IP rating

The ingress protection (IP) code denotes the protection against solid objects, moisture and impact provided by the luminaire enclosure.

foreign body protection - 1st IP digit

Test Mark	Protection type	Protection
	IP 1xx	against foreign bodies 50mm
	IP 2xx	against foreign bodies 12mm
	IP 3xx	against foreign bodies 2.5mm
	IP 4xx	against foreign bodies 1mm
	IP 4xx	against harmful dust deposits
	IP 5xx	against dust entry

water protection - 2nd IP digit

Test Mark	Protection type	Protection
	IP x1x	against drops of water falling vertically
	IP x2x	against drops of water from angles up to 15º
	IP x3x	against showers up to 60º
	IP x4x	against splash water
	IP x5x	against heavy downpours
	IP x6x	against water jets
	IP x7x	against immersion
	IP x8x	against submersion.

mechanical impact protection - 3rd IP digit

Test Mark	Protection type	Protection
	IP xx1	impact 0.225 joule
	IP xx2	impact 0.375 joule
	IP xx3	impact 0.500 joule
	IP xx5	impact 2.00 joule
	IP xx7	impact 6.00 joules
	IP xx9	impact 20.00 joules

safety symbols 

The ENEC symbol (european norm electrical certification) is a european test and certification symbol for luminaires and electrical components in luminaires. The number 17 signifies that the test/certification symbol was awarded by Nemko institute for testing and certification in Norway.

luminaires with the F mark can be fixed to normal flame inhibiting materials

(EN600598/VDE0711)

Electrical Characteristics

Typical electrical characteristics for lamp circuits

Lamp Type & Wattage	Starting Current (A) 220V	230V	240V	Running Current (A) 220V	230V	240V	Gear losses (W)	Total Circuit Watts	Power Factor	Capacitor Value (µF)	Lowest Starting Temp (°C)	Fuse (A)
HID Wire Wound Circuits												
High Pressure Sodium												
50W	0.5	0.47	0.45	0.33	0.31	0.3	15	65	> 0.9	8	-30	5
70W	0.66	0.63	0.6	0.44	0.42	0.4	16	86	> 0.9	10	-30	5
100W	0.92	0.89	0.84	0.61	0.59	0.56	23	123	> 0.9	12	-30	5
150W	1.31	1.26	1.2	0.87	0.84	0.8	25	175	> 0.9	20	-30	5
250W	2	1.9	1.8	1.35	1.3	1.24	35	285	> 0.9	35	-30	10
400W	3.1	3	2.85	2.07	1.98	1.9	45	445	> 0.9	50	-30	10
600W	4.47	4.28	4.18	3.44	3.22	3.07	91	691	0.88	60	-30	10
1000W*	Less than operating			5	4.81	4.6	85	1085	> 0.9	32(480V)***	-30	20
Mercury (MBF/HPL)												
50W	0.45	0.43	0.41	0.3	0.28	0.27	13	63	> 0.9	7	-20	5
80W	0.71	0.68	0.65	0.47	0.45	0.43	16	96	> 0.9	8	-20	5
125W	1.08	1.04	0.99	0.72	0.69	0.66	20	145	> 0.9	10	-20	5
250W	2	1.9	1.8	1.34	1.28	1.23	30	280	> 0.9	20	-20	10
400W	3	2.9	2.8	2	1.93	1.85	35	435	> 0.9	30	-20	10
Metal Halide (MBI/HQI)												
70HQI/MBI	0.66	0.63	0.6	0.44	0.42	0.4	16	86	> 0.9	10	-20	5
100HQI/MBI	0.92	0.89	0.84	0.61	0.59	0.56	23	123	> 0.9	12	-20	5
150HQI/MBI	1.31	1.26	1.2	0.87	0.84	0.8	25	175	> 0.9	20	-20	5
250HQI/MBI	2	1.9	1.8	1.35	1.3	1.24	35	285	> 0.9	35	-20	10
400HQI/MBI	3.8	3.7	3.6	2.8	2.4	2.2	40	440	> 0.9	45	-20	10
450HQI/MBI	3.8	3.7	3.6	2.28	2.26	2.2	23	477	> 0.9	50	-20	
Euro Metal Halide												
250W	2.4	2.3	2.2	1.6	1.5	1.5	26	310	> 0.9	20	-20	10
400W	3.4	3.1	2.9	1.9	1.9	1.8	31	406	> 0.9	30	-20	10
Ceramic Metal Halide (CMH/CDM)												
35CDM	0.52	0.49	0.46	0.28	0.25	0.23	11	46	> 0.9	6	-20	5
70CDM	0.74	0.71	0.67	0.52	0.48	0.46	17	87	> 0.9	10	-20	5
100CDM	0.92	0.89	0.84	0.51	0.59	0.58	23	123	> 0.9	12	-20	5
150CDM	1.53	1.46	1.41	0.85	0.81	0.79	25	175	> 0.9	20	-20	5
250CDM	2	1.9	1.8	1.35	1.3	1.24	35	285	> 0.9	35	-20	10
400CDM	3.01	2.51	2.24	2.25	2.17	2.06	48	448	> 0.9	50	-20	10
Multi Vapour (MV)												
175W	Less than Running			1.04	0.99	0.95	30	205	> 0.9	4	-20	
250W	Less than Running			1.35	1.29	1.24	40	290	> 0.9	10	-20	10
400W	Less than Running			2.18	2.09	2	65	465	> 0.9	25.25	-20	10
1000W	Less than Running			4.92	4.72	4.5	65	1065	> 0.9	28(480v)***	-20	20

