

# 

RoHS



TC-TFI

# EM PRO G2, 220 – 240 V 50/60 Hz

PRO version

T5c

## Product description

• Emergency lighting supply unit with DALI interface and automatic test function

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T5

- · For linear and compact fluorescent lamps
- Low-profile casing (21 x 30 mm cross-section)
- 5-year guarantee

## Properties

- Non maintained operation
- DALI interface for testing and monitoring
- 1 or 3 h rated duration
- Operating time selectable with plug (duration link)
- Compatible with all electronic ballasts (dimmable and non-dimmable)
- 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
- Addressing function, patented ("EZ easy addressing")
- EZ addressing tool can be supplied
- 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 Tests:
- 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

## $\rightarrow$

#### Standards, page 13

For wiring diagrams and installation examples, page 13



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.

#### 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
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

## Ordering data

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Туре	Article number	Battery type	Number of cells	Packaging, carton	Packaging, pallet	Weight per pc.			
Rated operating time 1/3 h, Standard BLF									
EM 03 PRO G2	89800197	NiCd	3	10 pc(s).	700 pc(s).	0.156 kg			
EM 04 PRO G2	89800200	NiCd	4	10 pc(s).	700 pc(s).	0.156 kg			
EM 05 PR0 G2	89800203	NiCd	5	10 pc(s).	700 pc(s).	0.156 kg			
EM 06 PR0 G2	89800206	NiCd	6	10 pc(s).	700 pc(s).	0.156 kg			
EM 03 PRO NiMH G2	89800332	NiMH	3	10 pc(s).	700 pc(s).	0.156 kg			
EM 04 PRO NiMH G2	89800333	NiMH	4	10 pc(s).	700 pc(s).	0.156 kg			
EM 05 PRO NIMH G2	89800334	NiMH	5	10 pc(s).	700 pc(s).	0.156 kg			
EM 06 PRO NiMH G2	89800335	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 PRO G2	130 mA / 20 h	210 mA / 10 h	50 mA			
EM 04 PRO G2	130 mA / 20 h	210 mA / 10 h	50 mA			
EM 05 PRO G2	130 mA / 20 h	210 mA / 10 h	50 mA			
EM 06 PRO G2	130 mA / 20 h	210 mA / 10 h	50 mA			
EM 03 PRO NIMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.			
EM 04 PRO NIMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.			
EM 05 PRO NIMH G2	130 mA / 20 h	210 mA / 10 h	130 mA / 4 min. – 0 mA / 16 min.			
EM 06 PRO 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 PRO G2	300 mA / 20 h	330 mA / 15 h	130 mA			
EM 04 PRO G2	300 mA / 20 h	330 mA / 15 h	130 mA			
EM 05 PRO G2	300 mA / 20 h	330 mA / 15 h	130 mA			
EM 06 PRO G2	300 mA / 20 h	330 mA / 15 h	130 mA			
EM 03 PRO NIMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min 0 mA / 16 min.			
EM 04 PRO NIMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.			
EM 05 PRO NIMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.			
EM 06 PRO NIMH G2	300 mA / 20 h	330 mA / 15 h	200 mA / 4 min. – 0 mA / 16 min.			

## RoHS



Test switch EM3

## Product description

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



#### Ordering data

Туре	Article number	Packaging, bag	Packaging, cartor	n Weight per pc.
Test switch EM 3	89899956	25 pc(s).	200 pc(s).	0.013 kg



## 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	Packaging,	Weight per
	bag	carton	pc.	
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



Addressing tool

## Product description

- Provides simple addressing for all PRO units
- Uses the bi-colour LED for device identification

## Properties

- Takes standard 9 V battery
- Easy two button operation
- Belt clip
- Auto power off to conserve battery
- Bright 7 segment LED display



