

MST

Your solutions

A2 class ballasts

+ Ignitors

+ BAG products



Magnetic Systems Technology Sp. z o.o. Sp. k.

2017.01.13

Directive 245/2009 – stage 3 – 13.04.2017

This directive doesn't prohibit sales electromagnetic ballasts, but introduce more strict efficiency requirements for electric products. Applies only to sales on the European market, where ballasts for HID lamps need to have A2 marking.

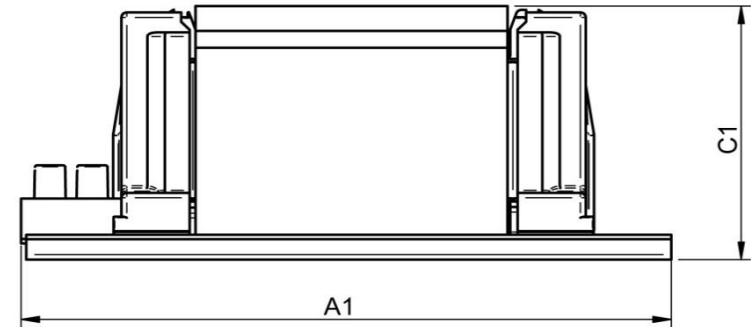
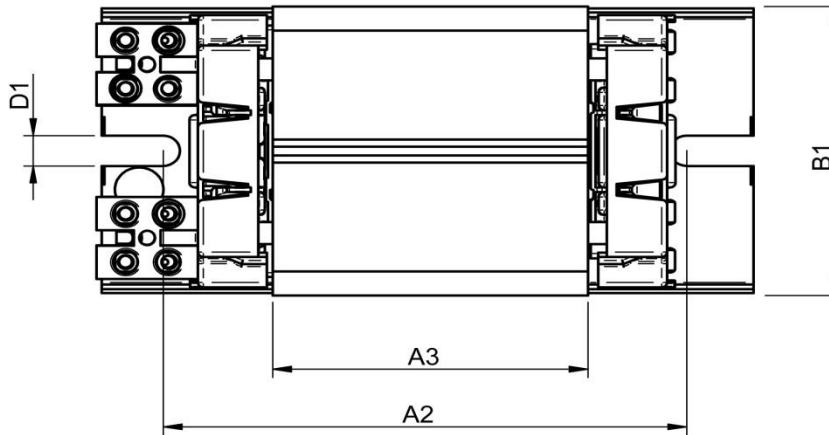
Table with minimum HID ballast efficiency – A2:

Nominal lamp wattage (P) [W]	Minimum ballast efficiency [%]	
	stage 2 (2012)	stage 3 (2017)
$P \leq 30$	65	78
$30 < P \leq 75$	75	85
$75 < P \leq 105$	80	87
$105 < P \leq 405$	85	90
$P > 405$	90	92

HID ballasts A2 - description

Benefits with new ballasts A2:

- Dimensions are similar as before
- Lower power losses
- Lower delta T
- Ballasts A2 use the same ignitors as before
- Ballasts A2 use the same capacitors as before
- Current design of ballasts with power 400W and above, already comply A2 class requirements





HID A2 Basic ballasts 50-70W lamps - 230V

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
NEW BSN 50 K302-A2-ITS	230V 50Hz	A2	118	94	61	52	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 10-S SUD 10-S	10uF
BSN 50 K302-I (TS)	230V 50Hz	A3	118	94	61	52	6,2		
BSN 50 K407-ITS	230/240V 50Hz	A3	118	94	61	52	6,2		
BSN 50 K302-ITS-A	230V 50Hz	A3	118	94	61	52	6,2		

NEW BSN 70 K302-A2-ITS	230V 50Hz	A2	118	94	61	52	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 10-S SUD 10-S SU 38-S * SUD 40-S *	12uF
BSN 70 K302-I (TS)	230V 50Hz	A3	118	94	61	52	6,2		
BSN 70 K407-ITS	230/240V 50Hz	A3	118	94	61	52	6,2		
BSN 70 K302-ITS-A	230V 50Hz	A3	123	98	61	52	6,2		