Typical electrical characteristics for lamp circuits continued

Lamp Type & Wattage	Starting Current (A) 220V	230V	240V	Running Current (A) 220V	230V	240V	Gear losses (W)	Total Circuit Watts	Power Factor	Capacitor Value (µF)	Lowest Starting Temp (°C)	Fuse (A)
HID Wire Wound Circuits												
Fluorescent PL / TRT												
11W				0.06	0.06	0.05	2	13	> 0.9	2	-10	5
13W				0.07	0.07	0.07	3	16	> 0.9	2	-10	5
18W				0.12	0.11	0.11	6	24	> 0.9	3	-10	5
26W				0.16	0.15	0.14	6	32	> 0.9	3	-10	5
Fluorescent PLE												
23W				0.13	0.13	0.12	6	29	> 0.9	3	-10	5
Fluorescent 2D												
28W				0.17	0.16	0.15	6	34	> 0.9	3	-10	5
38W				0.24	0.23	0.22	10	48	> 0.9	4	-10	5

Lamp Type & Wattage	Starting Current (A) 220V	230V	240V	Running Current (A) 220V	230V	240V	Gear losses (W)	Total Circuit Watts	Power Factor	Capacitor Value (µF)	Lowest Starting Temp (°C)	Fuse (A)
Electronic HID Ballasts												
Philips Cosmopolis												
60W Cosmopolis White	0.19	0.17	0.2	0.32	0.31	0.3	8	66	0.95	N/A	-20	5
140W Cosmopolis White	0.44	0.37	0.41	0.71	0.7	0.66	17	152	0.96	N/A	-20	5
Zodion												
50W Zodion SON/CMH	Less than Running			0.26	0.25	0.24	8	56	0.987	N/A	-30(SON) / (-20(CMH)	5
70W Zodion SON/CMH	Less than Running			0.37	0.35	0.34	10	80	0.988	N/A	-30(SON) / (-20(CMH)	5
100W Zodion SON/CMH	Less than Running			0.5	0.48	0.46	13	109	0.986	N/A	-30(SON) / (-20(CMH)	5
150W Zodion SON/CMH	Less than Running			0.76	0.72	0.69	14	165	0.996	N/A	-30(SON) / (-20(CMH)	5
Harvard												
50W Harvard SON/CMH	Less than Running			0.25	0.24	0.23	8	56	0.991	N/A	-30(SON) / (-20(CMH)	5
70W Harvard SON/CMH	Less than Running			0.35	0.34	0.32	7	77	0.996	N/A	-30(SON) / (-20(CMH)	5
100W Harvard SON/CMH	Less than Running			0.49	0.47	0.45	8	106	0.995	N/A	-30(SON) / (-20(CMH)	5
150W Harvard SON/CMH	Less than Running			0.7	0.67	0.64	15	153	0.998	N/A	-30(SON) / (-20(CMH)	5

