	10kA	THQL1120	\$20.25
1	25	(1) 14-8 Cu/12-8 Al	10kA	THQL1125	\$20.25
1	30	(1) 14-8 Cu/12-8 Al	10kA	THQL1130	\$20.25
1	35	(1) 8-3 Cu/8-3 Al	10kA	THQL1135	\$21.25
1	40	(1) 8-3 Cu/8-3 Al	10kA	THQL1140	\$21.25
1	45	(1) 8-3 Cu/8-3 Al	10kA	THQL1145	\$21.25
1	50	(1) 8-3 Cu/8-3 Al	10kA	THQL1150	\$21.25
1	60	(1) 8-3 Cu/8-3 Al	10kA	THQL1160	\$21.25
1	70	(1) 6-1/0 Cu/4-1/0 Al	10kA	THQL1170	\$42.50



THQL1120

### TQL and THQL 120/240 Vac, Internal Common Trip

# of Poles	Ampere Rating	Wire Range <sup>1</sup>	120/240 Vac Interrupting Rating	Product Number	List Price GO-138A
2	10 <sup>4</sup>		5kA	TQL2110	\$46.00
2	15	(1) 14-8 Cu/12-8 Al	10kA	THQL2115	\$46.00
2	20	(1) 14-8 Cu/12-8 Al	10kA	THQL2120	\$46.00
2	25	(1) 14-8 Cu/12-8 Al	10kA	THQL2125	\$46.00
2	30	(1) 14-8 Cu/12-8 Al	10kA	THQL2130	\$46.00
2	35	(1) 8-3 Cu/8-3 Al	10kA	THQL2135	\$47.75
2	40	(1) 8-3 Cu/8-3 Al	10kA	THQL2140	\$47.75
2	45	(1) 8-3 Cu/8-3 Al	10kA	THQL2145	\$47.75
2	50	(1) 8-3 Cu/8-3 Al	10kA	THQL2150	\$47.75
2	60	(1) 8-3 Cu/8-3 Al	10kA	THQL2160	\$47.75
2	70	(1) 6-1/0 Cu/4-1/0 Al	10kA	THQL2170	\$95.00
2	80	(1) 6-1/0 Cu/4-1/0 Al	10kA	THQL2180	\$131.00
2	90	(1) 6-1/0 Cu/4-1/0 Al	10kA	THQL2190	\$131.00
2	100	(1) 6-1/0 Cu/4-1/0 Al	10kA	THQL21100	\$131.00
2	110	(1) 2-2/0 Cu/2-2/0 Al	10kA	THQL21110	\$284.00
2	125	(1) 2-2/0 Cu/2-2/0 Al	10kA	THQL21125 <sup>3</sup>	\$284.00



THQP130

### THQP 120/240 Vac

# of Poles	Ampere Rating	Wire Range <sup>1</sup>	120/240 Vac Interrupting Rating	Product Number	List Price GO-138A
1	15	14-8 Cu/12-8 Al	10kA	THQP115	\$20.25
1	20	14-8 Cu/12-8 Al	10kA	THQP120	\$20.25
1	25	14-8 Cu/12-8 Al	10kA	THQP125	\$20.25
1	30	8-4 Cu/8-4 Al	10kA	THQP130	\$20.25
1	35	8-4 Cu/8-4 Al	10kA	THQP135	\$21.25
1	40	8-4 Cu/8-4 Al	10kA	THQP140	\$21.25
1	45	8-4 Cu/8-4 Al	10kA	THQP145	\$21.25
1	50	8-4 Cu/8-4 Al	10kA	THQP150	\$21.25

