



# Logic relays and Display system

CL range

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**NEW**

# Logic relays, display system

## CL range

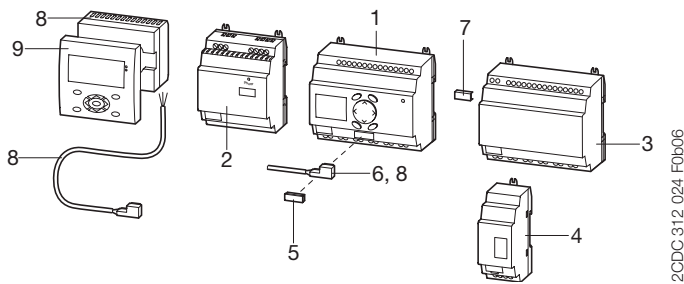
### System overview



2CDC 315 039 F0606

### System overview

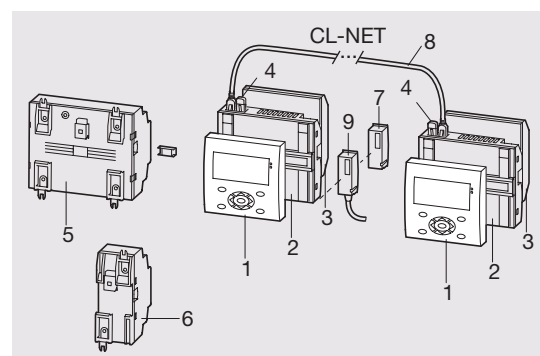
#### Logic relay with expansions and remote display



2CDC 312 024 F0606

- 1 Logic relay CL-LS..., CL-LM...
- 2 Power supply CL-LAS.SD00...
- 3 I/O-expansion CL-LER, CL-LET
- 4 Coupler unit for remote expansion CL-LEC
- 5 Memory module for logic relays CL-LAS.MD003
- 6 Connection cable to connect PC CL-LAS.TK001
- 7 CL-LINK CL-LAS.TK011
- 8 Remote display connection module CL-LDC.S...  
incl. connection cable
- 9 Display module CL-LDD..

#### Display system



2CDC 312 025 F0606

- 1 Display module CL-LDD..
- 2 Display base module CL-LDC.LN..
- 3 Display I/O-module CL-LDR, CL-LDT
- 4 Termination resistor CL-LAD.TK009
- 5 I/O-expansion CL-LER, CL-LET
- 6 Coupler unit for remote expansion CL-LEC
- 7 Memory module for display base module CL-LAD.MD004
- 8 Connection cable CL-LAD.TK002, CL-LAD.TK003,  
CL-LAD.TK004
- 9 Connection cable to connect PC CL-LAD.TK001

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**NEW**

# Logic relays, display system CL range

Benefits and advantages, Approvals and marks

## Concept

CL range logic relays are suitable for small and medium-sized control tasks and are able to substitute logic wiring in a quick and simple manner.

They can be used for applications in control as well as for timing functions, e. g.

- in buildings, lighting systems, air-conditioning systems, general control functions,
- in small machines and systems or
- as stand-alone control module for small applications.

## Steps to the application of CL range

- CL range can be used easily, rapidly and comfortably without any time-consuming planning and programming.
- The user can discover the advantages and the benefit of these logic relays in no time at all.
- CL range provides for the control statements according to a simple circuit diagram.
- Setup, storage, simulation and documentation are performed using the compact and user-friendly CL-SOFT software (CL-LAS.PS002).

## Software characteristics (CL-SOFT)

- display on a PC monitor according to IEC, ANSI
- up to 10 languages to choose from
- easy installation on all Microsoft Windows™ operating systems

## Technical Data

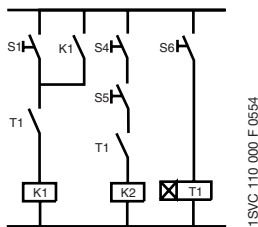
### Logic relays

- 8 or 12 digital inputs
- 4 or 6 digital relay outputs
- optionally with 4 or 8 transistor outputs
- 128 current paths
- 3 contacts as n/o or n/c contacts in series plus 1 coil per current path
- optionally with 2 or 4 analog inputs (not 100-240 V AC version)
- power flow display for checking the circuit diagram (devices with display)
- expansions for local or remote level
- enclosure color RAL 7035
- DIN rail mounting

### Display system

- useable as remote display or as compact HMI logic relay
- fully graphic, backlit display module
- 12 digital inputs
- 4 digital relay outputs
- optionally with 4 transistor outputs
- 265 current paths
- 4 contacts as n/o or n/c contacts in series plus 1 coil per current path
- optionally with 4 analog inputs (not 100-240 V AC version)
- networking-compatible via CL-NET
- front panel mounting
- expansion for local

## Logic links instead of wiring



## Software

- 16 timing relays 0.01-99:59 h
- 16 counting relays for up-, down counting
- 8 weekly timer, 8 annual timers
- 16 analog value comparators
- 16 free editable text display
- 32 markers or auxiliary relays

		Logic relays				Expansions			Display modules				Accessories	
		CL-LSR	CL-LST	CL-LMR	CL-LMT	CL-LER	CL-LET	CL-LEC	CL-LDD	CL-LDC <sup>1)</sup>	CL-LDR	CL-LDT	CL-LAS <sup>2)</sup>	CL-LAD <sup>3)</sup>
<b>Approvals</b>														
UL	UL	■	■	■	■	■	■	■	■	■	■	■	■	■
CSA 22.2 (hazardous locations)	CSA 22.2 (hazardous locations)	■	■	■	■	■	■	■	■	■	■	■	■	■
CSA	CSA	■	■	■	■	■	■	■	■	■	■	■	■	■
GOST	GOST	■	■	■	■	■	■	■	■	■	■	■	■	■
<b>Marks</b>														
CE	CE	■	■	■	■	■	■	■	■	■	■	■	■	■
C-Tick	C-Tick	■	■	■	■	■	■	■	■	■	■	■	■	■

<sup>1)</sup> not for: CL-LER.18DC2, CL-LER.20

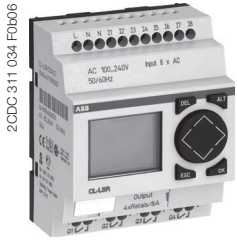
<sup>2)</sup> not for: CL-LAS.PS002, CL-LAS.TD001, CL-LAS.FD001

<sup>3)</sup> not for: CL-LAD.TKxxx - only UL, CSA

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# Logic relays CL-LSR, CL-LST, CL-LMR, CL-LMT

## Ordering details



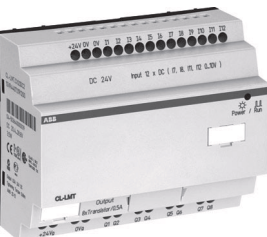
CL-LSR



CL-LST



CL-LMR



CL-LMT

Type	Rated operational voltage	Display + Keyboard	Timer	expandable	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg/lb
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### Logic relays CL-LSR

#### CL-LSR: 8 inputs, 4 relay outputs

CL-LSR.C12AC1	24 V AC	■	■		1SVR 440 712 R0300	1		0.20/0.44
CL-LSR.CX12AC1	24 V AC		■		1SVR 440 712 R0200	1		0.20/0.44
CL-LSR.12AC2	100-240 V AC	■			1SVR 440 713 R0100	1		0.20/0.44
CL-LSR.C12AC2	100-240 V AC	■	■		1SVR 440 713 R0300	1		0.20/0.44
CL-LSR.CX12AC2	100-240 V AC		■		1SVR 440 713 R0200	1		0.20/0.44
CL-LSR.C12DC1	12 V DC	■	■		1SVR 440 710 R0300	1		0.20/0.44
CL-LSR.CX12DC1	12 V DC		■		1SVR 440 710 R0200	1		0.20/0.44
CL-LSR.12DC2	24 V DC	■			1SVR 440 711 R0100	1		0.20/0.44
CL-LSR.C12DC2	24 V DC	■	■		1SVR 440 711 R0300	1		0.20/0.44
CL-LSR.CX12DC2	24 V DC		■		1SVR 440 711 R0200	1		0.20/0.44

### Logic relays CL-LST

#### CL-LST: 8 inputs, 4 transistor outputs

CL-LST.C12DC2	24 V DC	■	■		1SVR 440 711 R1300	1		0.20/0.44
CL-LST.CX12DC2	24 V DC		■		1SVR 440 711 R1200	1		0.20/0.44

### Logic relays CL-LMR

#### CL-LMR: 12 inputs, 6 relay outputs

CL-LMR.C18AC1	24 V AC	■	■	■	1SVR 440 722 R0300	1		0.36/0.79
CL-LMR.CX18AC1	24 V AC		■	■	1SVR 440 722 R0200	1		0.36/0.79
CL-LMR.C18AC2	100-240 V AC	■	■	■	1SVR 440 723 R0300	1		0.36/0.79
CL-LMR.CX18AC2	100-240 V AC		■	■	1SVR 440 723 R0200	1		0.36/0.79
CL-LMR.C18DC1	12 V DC	■	■	■	1SVR 440 720 R0300	1		0.36/0.79
CL-LMR.CX18DC1	12 V DC		■	■	1SVR 440 720 R0200	1		0.36/0.79
CL-LMR.C18DC2	24 V DC	■	■	■	1SVR 440 721 R0300	1		0.36/0.79
CL-LMR.CX18DC2	24 V DC		■	■	1SVR 440 721 R0200	1		0.36/0.79

### Logic relays CL-LMT

#### CL-LMT: 12 inputs, 8 transistor outputs

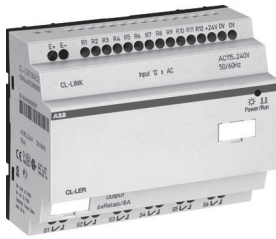
CL-LMT.C20DC2	24 V DC	■	■	■	1SVR 440 721 R1300	1		0.36/0.79
CL-LMT.CX20DC2	24 V DC		■	■	1SVR 440 721 R1200	1		0.36/0.79

