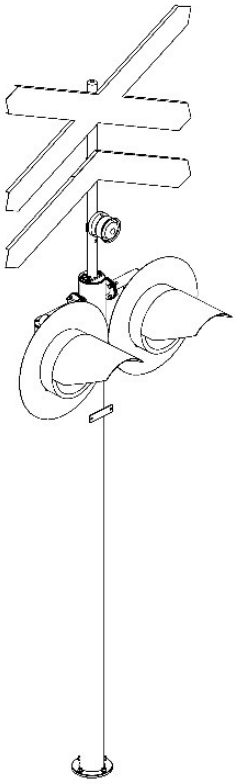
Road signal type SD-1M

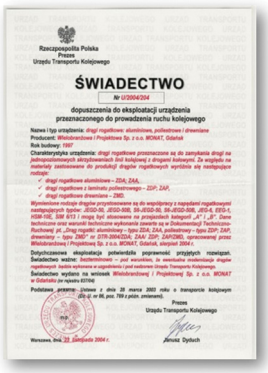


Signal type: SD-1M of level crossing signal system is designed to notify visual and (optionally) acoustic signals to road users at junctions of roads with railway lines (tracks). The signal warns road users against rail vehicle approaching the level crossing and starting of the boom barrier lowering process. It means that level crossing signals are designated for stopping all streams of traffic moving alongside the road for duration of train (rail vehicle) passage through the junction with such a road.

Road signals use PHG lamps (by F.U.S.T. Sygnały Rybnik) with the light bulb 12 V DC 24W or diode illuminator (LED insert 12 VDC; 7-12 W; ø300), replacing the traditional light bulb. Signal design comprises metal mast (round cross-section), in the bottom section of which there is a metal flange that enables mounting the mast to a foundation installed in the ground. Signal mast is covered with red strips of adhesive film ORALITE Reflective Film Engineer Grade, subject to 7 year guarantee. In the top section of the mast there is a head to which metal brackets are screwed with attached signal lamps. Lamps are installed horizontally, symmetrically to the mast axis. Signal adjustment is possible by using the head, which enables rotation in vertical plane, and the element between the head and the lamp, which enables adjustment vs. the transversal axis of the head. Black painted background sheet is attached to each lamp.

DESIGNATIONS OF ROAD SIGNAL SD-1M

Type:	Designation with digits	Type of lamp	Execution	
SD – 1M	1st digit	1	Ø 300; light source – incandescent; 12 V / 24 W	
		2	Ø 300; light source – incandescent; 12 V / 7-12 W	
	2nd digit		0	Without acoustic signal
			1	With acoustic signal
	3rd digit		0	Without the symbol G3 and G4 (St. Andrew's cross)
			1	With the symbol G3 - single track line
			2	With the symbol G4 - multiple track line
	4th digit		0	Without box foundation
			1	With box foundation
			2	Custom execution



Rzeczpospolita Polska
Prezes
Urzędu Transportu Kolejowego

ŚWIADECTWO

Nr U/2004/304

dopuszczenia do eksploatacji urządzenia
przeznaczonego do prowadzenia ruchu kolejowego

Road signal SD-1M has the Certificate of admission to use of RTC equipment no. U/2010/0299

ACCESSORIES

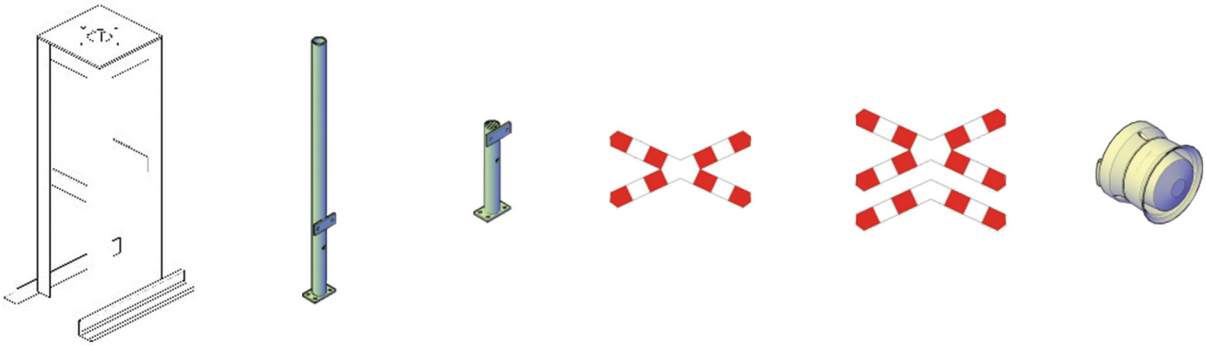
WARNING!