### THQP 120/240 Vac, Internal Common Trip

# of Poles	Ampere Rating	Wire Range <sup>1</sup>	120/240 Vac Interrupting Rating	Product Number	List Price GO-138A
2	15	14-8 Cu/12-8 Al	10kA	THQP215	\$46.00
2	20	14-8 Cu/12-8 Al	10kA	THQP220	\$46.00
2	25	14-8 Cu/12-8 Al	10kA	THQP225	\$46.00
2	30	8-4 Cu/8-4 Al	10kA	THQP230	\$46.00
2	35	8-4 Cu/8-4 Al	10kA	THQP235	\$47.75
2	40	8-4 Cu/8-4 Al	10kA	THQP240	\$47.75
2	45	8-4 Cu/8-4 Al	10kA	THQP245	\$47.75
2	50	8-4 Cu/8-4 Al	10kA	THQP250	\$47.75



THQP230

<sup>1</sup>Solid or stranded for 14-10 AWG.

<sup>2</sup>UL listed as SWD (Switching Duty) rated. Suitable for switching 120 Vac fluorescent lighting loads.

<sup>3</sup>Recommended for use as main or submain breaker only.

<sup>4</sup>Not UL listed.

UL listed as HACR (heating, air conditioning and refrigeration).



Publications and Reference: See Section 22 for a complete list of additional product-related publications

### Tri-Break® Line

- Integrally Fused Thermal Magnetic Circuit Breakers
- Integrally Fused Magnetic Circuit Breakers
- Integrally Fused Molded Case Switches

These breakers are available in three types. Type TB1 (15-100 amperes) product numbers include frame, trip, line and load lugs, and current limiters all factory assembled. TB6 (300 to 600 amperes) and TB8 (600 to 800 amperes) include frame, trip and limiters, factory assembled, but do not include line or load lugs. If line and load lugs are required, order separately. Unless otherwise noted, TB1, TB6, and TB8 breaker components are UL listed in File E-42263. Fused molded case switches are UL listed in File E-57546.

### Mag-Break Line

- Magnetic only circuit breakers (motor circuit protectors)

These breakers are available only with noninterchangeable adjustable magnetic trip, in frame Types E, F, J, K, and Tri-Break®. All breakers are shipped factory assembled, complete with Cu/Al line and load lugs.

All magnetic only circuit breakers and limiters are UL Component Recognized in Files E-11592 and E-66390, respectively, unless otherwise noted.

### Spectra® RMS

- Circuit Breakers

Determine the required breaker frame, IC rating, and load requirements. Select frame, trip unit (rating plug), and lug, if required, product numbers from the tables on pages 3-46 to 3-54. For Spectra® breakers with MicroVersaTrip® Plus or MicroVersaTrip® PM Trip Units refer to pages 3-57 through 3-65. Select field-mounted internal accessory product numbers, if required, on pages 3-70 and 3-71. Select field-mounted external accessory product numbers, if required, on pages 3-97 through 3-107 and pages 3-66 to 3-69 for Spectra® breakers with MicroVersaTrip® Plus or MicroVersaTrip® PM Trip Units. Order as separate items.

- Mag-Break Motor Circuit Protectors

Determine the required frame and ampere requirements. Select frame, trip unit (rating plug), and lug, if required, product numbers from the table on pages 3-73 through 3-75. Select accessories as noted above for circuit breakers. The same accessories are used with both circuit breakers and motor circuit protectors. Order as separate items.

- Molded Case Switches

Determine the required frame and ampere requirements. Select frame and lug, if required, product numbers from the table on page 3-72. Rating plugs are not used. Select accessories as noted above for circuit breakers. Internal accessories do not require dummy trips. The same accessories are used with both circuit breakers and molded case switches. Order as separate items.

Unless otherwise noted, all circuit breakers are UL listed in File E-11592. Molded case switches are UL listed in File E-57546. Field-Installable Internal Accessories are UL listed in File E-57253. Distribution Cable Accessories for MicroVersaTrip® Plus Trip Units and MicroVersaTrip® PM Trip Units are UL listed in File E-57253.

