VIREX S.A.

If you are looking for
state-of-the-art
Traffic Solutions...

Stop at this
Traffic Light!

www.vierex.com

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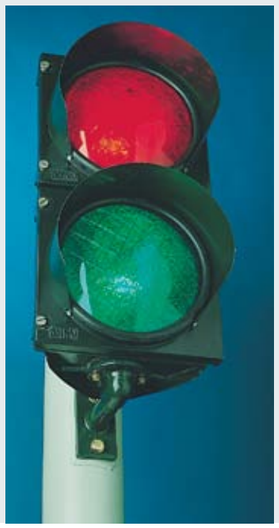
VRX... signals evolution since 1962

Get to know VRX



VRX started its operations in 1962 and since then designs, produces and distributes traffic lights and light signals of the highest quality.

VRX has achieved premium quality for its products using the latest technology, employing skilled personnel with expertise and potential, and investing up to 60% of its annual profit for research and development. VRX became one of the pioneer companies in the field and was awarded the quality assurance certification according to ISO 9002 standard.

The need for traffic lights

Who can imagine traffic without traffic lights?

Today the increased requirements for traffic safety demand traffic lights that offer much more than… light. If you look for traffic lights that really fulfill the modern demands, you should look… closely. Traffic lights should now fulfill a number of requirements such as durability, easy maintenance, distinct signaling regardless of the sun's position, long life expectancy, and flexible use.

What to look for in a traffic light

Red? Yellow? Green? …No, it's not that simple.

The high quality of the traffic light depends upon:

<u>The luminous intensity and the luminance of the signal</u>

There are several regulations that determine the requirements for the traffic light's luminous intensity. Generally, the light signal should be strong enough to be visible during the day but not blinding during the night. The traffic light's optical system determines the luminous intensity of the signal depending on the elements that control the light (reflectors, refraction lenses, luminous source).

Because the sunlight's intensity increases as we move closer to the earth's equator, the requirements for the luminous intensity of the traffic lights vary according to their place of installation. The luminous sources used by VRX are chosen to achieve the appropriate luminous intensity of the traffic lights according to the brightness of the environment.

VRX always produces traffic lights that comply with every country's regulations. Usually the basic principle is to comply with the EN 12368 and DIN 67527 standards. Accredited laboratories have certified the compliance of VRX Traffic Lights to these standards.

The contrast of the luminous field to the surroundingsThe brightness of the environment during the day and the night light pollution of the cities degrade the distinctness of a light signal.

The dark color of the field door (the front square surface) and the visor increases the contrast of the luminous field to the environment. The addition of a contrast frame, around the traffic light, intensifies the contrast even more in order for the luminous field to be more distinct.

The reflection of the sun's rays on the traffic light can cause a false recognition of the light signal (phantom effect). The VRX Traffic Lights have their shell and optical system especially designed against the phantom effect. The phantom effect can be further reduced with the use of an anti-phantom mask.

The size of the signal's surface

The recognition of the signal is easier when its surface is larger. Additionally, the faster the speed of traveling vehicles gets, the larger the diameter of the luminous field must be.

The VRX Traffic Lights are manufactured in three sizes, corresponding to three different diameters of luminous fields (100mm, 200mm, and 300mm) in order to cover all practical needs.

Dust and water tightness of the traffic light

The suspended dust in the environment is increased or decreased depending upon the relative humidity of the air. The amount of dust in the air is small in countries with less sunshine and more rainfall, and large in countries with a lot of sunshine and little rainfall. The traffic lights are repeatedly turned on and off and their interior temperature fluctuates constantly creating airflow. The incoming air carries dust and humidity into the traffic light, if it is not adequately airtight. The dust and humidity settle on the lens, reflector, and lamp surfaces degrading the brightness and luminosity of the field, while the humidity's conductivity can cause the traffic light and the system to malfunction. Therefore, the water and air tightness of the traffic lights are crucial factors for maintaining their quality in time and the system's reliable operation.

The VRX Traffic Lights, is important to note, are manufactured with IP66 protection against dust and water, which is the highest among the existing traffic lights.

Saving energy

The low energy consumption by the traffic lights makes their operation economical and moreover, it keeps the temperature inside the traffic lights low, contributing to their longevity.

The VRX Traffic Lights achieve energy savings with proper light distribution, maximizing the optical system's performance, and the use of small lamps with very small filaments or the use of light emitting diode (LED) optical systems.

Sufficiency of spare parts

The availability of spare parts, for the immediate repair of traffic lights, is important because they are at risk to be damaged by passing vehicles and in frequent need of repair. VRX guarantees availability of spare parts for 10 years from the date of the traffic light's purchase, for all offered models, even for their smallest parts, with immediate delivery.

Maintenance requirements

The traffic lights maintenance, if demanded frequently, can significantly increase their operational costs.

The VRX Traffic Lights have the minimum maintenance needs due to their long life lamps, exceptional airtight design, and durable materials. Their efficient design minimizes the time needed for their maintenance.

Warranty

VRX guarantees the durability of the materials and the good operation of its traffic lights for 5 years from the date of purchase.

Installation instructions

VRX provides detailed and clear instructions for the correct and quick installation of all poles, brackets, supporting arms, and suspension systems of its traffic lights. Instructions are also available covering the planning and execution of the electrical connections, as well as wiring troubleshooting of a traffic light installation.

Why VRX?

VRX Traffic Lights stand out as much for the high quality of their materials as the functionality of their design that excels in:

- Fast and easy mounting
- Visor of the luminous field made from flexible material with anti-reflective properties and interlocking mounting, for fast assembly and replacement
- Maintaining their luminosity properties in time, even in places with high levels of dust and low levels of humidity
- Effective protection against dust and water, IP66 rating, according to the EN 60529 standard
- Easy and safe assembly
- Flexible compliance to the requirements of several countries' regulations
- Successful performance under extreme environmental conditions, especially in high temperatures and dust
- Established strength of construction
- Long life expectancy
- Use of the latest technology
- Wide range of traffic light types to satisfy every practical need

These are the reasons that VRX Traffic Lights have earned the market's trust over the years!

