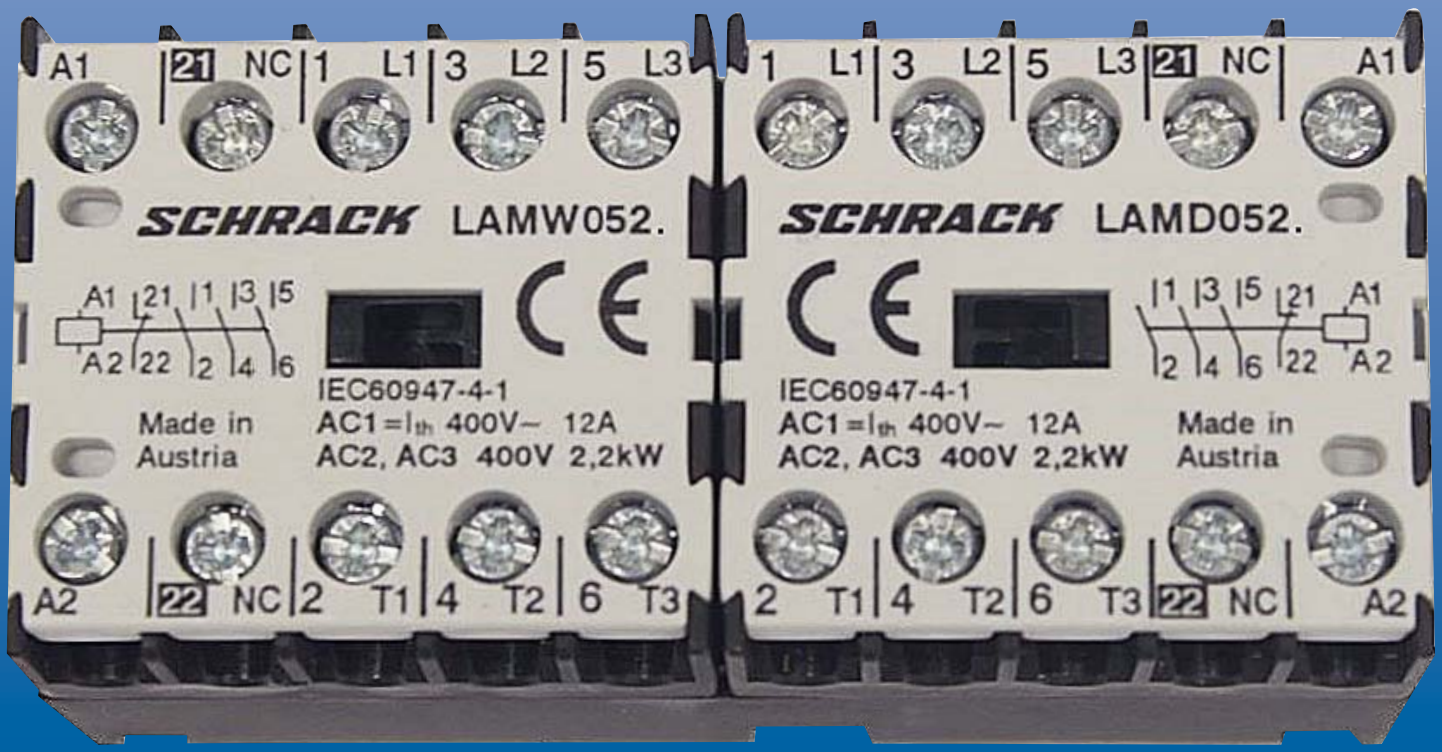
Micro-Contactors LAM

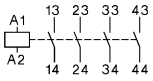


- The contactor, as small as a relay – the smallest in the world
- > 3mm contact clearance acc. IEC60335-1 for safety-related applications
- Reversing contactors with mechanical interlock

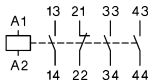
MICRO AUXILIARY CONTACTORS 4-POLE, AC OPERATED

Ratings		Contacts[1]			Distinc. number acc. to	**Type**	Coil voltage **0** 24V 50Hz/60Hz **3** 220-240V 50Hz/60Hz		
AC15	AC15	Rated current							
230V	400V	I_{th}							
A	A	A	S	Ö	EN50011			Pack pcs.	Weight kg/pc.
4-pole, with screw terminals									
3	1,5	5	4	-	40E	**LAMH037.**		10	0,07
3	1,5	5	3	1	31E	**LAMH038.**		10	0,07
3	1,5	5	2	2	22E	**LAMH039.**		10	0,07

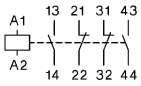
LAMH037.



