

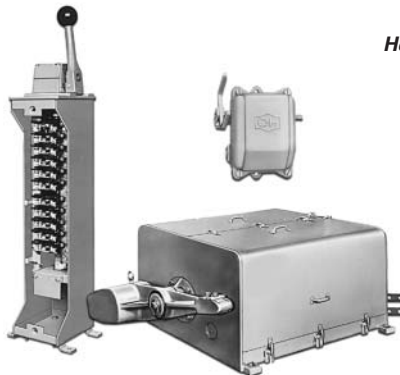
Crane Control

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Heavy-Duty Brakes



Master and Limit Switch Family



Contactors and Relays



Cat. No. C304ANA301

Product Description

These overload relays are designed for use on dc power circuits to monitor dc motor loading. Inverse time and instantaneous versions are available, with either manual or automatic reset.

Inverse time limit trip relays are normally set to trip between 125% and 175% of full load motor current. The inverse time feature is provided by an oil dashpot.

Note: These inverse trip type overload relays are shipped with a neoprene plug in the dashpot to prevent mechanical damage during shipment. This plug must be removed for the relay to function properly.

Instantaneous trip type overload relays use a dry type dashpot and are normally set to trip between 200% and 300% of full load motor current.

Standards and Certifications

- NEMA ICS2-222.
- ANSI/IEEE Standard 100.
- NEMA Standard 5-24-1960.

Technical Data and Specifications

- Current Range: 1.5 – 6500 amperes.
- Voltage: Maximum 600 Vdc.
- Operation:
 - Magnetic with oil filled dashpot for time delay
- Mounting:
 - Steel panel or insulated panel
- Electrical Ratings:
 - 10 amperes continuous
 - 2.2 amperes inductive breaking at 115 V
 - 1.1 amperes inductive breaking at 230 V
- Reset: Manual or automatic.

Dimensions

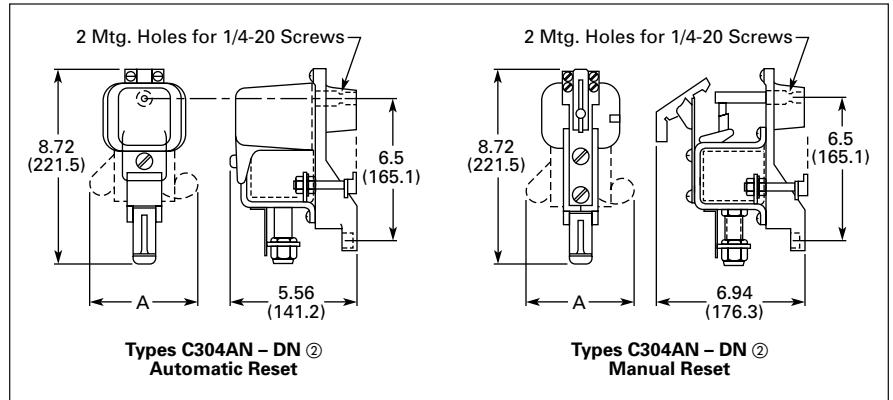


Figure 34. Approximate Dimensions in Inches (mm)