A closer look at VRX Traffic Lights

Technical Specifications - according to EN 12368

Ingress protection	IP66		(higher than Class IV: IP55)	
Environmental conditions	+60Æ C to -25Æ C		Class A & B	
Output luminous intensity	π_{min}	π_{max}	Performance level	
incandescent lamps or LED Med	200cd	2000cd	2/2	
halogen lamps or LED High	400cd	2500cd	3/2	
Distribution of luminous intensity	Wide beam signal (Type W)		Category B	
Maximum phantom signal			Class 5	
Signal lights with symbols			Class S1	
Background screen	signal head		shell only	with frame
	Ø200		Class C1	Class C3
	Ø300		Class C1	Class C2
Impact resistance			Class IR3	

Traffic lights variations

The VRX Traffic Lights are produced in several variations that can meet all practical signaling needs. The variations result from the combination of the following:

Shell color	Lamp holders
Visor	Equipment 10V
Refraction lenses	Luminous field symbols
Anti-phantom mask	Diameter of luminous fields
Lamps	Number of luminous field
Reflectors	

Shell color

The color of the shell may have the following color combinations:

Body Color		Door & Visor Color
fir green (RAL 6009)	/	fir green (RAL 6009)*
yellow (RAL 1003)	/	fir green (RAL 6009)
yellow (RAL 1003)	/	yellow (RAL 1003)
yellow (RAL 1003)	/	black (RAL 9017)
black (RAL 9017)	/	black (RAL 9017)
agate gray (RAL 7038)	/	black (RAL 9017)
agate gray (RAL 7038)	/	agate gray (RAL 7038)
light ivory (RAL 1015)	/	black (RAL 9017)

* standard

Diameter of luminous fields Ø300 Ø200

fir green (RAL 6009)
yellow (RAL 1003)
black (RAL 9017)
agate gray (RAL 7038)
light ivory (RAL 1015)

Visor

The luminous field's visor is easily installed (twisted on) to the door. The Ø200 mm and Ø300 mm traffic lights are also available with a short visor for limited space situations, such as a pedestrian signal placed at an intersection.

The use of the short visor impedes the anti-phantom properties of the traffic light and it is not recommended for traffic lights without a symbol diaphragm or anti-phantom mask.

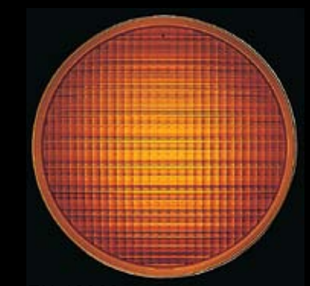
Refraction lenses

The lenses are made of glass or polycarbonate plastic, according to EN, ITE, or DIN standards. They mount on the door of the traffic light with an EPDM rubber seal that withstands temperatures up to 160Æ C.

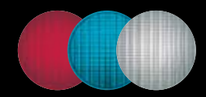
The color of the refraction lenses can be red, yellow, green, clear, or white, according to EN 12368, CIE S 004, DIN 6163, or πΔ∂ standards.

The polycarbonate lenses can also be heat welded to the door. The LED optical systems are available only with their build-in polycarbonate lenses and are mounted with a rubber seal.

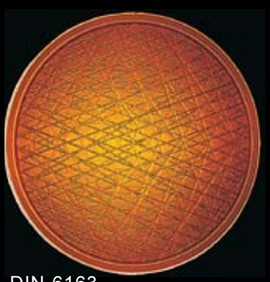
REFRACTION LENSES



EN 12368



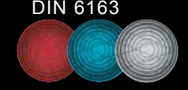
Ø200
Ø300



DIN 6163

Ø200
Ø300

DIN 6163



Ø100

LED

Anti-Phantom mask

The optical system used by VRX allows the reflection of very little sunlight. The easy installation of a mask, in extremely demanding cases, can result to an additional 50% reduction of the reflection.

There are two types of masks:

- The cell-type mask has a number of holes, hexagonal shaped, that limit the reflection of the sunlight.
- The louver-type mask has horizontal metal louvers that their top surface is painted flat black, while their bottom surface is highly reflective. The sunlight is absorbed by the black surface of the louvers, while the bottom surface minimizes the light intensity loss caused by the installation of the anti-phantom mask.

(The LED optical system does not require an anti-phantom mask)

Lamps

The lamps used are the following:

- **Incandescent lamps,** vibration-proof type, krypton, 230V, E27, with 8.000 hours life expectancy and rating:

25W	in traffic lights for	vehicles	with luminous field diameter	Ø 100 mm
40W	“	pedestrian	“	Ø 200 mm
75W	“	vehicles	“	Ø 200 mm
100W	“	vehicles	“	Ø 300 mm

- **Halogen lamps,** 10V, BA20s, with 15.000 hours life expectancy

20W	in traffic lights for	pedestrians or vehicles	with luminous field diameter	Ø 200 mm
30W	“	vehicles	“	Ø 300 mm

- **Light Emitting Diode (LED) Optical Systems,** the latest technology development in traffic light design, with the following advantages:
  - long life expectancy with 100.000 hrs of operation
  - high light intensity
  - luminance uniformity
  - minimal degradation of luminous properties in time
  - very low energy consumption
  - minimum requirements for maintenance

Reflectors

The proper reflector is selected, according to the type of the lamp used.

