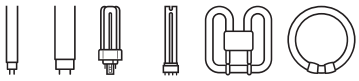
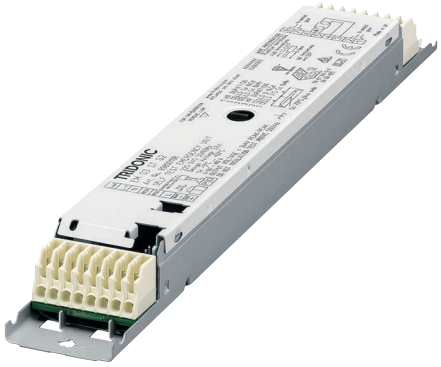


EM SELFTEST G2, 220 – 240 V

SELFTEST version



Product description

- Emergency lighting supply unit with self-test function
- For linear and compact fluorescent lamps
- Low-profile casing (21 x 30 mm cross-section)
- 5-year guarantee

Properties

- Non maintained operation
- Self-test as per IEC 62034
- 1 or 3 h rated duration
- Operating time selectable with plug (duration link)
- Compatible with all electronic ballasts
- 5-pole technology: 4-pole lamp changeover and delayed power switching for the ballast
- High-frequency ac operation of the lamp
- Power control technology ensures maximum emergency ballast lumen factors (EBLF) for all lamps
- Gentle on the lamp thanks to preheated lamp start and permanent cathode heating in emergency mode
- 5,5 min. boost start for rapid heating of the lamp, more light in the startup phase and optimum lamp life
- Standard and high ballast lumen factor for 1-hour types
- Electronic multi-level charge system
- „Rest mode“ function
- Automatic commissioning
- Automatic function and duration test at time of low risk
- Two-colour status display LED
- Deep discharge protection
- Very low energy consumption from the battery after activation of the deep discharge protection
- Short-circuit-proof battery connection
- Polarity reversal protection for battery

Self-test:

- Status of the battery
- Status of the lamp
- Charge condition
- Function test
- Duration test

Batteries

- High-temperature cells
- NiCd or NiMH batteries
- D- Cs- or LA cells
- 4-year design life
- 1-year guarantee
- For battery compatibility refer to chapter „Ballast-Lumen-Factor (BLF)“

→

Standards, page 13

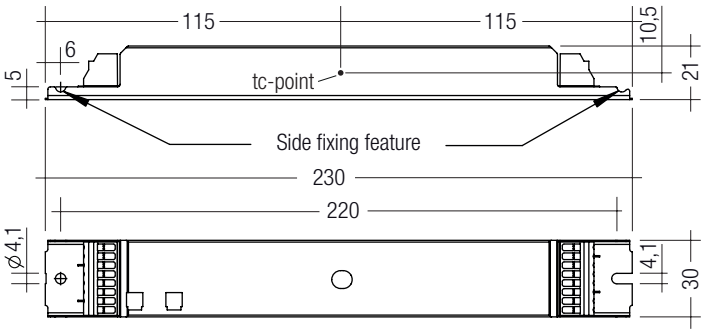
For wiring diagrams and installation examples, page 16

EM SELFTEST G2, 220 – 240 V

SELFTEST version

Technical data

Rated supply voltage	220 – 240 V
Mains frequency	50 / 60 Hz
Mains current	60 mA
Rated power	< 10 W
Overvoltage protection	320 V (for 1 h)
Maximum operating voltage (U-OUT of the ECG)	460 V
Battery charging time 1 h	10 h
Battery charging time 3 h	15 h
Discharge current, Standard BLF	1 A
Discharge current, High Output BLF	2.2 A
Time to light	1.2 s from detection of emergency event
Leakage current (PE)	0.5 mA
Ambient temperature ta	-5 … +60 °C
Max. casing temperature tc	+70 °C
Mains voltage changeover threshold	according to EN 60598-2-22
Min. lamp starting temperature (emergency operation)	-5 °C
Type of protection	IP20
Rest mode max. number of emergency units	100
Rest mode max. wiring distance	1,000 m



Note: Control gear supplied with duration link in 3 hours position. Remove duration link for 1 hour duration. Duration link must be set before battery and mains connection.

Ordering data

Type	Article number	Battery type	Number of cells	Packaging, carton	Packaging, pallet	Weight per pc.
Rated operating time 1/3 h, Standard BLF						
EM 03 ST G2	**89800198**	NiCd	3	10 pc(s).	700 pc(s).	0.156 kg
EM 04 ST G2	**89800201**	NiCd	4	10 pc(s).	700 pc(s).	0.156 kg
EM 05 ST G2	**89800204**	NiCd	5	10 pc(s).	700 pc(s).	0.156 kg
EM 06 ST G2	**89800207**	NiCd	6	10 pc(s).	700 pc(s).	0.156 kg
EM 03 ST NiMH G2	**89800336**	NiMH	3	10 pc(s).	700 pc(s).	0.156 kg
EM 04 ST NiMH G2	**89800337**	NiMH	4	10 pc(s).	700 pc(s).	0.156 kg
EM 05 ST NiMH G2	**89800338**	NiMH	5	10 pc(s).	700 pc(s).	0.156 kg
EM 06 ST NiMH G2	**89800339**	NiMH	6	10 pc(s).	700 pc(s).	0.156 kg
Rated operating time 1 h, High Output						
EM 13 HO ST G2	**89800229**	NiCd	3	10 pc(s).	700 pc(s).	0.156 kg
EM 14 HO ST G2	**89800232**	NiCd	4	10 pc(s).	700 pc(s).	0.156 kg
EM 15 HO ST G2	**89800235**	NiCd	5	10 pc(s).	700 pc(s).	0.156 kg
EM 16 HO ST G2	**89800238**	NiCd	6	10 pc(s).	700 pc(s).	0.156 kg
EM 13 HO ST NiMH G2	**89800340**	NiMH	3	10 pc(s).	700 pc(s).	0.156 kg
EM 14 HO ST NiMH G2	**89800341**	NiMH	4	10 pc(s).	700 pc(s).	0.156 kg
EM 15 HO ST NiMH G2	**89800342**	NiMH	5	10 pc(s).	700 pc(s).	0.156 kg
EM 16 HO ST NiMH G2	**89800343**	NiMH	6	10 pc(s).	700 pc(s).	0.156 kg