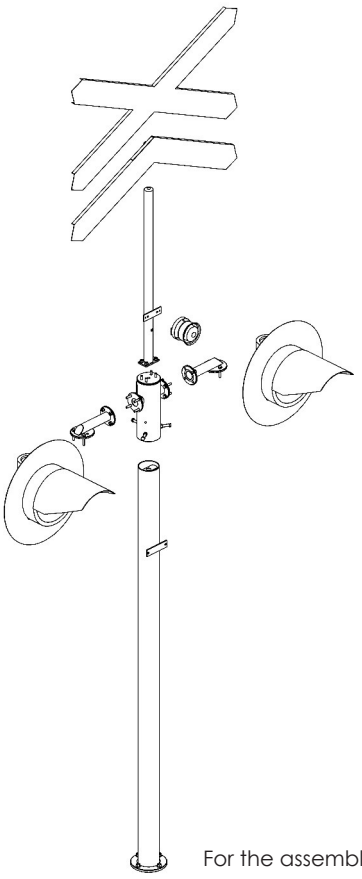
Steel foundation box of the road signal is not included in the road signal kit.

It is a separate price list item.

Additional accessories for the road signal include:

- steel foundation box of road signal,
- bracket for St. Andrew's cross and typhon,
- bracket for typhon,
- St. Andrew's cross for single track line - (road sign G3),
- St. Andrew's cross for multiple track line - (road sign G4),
- typhon,
- typhon, modulated.





For the assembly drawing of road signal, see below.

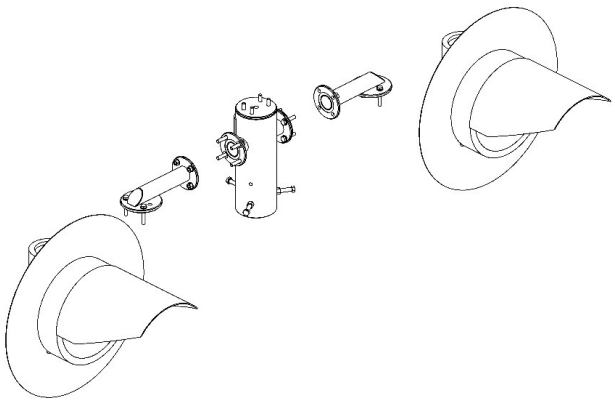
Road signal SD-1M head

Signal type: SD-1M of level crossing signal system is designed to notify visual and (optionally) acoustic signals to road users at junctions of roads with railway lines (tracks).

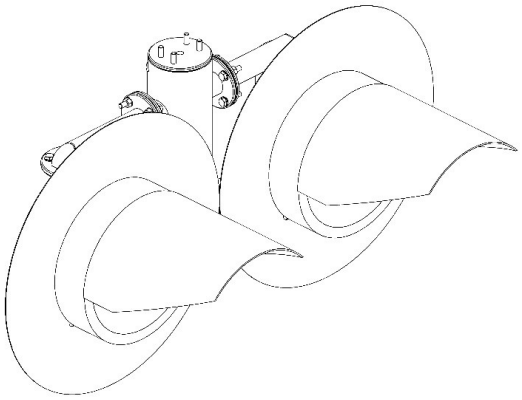
The essential component of the signal is a special head installed on the top of the mast, designed for:

- installation of a console with suspended signal lamps (chambers) installed horizontally, symmetrically to the mast axis;
- the base for road sign G-3 „Saint Andrew's cross" support (single arms), erected ahead of level crossings at single track lines, or for road sign G-4 „Saint Andrew's cross" support (lower arms doubled), erected ahead of level crossings at double or multiple track lines,
- typhon mount.

Road signal head uses PHG lamps (by F.U.S.T. Sygnały Rybnik) with the light bulb 12 VDC 24W or diode illuminator (LED insert 12 VDC; 7-12 W; ø300), replacing the traditional light bulb. In the top section of the mast there is a head to which metal brackets are screwed with attached signal lamps. Lamps are installed horizontally, symmetrically to the mast axis. Signal adjustment is possible by using the head, which enables rotation in vertical plane, and the element between the head and the lamp, which enables adjustment vs. the transversal axis of the head. Black painted background sheet is attached to each lamp.



Drawing representing components of the road signal head



Assembly drawing of the road signal head

TLT diode illuminator - LED insert for road signal

Implementation of this solution has been inspired by the common in developing countries tendency to eliminate incandescent light sources and substituting them with semi-conductor light sources, consuming ten times less energy. Different operating principle makes the guaranteed working time of TLT illuminator exceed 100,000 hours (average working time of high quality incandescent light source is 3500 hours). LED inserts offer a series of unique features, including they are the only solution to meet all the requirements defined in regulation by Minister of Infrastructure of 3 July 2003 published in JoL No. 220, and their use is not connected with additional costs of replacing luminaires or sockets. Tenfold reduction in energy consumption ensures return on TLT LED inserts within one year.
LED inserts come with 6 years guarantee.