## Ordering data

Туре	Article number	Weight per pc.
EM PRO addressing tool	89899836	0.08 kg

## Ballast lumen factor (BLF) in %

				Duration				1/3 h Sta	ndard BLF			
				Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells
				Туре	EM 03 PRO G2	EM 03 EM 04 PRO G2 PRO G2	EM 05 PRO G2	EM 06 PRO G2	EM 03 PRO NIMH G2	EM 04 PRO NiMH G2	EM 05 PRO NiMH G2	EM 06 PRO NiMH G2
				Art. no.	89800197	89800200	89800203	89800206	89800332	89800333	89800334	89800335
			Lamp type	Wattage		BLF	in emergenc	y lighting mod	de in % for rat	ed operating	time	
			T5	6 W								
				8 W	32.4	40.0			32.4	40.0		
				13 W								
			ECO T5	13W		22.0				22.0		
				20 W		15.4		10.0		15.4		10.0
				25 W				13.4				10.8
				45 W				8.1				8.1
				50 W				5.8				5.8
				73 W				4.1				4.1
			T5 FH	14W		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		40.0		15.6		40.0
				39 W				10.0				10.0
				49 W				5.2				0.7 5.2
				80 W				4.2				4.2
			 T8	15 W		17.0		7.2		17.0		7.2
				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
lechnology and capacity	Design	Number of cells	Туре	Article number				Assignabl	e batteries			
	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						
NiCd 4 Ah	Side by side	4	Accu-NiCd 4B 55	89800385		3 h						
D cells <sup>®</sup>	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				
	Stick	3	Accu-NiMH C 3A	89899744	1 h				1 h			
	Stick	4	Accu-NiMH C 4A	89899700		1 h				1 h		
NIME ZAD	Stick	5	Accu-NiMH C 5A	89899703			1 h				1 h	
55 0010	Stick	6	Accu-NiMH C 6A	89899706				1 h				1 h
	Stick + Stick	3+3	Accu-NiMH C 6C	89899707				1 h				1 h
	Stick	3	Accu-NiMH 4Ah 3A CON	89800441					3 h			
	Stick	4	Accu-NiMH 4Ah 4A CON	89800442						3 h		
NIMH 4 Ah	Stick + Stick	2 + 2	Accu-NiMH 4Ah 4C CON	89800438						3 h		
LH UCII9	Stick + Stick	2 + 3	Accu-NiMH 4Ah 5C CON	89800439							3 h	

<sup>®</sup> Note: 50°C batteries also available (see seperate datasheet at www.tridonic.com)

Accu-NiMH 4Ah 6C CON 89800440

3 + 3

Stick + Stick

3 h

## Ballast lumen factor (BLF) in %

EM PRO G2 for compact lamps, 3 or 1 h

Lamp type TC-DD	Cells Type Article no. Wattage 10 W 16 W 21 W 28 W	3 cells EM 03 PR0 G2 89800197	4 cells EM 04 PR0 G2 89800200	5 cells EM 05 PR0 G2	6 cells EM 06 PRO G2	3 cells EM 03 PRO NiMH	4 cells EM 04 PRO NiMH	5 cells EM 05	6 cells EM 06			
Lamp type TC-DD	Type Article no. Wattage 10 W 16 W 21 W 28 W	EM 03 PRO G2 89800197	EM 04 PRO G2 89800200	EM 05 PR0 G2	EM 06 PRO G2	EM 03 PRO NiMH	EM 04 PRO NiMH	EM 05	EM 06			
Lamp type TC-DD	Article no. Wattage 10 W 16 W 21 W 28 W	89800197	89800200	89800203		G2	G2	G2	PRO NIMH G2			
Lamp type TC-DD	Wattage 10 W 16 W 21 W 28 W		_	00000200	89800206	89800332	89800333	89800334	89800335			
TC-DD	10 W 16 W 21 W 28 W		BLF	BLF in emergency lighting mode in % for rated operating time								
	16 W 21 W 28 W											
	21 W 28 W		23.6				23.6					
	28 W		15.4				15.4					
			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®	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 <sup>3</sup>		11.5 / 10.0	13.0	14.0		11.5 / 10.0	13.0	14.0			
	32 W <sup>3</sup>			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				
FC-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					
Гуре	Article				Annianchl	hattorioo						
	number				Assignable	e natteries						
Accu-NiCd 3A	89895960	3 h										

Technology	Design	Number	Туре	Article		Assignable bottorios						
and capacity		of cells		number				Assignabi	e Dallenes			
	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						
NiCd 4 Ah	Side by side	4	Accu-NiCd 4B 55	89800385		3 h						
D cells <sup>®</sup>	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				
	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	
US CEIIS	Stick	6	Accu-NiMH C 6A	89899706				1 h				1 h
	Stick + Stick	3+3	Accu-NiMH C 6C	89899707				1 h				1 h
	Stick	3	Accu-NiMH 4Ah 3A CON	89800441					3 h			
	Stick	4	Accu-NiMH 4Ah 4A CON	89800442						3 h		
NIMH 4 AN	Stick + Stick	2 + 2	Accu-NiMH 4Ah 4C CON	89800438						3 h		
LA CEIIS	Stick + Stick	2 + 3	Accu-NiMH 4Ah 5C CON	89800439							3 h	
	Stick + Stick	3 + 3	Accu-NiMH 4Ah 6C CON	89800440								3 h

<sup>®</sup> Note: 50°C batteries also available (see seperate datasheet at www.tridonic.com)

<sup>®</sup> The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 14/9,5).