Typical electrical characteristics for lamp circuits continued

Lamp Type & Wattage	Starting Current (A) 220V	230V	240V	Running Current (A) 220V	230V	240V	Gear losses (W)	Total Circuit Watts	Power Factor	Capacitor Value (µF)	Lowest Starting Temp (°C)	Fuse (A)
Electronic HID Ballasts												
SELC												
50W SELC SON/CMH	Less than Running			0.27	0.26	0.25	12	58	0.974	N/A	-30(SON) / (-20(CMH)	5
70W SELC SON/CMH	Less than Running			0.27	0.33	0.32	11	74	0.983	N/A	-30(SON) / (-20(CMH)	5
100W SELC SON/CMH	Less than Running			0.5	0.48	0.46	13	109	0.993	N/A	-30(SON) / (-20(CMH)	5
150W SELC SON/CMH	Less than Running			0.75	0.72	0.69	19	165	0.995	N/A	-30(SON) / (-20(CMH)	5
Philips CDO - TT												
Mastercity 70W	Less than Running			0.37	0.35	0.34	8	78	0.97	N/A	-20(CMH)	5
Mastercity 100W	Less than Running			0.52	0.5	0.48	10	112	0.98	N/A	-20(CMH)	5
Mastercity 150W	Less than Running			0.75	0.72	0.69	15	165	0.99	N/A	-20(CMH)	5
Metrolight Super HID™												
Super HID™ 50	Less than Running			0.27	0.27	0.26	7	56	0.94	N/A	-30(SON) / (-20(CMH)	5
Super HID™ 70	Less than Running			0.36	0.35	0.34	8	77	0.96	N/A	-30(SON) / (-20(CMH)	5
Super HID™ 100	Less than Running			0.51	0.49	0.47	8	112	0.98	N/A	-30(SON) / (-20(CMH)	5
Super HID™ 150	Less than Running			0.74	0.7	0.68	14	162	0.985	N/A	-30(SON) / (-20(CMH)	5
Prismatron Metal Halide												
PTNG1L320 (1x320W)	Less than Running			1.6	1.5	1.4	24	339	> 0.9	N/A	-20	5
PTNG2L320 (2x320W)	Less than Running			3.1	3	2.9	16 per lamp	685	> 0.9	N/A	-20	5
PTNG1L350 (1x350W)	Less than Running			1.7	1.6	1.6	22	369	> 0.9	N/A	-20	5
PTNG2L350 (2x350W)	Less than Running			3.4	3.3	3.2	17.5 per lamp	750	> 0.9	N/A	-20	5
PTNG1L400 (1x400W)	Less than Running			1.9	1.9	1.8	30	422	> 0.9	N/A	-20	5
PTNG2L400 (2x400W)	Less than Running			3.9	3.7	3.6	20.5 per lamp	857	> 0.9	N/A	-20	5
Fluorescent PL / TRT												
32W				0.18	0.17	0.16	3	35	> 0.9	N/A	-10	5
42W				0.2	0.19	0.19	2	44	> 0.9	N/A	-10	5
57W				0.28	0.27	0.26	5	62	> 0.9	N/A	-10	5
70W				0.34	0.32	0.31	4	74	> 0.9	N/A	-10	5

Typical electrical characteristics for lamp circuits continued

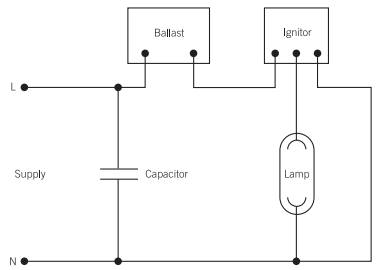
Lamp Type & Wattage	Starting Current (A) 220V	230V	240V	Running Current (A) 220V	230V	240V	Gear losses (W)	Total Circuit Watts	Power Factor	Capacitor Value (µF)	Lowest Starting Temp (°C)	Fuse (A)
Electronic HID Ballasts												
Fluorescent PLL												
2x55				0.52	0.5	0.48	5	115	> 0.9	N/A	-10	5
Fluorescent 2D												
55W				0.27	0.26	0.25	5	60	> 0.9	N/A	-10	5
Fluorescent T5												
2x24				0.23	0.22	0.21	5	48	> 0.9	N/A	-10	5
2x28				0.28	0.27	0.26	6	60	> 0.9	N/A	-10	5
2x39				0.37	0.35	0.35	7	82	> 0.9	N/A	-10	5
2x49				0.48	0.46	0.44	9	104	> 0.9	N/A	-10	5
LED Circuits												
3 WAY						0.03	3.81	7.2	0.98	N/A	-20	
6 WAY						0.032	1.34	7.6	0.98	N/A	-20	
9 WAY						0.04	0.94	11	0.98	N/A	-20	
12 WAY						0.061	2.66	14.6	0.98	N/A	-20	

The performance specification of the electrical circuits and fusing guide represents typical values obtained in accordance with accepted test methods and are subject to normal manufacturing variations of lamps, control gear and luminaires. They are issued as a technical service guide, but are subject to change without prior notice.

