



PRODUCT CATALOGUE



WE DELIVER ON OUR PROMISES

UNRIVALLED, QUALITY INNOVATION, CUSTOMER SERVICE

Frontier Safety Ltd UK is one of Britain's largest and most respected manufacturers of innovative products for the fire protection industry.

FRONTIER SAFETY LTD

Providing outstanding commercial, industrial, and residential fire protection services in United Kingdom (UK), United Arab Emirates (UAE) and globally.

Specializing in fire pump design, fabrication, installation, and support as well as fire alarm designs, installation and support in both the commercial and residential markets. Frontier Safety Limited recognizes our success stems from leaders who are knowledgeable, respected, and trustworthy. Our employees exemplify pride, initiative, and personal conviction.

Through these high ideals, we lead as an entity with genuine concern for our employees, making them top priority. The resulting loyalty and sense of honour elevates a greatness that is measured by the achievements of our employees. Frontier Safety Limited sets itself apart from other fire protection & safety contractors through our strong relationships with customers and employees, innovation, and time-tested quality work.

Our goal is to provide better customer services than any other contractor. We accomplish this through developing personal relationship with our customers and ensuring that they are completely satisfied with our work.



FRONTIER





FIRE ALARM SYSTEM



ANALOGUE ADDRESSABLE FIRE DETECTION SYSTEM

The FRN-3002 series of analogue addressable fire alarm panels consists of 3 models (1, 2 and 4 loop connections), named FRN-3002, Compact PRA-CO50SG, & Compact PRACO100SG respectively, all sharing the same control interface, functionality and indications.

The accompanying software application for Windows PC, FRN-3002 provides utilities for calculating installation parameters, configuring the control panel and keeping an event log record

All FRN-3002 models include 4 outputs for conventional sirens, an alarm relay, a fault relay and a programmable auxiliary relay. Two 12V lead acid (Pb) batteries are required in each control panel. The supported battery capacity is 7Ah, 9Ah, 12Ah or 15Ah, which must be calculated in accordance with the size of the installation (number of devices) and the required emergency duration (during mains interruption).

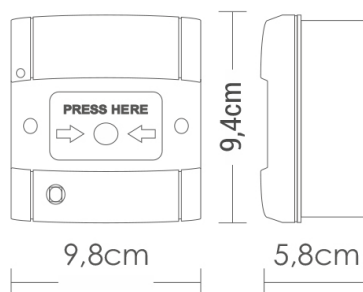
EVPU®

EN 54-2
EN 54-4
EN 54-13
EN 54-21
EN 12094-1



ADDRESSABLE MANUAL CALL POINT

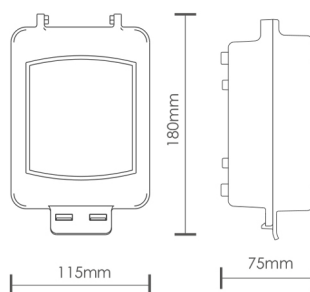
Dimensions



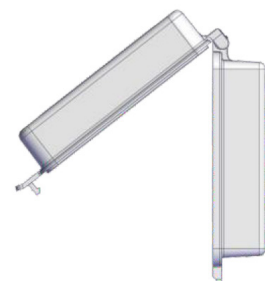
CODE	TYPE	DESCRIPTION		VOLTAGE	STANDBY/ALARM CONSUMPTION	
921513600	FRN 60	Addressable manual call point with integrated isolator	IP20	11-30V DC	90µA / 2,5mA	185 gr.

WATERPROOFING CASE

Dimensions



Side view



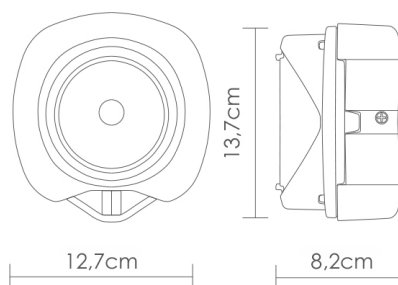
CODE	TYPE	DESCRIPTION		
927535000	FRN-WP	Waterproofing case for fire alarm call point (fire alarm call point is not included)	IP65	280 gr.







ADDRESSABLE SIRENS



Dimensions





CODE	TYPE	DESCRIPTION		MAXIMUM SOUND LEVEL IN 1 METER	VOLTAGE	STANDBY/ALARM CONSUMPTION	
921513201	FRN 92	Waterproof addressable siren with beacon and integrated isolator	IP65	101dB, Dip switch for siren and beacon selection	11-30V DC	90µA / 11,2-52,4mA	185 gr.
921513000	FRN 92	Waterproof addressable sounder with integrated isolator	IP65	101dB, Dip switch for siren selection	11-30V DC	90µA / 7.4-35.9mA	313 gr.

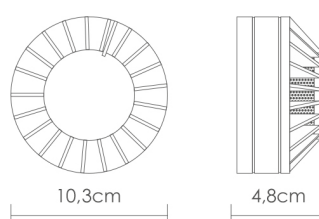




ADDRESSABLE DETECTORS

CODE	TYPE	DESCRIPTION		CLASS	VOLTAGE	STANDBY/ALARM CURRENT	
921615500	FRN 30	Addressable optical smoke detector with integrated isolator	IP42	-	11-30V DC	195µA/2,5mA	160 gr.
921615700	FRN 36	Addressable optical smoke and rate-of-rise heat detector with integrated isolator	IP42	A1R/A1S	11-30V DC	195µA/2,5mA	160 gr.
921616000	FRN 20	Addressable rate-of-rise heat detector with integrated isolator adjustable	IP42	A1R/A1S/CS	11-30V DC	90µA/2,5mA	145 gr.

DETECTORS WITHOUT BASE		DESCRIPTION		CLASS	VOLTAGE	STANDBY/ALARM CURRENT	
CODE	TYPE						
921615501	FRN 30/WB	Addressable optical smoke detector with integrated isolator without base	IP42	-	11-30V DC	195µA/2,5mA	160 gr.
921615703	FRN 36/WB	Addressable optical smoke and rate-of-rise heat detector with integrated isolator without base	IP42	A1R/A1S	11-30V DC	195µA/2,5mA	160 gr.
921616003	FRN 20/WB	Addressable rate-of-rise heat detector with integrated isolator without base	IP42	A1R/A1S/CS adjustable	11-30V DC	90µA/2,5mA	145 gr.

Dimensions



ACCESSORIES		DESCRIPTION		VOLTAGE	STANDBY/ALARM CURRENT	
CODE	TYPE					
921196000	BASE-196/N	Waterproofing box for fire alarm sensor base with cable glands	IP20			160 gr.
921196000	BASE-196/N	Base for addressable detector with siren and beacon	IP20	11-30V DC	195µA/2,5mA	145 gr.
808165501	BS-6155	Integrated base for the detectors	IP20			50 gr.



BASE-196/N



FRN 97

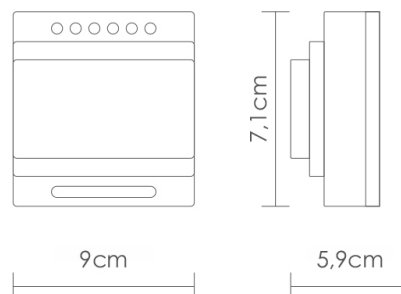




BS-6155

ADDRESSABLE TWIN INPUT/OUTPUT UNIT





Dimensions



CODE	TYPE	DESCRIPTION		VOLTAGE	STANDBY/ALARM CURRENT	
921812000	FRN 56	Addressable twin input/output unit with integrated isolator	IP20	11-30V DC	200µA/2,5mA	136 gr.

REMOTE DETECTOR LED



CODE	TYPE	DESCRIPTION	VOLTAGE		STANDBY/ALARM CURRENT	
921572000	FRN- RI	Remote detector LED (red)	Connected with "R" of the detector	IP20	10mA	50 gr.





CONVENTIONAL FIRE ALARM SYSTEM



CONVENTIONAL FIRE ALARM SYSTEM



FRNC 4001 - CONVENTIONAL FIRE ALARM CONTROL PANEL (2,4,8 ZONE)

- 2, 4 or 8 detection zones.
- Upto 32 devices per alarm zone circuit
- Manual activation of audio visual alarm devices.
- Supervised auxiliary DC 24V outputs.
- 2 Independently programmable non addressable AV alarm output circuit.
- 2 programmable fire alarm relay outputs.
- Fault relay output 3 voltage free inputs for remote reset, evacuation start/ stop, and Day/ night mode.
- Supports upto 7 repeater panels.



CONVENTIONAL SMOKE DETECTORS - (FRNSC)

- Advanced algorithms provide analogue detection discrimination.
- Surface mount device circuit board design.
- High immunity against unwanted alarms.
- Stable smoke sensing chamber. No adjustment or replacement is required.
- 4 wire models available with auto reset
- 2 wire & 4 wire models available with remote LED output
- Sleek low profile housing design
- Dual LED for 360 visibility

CONVENTIONAL FIRE ALARM SYSTEM



CONVENTIONAL HEAT DETECTORS - (FRNHC)

- Durable heat sensor
- Analogue detection discrimination.
- Dual LED for 360 visibility
- 2 wire & 4 wire models available with remote LED output
- 4 wire models available with auto reset



CONVENTIONAL MANUAL CALL POINT - (FRNMCP)

- Pressure activated displacement element provide a safe user experience
- Integral indicator to show polling and alarm activation.
- Resettable with simple key operation.
- Suitable for indoor use
- Monitors for quiescent alarm & fault conditions.



CONVENTIONAL SOUNDER (FRN 91C)

- Operates when the supply voltage is connected to the devices.
- Complete with relay out put and indicating equipment or from an output module connected to addressable alarm circuit wiring
- DC 24V operation
- Loud sound output of 95 dB at 1m
- Zero current load in quiescent condition





WIRELESS SMOKE DETECTOR



205 DC SMOKE ALARM

Long life smoke alarm for residential applications

EN 14604, VDS 3131, C €



205 DC Smoke Alarm

DESCRIPTION

205 DC smoke alarms is a battery powered smoke detection and alarm functions within a single unit.

Advanced electronics in conjunction with a photoelectric smoke sensing chambers provide early detection of fire and high immunity against unwanted alarms.

205 DC smoke alarms are powered by a long-life Lithium-ion battery and do not require a mains supply. Models with either user-replaceable and non-replaceable batteries are available.

Inter connectable 205 DC smoke alarms use a wireless transmission path. Configuration into a closed group ensures that other units within radio signal range are not affected by a test or fire alarm occurring within the configured group.

The 205 DC smoke alarm is suitable for general residential applications, and provides home owners and installers with an easy-to-install long-life solution for life safety and property protection applications.





FIRE ALARM CONTROL PANE (FRONTIER NEO)





ED100 – Optical smoke detector

The ID100 optical smoke detector is based on the Tyndall effect (diffusion of light) and provides first-rate early warning in the event of fire. It offers wide-spectrum detection of smoke particles generated by the majority of fires. The newly designed optical chamber with sealed upper-part

and 500 µm holes diameter mesh insect screen ensure high immunity to false alarms. Sensitivity can be modified to adapt the detector to different conditions of use (sensitivity that can be set: 0.08 dB/m – 0.10 dB/m – 0.12 dB/m - 0.15dB/m).



ED200 – Heat detector

The detector can be set in the following modes: A1R (fixed threshold at 58°C with thermovelocimetric detection), B (fixed threshold at 72°C), A2S (fixed threshold at 58°C), BR (fixed threshold at 72°C

with thermovelocimetric detection). As a result of its high flexibility, this detector is suitable for installation in dusty or smoky environments where the risk of false alarms is high.



ED300 – Smoke and Heat detector

This detector combines smoke and heat sensing technologies that provide (in accordance with the operating mode) exceptionally high sensitivity to all types of fires (especially to fast burning blazing fires involving inflammable liquids which

produce a limited amount of smoke) yet is highly immune to false alarms. The operating mode can be set directly on the control panel by selecting from the following:



PLUS Mode (set at factory): the detector will trigger an alarm when the measured values exceed the set smoke threshold (configurable as per the ED100), or when the measured values exceed the set heat threshold (configurable as per the ED200). Furthermore, in the event of a rise in temperature, the smoke detection sensitivity will be taken to the maximum value. This operating mode, characterized by high sensitivity, allows detection of fast burning blazing fires (for example, fires involving inflammable liquids such as alcohol).

- OR Mode: the detector will trigger an alarm when the measured values exceed the set smoke threshold (configurable as per the ED100), or when the measured values exceed the set heat threshold (configurable as per

the ED200). This operating mode, characterized by discrete sensitivity analysis, allows the detector to sense fires with a high emission of smoke and low heat output (for example, smouldering fires) and also fires with low emission of smoke and high heat output (for example, burning chemicals).

- AND mode: the detector will trigger an alarm only when the set smoke and heat thresholds (configurable as per the ED100 and ED200) are exceeded at the same time. This operating mode, characterized by low sensitivity, greatly reduces the risk of false alarms. Given the low reactivity of this operating mode, before using it, conditions must be carefully assessed.

- SMOKE Mode: the detector will operate as per the ED100.

- HEAT Mode: the detector will operate as per the ED200.



ANALOGUE-ADDRESSABLE DETECTION ENEA

EN 54-11
EN 54-17
EN 54-18

EM500 – Module for the creation of synoptic panels for fire-detection control panels from the Presidia range

The EM500 consists of two separate units (both supplied):

EM500 module – Connects to and feeds directly from the loop, provides 8 LED driver connectors (supplied) and 5 input terminals. Each of the 8 LEDs can be configured to activate in response to any condition, each of the input terminals can be used for any function.

The EM500-EXP expansion module

Connects to the EM500 module via a connection wire (supplied) and adds a further 24 LEDs (supplied). Each LED is configurable, requires ancillary power supply voltage (24Vdc).



FBOX100 – IP65 plastic enclosure

IP65 plastic enclosure for housing loop module models EM312SR, EM110, EM411R, EM3xx, EM322AC.

- Dimensions 16x12x5 mm
- White casing



Manual call points

EC0011E – Outdoor manual call point (IP67)

- Addressable call point
- Manual call point with resettable element. Weatherproof to IP67, suitable for outdoor installation.



EC0020 – Manual call point

- Manual call point with resettable element operated by plastic key (included)
- Activation condition indicated by coloured flag and LED



LPCB
Cert. No. 991h

EM600 – HUSH BUTTON – Home mute button

The EM600 module ('Hush button') finds its ideal placement in residential installations and in applications where a control panel is installed for the protection of an entire apartment block with detectors inside each separate apartment. By installing an EM600 button inside each apartment, in the event of a smoke alarm a voice message will warn only the occupants of the apartment in danger. In the event of a false alarm,

generated for instance by cooking, the occupants will have the possibility to silence the alarm, remove the cause and open a window for several minutes to ventilate the room. It is possible to silence an alarm three consecutive times after which the warning will be broadcast to the entire building. Clear and intuitive voice messages guide the building occupants throughout the various phases.



Remote indicators

IL0010 – Remote indicator

Remote fire-warning indicator



Visual/Audible signalling devices

ESS021* – Audible/Visual sign

Red alarm sign complete with EN54-3 certified audible signalling. Comes with 'Fire alarm' written on it, available with different indications on request. The sign comprises an EM312SR module. It must be connected to the loop and a 24Vdc power source. As well as activating

ESS022* – Audible-Visual alarm sign and flasher

warning signals, this device provides an input for a conventional alarm button and a relay for the control of an electromagnetic stop. It is a costefficient solution for the complete control of a Fire Exit (REI Door). ESS022 has EN54-23 approved flasher circuitry.



	ESS021	ESS022
Sound output @ 1m	92 dB(A)	
Light output (EN54-23)	-	W 4.6 - 9.1
Flash frequency	-	1 Hz
Operating voltage	18 – 30 Vdc	
Consumption	21 mA	50 mA
Operating temperature	from -10°C to +55°C	
Dimensions	293 x 130 x 55 mm	

ISB1011 – Non-addressable base with audible signalling

ISB1021 – Non-addressable base with audible/visual signalling

ISB1030 – Non-addressable base with audible signalling and voice functions

ISB1050 – Non-addressable base with audible/visual signalling and voice functions

Base for Enea series detectors with audible/visual signaller, activated by the R output of the detector, IP21 protection grade. Depending on the model, it is possible to select the alarm tone from the 14 available as well as adjust volume and flasher intensity (in models with flasher components). For models with the voice alarm

function, besides the 14 tones, it is also possible to choose from the 16 voice messages available in 8 different languages and, via the EDRV2000, customize tones and voice messages. Loop-powered base. The ISB1030 and ISB1050 are equipped with terminals for an optional separate power input.



	ISB1011 - ISB1021				ISB1030 - ISB1050	
Tone	14 selectable via Dip switch				14 + 16 voice messages selectable via EDRV2000	
Sound output @ 1m	MAX 98 dB					
Visual range (EN54-23)	High Power	C-3-8	O-3.3-8		C-3-10	O-4-10
	Low Power	C-3-7	O-3-7		C-3-9	O-3.5-9
IP protection rating	IP21					
Operating voltage	18 – 30 Vdc					
Consumption	From 1.4 a 40mA (depending on the selected tone)					
Operating temperature	from -10°C to +55°C					
Weight	220 g					
Dimensions	112x112x53 mm					

ESB1011 – Addressable base with audible signalling

ESB1021 – Addressable base with audible/visual signalling

ESB1030 – Addressable base with audible signalling and voice functions

ESB1050 – Addressable base with audible/visual signalling and voice functions

Base for Enea series detectors with visual/audible alarm signaller, equipped with own address and capable of changing tone (or voice message, for versions with the voice function) in accordance with the situation, IP21 protection grade. Volume, flash intensity and sound sequences can be selected via the control panel from the 14 tones onboard the device (and 16 voice messages available in 8

different languages, only for versions with the voice function). For models with the voice alarm function, it is also possible to customize tones/ voice messages by means of the EDRV2000. Loop-powered base. The ESB1030 and ESB1050 are equipped with terminals for an optional separate power input.



	ISB1011 - ISB1021				ISB1030 - ISB1050	
Tone	14 selectable via Dip switch				14 + 16 voice messages selectable via EDRV2000	
Sound output @ 1m	MAX 98 dB					
Visual range (EN54-23)	High Power	C-3-10	O-4-10		C-3-10	O-4-10
	Low Power	C-3-9	O-3.5-9		C-3-9	O-3.5-9
IP protection rating	IP21					
Operating voltage	18 – 30 Vdc					
Consumption	From 1.4 a 40mA (depending on the selected tone)					
Operating temperature	from -10°C to +55°C					
Weight	220 g					
Dimensions	112x112x53 mm					



ANALOGUE-ADDRESSABLE DETECTION ENEA

EN 54-11
EN 54-17
EN 54-18

- ES1011** – Ceiling mount addressable audible signaller
ES1021 – Ceiling mount addressable visual/audible alarm signaller
ES1030 – Ceiling mount addressable alarm signaller with voice functions
ES1050 – Ceiling mount addressable visual/audible alarm signaller with voice functions

Ceiling mount addressable visual/audible-alarm signaller, IP21 protection grade. Volume, flash intensity and sound sequences can be selected via the control panel from the 14 tones on-board the device (and 16 voice messages available in 8 different languages,

only for versions with the voice function). For models with the voice alarm function, it is also possible to customize tones/ voice messages by means of the EDRV2000. The device is powered via the loop but is equipped with terminals for an optional separate power input.



	ES1011 - ES1021		ES1030 - ES1050	
Tone	14 selectable via Dip switch		14 + 16 voice messages selectable via EDRV2000	
Sound output @ 1m			MAX 98 dB	
Visual range (EN54-23)	High Power	C-3-8 O-3.3-8	C-3-10	O-4-10
	Low Power	C-3-7 O-3-7	C-3-9	O-3.5-9
IP protection rating			IP21	
Operating voltage			18 – 30 Vdc	
Consumption			From 1.4 a 40mA (depending on the selected tone)	
Operating temperature			from -10°C to +55°C	
Weight			175 g	
Dimensions			112x112x53 mm	

ES1000SP – Spacer

1 cm spacer for signalling devices and bases with signalling from the ES1000 serie. (ES1000SP/B). Available in packs of 10, also in black colour

- ES2011RE** – Wall mount audible alarm signaller. Red
ES2011WE – Wall mount audible alarm signaller. White
ES2021RE – Wall mount visual/audible alarm signaller. Red
ES2021WE – Wall mount visual/audible alarm signaller. White
ES2030RE – Wall mount audible alarm signaller with voice alarm. Red
ES2030WE – Wall mount audible alarm signaller with voice alarm. White
ES2050RE – Wall mount visual/audible alarm signaller with voice alarm. Red
ES2050WE – Wall mount visual/audible alarm signaller with voice alarm. White

Wall mount addressable visual/audible-alarm signaller, IP65 protection grade. Volume, flash intensity and audio sequences selectable via the control panel (and diversified according to circumstances) choosing from the 14 tones (and 16 messages in 8 different languages for the versions with voice functions) available

on board the device. For models with the voice alarm function, it is also possible to customize tones/ voice messages by means of the EDRV2000. The device is powered via the loop but is equipped with terminals for an optional separate power input.



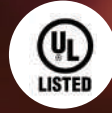
	ES2011 - ES2021		ES2030 - ES2050	
Tone	14 selectable via Dip switch		14 + 16 voice messages selectable via EDRV2000	
Sound output @ 1m			MAX 98 dB	
Visual range (EN54-23)	High Power	W-3.5-7 O-3.5-8-7	W-3.5-10.2	O-3.5-10.5-10.0
	Low Power	W-3-6.5 O-3-8-6.5	W-2.8-7	O-2.8-7.5-7
IP protection rating			IP65	
Operating voltage			18 – 30 Vdc	
Consumption			From 1.4 a 40mA (depending on the selected tone)	
Operating temperature			from -10°C to +55°C	
Weight			150 g	
Dimensions			121 x 121 x 57 mm	

PLEXI_ES2000* – Signalling sign with placement for sounder installation

Transparent plexiglass panel with 'FIRE ALARM' warning (white wording on red background) and Frontier Logo. The panel is supplied with assembling kit and template. Dimensions: 430 x 130 x 4mm.