Specific technical data

Type	Charge current / Battery charging time		
	Initial charge / duration	Fast recharge / duration	Trickle charge, continuously
Rated operating time 1 h, Standard BLF			
EM 03 ST G2	130 mA / 20 h	210 mA / 10 h	50 mA
EM 04 ST G2	130 mA / 20 h	210 mA / 10 h	50 mA
EM 05 ST G2	130 mA / 20 h	210 mA / 10 h	50 mA
EM 06 ST G2	130 mA / 20 h	210 mA / 10 h	50 mA
EM 03 ST NiMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.
EM 04 ST NiMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.
EM 05 ST NiMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.
EM 06 ST NiMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.
Rated operating time 3 h, Standard BLF			
EM 03 ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 04 ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 05 ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 06 ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 03 ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
EM 04 ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
EM 05 ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
EM 06 ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
Rated operating time 1 h, High Output			
EM 13 HO ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 14 HO ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 15 HO ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 16 HO ST G2	300 mA / 20 h	330 mA / 15 h	130 mA
EM 13 HO ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
EM 14 HO ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
EM 15 HO ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.
EM 16 HO ST NiMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.

RoHS

ACCES-SORIES

Test switch EM3

Product description

- For connection to the emergency lighting unit
- For checking the device function
- Plug connection

Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pcs.
Test switch EM 3	**89899956**	25 pc(s).	200 pc(s).	0.013 kg

ACCES-SORIES

Status indication bi-colour LED

Product description

- Two-colour status display LED
- Green: system OK, red: fault
- Plug connection

Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pcs.
LED EM bi-colour, 1.0 m CON	**89800273**	25 pc(s).	200 pc(s).	0.015 kg
LED EM bi-colour, high brightness HO 1.0 m CON	**89800275**	25 pc(s).	200 pc(s).	0.015 kg
LED EM bi-colour, 0.6 m CON	**89800474**	25 pc(s).	200 pc(s).	0.005 kg
LED EM bi-colour, high brightness HO 0.6 m CON	**89800475**	25 pc(s).	200 pc(s).	0.005 kg
LED EM bi-colour, 0.3 m CON	**89800274**	25 pc(s).	200 pc(s).	0.005 kg
LED EM bi-colour, high brightness HO 0.3 m CON	**89800276**	25 pc(s).	200 pc(s).	0.005 kg

Ballast lumen factor (BLF) in %

EM SELFTEST G2 for linear lamps, 3 or 1 h

	Duration	1/3 h Standard BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
	Type	EM 03 ST G2	EM 04 ST G2	EM 05 ST G2	EM 06 ST G2	EM 03 ST NiMH G2	EM 04 ST NiMH G2	EM 05 ST NiMH G2	EM 06 ST NiMH G2
	Art. no.	89800198	89800201	89800204	89800207	89800336	89800337	89800338	89800339
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time							
T5	6 W								
	8 W	32.4	40.0			32.4	40.0		
	13 W								
ECO T5	13 W		22.0				22.0		
	20 W		15.4				15.4		
	25 W				16.8				16.8
	32 W				13.4				13.4
	45 W				8.1				8.1
	50 W				5.8				5.8
	73 W				4.1				4.1
T5 FH	14 W		24.0				24.0		
	21 W			18.0				18.0	
	28 W				15.0				15.0
	35 W				11.0				11.0
T5 FQ	24 W		15.6				15.6		
	39 W				10.0				10.0
	49 W				6.7				6.7
	54 W				5.3				5.3
	80 W				4.2				4.2
T8	15 W		17.0				17.0		
	18 W		18.0				18.0		
	30 W								
	36 W		11.0				11.0		
	38 W								
	58 W			7.5				7.5	
	70 W				4.5				4.5

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries							
NiCd 4 Ah D cells	Stick	3	**Accu-NiCd 3A**	**89895960**	3 h							
	Side by side	3	**Accu-NiCd 3B 55**	**89800384**	3 h							
	Stick	4	**Accu-NiCd 4A 55**	**89800089**		3 h						
	Side by side	4	**Accu-NiCd 4B 55**	**89800385**		3 h						
	Stick + Stick	2 + 2	**Accu-NiCd 4C**	**89895978**		3 h						
	Stick	5	**Accu-NiCd 5A**	**89895973**			3 h					
	Stick + Stick	2 + 3	**Accu-NiCd 5C 55**	**89800090**			3 h					
	Stick + Stick	3 + 3	**Accu-NiCd 6C 55**	**89800388**				3 h				
NiMH 2 Ah Cs cells	Stick	3	**Accu-NiMH C 3A**	**89899744**	1 h				1 h			
	Stick	4	**Accu-NiMH C 4A**	**89899700**		1 h				1 h		
	Stick	5	**Accu-NiMH C 5A**	**89899703**			1 h				1 h	
	Stick	6	**Accu-NiMH C 6A**	**89899706**				1 h				1 h
	Stick + Stick	3 + 3	**Accu-NiMH C 6C**	**89899707**				1 h				1 h
NiMH 4 Ah LA cells	Stick	3	**Accu-NiMH 4Ah 3A CON**	**89800441**					3 h			
	Stick	4	**Accu-NiMH 4Ah 4A CON**	**89800442**						3 h		
	Stick + Stick	2 + 2	**Accu-NiMH 4Ah 4C CON**	**89800438**						3 h		
	Stick + Stick	2 + 3	**Accu-NiMH 4Ah 5C CON**	**89800439**							3 h	
	Stick + Stick	3 + 3	**Accu-NiMH 4Ah 6C CON**	**89800440**								3 h