### Accessories

Order accessories from the appropriate table:

- Thermal Magnetic Circuit Breakers, Magnetic Circuit Breakers, and Molded Case Switches<sup>1</sup>—pages 3-39 to 3-45 and 3-97 to 3-107.
- Spectra® RMS Breakers—pages 3-70 to 3-71 and 3-97 to 3-107.
- Spectra® RMS Breakers with MicroVersaTrip® Plus Trip Units or MicroVersaTrip® PM Trip Units—pages 3-66 to 3-71, and 3-96 to 3-107.

<sup>1</sup>Installation of accessories in molded case switches requires dummy trip; see page 3-45 for information. Dummy trip not required for Tri-Break® or Q-Line molded case switches.

### Molded Case Circuit Breaker and Switch Terminal Configuration Code

Order standard Cu/Al lugs by using suffix codes presented. Order lugs separately if special lugs are required. For optional lugs, see pages 3-101 and 3-102.

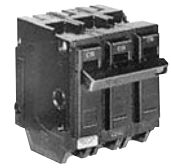
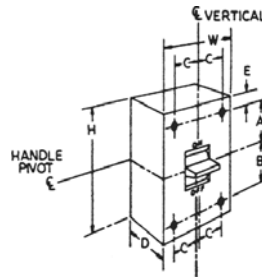
Breaker/Switch Type	Suffix				
	Blank	WL	XL	X2	LL
TQD/TJD	Load Lugs Only	Line and Load Lugs	—	Line Lugs Only	No Lugs
Molded Case Breakers, Thermal Magnetic	Load Lugs Only	Line and Load Lugs	—	Load Lugs Only	No Lugs
Molded Case Switch	Line and Load Lugs	—	No Lugs	Line Lugs Only	Load Lugs Only
Spectra RMS™ Breakers	No Lugs			Order Lugs Separately	
Mine Duty™ Breakers	No Lugs			Order Lugs Separately	
Mag-Break® Breakers	Line and Load Lugs	—	—	—	—



## Quick Reference Guide

Ratings do not apply to molded case switches.

The interruption ratings and voltages shown in the table are maximum ratings. A circuit breaker of the type given in the left-hand column may be applied at the given circuit voltage in any electrical distribution system where the available fault current at the load terminals of the breaker does not exceed the value in the table. That circuit breaker type may also be applied at intermediate values of circuit voltage provided the available fault current at the load terminals of the breaker does not exceed the value in the table for the higher value of voltage.



THQL 32015

## Q-Line (UL file E-11592; Fixed Thermal Magnetic Trip Unit)

Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating		UL Listed Interrupting Ratings—rms Symmetrical kA								Dimensions (in.)							Std. Pack	
					Vac						Vdc		H	W	D	A	B	C	E		
					120	120/240	240	277	480	600	125	250									
TQ	15-50	1	120/240	—	—	10	—	—	—	—	—	—	3	3/4	2 3/8	—	—	—	—	10	
	15-60	2	120/240	—	—	10	—	—	—	—	—	—	3	1 1/2	2 3/8	—	—	—	—	5	
THQP <sup>1</sup>	15-50	1	120/240	—	—	10	—	—	—	—	—	—	3 9/32	1/2	2 3/8	—	—	—	—	100	
		2												1							50
TQL/TQB/ TQC	10	1	120/240	—	—	5 <sup>2</sup>	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	50	
		2												2							25
		3												3							15
THQL <sup>1</sup> THQB <sup>1</sup> THQC <sup>1</sup>	15-70	1	120/240	—	—	10	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	50		
	15-125	2											2							25	
	15-100	3											3							15	
THHQB <sup>1</sup> THHQC <sup>1</sup>	15-70	1	120/240	—	—	22	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	50		
	15-100	2											2							25	
		3											3							15	
THHQL <sup>1</sup>	15-70	1	120/240	—	—	22	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	50		
	15-125	2											2							25	
	15-100	3											3							15	
TXQL <sup>1</sup> TXQB <sup>1</sup> TXQC <sup>1</sup>	15-30	1	120/240	—	—	65	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	50		
		2											2							25	
		3											3							15	
TQDL	125-200	2	120/240	—	—	10	—	—	—	—	—	—	6 1/16	2	2 3/8	—	—	—	—	12	
THQDL	125-200	2	120/240	—	—	22	—	—	—	—	—	—	6 1/16	2	2 3/8	—	—	—	—	12	
TQD <sup>1</sup>	100-225	2	240	—	—	10	10	—	—	—	—	—	6 9/16	2 3/4	2 5/8	2 7/16	2 7/16	—	27/32	1	
	100-225	3				—	10							4 1/8							11/16
THQD <sup>1</sup>	100-225	2	240	—	—	22	22	—	—	—	—	—	6 9/16	2 3/4	2 5/8	2 7/16	2 7/16	—	27/32	1	
	100-225	3				—	22							4 1/8							11/16
TJD	250-400	2	240	—	—	22	22	—	—	—	—	10	10 1/8	8 1/4	3 13/16	3 15/16	3 13/16	1 3/8	1 3/16	1	
	250-400	3				—	22														—

