

Electrical installation solutions for buildings

Control and automation

Index

D Line digital time switches	7/2
ATe electro-mechanical time switches	7/7
AT72e electro-mechanical time switches	7/8
E 232 staircase lighting time-delay switches	7/9
E 234 electronic timers	7/11
T Line twilight switches	7/15
T1 POLE twilight switches	7/17
TWA twilight switches	7/18
THS modular thermostats	7/20
CL logic relays, display system	7/22
E 450 priority switches	7/29
RAL overload relays	7/30
LSS1/2 load shedding switch	7/31
E 235 mains disconnection relays	7/32
LEE 230 extractable power failure signalling lamp	7/34

D Line. Simply precise

An ideal range for automating the functions of the installation

Sealable glass and keypad lock to prevent tampering by unauthorised personnel

Inputs for the connection of remote controls (i.e. switches and buttons) and for DCF77 or GPS receiver connection

Clear display of each contact status

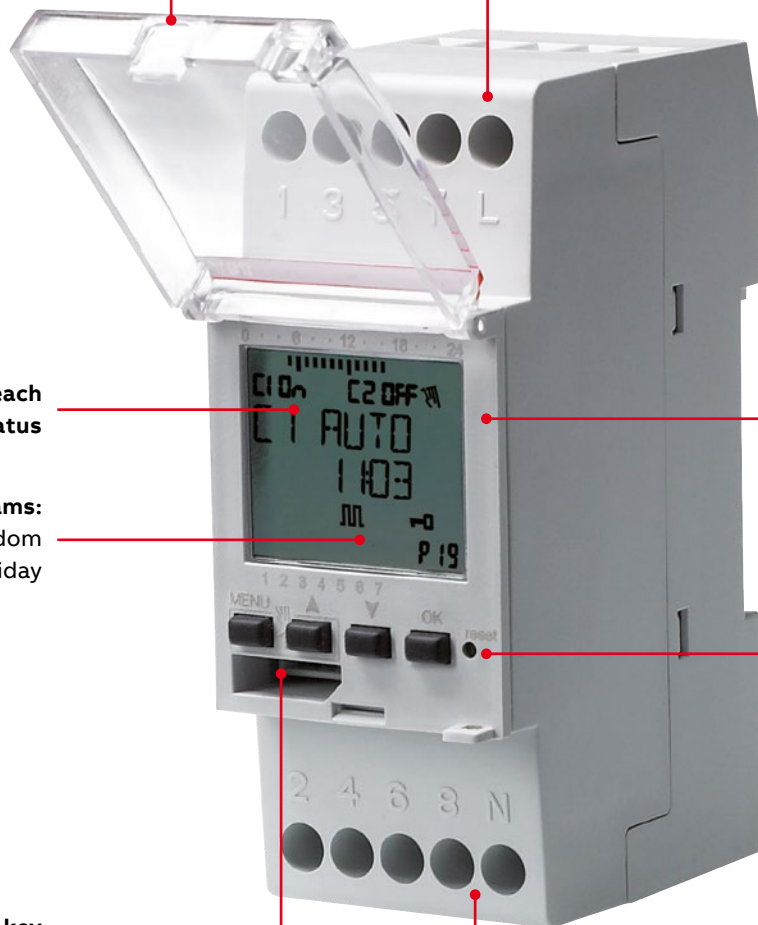
High contrast LCD monitor for excellent visibility in all conditions due to timed back-lighting

Wide range of programs: standard, cyclic, random and holiday

Permanent or temporary manual deviation, directly activated with a single touch

Programming key slot to run, copy or save programs

Terminals for wires up to 6 mm².



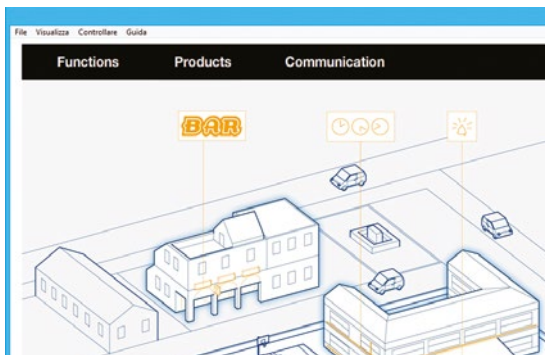


Wide range of programs: standard, cyclic, random and holiday

- Permanent or temporary manual deviation, directly activated with a single touch
- Graphical display of the complete sequence of switchings provided by the program in memory, for each of the channels in the day in question
- External inputs for the connection of one or more remote commands, for example: switches or buttons
- 64 memory locations
- Accuracy of $\pm 0,5$ seconds/24h
- Switching solar time/daylight saving time
- Running reserves of 6 years (lithium battery)



Programming key D KEY allows to run a program in EMD external memory automatically, to save the programs in the time switch or created by the D SW programming software, on the D KEY external memory and viceversa. Furthermore, the holiday programs can be loaded and unloaded on D KEY.



D Line time switches' programming can be executed directly on your PC thanks to D SW software that lets you quickly, simply and easily create complex programs from your desktop. Indeed, it is possible to transfer the program to the D KEY memory unit and then copy it on multiple devices, avoiding any errors in reprogramming. Once created, the program can be printed or saved to file as pdf.



Time synchronization via DCF77 or GPS antennas. The D DCF77 antenna receives scheduled messages transmitted by the atomic clock installed c/o Mainflingen (Germany), near Frankfurt. Thanks to this signal, the time switches are automatically set to: hour, date and proper daylight saving time. The D GPS antenna receives time from the Global Positioning System, providing an accurate location and time information for an unlimited number of people in all weathers, day or night, anywhere in the world; time is derived from different sources simultaneously that allow the time switch to compensate for propagation delays.

Control and automation

D Line digital time switches



D Line

1CS400080F0202

Technical specifications D Line		D1	D1 PLUS	D1 SYNCHRO	D2	D2 PLUS	D2 SYNCHRO
Rated voltage	[V]	230 AC ± 10%					
Rated pulsating voltage	[kV]	4					
Contact type		Contact relay in free exchange from potential					
Programming key		-	■	■	-	■	■
External input		■	■	-	■	■	-
DCF77 antenna		-	-	■	-	-	■
GPS antenna		-	-	■	-	-	■
Programming software		-	■	■	-	■	■
250 V contact capacity							
Resistive loads cos φ 1	[A]	16	16				
Inductive loads cos φ 0.6	[A]	10	2				
Rated frequency	[Hz]	50/60					
Time base		quartz					
Minimum switching	[sec.]	1					
Max programs per cycle	[n°]	64 (can be coupled in day blocks)					
Running reserve	[year]	6 from the first start-up (lithium battery)					
External input	[n°]	1			2		
Activity suspension		From 1 day to 12 months					
Operating accuracy	[sec/24h]	± 0.5					
Max. dissipated power	[VA]	6.5			7.8		
Max. switching power	[VA]	3500					
Switching capacity							
Incandescent lamps	[W]	3000					
Non-rephased fluorescent lamps	[W]	1100					
Fluorescent tube lamps rephased in parallel	[W]	900					
Fluorescent tube lamps with electronic reactor	[W]	7 ÷ 23 (max. 23 lamp.)					
Fluorescent tube lamps rephased in series	[W]	1100					
Protection degree	[IP]	20					
Max. terminal cross-section	[mm²]	6					
Terminals		loss-proof screw					
Tightening torque	[Nm]	0.5					
Installation type		DIN rail					
Operating temperature	[°C]	-5 ... +55					
Storage temperature	[°C]	-10 ... +65					
Modules	[n°]	2					
Reference standards		EN 60730-1; EN 60730-2-7					

Technical features Accessories for D Line			
		D DCF77	D GPS
Rated voltage	[V]	230 AC \pm 20%	
Rated frequency	[Hz]	50/60	
Power loss	[W]	0.1	2
Operating temperature	[°C]	-10...+70	-10...+40
Storage temperature	[°C]	-30...+90	-40...+85
Power consumption	[VA]	9.2	2
Time of the signal		1 sending / min.	min 30 sendings/hour; max 50 sendings/hour
Protection degree	[IP]	65	65
Max. number of connected devices	[No.]	10	10
Max. wiring length	[m]	1000	1000
Terminal size for cable	[mm ²]	0.5...2.5	0.5...2.5
Mounting		pole/wall	pole/wall

Control and automation

D Line digital time switches



1CSC400081PF0202

D1



1CSC400081PF0202

D1 PLUS

D Line weekly digital time switches

The unique design, with white backlit LCD display, and extreme ease of use with two lines of text menu and only four buttons, make D Line ideal to automate the installation functions. Thanks to the innovative management of time vacation, the D Line digital time switches allow the exclusion of the normal weekly program in one or more periods of several years or between two different years.