Ballast lumen factor (BLF) in %

EM SELFTEST G2 for compact lamps, 3 or 1 h

	Duration	1/3 h Standard BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
	Type	EM 03 ST G2	EM 04 ST G2	EM 05 ST G2	EM 06 ST G2	EM 03 ST NiMH G2	EM 04 ST NiMH G2	EM 05 ST NiMH G2	EM 06 ST NiMH G2
	Article no.	89800198	89800201	89800204	89800207	89800336	89800337	89800338	89800339
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time							
TC-DD	10 W								
	16 W		23.6				23.6		
	21 W		15.4				15.4		
	28 W		13.7				13.7		
	38 W				10.3				10.3
	55 W				5.9				5.9
TC-SEL	7 W								
	9 W	18.3	27.6			18.3	27.6		
	11 W	17.4	31.0			17.4	31.0		
TC-DEL	10 W								
	13 W	18.6	25.6			18.6	25.6		
	18 W		17.0				17.0		
	26 W		14.4				14.4		
TC-TEL[1]	13 W	17.0 / 10.9	25.2 / 17.1			17.0 / 10.9	25.2 / 17.1		
	18 W		17.5 / 14.1	17.8 / 21.0			17.5 / 14.1	17.8 / 21.0	
	26 W[2]		11.5 / 10.0	13.0	14.0		11.5 / 10.0	13.0	14.0
	32 W[2]			14.0 / 5.6	x / 8.0			14.0 / 5.6	x / 8.0
	42 W				7.4 / 7.3				7.4 / 7.3
	57 W								
T5c	22 W		16.9				16.9		
	40 W				7.4				7.4
	55 W				5.1				5.1
TC-F	18 W		18.0				18.0		
	24 W			21.0				21.0	
	36 W			13.0				13.0	
TC-L	18 W		17.4				17.4		
	24 W			17.0				17.0	
	36 W			12.0				12.0	
	40 W			8.8				8.8	
	55 W				5.4				5.4
TC-R	14 W		20.0				20.0		
	17 W		15.0				15.0		

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries							
NiCd 4 Ah D cells	Stick	3	**Accu-NiCd 3A**	**89895960**	3 h							
	Side by side	3	**Accu-NiCd 3B 55**	**89800384**	3 h							
	Stick	4	**Accu-NiCd 4A 55**	**89800089**		3 h						
	Side by side	4	**Accu-NiCd 4B 55**	**89800385**		3 h						
	Stick + Stick	2 + 2	**Accu-NiCd 4C**	**89895978**		3 h						
	Stick	5	**Accu-NiCd 5A**	**89895973**			3 h					
	Stick + Stick	2 + 3	**Accu-NiCd 5C 55**	**89800090**			3 h					
	Stick + Stick	3 + 3	**Accu-NiCd 6C 55**	**89800388**				3 h				
NiMH 2 Ah Cs cells	Stick	3	**Accu-NiMH C 3A**	**89899744**	1 h				1 h			
	Stick	4	**Accu-NiMH C 4A**	**89899700**		1 h				1 h		
	Stick	5	**Accu-NiMH C 5A**	**89899703**			1 h				1 h	
	Stick	6	**Accu-NiMH C 6A**	**89899706**				1 h				1 h
	Stick + Stick	3 + 3	**Accu-NiMH C 6C**	**89899707**				1 h				1 h
NiMH 4 Ah LA cells	Stick	3	**Accu-NiMH 4Ah 3A CON**	**89800441**					3 h			
	Stick	4	**Accu-NiMH 4Ah 4A CON**	**89800442**						3 h		
	Stick + Stick	2 + 2	**Accu-NiMH 4Ah 4C CON**	**89800438**						3 h		
	Stick + Stick	2 + 3	**Accu-NiMH 4Ah 5C CON**	**89800439**							3 h	
	Stick + Stick	3 + 3	**Accu-NiMH 4Ah 6C CON**	**89800440**								3 h

[1] The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 14 / 9,5).

[2] For best performance of 26W and 32W TC lamps, and especially amalgam filled lamps, we recommend the use of EM 06 ST G2 resp. EM 16 HO ST G2.

Ballast lumen factor (BLF) in %

EM SELFTEST G2 for linear lamps, 1 h High Output

	Duration	1 h High Output BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
	Type	EM 13 HO ST G2	EM 14 HO ST G2	EM 15 HO ST G2	EM 16 HO ST G2	EM 13 HO ST NiMH G2	EM 14 HO ST NiMH G2	EM 15 HO ST NiMH G2	EM 16 HO ST NiMH G2
	Art. no.	89800229	89800232	89800235	89800238	89800340	89800341	89800342	89800343
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time							
T5	6 W								
	8 W	58.0	68.0			58.0	68.0		
	13 W								
ECO T5	13 W		47.0				47.0		
	20 W		33.0				33.0		
	25 W				41.0				41.0
	32 W				32.7				32.7
	45 W				31.6				31.6
	50 W				22.6				22.6
	73 W				16.0				16.0
T5 FH	14 W		46.0				46.0		
	21 W			41.0				41.0	
	28 W				39.0				39.0
	35 W				28.6				28.6
T5 FQ	24 W		33.4				33.4		
	39 W				34.3				34.3
	49 W				23.0				23.0
	54 W				18.2				18.2
	80 W				14.4				14.4
T8	15 W		37.6				37.6		
	18 W		39.8				39.8		
	30 W								
	36 W		21.0				21.0		
	38 W								
	58 W			18.0				18.0	
	70 W								

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries							
NiCd 4 Ah D cells	Stick	3	**Accu-NiCd 3A**	**89895960**	1 h							
	Stick	4	**Accu-NiCd 4A 55**	**89800089**		1 h						
	Side by side	4	**Accu-NiCd 4B**	**89895977**		1 h						
	Stick + Stick	2 + 2	**Accu-NiCd 4C**	**89895978**		1 h						
	Stick	5	**Accu-NiCd 5A**	**89895973**			1 h					
	Stick + Stick	2 + 3	**Accu-NiCd 5C 55**	**89800090**			1 h					
	Stick + Stick	3 + 3	**Accu-NiCd 6C**	**89895963**				1 h				
NiMH 4 Ah LA cells	Stick	3	**Accu-NiMH 4Ah 3A CON**	**89800441**					1 h			
	Stick	4	**Accu-NiMH 4Ah 4A CON**	**89800442**						1 h		
	Stick + Stick	2 + 2	**Accu-NiMH 4Ah 4C CON**	**89800438**						1 h		
	Stick + Stick	2 + 3	**Accu-NiMH 4Ah 5C CON**	**89800439**							1 h	
	Stick + Stick	3 + 3	**Accu-NiMH 4Ah 6C CON**	**89800440**								1 h