* Refer to 'Accessories' section for available text.





SELF CONTAINED EMERGENCY/EXIT LIGHTS



CONVENTIONAL EMERGENCY LIGHT

PRODUCT SPECS	Product Name	Emergency Light
	Product Model	FRN 2145
	Battery	Ni-Cd SC3.6V 1500mAh
	Charge Time	24H
	Emergency Duration	3H
	PCB Type	CEM-1 /1.6MM
	Self-contained or central power supply	Self-contained
	Case/color	White
	Viewing Distance	NA
	Degree of Protection	IP65
	Classification of Luminaries	NA



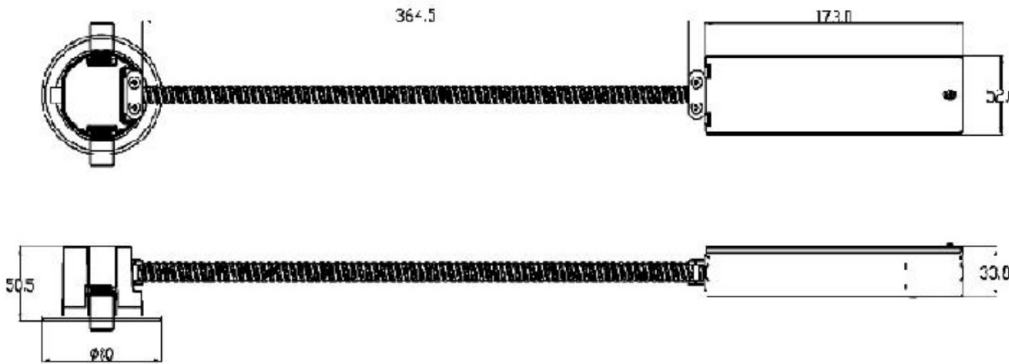
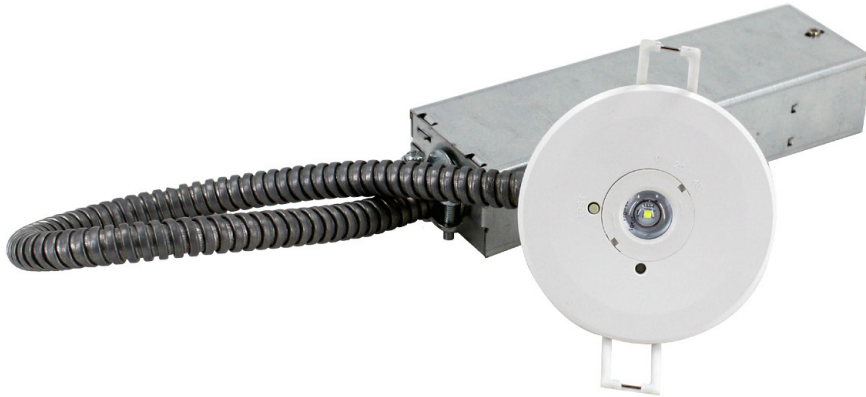
PRODUCT SPECS	Classification of Luminaires	NA
	Certification Standard	UL924
	Operation Temperature	0°C-40°C
	Warranty (Years)	1 Year
ELECTRICAL	Input Voltage	VAC 120~277
	Frequency	50Hz / 60Hz
	Input Current	0.075A (maintained) 0.025A (non-maintained)
	Input Power	5W (maintained) 1.5W (non-maintained)
	Operation Mode	Maintained/Non-maintained
	Emergency Power	1.3W(3.6V)
	Power Factor	N/A
OPTICAL	LED Package Type	SMD 2835/0.2W
	LED Qty	27pcs
	Correlated Color	6500k
	Luminance Flux	150 LM
	Emergency LuminanceFlux	150 LM
	Color Render Index	Ra80
	Dimension(mm)	352×110×68MM
STRUCTURAL	Mounting Type	Wall mounted
	Cover Material	PC
	Housing Material	PC
	Net Weight	0.65KG





RECESS MOUNTED EMERGENCY LIGHT

FRN-Z1101U



Unit:mm

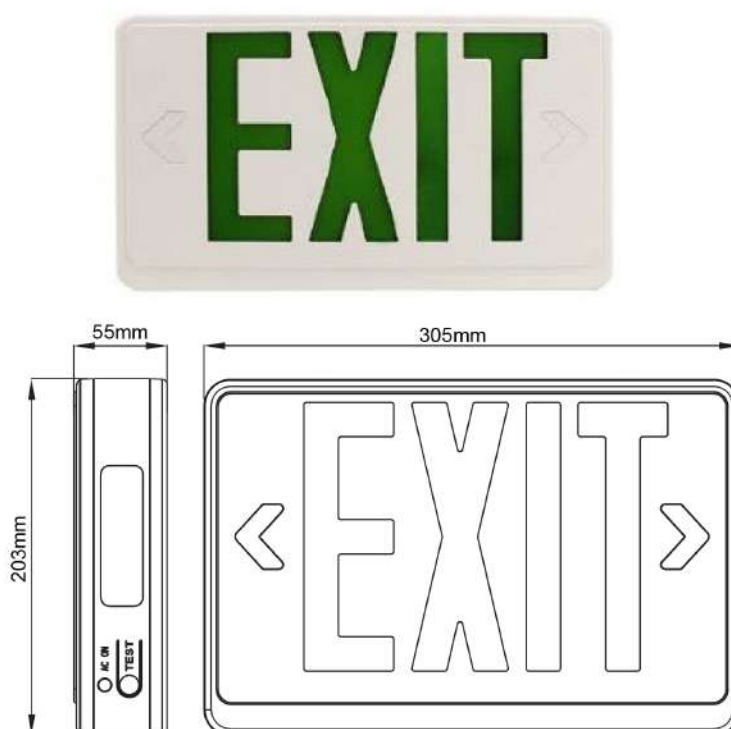
SPECIFICATION

- Input Voltage : 230V AC
- Mounting Method : RecessedLight
- Rated Wattage: 3W
- LED 3535
- Lumen Output : >150 lm
- Battery Charge Time : 16H
- Emergency Time : 3H
- Operation Model : Maintained / Non-Maintained
- IP Level : IP20
- Certificate : UL



CONVENTIONAL EXIT LIGHT

SL#	DESCRIPTION	BRAND	MODEL	APPROVAL
1	EXIT LIGHT WALL MOUNTED	FRONTIER	FRN B5108U-G	

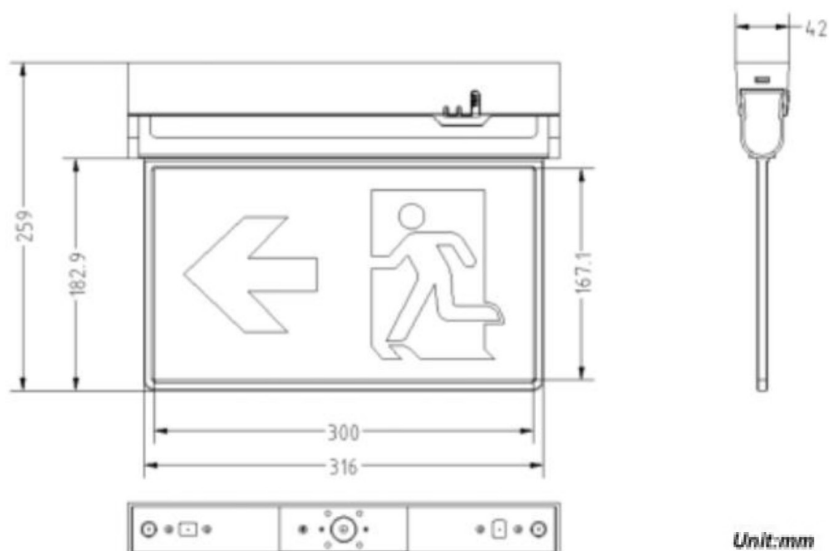


MODEL NAME	FRN-B5108U-G
Rated voltage	AC120-277V~, 60Hz
Rated Wattage	1.2W
Emergency Output Rating	0.36W
Emergency Run Time	180 Minutes
Battery	Ni-Cd 1.2V, 900mAh
Battery life	up to 4 years
Recharge Time	24 hrs
Operating Temp Range	0°C-40°C
Dimensions	305x203x53mm
Weight	0.85kg



HANGING EXIT LIGHT

FRN-F2030CA

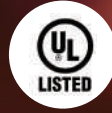


Unit:mm

SPECIFICATION

- Input Voltage : AC 230V Mounting Method:
- Ceiling / Wall / Recessed / Suspend / End mount
- Battery Charge Time : 3H
- Rated wattage: 1.2W
- Operation Model : Maintained
- Viewing Distance : 30M
- IP Level : IP20
- Certificate : UL

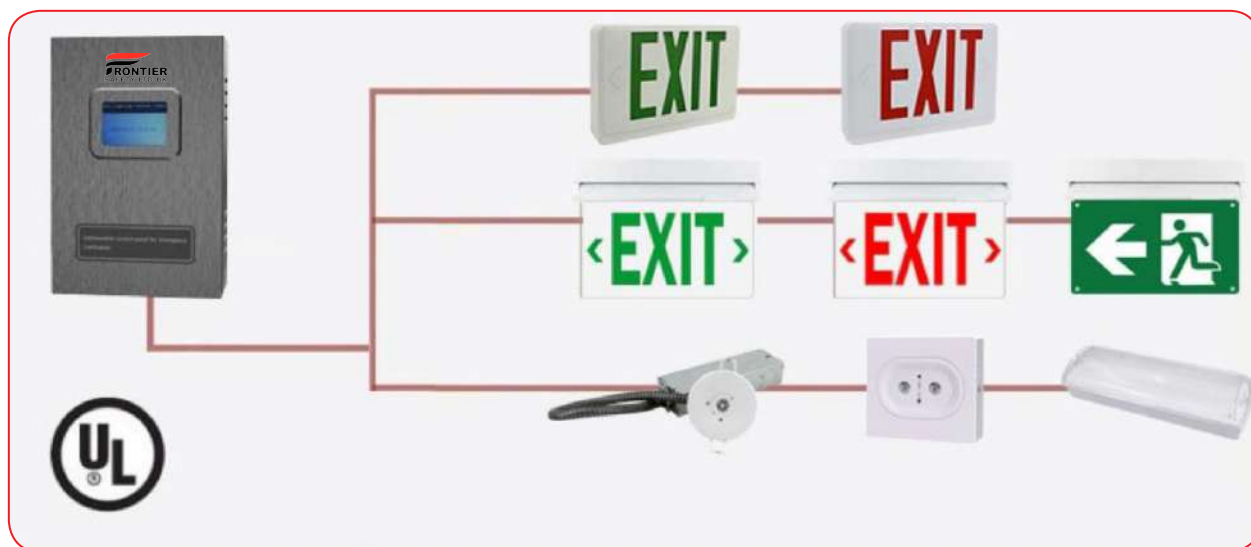




CENTRAL MONITORING SYSTEM



Central Monitoring Emergency / Exit light system



SYSTEM INTRODUCTION

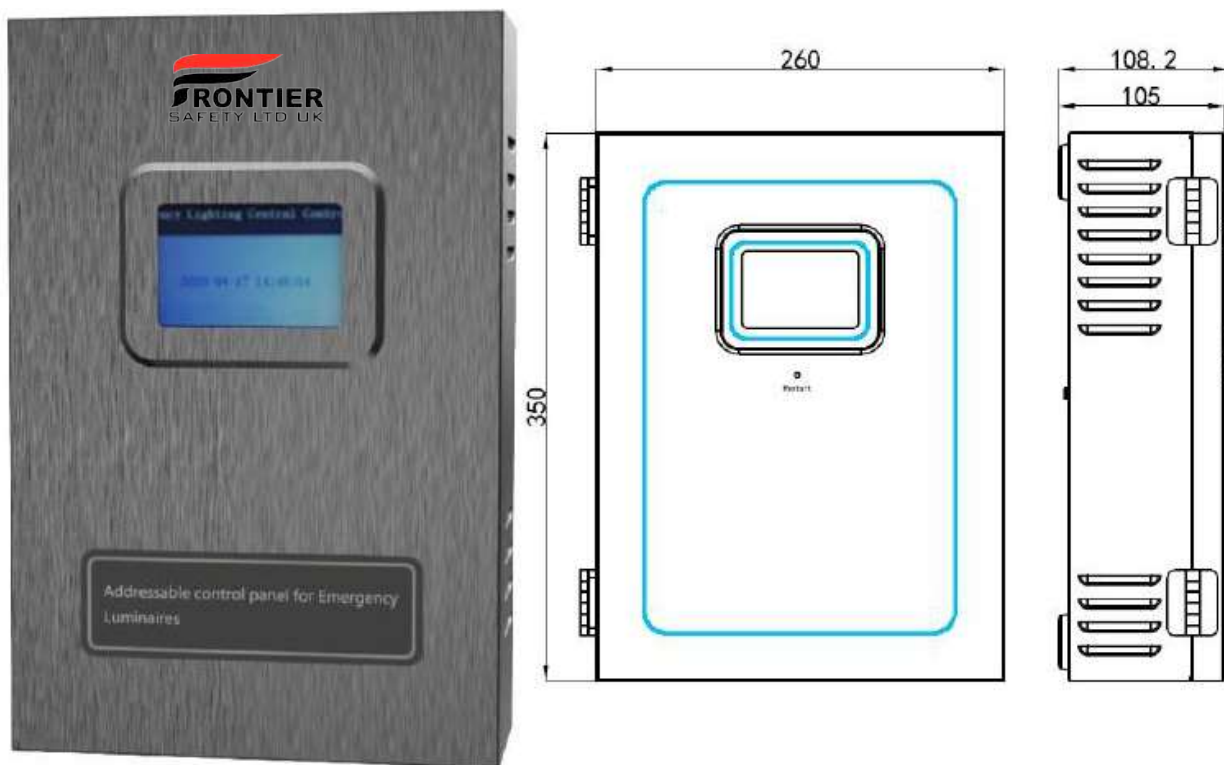
The system adopts one core (two-wire), using the power supply wire for digital communication at the same time. It is cost saving and easy to install. Each control panel supports up to 255 emergency fixtures, with a maximum distance of 1000 meters.



Emergency luminaire system

CENTRAL MONITORING PANEL

FRN-350-DC36U

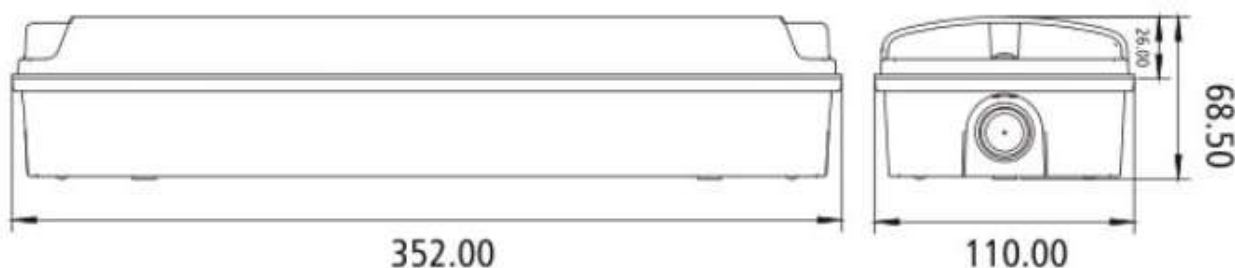


SPECIFICATION

- Input Voltage : AC 100.120V/ 200.240V
- Output voltage : DC34.5V
- IP Level : IP20
- Operation Temp : 0.40°C
- Output current : Max 8A
- Output power : Maximum 276W
- Communication distance : Up to 1000 met
- Carrying Capacity : Maximum 255 device:
- No. of Lines : 2 lines
- Certificate : UL



ADDRESSABLE SURFACE / RECESSED MOUNTED EMERGENCY LIGHT FRN-Z2745U

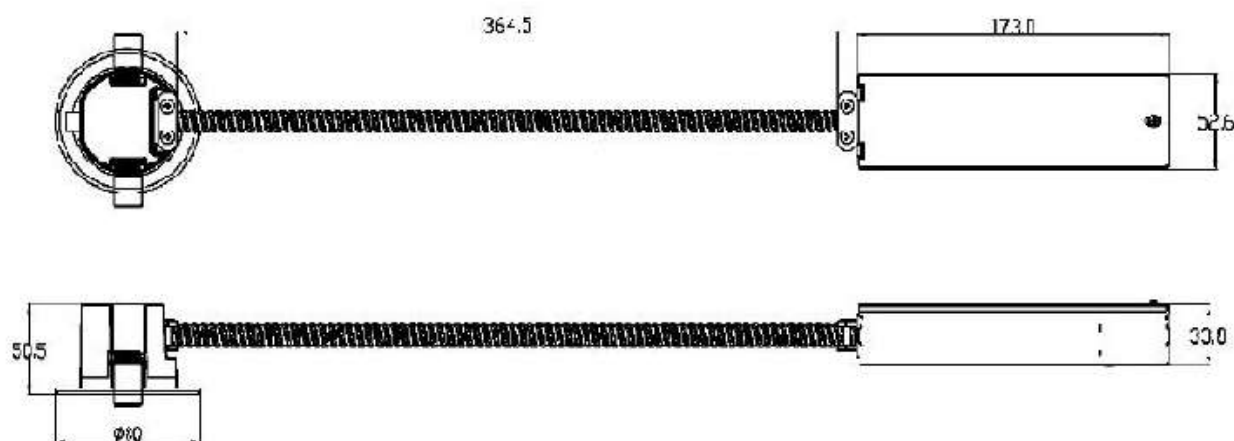


SPECIFICATION

- Mounting Method : Surface/Recessed
- Input Voltage : DC36V(DC15-40V)
- Light Source : SMD2835x27pcs
- CRI>80
- Lumen Output : 3001m
- IP Level : IP65
- Operation Model : Maintained/Non-Maintained
- Battery : LiFePO4 3.2V 3600mAh
- Battery Charge Time : 24H
- Emergency Time : 3H
- Recessed Kit (Optional)
- Certificate : UL

ADDRESSABLE RECESS MOUNTED EMERGENCY LIGHT

FRN-Z1805U

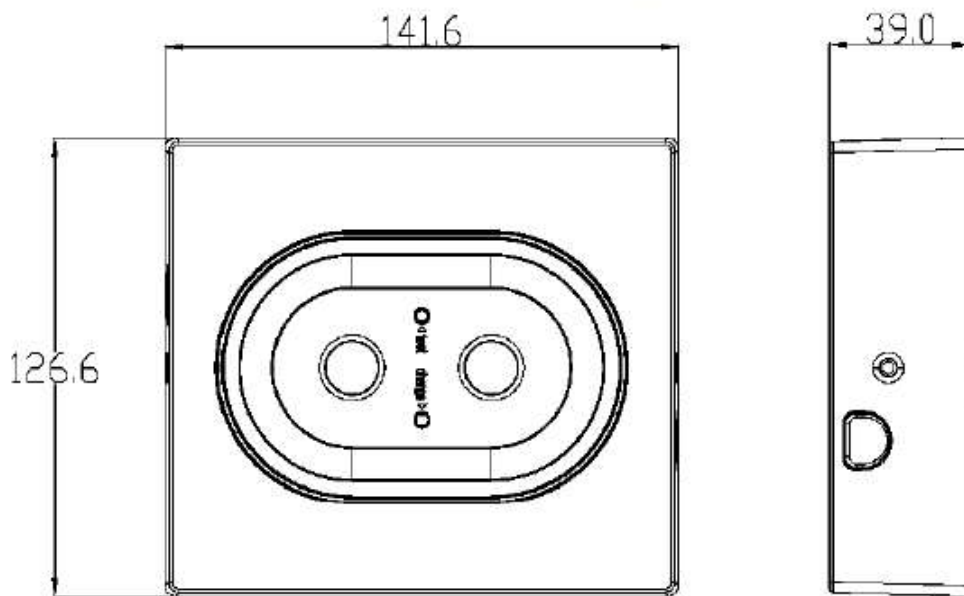


SPECIFICATION

- Input Voltage : DC36V(DC15-40V)
- Mounting Method : Recessed
- Light Source : SMD 3535 x 1pc
- CRI>70
- Lumen Output : 300lm
- Battery Charge Time : 24H
- Emergency Time : 3H
- Operation Model : Non-Maintained
- Battery : LiFePo4 3.2V 3600mAh
- IP Level : IP20
- Certificate : UL