* 70W double ended lamp only



HID A2 Basic ballasts 100-250W lamps - 230V

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
NEW BSN 100 K302-A2-ITS	230V 50Hz	A2	123	98	61	52	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 38-S SUD 40-S	12uF
BSN 100 K302-I (TS)	230V 50Hz	A3	123	98	61	52	6,2		
BSN 100 K407-ITS	230/240V 50Hz	A3	123	98	61	52	6,2		
BSN 100 K302-ITS-A	230V 50Hz	A3	126	104	76	65	6,2		
NEW BSN 150 K302-A2-ITS	230V 50Hz	A2	134	113	76	65	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 38-S SUD 40-S	18uF
BSN 150 K302-I (TS)	230V 50Hz	A3	126	104	76	65	6,2		
BSN 150 K407-ITS	230/240V 50Hz	A3	134	113	76	65	6,2		
BSN 150 K302-ITS-A	230V 50Hz	A3	151	129	76	65	6,2		
NEW BSN 250 K302-A2-ITS	230V 50Hz	A2	160	139	76	65	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 38-S SUD 40-S	32uF
BSN 250 K302-I (TS)	230V 50Hz	A3	151	129	76	65	6,2		
BSN 250 K407-ITS	230/240V 50Hz	A3	160	139	76	65	6,2		
BSN 250 K302-ITS-A	230V 50Hz	A3	143	121	97	83	6,2		



HID A2 Step dimming ballast - 230V

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
NEW BSN 70/50 K 302-A2-TS	230V 50Hz	A2	123	98	61	52	6,2	SU 10-S SUD 10-S SU 38-S * SUD 40-S *	12uF
BSN 70/50 K407-TS	230/240V 50Hz	A3	118	94	61	52	6,2		
NEW BSN 100/70 K302-A2-TS	230V 50Hz	A2	123	98	61	52	6,2	SU 10-S ** SUD 10-S ** SU 38-S * SUD 40-S *	12uF
BSN 100/70 K407-TS	230/240V 50Hz	A3	123	98	61	52	6,2		
NEW BSN 150/100 K302-A2-TS	230V 50Hz	A2	134	113	76	65	6,2	SU 38-S SUD 40-S	18uF
BSN 150/100 K407-TS	230/240V 50Hz	A3	134	113	76	65	6,2		
NEW BSN 250/150 K302-A2-TS	230V 50Hz	A2	143	121	97	83	6,2	SU 38-S SUD 40-S	32uF
BSN 250/150 K407-TS	230/240V 50Hz	A3	160	139	76	65	6,2		

* 70W double ended lamp only

** 70W lamp only



HID A2 Reinforced ballasts - 230V

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
NEW BSN 70 K202-A2-TS-R	230V 50Hz	A2	118	94	61	52	6,2	SU 10-S SUD 10-S SU 38-S * SUD 40-S *	12uF
BSN 70 K307-TS-R	230/240V 50Hz	A3	118	94	61	52	6,2		
NEW BSN 100 K202-A2-TS-R	230V 50Hz	A2	123	98	61	52	6,2	SU 38-S SUD 40-S	12uF
BSN 100 K307-TS-R	230/240V 50Hz	A3	123	98	61	52	6,2		
NEW BSN 150 K202-A2-TS-R	230V 50Hz	A2	134	113	76	65	6,2	SU 38-S SUD 40-S	18uF
BSN 150 K307-TS-R	230/240V 50Hz	A3	134	113	76	65	6,2		
NEW BSN 250 K202-A2-TS-R	230V 50Hz	A2	160	139	76	65	6,2	SU 38-S SUD 40-S	32uF
BSN 250 K307-TS-R	230/240V 50Hz	A3	160	139	76	65	6,2		

* 70W double ended lamp only



HID A2 Heavy Duty ballasts - 230V:

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
NEW BSN 50 L33-A2-TS	230V 50Hz	A2	118	103	65	53	6,2	SN(D) 57 SU 10-S SUD 10-S	10uF
BSN 50 L33-TS	230V 50Hz	A3	118	103	65	53	6,2		
NEW BSN 70 L33-A2-TS	230V 50Hz	A2	118	103	65	53	6,2	SN(D) 57 SU 10-S SUD 10-S SU 38-S * SUD 40-S *	12uF
BSN 70 L33-TS	230V 50Hz	A3	118	103	65	53	6,2		
NEW BSN 100 L33-A2-TS	230V 50Hz	A2	123	108	65	53	6,2	SN(D) 58 SU 38-S SUD 40-S	12uF
BSN 100 L33-TS	230V 50Hz	A3	123	108	65	53	6,2		
NEW BSN 150 L33-A2-TS	230V 50Hz	A2	126	107,5	81	66	6,2	SN(D) 58 SU 38-S SUD 40-S	18uF
BSN 150 L33-TS	230V 50Hz	A3	126	108	81	66	6,2		
NEW BSN 250 L33-A2-TS	230V 50Hz	A2	151	132	81	66	6,2	SN(D) 58 SU 38-S SUD 40-S	32uF
BSN 250 L33-TS	230V 50Hz	A3	151	132	81	66	6,2		

