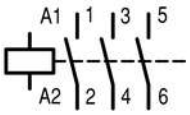
DATASHEET - DILL20(24V50HZ)



Lamp load contactor, 24 V 50 Hz, 220 V 230 V: 20 A, Contactors for lighting systems

Part no.	**DILL20(24V50HZ)**
Catalog No.	**104407**
Alternate Catalog No.	**XTCT020C00U**
EL-Nummer (Norway)	**4134242**

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	A	20
380 V 400 V	I_e	A	20
AC-5b			
220 V 230 V	I_e	A	27
380 V 400 V	I_e	A	27
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	45
Contact sequence			
Actuating voltage			24 V 50 Hz
Note			Switchgear for lighting systems

		DILL	L12	L18	L20	M7	M9	M12	M17	M25	M32	M40	M50
Permissible compensation capacitance			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	I_e	[A]	12	18	20	3.5	6	10	12	17.5	20	25	30

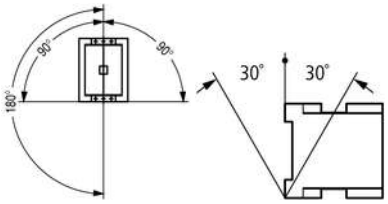
Switchgear for lighting systems LED lamps													
High-pressure mercury-arc lamps	Ie [A]	12	18	20	3.5	6	10	12	17.5	20	25	30	
Metal-halide lamps	Ie [A]	12	18	20	3.5	6	10	12	17.5	20	25	30	
Low-pressure sodium lamps	Ie [A]	7.5	10	12	3	4	6	7.5	10	12	15	22	
	DIL	M65	M80	M95	M115	M150	M185A	M225A	M250A	M300A	M400A	M500A	
Permissible compensation capacitance	Cmax [mF]	500	550	620	830	970	2055	2300	2600	3000	3250	3500	
Filament lamp	Ie [A]	55	67	79	95	125	153	187	208	349	332	415	
Mercury blended lamps	Ie [A]	45	65	67	80	110	123	150	167	200	266	332	
Fluorescent lamps, conventional - reactor – starter – connection	Ie [A]	55	95	100	125	145	207	237	263	300	375	525	
Fluorescent lamps, conventional - reactor – starter – connection	Ie [A]	59	71	95	100	138	186	213	236	270	338	473	
Fluorescent lamps, duo circuit (series compensated)	Ie [A]	45.5	56	66.5	80.5	105	130	158	175	210	280	350	
electronic upstream devices and LED lamps	Ie [A]	36	55	60	80	95	138	158	175	200	250	350	
High-pressure mercury-arc lamps	Ie [A]	36	55	60	80	95	138	158	175	200	250	350	
Metal-halide lamps	Ie [A]	36	55	60	80	95	138	158	175	200	250	350	
Low-pressure sodium lamps	Ie [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 (Cmax)!
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	x 10^6	1
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		°C	-25 - +60

Enclosed		°C	- 25 - 40
Storage		°C	- 40 - 80
Mounting position			
Mechanical shock resistance (IEC/EN 60068-2-27)			
Half-sinusoidal shock, 10 ms			
Mechanical shock resistance		g	6.9
Degree of Protection			IP00
Altitude		m	Max. 2000
Weight			
AC operated		kg	0.42

Main conducting paths

Rated impulse withstand voltage	U_{imp}	V AC	8000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U_i	V AC	690
Rated operational voltage	U_e	V AC	690
Making capacity		A	550
Breaking capacity	380 … 400 V	A	320
Lifespan, electrical	Operations		10000
Short-circuit protection maximum fuse			
400 V	gG/gL 500 V	A	125

AC

AC-1			
Rated operational current			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	45
at 60 °C	$I_{th} = I_e$	A	40
AC-5a operation			
220 V 230 V	I_e	A	20
380 V 400 V	I_e	A	20
AC-5b operation			
220 V 230 V	I_e	A	27
380 V 400 V	I_e	A	27
380 V 400 V	I_e	A	27
Electric lamps			
Filament bulbs		A	27
Mercury blended lamps		A	23
Fluorescent lamp load			
Conventional reactor starter circuit		A	35
Duo circuit		A	35
Electronic upstream devices		A	20
High-pressure mercury vapour lamps		A	20
Metal-halide lamps		A	20
High-pressure sodium lamps		A	20
Low-pressure sodium lamps		A	12
Maximum permissible compensation capacitance		µF	470