<sup>®</sup> For best performance of 26W and 32W TC lamps, and especially amalgam filled lamps, we recommend the use of EM 06 PRO G2.

## Emergency Ballast Lumen Factor (EBLF) in $\%^{\circ}$

EM PRO G2, 3 or 1 h

	Duration		1/3h Standard BLF							
	Cells	3 cells	4 cells	5 cells	6 cells	3 cells	4 cells	5 cells	6 cells	
	Туре	EM 03 PRO G2	EM 04 PRO G2	EM 05 PR0 G2	EM 06 PRO G2	EM 03 PRO NiMH G2	EM 04 PRO NiMH G2	EM 05 PRO NiMH G2	EM 06 PRO NiMH G2	
	Article no.	89800197	89800200	89800203	89800206	89800332	89800333	89800334	89800335	
Lamp type	Wattage			EBLF in emerg	ency lighting mo	de in % for rated	operating time			
T5	6 W									
	8 W	29.0	36.0			29.0	36.0			
	13W									
ECO T5	13W		19.7				19.7			
	20 W		13.9		44.0		13.9		110	
	25 W				14.9				14.9	
	32 W				7.2				7.2	
	43 W				5.9				5.9	
	73W				4.1				4.1	
T5 FH	14W		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		10.0		4.2		10.0		4.2	
18	15 W		16.0				16.0			
	30 W		10.5				10.5			
	36 W		10.2				10.2			
	38 W									
	58 W			6.5				6.5		
	70 W				3.7				3.7	
TC-DD	10W									
	16W		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	
IG-SEL	7 W	12.6	21.9			12.6	21.9			
	11 W	16.0	28.0			16.0	21.0			
TC-DFI	10W	10.0	20.0			10.0	20.0			
TO DEE	13W	13.9	21.3			13.9	21.3			
	18W		15.5				15.5			
	26 W		13.0				13.0			
TC-TEL <sup>®</sup>	13W	14.3 / 8.2	21.8 / 9.7			14.3 / 8.2	21.8 / 9.7			
	18W		14.5 / 8.6	15.3 / 14.1			14.5 / 8.6	15.3 / 14.1		
	26 W®		10.4 / 8.5	9.7	11.9		10.4 / 8.5	9.7	11.9	
	32 W <sup>30</sup>			12.8 / 4.8	x//./			12.8 / 4.8	x//./	
	42 W				7.276.7				7.276.7	
T5c	22W		147				14.7			
100	40 W		14.7		7 7		14.7		7 7	
	55 W				4.4				4.4	
TC-F	18W		16.5				16.5			
	24 W			19.5				19.5		
	36 W			12.0				12.0		
TC-L	18W		15.3				15.3			
	24 W			15.5				15.5		
	36 W			10.5				10.5		
	40 W			8.4				8.4		
	55 W		10.0		4.8		10.0		4.8	
IU-K	14 W		18.2				18.2			
	17 W		13.3				13.3			

<sup>®</sup> According to EN 61347-2-7: 2006

<sup>®</sup> The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 14/9,5).

<sup>®</sup> For best performance of 26W and 32W TC lamps, and especially amalgam filled lamps, we recommend the use of EM 06 PRO G2.