LAMH038.



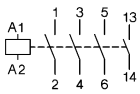
LAMH039.



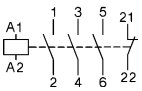
MICRO CONTACTORS 3-POLE, AC OPERATED

Power ratings	Rated current	Aux. contacts[1] built-in		**Type**	Coil voltage **0** 24V 50Hz/60Hz **3** 220-240V 50Hz/60Hz		
AC2, AC3	AC1						
380V							
400V							
415V	440V					Pack	Weight
kW	A	S	Ö			pcs.	kg/pc.
3-pole, with screw terminals							
2,2	12	1	-	**LAMD051.**		10	0,07
2,2	12	-	1	**LAMD052.**		10	0,07
4-pole, with screw terminals							
2,2	12	-	-	**LAMD054.**		10	0,07

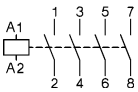
LAMD051.



LAMD052.



LAMD054.



[1] Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Positively guided contacts.

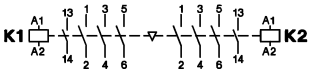
MICRO REVERSING CONTACTORS, MECHANICAL INTERLOCKED, AC OPERATED

Power ratings	Rated current	Aux. contacts[1] built-in		Type	Coil voltage	Pack	Weight
					0 24V 50Hz/60Hz **3** 220-240V 50Hz/60Hz		
AC2, AC3	AC1						
380V **400V** **415V**	690V						
kW	A	S	Ö			pcs.	kg/pc.

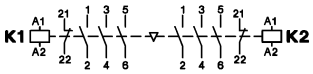
3-pole, with screw terminals

2,2	12	1	-	**LAMW051.**	1	0,14
2,2	12	-	1	**LAMW052.**	1	0,14

LAMW051.



LAMW052.



SNAP-ON ADAPTOR

For Type	Specification	Type	Pack pcs.	Weight kg/pc.
LAMD, LAMW[2], LAMH	Adaptor for snap-on mounting to DIN-rail TS35	**LAMZTS35**	10	0,0061

DIN-RAIL TS15, 1000mm

For Type	Specification	Type	Pack pcs.	Weight kg/pc.
LAMD, LAMW, LAMH	DIN-rail TS15 length 1000mm	**LAMZTS15**	1	0,02

[1] Contacts suitable for electronic circuits, according to EN947-5-4 for rated voltage 24V DC (test ratings 17V DC, 5mA). Positively guided contacts.

[2] Two adaptors are neccessary for one reversing unit LAMW....

TECHNICAL DATA

Data according to IEC 60947-4-1, VDE 0660, EN 60947-4-1

Main Contacts			**Type**	**LAMD, LAMW**
Rated insulation voltage U_i			V~	480 [1]
Making capacity I_{eff}	at U_e = 440V~		A	65
Breaking capacity I_{eff}	400V~		A	50
cos ϕ = 0,65				
Utilization category AC1				
Switching of resistive load				
Rated operational current I_e (=I_{th}) at 40°C, open			**A**	**12**
Rated operational power of three-phase resistive loads	230V		kW	4,7
50-60Hz, cos ϕ = 1	240V		kW	4,8
	400V		kW	8,3
	415V		kW	8,6
	480V		kW	9,5
Rated operational current I_e (=I_{th}) at 60°C, enclosed			A	8
Rated operational power of three-phase resistive loads	230V		kW	3,1
50-60Hz, cos ϕ = 1	240V		kW	3,3
	400V		kW	5,5
	415V		kW	5,7
	480V		kW	6,5
Minimum cross-section of conductor at load with I_e (=I_{th})			mm^2	1,5
Utilization category AC2 and AC3				
Switching of three-phase motors				
Rated operational current I_e	220V		A	6,2
open and enclosed	230V		A	6,2
	240V		A	5,6
	380-400V		**A**	**5**
	415-440V		A	5
	480V		A	5
Rated operational power of three-phase motors	220-240V		kW	1,5
50-60Hz	**380-440V**		**kW**	**2,2**
	480V		kW	2,2
Utilization category AC4				
Switching of squirrel cage motors, inching				
Rated operational current I_e	220V		A	4,9
open and enclosed	230V		A	4,9
	240V		A	4,1
	380-400V		**A**	**3,5**
	415-440V		A	3,5
	480V		A	3,5
Rated operational power of three-phase motors	220-240V		kW	1,1
50-60Hz	**380-440V**		**kW**	**1,5**
	480V		kW	1,5

[1] Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): U_{imp} = 4kV.
Data for other conditions on request.