ADDRESSABLE SURFACE MOUNTED EMERGENCY LIGHT FRN-Z2805U

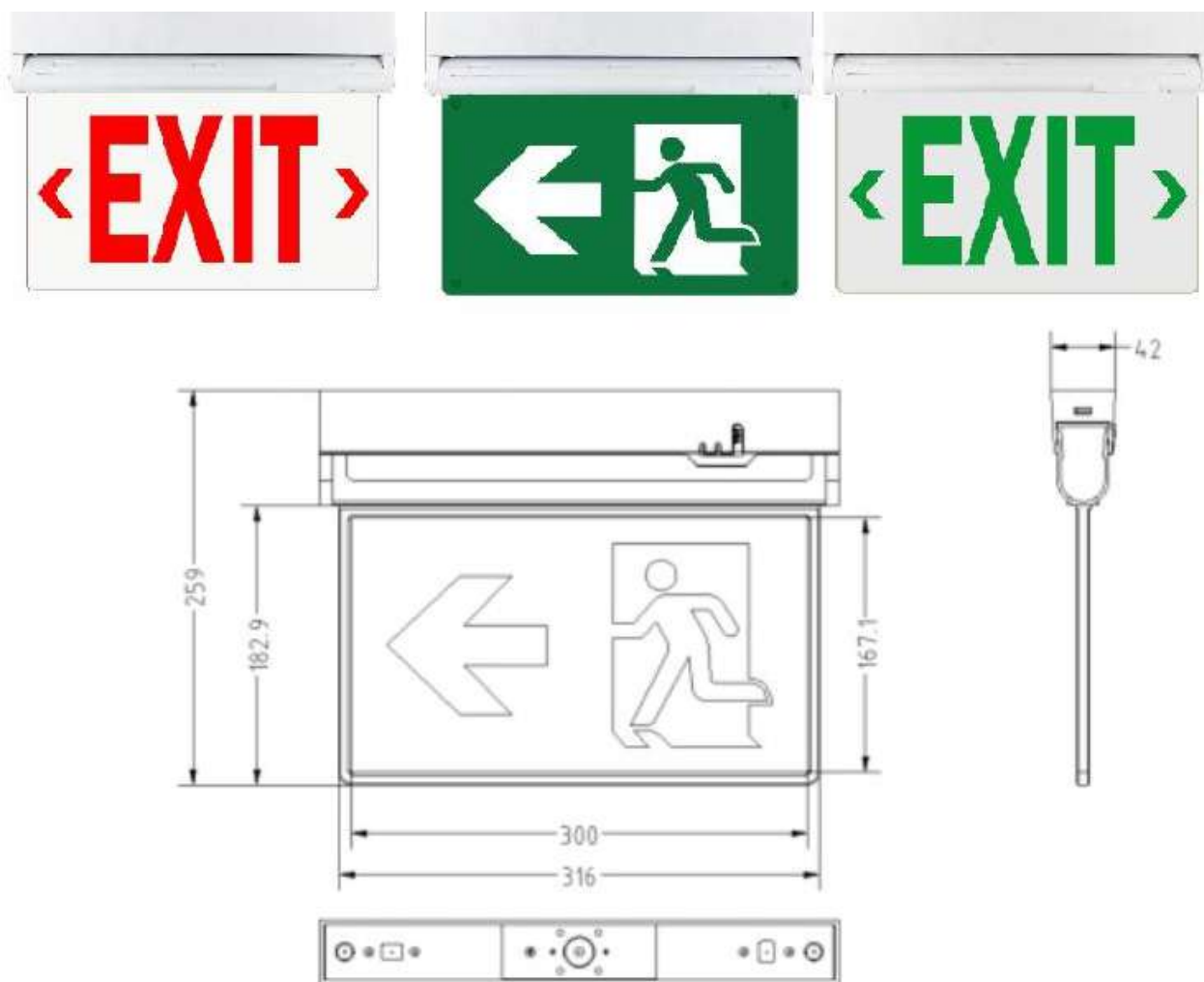


SPECIFICATION

- Input Voltage : DC36V(DC15-40V)
- Mounting Method : Surface
- Light Source : SMD 3535x1pc
- CRI >70
- Lumen Output : 3001m
- Battery Charge Time : 24H
- Emergency Time : 3H
- Operation Model : Non-Maintained
- Battery : LiFePo4 3.2V 3600mAh
- IP Level : IP20
- Certificate : UL

ADDRESSABLE HANGING EXIT LIGHT

FRN-B2308U

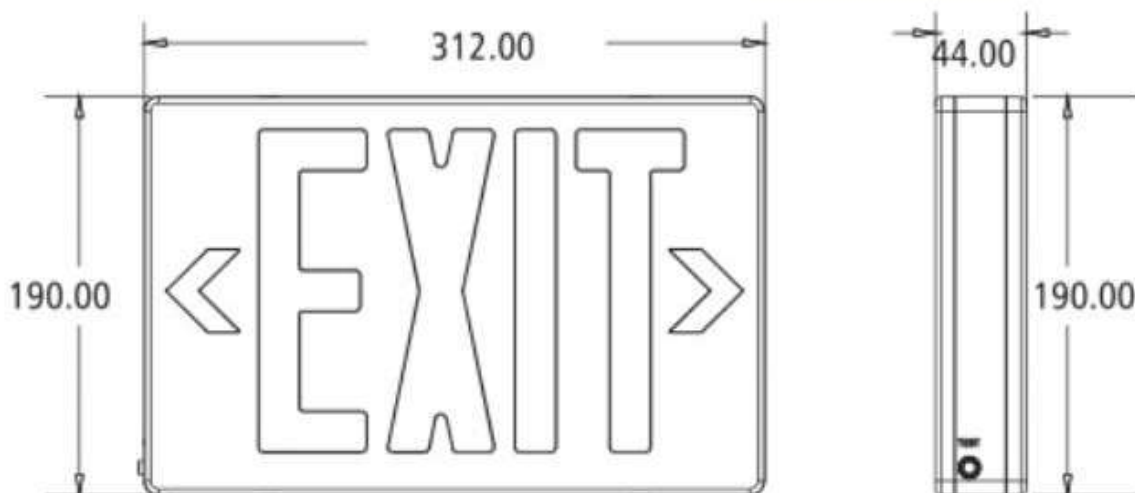


SPECIFICATION

- Input Voltage : DC36V(DCIS-40V)
- CRI>80
- Mounting Method : Ceiling/Wall/Recessed/
Suspend/End mount
- Battery Charge Time : 24H
- Emergency Time : 3H
- Operation Model : Maintained
- Viewing distance : 30M
- IP Level : 1P20
- Certificate : UL



ADDRESSABLE CEILING / WALL MOUNTED EXIT LIGHT FRN-B5508U



SPECIFICATION

- Input Voltage : DC36V(DC15-40V)
- Mounting Method : Ceiling/Wall/End mount
- Battery Charge Time : 24H
- Emergency Time : 3H
- Operation Model: Maintained
- Battery : Ni-Cd 1.2V 900mAh
- IP Level : IP20
- Certificate : UL



SELF CONTAINED EMERGENCY & EXIT LIGHT (FRONTIER NEO)



NOTE: LED = Light Emitting Diode

LABELING EXPLANATION:

X: Self contained **1:** Maintained operation (*) **A:** Including test device

E: With non-replacable lamp(s) and/or battery

F: Automatic test gear complying with IEC 61347-2-7 denoted EL-T

90: 1.5 hours duration **180:** 3 hours duration

(*) Maintained operation: The luminaire lights its illumination source, when it is powered by the mains power supply or not.

Non Maintained operation: The luminaire lights its illumination source, only in case of mains power supply's failure.

X 1 A E F 1 8 0



The light source of this luminaire is not replaceable. When the light source reaches its end of life the whole luminaire must be replaced.



CAUTION : Do not view directly with bare eyes.



TECHNICAL CHARACTERISTICS

	FRN SLL-1001	FRN 2145
Operation voltage	220-240V AC / 50-60Hz	
Maximum power consumption	11W / 11.4VA	
Supply current	52mA	
U-out	23V	
Prated	5.3W	
Irated	375mA	
Max open circuit voltage	23V	
Wire cross section	0.5mm ² - 2.5mm ²	
Minimum power factor	0.94	
Battery (ni-cd)	4.8V/3Ah	4.8V/6Ah
Insulation between supply & control terminals	Basic insulation	
Insulation between supply & battery circuit	Basic insulation	
Battery protection	Deep discharge and overcharge protection / the control gear will recharge the battery normally after the test of 22.3	
Min max. Discharge voltage	4 - 6V	
Min max. Discharge current	1000 - 1350mA	
Min max. Charge current	360 - 410mA	
Trickle charge voltage/current	5.7V / 40mA	
Max charge voltage	6V	
Indications	LED Charge, Lamp Fault LED, Battery Fault LED	
Charge time	24 hours	
Minimum duration	1.5 hour	3 hours
Light source	30 white LEDs	
Light source luminous flux (mains / emergency)	700lm / 1000lm	
Degrees of cover protection	IP40	
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3	
Operation temperature range	5 to 40 °C	
Control gear Max. Temperature: tc	74 °C at Z3	
Relative humidity	Up to 95%	
Construction material	ABS/PC, PC	
External dimension (l x w x h)	322 x 162 x 58 mm	
Weight	1041gr.	1317gr.
Guarantee	3 years (1 year for the battery)	
Control gear with automatic test function	EL-T	

LED Characteristics		
	FRN SLL-1001	FRN 2145
Manufacturer	Frontier Safety LTD, UK	
Model number	1603195	
Voltage range	13.3-14.3V DC	
Nominal power	5.3W	
Connections	Fixed connection between main pcb and led module	
Temperature (tc)	65 °C max. across the board	



FRN SLL-1001 & FRN 2145

**SELF-TESTING MAINTAINED/NON MAINTAINED
EMERGENCY LUMINAIRES**



MAINTAINED/NON-MAINTAINED EMERGENCY ILLUMINATION SIGNS



TECHNICAL CHARACTERISTICS	FRN-MLD-28D/w	FRN-F2030CA	FRN-MLD-44D/w
Operation voltage	220-240V AC/50-60Hz		
Maximum power consumption	3W / 7.5VA	3W / 8VA	
Prated	980mW		
Irated	100mA		
U-out	20V		
Irated	0.65		
Wire cross section	2.5mm²		
Battery (ni-cd)	3.6V/1Ah		
Battery protection	Deep discharge and overcharge protection / the control gear will recharge the battery normally after the test of 22.3		
Min max. Discharge voltage	3 - 4.1V		
Min max. Discharge current	208 - 250mA		
Min max. Charge current	135 - 145mA		
Max charge voltage	4.8V		
Rated current @ 3.6V	245mA	240mA	
Indications/controls	Charge LED / Test Button		
Charge time	24h		
Minimum duration	3h		
Light source	12 White LED	15 White LED	
Light source luminous flux (mains / emergency)	85lm/85lm	105lm/85lm	
Degrees of cover protection	IP40		
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3		
Viewing distance	16m	30m	38m
Operation temperature range	5-40 °C		
Relative humidity	Up to 95%		
Construction material	ABS/PC, Acrylic plate, PVC		
External panel dimension (l x w x h)	280x100mm	340x170mm	440x220mm
External dimension (l x w x h)	305x25x155mm	365x25x225mm	465x25x275mm
Weight	520gr.	850gr.	1310gr.
Guarantee	3 years (1 year for the battery)		
The control gear is suitable for LED modules only			
The control gear has mains-connected windings of transformer			
The control gear is proof against supply voltage polarity reversal			
The lamp control gear relies upon the luminaire enclosure for protection against accidental contact with live part (7.2 BS EN 61347-2-7)			
Integrated SPD			
LED MODULE CHARACTERISTICS	FRN-MLD-28D/w	FRN-F2030CA	FRN-MLD-44D/w
Manufacturer	Frontier Safety LTD, UK		
Model number	1702161	1802161	1902161
Voltage range	8.5-10.5V DC		
Nominal power	800mW	980mW	
Connections	Fixed connection between main pcb and led module		
Temperature (tc)	45 °C max. across the board		



The light source of this luminaire is not replaceable when the light source reaches its end of life the whole luminaire shall be replaced.

NOTE Maintenance of the declared insulation barrier for the luminaire can also be dependent on other external components/products connected to the same bus. This is the responsibility of the control system designer, not the luminaire manufacturer.



MONITORING SYSTEM (FRONTIER NEO)



6. TECHNICAL CHARACTERISTICS – SPECIFICATIONS

Description	FRN-350-DC36U 1 loop 16 zone adressable luminaire panel
Power Supply	220-240VAC/50-60HZ
Consumption	25W (0.150A AC)
Battery type	Sealed lead acid (Pb) battery 12V / 7Ah Max
Charger	Stabilized power supply 13,8V / 400mA
Loop circuit	The maximum number of addressable modules connected to the panel is 250.
24V output	General outputs with a 24VDC 300mA rating.
Output Relay	3 relay outputs with volt-free contacts (NC,C,NO).
Maximum load	The maximum load connected to the panel must not exceed 0.6A.
Degrees of cover protection	IP 30
Humidity	Up to 95% relative humidity
Constructional material	ABS/PC, PC
Dimensions	322 x 241 x 97 mm
Weight	1400 gr
Produced in accordance with	EN 50172, EN50130-4, EN 61000-6-3
Guarantee	2 years



ADDRESSABLE SELF TESTING NON-MAINTAINED EMERGENCY CEILING MOUNTED LUMINAIRES



TECHNICAL CHARACTERISTICS				
	FRN GR-290/M/ADR	FRN GR-291/M/ADR	FRN GR-292/M/ADR	FRN-Z1805U
Operation voltage	220-240V AC / 50-60Hz			
Max. Supply current	19.5mA AC			
Maximum power consumption	4.3W / 4.7 VA			
Minimum power factor (λ)	0.9			
U-out	6V			
Battery	4.8V/1.2Ah, NiMH (4KRMT 15/51)			
Insulation between supply & control terminals	Basic insulation			
Insulation between supply & battery circuit	Basic insulation			
Working voltage at which the insulation is designed	500V			
Battery protection	Deep discharge and overcharge protection			
Battery voltage range	4-6V			
Battery supply current during emergency	(Vbat=4.8V):500mA		(Vbat=4.8V):230mA	
Battery charge current range	130 - 200mA (normal charge) / 20 - 30mA (trickle charge)			
Battery discharge current range	400 - 600mA		180 - 300mA	
Indications - controls	Charge, lamp fault, battery fault			
Charge time	24 hours			
Minimum duration	1.5 hour		3 hours	
Light source	1 white power LED			
Emergency illumination	300lm		150lm	
Degrees of cover protection	IP40			
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3			
Operation temperature range	5 to 40 °C			
Prated/irated	2.1W/660mA		1W/320mA	
Control gear Max. Temperature (tc)	65°C at Q2			
Relative humidity	Up to 95%			
Construction material	ABS/PC			
External dimension	Ø125 x 65 mm			
Weight	442gr.			
Guarantee	3 years (1 year for the battery)			
Control gear with automatic Test function	<div>EL-T</div>			
Controlgear is suitable for LED module only				
The controlgear has mains-connected windings of transformer				



NOTE: LED = Light Emitting Diode

LABELING EXPLANATION:

X: Self contained **1:** Maintained operation (*) **A:** Including test device

B: Including remote test mode **C:** Including inhibiting mode

E: With non-replacable lamp(s) and/or battery

F: Automatic test gear complying with IEC 61347-2-7 denoted EL-T

90: 1.5 hours duration **180:** 3 hours duration

(*) Maintained operation: The luminaire lights its illumination source, when it is powered by the mains power supply or not.

Non Maintained operation: The luminaire lights its illumination source, only in case of mains power supply's failure.

X 1 A B C D E F 180



The light source of this luminaire is not replaceable when the light source reaches its end of life the whole luminaire must be replaced.



CAUTION : Do not view directly with bare eyes.



TECHNICAL CHARACTERISTICS

	FRN SLL-1001/ADR	FRN-Z2745U
Operation voltage	220-240V AC / 50-60Hz	
Maximum power consumption	11W / 11.4VA	
Supply current	52mA	
U-out	23V	
Prated	5.3W	
Irated	375mA	
Max open circuit voltage	23V	
Wire cross section	0.5mm ² - 2.5mm ²	
Minimum power factor	0.94	
Battery (ni-cd)	4.8V/3Ah	4.8V/6Ah
Insulation between supply & control terminals	Basic insulation	
Insulation between supply & battery circuit	Basic insulation	
Battery protection	Deep discharge and overcharge protection / the control gear will recharge the battery normally after the test of 22.3	
Min max. Discharge voltage	4 - 6V	
Min max. Discharge current	1000 - 1350mA	
Min max. Charge current	360 - 410mA	
Trickle charge voltage/current	5.7V / 40mA	
Max charge voltage	6V	
Indications	LED Charge, Lamp Fault LED, Battery Fault LED	
Charge time	24 hours	
Minimum duration	1.5 hour	3 hours
Light source	30 white LEDs	
Light source luminous flux (mains / emergency)	700lm / 1000lm	
Degrees of cover protection	IP40	
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3	
Operation temperature range	5 to 40 °C	
Control gear max.Temperature: tc	74 °C at Z3	
Relative humidity	Up to 95%	
Construction material	ABS/PC, PC	
External dimension (l x w x h)	322 x 162 x 58 mm	
Weight	1041gr.	1317gr.
Guarantee	3 years (1 year for the battery)	
Control gear with automatic test function	EL-T	

LED Characteristics		
	FRN SLL-1001/ADR	FRN-Z2745U
Manufacturer	Frontier Safety LTD, UK	
Model number	1603195	
Voltage range	13.3-14.3V DC	
Nominal power	5.3W	
Connections	Fixed connection between main pcb and led module	
Temperature (tc)	65 °C max. across the board	



FRN SLL-1001/ADR & FRN-Z2745U

**ADDRESSABLE SELFTESTING
MAINTAINED/NON MAINTAINED
EMERGENCY LUMINAIRES**



SELF TESTING MAINTAINED EMERGENCY LUMINAIRES WITH WHITE LEDS



TECHNICAL CHARACTERISTICS				
	FRN GR-1315/15L	FRN GR-1315/30L	FRN GR-1316/15L	FRN GR-1316/30L
Operation voltage	220-240V AC/50-60Hz			
Maximum power consumption	3.4W/3.8VA	4.5W/4.9VA	3.3W/3.7VA	5.3W/5.6VA
Batteries (Ni-Cd)	3.6V/0.6Ah	3.6V/1.5Ah		3.6V/3Ah
Battery protection	From overcharge and deep discharge			
Indications - controls	Charge, Lamp Fault, Battery Fault indication LED, TEST Button			
Charging time	24h			
Minimum autonomous duration	90min		180min	
Illumination source	15 white LEDs	30 white LEDs	15 white LEDs	30 white LEDs
Illumination (230V AC / emergency)	105lm / 105lm	210lm / 210lm	105lm / 105lm	210lm / 210lm
Degrees of cover protection	IP 40			
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3			
Operation temperature range	5 to 40 °C			
Relative humidity	Up to 95%			
Construction material	ABS/PC, PC			
External dimension	353 x 143 x 57 mm			
Typical weight	670gr.	750gr.		820gr.
Guarantee	3 years (1 year for the battery)			



General

These luminaires are used indoors (ta 40°C) where emergency light is needed. Each luminaire must be permanently connected to mains power supply. In normal operation (L1 connected to L) the led strip lights and the battery is charging. In case of a mains power supply failure the luminaire will light the led strip automatically in emergency mode (powered by its battery). When the mains power supply is restored the device turns to normal operation.

Battery Charging

The battery charging is completely controlled. In this case, the best possible battery maintenance is achieved, as well as the elongation of its duration. When the battery has completely charged, it charges with a maintenance current.

Battery Cut-off

The luminaire enters in this operation when the mains power supply fails and the battery has lost its energy. During this operation the luminaire enters the idle state and battery consumption is negligible, in order to be protected from deep discharge.

Manual Test

The manual test can be conducted only if the main power supply and the battery is connected. By pressing the test button briefly an operation test is initiated. During this test period all indication LEDs are OFF.

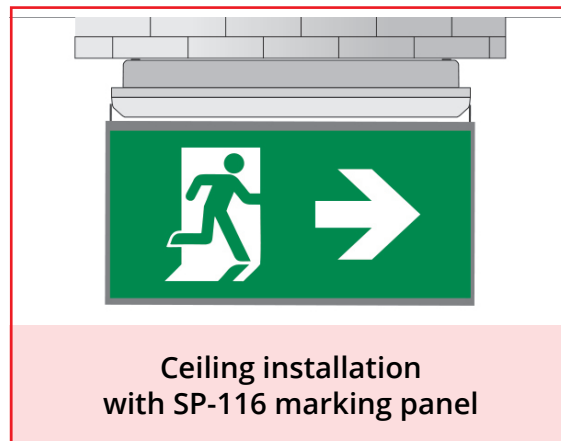
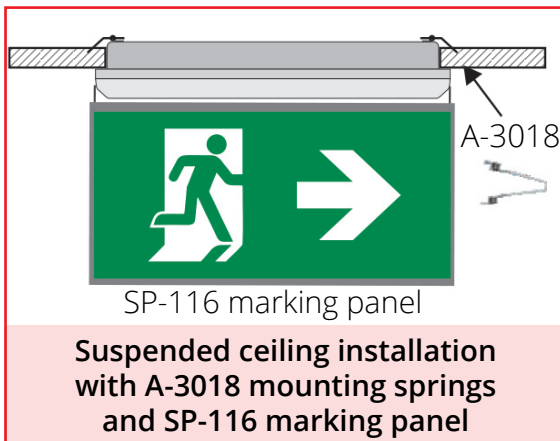
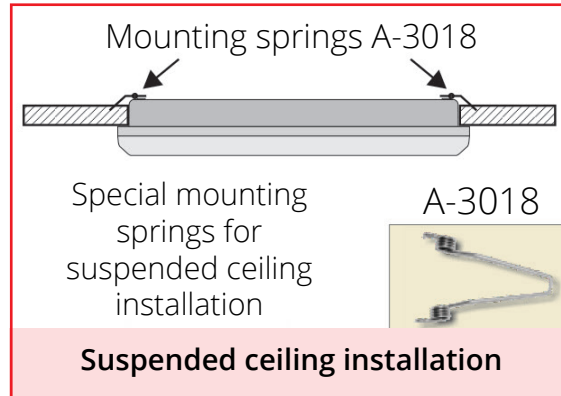
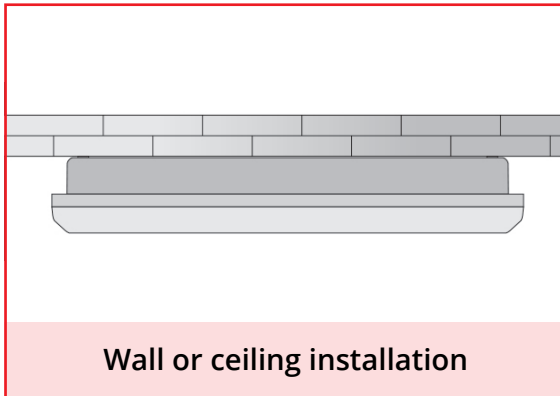
Automatic Operational Test

This test includes all the operations that provide the manual test and is conducted automatically every 15 days. In order to be performed, the mains power supply and the battery should be connected.