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# Logic relays CL-LER, CL-LET, CL-LEC

## Ordering details

2CDC 311 037 F0006



**CL-LER**

2CDC 311 038 F0006



**CL-LEC**

Type	Rated operational voltage	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg/lb
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### Expansions CL-LER

#### CL-LER: 2 relay outputs

<b>CL-LER.20</b>	-	<b>1SVR 440 709 R5000</b>	1		0.07/0.15
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#### CL-LER: 12 inputs, 6 relay outputs

<b>CL-LER.18AC2</b>	100-240 V AC	<b>1SVR 440 723 R0000</b>	1		0.26/0.57
<b>CL-LER.18DC2</b>	24 V DC	<b>1SVR 440 721 R0000</b>	1		0.22/0.49

### Expansion CL-LET

#### CL-LET: 12 inputs, 8 transistor outputs

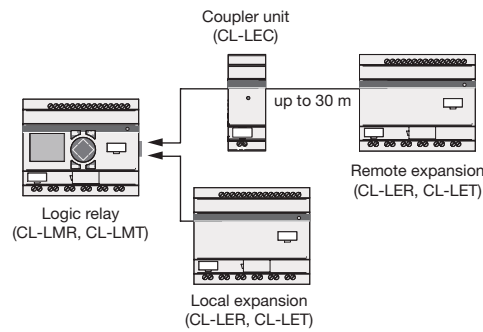
<b>CL-LET.20DC2</b>	24 V DC	<b>1SVR 440 721 R1000</b>	1		0.21/0.46
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### Coupler unit CL-LEC

#### CL-LEC: Coupler unit for remote expansion with a distance of up to 30 m

<b>CL-LEC.CI000</b>	-	<b>1SVR 440 709 R0000</b>	1		0.07/0.15
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### Expansion



2CDC 312 019 F0206

The CL-LMR and CL-LMT logic relays can be expanded simply. This I/O expansion is possible on local and remote level.

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# Logic relays - Accessories

## CL-LAS

### Ordering details

Type	Description	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg/lb
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Software for CL range (CL-SOFT)

**CL-LAS: Software for programming and control of CL range devices**

<b>CL-LAS.PS002</b>	Installation CD-ROM for Microsoft Windows™	<b>1SVR 440 799 R8000</b>	1		0.10/0.21
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Memory module for logic relay

**CL-LAS: Memory module for logic relay**

<b>CL-LAS.MD003</b>	Size: 32 kB	<b>1SVR 440 799 R7000</b>	1		0.02/0.04
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Connecting cables

**CL-LAS: Cable with serial interface to connect PC and logic relay**

<b>CL-LAS.TK001</b>	Length: 2 m	<b>1SVR 440 799 R6000</b>	1		0.10/0.22
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**CL-LAS: Spare plug for connection of logic relay to expansion (CL-LINK)**

<b>CL-LAS.TK011</b>		<b>1SVR 440 799 R5100</b>	1		0.10/0.22
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Fixing brackets

**CL-LAS: Fixing brackets for screw mounting of logic relay, expansion, display base module**

<b>CL-LAS.FD001</b>	content: 9 fixing brackets	<b>1SVR 440 799 R5000</b>	1		0.01/0.01
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Type	Rated input voltage	Rated output voltage / current	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg/lb
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Power supplies

**CL-LAS: Primary switch mode power supplies**

<b>CL-LAS.SD001</b>	100-240 V AC	24 V DC / 0.25 A 12 V DC / 20 mA	<b>1SVR 440 703 R0000</b>	1		0.10/0.22
<b>CL-LAS.SD002</b>	100-240 V AC	24 V DC / 1.25 A	<b>1SVR 440 713 R0000</b>	1		0.20/0.44

Simulator

**CL-LAS: Input-/ output simulator with wall power supply, fits to CL-LSR and CL-LST**

<b>CL-LAS.TD001</b>	100-240 V AC	24 V DC	<b>1SVR 440 793 R0000</b>	1		0.19/0.43
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**NEW**

## Logic relays

### CL-LSR, CL-LST, CL-LMR, CL-LMT, CL-LE..., ...

Conversion table AC010 range → CL range

Type old	Order code old	Type new / alternative	Order code new / alternative
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**Logic relays**

LM021-12RDC	1SVR 440 610 R0100	<b>CL-LSR.12DC2</b>	<b>1SVR 440 711 R0100</b>
LM022-C12RDC	1SVR 440 610 R0300	<b>CL-LSR.C12DC2</b>	<b>1SVR 440 711 R0300</b>
LM024-CX12RDC	1SVR 440 610 R0200	<b>CL-LSR.CX12DC2</b>	<b>1SVR 440 711 R0200</b>
LM025-C12TDC	1SVR 440 610 R1300	<b>CL-LST.C12DC2</b>	<b>1SVR 440 711 R1300</b>
LM026-CX12TDC	1SVR 440 610 R1200	<b>CL-LST.CX12DC2</b>	<b>1SVR 440 711 R1200</b>
LM023-C12RDC12V	1SVR 440 612 R0300	<b>CL-LSR.C12DC1</b> CL-LSR.CX12DC1	<b>1SVR 440 710 R0300</b> 1SVR 440 710 R0200
LM001-12RAC	1SVR 440 611 R0100	<b>CL-LSR.12AC2</b>	<b>1SVR 440 713 R0100</b>
LM002-C12RAC	1SVR 440 611 R0300	<b>CL-LSR.C12AC2</b>	<b>1SVR 440 713 R0300</b>
LM003-CX12RAC	1SVR 440 611 R0200	<b>CL-LSR.CX12AC2</b> CL-LSR.C12AC1 CL-LSR.CX12AC1	<b>1SVR 440 713 R0200</b> 1SVR 440 712 R0300 1SVR 440 712 R0200
LM043-CE20TDC	1SVR 440 620 R6300	<b>CL-LMT.C20DC2</b>	<b>1SVR 440 721 R1300</b>
LM044-CXE20TDC	1SVR 440 620 R6200	<b>CL-LMT.CX20DC2</b>	<b>1SVR 440 721 R1200</b>
LM041-CE18RDC	1SVR 440 620 R5300	<b>CL-LMR.C18DC2</b>	<b>1SVR 440 721 R0300</b>
LM042-CXE18RDC	1SVR 440 620 R5200	<b>CL-LMR.CX18DC2</b> CL-LMR.C18DC1 CL-LMR.CX18DC1	<b>1SVR 440 721 R0200</b> 1SVR 440 720 R0300 1SVR 440 720 R0200
LM011-CE18RAC	1SVR 440 621 R5300	<b>CL-LMR.C18AC2</b>	<b>1SVR 440 723 R0300</b>
LM012-CXE18RAC	1SVR 440 621 R5200	<b>CL-LMR.CX18AC2</b> CL-LMR.C18AC1 CL-LMR.CX18AC1	<b>1SVR 440 723 R0200</b> 1SVR 440 722 R0300 1SVR 440 722 R0200

**Expansions**

DO001-EX02R	1SVR 440 600 R5000	<b>CL-LER.20</b>	<b>1SVR 440 709 R5000</b>
DX001-EX18RAC	1SVR 440 621 R0000	<b>CL-LER.18AC2</b>	<b>1SVR 440 723 R0000</b>
DX011-EX18RDC	1SVR 440 620 R0000	<b>CL-LER.18DC2</b>	<b>1SVR 440 721 R0000</b>
DX021-EX20TDC	1SVR 440 620 R1000	<b>CL-LET.20DC2</b>	<b>1SVR 440 721 R1000</b>
CI000	1SVR 440 600 R0000	<b>CL-LEC.CI000</b>	<b>1SVR 440 709 R0000</b>

**Software**

PS001-SOFT	1SVR 440 690 R0000	<b>CL-LAS.PS002</b>	<b>1SVR 440 799 R8000</b>
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**NEW**

# Display system CL-LDD, CL-LDC, CL-LDR, CL-LDT

## Ordering details



**CL-LDD.K**



**CL-LDC.S..**



**CL-LDC.LN..**



**CL-LDR**

Type	Rated operational voltage	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg/lb
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### Display modules

**CL-LDD: Graphic display 132 x 64 pixel**

<b>CL-LDD.XK</b>	-	<b>1SVR 440 839 R4500</b>	1		0.14/0.30
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**CL-LDD: Graphic display 132 x 64 pixel, with keyboard**

<b>CL-LDD.K</b>	-	<b>1SVR 440 839 R4400</b>	1		0.13/0.29
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### Remote display connection modules

**CL-LDC: Module to displace the display from the logic relay, 5 m, length adaptable**

<b>CL-LDC.SDC2</b>	24 V DC	<b>1SVR 440 841 R0000</b>	1		0.16/0.36
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<b>CL-LDC.SAC2</b>	100-240 V AC	<b>1SVR 440 843 R0000</b>	1		0.16/0.36
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### Display base modules

**CL-LDC: CPU / power supply**

<b>CL-LDC.LDC2</b>	24 V DC	<b>1SVR 440 821 R0000</b>	1		0.16/0.36
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<b>CL-LDC.LAC2</b>	100-240 V AC	<b>1SVR 440 823 R0000</b>	1		0.16/0.36
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**CL-LDC: CPU / power supply, networking-compatible (CL-NET)**

<b>CL-LDC.LNDC2</b>	24 V DC	<b>1SVR 440 821 R1000</b>	1		0.17/0.38
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<b>CL-LDC.LNAC2</b>	100-240 V AC	<b>1SVR 440 823 R1000</b>	1		0.17/0.38
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### Display I/O-modules

**CL-LDR: 8 inputs, 4 relay outputs**

<b>CL-LDR.16AC2</b>	100-240 V AC	<b>1SVR 440 853 R0000</b>	1		0.17/0.38
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<b>CL-LDR.16DC2</b>	24 V DC	<b>1SVR 440 851 R0000</b>	1		0.17/0.38
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**CL-LDR: 8 inputs, 4 relay outputs, 1 analog output**