Current heat loss

Current heat loss at I_e to AC-5b/400 V		W	4.5
Impedance per pole		mΩ	2.65

Magnet systems

Voltage tolerance			

AC operated	Pick-up	x U_c	
Min. pick-up voltage, AC operated		x U_c	0.14
Pick-up voltage AC operated, max.		x U_c	1.7
Drop-out voltage AC operated	Drop-out	x U_c	
Drop-out voltage, AC-operated, min.		x U_c	0.3
Power consumption of the coil in a cold state and 1.0 x U_S			
Dual-voltage coil 50 Hz	Pick-up	VA	52
Dual-voltage coil 50 Hz	Sealing	VA	7.1
Dual-voltage coil 50 Hz	Sealing	W	2.1
Dual-voltage coil 60 Hz	Pick-up	VA	67
Dual-voltage coil 60 Hz	Sealing	VA	8.7
Dual-voltage coil 60 Hz	Sealing	W	2.1
Duty factor		% DF	100
Operating times			
Closing delay		ms	
Switching times of main contacts AC operated Closing delay, min.		ms	16
Switching times of main contacts AC operated Closing delay, max.		ms	22
Opening delay		ms	
Switching times of main contacts AC operated Opening delay, min.		ms	8
Switching times of main contacts AC operated Opening delay, max.		ms	14

Additional technical data

like the contactar	DIL		M32

Rating data for approved types

Switching capacity			
General use		A	40
Short Circuit Current Rating		SCCR	
Basic Rating			
SCCR		kA	5
max. Fuse		A	125
max. CB		A	125
480 V High Fault			
SCCR (fuse)		kA	100
max. Fuse		A	125 Class J
SCCR (CB)		kA	22
max. CB		A	32
600 V High Fault			
SCCR (fuse)		kA	100
max. Fuse		A	125 Class J
SCCR (CB)		kA	22
max. CB		A	32
Special Purpose Ratings			
Incandescent Lamps (Tungsten)			
480V 60Hz 3phase, 277V 60Hz 1phase		A	40
600V 60Hz 3phase, 347V 60Hz 1phase		A	40

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_n	A	27
Heat dissipation per pole, current-dependent	P_{vid}	W	1.5
Equipment heat dissipation, current-dependent	P_{vid}	W	4.5
Static heat dissipation, non-current-dependent	P_{vs}	W	2.1
Heat dissipation capacity	P_{diss}	W	0

Operating ambient temperature min.	°C	-25
Operating ambient temperature max.	°C	60
IEC/EN 61439 design verification		
10.2 Strength of materials and parts		
10.2.2 Corrosion resistance		Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures		Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat		Meets the product standard's requirements.
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.
10.2.4 Resistance to ultra-violet (UV) radiation		Meets the product standard's requirements.
10.2.5 Lifting		Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact		Does not apply, since the entire switchgear needs to be evaluated.
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.
10.9.3 Impulse withstand voltage		Is the panel builder's responsibility.
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 8.0

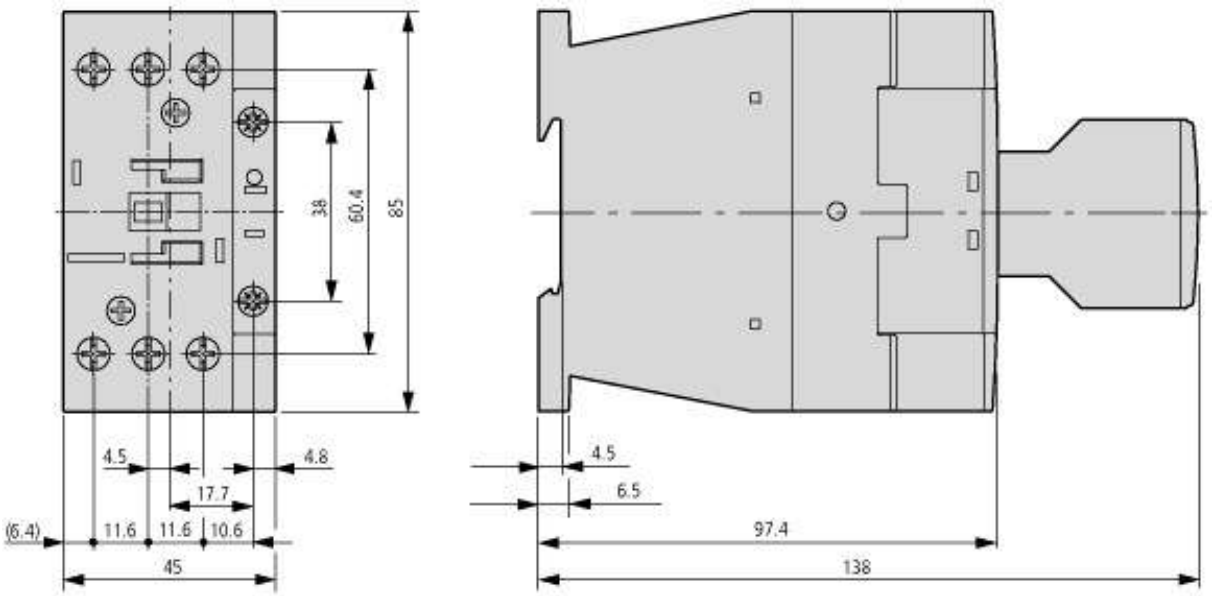
Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])		
Rated control supply voltage Us at AC 50HZ	V	24 - 24
Rated control supply voltage Us at AC 60HZ	V	0 - 0
Rated control supply voltage Us at DC	V	0 - 0
Voltage type for actuating		AC
Rated operation current Ie at AC-1, 400 V	A	20
Rated operation current Ie at AC-3, 400 V	A	0
Rated operation power at AC-3, 400 V	kW	0
Rated operation current Ie at AC-4, 400 V	A	0
Rated operation power at AC-4, 400 V	kW	0
Rated operation power NEMA	kW	0
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 normally open contacts as main contact		3

