



**104402**  
**DILL12(230V50HZ,240V60HZ)**

Overview

Specifications

Resources



Delivery program

Technical data

Design verification as per IEC/EN 61439

Technical data ETIM 7.0

Approvals

Dimensions

## DELIVERY PROGRAM

Product range  
 DILL Lighting contactors

Application  
 Contactors for lighting systems

Utilization category  
 AC-1: Non-inductive or slightly inductive loads, resistance furnaces

### Rated operational current

AC-5a  
 220 V 230 V [ $I_e$ ]  
 12 A

AC-5a  
 380 V 400 V [ $I_e$ ]  
 12 A

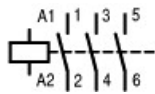
AC-5b

220 V 230 V [ $I_e$ ]  
14 A

AC-5b  
380 V 400 V [ $I_e$ ]  
14 A

AC-1  
Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
Open  
at 40 °C [ $I_{th} = I_e$ ]  
27 A

Contact sequence



Actuating voltage  
230 V 50 Hz, 240 V 60 Hz

Note

**Switchgear  
for lighting  
systems**

	DIL	L12	L18	L20	M7	M9	M12	M17	M25	M32	M40	M50
Permissible compensation capacitance	$C_{max}$ [mF]	470	470	470	47	80	100	220	330	470	470	500
Filament lamp	$I_e$ [A]	14	21	27	6	7.5	10	14	21	27	33	42
Mercury blended lamps	$I_e$ [A]	12	16	23	5	6.5	8.5	12	16	23	30	38
Fluorescent lamps, conventional - reactor - starter - connection	$I_e$ [A]	20	26	35	9	10	15	20	26	35	41	45
Fluorescent lamps, conventional - reactor - starter - connection	$I_e$ [A]	20	26	35	5.5	8	13	15	22.5	29	36	47
Fluorescent lamps, duo circuit (series compensated)	$I_e$ [A]	12	18	20	5	6.5	8.5	12	17.5	22.5	28	35

electronic upstream devices and LED lamps	le [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
High-pressure mercury-arc lamps	le [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
Metal-halide lamps	le [A]	12	18	20	3.5	6	10	12	17.5	20	25	30
Low-pressure sodium lamps	le [A]	7.5	10	12	3	4	6	7.5	10	12	15	22
	DIL	M65	M80	M95	M115	M150	M185A	M225A	M250A	M300A	M400A	M500A
Permissible compensation capacitance	C <sub>max</sub> [mF]	500	550	620	830	970	2055	2300	2600	3000	3250	3500
Filament lamp	le [A]	55	67	79	95	125	153	187	208	349	332	415
Mercury blended lamps	le [A]	45	65	67	80	110	123	150	167	200	266	332
Fluorescent lamps, conventional - reactor - starter - connection	le [A]	55	95	100	125	145	207	237	263	300	375	525
Fluorescent lamps, conventional - reactor - starter - connection	le [A]	59	71	95	100	138	186	213	236	270	338	473
Fluorescent lamps, duo circuit (series compensated)	le [A]	45.5	56	66.5	80.5	105	130	158	175	210	280	350
electronic upstream devices and LED lamps	le [A]	36	55	60	80	95	138	158	175	200	250	350
High-pressure mercury-arc lamps	le [A]	36	55	60	80	95	138	158	175	200	250	350
Metal-halide lamps	le [A]	36	55	60	80	95	138	158	175	200	250	350
Low-pressure sodium lamps	le [A]	25	35	40	50	70	100	11	123	140	175	245

In compensated lamps, the sum of the capacitances must not exceed the contactors' max. permissible capacitor load ( $C_{max}$ )!  
The values in the table are for each contact in the contactors.

## TECHNICAL DATA

### General

Standards  
IEC/EN 60947, VDE 0660, UL, CSA

Lifespan, mechanical  
AC operated [Operations]  
 $1 \times 10^6$

Operating frequency, mechanical  
AC operated [Operations/h]  
60

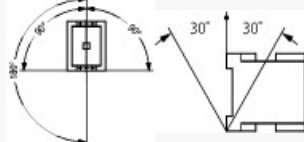
Climatic proofing  
Damp heat, constant, to IEC 60068-2-78  
Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature  
Open  
-25 - +60 °C

Ambient temperature  
Enclosed  
- 25 - 40 °C

Ambient temperature  
Storage  
- 40 - 80 °C

### Mounting position



Mechanical shock resistance (IEC/EN 60068-2-27)  
Half-sinusoidal shock, 10 ms  
Mechanical shock resistance  
6.9 g