<b>CL-LDR.17DC2</b>	24 V DC	<b>1SVR 440 851 R2000</b>	1		0.17/0.38
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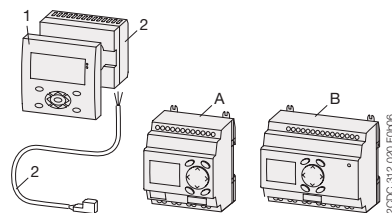
**CL-LDT: 8 inputs, 4 transistor outputs**

<b>CL-LDT.16DC2</b>	24 V DC	<b>1SVR 440 851 R1000</b>	1		0.14/0.30
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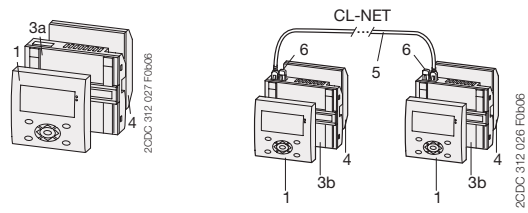
**CL-LDT: 8 inputs, 4 transistor outputs, 1 analog output**

<b>CL-LDT.17DC2</b>	24 V DC	<b>1SVR 440 851 R3000</b>	1		0.14/0.30
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### Remote display



### Compact HMI logic relays



**stand alone with I/Os      communication via CL-NET**

- 1 Display CL-LDD..
- 2 Remote display connection module CL-LDC.S.. incl. connection cable
- 3a Display base module CL-LDC.L..
- 3b Display base module for CL-NET CL-LDC.LN..

**NEW**

# Display system - Accessories

## CL-LAD

### Ordering details

Type	Description	Order code	Pack. unit pieces	Price 1 piece	Weight 1 piece kg/lb
	Memory module for display base module				
	<b>CL-LAD: Memory module for display base</b>				
<b>CL-LAD.MD004</b>	Size: 256 kB	<b>1SVR 440 899 R7000</b>	1		0,02/0.03
	Connecting cables				
	<b>CL-LAD: Cable with serial interface to connect PC and display base module</b>				
<b>CL-LAD.TK001</b>	Length: 2 m	<b>1SVR 440 899 R6000</b>	1		0.11/0.23
	<b>CL-LAD: Cable to connect 2 display base modules (CL-NET)</b>				
<b>CL-LAD.TK002</b>	Length: 0.3 m	<b>1SVR 440 899 R6100</b>	1		0.05/0.12
<b>CL-LAD.TK003</b>	Length: 0.8 m	<b>1SVR 440 899 R6200</b>	1		0.07/0.14
<b>CL-LAD.TK004</b>	Length: 1.5 m	<b>1SVR 440 899 R6300</b>	1		0.08/0.18
	<b>CL-LAD: Cable for point-to-point connection of remote display connection module and display base module, length adaptable</b>				
<b>CL-LAD.TK005</b>	Length: 5 m	<b>1SVR 440 899 R6400</b>	1		0.20/0.44
	<b>CL-LAD: Cable for point-to-point connection of 2 display base modules, length adaptable</b>				
<b>CL-LAD.TK006</b>	Length: 5 m	<b>1SVR 440 899 R6500</b>	1		0.12/0.26
	<b>CL-LAD: Cable for point-to-point connection of remote display connection module and logic relay, length adaptable</b>				
<b>CL-LAD.TK007</b>	Length: 5 m	<b>1SVR 440 899 R6600</b>	1		0.20/0.44
	<b>CL-LAD: Termination resistor</b>				
<b>CL-LAD.TK009</b>	content: 2 pieces	<b>1SVR 440 899 R6900</b>	1		0.01/0.02
	Protective covers				
	<b>CL-LAD: Protective cover, transparent, for harsh environmental conditions and application in the food industry</b>				
<b>CL-LAD.FD001</b>		<b>1SVR 440 899 R1000</b>	1		0.03/0.07
	<b>CL-LAD: Protective cover, transparent and sealable</b>				
<b>CL-LAD.FD011</b>		<b>1SVR 440 899 R2000</b>	1		0.03/0.07

**NEW**

# Logic relays

## CL-LSR, CL-LST, CL-LMR, CL-LMT, CL-LER, CL-LET

### Technical data / Input circuit - supply circuit

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LSR.C...12DC1	CL-LSR....12DC2 CL-LST.C...12DC2	CL-LSR.C...12AC1	CL-LSR...12AC2
<b>Input circuit - supply circuit</b>				
Rated operational voltage $U_o$	12 V DC	24 V DC	24 V AC	100-240 V AC
Rated operational voltage tolerance	-15...+30 %	-15...+20 %	-15...+10 %	
Operational voltage range	10.2-15.6 V DC	20.4-28.8 V DC	20.4-26.4 V AC	85-264 V AC
Rated frequency	0 Hz		50/60 Hz	
Rated frequency tolerance	-		±5 %	
Residual ripple	≤ 5 %			
Input current	typ. 140 mA	-	-	-
at 12 V DC	typ. 140 mA	-	-	-
at 24 V DC	-	typ. 80 mA	-	-
at 24 V AC	-	-	typ. 200 mA	-
at 115/120 V AC (60 Hz)	-	-	-	typ. 40 mA
at 230/240 V AC (50 Hz)	-	-	-	typ. 20 mA
Power failure buffering (IEC/EN 61131-2)	10 ms		20 ms	
Power dissipation	typ. 2 W	-	-	-
at 12 V DC	typ. 2 W	-	-	-
at 24 V DC	-	typ. 2 W	-	-
at 24 V AC	-	-	typ. 5 VA	-
at 115/120 V AC	-	-	-	typ. 5 VA
at 230/240 V AC	-	-	-	typ. 5 VA

Type	CL-LMR.C...18DC1	CL-LMR.C...18DC2 CL-LMT.C...20DC2	CL-LMR.C...18AC1	CL-LMR.C...18AC2
<b>Input circuit - supply circuit</b>				
Rated operational voltage $U_o$	12 V DC	24 V DC	24 V AC	100-240 V AC
Rated operational voltage tolerance	-15...+30 %	-15...+20 %	-15...+10 %	
Operational voltage range	10.2-15.6 V DC	20.4-28.8 V DC	20.4-26.4 V AC	85-264 V AC
Rated frequency	0 Hz		50/60 Hz	
Rated frequency tolerance	-		±5 %	
Residual ripple	≤ 5 %			
Input current	typ. 200 mA	-	-	-
at 12 V DC	typ. 200 mA	-	-	-
at 24 V DC	-	typ. 140 mA	-	-
at 24 V AC	-	-	typ. 300 mA	-
at 115/120 V AC (60 Hz)	-	-	-	typ. 70 mA
at 230/240 V AC (50 Hz)	-	-	-	typ. 35 mA
Power failure buffering (IEC/EN 61131-2)	10 ms		20 ms	
Power dissipation	typ. 3.5 W	-	-	-
at 12 V DC	typ. 3.5 W	-	-	-
at 24 V DC	-	typ. 3.5 W	-	-
at 24 V AC	-	-	typ. 7 VA	-
at 115/120 V AC	-	-	-	typ. 10 VA
at 230/240 V AC	-	-	-	typ. 10 VA

Type	CL-LER.18DC2 CL-LET.20DC2	CL-LER.18AC2		
<b>Input circuit - supply circuit</b>				
Rated operational voltage $U_o$	24 V DC	100-240 V AC		
Rated operational voltage tolerance	-15...+20 %	-15...+10 %		
Operational voltage range	20.4-28.8 V DC	85-264 V AC		
Rated frequency	0 Hz	50/60 Hz		
Rated frequency tolerance	-	±5 %		
Residual ripple	≤ 5 %	-		
Input current	typ. 140 mA	-		
at 24 V DC	typ. 140 mA	-		
at 115/120 V AC (60 Hz)	-	typ. 70 mA		
at 230/240 V AC (50 Hz)	-	typ. 35 mA		
Power failure buffering (IEC/EN 61131-2)	10 ms	20 ms		
Power dissipation	typ. 3.4 W	-		
at 24 V DC	typ. 3.4 W	-		
at 115/120 V AC	-	typ. 10 VA		
at 230/240 V AC	-	typ. 10 VA		