TECHNICAL DATA – CONTINUED

Data according to IEC 60947-4-1, VDE 0660, EN 60947-4-1

Main Contacts			Type	LAMD, LAMW
Utilization category DC1				
Switching of resistive load	1 pole	24V	A	12
Time constant L/R ≤1ms		60V	A	12
Rated operational current I_e		110V	A	-
		220V	A	-
	3 pole in series	24V	A	12
		60V	A	12
		110V	A	12
		220V	A	-
Utilization category DC3 and DC5				
Schalten von Nebenschluß-	1 pole	24V	A	12
und Reihenschlußmotoren		60V	A	-
Time constant L/R ≤15ms		110V	A	-
Rated operational current I_e		220V	A	-
	3 pole in series	24V	A	12
		60V	A	12
		110V	A	12
		220V	A	-
Maximum ambient temperature				
Operation		open	°C	-40 to +60 (+90) [1]
		enclosed	°C	-40 to +40
with therminal overload relay		open	°C	-25 to +60
		enclosed	°C	-25 to +40
Storage			°C	-50 to +90
Short circuit protection				
for contactors without thermal overload relay				
Coordination-type "1" according to IEC 947-4-1				
Contact welding without hazard of persons				
max. fuse size		gL (gG)	A	20
Coordination-type "2" according to IEC 947-4-1				
Light contact welding accepted				
max. fuse size		gL (gG)	A	-
Contact welding not accepted				
max. fuse size		gL (gG)	A	-
For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size.				
Cable cross-sections				
for contactors				
Main connector		solid or stranded	mm^2	0,5 - 1,5
		flexible	mm^2	0,5 - 1,5
		flexible with multicore cable end	mm^2	0,5 - 1,5
Cables per clamp				2
		solid or stranded	AWG	20 - 14
Frequency of operation z		without load	1/h	10000
Contactors without		AC3, I_e	1/h	600
therminal oberload relay		AC4, I_e	1/h	120
		DC3, I_e	1/h	600
Mechanical life AC operated		S x	10^6	3
Short time current		10s--current	A	50
Power loss per pole		at I_e /AC3 400V	W	0,2
Resistance to shock according to IEC 68-2-27				
Shock time 20ms sine-wave				
AC operated		S	g	2,5
		Ö	g	2,5

[1] With reduced control voltage range 0,9 up to 1,0 x U_s and with reduced rated current I_e /AC1according to I_e /AC3.

TECHNICAL DATA – CONTINUED

Data according to IEC 60947-5-1, VDE 0660, EN 60947-5-1

Auxiliary Contacts			Type	LAMD, LAMW, LAMH
Rated insulation voltage		U_i	V~	440 [1]
Thermal rated current I_{th} to 440V				
Ambient temperature		40°C	A	5
		60°C	A	3
Power loss per pole		at I_{th}	W	0,25
Utilization category AC15				
Rated operational current I_e		220-240V	A	3
		380-415V	A	1,5
		440V	A	1
Utilization category DC13				
Rated operational current I_e		60V	A	0,5
				-
				-
Maximum ambient temperature				
Operation		open	°C	-40 to +60 (+90) [2]
		enclosed	°C	-40 to +40
Storage			°C	-40 to +90
Short circuit protection				
short-circuit current 1kA, contact welding not accepted				
max. fuse size		gL (gG)	A	10
For contactors with thermal overload relay the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse size.				
Power consumption of coils				
AC operated		inrush	VA	9
		sealed	VA	4
			W	1,8
Operation rage of coils				
in multiples of control voltage U_s				0,85 - 1,1
Switching time at control voltage U_s ±10% [3] [4]				
AC operated		make time	ms	13 - 18
		release time	ms	5 - 10
		arc duration	ms	10 - 15
DC operated		make time	ms	-
		release time	ms	-
		arc duration	ms	-
Cablecross-section				
all connectors		solid	mm^2	0,5 - 1,5
		flexible	mm^2	0,5 - 1,5
		flexible with multicore cable end	mm^2	0,5 - 1,5
Clamps per pole				2
		solid or stranded	AWG	20 - 14

[1] Suitable for: earthed-neutral systems, overvoltage category I to III, pollution degree 3 (standard-industry): U_{imp} =4kV. Data for other conditions on request.