## Lamp current in emergency operation in mA

EM PRO 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		
	Туре	EM 03 PRO G2	EM 04 PRO G2	EM 05 PRO G2	EM 06 PR0 G2	EM 03 PRO NiMH G2	EM 04 PRO NiMH G2	EM 05 PRO NiMH G2	EM 06 PRO NiMH G2		
	Article no.	89800197	89800200	89800203	89800206	89800332	89800333	89800334	89800335		
Lamp type	Wattage			Lamp current in	emergency opera	tion in mA for rate	d operating time				
T5	6 W										
	8 W	31.5	40.0			31.5	40.0				
	13W										
ECO T5	13W		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		
T5 FH	1/W		26.0		13.4		26.0		10.4		
10111	21 W		20.0	22.0			20.0	22.0			
	28W			22.0	19.0			EE.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		
Т8	15 W		42.0				42.0				
	18W		38.0				38.0				
	30 W		26.3				26.3				
	36 W										
	38 W			00.0				00.0			
	28 W			22.8	12.0			22.8	12.0		
	10.W				13.0				13.0		
10-00	16W		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										
	13W	26.8	30.4			26.8	30.4				
	18W		31.4				31.4				
	26 W	07.0/06.0	20.0			07.0 / 00.0	20.0				
IC-IEL®	18.W	27.07 20.0	31.0/31.0	32 / / 32 3		27.0720.0	31.0/31.0	32 / / 32 3			
	26W		26.7	29.9	29.9		26.7	29.9	29.9		
	32 W		20.1	21.0 / 19.0	x / 17.0		20.1	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			
IC-L	18W		41.4	00.0			41.4	00.0			
	24 W			36.0				36.0			
	36 W			25.0				25.0			
	40 W			10.0	16.4			10.0	16.4		
TC-B	14 W		20.9		10.4		20.9		10.4		
10 11	17 W		15.4				15.4				

<sup>®</sup> The first figure is related to non-amalgam lamps, the second figure is realted to amalgam lamps (e.g. 15/16).

#### Testing:

#### **DALI Control**

A DALI command from a suitable control unit can be used to initiate function and duration tests at individually selected times. Status flags are set for report back and data logging of results.

When a DALI bus has not been connected or when a DALI bus is connected but the DALI default DELAY and INTERVAL times have not been re-set by sending appropriate DALI commands, then the EM PRO G2 will conduct self-tests in accordance with the default times set within the EEPROM. These default times are factory pre-set, in accordance with the DALI standard EN 62386-202, to conduct an automatic function test every 7 days and a duration test every 52 weeks. Since the DELAY time is factory pre-set to Zero, all units are tested at the same time. Test times can be changed with a command over the DALI bus.

The DELAY and INTERVAL time values must be re-set when the emergency system test times are to be scheduled by a DALI control and monitoring system. Note that once the default values have been set to Zero, tests will only be conducted following a command from the control system. If the DALI bus is disconnected the EM PRO G2 does not revert to self-testing mode.

Note: If the battery is connected the DALI communication is only possible after power reset.

#### Addressing

The EM PRO G2 includes the EZ easy addressing system which allows addressing and identification by using the bi-colour LED in conjunction with the EM PRO addressing tool. Binary address codes given by the LED can be simply converted to the DALI addresses 0 to 63. For single handed addressing using this method it is necessary to send a broadcast ident command every 3 to 9 seconds. During this command the main fluorescent lamp will be switched off and the LED will flash the 6 bit binary address preceded by a 3 second start indication period.

#### Commissioning

After installation of the luminaire and initial connection of the mains supply and battery supply to the EM PRO G2 the unit will commence charging the batteries for 20 hours (initial charge). Afterwards the module will conduct a commissioning test for the full duration. 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 hrs) and the interval time is not set to zero, otherwise the system is expected to perform the testing.

#### **Functional test**

The time of day and frequency of the 30 seconds function test can be set by the DALI controller. The default setting is a 30 seconds test on a weekly basis.

#### **Duration test**

The time of day and frequency of the duration test can be set by the DALI controller. The default setting is a duration test conducted every 52 weeks.

#### Prolong time

Prolong time can be set by the DALI controller. This is the delay time between return of the mains supply and the end of the emergency operation. The default prolong time is set as 0 minutes as specified within the DALI standard.

#### **Rest Mode**

Rest mode can be initiated by the DALI controller. The appropriate command should be sent after the mains supply has been disconnected and whilst the module is in emergency operation. After a mains reset the EM PRO G2 exits the rest mode. EM PRO G2 supports the re-light command via the DALI bus.

#### Test switch

An optional test switch can be wired to each EM PRO G2. This can be used to to: • initiate a 5 seconds function test: press 200 ms < T < 1 s

press > 1 s

press > 10 s

- execute function test as long as switch pressed:
- reset selftest timer (adjust local timing):

#### 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.

#### **DALI Controller**

DALI controllers and hardware/software solutions are available from Tridonic. Please refer to the Lighting controls section.