Ballast lumen factor (BLF) in %

EM SELFTEST G2 for compact lamps, 1 h High Output

	Duration	1 h High Output BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
	Type	EM 13 HO ST G2	EM 14 HO ST G2	EM 15 HO ST G2	EM 16 HO ST G2	EM 13 HO ST NiMH G2	EM 14 HO ST NiMH G2	EM 15 HO ST NiMH G2	EM 16 HO ST NiMH G2
	Article no.	89800229	89800232	89800235	89800238	89800340	89800341	89800342	89800343
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time							
TC-DD	10 W								
	16 W								
	21 W								
	28 W								
	38 W								
	55 W								
TC-SEL	7 W								
	9 W	46.3	42.8			46.3	42.8		
	11 W	44.0	48.0			44.0	48.0		
TC-DEL	10 W								
	13 W	43.0	53.0			43.0	53.0		
	18 W		39.3				39.3		
	26 W		29.8				29.8		
TC-TEL[1]	13 W	39.3 / 38.0	52.2 / 48.0			39.3 / 38.0	52.2 / 48.0		
	18 W		37.3 / 35.3				37.3 / 35.3		
	26 W[2]		28.0 / 25.0				28.0 / 25.0		
	32 W[2]			28.5 / 9.1				28.5 / 9.1	
	42 W			15.0 / 18.0				15.0 / 18.0	
	57 W								
T5c	22 W		36.2				36.2		
	40 W				25.4				25.4
	55 W				17.5				17.5
TC-F	18 W		31.0				31.0		
	24 W			40.3				40.3	
	36 W			25.0				25.0	
TC-L	18 W		33.0				33.0		
	24 W			37.4				37.4	
	36 W			30.6				30.6	
	40 W			22.5				22.5	
	55 W								
TC-R	14 W		52.7				52.7		
	17 W		39.5				39.5		

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries							
NiCd 4 Ah D cells	Stick	3	**Accu-NiCd 3A**	**89895960**	1 h							
	Stick	4	**Accu-NiCd 4A 55**	**89800089**		1 h						
	Side by side	4	**Accu-NiCd 4B**	**89895977**		1 h						
	Stick + Stick	2 + 2	**Accu-NiCd 4C**	**89895978**		1 h						
	Stick	5	**Accu-NiCd 5A**	**89895973**			1 h					
	Stick + Stick	2 + 3	**Accu-NiCd 5C 55**	**89800090**			1 h					
	Stick + Stick	3 + 3	**Accu-NiCd 6C**	**89895963**				1 h				
NiMH 4 Ah LA cells	Stick	3	**Accu-NiMH 4Ah 3A CON**	**89800441**					1 h			
	Stick	4	**Accu-NiMH 4Ah 4A CON**	**89800442**						1 h		
	Stick + Stick	2 + 2	**Accu-NiMH 4Ah 4C CON**	**89800438**						1 h		
	Stick + Stick	2 + 3	**Accu-NiMH 4Ah 5C CON**	**89800439**							1 h	
	Stick + Stick	3 + 3	**Accu-NiMH 4Ah 6C CON**	**89800440**								1 h

[1] The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 14 / 9,5).

[2] For best performance of 26W and 32W TC lamps, and especially amalgam filled lamps, we recommend the use of EM 06 ST G2 resp. EM 16 HO ST G2.

Emergency Ballast Lumen Factor (EBLF) in %[1]

EM SELFTEST G2, 3 or 1 h

	Duration	1/3 h Standard BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
	Type	EM 03 ST G2	EM 04 ST G2	EM 05 ST G2	EM 06 ST G2	EM 03 ST NiMH G2	EM 04 ST NiMH G2	EM 05 ST NiMH G2	EM 06 ST NiMH G2
	Article no.	89800198	89800201	89800204	89800207	89800336	89800337	89800338	89800339
Lamp type	Wattage	EBLF in emergency lighting mode in % for rated operating time							
T5	6 W								
	8 W	29.0	36.0			29.0	36.0		
	13 W								
ECO T5	13 W		19.7				19.7		
	20 W		13.9				13.9		
	25 W				14.9				14.9
	32 W				11.9				11.9
	45 W				7.3				7.3
	50 W				5.9				5.9
	73 W				4.1				4.1
T5 FH	14 W		22.0				22.0		
	21 W			17.0				17.0	
	28 W				14.0				14.0
	35 W				10.5				10.5
T5 FQ	24 W		14.1				14.1		
	39 W				9.1				9.1
	49 W				6.4				6.4
	54 W				5.7				5.7
	80 W				4.2				4.2
T8	15 W		16.0				16.0		
	18 W		16.5				16.5		
	30 W								
	36 W		10.2				10.2		
	38 W								
	58 W			6.5				6.5	
	70 W				3.7				3.7
TC-DD	10 W								
	16 W		20.0				20.0		
	21 W		13.9				13.9		
	28 W		12.2				12.2		
	38 W				8.9				8.9
	55 W				5.5				5.5
TC-SEL	7 W								
	9 W	13.6	21.8			13.6	21.8		
	11 W	16.0	28.0			16.0	28.0		
TC-DEL	10 W								
	13 W	13.9	21.3			13.9	21.3		
	18 W		15.5				15.5		
	26 W		13.0				13.0		
TC-TEL[2]	13 W	14.3 / 8.2	21.8 / 9.7			14.3 / 8.2	21.8 / 9.7		
	18 W		14.5 / 8.6	15.3 / 14.1			14.5 / 8.6	15.3 / 14.1	
	26 W[3]		10.4 / 8.5	9.7	11.9		10.4 / 8.5	9.7	11.9
	32 W[3]			12.8 / 4.8	x / 7.7			12.8 / 4.8	x / 7.7
	42 W				7.2 / 6.7				7.2 / 6.7
	57 W								
T5c	22 W		14.7				14.7		
	40 W				7.7				7.7
	55 W				4.4				4.4
TC-F	18 W		16.5				16.5		
	24 W			19.5				19.5	
	36 W			12.0				12.0	
TC-L	18 W		15.3				15.3		
	24 W			15.5				15.5	
	36 W			10.5				10.5	
	40 W			8.4				8.4	
	55 W				4.8				4.8
TC-R	14 W		18.2				18.2		
	17 W		13.3				13.3		

[1] According to EN 61347-2-7: 2006

[2] The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 14 / 9,5).

[3] For best performance of 26W and 32W TC lamps, and especially amalgam filled lamps, we recommend the use of EM 06 ST G2 resp. EM 16 HO ST G2.