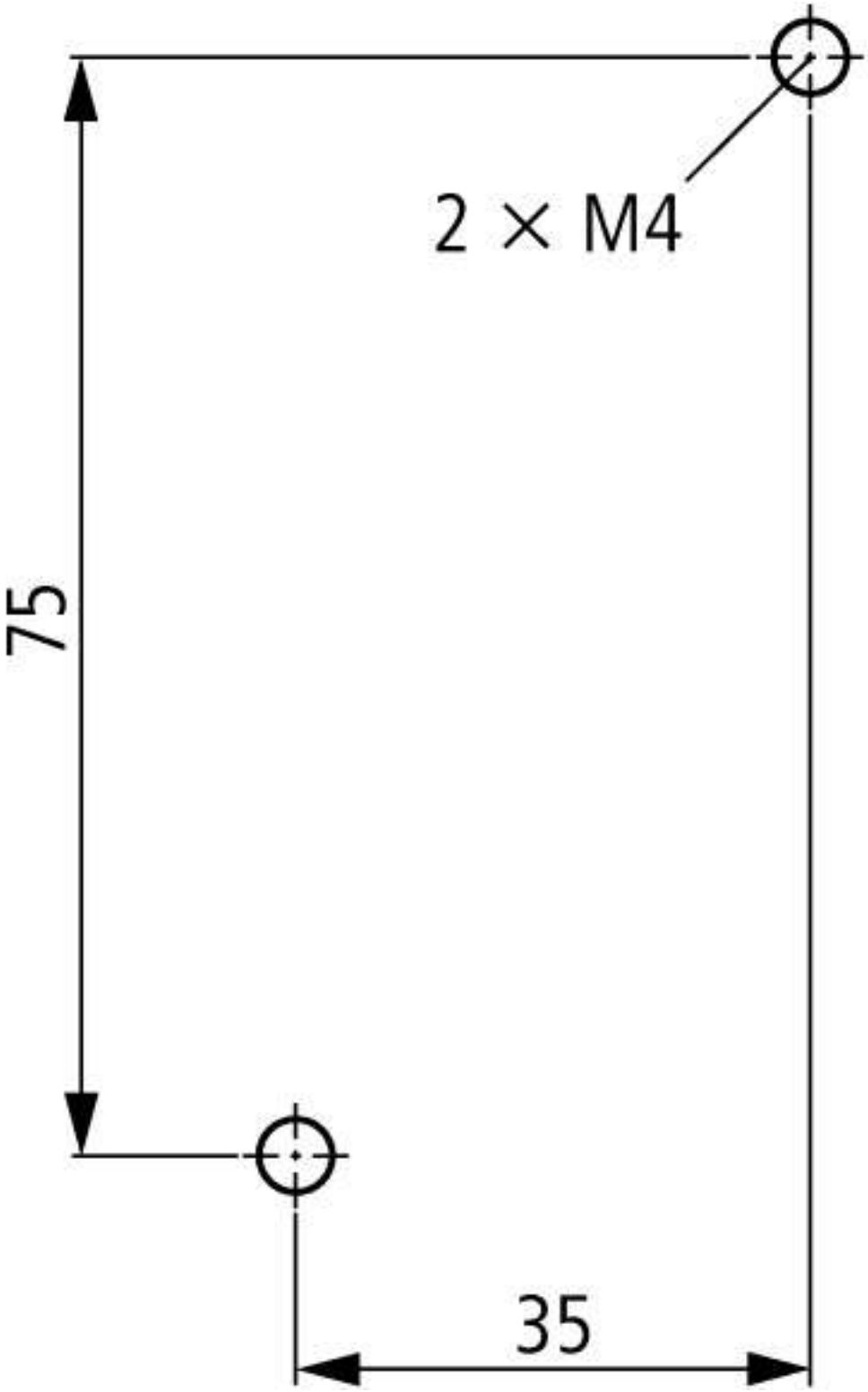
Approvals

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

Additional product information (links)

IL03407047Z (AWA2100-2322) Lighting contactors	
IL03407047Z (AWA2100-2322) Lighting contactors	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407047Z2021_08.pdf

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