* 70W double ended lamp only



HID A2 Basic ballasts for Metal Halide lamps - 230V

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
NEW BMH 35 K302-A2-ITS	230V 50Hz	A2	118	94	61	52	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 38-S SUD 40-S	6uF
BMH 35 K302-ITS	230V 50Hz	A3	118	94	61	52	6,2		
BMH 35 K407-ITS	230/240V 50Hz	A3	118	94	61	52	6,2		
BMH 35 K302-ITS-A	230V 50Hz	A3	118	94	61	52	6,2		

NEW BMH 70 K302-A2-ITS	230V 50Hz	A2	118	94	61	52	6,2	SK 578 SK 578-S SK 578 Digital SK 578-S Digital SU 38-S SUD 40-S	12uF
BMH 70 K302-ITS	230V 50Hz	A3	118	94	61	52	6,2		
BMH 70 K407-ITS	230/240V 50Hz	A3	118	94	61	52	6,2		
BMH 70 K302-ITS-A	230V 50Hz	A3	123	98	61	52	6,2		



HID A2 ballasts 400-1000W lamps - 230V

Product name	Mains	EEI	Dimensions [mm]					Ignitor	Capacitor
			A1	A2	B1	C1	D1		
BSN 400 K302-A2-ITS	230V 50Hz	A2	166	145	97	83	6,2	SK 578 (-S) SK 578 Digital SU 38-S SUD 40-S	45 uF
BSN 400 L33-A2-TS	230V 50Hz	A2	166	147	102	84	6,2		45 uF
BSN 600 K302-A2-ITS	230V 50Hz	A2	166	145	97	83	6,2	SK 578 (-S) SK 578 Digital	60 uF
BSN 1000 K302-I	230V 50Hz	A2	285	268	97	78	83	SK 578 (-S) SK 578 Digital Series 1000W	100 uF
BHL 1000 K202	230V 50Hz	A2	225	208	97	78	83	SI 52 (-S)	60 uF



High Power ballasts A2 class

Product name	Voltage [V]	Freq. [Hz]	EEL	Lamps	Lamp current [A]	Ignitor*	Capacitor
BHL 1000 L78	230/240	50	A2	HPL	7,5/8,25	SI52 / none	60uF 250V
BSN 1000 L78	230/240	50	A2	MHN-LA/SON	9,3/10,3/10,6	Series	100uF 280V
BSN 1000 L43	220	60	A2	MHN-LA/SON	9,3/10,3/10,6	Series	100uF 280V
BMH 1800 L78	230/240	50	A2	MHN-SA	17,3	Series	200uF 280V
BMH 1800 L43	220	60	A2	MHN-SA	17,3	Series	200uF 280V
BHL 2000 L76	380/400/415	50	A2	HPI	8,6/9,1	SI 54	40uF 450V
BHL 2000 L78	230/240	50	A2	HPI	16,5	SI 52	100uF 280V
BSN 1000 L02	220	50	A2	MHN-LA/SON	9,3/10,3/10,6	Series	100uF 280V
BMH 2000 L76	380/400/415	50	A2	MHN-LA/SA	10,5/9,6/10,3	Series	60uF 450V
BHL 2000 L50	360/380/400	50	A2	HPI	8,6/9,1	SI 54	40uF 450V
BHL 1000 L02	220	50	A2	HPL	8,25	SI 52 / none	60uF 250V
BHD 2000 L76	380/400/415	50	A2	MHN-LA/SA/FC	11,3/9,6/10,3/11,0	Series	60uF 450V
BHD 2000 L77	400/415/430	50	A2	MHN-LA/SA	9,6/10,3/11,3	Series	60uF 450V
BMH 2000 L5018-A	380/400/415	50	A2	MHN-LA/SA/SB/FC	9,6/10,0/10,3/11,3/11,6	Series	60uF 450V
BSN 1000 L307-A	230/240	50	A2	SON/MHN-LA	9,3/10,0/10,3/10,6	Series	100uF 280V
BMH 2000 L5019-A	360/380/400/415	50	A2	MHN-LA/FC	9,6/10,0/10,3	Series	60uF 450V
BMH 2000 L5030-A	380/400/415	60	A2	MHN-LA/SA/SB/FC	9,6/10,0/10,3/11,3/11,6	Series	60uF 450V
BHL 2000 L4018-A	380/400/415	50	A2	HPI	8,6/9,10	SI 54	40uF 450V
BHL 1000 L307-A	230/240	50	A2	HPL/HPI	7,5/8,25	SI 52 / none	60uF 250V
BSN 1000 L407-I-A	230/240	50	A2	SON/MHN-LA	9,3/10,0/10,3/10,6	SN 56 / SN 59	100uF 280V
BSN 1000 L201-A	220	60	A2	SON/MHN-LA	9,3/10,0/10,3/10,6	Series	100uF 280V
BHL 1000 L201-A	220	60	A2	HPL/HPI	7,5/8,25	SI 52 / none	60uF 250V
BHL 2000 L4030-A	380/400/415	60	A2	HPI	8,6/9,1	SI 54	40uF 450V