### CB3 Ground Fault, Equipment Ground Fault and Arc Fault (UL File E-51075; Fixed Thermal Magnetic Trip Unit)

THQB THQC THQL ...GF, GFEP, AF	15-30	1	120	—	10	—	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	10
		2	120/240	—	—	1	—	—	—	—	—	—	—	2	—	—	—	—	—	10
THHQL ...GF THHQB ...GF AF	15-30	1	120	—	22	—	—	—	—	—	—	—	3 9/32	1	2 3/8	—	—	—	—	10

<sup>1</sup> UL listed as HACR (heating, air conditioning and refrigeration).

<sup>2</sup> Not UL listed.



# Panelboards

## A-Series® Panelboards

### Equipment Ratings

#### A-Series® Panels—For Expanded Ratings

Panel Type	System Voltage (Maximum)	UL Series <sup>1</sup> Connected Rating rms Symmetrical Amps (in Thousands)		Type	Branch		Fully Rated <sup>2</sup> Equipment Rating rms Symmetrical Amps (in Thousands)
		SEP, SFP, SGP Main 400A Max.	SEL, SFL, SGL 600A Max.		No. Poles	Ampere Rating	
AL	120/240Vac	200	85	THQL/THHQL-GF	1,2	15-30	10/22
				THQL/THHQL	1,2	15-100	10/22
				TXQL	1,2	15-30	65
	240Vac			THQL/THHQL	2,3	15-100	10/22
				TXQL	3	15-30	65
				TQD/THQD	2,3	125-225	10/22
AQ	120/240Vac	200	85	THQB/THHQB-GF	1,2	15-30	10/22
				THQB/THHQB	1,2	15-100	10/22
				TXQB	1,2	15-30	65
	240Vac			THQB/THHQB	2,3	15-100	10/22
				TXQB	3	15-30	65
				TQD/THQD	2,3	125-225	10/22
AE	240Vac	200	85	TEY	1,2,3	15-100	65
				THED	2,3	15-30	65
				SF	2,3	125-225	65
	480Y/277Vac			TEY	1,2,3	15-100	14/25
				TED	2,3	110-150	14
				TFJ	2,3	125-225	14
AD/AD Plus	480Vac	100	65	TED/FB/SE/SF	1,2,3	15-225	65
	600/377Vac	35	35	TED/FB/SE/SF	1,2,3	15-225	35