[2] With reduced control voltage range 0,9 up to 1,0 x U_s and with reduced thermal rated current I_{th} to I_e /AC15.

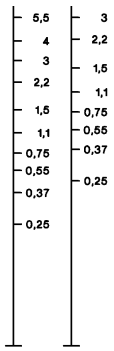
[3] Summary switching time = release time + arc duration.

[4] Release time of NC make time of NO increase when suppressor units for voltage peak protection are used (Varistor, RC-units, diode units).

MOTOR RATING AND BREAKING CURRENT

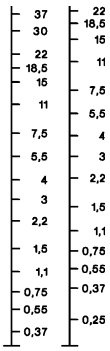
Motor rating
P_n = AC4

380/ 400V kW | 220/ 230V kW



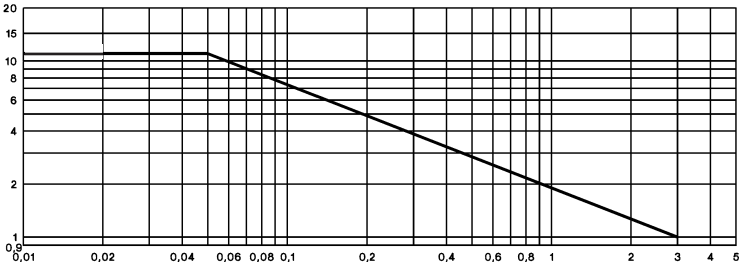
Motor rating
Pn = AC3

380/ 400V kW | 220/ 230V kW



Breaking current
I_o (= I_e = AC1)
A

LAMD, LAMW

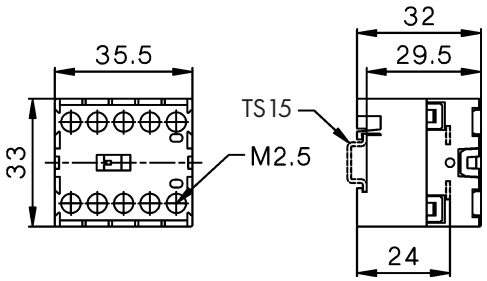


Millions of operations

DIMENSIONS

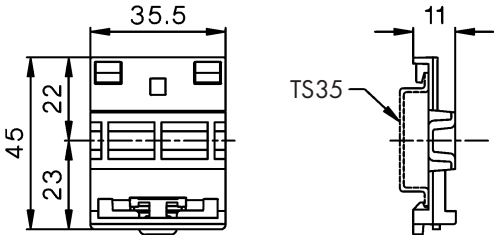
AC operated
with screw terminals

LAMD
LAMH



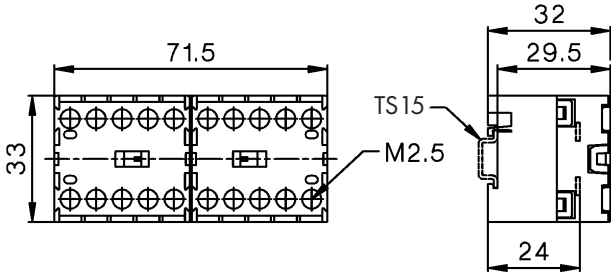
Snap-on adaptor

LAMZTS35

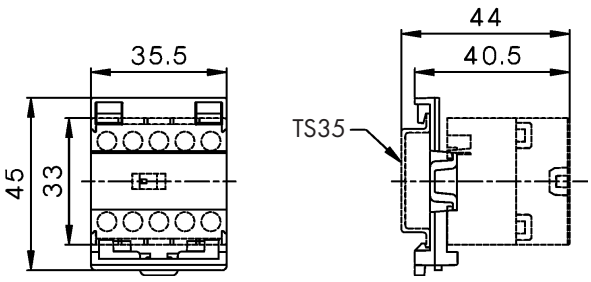


Reversing contactors
with screw terminals

LAMW



LAMD, LAMH with Snap-on adaptor



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