Lamp holders

The following types of lamp holders are used:

E27 for incandescent lamps

BA20s for halogen lamps

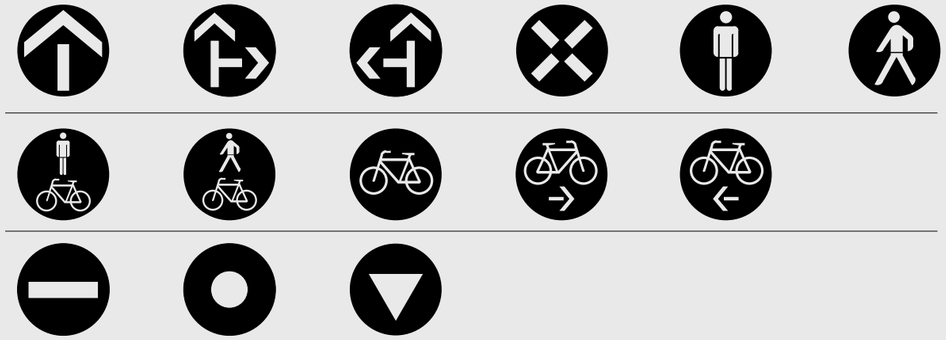
Equipment 10V

The power supply of the halogen lamps satisfies the special safety requirements and has 20-22 VA rating for 20W lamps or 30-45 VA rating for 30W lamps. The power voltage determines the power supply type.

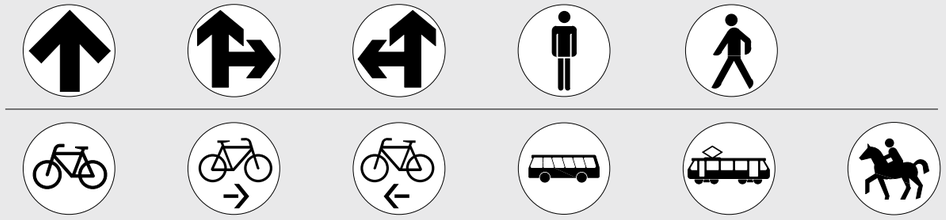
LUMINOUS FIELD SYMBOLS

When symbols are needed on the luminous fields of the traffic lights either diaphragms (with the desired symbols punched out) are placed behind the refraction lenses or refraction lenses with the desired symbols printed on them are used. All symbols used by VRX comply in shape and size with the "Direction for Traffic Lights" RiLSA (Richtlinien fur Lichtsignalanlangen).