Automatic Autonomous Test

The Automatic Autonomous Test is conducted and measures the luminaire's back up operation. This test is conducted automatically every six months. In order to be performed, the mains power supply and the battery should be connected (the battery should be charged). If the battery is not charged, the test is postponed until the battery is completely charged.

INSTALLATION METHODS



NOTE: LED = Light Emitting Diode
LABELING EXPLANATION:

X: Self contained
1: Maintained (*)
A: Including test device
G: Internally illuminated
*90: 1.5 hour duration
180: 3 hours duration

Note!! The installer should fill in, on the specification label, the letter G if the luminaire is used as a safety sign.

X 1 AG *9 0

(*) Maintained operation: The luminaire lights its illumination source, whether it is powered by the mains power supply or not.

Non Maintained operation: The luminaire lights its illumination source, only in power supply's failure.

Battery replacement.

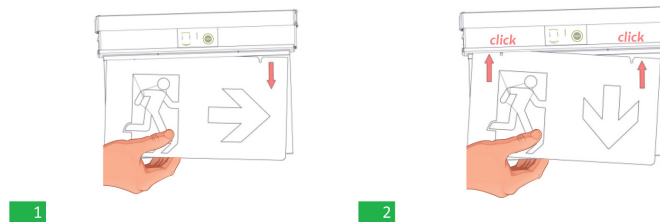
It can be done only by a competent person and after the mains interruption.

1. Follow the step 2 and 3 of the installation procedure.
2. Disconnect the connector and remove the old battery.
3. Connect the new battery with the same type (step 5 of the installation procedure) and place it in the position of the old one.
4. Follow the step 7 of the installation procedure and power the device.

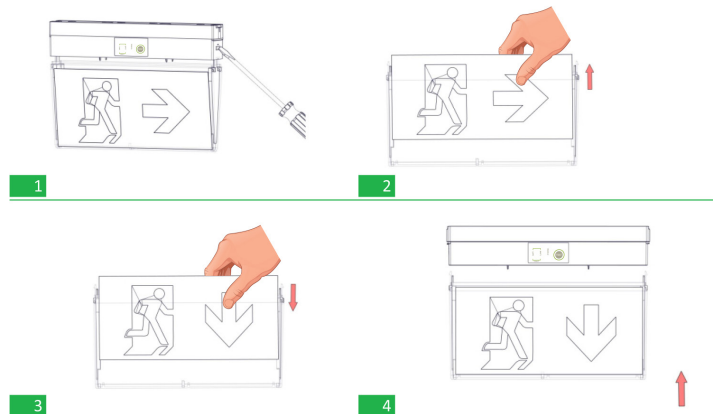


Legend installation-replacement

FRN-B2308U & FRN KLD-30/ST/ADR



FRN KLR-20/ST/ADR



Accessories for installation (After request)

- A-2130: Accessory for ceiling (1m)
- A-2131: Accessory for ceiling (0,5m)
- A-2132: Accessory for ceiling (0,25m)
- A-2133: Accessory for wall mounting
- A-2136: Accessory for hanging installation (2,5m)
- A-2520/PL/ST: Suspended ceiling base

Battery replacement

1. Disassemble the luminaire.
2. Remove the battery connector and carefully remove the battery from its base.
3. Install a new battery of the same type and rating.
4. Assemble the luminaire and power the device.

NOTE: LED = Light Emitting Diode

LABELING EXPLANATION:

X: Self contained **1:** Maintained (*) **A:** Including test device **B:** Including remote test mode **C:** Including inhibiting mode
E: With non-replacable lamp(s) and/or battery **F:** Automatic test gear complying with IEC 61347-2-7 denoted EL-T

G: Internally illuminated safety sign

60: 1 hour duration **180:** 3 hours duration **480:** 8 hours duration

X	1	A	B	C	E	F	G	180
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(*) Maintained operation: The luminaire lights its illumination source, when it is powered by the mains power supply or not.

Non Maintained operation: The luminaire lights its illumination source, only in case of mains power supply's failure.

ATTENTION!!!



The light source of this luminaire is not replaceable when the light source reaches its end of life the whole luminaire must be replaced.

TECHNICAL CHARACTERISTICS			
	FRN KLD-30/ST/ADR	FRN-B2308U	FRN KLR-20/ST/ADR
Operation voltage	220-240V AC / 50-60Hz		
Maximum power consumption	3.9W / 4.4VA		
Supply current	20mA		
U-out	70V		
Prated	1.5W		
Irated	130mA		
Max open circuit voltage	39V DC		
Emergency output factor (eofx)	1h: 3.4, 3h: 1.4, 8h: 0.2		
Wire cross section	0.08mm ² - 1.5mm ²		
Minimum power factor	0.87		
Battery (ni-mh)	3.6V/1.5Ah		
Insulation between supply & control terminals	Basic insulation		
Insulation between supply & battery circuit	Basic insulation		
Battery protection	Deep discharge and overcharge protection / the control gear will recharge the battery normally after the test of 22.3		
Min max. Discharge voltage	3 - 4.5V		
Min max. Discharge current	1h (400-690mA), 3h (190-295mA), 8h (55-95mA)		
Min max. Charge current	20 - 120mA		
Trickle charge voltage/current	4.4V / 40mA		
Max charge voltage	4.9V		
Indications	LED Charge, Lamp Fault LED, Battery Fault LED / Test Button		
Charge time	24 hours		
Minimum duration	1h / 3h / 8h Manually Selected (Default 3h)		
Light source / output mode	LED / CONSTANT CURRENT		
Light source luminous flux (mains / emergency)	80lm / 1h: 250lm, 3h: 110lm, 8h: 15lm		
Degrees of cover protection	IP54		
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547, EN 61000-3-2, EN 61000-3-3		
Operation temperature range	5 to 40 oC		
Control gear max.Temperature: tc	58 oC at BR1		
Relative humidity	Up to 95%		
Construction material	PC, Acrylic Plate		PC
External dimension (l x w x h)	310x35x216mm	260x35x180mm	260x35x170mm
Weight	955gr.	740gr.	560gr.
Guarantee	3 years (1 year for the battery)		
Control gear with automatic Test function	EL-T		

LED Characteristics			
	FRN KLD-30/ST/ADR	FRN-B2308U	FRN KLR-20/ST/ADR
Manufacturer	Frontier Safety LTD, UK		
Model number	2711195		
Voltage range	11.2-13.2V DC		
Nominal power	0.72		
Connections	Built-in main board		
Temperature (tc)	45 °C max. across the board		





FRN-B2308U



FRN KLD-30/ST/ADR



FRN KLR-20/ST/ADR

**FRN KLD-30/ST/ADR, FRN-B2308U & FRN KLR-20/ST/ADR
ADDRESSABLE SELF TESTING MAINTAINED
EMERGENCY ILLUMINATION SIGNS**





CENTRAL BATTERY SYSTEM (FRONTIER NEO)



1.1 TECHNICAL CHARACTERISTICS

	FRN GR-8600/300/4	FRN GR-8600/300/8	FRN GR-8600/600/8
Operating voltage	~230V 50-60Hz		
Batteries	2 x 12V/33Ah		2 x 12V/55Ah
Illumination circuits (zones)	4	8	8
Maximum AC power (input)	900VA		1.4kVA
Max. power output (emergency)	300W		600W
Max. power output (per zone)		75W	
Operating temperature range	5 – 40 °C		
Degrees of cover protection	IP 21		
Dimensions	67 x 50 x 27 cm		
Weight (w/o batteries)	17.3kg	17.6kg	18.7kg
Battery fuse	30A/32V (maxi)		
Zones fuse (output)	4A/250V (slow)		
Mains fuse	8A/250V (slow)		
Battery fan fuse	0.3A/250V (slow)		
Type of electric shock protection	Class I		
Max. operating altitude (above sea level)	1000m		
Max. relative humidity	95%		
Guarantee	2 years		

All fuses are size 5x20, battery fuse is 29mm car type.

WARNING: This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

The class of Voltmeter and Ammeter is 1.5.



EDGE ILLUMINATION SIGNS FOR CBS 24V DC



TECHNICAL CHARACTERISTICS			
	FRN ZLD-28/CBS/24VDC/EM	FRN ZLD-34/CBS/24VDC/EM	FRN ZLD-44/CBS/24VDC/EM
Mains voltage	15-30V DC		
Maximum power consumption	1.4 W	1.6 W	1.85 W
Light source intensity	150lm	175lm	200lm
Rating of cover protection	IP 40		
Produced in accordance with	EN 60598-1, EN 60598-2-22, EN 55015, EN 61547		
Operation temperature range	-30 to 50 °C		
Relative humidity	up to 95%		
Construction materials	Aluminum, Acrylic plate		
External dimensions	290x172x38mm	350x242x38mm	450x295x38mm
Typical weight	630 gr.	1010 gr.	1415 gr.
Guarantee	3 years		

General:

- Operations for installation, maintenance or testing must be done by authorized personnel only.
- The device must be connected only to the CBS with 24VDC output either in mains or emergency like FRN GR-8500.

Installation

To install the illumination sign follow the installation instructions below.

NOTE: LED = Light Emitting Diode

LABELING EXPLANATION: Z: Central supply

1: Maintained (*) G: Internally illuminated safety sign

INSTALLATION INSTRUCTIONS

ELECTRICAL CONNECTIONS

- Dismantle the luminaire by pushing the lock/unlock button and slide the luminaire to the right and pull it down.
- Pass through the cables from the entry hole and connect them (please respect the polarity).
- Place upwards the luminaire and slide it to the left. The lock/unlock button appears indicating that the luminaire is securely installed.
- Power on the device.

FLAG MOUNTING INSTALLATION (optional)

Install the flag mounting base on the wall and perform the respective steps of the electrical connections.

SURFACE MOUNTING ON A WALL (single sided)

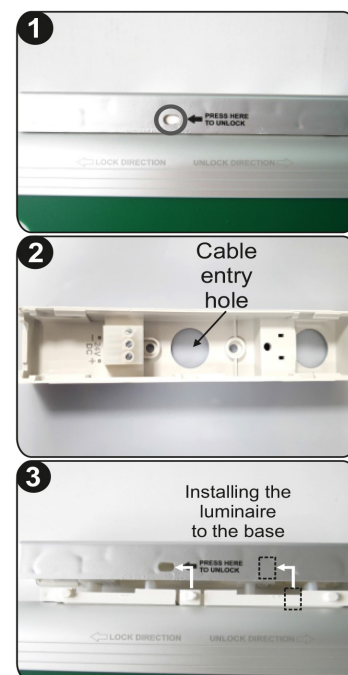
Install the included bracket on the wall and perform the respective steps of the electrical connections.

CEILING INSTALLATION

Install the mounting base on the ceiling and perform the respective steps of the electrical connections.

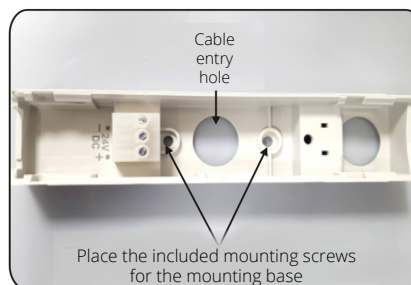
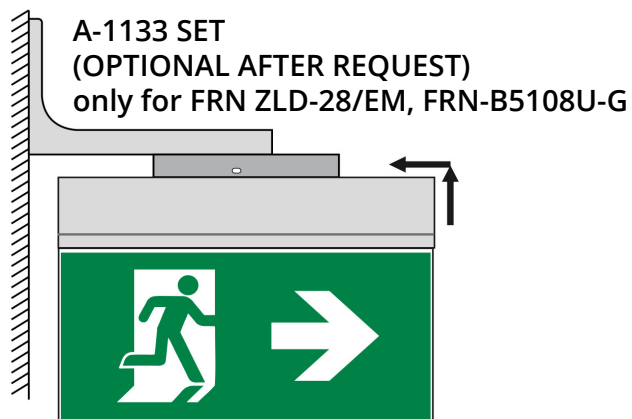
HANGING INSTALLATION (optional)

Install the mounting base (tube) on the ceiling and perform the respective steps of the electrical connections.

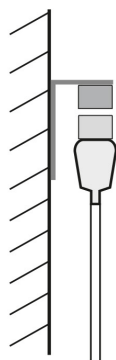
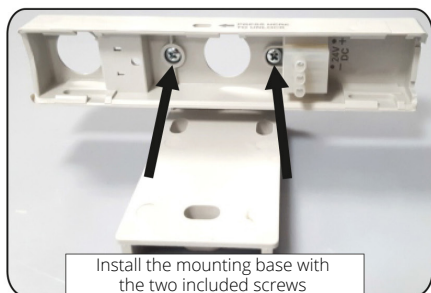
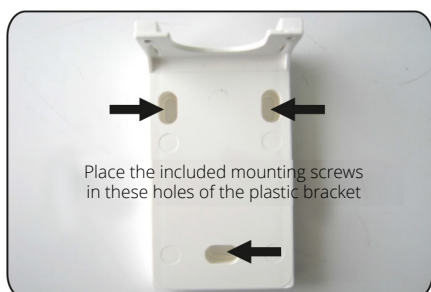


MOUNTING METHODS

FLAG MOUNTED ON A WALL



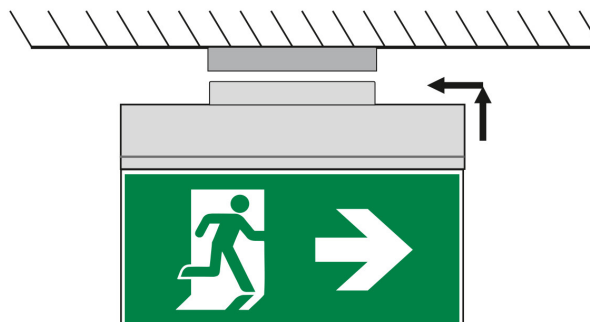
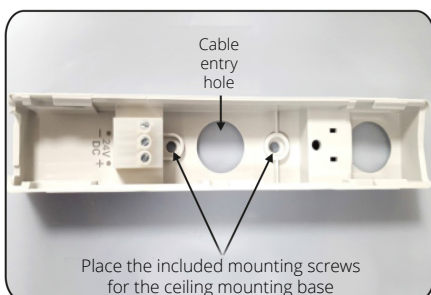
SURFACE MOUNTING ON A WALL (single side luminaire)



A-1134 SET (INCLUDED IN THE PACKAGE)



CEILING MOUNTED





PAVA AND VOICE EVACAUCTION SYSTEM



DIGITAL NETWORK PA & VOICE ALARM CONTROLLER FRNVA-6000MA



DESCRIPTIONS

VA-6000MA is a controller for public address (PA), voice evacuation. It can control the complete system and check the status through its 5" colourful touch screen or through PC management software, to realize automatic monitor and management for each zone and each terminal, and realize automatic executing pre-programmed control. Built-in programmable trigger input and output interface is used for linkage control by used together with the sound and light alarm module(it can also be linked with the bus fire linkage controller).

FEATURES

- 5 inch HD color touch graphical operation interface.
- One key touch for emergency alarm.
- Support zone selection, zone distribution, grouping operation, the volume can be adjusted independently.
- Support user-defined zone name, group name, host name (when multi hosts cascading), easy to operate and manage.
- Support event trigger, timing trigger control output.
- Support zone monitor, equipment status real-time check.
- Support event trigger call, can be set re-calling times when no answer.
- Integrated 4 independent players (supports MP3 and wma audio formats).
- Support lines redundant wiring.
- Ethernet online configuration, control interface can work offline.
- Can connect up to 4 remote microphones with distance of 600 meters and also support microphone circuit redundancy wiring.
- Support linkage to bus fire controller.

BASIC FUNCTIONS

- Integrated with one independent background music player, support fixed time, fixed zone, fixed song, and specify playback mode playing, support MP3 and WMA audio format.
- Integrated with one independent voice message player, convenient for replacing voice message and language according to actual applications.
- Integrated with 2 independent EVA voice message players; support programmable staged evacuation alarm mode and specified partition evacuation alarm mode, evacuation alarm and warning will be played at the same time.
- Integrated with one channel analogue telephone interface, convenient for remote telephone paging.
- 4 channel line input (one is optional for line or ordinary microphone), 1 audio output, audio output for external system recorder, for in on emergency call speech recording.
- 4 remote MIC interface, connected to VA-6000RM remote microphone. All paging stations connected with the standard RJ-45 network and CAT-5 network, using long-distance parallel transmission mode for voice transmission, the distance is up to 600 meters.
- 8 level signal or no voltage short circuit (or with voltage which determined by program, default is no voltage) input terminal, (can be regarded as 8 quick control key), each shortcut key functions can be specified, such as: language message to specified zones or open external power supply to trigger a third party equipment to achieve the event triggering warning.
- Real time diagnosis, treatment, record $\leq 1000w$, support sound, light alarm and prompt maintenance, troubleshooting when abnormal.
- Support basic Window platform visual operation interface, status automatic synchronization, classification rights management to ensure the security system.
- System support for third party online without voltage relay input and output interface.
- Host has backup function, by adding multiple hosts to ensure the system safety and expand audio source, increase system control point (Note, Please configure VA-6000ST before increasing host, otherwise the increased host can't operate, the host will automatically remind user to reconfigure).

SPECIFICATIONS

Model	VA-6000MA
Electrical Specifications	
AC Power Supply	
Voltage	~220-240V 50/60Hz
Maximum Current	Less than 0.2A
Specification Of The Fuse	250V/2A, slow type
Power	36W
OC Power Supply	
Voltage	24V OC, $\pm 20\%$
Maximum Current	1.5 A
Performance Index	
Emergency Microphone	
Sensitivity	5mV
Impedance	600 Ω
Line input	
Distortion	<1 % (rated output power), 1 KHz
Frequency	80Hz ~ 20KHz
Sensitivity	775mV
Impedance	10K Ω
S/N Ratio	>70dB
Record Output	
Distortion	<1 % (rated output power), 1KHz
Frequency	200mV
Sensitivity	>70dB
Contact Output	
Fault Relay Output	Short circuit, no voltage
Fire linkage Relay Output	Short circuit, no voltage
8 Relay Programmable Output	Short circuit, no voltage
Programmable OC24V Power Outputs	+DC 24V, 1A
8 Programmable Trigger Input	
Level Model	highest 3.3V
Short Circuit Mode	Short circuit, no voltage
Short Circuit Input	
Fire Reset Input Contact	Pulse ≥ 0.55 , no voltage
Voice Message	
Data Format	MP3 or WMA format
Storage Type	SD
Information Capacity	65535 (programmable maximum 255)
Storage Time	> 10 years
Log Information	
Data Format	HEX
Storage Type	Nand Flash
Information Capacity	1000
Storage Time	> 10 years
Mechanical Index	
Size (L x W x D)	484 x 132 x 449 mm (19 inches wide, JU)
Weight	About 8.0 Kg
Installation	Desktop or 19 inch cabinet
Color	Block
Environmental Requirements	
Operating Temperature	+5°C~+40°C
Storage Temperature	-20°C~+70°C
Relative Temperature	<95%

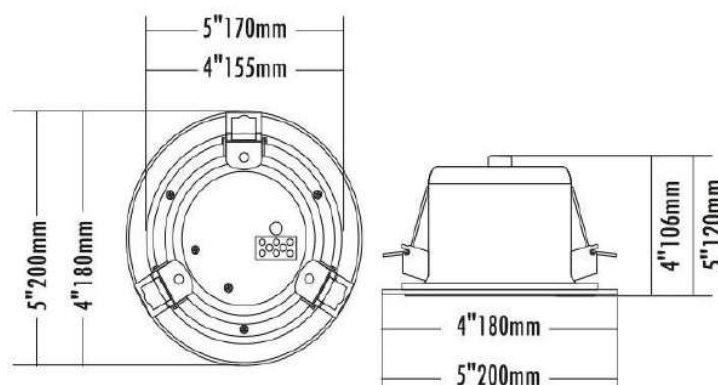


FIREPROOF CEILING SPEAKER

FRNVA-104C / FRNVA-105C

DESCRIPTIONS

4" / 5" fireproof version ceiling speaker
 Ceramic connector, thermal use and fire-resistant cable
 6 watts at 100v output
 All metal material design with fire dome
 Fast installation by spring clip
 Economy cost solution
 Excellent response for background music and voice message
 EN54-24 Certification is under taken

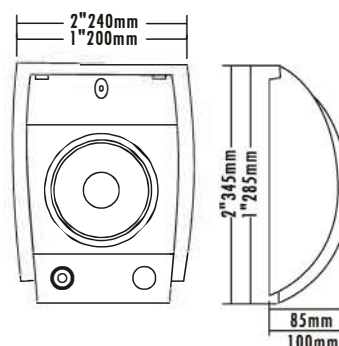


Model	VA-104C	VA-105C
Power Taps @100V	6W	6W
Power Taps @70V	3W	3W
Impedance	COM/1.7KΩ	COM/1.7KΩ
SPL(1W/1M)	89dB	90dB
Frequency Response (-10dB)	110-16KHz	110-18KHz
Finish	Baffle: Steel, White	Baffle: Steel, White
	Grill: Aluminum, White Cover: Steel, Orange	Grill: Aluminum, White Cover: Steel, Orange
Speaker Driver	4" x 1	5" x 1
Cutout Size	155mm	170mm
Dimensions	180 x 106mm	200 x 120mm
Weight	0.9Kg	1Kg
Mounting	Spring-clip	Spring-clip