Degree of Protection  
IP00

Altitude  
Max. 2000 m

Weight  
AC operated  
0.42 kg

### Main conducting paths

Rated impulse withstand voltage [ $U_{imp}$ ]  
8000 V AC

Overvoltage category/pollution degree  
III/3

Rated insulation voltage [ $U_i$ ]  
690 V AC

Rated operational voltage [ $U_n$ ]  
690 V AC

Making capacity  
238 A

Breaking capacity [380 ... 400 V]  
170 A

Lifespan, electrical [Operations]  
10000

Short-circuit protection maximum fuse  
400 V [gG/gL 500 V]  
63 A

**AC**

AC-1  
Rated operational current  
Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
Open  
at 40 °C [ $I_{th} = I_e$ ]  
27 A

AC-1  
Rated operational current  
Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
Open  
at 60 °C [ $I_{th} = I_e$ ]  
24 A

AC-5a operation  
220 V 230 V [ $I_e$ ]  
12 A

AC-5a operation  
380 V 400 V [ $I_e$ ]  
12 A

AC-5b operation  
220 V 230 V [ $I_e$ ]  
14 A

AC-5b operation  
380 V 400 V [ $I_e$ ]  
14 A

AC-5b operation  
380 V 400 V [ $I_e$ ]  
14 A

Electric lamps  
Filament bulbs  
14 A

Electric lamps  
Mercury blended lamps  
12 A

Electric lamps  
Fluorescent lamp load  
Conventional reactor starter circuit  
20 A

Electric lamps  
Fluorescent lamp load  
Duo circuit  
20 A

Electric lamps  
Electronic upstream devices  
12 A

Electric lamps  
High-pressure mercury vapour lamps  
12 A

Electric lamps  
Metal-halide lamps  
12 A

Electric lamps  
High-pressure sodium lamps  
12 A

Electric lamps  
Low-pressure sodium lamps  
7.5 A

Electric lamps  
Maximum permissible compensation capacitance  
470  $\mu\text{F}$

## Current heat loss

Current heat loss at  $I_b$  to AC-5b/400 V  
1.2 W

Impedance per pole  
2.65 m $\Omega$

## Magnet systems

Voltage tolerance  
AC operated [Pick-up]  
Min. pick-up voltage, AC operated  
 $0.9 \times U_c$

Voltage tolerance  
AC operated [Pick-up]

Flick-up voltage AC operated, max.  
 $1.2 \times U_c$

Voltage tolerance  
Drop-out voltage AC operated [Drop-out]  
Drop-out voltage, AC-operated, min.  
 $0.3 \times U_c$

Power consumption of the coil in a cold state and  
 $1.0 \times U_s$   
Dual-voltage coil 50 Hz [Flick-up]  
52 VA

Power consumption of the coil in a cold state and  
 $1.0 \times U_s$   
Dual-voltage coil 50 Hz [Sealing]  
7.1 VA

Power consumption of the coil in a cold state and  
 $1.0 \times U_s$   
Dual-voltage coil 50 Hz [Sealing]  
2.1 W

Power consumption of the coil in a cold state and  
 $1.0 \times U_s$   
Dual-voltage coil 60 Hz [Flick-up]  
67 VA

Power consumption of the coil in a cold state and  
 $1.0 \times U_s$   
Dual-voltage coil 60 Hz [Sealing]  
8.7 VA

Power consumption of the coil in a cold state and  
 $1.0 \times U_s$   
Dual-voltage coil 60 Hz [Sealing]  
2.1 W

Duty factor  
100 % DF

Operating times  
Closing delay  
Switching times of main contacts AC operated  
Closing delay, min.  
16 ms

Operating times  
Closing delay  
Switching times of main contacts AC operated



Closing delay, max.  
22 ms

Operating times  
Opening delay  
Switching times of main contacts AC operated  
Opening delay, min.  
8 ms

Operating times  
Opening delay  
Switching times of main contacts AC operated  
Opening delay, max.  
14 ms