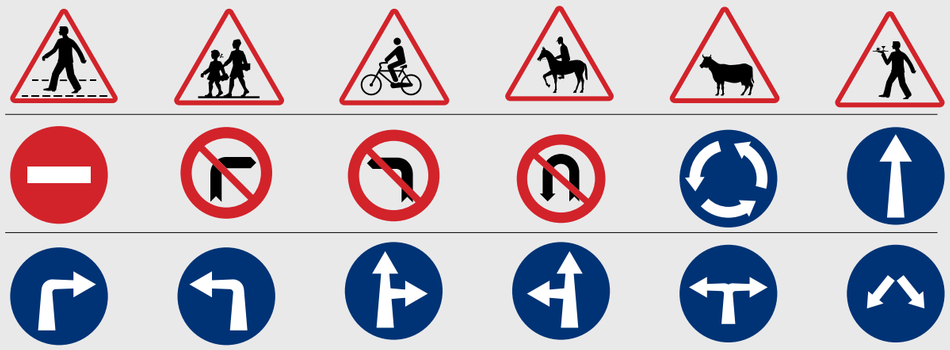
DIAPHRAGM SYMBOLS



PRINTED SYMBOLS

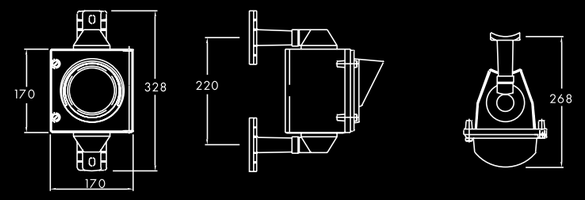


SPECIAL USE SYMBOLS

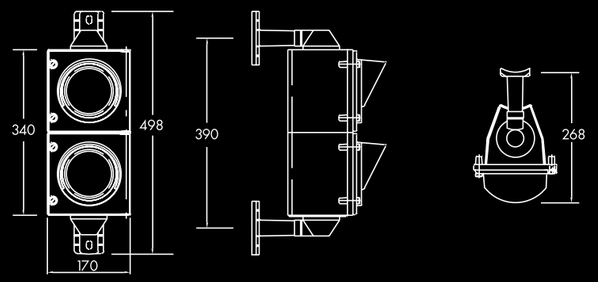


TRAFFIC LIGHTS DIMENSIONS IN mm

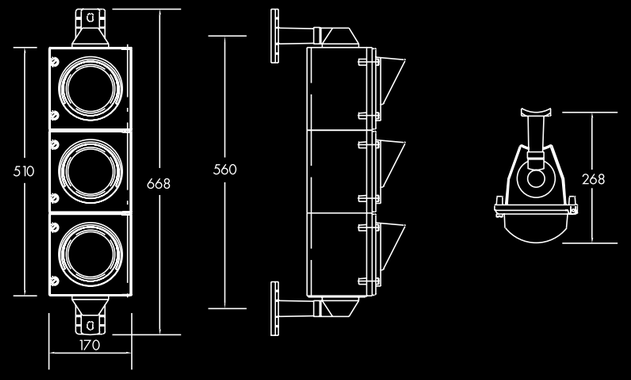
1 FIELD Ø100



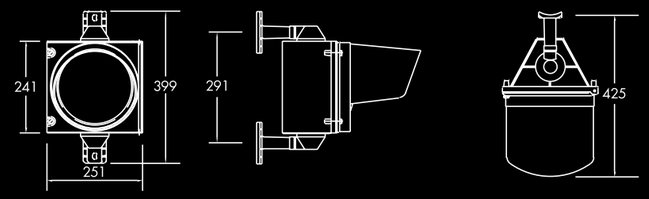
2 FIELDS Ø100



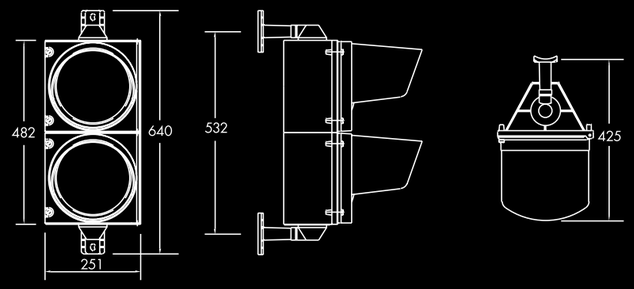
3 FIELDS Ø100



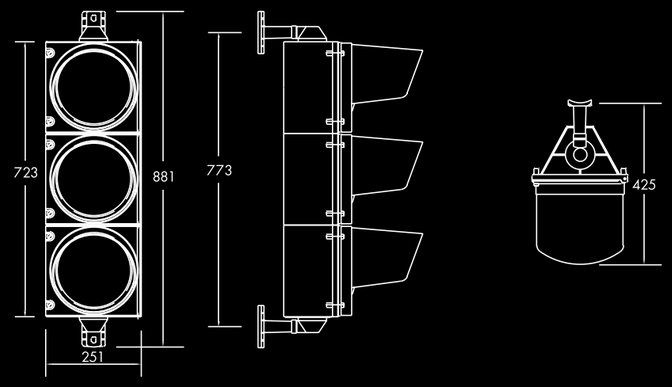
1 FIELD Ø200



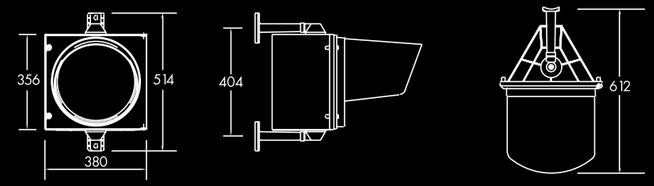
2 FIELDS Ø200



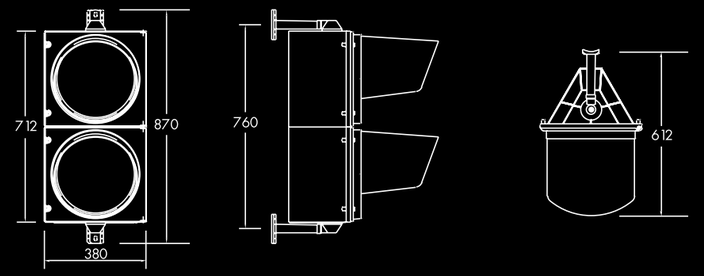
3 FIELDS Ø200



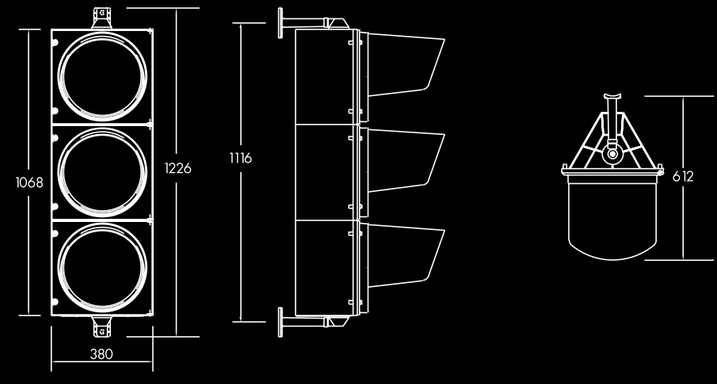
1 FIELD Ø300



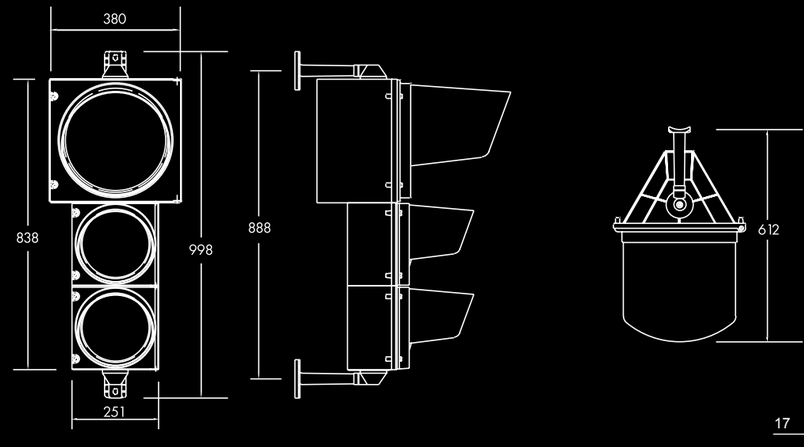
2 FIELDS Ø300



3 FIELDS Ø300



3 FIELDS Ø200/Ø300



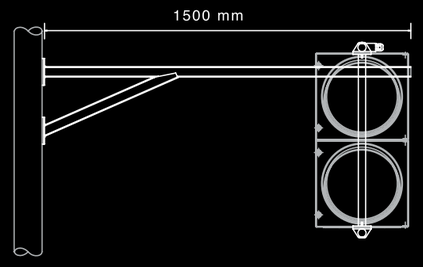
Diameter of luminous fields

Luminous fields can have diameters of 100 mm, 200 mm or 300 mm, depended upon the specific use of the traffic light.

Number of luminous fields

The traffic lights are produced with one, two, or three fields depended on the specific use of the traffic light. The fields are manufactured with sufficient strength to allow, for special orders, the assembly of up to five fields.

SUPPORTING ARM OF VERTICAL POLE



Mounting

The mounting of the traffic lights on a vertical pole or the vertical part of a pole, depending on their arrangement, is accomplished with four types of mounting brackets:

- Simple brackets

  Used for the mounting of one traffic light from a single position on the pole, as well as for the mounting of traffic lights on bridges or walls.