#### Column Type A-Series® Panels

Panel Type	System Voltage (Maximum)	UL Series <sup>1</sup> Connected Rating rms Symmetrical Amps (in Thousands)		Type	Branch		Fully Rated <sup>2</sup> Equipment Rating rms Symmetrical Amps (in Thousands)
		SEL, SFL 225A Max.			No. Poles	Ampere Rating	
ALC	120/240Vac	85		THQL/THHQL	1,2	15-30	10/22
				THQL/THHQL	1,2	15-100	10/22
				TXQL	1,2	15-30	65
	240Vac			THQL/THHQL	2,3	15-100	10/22
				TXQL	3	15-30	65
				TQD/THQD	2,3	125-150	10/22
AQC	120/240Vac	85		THQB/THHQB-GF	1,2	15-30	10/22
				THQB/THHQB	1,2	15-100	10/22
				TXQB	1,2	15-30	65
	240Vac			THQB/THHQB	2,3	15-100	10/22
				TXQB	3	15-30	65
				TQD/THQD	2,3	125-150	10/22
AEC	480Y/277Vac	65		TEY	1,2,3	15-80 <sup>3</sup>	14
				TED	2,3	110-150	14

<sup>1</sup>Applicable to panelboards with either local or remote main circuit breaker(s) - 400A maximum standard A-Series; 225A maximum Column Type. See DET-008 for complete Series Ratings listings.

<sup>2</sup>Fully rated equipment rating is equal to the lowest interrupting rating of any circuit breaker installed.

<sup>3</sup>80A max. with #3-60°C wire max.