Emergency Ballast Lumen Factor (EBLF) in %[1]

EM SELFTEST G2, 1 h High Output

	Duration	1 h High Output BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
	Type	EM 13 HO ST G2	EM 14 HO ST G2	EM 15 HO ST G2	EM 16 HO ST G2	EM 13 HO ST NiMH G2	EM 14 HO ST NiMH G2	EM 15 HO ST NiMH G2	EM 16 HO ST NiMH G2
	Article no.	89800229	89800232	89800235	89800238	89800340	89800341	89800342	89800343
Lamp type	Wattage	EBLF in emergency lighting mode in % for rated operating time							
T5	6 W								
	8 W	46.0	54.5			46.0	54.5		
	13 W								
ECO T5	13 W		35.0				35.0		
	20 W		25.0				25.0		
	25 W				32.5				32.5
	32 W				25.9				25.9
	45 W				22.3				22.3
	50 W				18.0				18.0
	73 W				12.5				12.5
T5 FH	14 W		40.0				40.0		
	21 W			33.5				33.5	
	28 W				34.5				34.5
	35 W				25.8				25.8
T5 FQ	24 W		25.4				25.4		
	39 W				22.3				22.3
	49 W				15.7				15.7
	54 W				14.0				14.0
	80 W				10.3				10.3
T8	15 W		33.6				33.6		
	18 W		34.7				34.7		
	30 W								
	36 W		17.5				17.5		
	38 W								
	58 W			15.5				15.5	
	70 W								
TC-DD	10 W								
	16 W								
	21 W								
	28 W								
	38 W								
	55 W								
TC-SEL	7 W								
	9 W	27.2	43.6			27.2	43.6		
	11 W	35.0	45.0			35.0	45.0		
TC-DEL	10 W								
	13 W	25.0	34.5			25.0	34.5		
	18 W		25.1				25.1		
	26 W		21.1				21.1		
TC-TEL[2]	13 W	28.6 / 15.5	35.5 / 15.5			28.6 / 15.5	35.5 / 15.5		
	18 W		23.5 / 10.1				23.5 / 10.1		
	26 W[3]		21.0 / 12.5				21.0 / 12.5		
	32 W[3]			22.5 / 7.8				22.5 / 7.8	
	42 W			16.0 / 9.3				16.0 / 9.3	
	57 W								
T5c	22 W		26.5				26.5		
	40 W				18.9				18.9
	55 W				10.8				10.8
TC-F	18 W		26.0				26.0		
	24 W			35.7				35.7	
	36 W			22.0				22.0	
TC-L	18 W		27.5				27.5		
	24 W			34.1				34.1	
	36 W			23.1				23.1	
	40 W			18.5				18.5	
	55 W								
TC-R	14 W		44.4				44.4		
	17 W		32.5				32.5		

[1] According to EN 61347-2-7: 2006

[2] The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 14 / 9,5).

[3] For best performance of 26W and 32W TC lamps, and especially amalgam filled lamps, we recommend the use of EM 06 ST G2 resp. EM 16 HO ST G2.

Lamp current in emergency operation in mA

EM SELFTEST G2, 3 or 1 h

	Duration	**1/3 h Standard BLF**							
	Cells	**3 cells**	**4 cells**	**5 cells**	**6 cells**	**3 cells**	**4 cells**	**5 cells**	**6 cells**
	Type	**EM 03 ST G2**	**EM 04 ST G2**	**EM 05 ST G2**	**EM 06 ST G2**	**EM 03 ST NiMH G2**	**EM 04 ST NiMH G2**	**EM 05 ST NiMH G2**	**EM 06 ST NiMH G2**
	Article no.	**89800198**	**89800201**	**89800204**	**89800207**	**89800336**	**89800337**	**89800338**	**89800339**
Lamp type	Wattage	**Lamp current in emergency operation in mA for rated operating time**							
T5	6 W								
	8 W	31.5	40.0			31.5	40.0		
	13 W								
ECO T5	13 W		34.0				34.0		
	20 W		34.2				34.2		
	25 W				24.0				24.0
	32 W				20.3				20.3
	45 W				17.2				17.2
	50 W				12.9				12.9
	73 W				15.4				15.4
T5 FH	14 W		26.0				26.0		
	21 W			22.0				22.0	
	28 W				19.0				19.0
	35 W				15.0				15.0
T5 FQ	24 W		32.9				32.9		
	39 W				19.2				19.2
	49 W				14.0				14.0
	54 W				12.0				12.0
	80 W				15.2				15.2
T8	15 W		42.0				42.0		
	18 W		38.0				38.0		
	30 W		26.3				26.3		
	36 W								
	38 W								
	58 W			22.8				22.8	
	70 W				13.0				13.0
TC-DD	10 W								
	16 W		29.5				29.5		
	21 W		34.2				34.2		
	28 W		22.9				22.9		
	38 W				21.8				21.8
	55 W				20.5				20.5
TC-SEL	7 W								
	9 W	35.8	44.5			35.8	44.5		
	11 W	28.0	32.0			28.0	32.0		
TC-DEL	10 W								
	13 W	26.8	30.4			26.8	30.4		
	18 W		31.4				31.4		
	26 W		20.0				20.0		
TC-TEL[1]	13 W	27.0 / 26.0	32.5 / 31.8			27.0 / 26.0	32.5 / 31.8		
	18 W		31.9 / 31.4	32.4 / 32.3			31.9 / 31.4	32.4 / 32.3	
	26 W		26.7	29.9	29.9		26.7	29.9	29.9
	32 W			21.0 / 19.0	x / 17.0			21.0 / 19.0	x / 17.0
	42 W				14.0 / 12.0				14.0 / 12.0
	57 W								
T5c	22 W		30.1				30.1		
	40 W				16.4				16.4
	55 W				16.3				16.3
TC-F	18 W		40.0				40.0		
	24 W			42.0				42.0	
	36 W			26.0				26.0	
TC-L	18 W		41.4				41.4		
	24 W			36.0				36.0	
	36 W			25.0				25.0	
	40 W			16.0				16.0	
	55 W				16.4				16.4
TC-R	14 W		20.9				20.9		
	17 W		15.4				15.4		

[1] The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 15 / 16).