**NEW**

# Logic relays

## CL-LSR, CL-LST

### Technical data / Input circuit - inputs

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LSR.C...12DC1	CL-LSR....12DC2 CL-LST.C...12DC2	CL-LSR.C...12AC1	CL-LSR.C...12AC2
<b>Input circuit - Digital inputs</b>	<b>12 V DC</b>	<b>24 V DC</b>	<b>24 V AC</b>	<b>115 / 230 V AC</b>
Number	8			
Inputs can be used as analog inputs	2 (I7, I8)			-
Indication of operational states	LCD-Display (if existing)			
Electrical isolation	no			
from voltage supply	no			
between digital inputs	no			
from the outputs	yes			
Rated operational voltage $U_e$	12 V DC	24 V DC	24 V AC	
$U_e$ on „0“ signal	4 V DC (I1-I8)	< 5 V DC (I1-I8)	0-6 V AC (sinusoidal)	0-40 V AC (sinusoidal)
$U_e$ on „1“ signal	8 V DC (I1-I8)	> 15 V DC (I1-I6), > 8 V DC (I7, I8)	> 9,5 V DC, 14-26,4 V AC (sinusoidal) (I1-I6), > 7 V AC (sinusoidal) (I7,I8)	79-264 V AC (sinusoidal)
Rated frequency	-		50-60 Hz	
Input current on „1“ signal	3.3 mA (at 12 V DC, I1-I6), 1.1 mA (at 12 V DC, I7, I8)	3.3 mA (at 24 V DC, I6-I7), 2.2 mA (at 24 V DC, I7, I8)	4 mA (at 24 V AC, 50 Hz, I1-I6), 2 mA (at 24 V AC, 50 Hz, I7,I8), 2 mA (at 24 V DC, I7, I8)	6x0.25 mA (at 115 V AC, 60 Hz, I1-I6), 6x0.5 mA (at 230 V AC, 50 Hz, I1-I6) 2x4 mA (at 115 V AC, 60 Hz, I7, I8), 2x6 mA (at 230 V AC, 50 Hz, I7, I8)
Time delay from „0“ to „1“	debounce ON	20 ms		80 ms (at 50 Hz), 66 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz)
	debounce OFF	typ. 0.3 ms (I1-I6), typ. 0.35 ms (I7, I8)	typ. 0,25 ms (I1-I8)	20 ms (at 50 Hz), 16 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz)
Time delay from „1“ to „0“	debounce ON	20 ms		80 ms (at 50 Hz, I1-I6), 66 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz, I1-I6) 160 ms (at 50 Hz, I7, I8), 150 ms (at 60 Hz, I7, I8)
	debounce OFF	typ. 0.3 ms (I1-I6), typ. 0.15 ms (I7, I8)	-	20 ms (at 50 Hz, I1-I6), 16 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz, I1-I6) 100 ms (at 50 Hz, I7, I8), 100 ms (at 60 Hz, I7, I8)
Cable length (unshielded)	100 m		-	-
Maximum cable length per input	-		40 m	40 m (I1-I6), 100 m (I7, I8)
Frequency counter	Number	2 (I3, I4)	-	-
	counting frequency	< 1 kHz	-	-
	pulse shape	square-wave	-	-
	pulse / pause ratio	1:1	-	-
Rapid counter inputs	Number	2 (I1, I2)	-	-
	counting frequency	< 1 kHz	-	-
	pulse shape	square-wave	-	-
	pulse / pause ratio	1:1	-	-
Cable length (shielded)	< 20 m		-	-
<b>Input circuit - Analog inputs</b>				
Number	2 (I7, I8)			-
Electrical isolation	from voltage supply	no		-
	from the digital inputs	no		-
	from the outputs	yes		-
	from PC interface, memory module, CL-NET, CL-LINK	no		-
Input type	DC voltage			-
Signal range	0-10 V DC			-
Resolution	analog	0.01 V		-
	digital	0.01 V; 10 Bit (value 1-1023)		-
Input impedance	11.2 kΩ			-
Accuracy of the actual value	two CL devices	±3 %		-
	within one device	±2 %, ±0.12 V		-
Conversion time analog/digital	Input delay ON	20 ms		-
	Input delay OFF	each cycle		-
Input current	< 1 mA			-
Cable length (shielded)	< 30 m			-

**NEW**

# Logic relays

## CL-LMR, CL-LMT

### Technical data / Input circuit - inputs

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LMR.C...18DC1	CL-LMR.C...18DC2 CL-LMT.C...20DC2	CL-LMR.C...18AC1	CL-LMR.C...18AC2
<b>Input circuit - Digital inputs</b>	<b>12 V DC</b>	<b>24 V DC</b>	<b>24 V AC</b>	<b>115 / 230 V AC</b>
Number	12			
Inputs can be used as analog inputs	4 (I7, I8, I11, I12)			-
Indication of operational states	LCD-Display (if existing)			
Electrical isolation	no			
from voltage supply	no			
between digital inputs	no			
from the outputs	yes			
from PC interface, memory module, CL-NET, CL-LINK	no			yes
Rated operational voltage $U_o$	12 V DC	24 V DC	24 V AC	
$U_o$ on „0“ signal	4 V DC (I1-I12)	< 5 V DC (I1-I12, R1-R12)	0-6 V AC (sinusoidal)	0-40 V AC (sinusoidal)
$U_o$ on „1“ signal	8 V DC (I1-I12)	> 15 V DC (I1-I6, I9, I10) > 8 V DC (I7, I8, I11, I12)	> 9.5 V DC, 14-26.4 V AC (sinusoidal) (I1-I6, I9, I10) > 7 V AC (sinusoidal) (I7, I8, I11, I12)	79-264 V AC (sinusoidal)
Rated frequency	-		50-60 Hz	
Input current on „1“ signal	3.3 mA (at 12 V DC, I1-I6, I9-I12), 1.1 mA (at 12 V DC, I7, I8),	3.3 mA (at 24 V DC, I1-I6, I9, I10), 2.2 mA (at 24 V DC, I7, I8, I11, I12)	4 mA (at 24 V AC, 50 Hz, I1-I6, I9, I10), 2 mA (at 24 V AC, 50 Hz, I7, I8, I11, I12), 2 mA (at 24 V DC, I7, I8, I11, I12)	6x0.25 mA (at 115 V AC, 60 Hz, I1-I6), 6x0.5 mA (at 230 V AC, 50 Hz, I1-I6) 2x4 mA (at 115 V AC, 60 Hz, I7, I8), 2x6 mA (at 230 V AC, 50 Hz, I7, I8), 4x0.25 mA (at 115 V AC, 60 Hz, I9-I12), 4x0.5 mA (at 230 V AC, 50 Hz, I9-I12)
Time delay from „0“ to „1“	debounce ON	20 ms		80 ms (at 50 Hz), 66 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz)
	debounce OFF	typ. 0.3 ms (I1-I6, I9, I10), typ. 0.35 ms (I7, I8, I11, I12)	typ. 0.25 ms	20 ms (at 50 Hz), 16 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz)
Time delay from „1“ to „0“	debounce ON	20 ms		80 ms (at 50 Hz), 66 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz)
	debounce OFF	typ. 0.4 ms (I1-I6, I9, I10), typ. 0.35 ms (I7, I8, I11, I12)	-	20 ms (at 50 Hz), 16 <sup>2</sup> / <sub>3</sub> ms (at 60 Hz)
Cable length (unshielded)	100 m			
Maximum cable length per input			max. 40 m, typ. 40 m (I9, I10)	typ. 40 m (I1-I6, I9-I12), typ. 100 m (I7, I8)
Frequency counter	number	2 (I3, I4)		-
	counting frequency	< 1 kHz		-
	pulse shape	square-wave		-
	pulse / pause ratio	1:1		-
Rapid counter inputs	number	2 (I1, I2)		-
	counting frequency	< 1 kHz		-
	pulse shape	square-wave		-
	pulse / pause ratio	1:1		-
Cable length (shielded)	< 20 m			
<b>Input circuit - Analog inputs</b>				
Number	4 (I7, I8, I11, I12)			-
Electrical isolation	no			
from voltage supply	no			
from the digital inputs	no			
from the outputs	yes			
from PC interface, memory module, CL-NET, CL-LINK	no			
Input type	DC voltage			
Signal range	0-10 V DC			
Resolution	analog	0.01 V		
	digital	0.01 V; 10 Bit (value 1-1023)		
Input impedance	11.2 k $\Omega$			
Accuracy of the actual value	two CL devices	$\pm 3\%$		
	within one device	$\pm 2\%$ , $\pm 0.12\text{ V}$		
Conversion time analog/digital	Input delay ON	20 ms		
	Input delay OFF	each cycle		
Input current	< 1 mA			

**NEW**

# Logic relays

## CL-LER, CL-LET

### Technical data / Input circuit - inputs

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LER.18DC2 CL-LET.20DC2	CL-LER.18AC2
<b>Input circuit - Digital inputs</b>	<b>24 V DC</b>	<b>115 / 230 V AC</b>
Number		12
Inputs can be used as analog inputs		-
Indication of operational states		-
Electrical isolation	from voltage supply	no
	between digital inputs	no
	from the outputs	yes
	from PC interface, memory module, CL-NET, CL-LINK	no
Rated operational voltage $U_o$	24 V DC	
	$U_o$ on „0“ signal	< 5 V DC (I1-I12, R1-R12)
	$U_o$ on „1“ signal	-
Rated frequency	-	50-60 Hz
Input current on „1“ signal	3.3 mA (at 24 V DC, R1-R12)	12x0.25 mA (at 115 V AC, 60 Hz, R1-R12), 12x0.5 mA (at 230 V AC, 50 Hz, R1-R12)
Time delay from „0“ to „1“	debounce ON	20 ms
	debounce OFF	typ. 0.25 ms (R1-R12)
Time delay from „1“ to „0“	debounce ON	20 ms
	debounce OFF	-
Cable length (unshielded)	100 m	-
Maximum cable length per input	-	typ. 40 m (I1-I6, I9-I12, R1-R12), typ. 100 m (I7, I8)