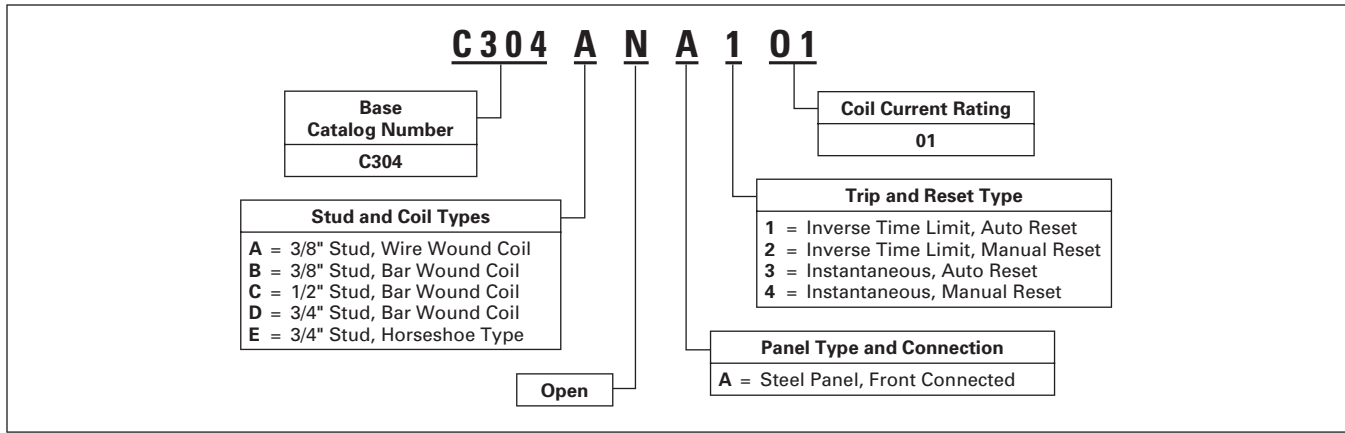
Table 119. Types C304AN – DN ①

Catalog Type	Dimensions in Inches (mm)
	A
C304AN	5.00 (127.0)
C304BN	5.38 (136.7)
C304CN	5.75 (146.1)
C304DN	6.75 (171.5)

① Type C304EN dimensions available upon request.

Catalog Number Selection

Table 120. DC Magnetic Overload Relay Catalog Numbering System



Product Selection

When Ordering Specify

- Complete Catalog Number.

Table 121. Inverse Time Limit Trip Type — Automatic Reset ①

Motor Full Load Current Range Amperes	Calibration Plate Current Range Amperes	Catalog Number	*
		Steel Panel Front Connected	
2.9 – 4.5	3.5 – 8.0	C304ANA101	
4.0 – 6.2	5.0 – 11.0	C304ANA102	
5.6 – 9.0	7.0 – 16.0	C304ANA103	
6.6 – 12.3	9.0 – 21.0	C304ANA104	
10.0 – 18.5	15.0 – 30.0	C304ANA105	
15.2 – 28.0	20.0 – 50.0	C304ANA106	
20.0 – 37.0	30.0 – 60.0	C304ANA107	
30.8 – 57.0	40.0 – 100.0	C304ANA108	
38. – 71.	50. – 125.	C304BNA109	
62. – 114.	80. – 200.	C304BNA110	
100. – 185.	150. – 300.	C304BNA111	
160. – 297.	200. – 500.	C304CNA112	
266. – 495.	350. – 850.	C304CNA113	
400. – 742.	500. – 1300.	C304CNA114	
470. – 874.	600. – 1500.	C304DNA115	
800. – 1485.	1000. – 2500.	C304DNA116	
1200. – 2285.	1500. – 3900.	C304ENA117	

① For relays with manual reset, change 8th digit of listed Catalog Number from 1 to 2.
Example: C304ANA201.

Discount Symbol 18CD-4

* Consult Sales Office for Pricing

Table 122. Instantaneous Trip Type — Automatic Reset ①

Motor Full Load Current Range Amperes	Calibration Plate Current Range Amperes	Catalog Number	*
		Steel Panel Front Connected	
1.5 – 2.6 2.3 – 4.0 3.1 – 5.3 4.2 – 7.2 6.2 – 10.8	3.5 – 8.0 5.0 – 11.0 7.0 – 16.0 9.0 – 21.0 15.0 – 30.0	C304ANA301 C304ANA302 C304ANA303 C304ANA304 C304ANA305	
9.5 – 16.6 12.5 – 21.0 19.0 – 33.0	20.0 – 50.0 30.0 – 60.0 40.0 – 100.0	C304ANA306 C304ANA307 C304ANA308	
24.0 – 41.0 39.0 – 67.0 63.0 – 108.0	50.0 – 125.0 80.0 – 200.0 150.0 – 300.0	C304BNA309 C304BNA310 C304BNA311	
100.0 – 173.0 166.0 – 289.0 250.0 – 433.0	200.0 – 500.0 350.0 – 850.0 500.0 – 1300.0	C304CNA312 C304CNA313 C304CNA314	
294.0 – 510.0 500.0 – 866.0	600.0 – 1500.0 1000.0 – 2500.0	C304DNA315 C304DNA316	
750.0 – 1300.0 1250.0 – 2166.0	1500.0 – 3900.0 3800.0 – 6500.0	C304ENA317 C304ENA318	

① For relays with manual reset, change 8th digit of listed Catalog Number from 3 to 4.
Example: C304ANA401.