#### 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.

#### Ballast compatibility

The EM PRO G2 emergency units use 5 pole technology and are compatible with most high frequency ballasts on the market, however it is important to check that the U-OUT rating of the ballast does not exceed the value specified under "Technical data".

#### 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<sup>2</sup> 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.

### Technical data batteries

#### Accu-NiCd

Case temperature range to ensure 4 years design life 4.2 / 4.5 Ah D Battery voltage/cell Single cell dimensions 4.2 / 4.5 Ah D Diameter Height Capacity D Max. short term temperature (reduced life-time) Max. number discharge cycles

#### Packing quantity

#### Accu-NiMh

Case temperature range	
2.0 Ah Cs	+5 °C to +55 °C
4.0 Ah LA	+5 °C to +45 °C
Battery voltage	1.2V
Single cell dimensions	
2.0 Ah Cs	
Diameter	22 mm
Height	42.5 mm
4.0 Ah LA	
Diameter	18.3 mm
Height	90 mm
Capacity Cs / LA	2.0 Ah / 4.0 Ah
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles 2.0 Ah Cs	4 cycles per year plus 4 cycles during comissioning

Max. number discharge cycles 4.0 Ah LA

Packing quantity

#### Storage, installation and commissioning

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

## Batteries

+5 °C to +55 °C

1.2V

32.5 mm

60.5 mm

70 °C

4.2 / 4.5 Ah

4 cycles per year plus 4 cycles during comissioning

2 cycles per year plus 4 cycles during

comissioning

5 pcs. per carton

5 pcs. per carton

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.

#### Status indication

System status is indicated by a bi-colour LED and by a DALI status flag.

LED indiction	Status	Comment		
Permanent green	System OK	AC mode		
Fast flashing green	Function test			
(0,1 sec on - 0,1 sec off)	underway			
Slow flashing green	Duration test			
(1 sec on - 1 sec off)	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	Charging failure	Incorrect charging current		
(0,1 sec on - 0,1 sec off)				
Double pulsing green	Inhibit mode	Switching into inhibit mode via controller		
Binary transmission of address	Address	During address identification made		
via green/red LED	identification			
Green and red off	DC mode	Battery operation (emergency mode)		

#### 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 Vpc 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  $2 M\Omega$ .

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 Vbc). To avoid damage to the electronic devices this test must not be conducted.

Note:

Basic insulation between supply and battery circuit.

## **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



Loosen wire through twisting and pulling

#### **IDC** interface

 solid wire with a cross section of 0.5 mm<sup>2</sup> 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  $^{1)}$ 

<sup>1)</sup> 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**



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 PRO 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 PRO 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 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	I	time
EM 03 PRO G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 04 PR0 G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 05 PRO G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 06 PR0 G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 03 PRO NIMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 04 PRO NIMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 05 PRO NIMH G2	90	130	130	130	180	260	260	260	10 A	120 µs
EM 06 PRO NiMH G2	90	130	130	130	180	260	260	260	10 A	120 µs

#### EM FLT1 filter

When the EM PRO 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 PRO 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 PRO G2 unit. To be effective the filter must be connected close to the EM PRO G2 module.

For further information please contact Tridonic.

Technical data: Push wire terminals 0.5–1.5 mm<sup>2</sup> solid conductor

## Ordering data

Туре	Article number	Packaging, carton	Packaging, pallet	Weight per pcs.
EM FLT1	89899942	50 pieces	1,000 pieces	0.022 kg







## Circuit diagram with EM FLT1 filter



#### Standards

- acc. to EN 50172
- acc. to EN 60598-2-22
- EN 61347-2-7
- EN 60925
- EN 62034
- EN 55015

- EN 61000-3-2EN 61000-3-3
- EN 61547
- EN 60068-2-64
- EN 60068-2-29
- EN 60068-2-30
  - DALI Standard EN 62386-202

#### EM PRO 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 7 terminals



Wiring diagram for non-maintained operation

Wiring diagram for twin lamp high frequency ballasts with 6 terminals



Wiring diagram for twin lamp high frequency ballasts with 8 terminals

**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 <u>www.tridonic.com</u>  $\rightarrow$  Technical Data

Guarantee conditions at <u>www.tridonic.com</u>  $\rightarrow$  Services

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