**NEW**

# Logic relays

## CL-LSR, CL-LMR, CL-LER

### Technical data / Output circuit - Relay outputs

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type		CL-LSR...	CL-LMR... CL-LER...	CL-LER.20
<b>Output circuit - Relay outputs</b>				
Number		4	6	2
Outputs in groups of		1		2
Parallel switching of outputs to increase capacity		not permissible		
Fusing of the output relay		circuit-breaker B16 or fuse 8 A (slow-acting)		
Electrical isolation	from voltage supply		yes	
	from the inputs		yes	
	from PC interface, memory module, CL-NET, CL-LINK		no	
	protective separation		300 V AC	
	basic isolation		600 V AC	
Mechanical lifetime		10x10 <sup>6</sup> switching cycles		
Current path	conventional thermal current (10 A UL)		8 A	
	recommended for load 12 V AC/DC		> 500 mA	
	short-circuit proof $\cos \varphi = 1$ ; characteristic B16 at 600 A		16 A	
	short-circuit proof $\cos \varphi = 0,5$ up to 0,7; characteristic B16 at 900 A		16 A	
	Rated impulse withstand voltage $U_{im}$ contact-coil		6 kV	
	Rated operational voltage $U_e$		250 V AC	
Rated insulation voltage $U_i$			250 V AC	
Protective separation (EN 50178)	between coil and contact		300 V AC	
	between two contacts		300V AC	
Making capacity	AC15, 250 V AC, 3 A (600 ops./h)		300.000 switching cycles	
	DC13, L/R $\leq 150$ ms, 24 V DC, 1 A (500 ops./h)		200.000 switching cycles	
Breaking capacity	AC15, 250 V AC, 3 A (600 ops./h)		300.000 switching cycles	
	DC13, L/R $\leq 150$ ms, 24 V DC, 1 A (500 ops./h)		200.000 switching cycles	
Incandescent lamp load	1000 W at 230/240 V AC		25.000 switching cycles	
	500 W at 115/120 V AC		25.000 switching cycles	
Fluorescent lamp load	10 x 58 W at 230/240 V AC with electrical control gear		25.000 switching cycles	
	10 x 58 W at 230/240 V AC uncompensated		25.000 switching cycles	
	1 x 58 W at 230/240 V AC conventional compensated		25.000 switching cycles	
Switching frequency	mechanical operations		10x10 <sup>6</sup>	
	switching frequency		10 Hz	
	resistive load / lamp load		2 Hz	
	inductive load		0.5 Hz	
<b>UL/CSA</b>				
Continuous current at 240 V			10 A AC	
Continuous current at 24 V			8 A DC	
AC	Utilization category (Control Circuit Rating Codes)		B 300 Light Pilot Duty	
	max. rated operational voltage		300 V AC	
	max. continuous thermal current $\cos \varphi = 1$ at B 300		5 A	
	max. making / breaking apparent power (Make/Break) $\cos \varphi \neq 1$ at B 300		3600/360 VA	
DC	Utilization category (Control Circuit Rating Codes)		R 300 Light Pilot Duty	
	max. rated operational voltage		300 V DC	
	max. continuous thermal current at R 300		1 A	
	max. making / breaking apparent power (Make/Break) at R 300		28/28 VA	

**NEW**

# Logic relays CL-LST, CL-LMT, CL-LET

## Technical data / Output circuit - Transistor outputs

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LST...	CL-LMT...	CL-LET...
<b>Output circuit - Transistor outputs</b>			
Number	4	8	
Rated operational voltage $U_o$	24 V DC		
Operational voltage range	20.4-28.8 V DC		
Residual ripple	≤ 5 %		
Supply current	on „0“ signal	typ. 9 mA / max. 16 mA	typ. 18 mA / max. 32 mA
	on „1“ signal	typ. 12 mA / max. 22 mA	typ. 24 mA / max. 44 mA
Reverse voltage protection	yes (Attention: If supply voltage is reversed, applying voltage at the outputs, causes a short circuit.)		
Electrical isolation	from voltage supply	yes	
	from the inputs	yes	
	from PC interface, memory module, CL-NET, CL-LINK	-	
Rated operational current $I_o$ on „1“ signal DC	max. 0.5 A		
Lamp load without $R_v$	5 W		
Residual current on „0“ signal per channel	< 0.1 mA		
Max. output voltage	on „0“ signal at external load < 10 M $\Omega$	2.5 V	
	on „1“ signal at $I_o = 0.5\text{ A}$	$U = U_o - 1\text{ V}$	
Short-circuit protection	yes, thermal (analysis results from diagnosis input I16, I15; R15, R16)		
Short-circuit tripping current for $R_a \leq 10\text{ m}\Omega$	$0.7\text{ A} \leq I_o \leq 2\text{ A}$ per output		
Total short-circuit current	8 A	16 A	
Peak short-circuit current	16 A	32 A	
Thermal tripping	yes		
Max. switching frequency with constant resistive load $R_L < 100\text{ k}\Omega$ (depending on active channels and their load)	40.000 switching cycles/h		
Parallel connection of outputs	with resistive load, inductive load with external suppressor, combination within one group	group 1: Q1-Q4	group 1: Q1-Q4, group 2: Q5-Q8 group 1: S1-S4, group 2: S5-S8
	number of outputs	max. 4	
	max. total current	2 A (Attention! Outputs must be actuated simultaneously and for the same length of time.)	
Indication of operational states of the outputs	LCD-Display (if existing)		
Inductive load <sup>1)</sup> without external suppressor			
$T_{0.95} = 1\text{ ms}$ , $R = 48\ \Omega$ , $L = 16\text{ mH}$	utilization factor	0.25 g	
	duty time	100 %	
	max. switching frequency $f = 0,5\text{ Hz}$ (max. duty time = 50 %)	1500 switching cycles	
DC13, $T_{0.95} = 72\text{ ms}$ , $R = 48\ \Omega$ , $L = 1.15\text{ H}$	utilization factor	0.25 g	
	duty time	100 %	
	max. switching frequency $f = 0,5\text{ Hz}$ (max. duty time = 50 %)	1500 switching cycles	
$T_{0.95} = 15\text{ ms}$ , $R = 48\ \Omega$ , $L = 0.24\text{ H}$	utilization factor	0.25 g	
	duty time	100 %	
	max. switching frequency $f = 0,5\text{ Hz}$ (max. duty time = 50 %)	1500 switching cycles	
Inductive load <sup>1)</sup> with external suppressor			
	demand factor	1 g	
	duty time	100 %	
	max. switching frequency max. duty time	depends on suppressor	

<sup>1)</sup> For inductive loading, without external suppression of the transistor outputs, the following applies:  
 $T_{0.95}$  = time in ms, until 95 % of the steady-state current is achieved.  $T_{0.95} = 3 \times T_{0.65} = 3 \times L/R$ .

Data transfer rate in the CL-NET network: bus lengths of 40 m and over only attainable with cables with additional cross-section and connection adapter.

**NEW**

# Logic relays

## CL-LSR, CL-LST, CL-LMR, CL-LMT, CL-LEC

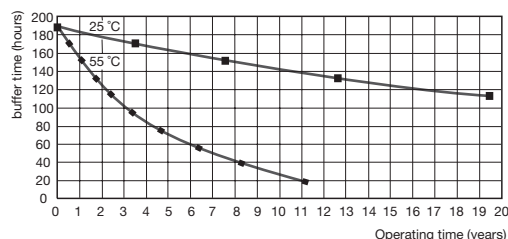
Technical data / General data, ...

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type		CL-LSR..., CL-LST...	CL-LMR..., CL-LMT...	CL-LER.20 CL-LEC.CI000
<b>General data</b>				
Dimensions (W x H x D)		71.5 mm x 90 mm x 58 mm (2.81 inch x 3.54 inch x 2.28 inch)	107.5 mm x 90 mm x 58 mm (4.23 inch x 3.54 inch x 2.28 inch)	35.5 mm x 90 mm x 58 mm (1.40 inch x 3.54 inch x 2.28 inch)
Weight		0.2 kg (0.44 lb)	0.3 kg (0.66 lb)	0.07 kg (0.15 lb)
Mounting		DIN rail (IEC/EN 60715), 35 mm or screw mounting with fixing brackets CL-LAS.FD001 (accessories)		
Mounting position		horizontal / vertical		
<b>Electrical connection</b>				
Wire size	rigid	0.2-4 mm <sup>2</sup> (22-12 AWG)		
min. / max.	fine-strand with wire end ferrule	0.2-2.5 mm <sup>2</sup> (22-12 AWG)		
Max. tightening torque		0.6 Nm		
<b>Environmental data</b>				
Ambient temperature range	operation	-25...+55 °C, cold acc. to IEC 60068-2-1, heat acc. to IEC 60068-2-2		
	storage	-40...+70 °C		
LCD-Display (clearly legible)		0...+55 °C		
Condensation		avoid condensation with suitable methods		
Humidity, no condensation (IEC/EN 60068-2-30)		5-95 %		
Air pressure (operation)		795-1080 hPa		
Degree of protection (IEC/EN 60529)		IP20		
Vibration (IEC/EN 60068-2-6)		10-57 Hz (constant amplitude 0.15 mm), 57-150 Hz (constant acceleration 2 g)		
Shock resistance (half-sine 15 g / 11 ms) (IEC/EN 60068-2-27)		18 Shocks		
Drop (IEC/EN 60068-2-31) height of fall		50 mm		
Free fall, packaged (IEC/EN 60068-2-32)		1 m		
<b>Insulation data</b>				
Overvoltage category		II		
Pollution degree (DIN EN 60947)		2		
Rating of air and creepage distances		EN 50178, UL 508, CSA C22.2, No. 142		
Insulation resistance		EN 50178		
<b>Standards</b>				
Standards and directives		EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27		
<b>Electromagnetic compatibility</b>				
Interference immunity				
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge 8 kV, contact discharge 6 kV)		
electromag. field (HF radiation resistance)	IEC/EN 61000-4-3	10 V/m		
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (supply cable 2 kV, signal lines 2 kV)		
powerful impulses (Surge)	IEC/EN 61000-4-5	supply cable symmetrical (AC) 2 kV, Level 2 (supply cable symmetrical (DC) 0.5 kV)		
HF line emission	IEC/EN 61000-4-6	10 V		
Interference suppression (EN 55011, EN 55022)		class B		
<b>Real time clock</b>				
Back-up time		see diagram		-
Accuracy		typ. $\pm 5$ ( $\pm 0.5$ h/year)		-
<b>Repeat accuracy of the time relay</b>				
Accuracy (from value)		$\pm 1$		-
Resolution	range „S“	10 ms		-
	range „M:S“	1 s		-
	range „H:M“	1 min		-
<b>Retention behaviour</b>				
Write cycles of retention memory (minimum)		1.000.000 (10 <sup>6</sup> )		-

### Technical diagram

#### Back-up time of the real time clock



2CDC-312 023 F0206

**NEW**

# Logic relays - power supplies

## CL-LAS.SD

### Technical data

Data at  $T_a = 25\text{ °C}$ ,  $U_{IN} = 230\text{ V}$  and rated values, if nothing else indicated.