The range includes 1 and 2 channel versions, equipped with large capacity internal battery to maintain operation without power supply and permanent memory EEPROM, to avoid the risk of program loss and to maintain the date and time settings in case of power failure, irrespective of its duration.

The "PLUS" version can transfer different types of programs by using a D KEY to be quickly copied in other digital time switches, avoiding the errors due to future modification. The "SYNCHRO" version can be coupled to the D DCF77 antenna, that allows an automatic synchronization of the digital time switch with the Frankfurt DCF77 time signal, or can be coupled to the D GPS antenna to allow synchronization received from the Global Positioning System.

The D Line is particularly useful in environments and situations where user management is required with a time schedule flexible enough to predict or exclude activities according to time and day of week or month.

Channels no.	Bbn	Order details		Price	Weight	Pack
	8012542	EAN	Type code	1	1 piece	unit
			Order code	piece	kg	pc.
1	587637	D1	2CSM258763R0621		0.140	1
1	575832	D1 PLUS	2CSM257583R0621		0.140	1
1	574934	D1 SYNCHRO	2CSM257493R0621		0.140	1
2	563136	D2	2CSM256313R0621		0.140	1
2	775836	D2 PLUS	2CSM277583R0621		0.140	1
2	773634	D2 SYNCHRO	2CSM277363R0621		0.140	1

Accessories for D Line digital time switches

Version	Bbn	Order details		Price	Weight	Pack
	8012542	EAN	Type code	1	1 piece	unit
			Order code	piece	kg	pc.
Programming key	771432	D KEY	2CSM277143R0621		0.005	1
Programming software	999737	D SW	2CSM299973R0621		0.020	1
DCF77 antenna	999836	D DCF77	2CSM299983R0621		0.150	1
GPS antenna	999935	D GPS	2CSM299993R0621		0.150	1

Control and automation

ATe electro-mechanical time switches



AT1e-R



AT2e-R

Technical features		AT1e	AT1e-R	AT2	AT2-R	AT2-7R	AT2e	AT2e-R	AT2e-7R
Rated voltage	[V]	230 AC ± 10%	230 AC ± 10%	230 AC ± 10%	230 AC ± 10%	230 AC ± 10%	230 AC ± 10%	230 AC ± 10%	230 AC ± 10%
Contact type		1NO	1NO	1NO/NC	1NO/NC	1NO/NC	1NO/NC	1NO/NC	1NO/NC
Resistive load	[A]	16	16	16	16	16	16	16	16
Inductive load	[A]	4	4	4	4	4	4	4	4
Rated frequency	[Hz]	45-60	45-60	50-60	50-60	50-60	50-60	50-60	50-60
Time base		quartz	quartz	quartz	quartz	quartz	quartz	quartz	quartz
Setting step (tappet)	[min]	15	15	30	30	210	15	15	105
Number of tappets		96	96	48	48	48	96	96	96
Running reserve	[h]	-	100	-	150	150	-	150	150
Power consumption	[VA]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Max. switching power	[W]	3500	3500	3500	3500	3500	3500	3500	3500
Max. terminal cross-section	[mm ²]	4	4	2.5	2.5	2.5	2.5	2.5	2.5
Tightening torque	[Nm]	0.8	0.8	0.5	0.5	0.5	0.5	0.5	0.5
Terminals		with captive screws	with captive screws	with captive screws	with captive screws	with captive screws	with captive screws	with captive screws	with captive screws
Installation type		on DIN rail	on DIN rail	on DIN rail	on DIN rail	on DIN rail	on DIN rail	on DIN rail	on DIN rail
Operating temperature	[°C]	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50
Storage temperature	[°C]	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50	-10...+50
Modules	[n°]	1	1	2	2	2	2	2	2
Reference standards		EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7	EN 60730-1; EN 60730-2-7

AT and ATe electro-mechanical time switches

They control circuit opening and closing according to the scheduled program. Both available on daily and weekly versions and equipped with a 16 A contact, they can be set on the scheduled program or on the permanent ON function (ON-OFF only for two modules versions). The AT3-R, AT2e-R and AT2e-7R versions are equipped with a built-in battery, charged by the network voltage, which allows the devices to maintain the set time also in case of long (up to 150 h) power supply failures. The products fit applications such as control of lighting systems of shops or commercial buildings, heating and ventilation systems as well as control of automatic irrigation systems of private or external gardens.

Contacts	Version	Bbn 8012542	Order details		Price 1 piece	Weight 1 piece kg	Pack unit pc.
			EAN	Type code			
1NO	Daily time switch without reserve	312055	AT1e	2CSM231205R0601		0.095	1
1NO	Daily time switch, running reserve	312154	AT1e-R	2CSM231215R0601		0.095	1
1NO/1NC	Daily time switch without reserve	041054	AT2	2CSM204105R0601		0.118	1
1NO/1NC	Daily time switch, running reserve	041153	AT2-R	2CSM204115R0601		0.118	1
1NO/1NC	Weekly time switch, running reserve	041252	AT2-7R	2CSM204125R0601		0.118	1
1NO/1NC	Daily time switch without reserve	312253	AT2e	2CSM231225R0601		0.118	1
1NO/1NC	Daily time switch, running reserve	312352	AT2e-R	2CSM231235R0601		0.118	1
1NO/1NC	Weekly time switch, running reserve	312451	AT2e-7R	2CSM231245R0601		0.118	1

Control and automation

AT72e electro-mechanical time switches



AT72e-R

Technical features				
		AT72e	AT72e-R	AT72e-7R
Rated voltage	[V]	230 AC + 10%	230 AC + 10%	230 AC + 10%
Contact type		1NO/NC	1NO/NC	1NO/NC
Ohmic loads	[A]	16	16	16
Inductive loads	[A]	2	2	2
Rated frequency	[Hz]	50/60	50/60	50/60
Time base				quartz
Setting step (tappet)	[Min]	15 (daily)	15 (daily)	120 (weekly)
Number of tappets		96 (daily)	96 (daily)	84 (weekly)
Running reserve	[h]	72	72	72
Power loss	[W]	0.9	0.9	0.9
Max. switching power	[W]	3.500	3.500	3.500
Max. terminal cross-section	[mm ²]	4	4	4
Tightening torque	[Nm]	0.8	0.8	0.8
Installation type		wall/panel	wall/panel	wall/panel
Protection degree		IP30	IP30	IP30
Operating temperature	[°C]	-10 ...+50	-10 ...+50	-10 ...+50
Storage temperature	[°C]	-10 ...+50	-10 ...+50	-10 ...+50
Reference standards		EN 60730-1, EN60730-2-7	EN 60730-1, EN60730-2-7	EN 60730-1, EN60730-2-7

AT72e electro-mechanical time switches

These switches are used to control circuit opening and closing according to a preset program. Available in daily or weekly versions, with or without running reserve, they are characterized by the settings on the front, which during the holding time of the load, allows for the contact status in ON/OFF to be forced until the next switching time. The AT72e range is the perfect solution for controlling lighting systems in shops and public buildings, heating and irrigation systems, etc.