- Double brackets

  Used for the mounting of two traffic lights (with the same number and diameter of fields) from a single position on the pole.

- Simple brackets with extension

  Used for the mounting of a second traffic light, which has different number of fields from the first, at the same optical direction.

- Supporting arms

  Used for the mounting of traffic lights at a distance from the vertical pole, when there are objects obstructing the drivers' visibility.

Each pole can have a combination of up to four, of the above bracket types, in a 90Æ arrangement. The use of these brackets allows for the following types of mounting on vertical poles:

- Mounting on the vertical part of the pole

  The traffic light is mounted on the pole using two brackets or one supporting arm. This requires opening on the pole one hole for the wiring and threaded holes for the mounting bolts of the brackets or the supporting arm. Alternatively, flexible steel bands can be used to secure the brackets, to avoid the threaded holes.

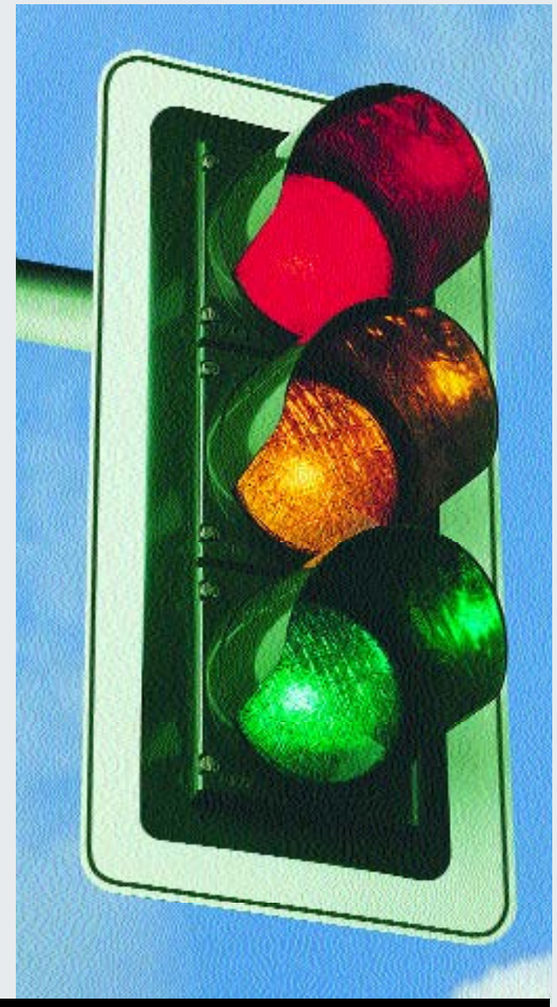
- Mounting from the top of the pole

  This is a faster mounting method and it uses a special mounting apparatus placed on the top of the pole. The traffic light mounts by screwing the upper bracket on the mounting apparatus and securing the lower bracket with a flexible steel band on the pole. The wiring passes from the pole to the traffic light through the mounting apparatus on the top and all drilling is avoided.

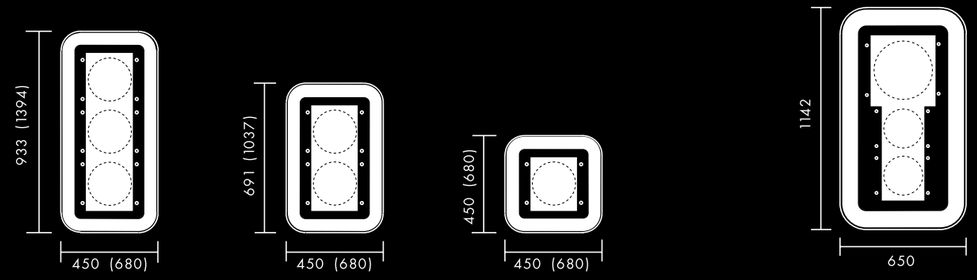
Frames

The contrast frames surround the traffic lights and their use improves the traffic signal's recognition significantly during the day, even in very bright environment.

The VRX contrast frames are made from aluminum, with an electrostatic coating, and their surface does not need maintenance. Their installation, around the shell of the traffic light, is easy with special mounting parts that do not degrade the water and air tightness of the traffic light because they do not require any drilling. They have sufficient strength for wind speeds up to 130km/h.



The dimensions of the VRX contrast frames are in mm and conform to the «Directions for Traffic Lights», RiLSA (Richtlinien fur Lichtsignalanlangen). The dimensions refer to traffic lights with 200 mm lens diameter, while in parenthesis are the dimensions for 300mm lens diameter.



Suspension

The VRX Traffic Lights suspension devices are strong and flexible, and at the same time protect the electrical wiring.

There are three types of suspension:

- Suspending from the horizontal arm of the pole

  Used to suspend the traffic lights on the pole's horizontal arm that extends over the street. The joints of the system allow 4 adjustments (including the height and the angle) ensuring the best positioning of the traffic light for the drivers.

  The optical axis of the traffic light, in this suspension system, is vertical to the horizontal arm. There is another suspension system, for special cases, which has the axis of the traffic light parallel to the horizontal arm.

- Suspending from steel cables perpendicular to the street

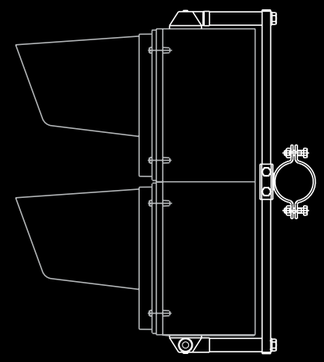
Used to suspend the traffic lights from 2 stretched cables, arranged perpendicularly above the street. The traffic light angle, to ensure its recognition by drivers, is adjusted by adjusting the center gravity.