**Publications and Reference:** See Section 22 for a complete list of additional product-related publications

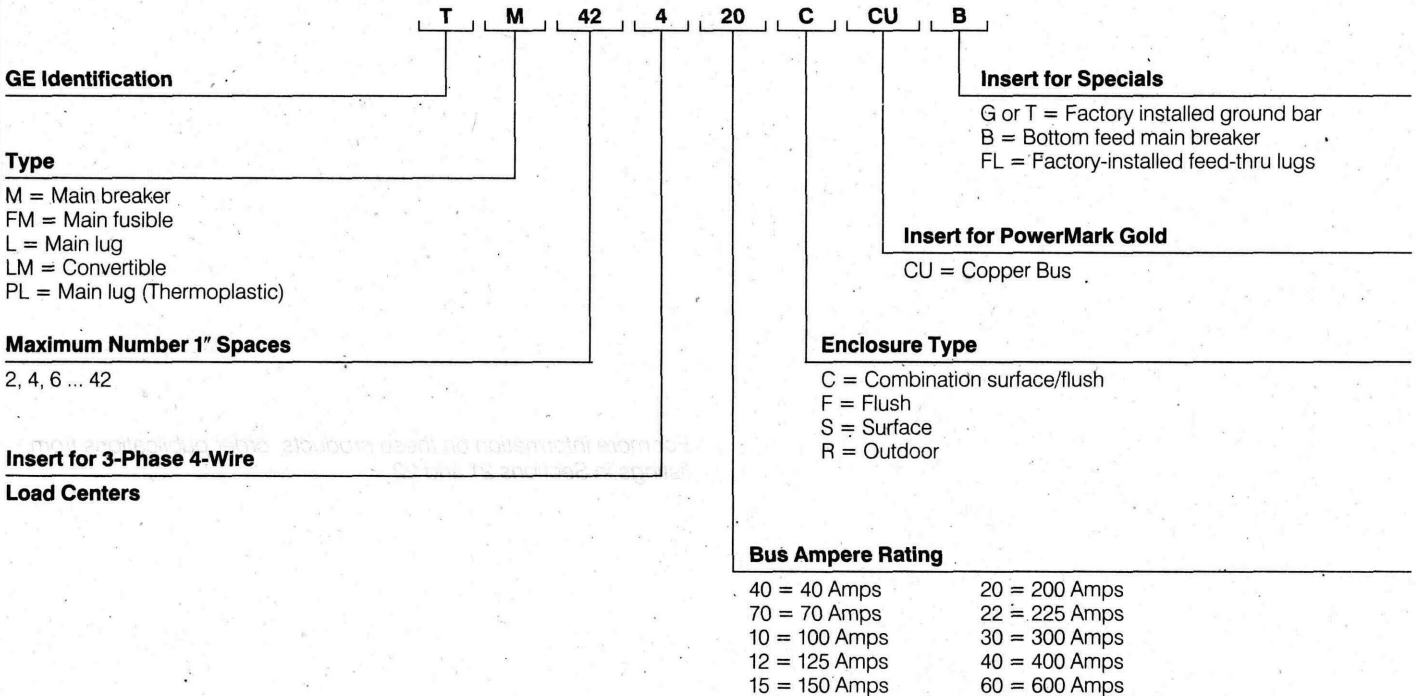


# GE Service Entrance Equipment

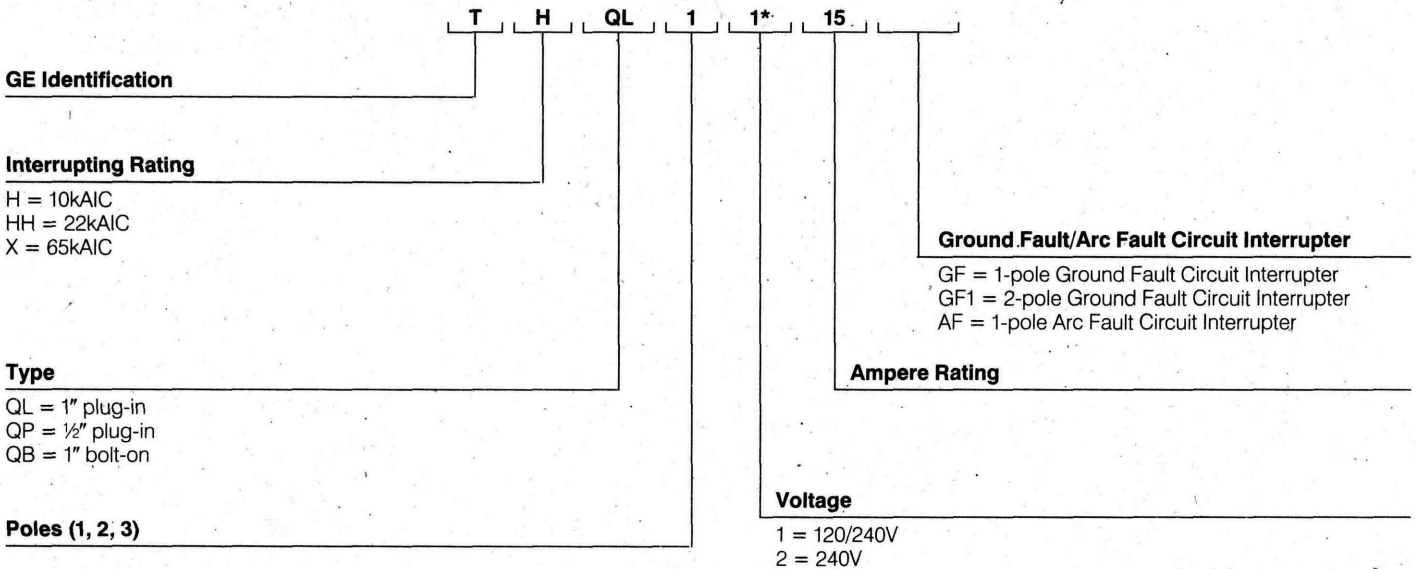
## PowerMark Gold™ and Plus™ Load Centers

SERVICE ENTRANCE

### Catalog Number Guide for Load Centers (Catalog number for illustrative purposes only)



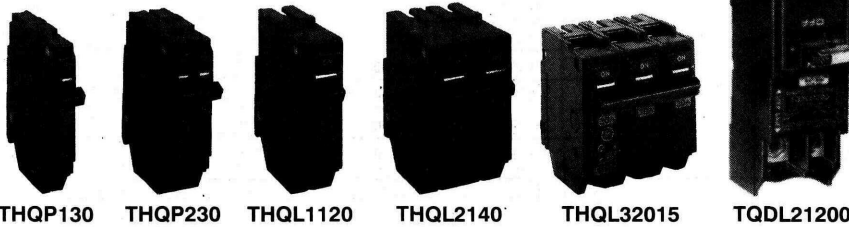
### Catalog Number Guide for Q Line Plug-in Circuit Breakers (Catalog number for illustrative purposes only)



\*Omit character for THQP breakers, which are all 120/240V.

