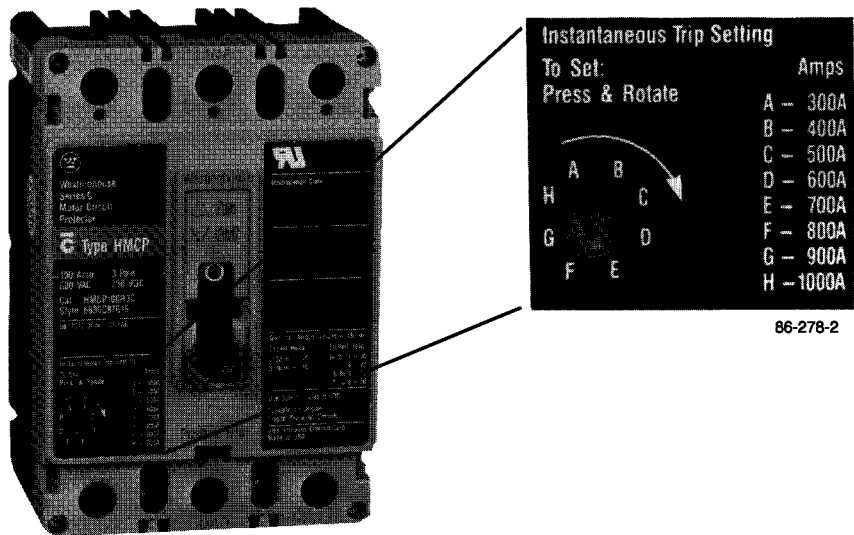


CENTERLINE[®] Motor Control Centers

Cutler-Hammer/Westinghouse Instantaneous Trip Motor Circuit Protectors (HMCP) In Application-Rated Starter Units

Product Data



Cutler-Hammer/Westinghouse 150 AMP frame instantaneous trip motor circuit protector (HMCP).

Application

Circuit breaker application is valid for the following Bulletin 2400 products:

- Bulletin 2407 Full Voltage Reversing Combination Starters
- Bulletin 2413 Full Voltage Non-Reversing Combination Starters

The information in this publication applies to Cutler-Hammer/Westinghouse motor circuit protectors (HMCP) when they are used in application-rated (16A through 304A) combination starter units. The particular circuit breaker (trip range) supplied with a unit depends on the horsepower or kilowatt rating and voltage that was specified when the unit was ordered. Table 1 lists the various combinations of circuit breakers and unit ratings. When using Table 1 be sure to use the line that applies to your equipment.

IMPORTANT: The information in this publication does not apply to inverse time circuit breakers. For combination starter units with inverse time circuit breakers, refer to Publication 2400-TD002A-EN-P, Cutler-Hammer/Westinghouse Inverse Time Circuit Breaker in Application-Rated Combination Starter Units.

Circuit Breaker Size and Adjustment

Packaged Control Products has made engineering evaluations for the protective device (circuit breaker) selection, sizing, and setting range based on the protection rules/requirements and motor criteria as stipulated in CEC, NEC, NEMA, UL and CSA Standards, e.g. motor full load currents (FLC), X/R ratios, lock rotor currents, nominal utilization voltages, etc. Should the motor application have criteria that deviates from those stated in the aforementioned standards, higher FLC and/or motor inrush currents (greater than 1300% of the nominal FLC) may be experienced, e.g. special motors, non-off standard NEMA or application-rated motors, Design B energy efficient, Design E motors, IEC N motors, etc.

The circuit breaker is shipped with the instantaneous trip arrow set to the lowest value. The motor full load current determines the magnetic trip setting of the HMCP circuit breaker. Rockwell Automation recommends selecting a trip setting that is approximately ten (10) times the motor nameplate full load current. The trip setting can be adjusted to a position which corresponds to the determined magnetic trip current: positions A through H for 150A and 600A frames, and A through I for 250A and 400A frames. To adjust the trip setting:

- a. Make certain that the circuit breaker operating handle is in the **OFF/O** position.
- b. Depress the adjustment pointer with a small screwdriver, and turn clockwise to the determined setting. Verify that the circuit breaker will not trip during motor starting. If the circuit breaker trips when attempting to start the motor, turn the pointer clockwise to successively higher positions, until the circuit breaker no longer trips when attempting to start the motor. Per the NEC the trip setting of the circuit breaker must never exceed 13 times the motor full-load current. The controller design is based on this requirement. Should Design B or E energy efficient motors (or IEC N motors) be utilized it may be necessary to set the breakers higher than 13 times the motor full-load current, but, should not exceed 17 times (change per 1999 NEC). For these applications consult the factory for controller and breaker sizing. Refer to the National Electrical Code (NEC) or the Canadian Electrical Code (CEC) for more information.

Note: When the devices are energized, motor peak inrush current can randomly exceed the maximum limit set by the code.

Push-To-Trip Mechanism

The push-to-trip mechanism provides a manual means for tripping the circuit breaker. Depress the red button on the circuit breaker cover. When the button is pushed, a plunger rotates the trip bar causing the breaker to trip, thus opening the HMCP contacts.