- Suspending from steel cables diagonal to the intersection

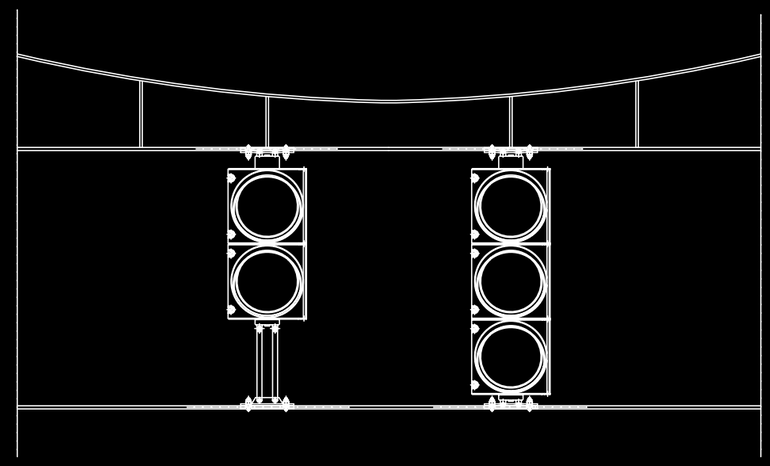
  Used to suspend the traffic lights from 4 cables, arranged diagonally above an intersection. The suspension device can hold 2 to 4 traffic lights that have the same number of fields and lens diameter.

  The suspension method is selected according to each installation requirements to achieve the best possible results.