Contacts	Version	Bbn	Order details		Price	Weight	Pack
		8012542	Type code	Order code	1	1 piece	unit
		EAN			piece	kg	pc.
1NO/NC	Daily time switch without reserve	312550	AT72e	2CSM231255R0601		0.142	1
1NO/NC	Daily time switch, running reserve	312659	AT72e-R	2CSM231265R0601		0.142	1
1NO/NC	Weekly time switch, running reserve	312758	AT72e-7R	2CSM231275R0601		0.142	1

Control and automation

E 232 staircase lighting time-delay switches

Technical features					
	E 232-230	E 232E-230N	E 232E-8/230N	E 232E-230 Multi 10	E 232E-8/230 Multi 10
Time range (stepless)	1 – 7 min. in 15 sec. increments	0.5 – 20 min. stepless	0.5 – 20 min. stepless	0.5 – 20 min. stepless	0.5 – 20 min. stepless
Control voltage 230 V AC	■	■	■	■	■
Universal voltage in addition			8 ... 240 V AC/DC		8...240 V AC/DC
Glow lamp load	50 mA	150 mA	150 mA	150 mA	150 mA
3/4 conductor operated	switches	automatically	automatically	automatically	automatically
Resettable	■	■	■	■	■
Steady-light switch	■	■	■	■	■
Advance warning acc. DIN 18015-2				■	■
Long-time range of 60 min.				■	■
Multi-functional (10 functions)				■	■
Rated voltage	230 V AC	240 V AC	240 V AC	240 V AC	240 V AC
Rated Frequency	50Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Control voltage range	0.9 ... 1.1 Un	0.85 ... 1.1 Un	0.85 ... 1.1 Un	0.85 ... 1.1 Un	0.85 ... 1.1 Un
Power loss	1 VA	6 VA	6 VA	6 VA	6 VA
Rated switching capacity	16 A, 230 V AC	16 A, 230 V AC	16 A, 230 V AC	16 A, 230 V AC	16 A, 230 V AC
Filament lamps	2,300 W	2,300 W	2,300 W	3,600 W	3,600 W
Halogen lamps	2,300 W	2,300 W	2,300 W	3,600 W	3,600 W
Fluorescent lamps series compensated / uncorrected	2,300 VA	2,300 VA	2,300 VA	3,600 VA *	3,600 VA *
Fluorescent lamps inductive or capacitive	2,300 VA	2,300 VA	2,300 VA	3,600 VA *	3,600 VA *
Fluorescent lamps shunt compensated	1,300 VA (70 µF)	400 VA (42 µF)	400 VA (42 µF)	1,200 VA (120 µF) *	1,200 VA (120 µF) *
Electronic controlgear	9x7 W, 6x11 W 5x15 W, 5x20 W	9x7 W, 7x11 W, 7x20 W, 7x23 W	9x7 W, 7x11 W, 7x20 W, 7x23 W	34x7 W, 27x11 W, 24x15 W, 22x23 W	34x7 W, 27x11 W, 24x15 W, 22x23 W
Inductive load (cos φ = 0.6/230 V AC)	2,300	2,300	2,300	2,300	2,300
Contact material	AgSnO2	AgSnO2	AgSnO2	AgSnO2	AgSnO2
Contact gap	≥ 3 mm	< 3 mm	< 3 mm	< 3 mm	< 3 mm
Mech. serviceable life	> 106	> 107	> 107	> 107	> 107
Serviceable life at rated load, cos φ =1	> 105	> 2x105	> 2x105	> 2x105	> 2x105
Serviceable life at rated load, cos φ =0.6	> 104	> 4x104	> 4x104	> 4x104	> 4x104
Max. terminal cross-section	10.7 mm ²	13 mm ²	13 mm ²	13 mm ²	13 mm ²
Max. conductor cross-section	6 mm ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²
ON duration	Resettable after 30 sec.	100 %	100 %	100 %	100 %
Ambient temperature	- 10 °C to + 50 °C	- 25 °C to + 50 °C	- 25 °C to + 50 °C	- 25 °C to + 50 °C	- 25 °C to + 50 °C
Housing and insulation material	heat resistant, self-extinguishing thermoplast	heat resistant, self-extinguishing thermoplast	heat resistant, self-extinguishing thermoplast	heat resistant, self-extinguishing thermoplast	heat resistant, self-extinguishing thermoplast
Control current at 230 V AC	4.5 mA	26 mA	26 mA	26 mA (min. 8 mA at 8 V AC)	26 mA (min. 8 mA at 8 V AC)
Minimum command duration	10 ms	20 ms	20 ms	20 ms / 50 ms for multi voltage input	20 ms / 50 ms for multi voltage input

* no disconnection advance warning possible for this application.

Control and automation

E 232 staircase lighting time-delay switches



E 232-230



E 232 E-230N

E 232 staircase lighting time-delay switches

Staircase lighting time-delay switches are usually operated by pushbuttons, often fitted with a glow lamp. Switches are designed for a glow lamp current of up to 150 mA and thus perfectly suitable for installations in multi-storey buildings.

The E 232-230 staircase lighting time-delay switch includes an electro-mechanical timer with a synchronous motor drive to ensure high operational safety in whatever mounting position. The time range is adjustable in increments of 15 seconds from 1 to seven minutes. Resettable after 30 seconds.

E 232E-230N and E 232E-8/230N devices feature electronic time delays. A high switching capacity, 150 mA glow lamp current parallel to the pushbuttons, steplessly adjustable time range from 0.5 to 20 min, as well as low switching noise make these devices so special. Devices of the E 232E-230 Multi 10 and E 232E-8/230 Multi 10 series are multi-functional products with 10 functions to choose from that can be adjusted from the front. Through an electronically controlled connection of the load at voltage zero, a very high switching capacity of 3,600 W (load of filament lamp) is reached.

The devices include an integrated warning feature (warning by blinking) according to DIN 18015-2 as well as a 60 minute long-time function.

The E 232E-8/230N and E 232E-8/230 Multi 10 staircase lighting time-delay switches offer an additional metallically separated control input for 8...240 V AC/DC.

Time range	Power loss W	Bbn 4013614 EAN	Order details		Price 1 piece	Weight 1 piece kg	Pack unit pc.
			Type code	Order code			
1 ... 7 min.	1 V A	54824 3	E 232-230	2CDE110000R0501		0.081	10
20 min	6 V A	65416 6	E 232 E-230N	2CDE110003R0511		0.095	10
20 min	6 V A	65417 3	E 232 E-8/230N	2CDE010003R0511		0.1	10
20 min	6 V A	65418 0	E 232 E-230 Multi 10	2CDE110013R0511		0.095	10
20 min	6 V A	65419 7	E 232 E-8/230 Multi 10	2CDE010013R0511		0.1	10

Control and automation

E 234 electronic timers



E 234

ZCDC251089F0b06

Technical data			
Data at Ta = 25 °C and rated values, unless otherwise indicated			
Type		CT-D with 1 c/o contact	CT-D with 2 c/o contacts
Input circuit - Supply circuit			
Rated control supply voltage US	A1-A2	24-240 V AC / 24-28 V DC ①	
Rated control supply voltage US tolerance		-15...+10 %	
Rated frequency	DC	50/60 Hz	
Frequency range	AC	47-63 Hz	
Typical power consumption		see data sheet	
Power failure buffering time		min. 20 ms	min. 20 ms
Input circuit - Control circuit			
Control input, Control function	A1-Y1/B1	start timing external	
Kind of triggering		voltage-related triggering	
Maximum cable length to the control input		50 m - 100 pF/m	
Minimum control pulse length		20 ms	
Control voltage potential		see rated control supply voltage	
Current consumption of the control input		see data sheet	
Parallel load / polarized		yes / yes	
Timing circuit			
Time ranges	7 time ranges 0.05 s - 100 h	1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min 5.) 5-100 min 6.) 0.5-10 h 7.) 5-100 h	
	4 time ranges 0.05 s - 10 min (CT-SDD, CT-SAD)	1.) 0.05-1 s 2.) 0.5-10 s 3.) 5-100 s 4.) 0.5-10 min	
Recovery time		< 50 ms	
Repeat accuracy (constant parameters)		$\Delta t < \pm 0.5 \%$	
Accuracy within the rated control supply voltage tolerance		$\Delta t < 0.005 \% / V$	
Accuracy within the temperature range		$\Delta t < 0.06 \% / ^\circ C$	
Star-delta transition time	CT-SDD	fixed 50 ms	
	CT-SAD	adjustable: 20 ms, 30 ms, 40 ms, 50 ms, 60 ms, 80 ms or 100 ms	
Star-delta transition time tolerance	CT-SDD, CT-SAD	± 3 ms	
Indication of operational states			
Control supply voltage / timing	U: green LED	: control supply voltage applied : timing	
Relay status	R: yellow LED	: output relay 1 or 2 energized	
Output circuit			
Kind of output	15-16/18	relay, 1 c/o contact	-
	15-16/18; 25-26/28	-	relay, 2 c/o contacts
	17-18; 17-28	relay, 2 n/o contacts (CT-SDD, CT-SAD)	
Contact material		Cd-free, see data sheet	
Rated operational voltage Ue		250 V	
Minimum switching voltage / minimum switching current		12 V / 100 mA	
Maximum switching voltage / maximum switching current		see load limit curves	