Type		CL-LAS.SD001	CL-LAS.SD002
<b>Input circuit</b>			
Rated input voltage $U_{IN}$	AC	100 V AC, 120 V AC, 230 V AC, 240 V AC	
	DC	85-265 V DC	
Input voltage range	AC	85-264 V AC	
	DC	85-265 V DC	
Rated input voltage tolerance	AC	-15...+10 %	
Frequency range	AC	47-63 Hz	
Typ. current / power consumption	at 115 V	approx. 0.17 A / 7 W	0.3 A / 35 W
	at 230 V	0.05 A / 7 W	0.15 A / 35 W
Inrush current		< 5 A	
Power failure buffering time		> 10 ms (at 115 V), > 20 ms (at 230 V)	
Internal fuse		1.5 A slow-acting	2 A slow-acting (at 115 V), 1 A slow-acting (at 230 V)
<b>Indication of operational states</b>			
Output voltage	green LED	┌───┐: output voltage applied	
<b>Output circuit</b>			
Rated output voltage		24 V DC	
Rated output voltage tolerance		± 3 %	± 5 %
Output current $I_o$		0-0.25 A	0-1.25 A
Deviation with	load change 25-100 % change of the input voltage	± 1 %	
Switching peaks		< 50 $V_{pp}$ (at 115 V), < 30 $V_{pp}$ (at 230 V)	< 5 $V_{pp}$
Reference output voltage		12 V DC	-
Reference output voltage tolerance		± 4 %	-
Output current at reference voltage		0-20 mA	-
Deviation with	load change 25-100 % change of the input voltage	± 1 %	
Switching peaks		< 7 $V_{pp}$	
<b>Output circuit - No-load-, overload- and short-circuit behaviour</b>			
Short-circuit protection		continuous short-circuit proof, hiccup-mode	continuous short-circuit proof, hiccup-mode, approx. 10 Hz
Overload protection		current limitation	
<b>General data</b>			
Efficiency		> 81 %	> 87 %
Power dissipation		typ. 1 W	typ. 5 W
Dimensions (W x H x D)		35.5 mm x 90 mm x 58 mm (1.40 inch x 3.54 inch x 2.28 inch)	71.5 mm x 90 mm x 58 mm (2.81 inch x 3.54 inch x 2.28 inch)
Weight		0,1 kg (0.22 lb)	0,25 kg (0.55 lb)
Mounting		DIN rail (IEC/EN 60715), 35 mm or screw mounting with fixing brackets CL-LAS.FD001 (accessories)	
Mounting position		horizontal / vertical	
Degree of protection (IEC/EN 60529)		IP20	
Protection class (IEC 60536)		II	
<b>Electrical connection</b>			
Wire size	fine-strand with wire end ferrule	0.2 mm <sup>2</sup> / 4 mm <sup>2</sup> (22-12 AWG)	
min. / max.	rigid	0.2 mm <sup>2</sup> / 2.5 mm <sup>2</sup> (22-12 AWG)	
Tightening torque		max. 0.6 Nm	
<b>Environmental data</b>			
Ambient temperature range	operation	-25...+55 °C (cold acc. to IEC 60068-2-1, heat acc. to IEC 60068-2-2)	
	storage	-40...+70 °C	
Humidity, no condensation (IEC/EN 60068-2-30)		5-95 %	
Vibration (IEC/EN 60068-2-6)		10-57 Hz (constant amplitude 0.15 mm), 57-150 Hz (constant acceleration 2 g)	
Shock (half-sine 15 g / 11 ms) (IEC/EN 60068-2-27)		18 Shocks	
<b>Insulation data</b>			
Insulation resistance		EN 50178	
Air and creepage distances		EN 50178	
Protective separation	input / output	ja, SELV (VDE 0100 Teil 410; IEC 60364-4-41, HD 384.4.41 S2) EN 60950	
Pollution degree		2	
<b>Standards</b>			
Standards and directives		EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-27	
<b>Electromagnetic compatibility</b>			
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge 8 kV, contact discharge 6 kV)	
electromag. field (HF radiation resistance)	IEC/EN 61000-4-3	10 V/m	
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (2 kV)	
powerful impulses (Surge)	IEC/EN 61000-4-5	supply cable symmetrical (AC) 2 kV, Level 2 (24 V, compensating cable symmetrical, 0.5 kV)	
HF line emission	IEC/EN 61000-4-6	10 V	
Impulse voltage 24 V	EN 50178	6 kV	

**NEW**

# Display system CL-LDD

## Technical data

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LDD...	
<b>Input circuit - Supply circuit</b>		
Power failure buffering (IEC/EN 61131-2)		10 ms
<b>General data</b>		
Dimensions (W x H x D)		with keys: 86.5 x 86.5 x 21.5 mm (3.41 x 3.41 x 0.85 inch) without keys: 86.5 x 86.5 x 20 mm (3.41 x 3.41 x 0.79 inch)
Weight		0.13 kg (0.29 lb)
Mounting		2 x 22.5 mm, with 2 retainers screwed
Mounting position		horizontal / vertical
<b>Environmental data</b>		
Ambient temperature range	operation	-25...+55 °C (cold acc. to IEC 60068-2-1, heat acc. to IEC 60068-2-2)
	storage	-40...+70 °C
LCD-Display (clearly legible)		-5...+50 °C, -10...0 °C (with backlit / continuous operation)
Condensation		avoid condensation with suitable methods
Humidity, no condensation (IEC/EN 60068-2-30)		5-95 %
Air pressure (operation)		795-1080 hPa
Degree of protection (IEC/EN 60529)		IP65
Vibration (IEC/EN 60068-2-6)		10-57 Hz (constant amplitude 0.15 mm), 57-150 Hz (constant acceleration 2 g)
Shock resistance (half-sine 15 g / 11 ms) (IEC/EN 60068-2-27)		18 Shocks
Drop (IEC/EN 60068-2-31) height of fall		50 mm
Free fall, packaged (IEC/EN 60068-2-32)		1 m
<b>Insulation data</b>		
Pollution degree (DIN EN 60947)		3
Rating of air and creepage distances		EN 50178, UL 508, CSA 22.2, No 142
Insulation resistance		EN 50178
<b>Standards</b>		
Standards and directives		EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, IEC 60068-2-6, IEC 60068-2-27
<b>Electromagnetic compatibility</b>		
Interference immunity		
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge 8 kV, contact discharge 6 kV)
electromag. field (HF radiation resistance)	IEC/EN 61000-4-3	10 V/m
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (supply cable 2 kV, signal lines 2 kV)
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 3 (supply cable symmetrical 2 kV, CL-LDC.L...AC2) Level 2 (0.5 kV supply cable symmetrical, CL-LDC.L...AC2)
HF line emission	IEC/EN 61000-4-6	10 V
Interference suppression (EN 55011, EN 55022)		class B

**NEW**

# Display system CL-LDC

## Technical data

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LDC.SDC2	CL-LDC.SAC2	CL-LDC.LDC2	CL-LDC.LAC2	CL-LDC.LNDC2	CL-LDC.LNAC2
<b>Input circuit - Supply circuit</b>						
Rated operational voltage $U_o$	24 V DC	100-240 V AC	24 V DC	100-240 V AC	24 V DC	100-240 V AC
Rated operational voltage tolerance	-15...+20 %	-15...+10 %	-15...+20 %	-15...+10 %	-15...+20 %	-15...+10 %
Operational voltage range	20.4-28.8 V DC	85-264 V AC	20.4-28.8 V DC	85-264 V AC	20.4-28.8 V DC	85-264 V AC
Frequency	0 Hz	50/60 Hz	0 Hz	50/60 Hz	0 Hz	50/60 Hz
Frequency tolerance	-	± 5 %	-	± 5 %	-	± 5 %
Residual ripple	≤ 5 %	-	≤ 5 %	-	≤ 5 %	-
Input current	at 24 V DC	typ. 185 mA	-	typ. 200 mA	-	typ. 200 mA
	at 115/120 V AC (60 Hz)	-	typ. 90 mA	-	typ. 90 mA	-
	at 230/240 V AC (50 Hz)	-	typ. 60 mA	-	typ. 60 mA	-
Power failure buffering (IEC/EN 61131-2)	10 ms					
Power dissipation	at 24 V DC	1.5 W	-	3.4 W	-	3.4 W
	at 115/120 V AC	-	typ. 11 VA	-	typ. 11 VA	-
	at 230/240 V AC	-	typ. 15 VA	-	typ. 15 VA	-
<b>Network - point-to-point connection</b>						
Number of stations	1		-			
Data transfer rate	CL-LS..., CL-LM...	9,6 kBaud		-		
	CL-LDD	19,2 kBaud		-		
Distance	max. 5 m		-			
Electrical isolation	to voltage supply	yes		-		
	to connected device	yes		-		
Termination system	spring-type terminal		-			
<b>Network - CL-NET</b>						
Numer of stations	max. 1		-		max. 8	
Data transfer rate	6 m	-		1000 kBit/s		
	25 m	-		500 kBit/s		
	40 m	-		250 kBit/s		
	125 m	-		125 kBit/s		
	300 m	-		50 kBit/s		
	700 m	-		20 kBit/s		
	1000 m	-		10 kBit/s		
Electrical isolation	to voltage supply	-		yes		
	to inputs	-		yes		
	to outputs	-		yes		
	to PC interface, memory module, CL-NET, CL-LINK	-		yes		
Bus terminator (first and last station)	-		yes			
Termination system	-		RJ45, 8 pole			
<b>General data</b>						
Dimensions (W x H x D)	75 x 58 x 36.2 mm (2.95 x 2.28 x 1.43 inch)		107.5 x 90 x 30 mm (4.23 x 3.54 x 1.18 inch)			
Weight	0.164 kg (0.36 lb)		0.145 kg (0.32 lb)			
Mounting	plugged onto CL-LDD		plugged onto CL-LDD or on DIN rail (IEC/EN 60715)			
Mounting position						
<b>Electrical connection - Supply circuit</b>						
Wire size	fine-strand with wire end ferrule	0.2 mm <sup>2</sup> / 2.5 mm <sup>2</sup> (24-12 AWG)				
	min. / max.	rigid	0.2 mm <sup>2</sup> / 4 mm <sup>2</sup> (24-12 AWG)			
<b>Electrical connection - Data cable</b>						
Wire size	fine-strand with wire end ferrule	0.08 mm <sup>2</sup> / 1.5 mm <sup>2</sup> (28-12 AWG)	-		0.2 mm <sup>2</sup> / 2.5 mm <sup>2</sup> (24-12 AWG)	
	min. / max.	rigid	0.08 mm <sup>2</sup> / 2.5 mm <sup>2</sup> (28-12 AWG)	-		0.2 mm <sup>2</sup> / 4 mm <sup>2</sup> (24-12 AWG)
<b>Environmental data</b>						
Ambient temperature range	operation	-25...+55 °C (cold acc. to IEC 60068-2-1, heat acc. to IEC 60068-2-2)				
	storage	-40...+70 °C				
Condensation	avoid condensation with suitable methods					
Humidity, no condensation (IEC/EN 60068-2-30)	5-95 %					
Air pressure (operation)	795-1080 hPa					
Degree of protection (IEC/EN 60529)	IP20					
Vibration (IEC/EN 60068-2-6)	10-57 Hz (constant amplitude 0.15 mm), 57-150 Hz (constant acceleration 2 g)					