WALL MOUNT LOUDSPEAKER

FRNVA-565

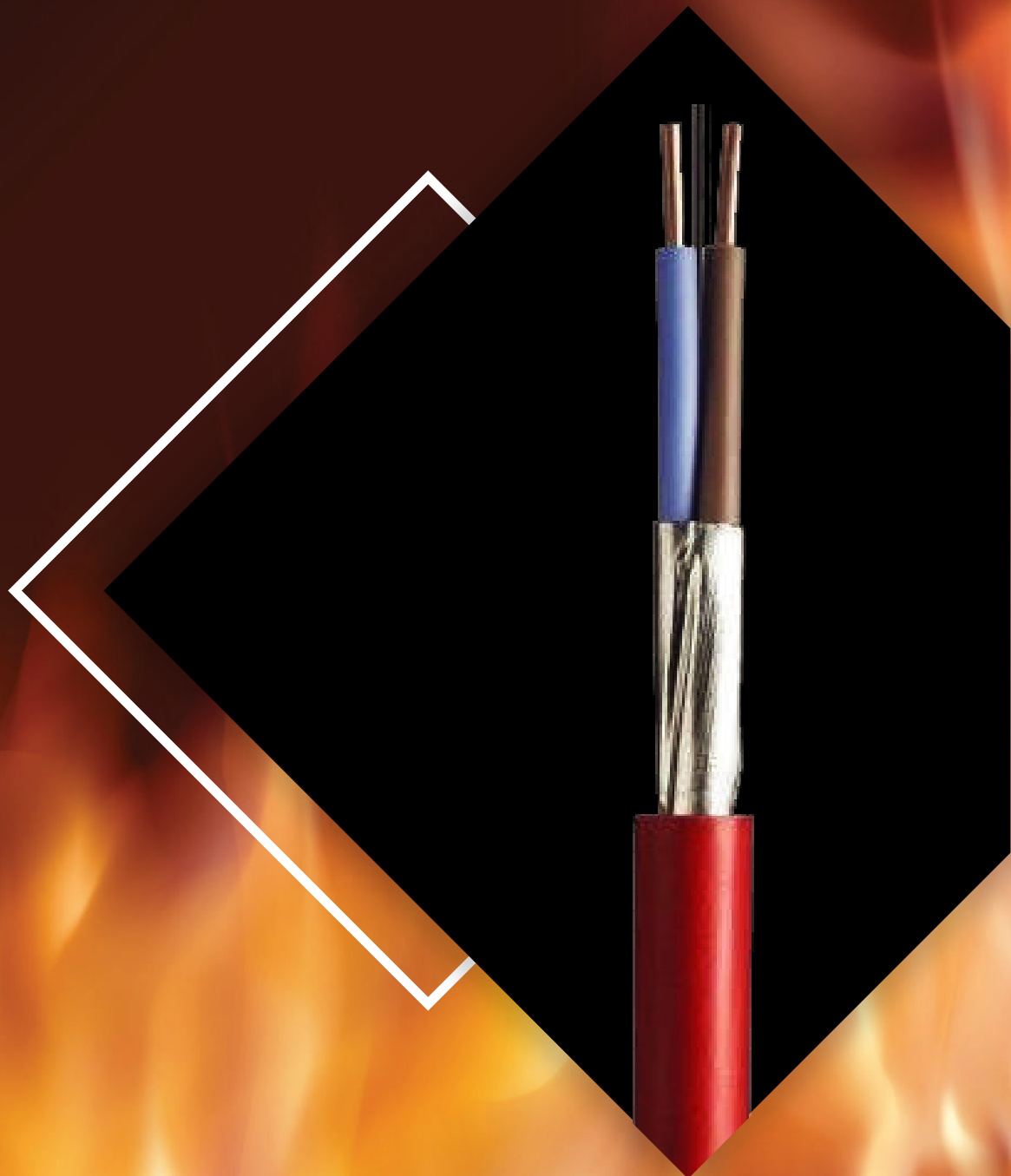


Model	VA-611
Power Tops@100V	1.5W, 3W, 6W
Power Tops@70V	0.75W, 1.5W, 3W
Impedance	Black: COM Red: 6.7KΩ / 3.3KΩ / 1.7KΩ
SPL(1W/1M)	90dB ±3dB
Mox. SPL (Rated1W/1M)	98dB
Frequency Response (-10dB)	90-18KHz
Finish	Baffle: ABS, White Grille: Steel, Gray
Speaker Driver	5" X 1 2" x 1
Dimensions	285 x 200 x 85mm
Weight	1.3Kg
Mounting	Spring-clip





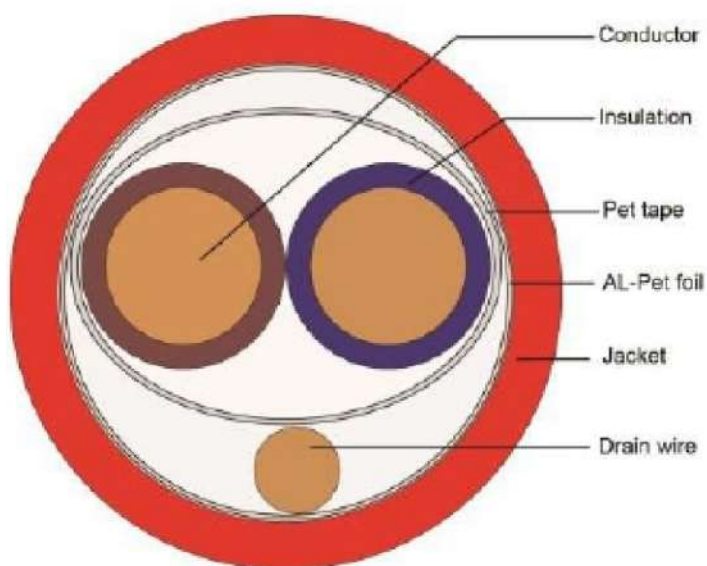
FIRE RESISTANT CABLES



FIRE RESISTANT CABLES

(2C X 1.0 sq.mm)

FIRE ALARM CABLE SHIELDED SERIES



APPLICATION

Fire Protective Signaling Circuits, Smoke detectors, Strobes/Sirens, Pull stations Voice communications, Burglar alarms, Audio control, initiating & notification circuits, Microprocessor/Addressable Controlled Systems.

STANDARDS

UL Standard: UL 13 & UL 1424 & UL 444

Flame Rating: UL 1666 Riser c(UL) FT4

RoHS: Compliant Directive 2011/65/EU



FIRE RESISTANT CABLES

(2C X 1.0 sq.mm)

PHYSICAL STRUCTURE

1.1	Conductor Diameter		1.12±0.003mm
1.2	Conductor Material		Solid Bare Copper
1.3	Insulation Diameter		PVC,1.92±0.05mm
1.4	Insulation Material Colour		Brown & Blue
1.5	Drain Wire	No. Strands	1
		Strand Size	0.80±0.003mm
1.6	Foil Shield Coverage		115% Polyester Foil,1x20x0.025mm
1.7	Drain Wire Material		Tinned copper wire
1.8	Foil Shield Coverage		100% Single Aluminum Foil,1x20x0.35mm
1.9	Jacket Colour		PVC Red RAL3000 or as request
1.10	Jacket Thickness		≥0.85mm
1.11	Overall Diameter		5.80±0.20mm

MECHANICAL PROPERTIES

Band radius	8 x D
Operating temperature range:	-20°C to 75°C

ELECTRICAL PROPERTIES

AT 20°C

Conductor Resistance	Ω/km	≤21.4
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FIRE RATING

PVC: UL 1666



FIRE RESISTANT CABLES

(2C X 1.5 sq.mm)

PHYSICAL STRUCTURE

1.1	Conductor Diameter		1.37±0.003mm
1.2	Conductor Material		Solid Bare Copper
1.3	Insulation Diameter		PVC, 2.35±0.05mm
1.4	Insulation Material Colour		Brown & Blue
1.5	Drain Wire	No. Strands	1
		Strand Size	0.80±0.003mm
1.6	Foil Shield Coverage		115% Polyester Foil,1x20x0.025mm
1.7	Drain Wire Material		Tinned copper wire
1.8	Foil Shield Coverage		100% Single Aluminum Foil,1x20x0.35mm
1.9	Jacket Colour		PVC Red RAL3000 or as request
1.10	Jacket Thickness		≥0.85mm
1.11	Overall Diameter		6.50±0.20mm

MECHANICAL PROPERTIES

Band radius	8 x D
Operating temperature range:	-20°C to 75°C

ELECTRICAL PROPERTIES

AT 20°C

Conductor Resistance	Ω/km	≤12.0
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FIRE RATING

PVC: UL 1666



FIRE RESISTANT CABLES

(2C X 2.5 sq.mm)

PHYSICAL STRUCTURE

1.1	Conductor Diameter		1.76±0.003mm
1.2	Conductor Material		Solid Bare Copper, Wires
1.3	Insulation Diameter		PVC, 2.75±0.05mm
1.4	Insulation Material Colour		Brown & Blue
1.5	Drain Wire	No. Strands	1
		Strand Size	0.80±0.003mm
1.6	Foil Shield Coverage		115% Polyester Foil, 1x20x0.025mm
1.7	Drain Wire Material		Tinned copper wire
1.8	Foil Shield Coverage		100% Single Aluminum Foil,1x20x0.35mm
1.9	Jacket Colour		PVC Red RAL3000 or as request
1.10	Jacket Thickness		≥0.85mm
1.11	Overall Diameter		7.40±0.20mm

MECHANICAL PROPERTIES

Band radius	8 x D
Operating temperature range:	-20 °C to 75 °C

ELECTRICAL PROPERTIES

AT 20 °C

Conductor Resistance	Ω/km	≤7.5
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FIRE RATING

PVC: UL 1666





FIRE BLANKET (FIRECPS)



FIRE BLANKET

Technical Data Sheet for Fire Blanket

1.	Art No. & Desc.		Fire blanket packed in hard box	
			Fire blanket packed in soft bag	
2.	Basic Fabric		3732 fiberglass fabric	
3.	Weave		4H plain weave	
4.	Yarn (tex)	warp weft	ECG 33 2 x2	
			ECG 33 2 x2	
			100±2cm	
			120±3cm	
			150±3cm	
5.	Length/Width		180±4cm	
6.	Thickness		0.43±5%	
7.	Weight		430g/m²±10g	
8.	Thread count	warp	19±1.9per cm	
		weft	14±1.4per cm	
9.	Tensile Strength min	warp	6200N/5cm	
		weft	5200N/5cm	
10.	LO1%		1.00%	
11.	Service Temperature		550°C	
12.	Chemical Composition(%)		SiO ₂ : 54.1±0.5	
			Al ₂ O ₃ :14.6±0.4	
			CaO: 16.6±0.3	
			MgO:4.6±0.3	
			B ₂ O ₃ : 8.8±0.5	
			R ₂ O<0.8	
			Fe ₂ O ₃ <0.57	





AUTOMATIC SPRINKLER HEAD



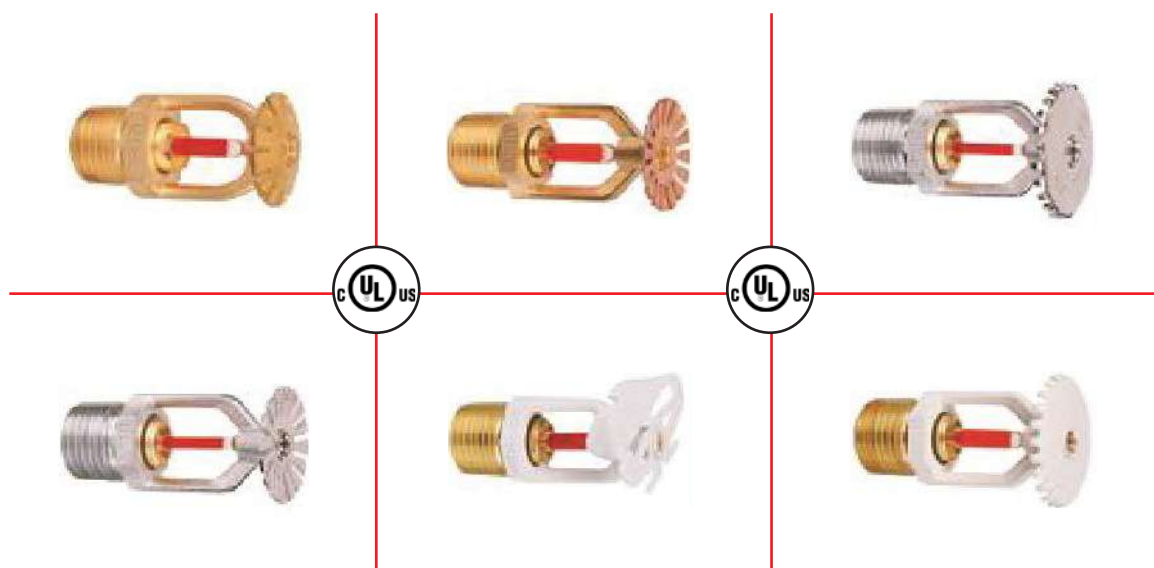
SPRINKLER HEAD

DESCRIPTION

Pendent, upright, conventional and sidewall sprinklers are used in automatic sprinkler systems designed in accordance with standard installation (NFPA13). The temperature response is a standard response 5mm glass bulb and fast response 3mm glass bulb. The sprinklers come in a compact design & are available in different finishes and temperature ratings.

The sprinklers body is made of a brass die-casting copper alloy (DZR). The spring seat consists of a spring Belleville washer coated on both side with a Teflon tape.

Pendent and conventional and sidewall sprinklers are installed with adjustable or non-adjustable escutcheon plates. These are intended to be installed on finished ceilings. Escutcheon plate adjustment provides convenience in pendent and conventional sprinkler installation when used in areas with finished ceiling or walls.



TECHNICAL SPECIFICATION

Style	Pendent, Upright, Sidewall, Conventional and Recessed Pendent, Recessed Sidewall, Recessed Conventional
K Factor gpm/(psi) ^{1/2} (L3/min(bar) ^{1/2})	5.6 (80)
Nominal Thread Size	1/2" NPT AND 1/2" BSPT
Max. Working Pressure	175 PSI (12BAR)
Factory Test Pressure	500 PSI (35BAR)
Min. Operating Pressure	7 PSI (0.5 BAR)
Finish	Brass and Chrome Plated and White Plated Available



SPRINKLER HEAD

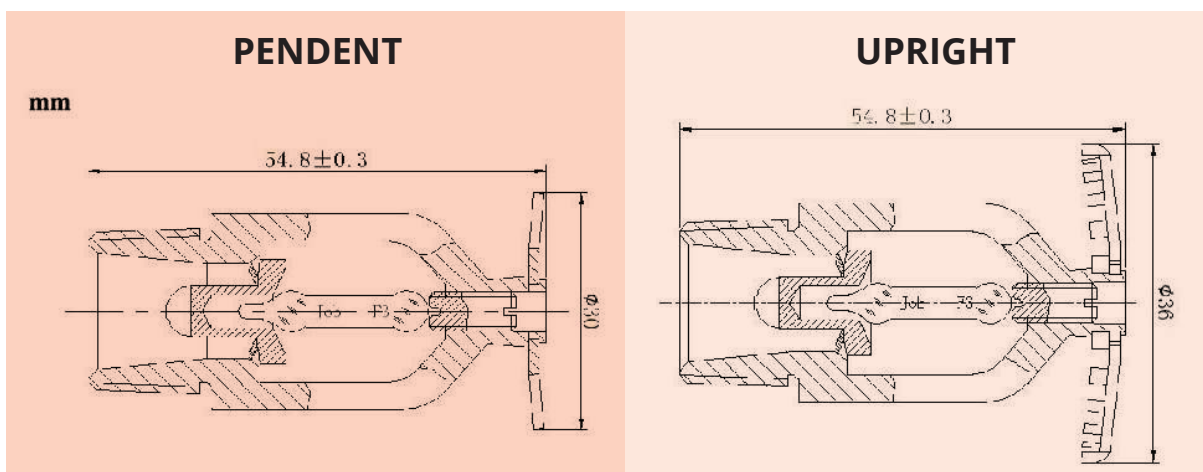
TECHNICAL SPECIFICATION

SIN	Response Type	Sprinkler Style	Temp. Rating F (C)
FN001	SR	Sidewall	155 (68)
FN002	QR	Sidewall	155 (68)
FN003	SR	Upright	135 (57) 155 (68) 175 (79)
FN004	QR	Upright	155 (68)
FN005	SR	Pendent	135 (57) 155 (68) 175 (79)
FN006	QR	Pendent	155 (68)
FN007	SR	Conventional	155 (68)

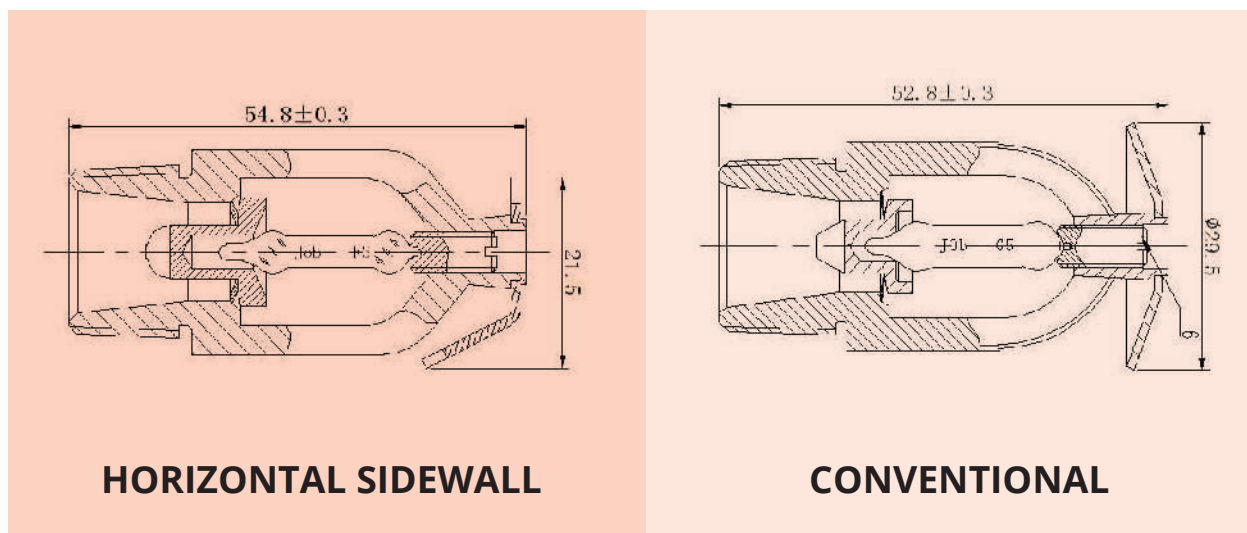
MATERIAL SPECIFICATION

Deflector	Brass UNS-28000
Bulb	Glass with Glycerin Solution JOB GS or Day-impex-937 for Ut0001, Ut0003, Ut0005, Ut0007 JOB F3 or Day-impex-941 for Ut0002, Ut0004, Ut0006
Load Screw	Brass UNS-28000
Seal	Brass UNS-28000
Frame	Brass UNS-28000
Seal Washer	Belleville Washer coated on both sides with Teflon Tape
Bulb Nominal Diameter	Standard Response 5.0mm, Quick Response 3.0mm

EACH STYLE SPRINKLER DIMENSION



SPRINKLER HEAD



INSTALLATION

The sprinklers which are manufactured and tested in accordance with the rigid requirements of Standard UL 199, should be installed in accordance with the current Standard NFPA13. The system piping must be properly sized to insure the minimum required flow rate at the sprinkler. Check for the proper model, style, orifice size and temperature rating prior to installation. Install sprinkler after the piping is in place to avoid mechanical damage, replace any damaged units, wet pipe systems must be protected from freezing.

Upon completion of the installation, the system must be tested as per recognized standard. In case of a thread leak, remove the unit, apply new pipe joint compound or tape and re-install.

INSTALLATION METHODS

- Sprinklers should be installed in the correct orientation that they are designed for. (eg: Do not install an upright sprinkler in down position).
- Hand tighten the sprinkler into the sprinkler fitting. It is recommended that a torque of 7 ~14 ft lbs be used to obtain a thread 1/2 inch NPT Sprinkler joint. A radial force of 10 - 20 lbs.
- Use only a non-hardening pipe joint compound or Teflon tape & apply to the male thread only.
- Hand tighten the sprinkler into fitting, use a 22mm open spanner or 8" (200mm) adjustable wrench on flat to tighten the unit into the fitting, do not use spanner on the frame arms, or it will cause the arms to break and causes bulb burst.



UL LISTED MEDIUM VELOCITY WATER SPRAY NOZZLE



TECHNICAL DATA

MODEL	FRN-MVN-B (Brass Material) FRN-MVN-S (Stainless Steel 316 Material)
TYPE	FRN-MVN-B & FRN-MVN-S are without strainer. Optional strainers are available on request
MAXIMUM WORKING PRESSURE	12 Bar (175 PSI)
END CONNECTION	½" NPT (½" BSPT OPTIONAL)
MATERIAL	Refer Table-I
WATER SPRAY ANGLE FOR EACH K-FACTOR	140°, 120° (UL Listed), 160°, 110°, 100°, 90°, 80° & 65°
K FACTOR	FRN-MVN-B & FRN-MVN-S Metric (US) K-18 (1.26) K-22 (1.54) K-30 (2.10) K-35 (2.45) K-41 (2.87) K-51 (3.57) K-64 (4.48) K-79 (5.53) K-102 (7.14) Other K-Factors are available on request.
FINISH	FRN-MVN-B: Natural Brass finish/ Nickel-Chrome plated/ Electroless Nickel plated, FRN-MVN-S: Natural finish
APPROVALS	UL Listed For Approval data refer UL Listing certificate
ORDERING INFORMATION	Specify K-Factor, spray angle, finish, model and end connection

DESCRIPTION

The Medium Velocity Water Spray Nozzles are open type (non-automatic) nozzles, designed for directional spray application in fixed fire protection systems.

Medium velocity water spray nozzle has a deflector, which discharges water in a directional cone shaped pattern of small droplet size. The water is uniformly distributed over the surface to be protected.

FRONTIER Nozzles are effectively designed to apply water to exposed vertical, horizontal, curved and irregular shaped surfaces to allow cooling to prevent excessive absorption of heat from external fire and avoid structural damage or spread of fire. In some applications nozzles may be installed to control or extinguish the fire depending on water design density as per applicable codes. The nozzle is used in a deluge water spray system for special hazard fire protection applications.

As the design and intent of specific water spray systems may vary considerably, The MV nozzle is made available in several combinations of orifice sizes (K-factors) and spray angles.