Lamp current in emergency operation in mA

EM SELFTEST G2, 1 High Output

	Duration	**1 h High Output BLF**							
	Cells	**3 cells**	**4 cells**	**5 cells**	**6 cells**	**3 cells**	**4 cells**	**5 cells**	**6 cells**
	Type	**EM 13 HO ST G2**	**EM 14 HO ST G2**	**EM 15 HO ST G2**	**EM 16 HO ST G2**	**EM 13 HO ST NiMH G2**	**EM 14 HO ST NiMH G2**	**EM 15 HO ST NiMH G2**	**EM 16 HO ST NiMH G2**
	Article no.	**89800229**	**89800232**	**89800235**	**89800238**	**89800340**	**89800341**	**89800342**	**89800343**
Lamp type	Wattage	**Lamp current in emergency operation in mA for rated operating time**							
T5	6 W								
	8 W	69.7	84.8			69.7	84.8		
	13 W								
ECO T5	13 W		68.2				68.2		
	20 W								
	25 W				58.0				58.0
	32 W								
	45 W								
	50 W								
	73 W				40.2				40.2
T5 FH	14 W		61.5				61.5		
	21 W			51.7				51.7	
	28 W				52.9				52.9
	35 W								
T5 FQ	24 W								
	39 W								
	49 W								
	54 W								
	80 W				37.2				37.2
T8	15 W								
	18 W								
	30 W								
	36 W		49.7				49.7		
	38 W								
	58 W			53.5				53.5	
	70 W								
TC-DD	10 W								
	16 W								
	21 W								
	28 W								
	38 W								
	55 W								
TC-SEL	7 W								
	9 W								
	11 W	52.2	68.9			52.2	68.9		
TC-DEL	10 W								
	13 W	46.8	62.3			46.8	62.3		
	18 W								
	26 W								
TC-TEL[1]	13 W	x / 50.6	x / 64.0			x / 50.6	x / 64.0		
	18 W								
	26 W		52.5 / 55.1				52.5 / 55.1		
	32 W			57.3				57.3	
	42 W			x / 44.9				x / 44.9	
	57 W								
T5c	22 W								
	40 W								
	55 W								
TC-F	18 W		83.8				83.8		
	24 W								
	36 W								
TC-L	18 W		81.3				81.3		
	24 W								
	36 W								
	40 W			50.9				50.9	
	55 W								
TC-R	14 W		43.3				43.3		
	17 W								

[1] The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 15 / 16).

Standards
- according to EN 50172
- according to EN 60598-2-22
- EN 61347-2-7
- EN 60925
- EN 62034
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-64
- EN 60068-2-29
- EN 60068-2-30

Commissioning
After installation of the luminaire and initial connection of the mains supply and battery supply to the EM ST G2 the unit will commence charging the batteries for 20 hours (initial charge). The 20 hours recharge occurs also if a new battery is connected or the module exits the rest mode condition.
The following automatic commissioning duration test is only performed when a battery is replaced and fully charged (after 20 hours).

Testing:

Commissioning test
A full commissioning test is carried out automatically after permanent connection of the supply for 5 days. The easy commissioning feature will set the initial test day and time to ensure random testing of units.

Functional test
Functional tests are carried out for 30 seconds on a weekly basis under the control of the Micro controller. Initiation and timing of these tests is set during the commissioning of the luminaire.

Duration test
A full duration test (3 hr. resp. 1 hr.) is carried out yearly to check the capacity of the batteries. For a full description of commissioning and test features please refer to application notes.

Test switch
An optional test switch can be wired to each EM ST G2. This can be used to to:
- initiate a 5 seconds function test: press 200 ms < T < 1 s
- execute function test as long as switch pressed: press > 1 s
- reset selftest timer (adjust local timing): press > 10 s

Timer reset functionality
The timer for function and duration test can be set to a particular time of the day by either pressing the test switch for longer than 10 seconds or cycling the unswitched line supply 5 times within 1 minute. The timer adjustment will enable the test start time to be defined manually at time in day when the timer was reset. It will also disable the adaptive test algorithm thereby forcing the unit to perform the test at the same time rather than it being defined by the adaptive algorithm. This function will only work provided the interval time is greater than zero (automatic test mode enabled). The delay timer value set when the unit was commissioned will be reloaded in order to randomise the tests between adjacent units.

Status indication
System status is indicated by a bi-colour LED.

LED indiction	Status	Comment
Permanent green	System OK	AC mode
Fast flashing green (0,1 sec on – 0,1 sec off)	Function test underway	
Slow flashing green (1 sec on – 1 sec off)	Duration test underway	
Red LED on	Load failure	Open circuit / Short circuit / lamp failure
Slow flashing red (1 sec on – 1 sec off)	Battery failure	Battery failed the duration test or function test / Battery is defect or deep discharged/ Incorrect battery voltage
Fast flashing red (0,1 sec on – 0,1 sec off)	Charging failure	Incorrect charging current
Double pulsing green	Inhibit mode	Switching into inhibit mode via controller
Binary transmission of address via green/red LED	Address identification	During address identification mode
Green and red off	DC mode	Battery operation (emergency mode)

Technical data batteries

Accu-NiCd
4.2 / 4.5 Ah

Battery voltage/cell	1.2 V
Cell type	D
Case temperature range to ensure 4 years design life	+5 °C to +55 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	6 months

Accu-NiMh
2.0 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Case temperature range to ensure 4 years design life	+5 °C to +55 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 30 cycles during comissioning
Max. storage time	6 months

4.0 Ah

Battery voltage/cell	1.2 V
Cell type	LA
Case temperature range to ensure 4 years design life	+5 °C to +45 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 30 cycles during comissioning
Max. storage time	6 months

For further informations refer to corresponding battery datasheet.

Storage, installation and commissioning

Relevant information about storage conditions, installation and commissioning are provided in the battery datasheets.

Mechanical details

Channel manufactured from galvanised steel.
Cover manufactured from white pre-coated steel.

LED bi-colour status indicator
- Green / red
- Mounting hole 6.5 mm dia
- Lead length 0.3 m / 1.0 m
- Insulation rating: 90 °C
- Plug connection

Test switch
- Mounting hole 7.0 mm dia
- Lead length 0.55 m
- Plug connection

Battery leads
- Quantity: 1 red and 1 black
- Length: 1.3 m
- Wire type: 0.5 mm^2 solid conductor
- Insulation rating: 90 °C

Battery end termination
Push on 4.8 mm receptacle to suit battery spade fitted with insulating cover

Module end termination
8.0 mm stripped insulation

Two-piece batteries are supplied with a 200 mm lead with 4.8 mm receptacles at each end and insulating covers to connect the separate sticks together.