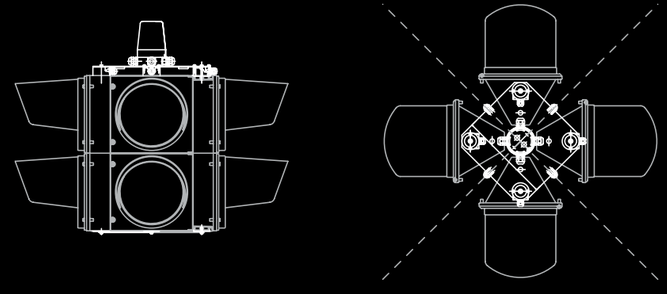
HORIZONTAL ARM SUSPENSION DEVICE

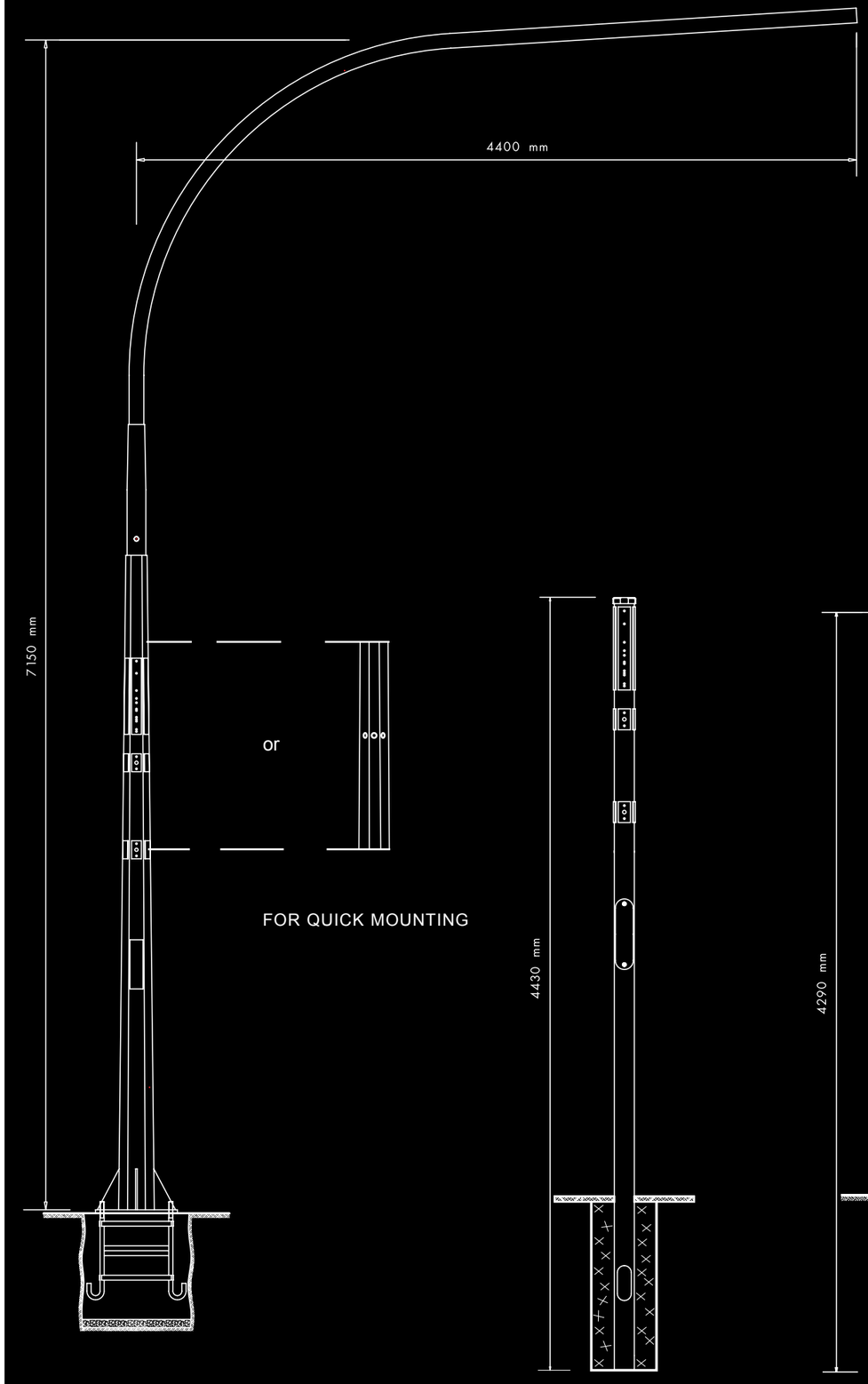


STEEL CABLE SUSPENSION DEVICE PERPENDICULAR TO THE

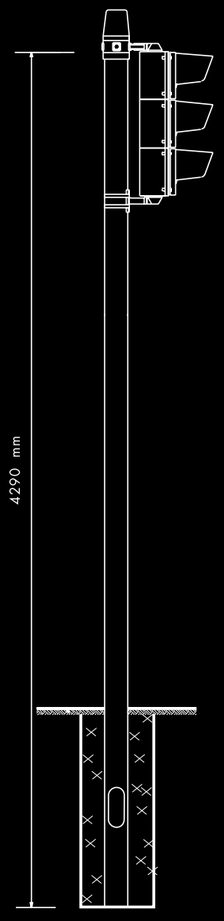


STEEL CABLE SUSPENSION DEVICE DIAGONAL TO THE INTERSECTION





VERTICAL POLE



VERTICAL POLE
FOR MOUNTING FROM THE TOP

Poles

Types of Poles

VRX provides the following types of poles for the installation of traffic lights:

- Vertical poles, for mounting the traffic lights with brackets or supporting arms. The installation of traffic lights requires the opening of threaded holes on the pole.
- Vertical poles, for mounting the traffic lights with brackets or supporting arms, using a special mounting apparatus placed on the top of the pole. The traffic light mounts by screwing the upper bracket on the mounting apparatus and securing the lower bracket with a flexible steel band on the pole.
- Poles with horizontal arm, for suspending the traffic lights on the horizontal arm and mounting the traffic lights on the vertical section with brackets or supporting arms. The installation of traffic lights requires the opening of threaded holes on the pole.
- Poles with horizontal arm, for suspending the traffic lights on the horizontal arm and fast mounting the traffic lights on the vertical section with brackets or supporting arms. The traffic light mounts on the vertical section by screwing the upper bracket in existing holes and securing the lower bracket with a flexible steel band on the pole. The existing holes have covers that are removed during the installation of the traffic light.

Electrical Terminal Block

All poles have a 24-connection terminal block placed either behind the door on the vertical section or inside the mounting apparatus on the top of the pole.

The terminal block is used for connecting the power cables that reach the pole from outside and the internal wiring of the traffic light. The terminal block provides for orderly wiring installation and efficient troubleshooting during maintenance.

PUSH BUTTON FOR

Assembly

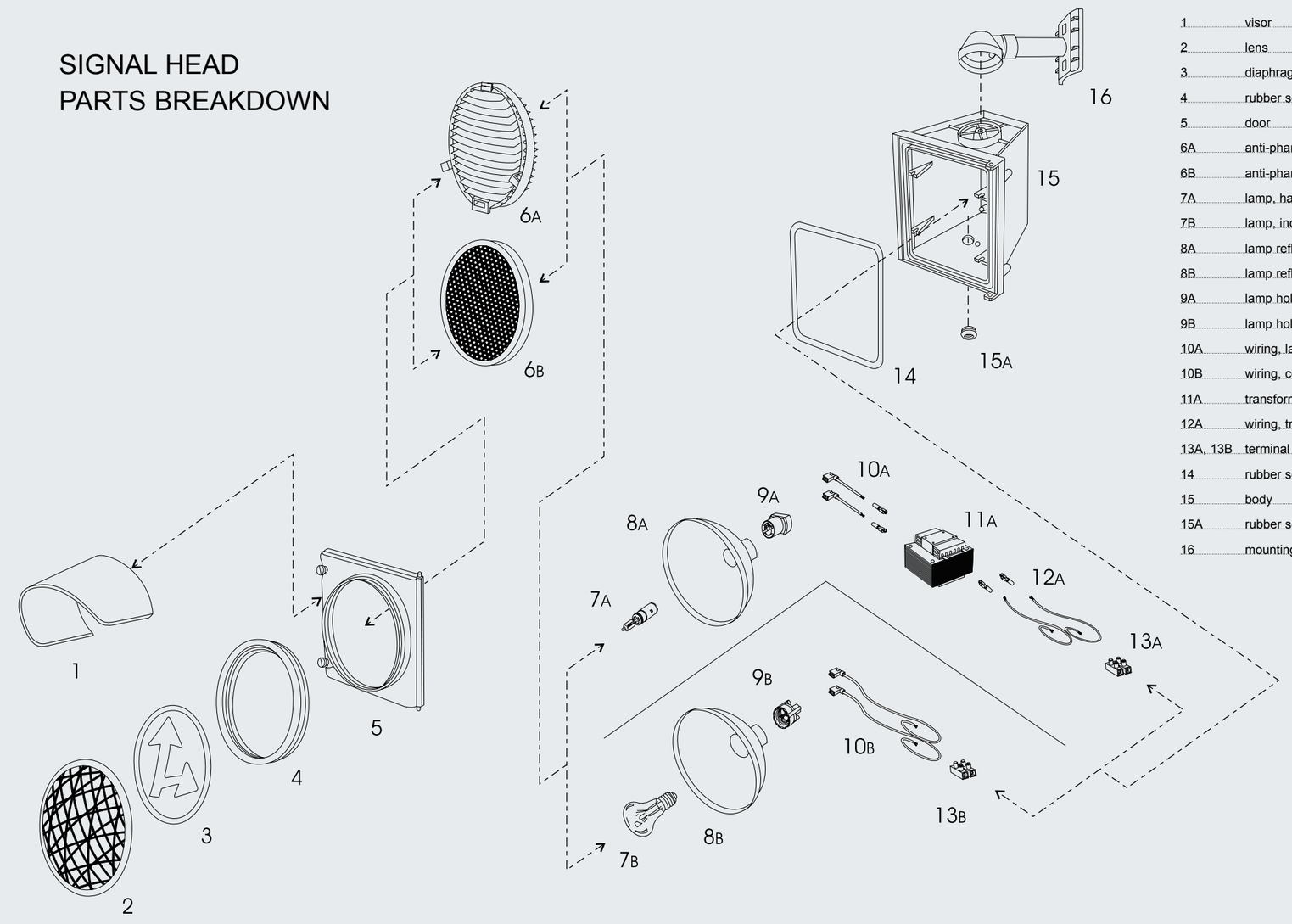
The shell of the VRX Traffic Lights is made from polycarbonate plastic that provides exceptional durability under extreme environmental conditions. The shell's quality is the highest, as any other part, and the assembly is simple and fast.