The minimum desirable pressure to achieve a reasonable spray pattern is 1.4 Kg./Sq.cm. The water distribution pattern as shown in the graph in the following pages is at an average pressure of 2.0 Kg./Sq.cm. The change in pressure between 1.4 to 3.5 Kg./sq.cm. does not significantly effect change in spray angle.

The spray pattern shown is with indoor application. System designer must consider wind velocity while designing the system for outdoor application. Field obstruction if any affecting the spray pattern of the nozzle must also be considered. The nozzle may be oriented to any position as deemed necessary to cover the hazard.



FN009, FN010 —CONCEALED PENDENT, STANDARD COVERAGE, STANDARD & QUICK RESPONSE, Sprinklers K-FACTOR: 5.6

DESCRIPTION & OPERATION

- The Series FN009, FN010, 5.6 K-factor, flat plate concealed pendent Sprinklers with standard coverage. Described in this data sheet FN009 is a standard response, 5mm glass bulb type sprinkler; FN010 is quick response, 3mm glass bulb type sprinkler.
- The soldered cover plate drops off the retainer assembly when exposed to heat, as from a fire, that has reached the plate's Listed temperature rating exposing the sprinkler above. As heat encompasses the glass bulb operating element of the sprinkler, the fluid in the bulb expands, compressing the air bubble within the bulb. When the air bubble can no longer compress, the fluid expansion causes breakage of the glass bulb, resulting in release of the water seal assembly, and discharge of water from the sprinkler.



TECHNICAL SPECIFICATION

SIN	FN009	FN010
Style	Concealed Pendent	
K Factor	5.6 (80 metric)	
gpm/(psi) ^{1/2} (L ³ /min(bar) ^{1/2})		
Nominal Thread Size	1/2" NPT OR 1/2" BSPT	
Max. Working Pressure	175 PSI (12BAR)	
Response	STANDARD	QUICK
Factory Test Pressure	500 PSI (35BAR)	
Min. Operating Pressure	7 PSI (0.5 BAR)	
Cover Plate Finishes	White Coating, Chrome, Bright Brass, Brass & Custom	

TEMPERATURE RATE

SIN	K FACTOR	135°F (57°C) Cover Plate		165°F (74°C) Cover Plate	
		135°F (57°C) Sprinkler	155°F (68°C) Sprinkler	175°F (79°C) Sprinkle	200°F (93°C) Sprinkler
FN009/FN010	5.6	Y	Y	Y	Y

SPRINKLER MATERIALS

Part	Material
Load Screw	DZR Brass
Bulb Seat	H62
Frame	DZR Brass
Seal	Beryllium Nickel w/Teflon
Deflector	C5191
Support Cup	Steel
Guide Pins	Stainless Steel 316
Cover Plate	H62
Skirt	H62
Ejection Spring	C5191





PORTABLE FIRE EXTINGUISHERS



FIRE EXTINGUISHER

FIRE EXTINGUISHER MODEL NUMBER

Sr No	Model Number	Particulars
1.	FRNDB2	2KG ABC POWDER STORED PRESSURE, FIRE RATING 13A & 89B
2.	FRNDB4	4KG ABC POWDER STORED PRESSURE, FIRE RATING 27A & 183B
3.	FRNDB6	6KG ABC POWDER STORED PRESSURE, FIRE RATING 43A & 233B
4.	FRNDB9	9KG ABC POWDER STORED PRESSURE, FIRE RATING SSA & 233B
5.	FRNDB1	1KG ABC POWDER STORED PRESSURE, FIRE RATING 8A &SSB
6.	FRNDC1	1KG ABC POWDER (25%MAP), STORED PRESSURE, FIRE RATING SA & 34B
7.	FRNDC2	2KG ABC POWDER(25% MAP), STORED PRESURE FIRE RATING13A & 70B
8.	FRNDA6	6KG POWDER, STORED PRESSURE, FIRE RATING SSA& 233B
9.	FRNRA6	6KG POWDER, STORED PRESSURE, FIRE RATING SSA& 233B
10.	FRNRB6	6KG POWDER, STORED PRESSURE, FIRE RATING 43A& 233B
11.	FRNFB6	6Ltr FOAM STORED PRESSURE, FIRE RATING 27A & 183B
12.	FRNFC6	6Ltr FOAM STORED PRESSURE FIRE RATING 21A & 183B
13.	FRNFA9	9Ltr FOAM STORED PRESSURE FIRE RATING 34A &233B
14.	FRNFC9	9Ltr FOAM STORED PRESSURE FIRE RATING 27A & 233B
15.	FRNWA6	6Ltr WATER, STORED PRESSUER, FIRE RATING 13A
16.	FRNWB6	6Ltr WATER, STORED PRESSURE, FIRE RATING 34A
17.	FRNWA9	9Ltr WATER, STORED PRESSURE, FIRE RATING 21A
18.	FRNKA2	2Ltr WET CHEMICAL, STORED PRESSURE, FIRE RATING SA,70B & 25F
19.	FRNKA3	3Ltr WET CHEMICAL, STORED PRESSURE, FIRE RATING 13A,89B & 40F
20.	FRNKA6	6Ltr WET CHEMICALS, STORED PRESSURE, FIRE RATING 34A,233B & ?SF
21.	FRNCAS	5KG CARBON DIOXIDE, FIRE RATING 59B
22.	FRNCA2S	2KG CARBON DIOXIDE, FIRE RATIN 34B
23.	FRNCA2	2KG CARBON DIOXIDE FIRE RATING 34B
24.	FRNCASS	5KG CARBON DIOXIDE FIRE RATING 70B





CARBON DIOXIDE (CO₂) FIRE EXTINGUISHER



DATA SHEET



Model	FRNCA2	FRNCA5	FRNCA2S	FRNCA5S
Capacity	2 KG	5 KG	2 KG	5 KG
Total Weight	7.2 KG	17.2 KG	7.2 KG	17.2 KG
Cylinder Height (mm)	515	665	515	665
Cylinder Diameter (mm)	114	152	114	152
Range of Throw	2.5	3.0	2.5	3.0
Fire Rating	34B	89B	34B	70B
Duration of Discharge (sec)	10	15	10	15
Extinguishing Agent	CO ₂	CO ₂	CO ₂	CO ₂
Propelling Agent	N ₂	N ₂	N ₂	N ₂
Operating Pressure	170 Bar	170 Bar	170 Bar	170 Bar
Material	Alloy	Alloy	Alloy	Alloy
Operating Temperature	-20C to +60C	-20C to +60C	-20C to +60C	-20C to +60C

DRY POWDER FIRE EXTINGUISHER



DATA SHEET



Model	FRND B1	FRNDC 1	FRNDB 2	FRNDC 2	FRNDB 4	FRNDB 6	FRNDB 9	FRNDA 6	FRNRA 6	FRNRB 6
Capacity	1 KG	1 KG	2 KG	2 KG	4 KG	6 KG	9 KG	6 KG	6 KG	6 KG
Total Weight	1.98 KG	1.98 KG	3.6 KG	3.6 KG	6.1 KG	9.4 KG	13.1 KG	9.4 KG	9.4 KG	9.4 KG
Cylinder Height (mm)	315	315	391	391	483	494	556	494	494	494
Cylinder Diameter (mm)	91	91	110	110	130	163	183	163	163	163
Range of Throw	3.5	3.5	4.0	4.0	5.0	5.5	6.0	5.5	5.5	5.5
Fire Rating	8A & 55B	5A & 34B	13A & 89B	13A & 70B	27A & 183B	43A & 233B	55A & 233B	55A & 233B	55A & 233B	43A & 233B
Duration of Discharge (sec)	8	8	10	10	17	17	23	17	17	17
Extinguishing Agent	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder	40% ABC Powder
Propelling Agent	N ₂	N ₂	N ₂	N ₂	N ₂	N ₂	N ₂	N ₂	N ₂	N ₂
Working Pressure	14 Bar	14 Bar	14 Bar	14 Bar	14 Bar	14 Bar	14 Bar	14 Bar	14 Bar	14 Bar
Material	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon
Operating Temperature	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C	-30C to +60C





WATER FIRE EXTINGUISHER



DATA SHEET



Model	FRNWA6	FRNWB6	FRNWA9
Capacity	6 LTR	6 LTR	9 LTR
Total Weight	9.8 KG	9.8 KG	13.5 KG
Cylinder Height(mm)	534	534	586
Cylinder Diameter(mm)	163	163	183
Range of Throw	5.0	5.0	7.0
Fire Rating	13A	34A	21A
Duration of Discharge (sec)	40	40	65
Extinguishing Agent	Water	Water	Water
Propelling Agent	N ₂	N ₂	N ₂
Operating Pressure	12 Bar	12 Bar	12 Bar
Material	Steel LowCarbon	Steel LowCarbon	Steel LowCarbon
Operating Temperature	-5C to +60C	-5C to +60C	-5C to +60C

WET CHEMICAL FIRE EXTINGUISHER



DATA SHEET



Model	FRNKA2	FRNKA3	FRNKA6
Capacity	2 LTR	3 LTR	6 LTR
Total Weight	5.4 KG	5.4 KG	10.1 KG
Cylinder Height(mm)	428	428	534
Cylinder Diameter(mm)	130	130	163
Range of Throw	3.0	3.0	4.5
Fire Rating	5A, 70B & 25F	13A, 89B & 40F	34A, 223B & 75F
Duration of Discharge (sec)	13	15	30
Extinguishing Agent	50% WetChemical	50% WetChemical	50% WetChemical
Propelling Agent	N ₂	N ₂	N ₂
Operating Pressure	12 Bar	12 Bar	12 Bar
Material	Steel LowCarbon	Steel LowCarbon	Steel LowCarbon
Operating Temperature	-5C to +60C	-5C to +60C	-5C to +60C





FOAM FIRE EXTINGUISHER



DATA SHEET



DESCRIPTION	FRNFB6	FRNFC6	FRNFA9	FRNFC9
Capacity	6 LTR	6 LTR	9 LTR	9 LTR
Total Weight	9.8 KG	9.8 KG	13.5 KG	13.5 KG
Cylinder Height (mm)	534	534	586	586
Cylinder Diameter (mm)	163	163	183	183
Range of Throw	5.0	5.0	6.0	6.0
Fire Rating	27A & 183B	21A & 183B	34A & 233B	27A & 233B
Duration of Discharge (sec)	22	22	30	30
Extinguishing Agent	6% AFF Foam	6% AFF Foam	6% AFF Foam	6% AFF Foam
Propelling Agent	N ₂	N ₂	N ₂	N ₂
Operating Pressure	12 Bar	12 Bar	12 Bar	12 Bar
Material	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon	Steel Low Carbon
Operating Temperature	-5C to +60C	-5C to +60C	-5C to +60C	-5C to +60C



FIRE SUPPRESSION SYSTEM (FM 200 SYSTEM)



SP SERIES

HFC-227ea Fire Extinguishing System

The Frontier Fire Systems SP Series Clean Agent Fire Extinguishing System utilizes HFC-227ea as the extinguishing medium. HFC-227ea is a colorless, non-toxic gas perfectly suited to protect high value assets in areas that may be normally occupied, in locations where clean up of other agents is problematic, when storage space for a fire suppression agent is restricted, or when an electrically non-conductive agent is required. Each system consists of the following components and their associated accessories:

- 1 HFC-227ea Storage Components** - Storage components consist of the cylinder assembly (s), which contains the HFC-227ea chemical agent, and the cylinder bracket(s), which holds the cylinder assembly securely in place.
- 2 HFC-227ea Distribution Components** - Distribution components consist of the discharge nozzles used to introduce the HFC-227ea agent into a protected hazard along with the associated piping system used to connect the nozzles to the cylinder assembly.
- 3 Trim Components** - Trim components complete the installation of the HFC-227ea system and consist of connection fittings, pressure gauge, low pressure supervisory switch, electric valve actuator, and manual valve actuator.
- 4 Slave Arrangement Components** - Slave arrangement components consist of the pneumatic valve actuator(s), actuation check valve, bleed valve, pilot hose, and fittings required for a multiple cylinder (slave) arrangement manual valve actuator.
- 5 Supplemental Components** - Supplemental components include the discharge pressure switch and manifold check valve. They supplement the core equipment or complete a specific multi cylinder configuration.
- 6 Control Panel** - This device monitors the condition of the electric actuator, detectors, warning devices, cylinder pressure, and any manual release and abort stations. All electric or electronic devices must connect to the control panel in order to function.



Typical Clean Agent System Layout



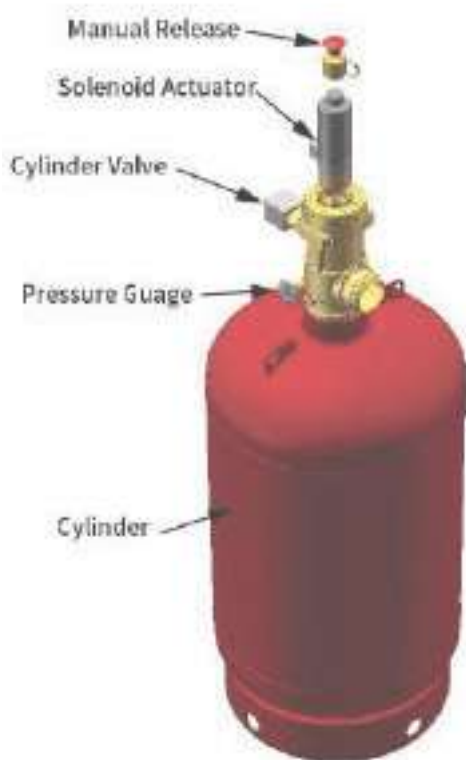
EQUIPMENT DESCRIPTION

The HFC-227ea agent is stored as a liquid in cylinder assemblies designed specifically for the application and charged to a fill density of between 480 kg/m³ and 1121 kg/m³. To ensure optimal performance, each cylinder is superpressurized with dry nitrogen to 25 or 42 bar at 21°C. An identification label is affixed to the cylinder body indicating the fill quantity of HFC-227ea, charging pressure, date of fill, and fill station. The SP Series supports three cylinder capacities.

HFC-227ea fire extinguishing systems are designed to be discharged within 10 seconds into a room, area, or enclosure with the structural integrity to retain the agent. The HFC-227ea uniformly mixes throughout the protected area, achieving a minimum concentration level in accordance with NFPA 2001 and/or agency listings.

Cylinder with Valve Assembly Part No.	Nominal Working Pressure (bar)	Nominal Cylinder Volume (L)	Fill Capacity(kg)		Outlet size (mm)	Empty Weight (kg)
			Min.	Max.		
811.101.0156	25	40	19.2	44.8	49	52
811.101.0158	42					
811.101.0166	25	50	24.0	56.0	49	57
811.101.0168	42					
811.101.0176	25	60	28.8	67.2	49	68
811.101.0178	42					
811.101.0186	25	70	33.6	78.4	49	67
811.101.0188	42					
811.101.0196	25	80	38.4	89.6	49	72
811.101.0198	42					
811.101.0206	25	90	43.2	100.8	49	84
811.101.0208	42					
811.101.0216	25	100	48.0	112.0	49	89
811.101.0218	42					
811.101.0226	25	120	57.6	134.4	49	99
811.101.0228	42					
811.101.0236	25	150	72.0	168.0	49	114
811.101.0238	42					
811.101.0246	25	180	86.4	201.6	49	146
811.101.0248	42					
811.101.0155	25	40	19.2	44.8	33	50
811.101.0157	42					
811.101.0165	25	50	24.0	56.0	33	55
811.101.0167	42					
811.101.0165	25	60	28.8	67.2	33	60
811.101.0167	42					





The cylinder assembly is composed of a cylinder, dip tube, cylinder valve, safety release.

Cylinder Valve: The automatic release of HFC- 227ea is controlled by a forged brass, differential pressure operated cylinder valve connected to the neck of the cylinder. The valve assembly is shipped with an anti- recoil safety device installed in the discharge outlet and chained to the cylinder valve.

Dip Tube: A threaded, rigid dip tube extends from the cylinder neck down to its bottom.

Cylinder: The light walled, welded seam cylinder is manufactured according to the requirements of TPED. Internal neck threads allow connection of the cylinder valve. The cylinder is designed for mounting in a vertical position only.

The cylinder valve has five connection points:

Valve Actuation Connection: A threaded connection located on top of the cylinder valve serves as the attachment point for the electric (primary) or pneumatic (slave) valve actuator.

Pressure Gauge Connection: A female connection serves as the attachment point for the pressure gauge. It is fitted with an internal check valve to allow removal of the gauge while the cylinder is pressurized.

Discharge Outlet: A 1.25 in (33mm) or 2 in (49mm) male thread connection serves as the attachment point for discharge piping.

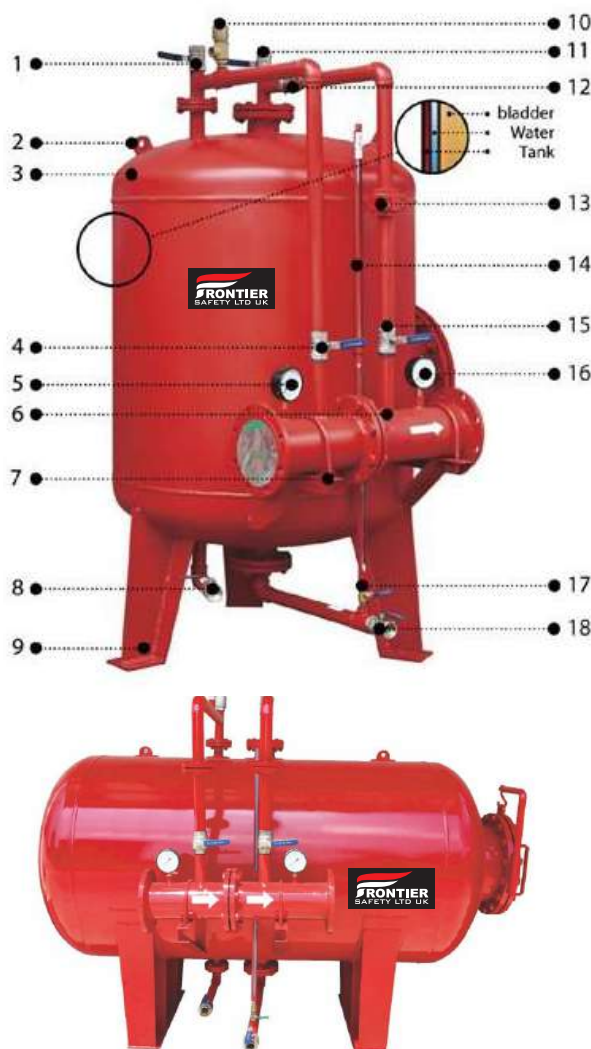
Pilot Actuation Port: A 1/4 in (8 mm) FNPT connection (shipped with a removable plug) provides a means of applying actuation pressure to the slave cylinder(s). This can also be used for attachment of the discharge pressure switch in single cylinder arrangements. The port is pressurized only during the 10 second discharge period.





FOAM BLADDER TANK





FOAM SYSTEM BLADDER TANK

**BLADDER TANK - 100
LITERS TO 6000 LITERS**

APPLICATION

Foam bladder tank, together with ratio controllers, form a balanced pressure proportioning system used to mix water and fire fighting foam together to generate an effective extinguishing medium.

The bladder tank technology as a mixing method, allows the water/foam ratio to remain stable by automatically adjusting to the variable flow rates and pressure conditions that may occur during system operation. This feature makes bladder tanks particularly suitable for multiple hazard systems, sprinkler systems and any other system operating under variable, non predictable, flow and pressure conditions.

FUNTION

The bladder tank is a carbon steel pressure vessel containing an elastomeric separation bladder between the water and foam concentrate. The bladder permits water pressure to be transferred to the foam concentrate without the two fluids mixing together. A ratio controller generates a water pressure drop by means of a reduced cross section where the water stream passes through it. As the foam concentrate pressure is higher than the pressure at the ratio controller, the foam starts flowing towards the water and mixing at a calibrated rate, which is dependant on the water flow rate.

SPECIFICATION

- 1 Water Vent Valve
- 2 Lifting Lug
- 3 Tank
- 4 Water Shut-Off Valve
- 5 Water Inlet Pressure Gauge
- 6 Ratio Controller
- 7 Ratio Controller Fixed Bracket
- 8 Water Drain Valve
- 9 Earth Lug
- 10 Relief Valve
- 11 Foam Vent Valve
- 12 Foam Check Valve
- 13 Concentrate Control Valve
- 14 Analog Level Indicator
- 15 Foam Contentrate Shut-Off Valve
- 16 Water/Foam Mixture Outlet Gauge
- 17 Foam Level Indicator Valve
- 18 Foam Concentrate Drain/Fill Valve





FOAM CONCENTRATE



AQUEOUS FILM FOAMING FOAM



PRODUCT DESCRIPTION

Frontier AFFF is a superior quality aqueous film-forming foam which can be used at the specified concentration to extinguish fires of non – polar hydrocarbon fuels. This extinguishing agent is suitable for use with most types of proportioning and discharge equipment. Frontier AFFF foam concentrates are designed for rapid fire knockdown by producing a thin aqueous film which helps to prevent the release of fuel vapours. The foam blanket from which the film forming liquid drains, separates oxygen from the fuel surface, extinguishes the fire and prevents re-ignition.



Frontier AFFF provides excellent penetrating and wetting qualities when used on Class A fires. The water content of the foam provides a cooling effect. The aqueous film is produced by the fluorocarbon surfactant reducing the surface tension of the foam solution to a point where the solution can be supported by the surface tension of the fuel. This is important when extinguishing deep-seated fires in wood, paper, rubber and other ordinary combustibles.



FEATURES

- Formulated for use with a wide range of discharge devices and proportioning systems.
- Suitable for use with both aspirating foam and standard water fog nozzles.
- If inadvertently frozen, thawing will render product completely serviceable again.
- Suitable for use with fiber glass, polyethylene or stainless steel.
- Suitable for use with either fresh or salt water.
- Suitable for use with deluge or closed head foam water sprinkler systems.
- Suitable for use with siliconised dry chemical extinguishing agents.
- U.L. recommended application rate on hydrocarbon type fuels is 0.10gpm/ft².
- Suitable for use at temperatures up to -29 ° C.