① CT-MFD.2x on request

Control and automation

E 234 electronic timers

Technical data			
Data at Ta = 25 °C and rated values, unless otherwise indicated			
Type		CT-D with 1 c/o contact	CT-D with 2 c/o contacts
Rated operational current I _e (IEC 60947-5-1) for category	AC12 (resistive) at 230 V	6 A	5 A
	AC15 (inductive) at 230 V	3 A	3 A ①
	DC12 (resistive) at 24 V	6 A	5 A
	DC13 (inductive) at 24 V	2 A	3 A ①
Mechanical lifetime		30 x 10 ⁶ switching cycles	
Electrical lifetime	at AC12, 230 V, 4 A	0.1 x 10 ⁶ switching cycles	
Short-circuit proof / maximum fuse rating (IEC/EN 60947-5-1)	n/c contact	6 A fast-acting	
	n/o contact	10 A fast-acting	
General data			
Duty time		100%	
Dimensions (W x H x D)		17.5 mm x 70 mm x 58 mm	17.5 mm x 80 mm x 58 mm
		(0.69 x 2.76 x 2.28 inches)	(0.69 x 3.15 x 2.28 inches)
Weight		see ordering details	
Mounting		DIN rail (EN 60715), snap-mounting without any tool	
Mounting position		any	
Minimum distance to other units horizontal / vertical		no / no	
Protection degree enclosure/terminals		IP50 / IP20	
Electrical connection			
Wire size	fine-strand	with wire end ferrule	2 x 0.5-1.5 mm ² (2 x 20-16 AWG) 1 x 0.5-2.5 mm ² (1 x 20-14 AWG)
		without wire end ferrule	2 x 0.5-1.5 mm ² (2 x 20-16 AWG) 1 x 0.5-2.5 mm ² (1 x 20-14 AWG)
	rigid		2 x 0.5-1.5 mm ² (2 x 20-16 AWG) 1 x 0.5-4 mm ² (1 x 20-12 AWG)
Stripping length		7 mm (0.28 inches)	
Tightening torque		0.5-0.8 Nm	
Environmental data			
Ambient temperature range	operation	-20 ... +60 °C	
	storage	-40 ... +85 °C	
Damp heat (cyclic) (IEC/EN 60068-2-30)		6 x 24 h cycles, 55 °C, 95 % RH	
Vibration (sinusoidal) (IEC/EN 60068-2-6)		20 m/s ² , 10 cycles, 10...150...10 Hz	
Shock (half-sine) (IEC/EN 60068-2-27)		150 m/s ² , 11 ms	

① CT-MFD.2x on request

Technical data			
Data at Ta = 25 °C and rated values, unless otherwise indicated			
Type		CT-D with 1 c/o contact	CT-D with 2 c/o contacts
Isolation data			
Rated impulse withstand voltage U_{imp} between all isolated circuits		4 kV; 1.2/50 μ s	
Pollution category		3	
Overvoltage category		III	
Rated insulation voltage U_i	input circuit / output circuit	300 V	
	output circuit 1 / output circuit 2	not available	300 V
Basic insulation (IEC/EN 61140) input circuit / output circuit		300 V	
Protective separation (IEC/EN 61140, EN 50178)	input circuit / output circuit	250 V	
Power-frequency withstand voltage test (test voltage) between all isolated circuits		2.5 kV; 50 Hz; 60 s	
Standards / Directives			
Standards		IEC/EN 61812-1	
Low Voltage Directive		2014/35/EU	
EMC Directive		2014/30/EU	
RoHS Directive		2011/65/EU	
Electromagnetic compatibility			
Interference immunity		IEC/EN 61000-6-2	
electrostatic discharge (ESD)	IEC/EN 61000-4-2	Level 3 (6 kV / 8 kV)	
radiated, radio-frequency, electromagnetic field	IEC/EN 61000-4-3	Level 3 (10 V/m)	
fast transients (Burst)	IEC/EN 61000-4-4	Level 3 (2 kV / 5 kHz)	
surge	IEC/EN 61000-4-5	Level 4 (2 kV L-L)	
conducted disturbances, induced by radio-frequency fields	IEC/EN 61000-4-6	Level 3 (10 V)	
Interference emission		IEC/EN 61000-6-3	
high-frequency radiated	IEC/CISPR 22, EN 55022	Class B	
high-frequency conducted	IEC/CISPR 22, EN 55022	Class B	

Control and automation

E 234 electronic timers



E 234 CT-MFD



E 234 CT-ERD

	ON-delay
	OFF-delay
	Impulse-ON
	Impulse-OFF
	Flasher starting with ON
	Flasher starting with OFF
	Pulse former
	Pulse generator
	Star-delta change-over

Description

The CT-D range in MDRC design with a width of only 17.5 mm fits into all domestic installation and distribution panels.

The CT-D range represents a link between industry and the installation types. For maximum flexibility in operation, 10 single-function as well as 2 multifunction devices with 7 timing functions are available. The devices offer 4 or 7 time ranges from 0.05 seconds up to 100 hours. Their wide input range allows the use in applications worldwide.

Timing function	Rated control supply voltage	Time ranges	Control input	Output	Bbn	Type	Order code	Price 1 piece	Weight 1 piece
EAN									
Multifunctional ¹⁾	24-240 V AC 24-48 V DC	7 (0.05 s - 100 h)	■	1 c/o		CT-MFD.12	1SVR500020R0000		0.060 (0.132)
Multifunctional ¹⁾	12-240 V AC/DC	7 (0.05 s - 100 h)	■	2 c/o		CT-MFD.21	1SVR500020R1100		0.065 (0.143)
ON-delay			-	1 c/o		CT-ERD.12	1SVR500100R0000		0.060 (0.132)
			-	1 c/o		CT-ERD.22	1SVR500100R0100		0.065 (0.143)
OFF-delay		7 (0.05 s - 100 h)	■	1 c/o		CT-AHD.12	1SVR500110R0000		0.060 (0.132)
			■	2 c/o		CT-AHD.22	1SVR500110R0100		0.065 (0.143)
Impulse-ON	24-240 V AC 24-48 V DC		-			CT-VWD.12	1SVR500130R0000		0.060 (0.132)
Flasher starting with ON			-	1 c/o		CT-EBD.12	1SVR500150R0000		
Pulse generator		2x7 (0.05 s - 100 h)	■			CT-TGD.12 ²⁾	1SVR500160R0000		0.060 (0.132)
			■	2 c/o		CT-TGD.22 ²⁾	1SVR500160R0100		0.065 (0.143)
Star-delta change-over		4 (0.05 s - 10 min)	-	2 n/o		CT-SDD.22 ³⁾	1SVR500211R0100		0.065 (0.143)
			-			CT-SAD.22 ⁴⁾	1SVR500210R0100		

1) Functions: ON-delay, OFF-delay with auxiliary voltage, Impulse-ON, Impulse-OFF with auxiliary voltage, Flasher starting with ON, Flasher starting with OFF, Pulse former

2) ON and OFF times adjustable independently: 2 x 7 time ranges 0.05 s - 100 h

3) Transition time 50 ms fixed

4) Transition time adjustable

■ Control input with voltage-related triggering
- no triggering

Synonyms

used expression	alternative expression(s)	used expression	alternative expression(s)
1 c/o contact	SPDT	voltage-related	wet / non-floating
2 c/o contacts	DPDT	volt-free	dry / floating

Control and automation

T Line twilight switches



T1

Technical features			T1	T1 PLUS
Rated voltage	[V]		110 ÷ 230 AC	
Contact type			1NO	
resistive load cosφ 1	[A]		16	
inductive load cosφ 0.6	[A]		3	
Switching capacity				
incandescent lamps	cosφ 1		max 3600 W	
fluorescent lamps	cosφ 0.8		max 3600 W	
fluorescent - duo./electronic lamps	cosφ 0.9		max 300 W	
LED lamps	cosφ 0.97		max 400 W	
Rated frequency	[Hz]		50/60	
Switching delay				
ON	[s]		30 ±10%	15...120 ±10%
OFF	[s]		40 ±10%	15...120 ±10%
Brightness range	[lx]		2:200	2:40 20:200 200:2000 2000:15000
Protection degree				
twilight switch			IP20	IP20
sensor			IP65	IP65
Operating temperature				
twilight switch	[°C]		-25...+55	
sensor	[°C]		-40...+70	
Storage temperature				
twilight switch	[°C]		-40...+70	
sensor	[°C]		-50...+80	
Power consumption	[VA]		4.5	
Max. switching power	[W]		3500	
Max. terminal cross-section	[mm ²]		2.5	
Terminals			loss-proof screw	
Tightening torque	terminals	[Nm]	0.5	
	sensor screw	[Nm]	0.4	
Installation type			on DIN rail	
Switching status indication/ brightness range			red Led / green Led	
Max wiring length	[m]		100	
Modules	[n°]		1	
Reference standards			EN 60669-1; EN 60669-2-1; EN 60730-1	