* depends on the used lamp

Semi-parallel ignitors for HID lamps



SK 578
SK 578 Digital

SK 97
SK 98 Digital

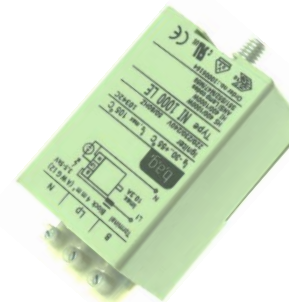
Digital ignitors main features:

- Long life performance
- Lamp state check
- Lamp end-of-life recognition
- Automatic switch off
- Automatic counter reset
- Strongly recommended for use with MH lamps due to the end of life effects

Product name	Lamps types	Mains		Ignition voltage [kV]		Ta	Cable length
		[V]	[Hz]	min	max	[°C]	[m]
SK 578	SON 50 ... 1000W MH 35 ... 1000W CDO 50 ... 250W CDM 35 ... 250W	220-240	50/60	1,8	5,0	-30 ... +85	10*
SK 578-S		220-240	50/60	1,8	5,0	-30 ... +85	10*
SK 578 Digital		220-240	50/60	1,8	5,0	-30 ... +85	10*
SK 578-S Digital		220-240	50/60	1,8	5,0	-35 ... +85	10*
SK 97	SON Green Power 600W	380-400	50/60	3,7	5,0	-30 ... +85	10*
SK 98 Digital	SON Green Power 600W	380-480	50/60	3,7	5,0	-30 ... +85	10*

* with typical cable of 100pF per meter

Series ignitors for HID lamps



Series ignitors main features:

- Compact dimensions
- Available in digital and analog versions
- To be used with series or semi-parallel ballasts
- Available with screw mounting
- Screw terminal block

SU 10-S
SUD 10-S
SU 38-S
SUD 40-S

NI 70 S 4K
NI 70 S 4K-TU
NI 400 LE 4K-TU
NI 1000 LE

MZN 400 S
MZN 400 LE 4K-TU
MZN 1000 S
380 MZN 2000 S

MST name	BAG name ***	Lamps types	Mains		Ignition voltage [kV]		Ta [°C]	Cable length [m]
			[V]	[Hz]	min	max		
SU 10-S	NI 70 S 4K	SON 50 ... 70W	220-240	50/60	1,9	2,3	-30 ... +90	2**
SUD 10-S	NI 70 S 4K-TU	SON 50 ... 70W	220-240	50/60	1,9	2,3	-20 ... +90	2**
SU 38-S	MZN 400 SU NI 400 LE 4K	SON 70* ... 400W MH 35 ... 400W	220-240	50/60	4	5	-30 ... +70	2**
SUD 40-S	NI 400 LE 4K-TU MZN 400 S-TU	SON 70* ... 400W MH 35 ... 400W	220-240	50/60	4	5	-30 ... +70	1**
NI 1000 LE MZN 1000 S	NI 1000 LE MZN 1000 S	SON 400...1000W MH 400...1000W	220-240	50/60	3,5	5	-30 ... +55	1**
380 MZN 2000 S	380 MZN 2000 S	SON 1000W MH 1000..2000W	380-430	50/60	4	5	-30 ... +45	2**