Rest mode

Rest mode can be initiated by applying a short pulse of between 9.5 VDC and 22.5 VDC in amplitude for a period of between 150 ms and 1.0 second. This should be applied to terminals marked Rest after the mains supply has been disconnected and whilst the module is in emergency operation. After a mains reset the EM ST G2 exits the rest mode. The EM ST G2 supports the re-light function. The Rest mode terminals are not sensitive to polarity.

Pulse/Mode	Standby	Emergency	Rest
150 – 1,000 ms	Inhibit	Rest	–
1,001 – 2,000 ms	Cancel inhibit	–	re-light

Isolation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 VDC for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal. The isolation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1,500 VAC (or 1,414 x 1,500 VDC). To avoid damage to the electronic devices this test must not be conducted.

Batteries
Connection method: 4.8 x 0.5 mm spade tag welded to end of cell
For stick packs this connection is accessible after the battery caps have been fitted.

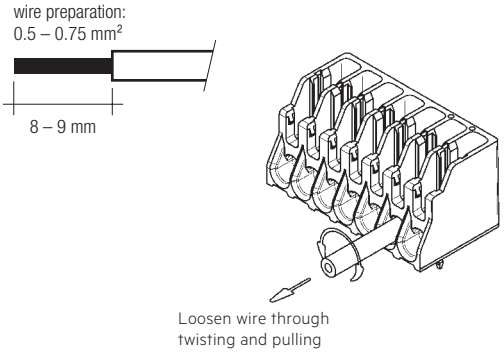
To inhibit inverter operation disconnect the batteries by removing the connector from the battery spade tag.

For battery data see separate data sheet.

Life-time
Average life-time 50,000 hours under rated conditions with a failure rate of less than 10 %. Average failure rate of 0.2 % per 1000 operating hours.

Electrical connections
An earthed starting aid is recommended. The module should be earthed by the fixings used to attach it to the luminaire.

Wiring
Lamp/ballast/supply



Note:
Basic insulation between supply and battery circuit.

IDC interface
- solid wire with a cross section of 0.5 mm²
  according to the specification from IDC terminals

Maximum lamp lead capacitance

terminals 5 and 6 (* hot leads)	100 pF [1)]
terminals 3 and 4	200 pF [1)]

[1)] Note: care should be taken not to exceed the total maximum lamp lead capacitance for HF ballast. Leads should always be kept as short as possible.

Duration link selection

Duration	Usage duration link
3 h	 With link
1 h	 Without link

Control gear supplied with duration link in 3 hours position.

The position of the link will only be read on first power up. If it is changed afterwards both the battery and mains supply must be disconnected for 10 seconds to enable the EM ST G2 to read the new link position on reconnection of the battery and mains. It will lead to a false battery failure indication if the link is changed after installation without this reset.

Wiring guidelines
To ensure that a luminaire containing high frequency emergency units complies with EN 55015 for radio frequency conducted interference in both normal and emergency mode it is essential to follow good practice in the wiring layout.

Within the luminaire the switched and unswitched 50 Hz supply wiring must be routed as short as possible and be kept as far away as possible from the lamp leads.
This means, for example, in a linear T8 or T5 luminaire the mains wiring should be routed along one side of the luminaire body, while the wires to the emergency lamp from the emergency module are routed along the other side.

The high frequency emergency lamp wiring contains “hot” leads at pins 5 and 6, which have high voltage to earth. These should be kept as short as possible and separated from other wiring to minimize coupling. They also have a restriction on capacitance to other wiring and earth of 100 pF, which must be observed to ensure good lamp starting.

With an earth connection of the metal case of the emergency module the noise suppression can be further improved. The wiring of the earth should be kept as short as possible.
Through wiring may affect the emc performance of the luminaire.

With the use of the fifth pole possible compatibility problems between the products can be prevented.
Depending on the luminaire wiring the radio suppression in the emergency mode of operation can be further improved.

Capacitive loading limits of lamp leads must not be exceeded. Note the capacitance of the emergency lamp leads adds to the capacitance of the leads from the ballast to the EM ST G2 module when considering ballast loading.

The LED and test switch wiring should be routed separately and kept as far away as possible from the high frequency lamp leads to avoid coupling.

Maximum loading of automatic circuit breakers

Automatic circuit breaker type	B10	B13	B16	B20	C10	C13	C16	C20	Inrush current	
Installation Ø	1.5 mm²	1.5 mm²	1.5 mm²	2.5 mm²	1.5 mm²	1.5 mm²	1.5 mm²	2.5 mm²	I_{max}	time
EM 03 ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 04 ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 05 ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 06 ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 03 ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 04 ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 05 ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 06 ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 13 HO ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 14 HO ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 15 HO ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 16 HO ST G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 13 HO ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 14 HO ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 15 HO ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 16 HO ST NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs

EM FLT1 filter

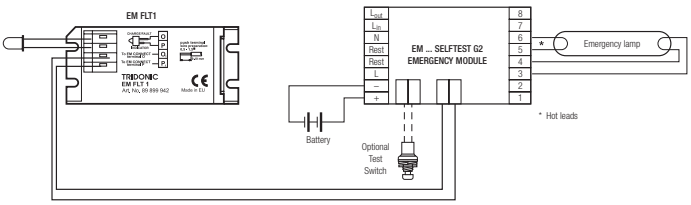
When the EM ST G2 is used in a remote appli-cation, where the lamp leads and LED indicator leads are routed together in close proximity, it is possible to have electrical interference picked up in the indicator leads.

Under certain conditions this interference can cause a lock-up of the EM ST G2 micro-controller.

To overcome this problem in such applications it is necessary to fit the filter EM FLT1 between the indicator LED and the EM ST G2 unit. To be effective the filter must be connected close to the EM ST G2 module.

For further information please contact Tridonic.