Table 1 Combination 2407 and 2413 Starter Units - Instantaneous Trip Motor Circuit Protector (HMCP)

Continuous Current Rating (Amperes)	Contactor Rating (Amperes)	Horsepower (Kilowatt) Range					Magnetic Trip Setting			
		220-230V	240V	380-415V	480V	600V	A	B	C	D
3A	16-23A	(0.12-0.25)	0.125-0.333	(0.12-0.37)	0.125-1	0.125-1	9	12	15	18
7A	16-23A	(0.37-0.75)	0.5-1	(0.55-1.5)	1.5-2	1.5-3	21	28	35	42
15A	16-23A	(1.1-1.5)	1.5-2	(2.2)	3-5	5	45	60	75	90
30A	16-23A	(2.2)	3-5	(3.7-5.5)	7.5-10	7.5-10	90	120	150	180
50A	16-23A	(3.7)	--	(7.5)	--	--	150	200	250	300
	16-23A	(5.5)	7.5	(11)	15	15	150	200	250	300
	30-37A	(5.5)	7.5-10	(11)	15-20	15-20	150	200	250	300
	43A	(5.5)	7.5-10	(11)	15-25	15-30	150	200	250	300
	60-85A	--	10	--	20-25	25-30	150	200	250	300
100A	23A	(7.5)	--	--	--	--	300	400	500	600
	30A	(7.5)	--	(15)	--	--	300	400	500	600
	37A	(7.5-11)	--	(15-18.5)	--	--	300	400	500	600
	43A	(7.5-11)	15	(15-22)	30	--	300	400	500	600
	60A	(7.5-11)	15-20	(15-22)	30-40	40	300	400	500	600
	72-85A	(7.5-11)	15-25	(15-22)	30-50	40-50	300	400	500	600
	110A	--	--	--	--	60	300	400	500	600
150LA	60A	(15-18.5)	--	(30)	--	--	450	600	750	900
	72A	(15-22)	--	(30-37)	--	--	450	600	750	900
	85A	(15-22)	30	(30-37)	60	--	450	600	750	900
	110A	--	30	--	60	75	450	600	750	900
150HA	85A	--	--	(45)	--	--	750	1000	1250	1500
	110A	(30)	40	(45-55)	75	100	750	1000	1250	1500
	180A	(37)	50	--	100	125	750	1000	1250	1500
250A	180A	(45)	60	(75)	125-150	150	1250	1405	1560	1720
	250A	--	75	--	--	200	1250	1405	1560	1720
400A	180A	--	--	(90)	--	--	2000	2250	2500	2750
	250A	(55)	100	(110)	200	250	2000	2250	2500	2750
400HA	250A	(75)	--	(132)	--	--	2250	2530	2810	3090
600A	304A	(90)	--	(150-160)	250	300	1800	2400	3000	3600

Magnetic Trip Setting					High Interrupting Capacity Suffix Letter "CA"	
E	F	G	H	I	C-H/Westinghouse Catalog Number	Allen-Bradley Part Number
21	24	27	30	--	HMCP5003AOC	25102-258-13
49	56	63	70	--	HMCP5007COC	25102-258-12
105	120	135	150	--	HMCP5015EOC	25102-258-14
210	240	270	300	--	HMCP5003HIC	25102-258-15
350	400	450	500	--	HMCP5050K2C	25102-258-16
350	400	450	500	--	HMCP5050K2C	25102-258-16
350	400	450	500	--	HMCP5050K2C	25102-258-16
350	400	450	500	--	HMCP5050K2C	25102-258-16
350	400	450	500	--	HMCP5050K2C	25102-258-16
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
700	800	900	1000	--	HMCP5100R3C	25102-258-17
1050	1200	1350	1500	--	HMCP5150T4C	25102-258-18
1050	1200	1350	1500	--	HMCP5150T4C	25102-258-18
1050	1200	1350	1500	--	HMCP5150T4C	25102-258-18
1050	1200	1350	1500	--	HMCP5150T4C	25102-258-18
1750	2000	2250	2500	--	HMCP5150U4C	25102-258-19
1750	2000	2250	2500	--	HMCP5150U4C	25102-258-19
1750	2000	2250	2500	--	HMCP5150U4C	25102-258-19
1875	2030	2185	2340	2500	HMCP250W5W	25102-321-02
1875	2030	2185	2340	2500	HMCP250W5W	25102-321-02
3000	3250	3500	3750	2500	HMCP400X5W	25102-353-01
3000	3250	3500	3750	4000	HMCP400X5W	25102-353-01
3375	3655	3935	4215	4000	HMCP400Y5W	25102-353-03
4200	4800	5400	6000	--	HMCP600L6W	25103-412-01

Horsepower and Kilowatt Ratings

The horsepower ratings for combination starter units listed in Table 1 were determined from full load currents as specified by NEC/CEC.

Acceptable performance should occur when the motor full load current is within 15% of the value which corresponds to the horsepower or kilowatt ratings and voltages listed in the NEC/CEC. Consult your local Rockwell Automation sales office or Allen-Bradley distributor if the motor full load current is not within these limits.



ATTENTION: The horsepower and kilowatt ratings and corresponding trip settings in Table 1 are only valid when the combination starter units are equipped with an Allen-Bradley Bulletin 193 overload relay (motor running overcurrent protective device).

When correctly selected, this combination of equipment protects against short circuit and ground fault damage, and provides coordinated overcurrent protection in the motor branch circuit for continuous-duty rated motors, as defined in the NEC and CEC.

The circuit breaker tripping may indicate the interruption of a high fault current. To ensure protection against fire and/or shock hazard, examine the current carrying parts of the combination starter units and replace if damaged. (Refer to NEMA Standards Publication Number ICS 2.2, Maintenance of Motor Controllers After a Fault Condition, and NEMA Standard Publication Number ICS 2, Parts ICS 2-302.

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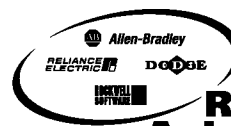
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