Control and automation

T Line twilight switches



T1

T Line modular twilight switches

These twilight switches allow to switch ON and switch OFF lighting devices according to a scheduled level of the ambient light. They are used in combination with an external sensor to detect if the ambient light is higher or lower than the set level . A switching delay prevents them from operating unnecessarily when the light intensity suddenly changes (e.g. lightning, moving vehicles, etc.). The T1 twilight switch 1 channel is preset with a 10 LUX from factory and it is equipped with 2 signalling LEDs that indicate the setpoint value and display the status of the contact . The operating instructions are printed on the side of the product. T1 PLUS switches feature a setpoint that can be adjusted for 4 different scale values (2:40, 20:200, 200:2000, 2000:15000).This makes them ideal for daytime applications where the LUX values are very high.



T1 PLUS

Brightness range	Bbn 8012542	Order details			Price 1	Weight 1 piece	Pack unit
lx	EAN	Type code	Order code	piece	kg	pc.	
2 : 200	955634	T1	2CSM295563R1341		0.076	1	
2 : 15000	957935	T1 PLUS	2CSM295793R1341		0.078	1	

Accessories for T Line modular twilight switches

The external sensor LS-D is supplied in the same package of the switch, but it's also available separately as spare part. The upper part of the external case (with screw locking), made up of thermoplastic material, bears up against ultraviolet rays to guarantee an homogeneous diffusion of the daylight internally. The sensor is also equipped with a cable gland.



LS-D

	Bbn 8012542	Order details			Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg	pc.	
External sensor	957232	LS-D	2CSM295723R1341		0.069	1	

Control and automation

T1 POLE twilight switches



T1 POLE

Technical features		
T1 POLE		
Rated voltage	[V]	110 ÷ 230 AC
Contact type		1NO polarized
resistive load cosφ 1	[A]	16
inductive load cosφ 0.6	[A]	3
Switching capacity		
incandescent lamps	cosφ 1	max 3600 W
fluorescent lamps	cosφ 0.8	max 3600 W
fluorescent - duo./electronic lamps	cosφ 0.9	max 300 W
LED lamps	cosφ 0.97	max 400 W
Rated frequency	[Hz]	50/60
Switching delay		
ON	[s]	30 ± 10%
OFF	[s]	40 ± 10%
Brightness range	[lx]	2:200
Protection degree		IP65
Operating temperature	[°C]	-40...+70
Storage temperature	[°C]	-50...+80
Power consumption	[VA]	4.5
Max. switching power	[W]	3500
Max. terminal cross-section	[mm ²]	2.5
Terminals		loss-proof screw
Tightening torque	[Nm]	0.4
Installation type		pole/wall
Switching status indication/		
brightness range		- / red Led
Reference standards		EN 60669-1; EN 60669-2-1; EN 60730-1

T1 pole mounting twilight switch

The T1 POLE version is designed for installation on the pole/wall, with photocell inputs and integrated cabling including cable gland seals to ensure a high protection degree. Thanks also to the high quality, T1 POLE provides excellent resistance to atmospheric agents and a long service life. T1 POLE is also internally equipped with a preset sensor of 10 LUX. The sensor is extractable from the base and allows an easy and efficient maintenance without needing further wiring. T1 POLE is the ideal solution to manage the external light systems such as the public ones, more precisely, in cases where there is a need of controlling the lighting of public or private roads, gardens, courtyards at the decline of solar radiation during twilight.

Brightness range	Bbn	Order details			Price	Weight	Pack
	8012542				1	1 piece	unit
lx	EAN	Type code	Order code	piece	kg	pc.	
2 : 200	957539	T1 POLE	2CSM295753R1341		0.140	1	

Control and automation

TWA twilight switches



TWA

Technical features

		TWA-1	TWA-2
Rated voltage	[V]	230 ±15% AC	
Contact type		1NO/NC	2 NO/NC
Resistive load cosφ 1	[A]	16	
Inductive load cosφ 0.6	[A]	10	
Max. number of lamps			
Switching capacity			
Incandescent and halogen lamps	[W]	2300	
Compensated (max. 45 μF) lamps	[W]	400	
Non compensated, series compensated lamps	[W]	1000	
Compact fluorescent lamps	[W]	500	
Rated frequency	[Hz]	50/60	
Max. programs per cycle		56	
Operating accuracy		±1.5 sec/24h	
Time base		quartz	
Minimum switching	[min]	1	
Running reserve	[year]	5	
Astronomical time accuracy	[min]	±10	
Protection degree		IP20	
Operating temperature	[°C]	-10...+55	
Storage temperature	[°C]	-20...+60	
Power consumption	[VA]	6	
Max. switching power	[W]	4000	
Min./Max. terminal cross-section			
Flexible	[mm ²]	1 to 6	
Rigid	[mm ²]	1.5 to 10	
Terminals		loss-proof screw	
Tightening torque	[mm ²]	1.2	
Installation type		on DIN rail	
Modules	[n°]	2	
Reference standards		EN 60730-1 EN 60730-2-7	



TWA-1

TWA twilight astronomical switches

The twilight astronomical switches TWA-1 and TWA-2, respectively, in 1 and 2 channels, automatically control lighting circuits depending on the time of sunrise and sunset, greatly increasing energy efficiency.

The programming is in fact based on a mathematical algorithm able to calculate the time of the rising and setting of the sun in a certain location for each day of the year. Once powered the device, simply insert date, time, geographical coordinates and time zone so that it is ready to work. The installation of these devices is particularly useful when using a twilight switch with external sensor is not recommended because it may be subject to malfunctions caused by air pollution, excessive brightness or vandalism. TWA-1 and TWA-2 are also indicated for the control of public lighting, shop windows of shops, neon signs, monuments, facades and illuminated fountains.

Brightness range	Bbn 8012542	Order details		Price 1 piece	Weight 1 piece kg	Pack unit pc.
		EAN	Type code			
1NO/NC	043652	TWA-1	2CSM204365R1341		0.160	1
2NO/NC	043751	TWA-2	2CSM204375R1341		0.160	1

Control and automation

THS modular thermostats



2CSC400719F0001

THS

Technical features		THS-C	THS-W	THS-S
Rated voltage	[V]	230 AC		
Contact type		1 NO/NC		2NO
Contact capacity				
Resistive load $\cos\phi$ 1	[A]	16		
Inductive load $\cos\phi$ 0.6	[A]	3		
Rated frequency	[Hz]	50/60		
Number of temperature setpoints		1 continuously adjustable		2 continuously adjustable
Adjustment range	[°C]	-20...+40	0...+60	0...+10 / +20...+60
Max switching power	[W]	3500		
Differential	[°C]	fixed $\Delta t = 1$		fixed $\Delta t = 2$
Thermal gradient		1 °K / 15 minutes		
Type of operation		ON / OFF fixed differential		
Protection degree		IP20		
Relay ON/OFF indication		LED indicator		
Temperature tolerance	[°C]	± 1		
T limits in operation	[°C]	0 ÷ +50		0 ÷ +70
Storage temperature	[°C]	-10...+65		-10...+70
Installation type		DIN rail		
Case / color		thermoplastic / grey RAL 7035		
Power consumption	[VA]	3		
Terminals		Loss-proof screw		
Max. terminal cross-section	[mm ²]	2.5		
Tightening torque	[Nm]	0.5		
Application type		services / industrial		
Programming		graduated scale with mechanical pointer		



2CSC400719F001

THS-C



2CSC400718F001

THS-S

THS modular thermostats

The THS series modular thermostats are suited for a wide array of refrigeration and heating applications. The THS-C and THS-W models, both with a potential-free switching contact, are ideal for controlling temperature in heating systems, industrial settings or difficult-to-access locations, as well as for temperature regulation in refrigeration systems, refrigerated counters, greenhouses, dryers, etc....