HARDWARE COMPATABILITY



Fixed
Proportioning
System



Foam
Chambers
&
Monitors



Nozzles
&
Sprinklers

APPROVALS



SPECIFICATIONS

PRODUCT	AFFF 1%	AFFF 3%	AFFF 6%	AFFF FREEZE PROTECT
Use concentration	1%	3%	6%	1% / 3% / 6%
Specific gravity	1.03 ± 0.02	1.01 ± 0.02	1.01 ± 0.02	1.06 ± 0.03
pH	7.5 ± .5	7.5 ± .5	7.5 ± .5	7.5 ± 0.5
Viscosity @ 20°C	< 10 CST	< 10 CST	< 10 CST	< 10 CST
Suspended sediment (V/V)	< 0.1 %	< 0.1 %	< 0.1 %	< 0.1 %
Freezing point	-2°C	-2°C	-2°C	-31°C
Pour point	-1°C	-1°C	-1°C	-30°C
Storage temperature	+1.7°C minimum +50°C maximum	+1.7°C minimum +50°C maximum	+1.7°C minimum +50°C maximum	-29°C minimum +50°C maximum
Foam expansion	Low > 7	Low > 7	Low > 7	Low > 7
25% Drainage time	3 minutes	3 minutes	3 minutes	4 minutes

AREAS OF APPLICATION

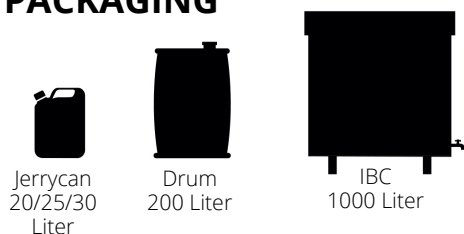
Frontier AFFF will provide quality protection for a wide range of hazardous areas such as:

- Refinery
- Hydrocarbon storage tanks
- Airports
- Ports
- Process areas
- Solvent extraction
- Polymer manufacturing
- Domestic fire
- Industrial fire
- Mobile equipment

STORAGE AND HANDLING

Frontier AFFF may be stored in its shipping container without change in its original physical or chemical characteristics. Shelf life is expected to be 20 years or more when stored at recommended temperatures and in original containers. It does not show significant sedimentation or precipitation in storage or after temperature cycling. Freezing and thawing have no effect on performance and the concentrate proportions satisfactorily in ordinary equipment at temperatures above 1.7°C. Synthetic foam concentrates should only be stored in stainless steel (Type 304L or 316), reinforced fiberglass polyester with a vinyl ester resin internal layer coating or plastic containers.

PACKAGING



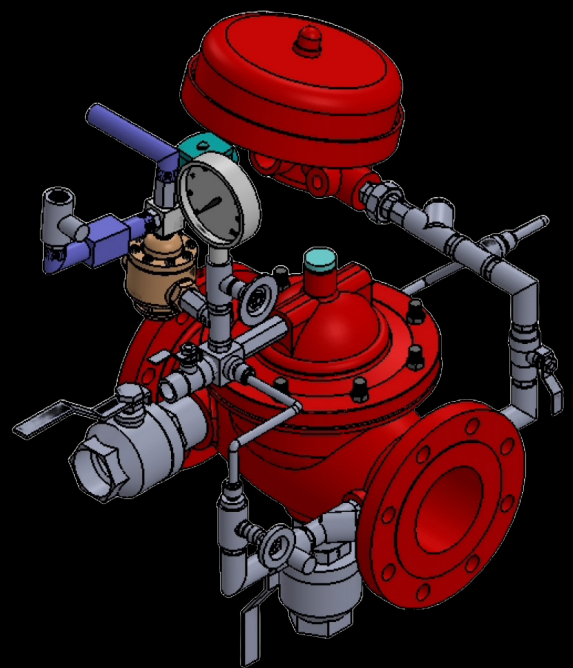
ENVIRONMENTAL IMPACT

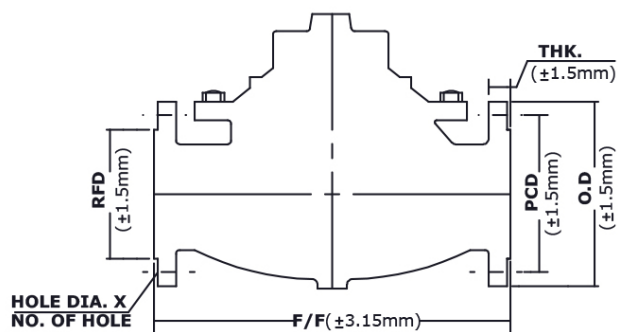
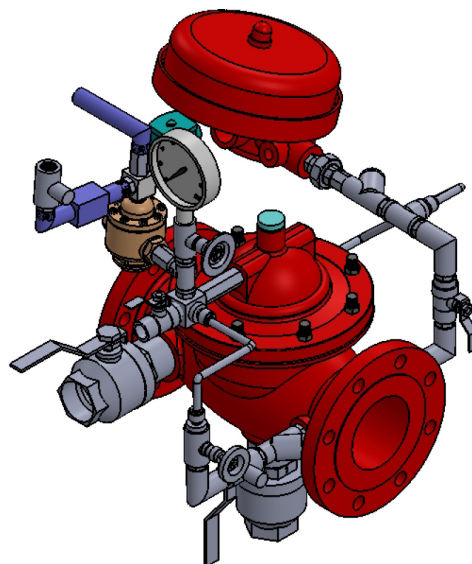
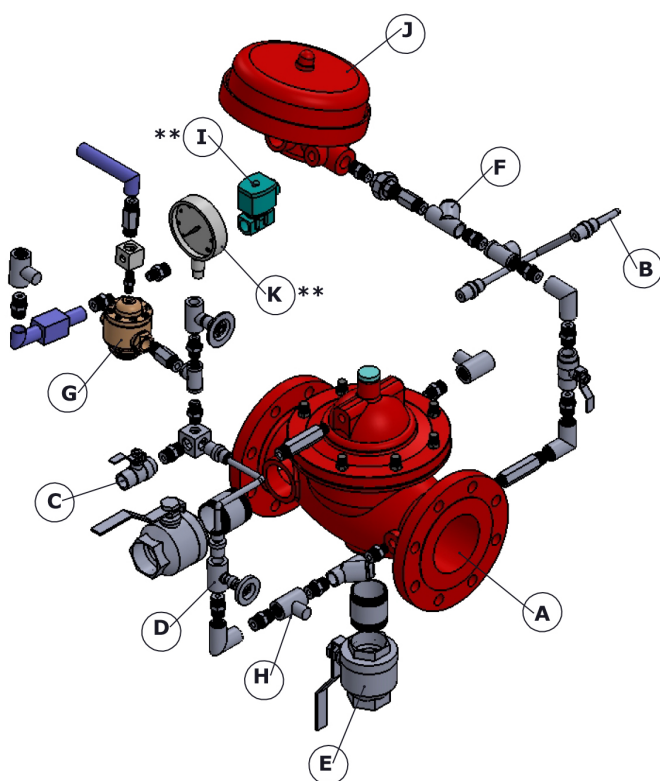
Frontier AFFF is biodegradable, low in toxicity and can be treated in effluent treatment plants.





DELUGE VALVE





VALVE FUNCTION

- Valve Opens when solenoid is ENERGIZED.
- Valve closed when solenoid is DE-ENERGIZED.
- M.R. station provides manual override of controls

NOTE

** Client Scope

** Option: 110/220/230 V AC (As Per Your Req.)

FLANGE DRILLING AS PER ANSI-B 16.5-150# RF. SERRATED FINISH

VALVE SIZE	F/F	O.D	THK.	R.F. DIA.	P.C.D	NO.OF HOLE	HOLE DIA.
50mm (2")	238.0	152.4	15.8	92.0	120.5	04	19.0
65mm (2-1/2")	242.0	177.5	17.5	104.8	120.5	04	19.0
80mm (3")	305.0	190.5	19.0	127.0	152.4	04	19.0
100mm (4")	381.0	228.6	23.8	157.1	190.5	08	19.0
150mm (6")	508.0	279.5	25.4	216.0	241.3	08	22.2
200mm (8")	645.0	342.9	28.5	270.0	298.5	08	22.2
250mm (10")	756.0	406.5	30.2	323.8	362.0	12	25.4



No	Description (fitting assembly)	Material	Size							QTY.
A	Basic valve	WCB	2"	2-1/2"	3"	4"	6"	8"	10"	1
B	Tubing & fitting	SS304/ COPPER	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	1
C	M.R. Station	ASTM A351 GR. CF8	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1
D	Flow control device	SS304	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1
E	Inlet/outlet drain valve	ASTM A351 GR. CF8	1/2"BSP	1/2"BSP	1.5"BSP	2"BSP	2"BSP	2"BSP	2"BSP	1
F	Strainer y-type	ASTM A351 GR. CF8	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1
G	Pilot valve	ASTM A351 GR. CF8	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"	1
* *	H	Nrv	SS304	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1
	I	2/2 Way solenoid valve 24 v dc** (any reputed make)	BRASS / SS304	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1
	J	Water motar gong - 3/4" bsp(f) - aluminium anodized								1
	K	Pressure gauge - 4" dial (any reputed make) range (0-14 kg/cm2g)								1

* *

* *

DESCRIPTION

- **Deluge valve** are used in conditions that call for quick application of large volumes of water and, for that reason, are often integral components in fire protection system.
- **Deluge systems** deliver large quantities of water over area, in a relatively short period of time. They are commonly used in fixed fire protection systems whose pipe system is empty until the deluge valve distributes pressurized water from open nozzles or sprinklers.
- **Deluge system** contain more components and equipment than wet pipe and dry systems. So for that matter they are more complex. Detection systems can include heat, smoke, ultraviolet (uv), or infrared (ir).

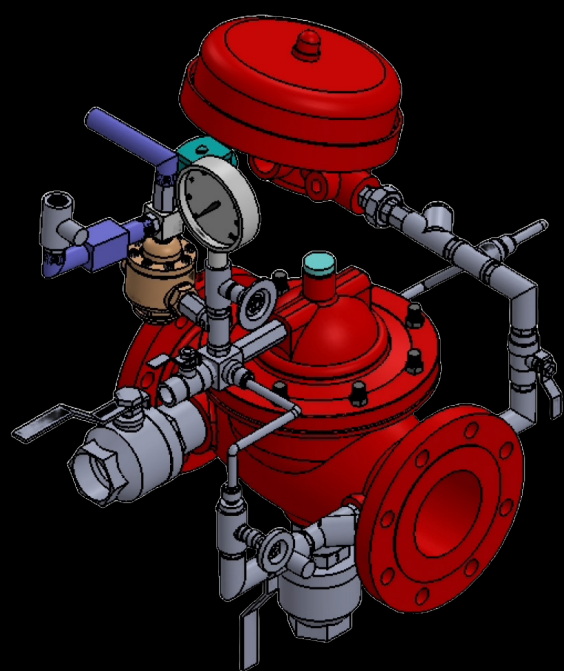
VALVE OPERATION

- Deluge valve models ACV FRN 100 are diaphragm operated, line fluid actuated, globe type straight pattern valves. The valve remains closed when line fluid (water) is loaded above the diaphragm in the cover chamber and valve opens fully, when line fluid (water) is emptied from the cover chamber.
- Fire will activate the heat-sensitive automatic fire sprinkler in the sprinkler heads closest to the fire. The pressurized water/air will flow from the activated sprinkler heads. Because the fire only activates the sprinkler heads closest to the fire, water damage is minimal. In fact, much less water is used when extinguishing a fire from a fire sprinkler than fire department extinguishment tools. When the fire sprinkler initiates, alarms will sound and continue sounding until the water flow is manually disabled.














PREACTION SYSTEM



PRE ACTION SYSTEM

- Dry pipe system is a sprinkler system employing an automatic sprinkler installed on a piping system containing air or nitrogen under pressure.
- This dry pipe valve is used to hold back the water supply and to serve as the water/air interface. It is designed so that a moderate amount of air pressure will hold back a much greater water pressure. When a fire occurs and enough heat is generated, one or more sprinklers will operate. The system's air pressure will then escape through the open sprinkler and drop to a predetermined level to allow the dry pipe valve to open. Once the dry pipe valve opens, the water supply will be admitted into the sprinkler system piping to fill it. Water will discharge from the sprinkler system piping to fill it and water will discharge.

TECHNICAL DATA

	• Model ACV FRN100	:	cast steel astm a 216 wcb
	• Normal Size	:	50,65,80,100,150,200 nb
	• Service Pressure	:	1.4 To 17 bar (20 to 246 psi)
	• Threaded Opening	:	bspt
	• Mounting	:	vertical or horizontal
	• Factory Hydrostatic Test Pressure	:	31 kg/sq.Cm. (440 Psi)
	• Flange Connection	:	ansi b 16.5 # 150 Rf (ff-optional)
	• Wet Pilot Sprinkler Height Limitaton	:	as per graph in the catalogue
	• Net Weight Without Trim	:	200 nb - 195 kg 150 nb - 150 kg 100 nb - 54kg 80 nb - 34 kg 65 nb - 30 kg 50 nb - 28 kg
	• Finish / paint	:	ral 3000 (red color)/ fire red is confirm to is5 shade 536 to is 2932
	• Approval	:	ul listed (80,100,150 nb)
	• Ordering Information	:	1. Size of valve 2. Flange specification 3. Valve trim vertical or horizontal 4. Trim type

PRE-ACTION SYSTEM

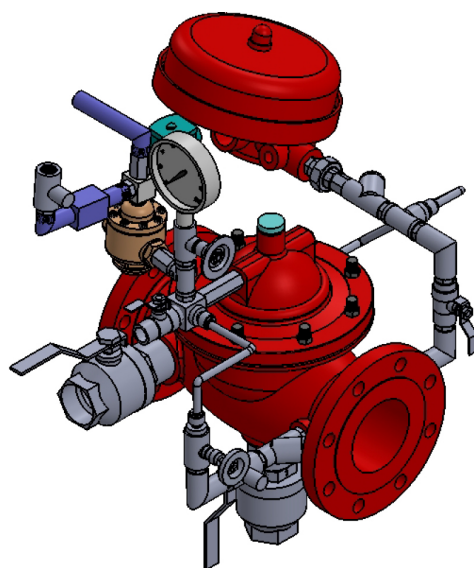
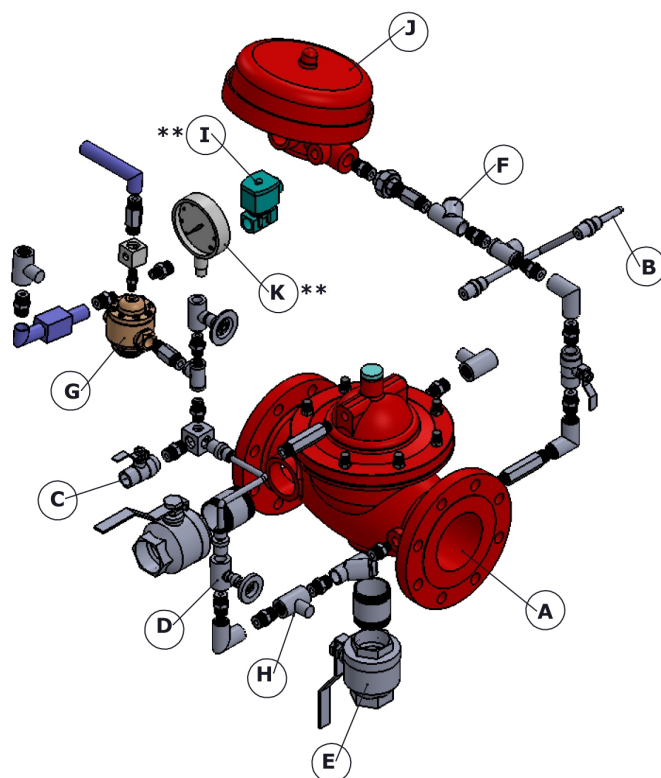
GENERAL DESCRIPTION

Pre-action sprinkler systems are specialized for use in locations where accidental water discharge is undesired and pre-alarm fire condition required to allow time for alternate fire suppression means, such as in museums with rare art works, manuscripts or books, libraries, archives, Data Centers, Lift Machine room, storage areas for valuable artifacts, computer and electronic equipments.

The supervised Single interlock Pre-action system with Electric Actuation utilizes automatic sprinklers and a supplemental detection system. Detection system consists of pre-action control panel, heat / smoke / multisensor, manual release station, etc. The release (Detection) system shall be designed to operate prior to sprinkler operation.

The following are the main advantages of a single interlock pre-action system over a wet pipe system.

- 1) Pre-alarm fire condition will occur prior to the sprinkler operation which allows extinguishing the fire by alternate fire suppression means. (Handheld fire extinguisher etc.,)
- 2) Integrity of the sprinkler piping can be monitored by a supervisory low pressure alarm switch. A trouble annunciator signal will occur whenever any abnormal leakage or accidental damage occurs in the piping system. However no water will flow and the air pressure is for supervisory alarm only.
- 3) In the event of a fire, the delay of water delivery time will be avoided because the detection system is designed to operate prior to sprinkler operation, allowing water to flow into the piping.



PRE-ACTION SYSTEM

In a supervised single interlock pre-action system, air is introduced into the system piping at a pressure of approximately 10 psi from an air or nitrogen source such as:

- 1) An air compressor
- 2) A plant air system (owner's air)
- 3) Nitrogen Cylinder Gas Supply

Any of the above sources can be used to fill the required system pressure in 30 minutes. A suitable automatic air maintenance device is used to control the pressure in the pre-action system. This air pressure supervises the piping to detect leaks. The pressure switch is used for detection of low air pressure on the sprinkler pipe.

A riser check valve in the single interlock system provides air check to the system and is pressurized with a nominal supervisory air pressure of 10 Psi. The supervisory low pressure alarm switch is set to transfer its contacts at 5 Psi to the pre-action control panel which in turn gives a trouble signal.

If any of the detectors senses fire, operation of a manual release station will give signal to pre-action control panel to energize(activate) the solenoid valve. Energized solenoid valve will drain the water from the top chamber of the deluge valve and allow water to flow into the piping. The flow of water converts the dry system into a wet system. When the fire produces enough heat to operate one or more sprinkler heads, water will flow from the operated sprinkler heads and control or suppress the fire.

UL Listed Deluge valve is a quick release, hydraulically operated diaphragm actuated type of valve. It has three chambers, isolated from each other by the diaphragm operated clapper and seat seal. While in SET position, water pressure is transmitted through an external bypass check valve and hydraulic shut-off valve from the system supply side to the top chamber, so that supply pressure in the top chamber act across the diaphragm operated clapper which holds the seat against the inlet supply pressure because of the 2 : 1 differential pressure design. On detection of fire the top chamber is vented to atmosphere through the outlet port via opened actuation devices (solenoid valve). If the top chamber pressure reaches less than half the supply pressure instantaneously, the upward force of the supply pressure lifts the clapper allowing water to enter the system piping network and alarm devices. As water flows into the system, the hydraulic shut-off valve becomes pressurized and automatically shuts off the top chamber supply flow (Priming line). Shutting off the top chamber supply flow prevents the **Pre-action valve** from becoming re-pressurized, thereby preventing inadvertent closing of the pre-action valve during a fire (If the solenoid valve become de-energized after its initial operation).