The single luminous fields can be linked into a traffic light of multiple fields using simple tools.

It is possible to combine luminous fields of different sizes because the connection points are the same on all sizes and match each other exactly. The connection surfaces of the fields are circular and serrated in order to achieve precise angular assembly and prevent rotation.

The mounting and suspension devices are made from materials that are resistant to corrosion and aging, ensuring solid mounting and wiring protection. All devices have the same threading which makes them interchangeable. The easy mounting of the traffic light, without opening holes on the poles, is possible with the use of flexible binding tapes made of stainless steel.

SIGNAL HEAD PARTS BREAKDOWN



1	visor
2	lens
3	diaphragm
4	rubber seal, lens
5	door
6A	anti-phantom mask, louver type
6B	anti-phantom mask, cell type
7A	lamp, halogen
7B	lamp, incandescent
8A	lamp reflector, halogen
8B	lamp reflector, incandescent
9A	lamp holder, BA20s
9B	lamp holder, E27
10A	wiring, lamp holder
10B	wiring, connecting
11A	transformer
12A	wiring, transformer
13A, 13B	terminal block
14	rubber seal, door
15	body
15A	rubber seal, wiring
16	mounting bracket

Ordering Codes for Road Traffic Lights (RTL)

Singal Heads

F S O - [ ][ ][ ][ ] – [ ][ ][ ][ ] – [ ][ ][ ]

Lens Diameter

100 mm	1
200 mm	2
300 mm	3
Ist field 300 mm, 2nd/3rd field 200 mm	4

Visor Size

Stantard	1
Short	2

Body Color / Door & Visor Color

fir green (RAL 6009) / fir green (RAL 6009) (STANTARD)	1
yellow (RAL 1003) / fir green (RAL 6009)	2
yellow (RAL1003) / yellow (RAL 1003)	3
yellow (RAL1003) / black (RAL 9017)	4
black(RAL 9017) / black (RAL 9017)	5
agate gray (RAL 7038) / black (RAL 9017)	6
agate gray (RAL 7038) / agate gray (RAL 7038)	7
light ivory (RAL 1015) / black (RAL 9017)	8

Field Arrangement (Specifies lens mounting and electrical connection)

Vertical, terminal strip in the lower field	1
Vertical, terminal strip in the upper field	2
Horizontal, terminal strip in the right field	3
Horizontal, terminal strip in the left field	4

Numbers of Fields

1 Field	1
2 Fields	2
3 Fields	3

Lens Colors

See the Detailed Catalog for more...	*

Lens Symbols

See the Detailed Catalog for more...	*

Build-in Flasher

NO Flasher	0
Simultaneous Flasher	1
Alternating Flasher	2

Luminous Source

Incandescent, Halogen, or LED - See the Detailed Catalog for more...	*

Lens Type

Glass according to EN	1
Polycarbonate according to EN	2
Polycarbonate according to EN (heat welded on door)	3
Glass according to ITE	4
Polycarbonate according to ITE	5
Glass according to DIN	7
Polycarbonate according to DIN	8
Polycarbonate according to DIN (heat welded on door)	9

Anti-Phantom Mask

No mask	0
Cell-type mask	1
Louver-type mask	2

Ordering Codes for Road Traffic Lights (RTL)

Accessories

F S O - [ ][ ][ ][ ] – [ ][ ][ ][ ] [0][0][0]

Lens Diameter

NOT Applicable (used when it has NO effect on the item)	0
100 mm	1
200 mm	2
300 mm	3
ist field 300 mm, 2nd/3rd field 200 mm	4

Visor Size

NOT Applicable (used when it has NO effect on the item)	0
Standard	1
Short	2

Color

NOTS Applicable (used when it has NO effect on the item)	0
Fir Green (RAL 6009)	1
Agate Gray (RAL 7038)	2
Yellow (RAL 1003)	3
Light Ivory (RAL 1015)	4
Black (RAL 9017)	5

ACCESORIES 9

Numbers of Fields

NOTS Applicable (used when it has NO effect on the item)	0
1 Field	1
2 Fields	2
3 Fields	3

Equipment Type

Pole	Vertical	0	1	0
	with Horizontal Arm	0	2	0
	Vertical, for mounting from the top	0	1	1
	with Horizontal Arm, for quick mounting	0	2	1
Vertical Pole Mounting Bracket	Short	1	1	0
	Long	1	2	0
	Supporting Arm	1	3	0
	Double	1	4	0
	Short, for mounting from the top	1	1	1
	Long, for mounting from the top	1	2	1
	Supporting Arm, for mounting from the top	1	3	1
	Double, for mounting from the top	1	4	1
Horizontal Arm Suspension Device	Indication Vertical to the Arm (Standard)	2	0	0
	Indication Parallel to the Arm	2	1	0
Steel Cable Suspension Device	Transversely to the Street, 2 point (Standard)	3	2	0
	Transversely to the Street with Spacer, 2 point	3	2	1
	Centered on Intersection, 4 point	3	4	0
Contrast Frame		4	0	0
Push Button for Pedestrians	Regular Unit	7	0	0
	Regular Sing, for vertical pole	7	0	1
	Regular Sing, for pole with Horizontal Arm	7	0	2
	Special needs Blind Unit	7	1	0
	Special needs Blind & Deaf Unit	7	1	1

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