# Q Line Plug-in Circuit Breakers

UL Listed (Molded Case Circuit Breakers No. 489)  
Federal Government Specification Qualified (WC-375B)  
60°C/75°C Conductor Rating  
Quick-Make, Quick-Break  
Box Type Terminals



Breaker Type	Ampere Rating	Wire Size AWG/kcmil Ⓣ	
		Cu	Al
THQP	15-25 30-50	14-8 8-4	12-8 8-4
THQL THHQL TXQL	15-30 35-60 70-100 110-125	14-8 8-3 6-1/0 2-2/0	12-8 8-3 4-1/0 2-2/0
TQDL THQDL	125-200	1/0-250	1/0-250

Ⓣ Solid or stranded for 14-10 AWG

Ampere Rating	10,000AIC						22,000AIC				65,000AIC	
	TYPE THQP ½-inch Module			TYPE THQL 1-inch Module			TYPE THHQL 1-inch Module				TYPE TXQL 1-inch Module	
	120/240V ac		120/240V ac		240V ac		120/240V ac		240V ac		120/240V ac	
	Cat. No.	List Price, GO-138A	Cat. No.	List Price, GO-138A	Cat. No.	List Price, GO-138	Cat. No.	List Price, GO-138A	Cat. No.	List Price, GO-138	Cat. No.	List Price, GO-138A

**Single-pole Ⓣ**

15 @	THQP115	\$20.25	THQL1115	\$ 20.25	—	—	THHQL1115	\$ 40.25	—	—	TXQL1115	\$ 74.75
20 @	THQP120	20.25	THQL1120	20.25	—	—	THHQL1120	40.25	—	—	TXQL1120	74.75
25	THQP125	20.25	THQL1125	20.25	—	—	THHQL1125	40.25	—	—	TXQL1125	74.75
30	THQP130	20.25	THQL1130	20.25	—	—	THHQL1130	40.25	—	—	TXQL1130	74.75
35	THQP135	21.25	THQL1135	21.25	—	—	THHQL1135	41.25	—	—	—	—
40	THQP140	21.25	THQL1140	21.25	—	—	THHQL1140	41.25	—	—	—	—
45	THQP145	21.25	THQL1145	21.25	—	—	THHQL1145	41.25	—	—	—	—
50	THQP150	21.25	THQL1150	21.25	—	—	THHQL1150	41.25	—	—	—	—
Std. Pkg.	5 cartons of 20		5 cartons of 10		—		5 cartons of 10		—		5 cartons of 10	