Circuit diagram with EM FLT1 filter

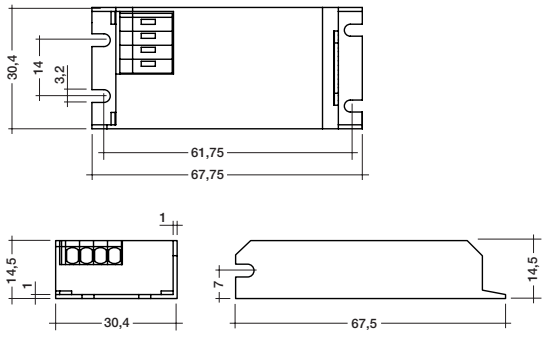


Technical data:
Push wire terminals 0.5–1.5 mm² solid conductor

Ordering data

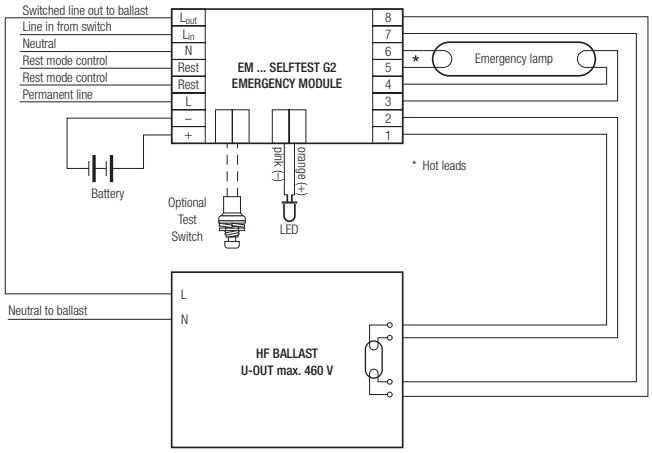
Type	Article number	Packaging, carton	Packaging, pallet	Weight per pcs.
EM FLT1	**89899942**	50 pc(s).	1,000 pc(s).	0.022 kg

EM FLT1 filter

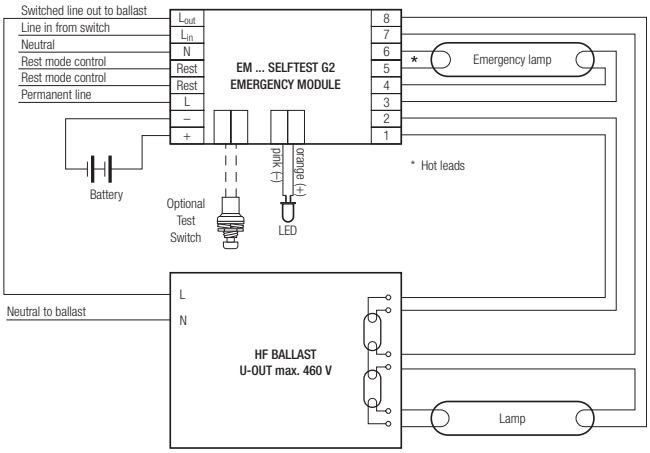


EM ... SELFTEST G2 emergency module wiring diagrams

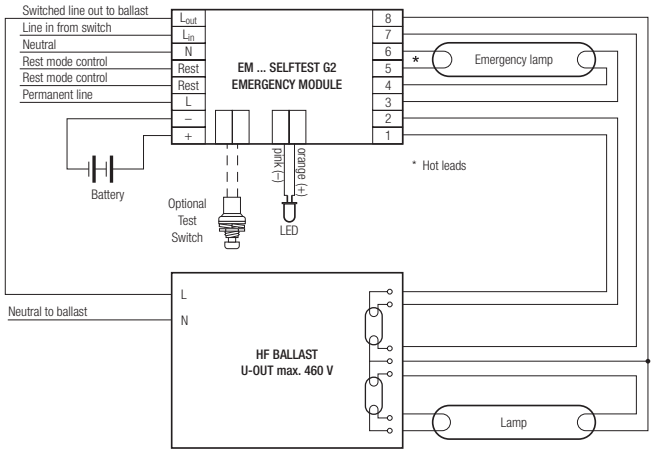
Not for use with magnetic ballasts and switch start circuits



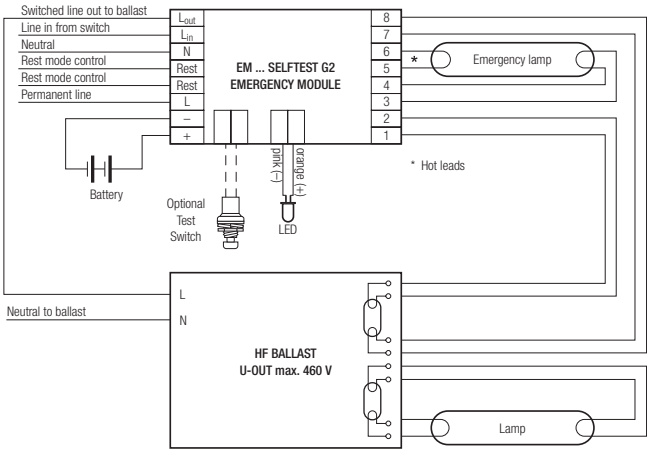
Wiring diagram for single lamp high frequency ballasts



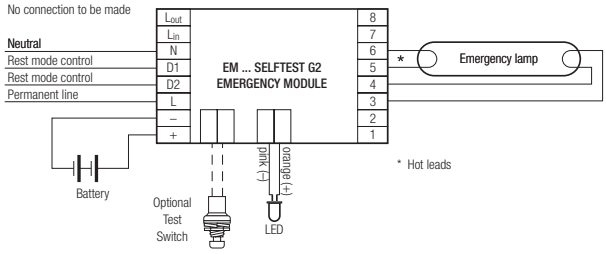
Wiring diagram for twin lamp high frequency ballasts with 6 terminals



Wiring diagram for twin lamp high frequency ballasts with 7 terminals



Wiring diagram for twin lamp high frequency ballasts with 8 terminals



Wiring diagram for non-maintained operation

Note: All hot leads normally marked with an * should be kept as short as possible. For comprehensive wiring diagrams and instructions consult the Tridonic website www.tridonic.com

Additional information

Additional technical information at www.tridonic.com → Technical Data

Guarantee conditions at www.tridonic.com → Services

Life-time declarations are informative and represent no warranty claim. No warranty if device was opened.