LED illumination inserts - TLT LED illuminator

The following are among the advantages of TLT LED inserts for road signals:

- Unlimited life cycle and reliability,
- Over tenfold reduction in power consumption,
- Full resistance to weather conditions and vibrations,

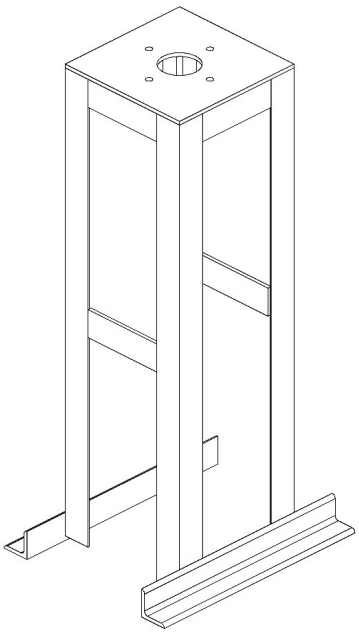
Absence of light reflexes confusing to traffic participants,

- Perfect visibility under all conditions,
- Minimum maintenance.

PARAMETERS

Parameter	Value	Notes
Light intensity * Is [Cd]	> 500	*- in accordance with EN 12368:2000
Brightness adjustment ** [%]	-20%	** -in accordance with JoL no. 170 of 12/10/2003 Regulation by Minister of Infrastructure
Luminance uniformity	>1:15	
Dominant colour * [nm] Spectrum	613-631 nm (red)	*- in accordance with EN 12368:2000
	585-508 nm (yellow)	*- in accordance with EN 12368:2000
	498-508 nm (green)	*- in accordance with EN 12368:2000
Phantom light class * with coloured lampshade	cl. V	*- in accordance with EN 12368:2000
Supply voltage	12 VDC	
Power intake [W]	7 to 12 W	
Protection grade	IP 65	
Conformance to standards	EN-12368,EN 60529, IEC 60529, EN 60598	
Electromagnetic compatibility acc. to	EN 50293:2000	

Steel foundation box of road signal SD-1M



view of the finished foundation box of the signal light SD-1m

Steel box foundation is designed to erect the railway signal SD-1M in the ground in correct position against the track and the pavement. The signal post is attached to its foundation box by means of 40 bolts M14. As opposed to the foundation for gate machines, the foundation for road signals is fitted out with welded threads to screw the bolts holding the signal mast.

WYKONANIE

The gate machine foundation box is made of angle sections and steel flat sections joined permanently by welding. It is dip galvanized acc. to PN-EN ISO 1461 in order to ensure protection against corrosion. The plate for the signal mast has a central hoe, diameter ø 50, through which cables are inserted to the signal.

Parameter	Value
Height	1030 mm
Dept	500 mm
Width	400 mm
Weight	40 kg

Typhon, modulated type EHL

Modulated (electronic) typhon type EHL is installed on road signals type SD-1M to provide warning on approaching rail vehicle to persons within the level crossing area. Mounting bracket for the signal SD-1M is designed to mount a typhon on the road signal. Typhon design enables configuring multiple sound effects, as per customer needs. For the purpose of protecting the level crossing the typhon sound is preset at slowly tolling bell (~1 sound / 1 s). Acoustic power of the typhon may be adjusted, depending on the distance between the level crossing and residential development.

EXECUTION

Typhon housing is executed in aluminium protected with powder coat in colour RAL 7000, and feature a protection grade IP 66.

SPECIFICATIONS

Parameter	Value
Housing	Cast aluminium
Method of installation	The sound outlet horizontal or pointing downward
Signal frequency	0 – 1.500 Hz
Filling factor:	1
Port	Max. 2.5mm² wire diameter
Cable inlet	5 to 12 mm
Temperature range	- 30° C to + 60° C
Acoustic power	Max. 110 dB
Weight	1.5 kg.
Dimensions	Diameter ø 125 mm, height 122 mm

View of the typhon, modulated (electronic) type.

Typhon mounting bracket

view of the finished mounting bracket for typhon

Mounting bracket for the signal SD-1M is designed to mount a typhon on the road signal type SD-1M.

EXECUTION

The mounting bracket is bolted to the top section of the signal head with four bolts. The base of the bracket and the head has a passage for cable providing power supply to the typhon. The cable is connected to terminal block inside the head, which may be accessed by unscrewing of dedicated mask sheet. The typhon is attached to the mounting bracket with dedicated welded flat section. The bracket is executed in steel pipe, ensuring suitable mechanical strength. On the top the bracket is sealed with a plastic cap, and on the bottom there is a flat section with four holes for mounting on the head. Below the flat section holding the typhon, there is a cable gland that enables hermetic entry of cable connection for the typhon. All surfaces of the steel structure are coated to ensure suitable resistance to weather conditions.