The THS-S model, with two independent potential-free contacts, allows regulation of cooling between +20 and +60 °C and anti-condensation between 0 and +10 °C. The THS-S thermostat is supplied with remote sensor and is ideal for temperature control of electrical cabinets.

Temperature	Bbn 8012542	Order details		Price 1	Weight 1 piece	Pack unit
°C	EAN	Type code	Order code	piece	kg	pc.
-20...+40	511632	THS-C	2CSM251163R1380		0.20	1
0...+60	070832	THS-W	2CSM207083R1380		0.20	1
*+20...+60 / 0...+10	368038	THS-S	2CSM236803R1380		0.17	1

* cooling / anticondensation

Temperature sensors for THS-C and THS-W thermostats

The remote sensors (supplied separately) are used in conjunction with the THS-C and THS-W series thermostats to detect temperature overshoot or undershoot from the programmed setpoint. The THS-1 and THS-4 models work in a temperature range between -30 °C and +130 °C and are respectively 1.5 and 4 meters long.

Lenght	Bbn 8012542	Order details		Price 1	Weight 1 piece	Pack unit
m	EAN	Type code	Order code	piece	kg	pc.
1.5	020332	THS-1	2CSM202033R1380		0.05	1
4	776031	THS-4	2CSM277603R1380		0.12	1

Control and automation

CL logic relays, display system



CL

Technical Data overview

Logic relays

8 or 12 digital inputs
 4 or 6 digital relay outputs
 optionally with 4 or 8 transistor outputs
 128 rungs
 3 contacts as n/o or n/c contacts in series plus 1 coil per rung
 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 compact HMI logic relay
 fully graphic, backlit display module
 12 digital inputs
 4 digital relay outputs
 optionally with 4 transistor outputs
 265 rungs
 4 contacts as n/o or n/c contacts in series plus 1 coil per rung
 optionally with 4 analog inputs (not 100-240 V AC version)
 networking-compatible via CL-NET
 front panel mounting
 expansion for local

Remote display

Remote display up to a distance of 5 m
 Illustration of text and status displays
 Remote adjustment via keypad
 Front panel mounting

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 freely editable text display
 32 markers or auxiliary relays

Further Documentation

(download from the internet: www.abb.com/lowvoltage > Control Products > Electronic Relays and Controls)

Technical catalogue

Electronic Products and Relays 2CDC 110 004 C0205

Manuals

Logic relay manual 1SVC 440 795 M0100
 Remote display manual 1SVC 440 795 M2100
 Display system manual 1SVC 440 795 M1100



CL-LSR



CL-LST

CL 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

Logic relays

Logic relays – 8 inputs, 4 relay outputs									
Rated operational voltage	Display + Keypad	Timer	Expandable	Bbn	Order details		Price 1 piece	Weight 1 piece kg/lb	Pack unit pc.
					EAN	Type code			
24 V AC	■	■				CL-LSR.C12AC1	1SVR440712R0300	0.20/0.44	1
24 V AC		■				CL-LSR.CX12AC1	1SVR440712R0200	0.20/0.44	1
100-240 V AC	■					CL-LSR.12AC2	1SVR440713R0100	0.20/0.44	1
100-240 V AC	■	■				CL-LSR.C12AC2	1SVR440713R0300	0.20/0.44	1
100-240 V AC		■				CL-LSR.CX12AC2	1SVR440713R0200	0.20/0.44	1
12 V DC	■	■				CL-LSR.C12DC1	1SVR440710R0300	0.20/0.44	1
12 V DC		■				CL-LSR.CX12DC1	1SVR440710R0200	0.20/0.44	1
24 V DC	■					CL-LSR.12DC2	1SVR440711R0100	0.20/0.44	1
24 V DC	■	■				CL-LSR.C12DC2	1SVR440711R0300	0.20/0.44	1
24 V DC		■				CL-LSR.CX12DC2	1SVR440711R0200	0.20/0.44	1

Logic relays – 8 inputs, 4 transistor outputs									
Rated operational voltage	Display + Keypad	Timer	Expandable	Bbn	Order details		Price 1 piece	Weight 1 piece kg/lb	Pack unit pc.
					EAN	Type code			
24 V DC	■	■				CL-LST.C12DC2	1SVR440711R1300	0.20/0.44	1
24 V DC		■				CL-LST.CX12DC2	1SVR440711R1200	0.20/0.44	1

Control and automation

CL logic relays, display system



CL-LMR

2CD0C311038FD006



CL-LMT

2CD0C311038FD006



CL-LER

2CD0C311037FD006



CL-LEC

2CD0C311038FD006

Logic relays – 12 inputs, 6 relay outputs

Rated operational voltage	Display + Keypad	Timer	Expandable	Bbn	Order details		Price 1 piece	Weight 1 piece	Pack unit
					EAN	Type code			
24 V AC	■	■	■		CL-LMR.C18AC1	1SVR440722R0300		0.36/0.79	1
24 V AC		■	■		CL-LMR.CX18AC1	1SVR440722R0200		0.36/0.79	1
100-240 V AC	■	■	■		CL-LMR.C18AC2	1SVR440723R0300		0.36/0.79	1
100-240 V AC		■	■		CL-LMR.CX18AC2	1SVR440723R0200		0.36/0.79	1
12 V DC	■	■	■		CL-LMR.C18DC1	1SVR440720R0300		0.36/0.79	1
12 V DC		■	■		CL-LMR.CX18DC1	1SVR440720R0200		0.36/0.79	1
24 V DC	■	■	■		CL-LMR.C18DC2	1SVR440721R0300		0.36/0.79	1
24 V DC		■	■		CL-LMR.CX18DC2	1SVR440721R0200		0.36/0.79	1

Logic relays – 12 inputs, 8 transistor outputs

Rated operational voltage	Display + Keypad	Timer	Expandable	Bbn	Order details		Price 1 piece	Weight 1 piece	Pack unit
					EAN	Type code			
24 V DC	■	■	■		CL-LMT.C20DC2	1SVR440721R1300		0.36/0.79	1
24 V DC		■	■		CL-LMT.CX20DC2	1SVR440721R1200		0.36/0.79	1

Expansion – 2 relays outputs

Rated operational voltage	Bbn	Order details		Price 1 piece	Weight 1 piece	Pack unit
		EAN	Type code			
-		CL-LER.20	1SVR440709R5000		0.07/0.15	1

Expansions – 12 inputs, 6 relay outputs

Rated operational voltage	Bbn	Order details		Price 1 piece	Weight 1 piece	Pack unit
		EAN	Type code			
100-240 V AC		CL-LER.18AC2	1SVR440723R0000		0.26/0.57	1
24 V DC		CL-LER.18DC2	1SVR440721R0000		0.22/0.49	1

Expansion - 12 inputs, 8 transistor outputs

Rated operational voltage	Bbn	Order details		Price 1 piece	Weight 1 piece	Pack unit
		EAN	Type code			
24 V DC		CL-LET.20DC2	1SVR440721R1000		0.21/0.46	1

Coupler unit for remote expansion with a distance of up to 30 m

Rated operational voltage	Bbn	Order details		Price 1 piece	Weight 1 piece	Pack unit
		EAN	Type code			
-		CL-LEC.CI000	1SVR440709R0000		0.07/0.15	1



CL-LAS.PS002

2CDC31102ZF0607



CL-LAS.MD003

2CDC31103F0607



CL-LAS.TK001

2CDC31104F0607



CL-LAS.TK011

2CDC31105F0607

Accessories for logic relays

Software CL-SOFT for programming and control of CL range devices

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Installation CD-ROM for Microsoft Windows™		CL-LAS.PS002	1SVR440799R8000		0.10/0.21	

Memory module for logic relays

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Memory size: 32 kB		CL-LAS.MD003	1SVR440799R7000		0.02/0.04	1

Connecting cable with serial interface to connect PC and logic relay

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length: 2 m		CL-LAS.TK001	1SVR440799R6000		0.10/0.22	1

Connecting cable with USB interface to connect PC and logic relay

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length:		CL-LAS.TK002	1SVR440799R6100			1

Connecting cable for point-to-point connection of remote-display connection module and logic relay

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length: 5 m, adaptable		CL-LAD.TK007	1SVR440899R6600		0.20/0.44	1

Fixing brackets for screw mounting of logic relay, expansion, display base module

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
content: 9 fixing brackets		CL-LAS.FD001	1SVR440799R5000		0.01/0.01	1

Connecting plug CL-LINK for connection of logic relay to expansion

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
CL-LINK		CL-LAS.TK011	1SVR440799R5100		0.10/0.22	1

Control and automation

CL logic relays, display system



CL-LAS.SD..