Table 123. Stud and Coil Types

Catalog Type	Description	Dimension Drawing Number	
		Automatic Reset	Manual Reset
C304AN	3/8" Stud, Wire Wound Coil	B10-3949	B10-3951
C304BN	3/8" Stud, Bar Wound Coil	B10-3949	B10-3951
C304CN	1/2" Stud, Bar Wound Coil	B10-3949	B10-3951
C304DN	3/4" Stud, Bar Wound Coil	B10-3949	B10-3951
C304EN	3/4" Stud, Horseshoe Type	A10-4135	A10-4136

Discount Symbol **18CD-4**

* Consult Sales Office for Pricing

Cross-Reference to Previous Products

Table 124. DC Magnetic Overload Relays Cross-Reference

Old	New	Old	New	Old	New	Old	New
10165H1-2-32	C304ANA102	10165H2-3-34	C304AND203	10165H3-5-34	C304AND306	10165H4-4-32	C304ANA405
10165H1-2-34	C304AND102	10165H2-4-32	C304ANA204	10165H3-6-32	C304ANA307	10165H4-4-34	C304AND405
10165H1-3-32	C304ANA103	10165H2-4-34	C304AND204	10165H3-6-34	C304AND307	10165H4-5-32	C304ANA406
10165H1-3-34	C304AND103	10165H2-5-32	C304ANA205	10165H3-7-32	C304ANA308	10165H4-5-34	C304AND406
10165H1-4-32	C304ANA104	10165H2-5-34	C304AND205	10165H3-7-34	C304AND308	10165H4-6-32	C304ANA407
10165H1-4-34	C304AND104	10165H2-6-32	C304ANA206	10165H3-9-12	C304BND311	10165H4-6-34	C304AND407
10165H1-5-32	C304ANA105	10165H2-6-34	C304AND206	10165H3-9-19	C304BNA311	10165H4-7-32	C304ANA408
10165H1-5-34	C304AND105	10165H2-7-32	C304ANA207	10165H3-12-19	C304CNA313	10165H4-7-34	C304AND408
10165H1-6-32	C304ANA106	10165H2-7-34	C304AND207	10165H3-13-14	C304CND313 ①	10165H4-9-12	C304CNA411
10165H1-6-34	C304AND106	10165H2-8-32	C304ANA208	10165H3-13-20	C304CNA313 ①	10165H4-9-19	C304BNA411
10165H1-7-32	C304ANA107	10165H2-8-34	C304AND208	10165H3-14-14	C304CND314 ①	10165H4-13-14	C304CND414 ①
10165H1-7-34	C304AND107	10165H2-9-12	C304BND210	10165H3-14-20	C304CNA314 ①	10165H4-13-20	C304CNA413 ①
10165H1-8-32	C304ANA108	10165H2-9-19	C304BNA210	10165H3-15-16	C304DND315 ①	10165H4-14-14	C304CND414 ①
10165H1-8-34	C304AND108	10165H2-10-12	C304BND211	10165H3-15-21	C304DNA315 ①	10165H4-14-20	C304CNA414 ①
10165H1-9-12	C304BND110	10165H2-10-19	C304BNA211	10165H3-16-16	C304DND315 ①	10165H4-15-16	C304DND415 ①
10165H1-9-19	C304BNA110	10165H2-12-14	C304CND212	10165H3-16-21	C304DNA315 ①	10165H4-15-21	C304DNA415 ①
10165H1-10-12	C304BND111	10165H2-12-20	C304CNA212	10165H3-17-23	C304DNA316 ①	10165H4-16-16	C304DND415 ①