PARAMETERS

Parameter	Value
Length	360 mm
Width	140 mm
Dept	70 mm
Weight	1.5 kg

Mounting bracket for Saint Andrew's cross

The mounting bracket of Saint Andrew's cross of road signal type SD-1M enable mounting both the Saint Andrew's cross and a typhon on the signal.

EXECUTION

The mounting bracket is bolted to the top section of the signal head with four bolts. The base of the bracket and the head has a passage for cable providing power supply to the typhon. The cable is connected to terminal block inside the head, which may be accessed by unscrewing of dedicated mask sheet. The cross is mounted with dedicated steel clamps that enable smooth adjustment during installation. Mounting bracket may be used to install crosses for single track lines and multiple track lines. The typhon is attached to the mounting bracket with dedicated welded flat section. The bracket is executed in steel pipe, ensuring suitable mechanical strength. On the top the bracket is sealed with a plastic cap, and on the bottom there is a flat section with four holes for mounting on the head. Below the flat section holding the typhon, there is a cable gland that enables hermetic entry of cable connection for the typhon. All surfaces of the steel structure are coated to ensure suitable resistance to weather conditions.

Parameter	Value
Length	1070 mm
Width	140 mm
Depth	70 mm
Weight	4 kg

NIE MOŻE STANOWIĆ ZAŁĄCZNIKA DO PRZETARGU KOPIA

Rzeczpospolita Polska
Prezes
Urzędu Transportu Kolejowego

ŚWIADECTWO

Nr U/2010/0299

dopuszczenia do eksploatacji typu urządzenia przeznaczonego do prowadzenia ruchu kolejowego

Nazwa i typ urządzenia: *sygnalizator drogowy typu SD-1M kolejowej sygnalizacji przejazdowej*

Producent: *MONAT Wielobranżowa i Projektowa Sp. z o.o., Gdańsk*

Rok budowy: *od 2008*

Charakterystyka urządzenia: *sygnalizator drogowy typu SD-1M przeznaczony jest do ostrzegania użytkowników dróg kołowych na jednopoziomowych skrzyżowaniach z liniami kolejowymi. Ostrzeganie dokonywane jest za pomocą sygnału świetlnego i opcjonalnie sygnału akustycznego. Podstawową częścią jest głowica sygnałowa składająca się z dwóch komór sygnałowych. Jako źródło światła może być żarówka sygnałowa na przejazdach kat. A, B, C lub zespół świetlny LED na przejazdach kolejowych kat. A.*

Budowa, opis działania oraz parametry sygnalizatora zawarte są w Dokumentacji techniczno-ruchowej pt.„Sygnalizator drogowy typu SD-1M kolejowej sygnalizacji przejazdowej", nr DTR-2009, z maja 2009 r. opracowanej przez firmę MONAT Wielobranżowa i Projektowa Sp. z o.o. w Gdańsku.

Sygnalizator drogowy kolejowej sygnalizacji przejazdowej typu SD-1M musi być zgodny z dokumentem pt.: „Warunki techniczne wykonania i odbioru sygnalizator drogowy typu SD-1M kolejowej sygnalizacji przejazdowej", z maja 2009 r., opracowanym przez firmę MONAT Wielobranżowa i Projektowa Sp. z o.o. w Gdańsku.

Wprowadzenie zmian w dokumentacji technicznej i w budowie sygnalizatora drogowego typu SD-1M kolejowej sygnalizacji przejazdowej typu SD-1M musi być uzgodnione z Urzędem Transportu Kolejowego.

Warunkiem ważności świadectwa dopuszczenia sygnalizatora drogowego typu SD-1M jest dostarczenie w cyklu pięcioletnim wyników badań zgodnych z Warunkami Technicznymi Wykonania i Odbioru.

Badania typu urządzenia: *badania zostały wykonane i dały wynik pozytywny, a dotychczasowa eksploatacja potwierdziła poprawność przyjętych rozwiązań.*

Świadectwo ważne jest: *bezterminowo*

Świadectwo wydano na wniosek firmy *MONAT Wielobranżowa i Projektowa Sp. z o.o. w Gdańsku (nr rejestru 159/10).*

Podstawa prawna: *Ustawa z dnia 28 marca 2003 roku o transporcie kolejowym (Dz. U. 2007 Nr 16, poz. 94 z późn. zm.)*

m.p.

Prezes
Urzędu Transportu Kolejowego

Warszawa, dnia 1 lipca 2010 r.

p.o. Mirosław Antonowicz
Wiceprezes