2CDC310101F0607



CL-LDC.S..

2CDC310101F0607



CL-LDD.K

2CDC31028F0606



CL-LDC.LN..

2CDC31031F0606

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

Rated input voltage	Rated output voltage/current	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
		EAN	Type code	Order code			
100-240 V AC	24 V DC		CL-LAS.TD001	1SVR440793R0000		0.19/0.43	1

Primary switch mode power supplies

Rated input voltage	Rated output voltage/current	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
		EAN	Type code	Order code			
100-240 V AC	24 V DC / 0.35 A 12 V DC / 20 mA		CL-LAS.SD001	1SVR440703R0000		0.10/0.22	1
100-240 V AC	24 V DC / 1.25 A		CL-LAS.SD002	1SVR440713R0000		0.20/0.44	1

Remote display connection modules to displace the display from the logic relay, incl. connecting cable CL-LAD.TK007, 5 m, length adaptable

Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code			
24 V DC		CL-LDC.SDC2	1SVR440841R0000		0.16/0.36	1
100-240 V AC		CL-LDC.SAC2	1SVR440843R0000		0.16/0.36	1

Display system

Graphic Display modules 132 x 64 pixel

Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code			
without keyboard		CL-LDD.XK	1SVR440839R4500		0.14/0.30	1
with keyboard		CL-LDD.K	1SVR440839R4400		0.13/0.29	1

Display base modules - CPU / power supply

Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code			
24 V DC		CL-LDC.LDC2	1SVR440821R0000		0.16/0.36	1
100-240 V AC		CL-LDC.LAC2	1SVR440823R0000		0.16/0.36	1

Display base modules - CPU / power supply, networking-compatible (CL-NET)

Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code			
24 V DC		CL-LDC.LNDC2	1SVR440821R1000		0.17/0.38	1
100-240 V AC		CL-LDC.LNAC2	1SVR440823R1000		0.17/0.38	1

Display I/O modules - 8 inputs, 4 relay outputs

Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code			
100-240 V AC		CL-LDR.16AC2	1SVR440853R0000		0.17/0.38	1
24 V DC		CL-LDR.16DC2	1SVR440851R0000		0.17/0.38	1



CL-LDR

2CDD3103RF0006

Display I/O modules - 8 inputs, 4 relay outputs, 1 analog output						
Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
24 V DC		CL-LDR.17DC2	1SVR440851R2000		0.17/0.38	1

Display I/O module - 8 inputs, 4 transistor outputs						
Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
24 V DC		CL-LDT.16DC2	1SVR440851R1000		0.14/0.30	1

Display I/O module - 8 inputs, 4 transistor outputs, 1 analog output						
Rated operational voltage	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
24 V DC		CL-LDT.17DC2	1SVR440851R3000		0.14/0.30	1



CL-LAD.MD004

2CDD31018F0007

Accessories for display system

Memory module for display base modules						
Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Memory size: 256 kB		CL-LAD.MD004	1SVR440899R7000		0.02/0.03	1



CL-LAD.TK009

2CDD31021F0007

Connecting cable with serial interface to connect PC and display base module						
Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length: 2 m		CL-LAD.TK001	1SVR440899R6000		0.11/0.23	1

Connecting cable with USB interface to connect PC and display base module						
Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length:		CL-LAD.TK011	1SVR440899R6700			1

Network cable (CL-NET) to connect 2 display base modules						
Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length: 0.3 m		CL-LAD.TK002	1SVR440899R6100		0.05/0.12	1
Length: 0.8 m		CL-LAD.TK003	1SVR440899R6200		0.07/0.14	1
Length: 1.5 m		CL-LAD.TK004	1SVR440899R6300		0.08/0.18	1

Connecting cable for point-to-point connection of remote display connection modules and display base module						
Description	Bbn	Order details		Price 1	Weight 1 piece	Pack unit
	EAN	Type code	Order code	piece	kg/lb	pc.
Length: 5 m, adaptable		CL-LAD.TK005	1SVR440899R6400		0.20/0.44	1

Control and automation

CL logic relays, display system

Connecting cable for point-to-point connection of 2 display base modules, length adaptable						
Description	Bbn	Order details		Price	Weight	Pack
		Type code	Order code	1	1 piece	unit
	EAN			piece	kg/lb	pc.
Length: 5 m		CL-LAD.TK006	1SVR440899R6500		0.12/0.26	1

Termination resistor						
Description	Bbn	Order details		Price	Weight	Pack
		Type code	Order code	1	1 piece	unit
	EAN			piece	kg/lb	pc.
content: 2 pieces		CL-LAD.TK009	1SVR440899R6900		0.01/0.02	1

Protective covers, transparent						
Description	Bbn	Order details		Price	Weight	Pack
		Type code	Order code	1	1 piece	unit
	EAN			piece	kg/lb	pc.
for harsh environmental conditions and application in the food industry		CL-LAD.FD001	1SVR440899R1000		0.03/0.07	1
sealable		CL-LAD.FD011	1SVR440899R2000		0.03/0.07	1

Assembly tool for mounting of display modules						
Description	Bbn	Order details		Price	Weight	Pack
		Type code	Order code	1	1 piece	unit
	EAN			piece	kg/lb	pc.
-		CL-LAD.FD002	1SVR440899R3000			1

Control and automation

E 450 priority switches



E 450

2CSC400457F0201

Technical characteristics		
	E 451-5.7	E 452-5.7
Operating coil		
Range of rated current equivalent to	6.7 ... 39 A correlates 1.5 ... 9 kW at 230 V, 4.6 ... 27 kW at 230/400 V	
Threshold current	3.1 ... 5.3 A	
OFF delay (max.)	0 main half waves	2 main half waves
Max. continuous current	43 A	
Therm. continuous capacity at 40 °C/104 °F	5 W	
Contact assembly		
Control contact	1 NC contact	
Rated contact current at 250 V	1 A	
Contact material	solid silver	
Max. switching voltage	400 V	
Max. switching capacity	230 VA	
Max. switched current	1 A	
Max. inrush current peak	5 A	
Electr. service life	> 10 ⁵ operations	
Mechanical service life	app. 2 x 10 ⁶ operations	
Max. electrical switching rate	app. 1800 operations/hour	
ON duration	100 %	
Ambient temperature	- 20 °C/- 4 °F to + 40 °C/104 °F	
Response time	10 ... 20 ms	
Release time	5 ... 20 ms	≥ 20 ms
Test voltage contact/coil	2.5 kV	
Clearance and creepage distance	C/250 V AC cording to IEC 669-1-23	
Protection degree	IP 40	
Protection against electric shock	according to DIN VDE 0106 Part 100 (BGV A2)	
Terminal contact	series coil up to 16 mm ² , control contact up to 2.5 mm ²	

E 450 priority switches

The priority switch is used in wiring systems where existing lead cross sections or the size of the power supply service box do not allow for simultaneous operation of two powerful loads (e.g. storage heating and flow-type heater).

The priority switch disconnects the long-term load (storage heating) for as long as the short-term consumer (flow-type heater) is switched on.

The coil of the priority switch is connected in series to the short-term load. When this load is switched on, the NC contact of the priority switch disconnects e.g. the heating system contactor.

For pneumatically controlled flow-type heaters							
Rated current range	Power loss W	Bbn 4016779 EAN 41590 3	Order details		Price 1 piece	Weight 1 piece kg	Pack unit pc.
			Type code	Order code			
6,7 ... 39 A	2.4	41590 3	E 451- 5.7 A	2CDE160000R0901		0.1	10

For electronically controlled flow-type heaters							
Rated current range	Power loss W	Bbn 4016779 EAN 20950 2	Order details		Price 1 piece	Weight 1 piece kg	Pack unit pc.
			Type code	Order code			
6.7 ... 39 A	2.4	20950 2	E 452-5.7 A	2CDE160010R0901		0.1	10

Control and automation

RAL overload relays



RAL

Technical characteristics		RAL3	RAL6
Rated voltage Un	[V]	230 AC	
Rated current In	[A]	18.3	27.5
Rated contact capacity In	[A]	12 cosφ=1; 4 cosφ=0.8	
Rated frequency	[Hz]	50	
Adjustment ranges	[A]	0 ...18.3	0...27.5
Power consumption	[W]	10	
Modules	[n°]	2	
Intervention delay		instantaneous	

RAL overload relays

Installed downstream of the main circuit-breaker in a single-phase system, they constantly compare the actual power consumption to the preset threshold. An acoustic alarm alerts that some appliances must be switched off to avoid tripping the main circuit-breaker whenever the preset threshold is exceeded. The device calibration is 3 kW.