10165H1-10-19	C304BNA111	10165H2-15-16	C304DND215 ①	10165H3-17-25	C304DND316 ①	10165H4-16-21	C304DNA415 ①
10165H1-11-19	C304CNA112	10165H2-15-21	C304DNA215 ①	10165H3-20-32	C304ANA306	10165H4-17-23	C304DNA416 ①
10165H1-12-14	C304CND112	10165H2-27-16	C304DND215 ①	10165H3-20-34	C304AND306	10165H4-17-25	C304DND416 ①
10165H1-12-20	C304CNA112	10165H2-27-21	C304DNA215 ①	10165H3-26-14	C304CND313 ①	10165H4-20-32	C304ANA406
10165H1-15-16	C304DND115 ①	10165H2-29-32	C304ANA201	10165H3-26-20	C304CNA313 ①	10165H4-20-34	C304AND406
10165H1-15-21	C304DNA115 ①	10165H2-29-34	C304AND201	10165H3-27-14	C304CND314 ①	10165H4-26-14	C304CND413 ①
10165H1-27-16	C304DND115 ①	10165H2-37-12	C304BND209	10165H3-27-20	C304CNA314 ①	10165H4-26-20	C304CNA413 ①
10165H1-27-21	C304DNA115 ①	10165H2-37-19	C304BNA209	10165H3-31-32	C304ANA301	10165H4-27-14	C304CND414 ①
10165H1-29-32	C304ANA101	10165H2-42-16	C304DND215 ①	10165H3-31-34	C304AND301	10165H4-27-20	C304CNA414 ①
10165H1-29-34	C304AND101	10165H2-42-21	C304DNA215 ①	10165H3-32-32	C304ANA302	10165H4-31-32	C304ANA401
10165H1-37-12	C304BND109	10165H2-43-16	C304DND215 ①	10165H3-32-34	C304AND302	10165H4-31-34	C304AND401
10165H1-37-19	C304BNA109	10165H2-43-27	C304DNA215 ①	10165H3-38-12	C304BND310	10165H4-32-32	C304ANA402
10165H1-42-16	C304DND115 ①	10165H2-47-16	C304DND215 ①	10165H3-38-19	C304BNA310	10165H4-32-34	C304AND402
10165H1-42-21	C304DNA115 ①	10165H2-47-27	C304DNA215 ①	10165H3-47-16	C304DND316 ①	10165H3-38-12	C304BND410
10165H1-43-16	C304DND115 ①	10165H2-48-16	C304DND216 ①	10165H3-47-27	C304DNA316 ①	10165H3-38-19	C304BNA410
10165H1-43-27	C304DNA115 ①	10165H2-48-27	C304DNA216 ①	10165H3-48-16	C304DND316 ①	10165H4-47-16	C304DND416 ①
10165H1-47-16	C304DND115 ①	10165H3-2-32	C304ANA303	10165H3-48-27	C304DNA316 ①	10165H4-47-27	C304DNA416 ①
10165H1-47-27	C304DNA115 ①	10165H3-2-34	C304AND303	10165H3-53-23	C304DNA316 ①	10165H4-48-16	C304DND416 ①
10165H1-48-16	C304DND116 ①	10165H3-3-32	C304ANA304	10165H3-53-25	C034DND316 ①	10165H4-48-27	C304DNA416 ①
10165H1-48-27	C304DNA116 ①	10165H3-3-34	C304AND304	10165H4-2-32	C304ANA403	10165H4-53-23	C304DNA416 ①
10165H2-2-32	C304ANA202	10165H3-4-32	C304ANA305	10165H4-2-34	C304AND403	10165H4-53-25	C304DND416 ①
10165H2-2-34	C304AND202	10165H3-4-34	C304AND305	10165H4-3-32	C304ANA404	—	—
10165H2-3-32	C304ANA203	10165H3-5-32	C304ANA306	10165H4-3-34	C304AND404	—	—