For the latest information please refer to www.holophane.co.uk

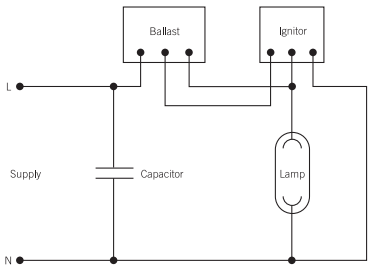
Circuit Diagrams

1



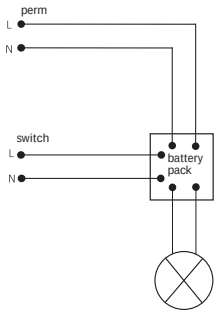
High Pressure Sodium 50 - 400 Watt
Metal Halide 70 - 400 Watt
Reactor & Superimposed ignitor circuit
used for integral version

2



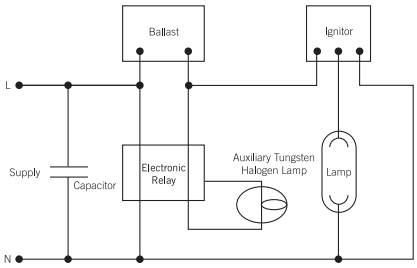
High Pressure Sodium 50 - 400 Watt
Metal Halide 70 - 400 Watt
Reactor & impulser ignitor circuit
used for remote gear version to
achieve greater starting distances

7



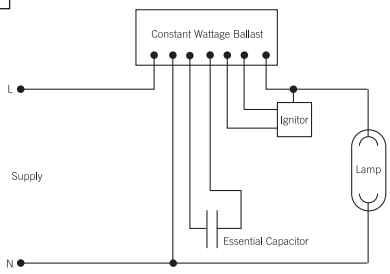
Generic emergency circuit

3



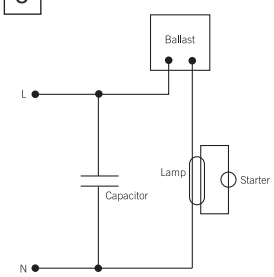
High Pressure Sodium 50 - 400 Watt
Metal Halide 250 - 400 Watt
Standby Relay Circuit

4



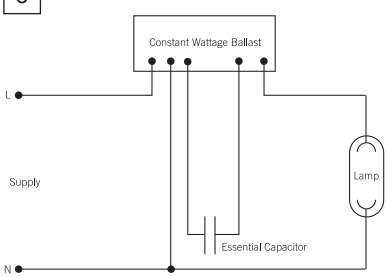
High Pressure Sodium 1000 Watt
C.W.A Circuit & Ignitor

5



4-pin PL
2D Fluorescent

6



Multi-Vapor 1000 Watt
C.W.A. Circuit

Fusing Guide

Circuit Protection for Multiple Luminaire Circuits

Within the electrical characteristics table shown on page 27.4, standard individual fuse values are quoted against each lamp type these can be used when looking to fuse individual luminaires, however we cannot recommend fuse sizes for multiple luminaires due to the individual nature of each installation.
We have no control over many variables. Therefore we would recommend that all installations are planned and installed with reference to the IEE wiring regulations (17th edition) which take effect from 1st July 2008. Using section 533 which deals with fusing, and section 599 which deals with lighting and luminaires, and any other sections of the regulations which are relevant to the installation.

Our only recommendation can be to use a type 'C' or better MCB, which will prevent nuisance tripping due to inrush currents.

When calculating fuse ratings please keep in mind the following points;

> High inrush current at initial switch on (as much as 25 times that of normal running current - although only for a few milliseconds)

> Running up currents

> Hot re-strike conditions

> Lamp rectification during stabilisation and with aged lamps

> Peaks in supply voltage. In order to compensate for these high currents it is recommended to rate the protection device larger than those stated for normal running conditions.