* 70W double ended lamp only

** with typical cable of 100pF per meter

*** ignitors for HID system hand over from BAG company – available in MST portfolio from 1st of January 2017

Parallel ignitors for HID lamps



NP 603



SI 51
SI 51-S
SI 52
SI 52-S

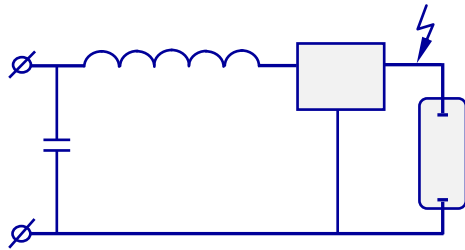
Parallel ignitors main features:

- Compact dimensions
- Operating with 250 and 400W HPI lamps
- To be used only with parallel ballasts
- Available with screw and click mounting
- Screw terminal block

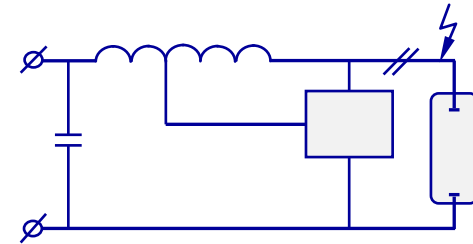
MST name	BAG name	Lamp Power	Lamps	Mains		Ignition voltage [kV]		Ta [°C]	Cable length [m]
				[V]	[Hz]	min	max		
SI 51	-	250 ... 400	HPI	220-240	50/60	0,58	0,75	-20 ... +75	1500*
SI 51-S	-	250 ... 400	HPI	220-240	50/60	0,58	0,75	-20 ... +75	1500*
SI 52	-	1000 ... 2000	HPI	220-240	50/60	0,58	0,75	-20 ... +75	350*
SI 52-S	-	1000 ... 2000	HPI	220-240	50/60	0,58	0,75	-20 ... +75	350*
NP 603	NP 603	250 ... 1000	HPI	220-240	50/60	0,7	1,0	-30 ... +85	100*

* with typical cable of 100pF per meter

Ignition systems for HID lamps



Series connected ignitor



Semi-parallel system

Advantages:

- Ballast and ignitor function independent
- No ignition tap in ballast needed
- No high voltage impulse on ballast

Disadvantages:

- Ignitor consume power
- Ignitor can hum (because of ignition coil)
- Ballast and ignitor need separate protection against end of life of lamp effects.

Advantages:

- Ignitor is not self-heating
- Lower power consumption of the ignitor
- Higher distance between ballast and lamp
- Silent system operation
- Semi-parallel ballast can be used in both types of the system (series and semi-parallel)
- Ignitor is not affected by end of life effects of the lamp

Disadvantages:

- Ignitor needs ballast with ignition tap
- Ballast should stand high voltage impulse

Power Switch for HID systems

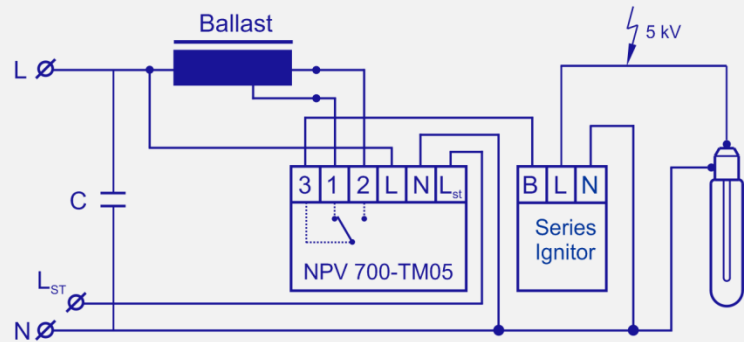


BAG NPV 700-TM05 – power switch used in combination with step dimming ballasts for energy saving in systems with High Pressure Sodium and Mercury lamps.