**NEW**

# Display system CL-LDC

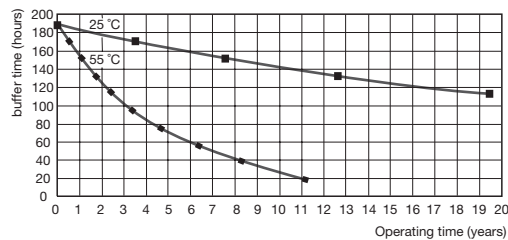
## Technical data

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LDC.SDC2	CL-LDC.SAC2	CL-LDC.LDC2	CL-LDC.LAC2	CL-LDC.LNDC2	CL-LDC.LNAC2
Shock (half-sine 15 g / 11 ms) (IEC/EN 60068-2-27)	18 Shocks					
Drop (IEC/EN 60068-2-31) height of fall	50 mm					
Free fall, packaged (IEC/EN 60068-2-32)	1 m					
<b>Insulation data</b>						
Degree of protection (DIN EN 60947)	2					
Rating of air and creepage distances	EN 50178, UL 508, CSA 22.2, No 142					
Isolation resistance	EN 50178					
<b>Standards</b>						
Standards and directives	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, IEC 60068-2-6, IEC 60068-2-27					
<b>Electromagnetical compatibility</b>						
Interference immunity						
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge 8 kV, contact discharge 6 kV)				
electromag. field (HF radiation resistance)	IEC/EN 61000-4-3	10 V/m				
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (supply cable 2 kV, signal lines 2 kV)				
powerful impulses (Surge)	IEC/EN 61000-4-5	Level 3 (supply cable symmetrical 2 kV, CL-LDC.L...AC2)				
		Level 2 (1 kV supply cable symmetrical)	Level 2 (0.5 kV supply cable symmetrical, CL-LDC.L...AC2)			
HF line emission	IEC/EN 61000-4-6	10 V				
Interference suppression (EN 55011, EN 55022)	class B					
<b>Real time clock</b>						
Back-up time	-	see digram				
Accuracy	-	typ. $\pm 5$ s/day ( $\pm 0,5$ h/year)				
<b>Repeat accuracy of the time relay</b>						
Accuracy (from value)	-	$\pm 0.02\%$				
Resolution	range „S“	-	5 ms			
	range „M:S“	-	1 s			
	range „H:M“	-	1 min			
<b>Retention behaviour</b>						
Write cycles of retention memory (minimum)	-	$10^{10}$ (read/ write cycles)				

### Technical diagram

#### Back-up time of the real time clock



2CDC 312 023 F0206

**NEW**

# Display system CL-LDR, CL-LDT

## Technical data

Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type		CL-LD...16DC2	CL-LD...17DC2	CL-LDR.16AC2
<b>Input circuit - Digital inputs</b>		<b>24 V DC</b>		<b>115/230 V</b>
Number		12		
Inputs can be used as analog inputs		4 (I7, I8, I11, I12)		-
Indication of operational states		-		LCD-Display (if existing)
Electrical isolation	from supply voltage	no		
	from digital inputs	no		
	from the outputs	yes		
	from PC interface, memory module, CL-NET, CL-LINK	yes		
Rated operational voltage $U_o$		24 V DC		-
	$U_o$ on „0“ signal	< 5 V DC (I1-I6, I9, I10), < 8 V DC (I7, I8, I11, I12)		0-40 V AC (sinusoidal)
	$U_o$ on „1“ signal	> 15 V DC (I1-I6, I9, I10), > 8 V DC (I7, I8, I11, I12)		79-264 V AC (sinusoidal)
Rated frequency		0 Hz		50-60 Hz
Input current on „1“ signal		3.3 mA (at 24 V DC, I1-I6, I9, I10), 2.2 mA (at 24 V DC, I7, I8, I11, I12)		12x0.2 mA (at 115 V AC, 60 Hz, I1-I12), 12x0.5 mA (at 230 V AC, 50 Hz, I1-I12)
Time delay from „0“ to „1“	debounce ON	20 ms		10 ms (at 50 Hz), 100 ms (at 60 Hz)
	debounce OFF	typ. 0.1 ms (I1-I4), typ. 0.25 ms (I5-I12)		10 ms (at 50 Hz), 100 ms (at 60 Hz)
Time delay from „1“ to „0“	debounce ON	20 ms		10 ms (at 50 Hz), 100 ms (at 60 Hz)
	debounce OFF	typ. 0.1 ms (I1-I4), typ. 0.4 ms (I5, I6, I9, I10), typ. 0.2 ms (I7, I8, I11, I12)		10 ms (at 50 Hz), 100 ms (at 60 Hz)
Cable length (unshielded)		100 m		-
Maximum cable length per input		-		typ. 60 m
Frequency counter	number	4 (I1, I2, I3, I4)		-
	counting frequency	< 3 kHz		-
	pulse shape	square-wave		-
	pulse / pause ratio	1:1		-
Incremental counter	number	2 (I1 + I2, I3 + I4)		-
	counting frequency	< 3 kHz		-
	pulse shape	square-wave		-
	signal offset	90°		-
	pulse / pause ratio	1:1		-
Rapid counter inputs	number	4 (I1, I2, I3, I4)		-
	counting frequency	< 3 kHz		-
	pulse shape	square-wave		-
	pulse / pause ratio	1:1		-
Cable length (shielded)		< 20 m		-
<b>Input circuit - Analog inputs</b>				
Number		4 (I7, I8, I11, I12)		-
Electrical isolation	to voltage supply	no		
	to digital inputs	no		
	to outputs	yes		
	to PC interface, memory modul, CL-NET, CL-LINK	yes		
Input type		DC voltage		-
Signal range		0-10 V DC		-
Resolution	analog	0.01 V		-
	digital	0.01 V; 10 Bit (value 0-1023)		-
Input impedance		11.2 kΩ		-
Accuracy of the actual value	two CL-LD... devices	± 3 %		-
	within one device	± 2 %		-
Conversion time analog/digital		each cycle		-
Input current		< 1 mA		-
Cable length (shielded)		< 30 m		-

**NEW**

# Display system CL-LDR, CL-LDT

## Technical data

Data at T<sub>a</sub> = 25 °C and rated values, if nothing else indicated.

Type		CL-LD...16DC2	CL-LD...17DC2	CL-LDR.16AC2
<b>Output circuit - Analog outputs</b>				
Number		-	1	-
Electrical separation	from voltage supply	-	no	-
	from the digital inputs	-	no	-
	from the digital outputs	-	yes	-
	from PC interface, memory module, CL-NET, CL-LINK	-	yes	-
Output type		-	DC voltage	-
Signal range		-	0-10 V DC	-
Max. output current		-	0.01 A	-
Burden resistance		-	1 kΩ	-
Overload and short-circuit protection		-	yes	-
Resolution	analog	-	0.01 V DC	-
	digital	-	10 Bit, (value: 0-1023)	-
Setting time		-	100 ms	-
Accuracy	-25...+55 °C	-	2 %	-
	25 °C	-	1 %	-
Conversion time		-	each CPU cycle	-
<b>General data</b>				
Dimensions (W x H x D)		CL-LDR: 89 x 90 x 44 mm (3.5 x 3.54 x 1.73 inch) CL-LDT (build-in): 89 x 90 x 25 mm (3.5 x 3.54 x 0.98 inch)		89 x 90 x 44 mm (3.5 x 3.54 x 1.73 inch)
Weight		CL-LDR: 0.15 kg (0.33 lb) / CL-LDT: 0.14 kg (0.31 lb)		0.15 kg (0.33 lb)
Mounting		snap-on power supply unit		
Mounting position		horizontal / vertical		
<b>Electrical connection</b>				
Wire size min. / max.	fine-strand with wire end ferrule	0.2 mm <sup>2</sup> / 2.5 mm <sup>2</sup> (24-12 AWG)		
	rigid	0.2 mm <sup>2</sup> / 4 mm <sup>2</sup> (24-12 AWG)		
<b>Electrical connection - Data cable</b>				
Wire size min. / max.	fine-strand with wire end ferrule	0.08 mm <sup>2</sup> / 1.5 mm <sup>2</sup> (28-12 AWG)		
	rigid	0.08 mm <sup>2</sup> / 2.5 mm <sup>2</sup> (28-12 AWG)		
<b>Environmental data</b>				
Ambient temperature range	operation	-25...+55 °C (cold acc. to IEC 60068-2-1, heat acc. to IEC 60068-2-2)		
	storage	-40...+70 °C		
Condensation		avoid condensation with suitable methods		
Humidity, no condensation (IEC/EN 60068-2-30)		5-95 %		
Atmospheric pressure (operation)		795-1080 hPa		
Degree of protection (IEC/EN 60529)		IP20		
Vibration (IEC/EN 60068-2-6)		10-57 Hz (constant amplitude 0.15 mm), 57-150 Hz (constant acceleration 2 g)		
Shock (half-sine 15 g / 11 ms) (IEC/EN 60068-2-27)		18 Shocks		
Drop (IEC/EN 60068-2-31) height of fall		50 mm		
Free fall, packaged (IEC/EN 60068-2-32)		1 m		
<b>Insulation data</b>				
Pollution degree		2		
Rating of air and creepage distances		EN 50178, UL 508, CSA C22.2, No. 142		
Isolation resistance		EN 50178		
<b>Standards</b>				
Standards and directives		EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27		
<b>Electromagnetic compatibility</b>				
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (air discharge 8 kV, contact discharge 6 kV)		
electromag. field (HF radiation res.)	IEC/EN 61000-4-3	10 V/m		
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (supply cable 2 kV, signal cable 2 kV)		
powerful impulses (Surge)	IEC/EN 61000-4-5	2 kV (supply cable symmetrical), Level 2 (0.5 kV supply cable symmetrical)		
HF line emission	IEC/EN 61000-4-6	10 V		
Interference suppression (EN 55011, EN 55022)		class B		