### Additional technical data

like the contactor [DIL]  
M17

### Rating data for approved types

Switching capacity  
General use  
24 A

Short Circuit Current Rating  
Basic Rating  
SCCR  
5 kA

Short Circuit Current Rating  
Basic Rating  
max. Fuse  
125 A

Short Circuit Current Rating  
Basic Rating  
max. CB  
125 A

Short Circuit Current Rating  
480 V High Fault  
SCCR (fuse)  
100 kA

Short Circuit Current Rating  
480 V High Fault  
max. Fuse

70 Class J A

Short Circuit Current Rating  
480 V High Fault  
SCCR (CB)  
22 kA

Short Circuit Current Rating  
480 V High Fault  
max. CB  
32 A

Short Circuit Current Rating  
600 V High Fault  
SCCR (fuse)  
100 kA

Short Circuit Current Rating  
600 V High Fault  
max. Fuse  
70 Class J A

Short Circuit Current Rating  
600 V High Fault  
SCCR (CB)  
22 kA

Short Circuit Current Rating  
600 V High Fault  
max. CB  
32 A

Special Purpose Ratings  
Incandescent Lamps (Tungsten)  
480V 60Hz 3phase, 277V 60Hz 1phase  
24 A

Special Purpose Ratings  
Incandescent Lamps (Tungsten)  
600V 60Hz 3phase, 347V 60Hz 1phase  
24 A

## **Electromagnetic compatibility (EMC)**

Emitted interference  
According to EN 60947-1

Interference immunity  
According to EN 60947-1

# DESIGN VERIFICATION AS PER IEC/EN 61439

## Technical data for design verification

Rated operational current for specified heat dissipation [ $I_r$ ]  
14 A

Heat dissipation per pole, current-dependent [ $P_{id}$ ]  
0.4 W

Equipment heat dissipation, current-dependent [ $P_{id}$ ]  
1.2 W

Static heat dissipation, non-current-dependent [ $P_{is}$ ]  
2.1 W

Heat dissipation capacity [ $P_{diss}$ ]  
0 W

Operating ambient temperature min.  
-25 °C

Operating ambient temperature max.  
+60 °C

## IEC/EN 61439 design verification

10.2 Strength of materials and parts  
10.2.2 Corrosion resistance  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
10.2.3.1 Verification of thermal stability of enclosures  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
10.2.3.2 Verification of resistance of insulating materials to normal heat  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
10.2.4 Resistance to ultra-violet (UV) radiation  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
10.2.5 Lifting  
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts  
10.2.6 Mechanical impact  
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts  
10.2.7 Inscriptions  
Meets the product standard's requirements.

10.3 Degree of protection of ASSEMBLIES  
Does not apply, since the entire switchgear needs to be evaluated.

10.4 Clearances and creepage distances  
Meets the product standard's requirements.

10.5 Protection against electric shock  
Does not apply, since the entire switchgear needs to be evaluated.

10.6 Incorporation of switching devices and components  
Does not apply, since the entire switchgear needs to be evaluated.

10.7 Internal electrical circuits and connections  
Is the panel builder's responsibility.

10.8 Connections for external conductors  
Is the panel builder's responsibility.

10.9 Insulation properties  
10.9.2 Power-frequency electric strength  
Is the panel builder's responsibility.

10.9 Insulation properties  
10.9.3 Impulse withstand voltage  
Is the panel builder's responsibility.

10.9 Insulation properties  
10.9.4 Testing of enclosures made of insulating material  
Is the panel builder's responsibility.

10.10 Temperature rise  
The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.

10.11 Short-circuit rating  
Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.12 Electromagnetic compatibility  
Is the panel builder's responsibility. The specifications for the switchgear must be observed.

10.13 Mechanical function  
The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

## TECHNICAL DATA ETIM 7.0

Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])

Rated control supply voltage  $U_s$  at AC 50HZ  
230 - 230 V

Rated control supply voltage  $U_s$  at AC 60HZ

240 - 240 V

Rated control supply voltage  $U_s$  at DC  
0 - 0 V

Voltage type for actuating  
AC

Rated operation current  $I_e$  at AC-1, 400 V  
12 A

Rated operation current  $I_e$  at AC-3, 400 V  
0 A

Rated operation power at AC-3, 400 V  
0 kW

Rated operation current  $I_e$  at AC-4, 400 V  
0 A

Rated operation power at AC-4, 400 V  
0 kW

Rated operation power NEMA  
0 kW

Modular version  
No

Number of auxiliary contacts as normally open  
contact  
0

Number of auxiliary contacts as normally closed  
contact  
0

Type of electrical connection of main circuit  
Screw connection

Number of normally closed contacts as main  
contact  
0

Number of main contacts as normally open contact  
3

## APPROVALS

Product Standards  
IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No.  
60947-4-1-14; CE marking

UL File No.  
E29096

UL Category Control No.  
NLDX

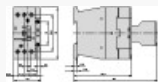
CSA File No.  
012528

CSA Class No.  
3211-04

North America Certification  
UL listed, CSA certified

Specially designed for North America  
No

## DIMENSIONS



distance at side to earthed parts: 6 mm

DILL12..20