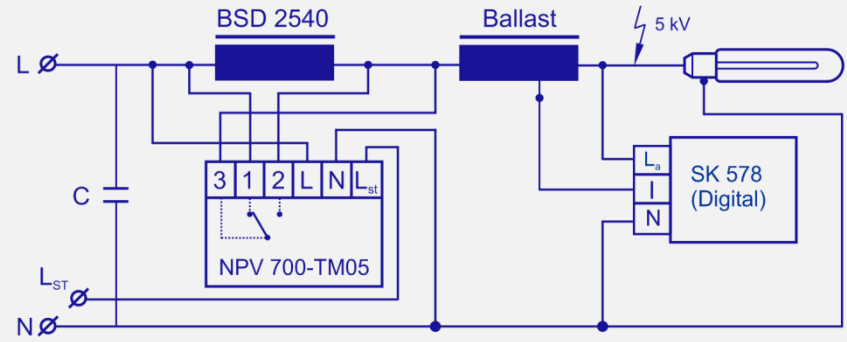
Power switch main features:

- Switch-over operation without applying control voltage (acc. to minutes time delay) or by additional line
- System works for 5 minutes of full load operation after start, independent of the applied control signal
- Maximum switching lamp power: 600W for HID sodium lamp, and 700W for HID mercury lamp
- Maximum switching lamp current: 8A

Wiring diagram: Dual wattage ballast + series ignitor



Wiring diagram: Dimming ballast + semi-parallel system



ZIRIUS – Hot Restrike ignitor

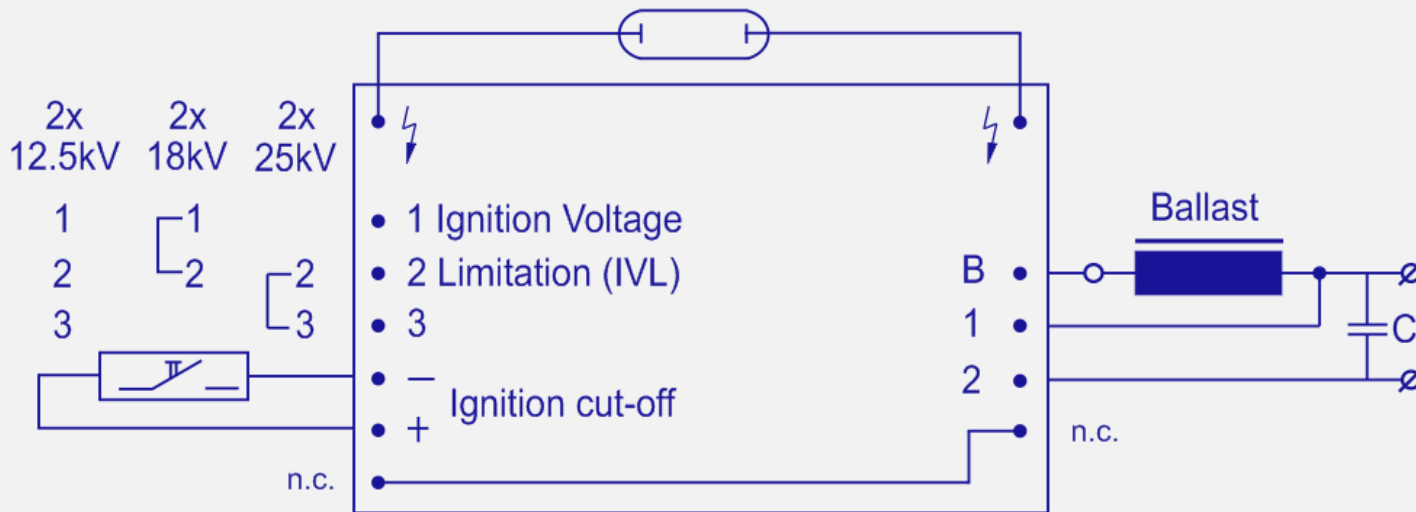


230/480 ZIR 2000 AS 2L – fully electronic ignitor with intelligent ignition management

Hot Restrike main features:

- Instant start of hot and cold lamp
- Automatic switch-off in case of abnormal lamp operation, or End-of-Life of lamp
- Automatic recognition of the connected lamp
- Individual adaptation of the ignition parameters
- Symetric ignition on both leads

Wiring diagram



MST

Your solutions