**NEW****Display system  
CL-LDR****Technical data / Output circuit - Relay outputs**Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type		CL-LDR...
<b>Output circuit - Relay outputs</b>		
Number		4
Outputs in groups of		-
Parallel switching of outputs to increase capacity		not permissible
Fusing of the output relay		circuit-breaker B16 or fuse 8 A (slow-acting)
Electrical isolation	from voltage supply	yes
	from the inputs	yes
	from PC interface, memory module, CL-NET, CL-LINK	yes
	protective separation	300 V AC
	Basic isolation	600 V AC
Mechanical lifetime		$10 \times 10^6$ switching cycles
Current path	conventional thermal current (10 A UL)	8 A
	recommended load 12 V AC/DC	> 500 mA
	short-circuit proof $\cos \varphi = 1$ ; characteristic B16 at 600 A	16 A
	short-circuit proof $\cos \varphi = 0.5$ up to 0.7; characteristic B16 at 900 A	16 A
	Rated impulse withstand voltage $U_{imp}$ contact-coil	6 kV
	Rated operational voltage $U_e$	250 V AC
Rated insulation voltage $U_i$		250 V AC
Protective separation (EN 50178)	between coil and contact	300 V AC
	between two contacts	300V AC
Making capacity	AC15, 250 V AC, 3 A (600 ops./h)	300.000 switching cycles
	DC13, L/R $\leq$ 150 ms, 24 V DC, 1 A (500 ops./h)	200.000 switching cycles
Breaking capacity	AC15, 250 V AC, 3 A (600 ops./h)	300.000 switching cycles
	DC13, L/R $\leq$ 150 ms, 24 V DC, 1 A (500 ops./h)	200.000 switching cycles
Incandescent lamp load	1000 W at 230/240 V AC	25.000 switching cycles
	500 W at 115/120 V AC	25.000 switching cycles
Fluorescent lamp load	10 x 58 W at 230/240 V AC with electrical control gear	25.000 switching cycles
	10 x 58 W at 230/240 V AC uncompensated	25.000 switching cycles
	1 x 58 W at 230/240 V AC conventional compensated	25.000 switching cycles
Switching frequency	mechanical operations	$10 \times 10^6$
	switching frequency	10 Hz
	resistive load / lamp load	2 Hz
	inductive load	0.5 Hz
<b>UL/CSA</b>		
Continuous current at 240 V		10 A AC
Continuous current at 24 V		8 A DC
AC	Utilization category (Control Circuit Rating Codes)	B 300 Light Pilot Duty
	max. rated operational voltage	300 V AC
	max. continuous thermal current $\cos \varphi = 1$ at B 300	5 A
	max. making / breaking apparent power (Make/Break) $\cos \varphi \neq 1$ at B 300	3600/360 VA
DC	Utilization category (Control Circuit Rating Codes)	R 300 Light Pilot Duty
	max. rated operational voltage	300 V DC
	max. continuous thermal current at R 300	1 A
	max. making / breaking apparent power (Make/Break) at R 300	28/28 VA

**NEW****Display system  
CL-LDT****Technical data / Output circuit - Transistor outputs**Data at  $T_a = 25\text{ °C}$  and rated values, if nothing else indicated.

Type	CL-LDT...	
<b>Output circuit - Transistor outputs</b>		
Number	4	
Rated operational voltage $U_o$	24 V DC	
Operational voltage range	20.4-28.8 V DC	
Residual ripple	-	
Supply current	on „0“ signal on „1“ signal	typ. 18 mA / max. 32 mA typ. 24 mA / max. 44 mA
Reverse voltage protection	yes (Attention: If supply voltage is reversed, applying voltage at the outputs, causes a short circuit.)	
Electrical isolation	from voltage supply from the inputs from PC interface, memory module, CL-NET, CL-LINK	yes yes yes
Rated operational current $I_o$ on „1“ signal DC	max. 0.5 A	
Lamp load without $R_v$	5 W (Q1-Q4)	
Residual current on „0“ signal per channel	< 0.1 mA	
Max. output voltage	on „0“ signal at external load < 10 M $\Omega$ on „1“ signal at $I_o = 0.5\text{ A}$	2.5 V $U = U_o - 1\text{ V}$
Short-circuit protection	thermal (Q1-Q4), (analysis results from diagnosis input I16)	
Short-circuit tripping current for $R_a \leq 10\text{ m}\Omega$	0.7 A $\leq I_o \leq 2\text{ A}$ per output	
Total short-circuit current	8 A	
Peak short-circuit current	16 A	
Thermal tripping	yes	
Max. switching frequency with constant resistive load $R_L < 100\text{ k}\Omega$ (depending on active channels and their load)	40.000 switching cycles/h	
Parallel connection of outputs	with resistive load, inductive load with external suppressor, combination within one group	group 1: Q1-Q4
	number of outputs	max. 4
	max. total current	2 A (Attention! Outputs must be actuated simultaneously and for the same length of time.)
Indication of operational states of the outputs	LCD-Display (if existing)	
Inductive load <sup>1)</sup> without external suppressor		
$T_{0.95} = 1\text{ ms}$ , $R = 48\ \Omega$ , $L = 16\text{ mH}$	utilization factor	0.25 g
	duty time	100 %
	max. switching frequency $f = 0,5\text{ Hz}$ (max. duty time = 50 %)	1500 switching cycles
DC13, $T_{0.95} = 72\text{ ms}$ , $R = 48\ \Omega$ , $L = 1.15\text{ H}$	utilization factor	0.25 g
	duty time	100 %
	max. switching frequency $f = 0,5\text{ Hz}$ (max. duty time = 50 %)	1500 switching cycles
$T_{0.95} = 15\text{ ms}$ , $R = 48\ \Omega$ , $L = 0.24\text{ H}$	utilization factor	0.25 g
	duty time	100 %
	max. switching frequency $f = 0,5\text{ Hz}$ (max. duty time = 50 %)	1500 switching cycles
Inductive load <sup>1)</sup> with external suppressor		
	demand factor	1 g
	duty time	100 %
	max. switching frequency max. duty time	depends on suppressor

<sup>1)</sup> For inductive loading, without external suppression of the transistor outputs, the following applies: $T_{0.95}$  = time in ms, until 95 % of the steady-state current is achieved.  $T_{0.95} \cdot 3 \times T_{0.65} = 3 \times L/R$ .

Data transfer rate in the CL-NET network: bus lengths of 40 m and over only attainable with cables with additional cross-section and connection adapter.

**NEW**

# Logic relays, display system

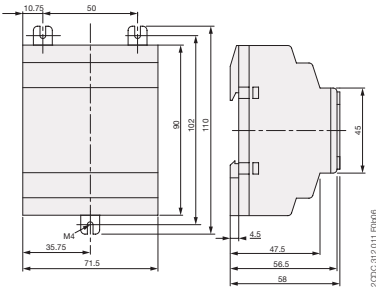
## CL range

### Dimensional drawings

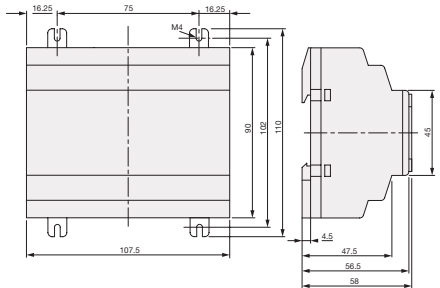
#### Dimensions

in mm

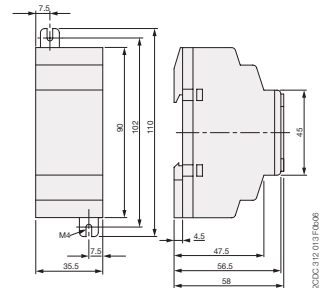
#### CL-LSR, CL-LST



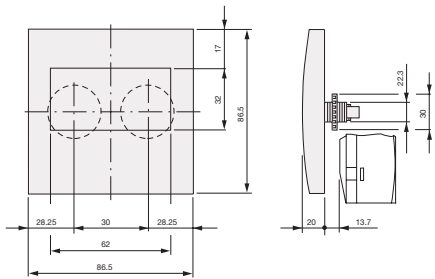
#### CL-LMR, CL-LMT



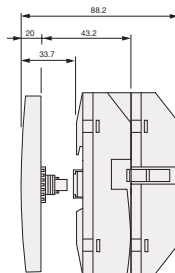
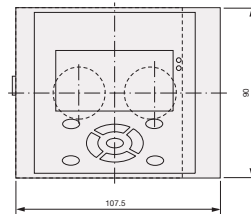
#### CL-LER.20



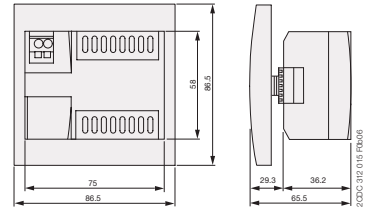
#### CL-LDD



#### CL-LDD.K + CL-LDC.L.. + (CL-LDR or CL-LDT)



#### CL-LDC.S..



#### CL-LDR, CL-LDT