① New device has a wider calibration range than old device, but is a functional replacement.

Note: See Pages 70 and 71 for prices.

Table 125. DC Magnetic Overload Relays Cross-Reference with Old Style Number

Old Catalog Number	Old Style Number	Replacement C304 Catalog Number	Old Catalog Number	Old Style Number	Replacement C304 Catalog Number
28UI2-2 28UI2-3 28UI2-5 28UI2-6 28UI2-8	A073-260365-4001 A073-260365-4002 A073-260365-4003 A073-260365-4004 A073-260365-4005	C304ANA401 C304ANA402 C304ANA403 C304ANA404 C304ANA405	28UI3-2 28UI32 28UI3-3 28UI3-5 28UI3-6	A073-260365-2001 A073-260365-2002 A073-260365-2003 A073-260365-2004 A073-260365-2005	C304ANA301 C304ANA302 C304ANA303 C304ANA304 C304ANA305
28UI2-13 28UI2-20 28UI2-22 28UI2-35 28UI2-55	A073-260365-4006 A073-260365-4007 A073-260365-4008 A073-260365-4009 A073-260365-4010	C304ANA406 C304ANA407 C304ANA407 C304ANA408 C304BNA409	28UI3-13 28UI3-20 28UI3-22 28UI3-35 28UI3-55	A073-260365-2006 A073-260365-2007 A073-260365-2008 A073-260365-2009 A073-260365-2010	C304ANA306 C304ANA307 C304ANA307 C304ANA308 C304BNA309
28UI2-68 28UI2-100 28UI2-110 28UI2-160 28UI2-220	A073-260365-4011 A073-260365-4012 A073-260365-4013 A073-260365-4014 A073-260365-4015	C304BNA410 C304BNA411 C304BNA411 C304CNA412 C304CNA413	28UI3-68 28UI3-100 28UI3-110 28UI3-160 28UI3-220	A073-260365-2011 A073-260365-2012 A073-260365-2013 A073-260365-2014 A073-260365-2015	C304BNA310 C304BNA311 C304BNA311 C304CNA312 C304CNA313
28UI2-285 28UI2-500 28UI2-600 28UI2-900 28UI2-1500	A073-260365-4016 A073-260365-4017 A073-260365-4018 A073-260365-4019 A073-281375-0004	C304CNA414 C304CNA414 C304DNA415 C304DNA416 C304ENA417	28UI3-285 28UI3-500 28UI3-600 28UI3-900 28UI3-1500	A073-260365-2016 A073-260365-2017 A073-260365-2018 A073-260365-2019 A073-281375-0002	C304CNA314 C304CNA314 C304DNA315 C304DNA316 C304ENA317
28UI2-2800 28UT2-2 28UT2-3 28UT2-5 28UT2-6	A073-281376-0004 A073-260365-3001 A073-260365-3002 A073-260365-3003 A073-260365-3004	C304ENA418 C304ANA201 C304ANA201 C304ANA201 C304ANA202	28UI3-2800 28UT3-2 28UT3-3 28UT3-5 28UT3-6	A073-281376-0002 A073-260365-1001 A073-260365-1002 A073-260365-1003 A073-260365-1004	C304ENA318 C304ANA101 C304ANA101 C304ANA101 C304ANA102
28UT2-8 28UT2-13 28UT2-20 28UT2-22 28UT2-35	A073-260365-3005 A073-260365-3006 A073-260365-3007 A073-260365-3008 A073-260365-3009	C304ANA203 C304ANA204 C304ANA205 C304ANA205 C304ANA206	28UT3-8 28UT3-13 28UT3-20 28UT3-22 28UT3-35	A073-260365-1005 A073-260365-1006 A073-260365-1007 A073-260365-1008 A073-260365-1009	C304ANA103 C304ANA104 C304ANA105 C304ANA105 C304ANA106
28UT2-55 28UT2-68 28UT2-100 28UT2-110 28UT2-160	A073-260365-3010 A073-260365-3011 A073-260365-3012 A073-260365-3013 A073-260365-3014	C304ANA207 C304ANA208 C304BNA209 C304BNA210 C304BNA211	28UT3-55 28UT3-68 28UT3-100 28UT3-110 28UT3-160	A073-260365-1010 A073-260365-1011 A073-260365-1012 A073-260365-1013 A073-260365-1014	C304ANA107 C304ANA108 C304BNA109 C304BNA110 C304BNA111
28UT2-220 28UT2-285 28UT2-500 28UT2-600 28UT2-900 28UT2-1500 28UT2-2800	A073-260365-3015 A073-260365-3016 A073-260365-3017 A073-260365-3018 A073-260365-3019 A073-281375-0003 A073-281376-0003	C304CNA212 C304CNA212 C304CNA213 C304CNA214 C304DNA215 C304DNA216 C304ENA217	28UT3-220 28UT3-285 28UT3-500 28UT3-600 28UT3-900 28UT3-1500 28UT3-2800	A073-260365-1015 A073-260365-1016 A073-260365-1017 A073-260365-1018 A073-260365-1019 A073-281375-0001 A073-281376-0001	C304CNA112 C304CNA112 C304CNA113 C304CNA114 C304DNA115 C304DNA116 C304ENA117