RAL built in relay output contact allows the following functions to be implemented:

- remote signalling (acoustic or lighting)
 - opening a divisional circuit-breaker to disable a non essential electrical appliance.
- Function b) allows one or more appliances to be automatically switched off in order to keep the power consumption within the preset limit and avoid unwanted tripping of the current-limiting device installed outside the home (e.g. in the basement). RAL must be reset manually.

Version	Bbn 8012542	Order details		Price 1	Weight 1 piece	Pack unit
		EAN	Type code			
0/3	400509	RAL 3		2CSM111200R1301	0.200	1
0/6	400608	RAL 6		2CSM121200R1301	0.200	1

Control and automation

LSS1/2 load shedding switch



LSS1/2

Technical characteristics		
Rated voltage Un	[V]	230 AC
Rated capacity In	[A]	90
Rated contact capacity In NPL1 and NPL2	[A]	16 each (terminals 12 and 14)
Rated frequency	[Hz]	50/60
Regulating thresholds	[A]	5...30 10...60 15...90
Load reinsertion delay		5-7 min. (NPL1); 4-5, 50 min. (NPL2)
Load disinsertion delay		about 2 sec.
Indicators		1 green LED = supply voltage available 2 red LEDs = loads switched off
Load OFF remote signalling	[A]	1 (terminals 11 and 13)
Terminals	Primary load	35 mm ²
	Non priority loads	10 mm ²
Power consumption	[W]	5
Modules	[n°]	5

LSS1/2 load shedding switch

Installed downstream of the main circuit-breaker, it compares the actual power consumption of the system to a preset maximum permitted value, and prevents tripping of the main circuit-breaker by sequentially switching off a maximum of two non-priority loads (NPL1 and NPL2) when the preset threshold is exceeded. A green LED indicates the presence of the supply voltage, and two red LEDs indicate the load OFF conditions. At preset time intervals, the device automatically attempts to reconnect the previously disabled loads.

Note: In unbalanced three-phase systems same function of LSS1/2 can be implemented via DMTME multimeters. Digital outputs of the multimeter can be set to trip with an user defined delay to switch off - by means of external contactors - non priority loads of arbitrary consumption. See for details in Chapter 7 of Electrical installation solutions for buildings - Technical details.

Bbn	Order details		Price	Weight	Pack
8012542			1	1 piece	unit
EAN	Type code	Order code	piece	kg	pc.
274407	LSS1/2	2CSM112500R1311		0.400	1

Control and automation

E 235 mains disconnection relays



E 235

Technical features	
Short circuit rupturing capacity	16 A/230 AC
Rated frequency	50/60 Hz
Range of control voltage	0.9 to 1.1 Un
Filament lamps	2300 W
Fluorescent lamps:	
twin lamp circuit	100 W
shunt compensated	56 W
electronic ballast	max. 36 W, dependent on manufacturer
Inductive load $\cos\varphi$ 0.6	6 A
Max. switching capacity ($\cos\varphi$ 0.5)	3500 VA
Intrinsic consumption ca.	1 W
Control voltage	5 V a.c.
Adjustable making capacity	2 - 15 VA
Breaking capacity	0.66 x making capacity
ON delay	50 ms
OFF delay	ca. 3 sec.
Contact assembly	1 NO contact
Service life at rated load	> 100000 switching cycles
Ambient temperature	- 10 °C/14 °F to +45 °C/113 °F
Max terminal cross-section	2.5 mm ²



E 235-NFS

2CDE100466F0201



E 235-GLE

2CDE100500R1711

E 235 Mains disconnection relay

Application and method of operation

According to building biologists, electrical interference fields emitted from live cables can impair well-being when the human organism is exposed to them for longer periods, e.g. in the bedroom. The E 235 demand switch automatically cuts off the mains voltage of an electric circuit when the last consumer in that circuit has been switched off. When the first consumer is switched on, the device switches the mains voltage back on with almost no delay. A low voltage of approx. 3 V is used to monitor whether consumers are switched on. As alternating voltage is used for this, it is virtually certain that even small consumer units with a capacitor and transformer power pack - e.g. charging stations for rechargeable devices, standard lamps, etc. - will be reliably detected and switched. Interference fields emitted by the monitoring voltage are so small that they cannot be registered. The mains is switched on when the consumer load exceeds the making capacity set in the demand switch. It is cut off when the consumer load falls to 2/3 of the set making capacity. The ON state is indicated by the integrated LED. You can choose between „Automatic monitoring“ and „Permanent ON“ using a rotary switch on the E 235.

Accessories

The E 235-GLA base load adapter is also available, and is used for switching the demand switch on manually. The adapter is plugged into a socket that is monitored by the demand switch. The toggle switch switches the base load, which is used to switch on the demand switch.

Some consumers require an initial voltage equal to the mains voltage in order to be switched on. These include brightness controllers, and fluorescent and energy-saving lamps. The PTC base load element E 235-GLE and base load adapter E 235-GLA are available for ensuring reliable switch-on of the mains field relay. The indicator light on the adapter displays the switched on mains voltage, irrespective of the position of the toggle switch. It tells you whether the mains voltage has been cut off or whether other consumers are still switched on. If you wish to connect a dimmer to the output of the demand switch, this must feature an additional switching contact. A base load element is also switched in parallel.

Description	Bbn 4016779	Order details		Price 1	Weight 1 piece	Pack unit
		EAN	Type code			
mains disconnection relay	571821	E 235-NFS	2CDE110000R1701		0.065	1
base load element	571814	E 235-GLE	2CDE100500R1711		0.001	1
base load adapter	571869	E 235-GLA	2CDE100510R1711		0.070	1

Control and automation

LEE 230 extractable power failure signalling lamp



LEE-230

2CSM111000R1361

Technical characteristics		
2P 10 A plug		distance between pins 19 mm, pin ø 4 mm
Supply	[V]	230 AC 50/60Hz
Recharge time	[h]	24
Endurance	[h]	3
Lighting level	[mcd]	3000
Operating temperature	[°C]	0...+45
Min. life cycle		5 years (battery)

Additional technical features

LEE-230 lamp automatically switches on when the voltage fails; the built-in rechargeable battery guarantees the supply.

It is particularly useful thanks to its construction and functional characteristics:

- it can be extracted from the socket and used as a torch with ON-OFF button on its frontal side
- when necessary it can work with standard sockets
- it can be moved when it is needed
- it has a long operation endurance, up to three hours
- it is ready to use, it does not require installation
- with a screw (ø 3.5 mm, L 16 mm) it is possible to fix it preventing the extraction from the M1173 ABB sockets with central hole
- the projecting part of the Schuko profile is very small (8 mm).
- The two LEDs placed on the frontal side of the lamp indicate its operation condition:
 - the red LED indicates the recharge activity and that, in the case of a network voltage back-out, the lamp will remain off
 - the green LED indicates the recharge activity and that, in the case of a network voltage black-out, the lamp will switch on (it will automatically switch off when the voltage returns).

By pushing the frontal pushbutton it is possible to change the status; if you do not use the lamp for a prolonged time it is suggested to set the first condition in order to preserve the battery life.

LEE 230 extractable power failure signalling lamp

The LEE 230 lamp is an automatic electronic lamp that can be installed in any modular socket or wiring accessory socket conforming to the German VDE Schuko standard (e.g. ABB M1173 or M1175), to the Italian standard P11 10A, or to the 10/16 A Italian dual standard.

The device functions both as a power failure signalling lamp and as a lighting device, to be used for example during maintenance activities or when seeking faults in the panel.

Pack	Bbn 8012542	Order details		Price 1	Weight 1 piece	Pack unit
		Type code	Order code			
	EAN			piece	kg	pc.
Blister	507406	LEE-230	2CSM111000R1361		0.100	1