**Two-pole Ⓣ : Incorporates Internal Common Trip Bar**

15	THQP215	46.00	THQL2115	46.00	THQL22015	\$133.00	THHQL2115	93.00	THHQL22015	\$193.00	TXQL2115	186.00
20	THQP220	46.00	THQL2120	46.00	THQL22020	133.00	THHQL2120	93.00	THHQL22020	193.00	TXQL2120	186.00
25	THQP225	46.00	THQL2125	46.00	THQL22025	133.00	THHQL2125	93.00	THHQL22025	193.00	TXQL2125	186.00
30	THQP230	46.00	THQL2130	46.00	THQL22030	133.00	THHQL2130	93.00	THHQL22030	193.00	TXQL2130	186.00
35	THQP235	47.75	THQL2135	47.75	THQL22035	133.00	THHQL2135	97.00	THHQL22035	193.00	—	—
40	THQP240	47.75	THQL2140	47.75	THQL22040	133.00	THHQL2140	97.00	THHQL22040	193.00	—	—
45	THQP245	47.75	THQL2145	47.75	THQL22045	133.00	THHQL2145	97.00	THHQL22045	193.00	—	—
50	THQP250	47.75	THQL2150	47.75	THQL22050	133.00	THHQL2150	97.00	THHQL22050	193.00	—	—
60	—	—	THQL2160	47.75	THQL22060	133.00	THHQL2160	97.00	THHQL22060	193.00	—	—
70	—	—	THQL2170	95.00	THQL22070	156.00	THHQL2170	148.00	THHQL22070	251.00	—	—
80	—	—	THQL2180	131.00	THQL22080	221.00	THHQL2180	210.00	THHQL22080	277.00	—	—
90	—	—	THQL2190	131.00	THQL22090	221.00	THHQL2190	210.00	THHQL22090	277.00	—	—
100	—	—	THQL21100	131.00	THQL22100	221.00	THHQL21100	210.00	THHQL22100	277.00	—	—
110	—	—	THQL21110	284.00	—	—	THHQL21110	686.00	—	—	—	—
125	—	—	THQL21125	284.00	—	—	THHQL21125	686.00	—	—	—	—
Std. Pkg.	5 cartons of 10		5 cartons of 5		5 cartons of 5		5 cartons of 5		5 cartons of 5		5 cartons of 5	
125	—	—	TQDL21125 Ⓣ	296.00	—	—	THQDL21125 Ⓣ	713.00	—	—	—	—
150	—	—	TQDL21150 Ⓣ	296.00	—	—	THQDL21150 Ⓣ	713.00	—	—	—	—
175	—	—	TQDL21175 Ⓣ	296.00	—	—	THQDL21175 Ⓣ	713.00	—	—	—	—
200	—	—	TQDL21200 Ⓣ	296.00	—	—	THQDL21200 Ⓣ	713.00	—	—	—	—
Std. Pkg.	—		10 cartons of 1		—		10 cartons of 1		—		—	

**Three-pole Ⓣ : Incorporates Internal Common Trip Bar**

15	—	—	—	—	THQL32015	165.00	—	—	THHQL32015	251.00	TXQL32015	348.00 Ⓣ
20	—	—	—	—	THQL32020	165.00	—	—	THHQL32020	251.00	TXQL32020	348.00 Ⓣ
25	—	—	—	—	THQL32025	165.00	—	—	THHQL32025	251.00	TXQL32025	348.00 Ⓣ
30	—	—	—	—	THQL32030	165.00	—	—	THHQL32030	251.00	TXQL32030	348.00 Ⓣ
35	—	—	—	—	THQL32035	165.00	—	—	THHQL32035	251.00	—	—
40	—	—	—	—	THQL32040	165.00	—	—	THHQL32040	251.00	—	—
45	—	—	—	—	THQL32045	165.00	—	—	THHQL32045	251.00	—	—
50	—	—	—	—	THQL32050	165.00	—	—	THHQL32050	251.00	—	—
60	—	—	—	—	THQL32060	165.00	—	—	THHQL32060	251.00	—	—
70	—	—	—	—	THQL32070	216.00	—	—	THHQL32070	329.00	—	—
80	—	—	—	—	THQL32080	245.00	—	—	THHQL32080	359.00	—	—
90	—	—	—	—	THQL32090	245.00	—	—	THHQL32090	359.00	—	—
100	—	—	—	—	THQL32100	245.00	—	—	THHQL32100	359.00	—	—
Std. Pkg.	—		—		5 cartons of 3		—		5 cartons of 3		5 cartons of 3	

Ⓣ UL Listed as HACR (heating, air conditioning and refrigeration).

Ⓣ UL Listed as SWD (switching duty). Suitable for 120 volts ac fluorescent lighting loads.

Ⓣ 15-100 amp UL Listed as HACR (heating, air conditioning and refrigeration).  
Ⓣ Requires four one-inch spaces.  
Ⓣ GO-138.

**References:**  
Accessories Pages . . . . . 1-11 thru 1-13  
Auxiliary Switches . . . . . BuyLog pages & Shunt Trips . . . . . 4-48 thru 4-49