Technical Data:

Nominal Size : 50, 80, 100, 150 & 200

Working Pressure : 175 psi



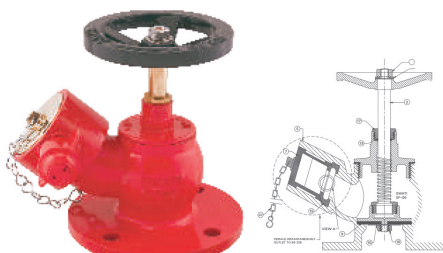


BREECHING INLET AND LANDING VALUE



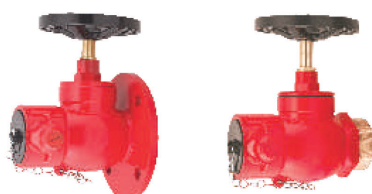


KM 632061

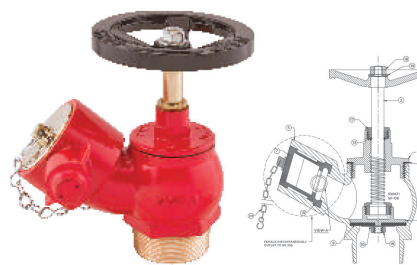


SF 05

STRAIGHT THROUGH VALVE



KM 632061



SF 06

BIB NOSE VALVE



SF 09

SF 10

RIGHT ANGLE VALVE



SF 11

SF 12

OBLIQUE VALVE



SF 95

FRNLV-06

FEATURES

- All Valves manufactured in accordance to BS 5041 Part 11987
- The Inlet on the Landing Valve can be either Flanged or Screwed
- The Landing Valves are classified under low pressure
- Possible to replace the gland seal when pressure with the valve fully closed
- Disc facing is a replaceable type
- All the products are suitable for both on-shore and off-shore applications
- Delivery hose connection and blank cap complying with BS 336:2020 Standard

SPECIFICATIONS

- **Body:** Copper Alloy to BS 1400 LG 2
- **Hand Wheel:** Grey Cast Iron to BS EN 1561
- **Inlet:** Flanged or Screw Thread to BS 21
- **Outlet:** Female Instantaneous to BS 336:2010
- **Working Pressure:** 15 Bar Max
- **Valve Seat Test Pressure:** 16.5 Bar
- **Body Seat Test Pressure:** 22.5 Bar
- **Flange Drilling:** BS 4504 Part 2:1974 Table 16/21
- **Nominal Size:** DN 65 and 2.5 inch

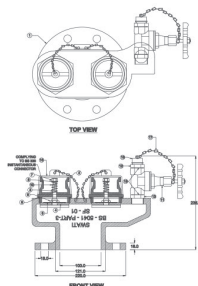




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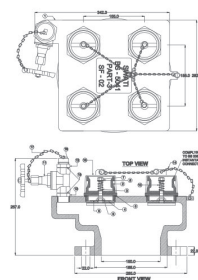
FRNBI-01



KM 632061



FRNBI-02



FEATURES

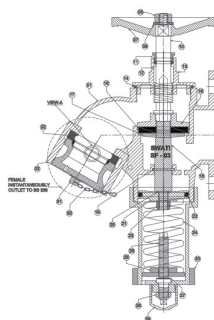
- Manufactured in accordance with BS5041 Part 3: 1975
- Body Material made of Spheroidal Graphite Cast Iron
- Inlet connection and non-return valves material made of copper alloy
- Each Inlet connection is fitted with non-return valve and of spring-loaded mushroom type
- Each breeching inlet is painted Red

SPECIFICATIONS

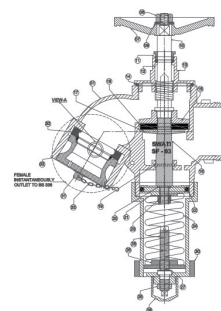
- **Body:** Spheroidal Graphite Cast Iron (Ductile Iron) to BS 2789
- **Inlet:** Copper Alloy to BS 1400, Male Instantaneous NRV connector Complying to BS 336
- **Outlet:** 4" and 6" Flanged
- **Working Pressure:** 10 Bar
- **Test Pressure:** 20 Bar
- **Flange Drilling:** BS 4504 Part: 2:1974 Table: 16/21
- **Drain Valve:** 1" Gate Valve as per BS 5154



SF 03



SF 04



FEATURES

- Designed and built in accordance with BS5041 Part 11987
- The Inlet on an Instantaneous Valve can be either flanged or Screwed
- Valve is fully complied to all the operational requirement of the standards without alteration of initial settings
- Primary shut-off valves using a high-quality rubber boned seating disc for a watertight rubber to metal seal
- High Quality Casting Finishes and Corrosion Resistant

SPECIFICATIONS

- **Body:** Copper Alloy to BS 1400 LG 2
- **Hand Wheel :** Grey Cast Iron to BS EN 1561
- **Inlet:** Flanged or Screw Thread to BS 21
- **Outlet:** Female Instantaneous to BS 336:2010
- **Working Pressure:** 20 Bar Max
- **Pressure Rating:** High Pressure Valve
- **Nominal Size:** DN65 & 2 72"
- **Seat Test Pressure:** 22.5 Bar
- **Body Test Pressure:** 30 Bar
- **Flange Drilling:** BS4504 Part 2:1974
- **Min. Water Flow Rate:** 8.5 L/S @ 4 Bar Outlet Pressure
- **Min. Valve Pressure Regulating:** 4 to12 Bar





FIRE HOSE REEL



MANUAL SWINGING ARM TYPE FIRE HOSE REEL

MODEL NO.: FRNHR-01M



SPECIFICATIONS

Standard	BS EN 671
Type	Manual swinging arm
Hose ID	25mm
Hose Length & Type	30m, PVC lining and cover, twisted with polyster yarn
Disc & Drum	550mm disc, 180mm drum
Assembly Components	RAL3000 Reel, Red Hose, 1" Rotay Nozzle, 1" Angle Valve
Working Pressure	12bar
Testing Pressure	18bar
Nozzle Orifice Diameter	8mm
Flow Rate	39L/min at 2bar; 56L/min at 4bar; 68L/min at 6bar



AUTOMATIC SWINGING ARM TYPE FIRE HOSE REEL

MODEL NO.: FRNHR-02A



SPECIFICATIONS

Standard	BS EN 671
Type	Automatic swinging arm
Hose ID	25mm
Hose Length & Type	30m, PVC lining and cover, twisted with polyester yarn
Disc & Drum	550mm disc, 180mm drum
Assembly Components	RAL3000 Reel, Red Hose, 1" Rotay Nozzle, 1" Angle Valve
Working Pressure	12bar
Testing Pressure	18bar
Nozzle Orifice Diameter	8mm
Flow Rate	39L/min at 2bar; 56L/min at 4bar; 68L/min at 6bar



UL LISTED FIRE HOSE - FRONTIER BRAND

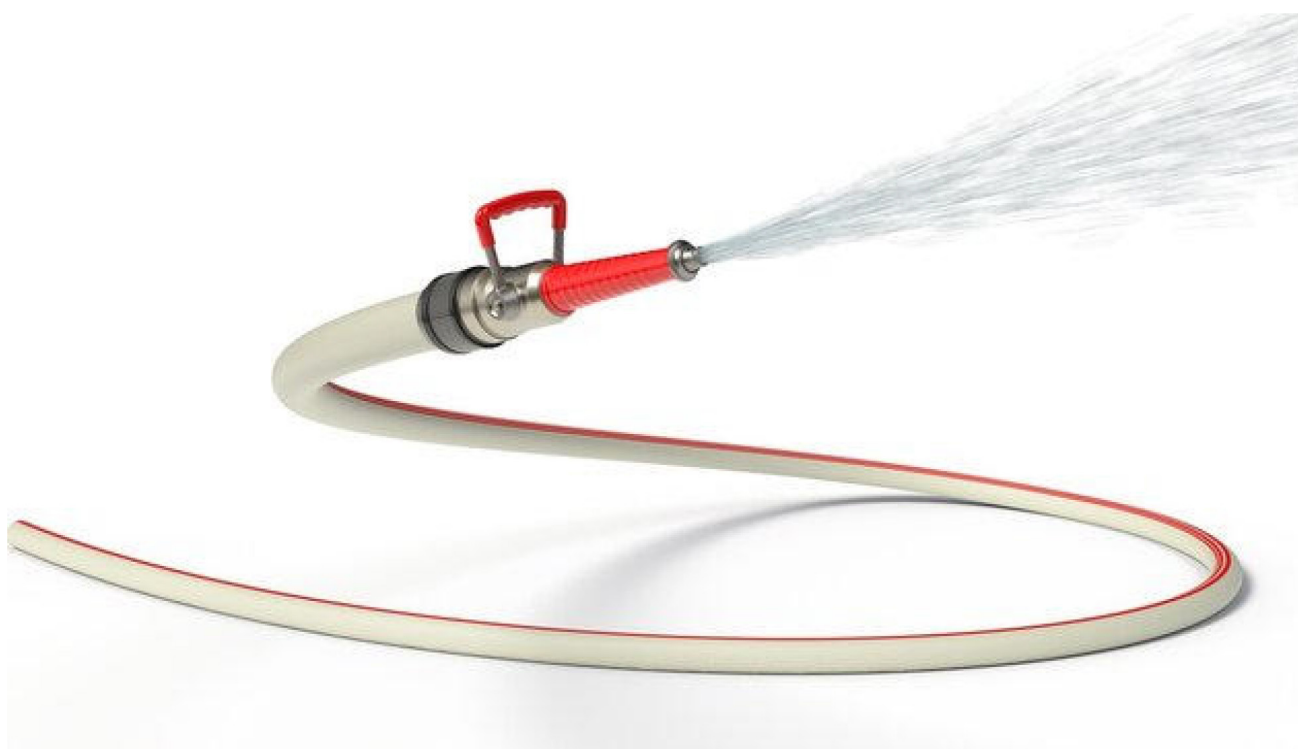


TYPE 1 FIRE HOSE

Sr No.	Description	Remarks
1	Manufacturer	Industrial Commercial Corporation (ICC)
2	Brand name	Frontier
3	Standard of Test	UL-19
4	Cover	It is a made upto 100% Synthetic Yarns with Inner synthetic EPDM rubber lining
5	Inner Lining	EPDM Rubber Lining
6	Internal Diameter	Shall confirm to the specified diameter within Tolerance of +2mm-0mm i.e 65mm (2 1/2")
7	Length	As per User Requirement
8	Workmanship	Jacket or Reinforcements shall be seamless evenly and firmly woven, and free from visible defects
9	Hydrostatic Proof-Pressure Tests (at 400PSI)	
	A.) Elongation	Change in Length not to increase 10%
	B.) Twist	5 turns per 50 feet(15.2 m)for 2 1/2" size
	C.) warp	20 inches per 50 feet(15.2 m)
	D.) Rise	102mm max. for 2 1/2" size
10	Coil Diameter	Max 60 cms (For 30m Length without couplings)
11	Burst Pressure Test	
	(A) While lying Straight	600 psi (42 bar)
	(B) While curved to radius of 27 inches	600 psi (42 bar)
12	Proof Pressure Test	400 psi (28 bar)
13	Kink Pressure Test	300 psi (21 bar)
14	Couplings	As per Customers Request: BS, Stroz, NST, NH, GOST. Brass and Aluminum both options available



Sr No.	Description	Remarks
15	Adhesion Test	A.)Adhesion between Lining to jacket shall not exceed 25mm/ min at 5.4kg load on 38.1mm strip.
16	Abrasion Test	When subjected to abrasion the hose should not burst before 100 cycles
17	Ozone Resistance	When a 150mm length of hose is inserted in a ozone chamber maintained at 50 +/- 2 deg Celsius and 50+/- 5 pphm for 96 hrs. the inner lining should not have any sign of cracks or crazing when observed from X2 Magnification Lens
18	Marking	a)Type of hose, b) Size of Hose, c) Length of Hose, d) Manufacturer's Name or trademark or both, e) Month and year of manufacturer f) Service Test Pressure of 200 psi g) File No: EX26501





GI PIPES



PAINTED STEEL PIPE



- Coating Material: Anti-rust Paint, Primer Paint, Epoxy Paint
- Coating Color: Red, Black, Gray, Varnish
- Coating Thickness: 30um
- Coating Method: Painted Outside
- Size: 1"---8"
- Temperature: -30°C--80°C
- Normal Pressure: 0.1 Mpa--8Mpa
- Connection: Grooved, Threaded, Plain

- Application: Sprinkler System, Gas system

Product Advantages:

- Paint is high quality and environmental, meet the requirement of usage
- Coating is uniformity and smooth.
- Coating with good adhesion and hardness
- Coating with good anticorrosion, prolong the pipe life span.

GALVANIZED STEEL PIPE



- Galv.: Hot-dip Galvanizing
- Size: 1/2"---8"
- Temperature: -30°C--80°C
- Normal Pressure: 0.1 Mpa--8Mpa
- Connection: Grooved, Threaded, Beveled, Plain

- Application: Water System, Sprinkler System, Gas system, Oil and HAVC System

Product Advantages:

- Galv. coating is uniformity, clean and bright.
- Using 0# zinc ingot, with good anti-corrosion ability.



EPOXY STEEL PIPE

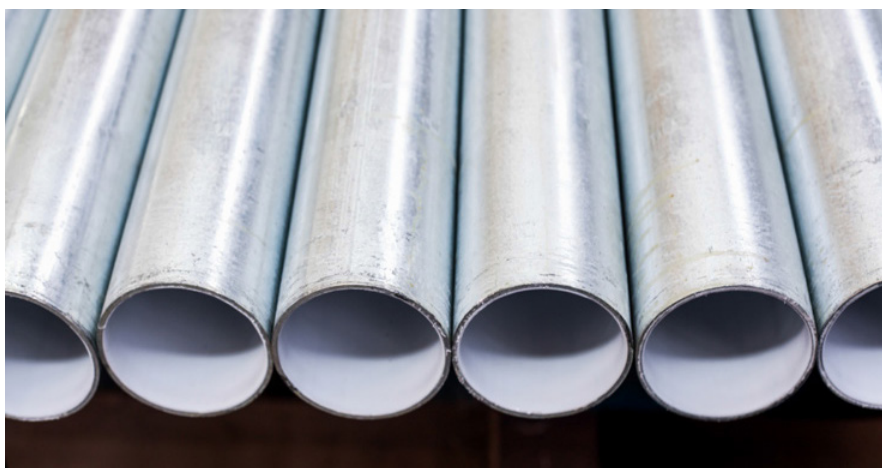


- Coating Material: Epoxy Resin Powder
- Coating Color: Red, Blue
- Coating Thickness: 40um-300um
- Size: 1/2"---8"
- Temperature: -30°C--80°C
- Normal Pressure: 0.1 Mpa--5Mpa
- Connection: Grooved, Threaded, Plain
- Application: Water System, HAVC System

Product Advantages:

- Epoxy powder is high-quality and environmental
- Coating with good anti-corrosion
- Coating with good hygienism
- Small resistance

PLASTIC-LINING STEEL PIPE



- Raw Material: PE, Hot-dip Galv, Pipe
- Size: 1"---8"
- Temperature: -30°C--80°C
- Normal Pressure: 0.1 Mpa--5Mpa
- Connection: Grooved, Threaded, Welded
- Application: Water System, Sprinkler System, Gas system, Oil and HAVC System

Product Advantages:

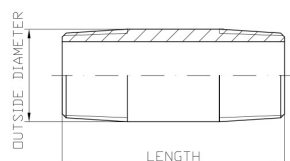
- Outside is Galv. pipe, with good anti-corrosion, and not easy to distortion.
- Inside is PE pipe, environmental and health, inside surface is smooth.
- Ensure the quality i of inside fluid, Improve transport efficiency.



BRASS PIPE NIPPLE



Material : ASTM B43
 Dimensions : ASTM B687
 Threads : ASME B1.20.1, ISO 7/1
 Schedule : Standard/Extra Heavy



Brass Pipe Nipple Standard/Extra Heavy

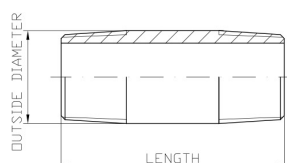
Pipe Size	Pipe O.D.	Length Close	Pipe Nipple Lengths (In)															
In	In	In																
1/8	0.405	3/4	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1/4	0.540	7/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3/8	0.675	1	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1/2	0.840	1 1/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3/4	1.050	1 3/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1	1.315	1 1/2	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1-1/4	1.660	1 5/8	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1-1/2	1.900	1 3/4	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
2	2.375	2	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
2-1/2	2.875	2 1/2	X	X	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3	3.500	2 5/8	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
4	4.500	2 7/8	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
5	5.562	3	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
6	6.625	3 1/8	X	X	X	X	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
8	8.625	3 1/2	X	X	X	X	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12



STEEL PIPE NIPPLE WITH AMERICAN STANDARD



Material : ASTM A53/A106/A333
 Dimensions : ASTM A733
 Threads : ASME B1.20.1
 Schedule : 40/80/160/XXS



Carbon Steel Pipe Nipple Sch.40/80/160/XXS, Welded/Seamless

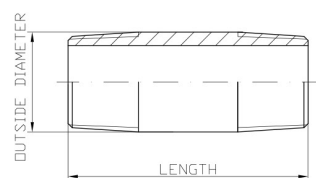
Pipe Size	Pipe O.D.	Length Close	Pipe Nipple Lengths (In)															
In	In	In																
1/8	0.405	3/4	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1/4	0.540	7/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3/8	0.675	1	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1/2	0.840	1 1/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3/4	1.050	1 3/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1	1.315	1 1/2	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1-1/4	1.660	1 5/8	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1-1/2	1.900	1 3/4	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
2	2.375	2	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
2-1/2	2.875	2 1/2	X	X	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3	3.500	2 5/8	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
4	4.500	2 7/8	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
5	5.563	3	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
6	6.625	3 1/8	X	X	X	X	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
8	8.625	3 1/2	X	X	X	X	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12

Noted: Other lengths and size available. Grooved end, SQ end and Bevel end available. Contact us for details.

STEEL PIPE NIPPLE WITH BRITISH/DIN STANDARD



Material : BS EN 10241
 Dimensions : BS EN 10241
 Threads : ISO7/1
 Schedule : Medium/Heavy



Carbon Steel Pipe Nipple Medium/Heavy ,Welded/Seamless

Pipe Size	Pipe O.D.	Length Close	Pipe Nipple Lengths (In)															
In	In	In																
6	10.3	19	30	40	50	60	80	100	120	150	180	200	250	300	350	400	450	500
8	13.7	27	30	40	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
10	17.1	28	30	40	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
15	21.3	37	X	40	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
20	26.7	39	X	40	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
25	33.4	46	X	X	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
32	42.2	51	X	X	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
40	48.3	51	X	X	50	60	80	100	41/2	150	180	200	250	300	350	400	450	500
50	60.3	60	X	X	X	60	80	100	41/2	150	180	200	250	300	350	400	450	500
65	76.1	69	X	X	X	X	80	100	41/2	150	180	200	250	300	350	400	450	500
80	88.9	75	X	X	X	X	80	100	41/2	150	180	200	250	300	350	400	450	500
100	114.3	87	X	X	X	X	X	100	41/2	150	180	200	250	300	350	400	450	500
125	141.3	96	X	X	X	X	X	X	41/2	150	180	200	250	300	350	400	450	500
150	168.3	96	X	X	X	X	X	X	41/2	150	180	200	250	300	350	400	450	500

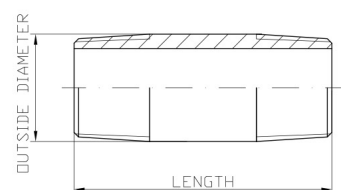
Noted: Other lengths and size available. Grooved end, SQ end and Bevel end available. Contact us for details.



STAINLESS STEEL NIPPLE WITH AMERICAN STANDARD



Material : ASTM A312/A312M
 Dimensions : ASTM A733
 Threads : ASME B1.20.1
 Schedule : 40/80

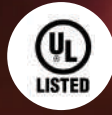


Stainless Steel Nipple Sch.40/80, Welded/Seamless

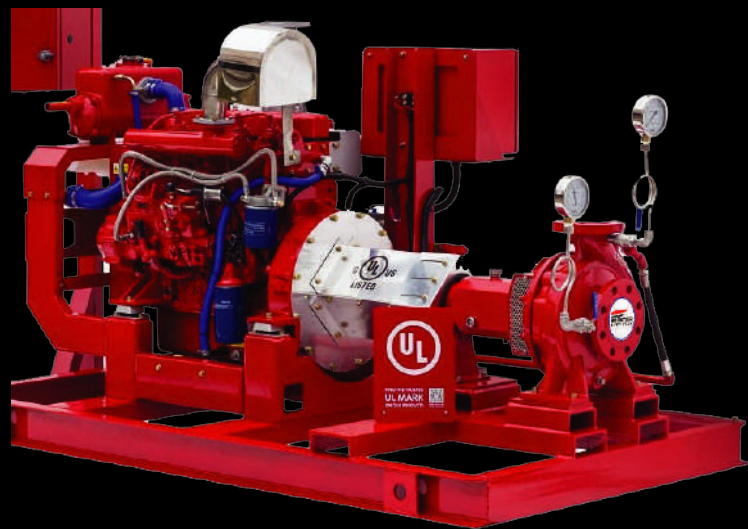
Pipe Size	Pipe O.D.	Length Close	Pipe Nipple Lengths (In)															
In	In	In																
1/8	0.405	3/4	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1/4	0.540	7/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3/8	0.675	1	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1/2	0.840	1 1/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3/4	1.050	1 3/8	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1	1.315	1 1/2	11/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1-1/4	1.660	1 5/8	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
1-1/2	1.900	1 3/4	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
2	2.375	2	X	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
2-1/2	2.875	2 1/2	X	X	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
3	3.500	2 5/8	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
4	4.500	2 7/8	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
5	5.563	3	X	X	X	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
6	6.625	3 1/8	X	X	X	X	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12
8	8.625	3 1/2	X	X	X	X	3 1/2	4	4 1/2	5	5 1/2	6	7	8	9	10	11	12

Noted: Other lengths and size available. Grooved end, SQ end and Bevel end available. Contact us for details.





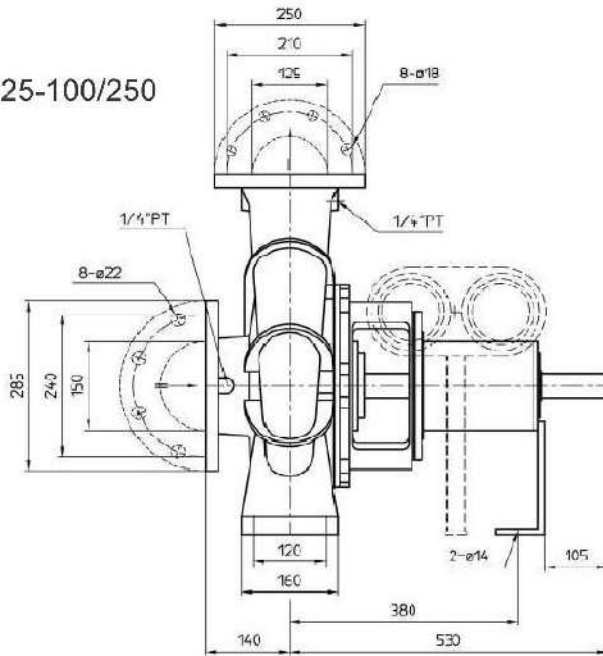
END SUCTION FIRE PUMP



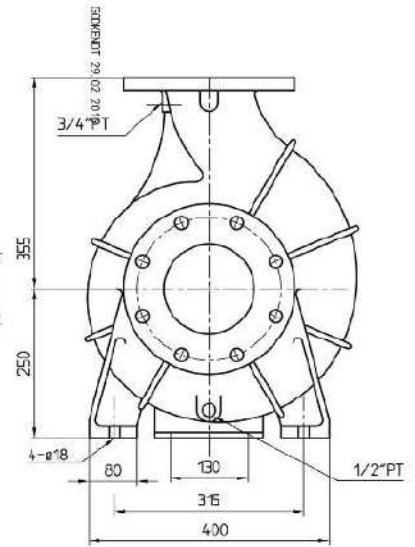
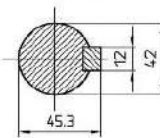
END SUCTION FIRE PUMP

Sectional & Dimensional Drawings

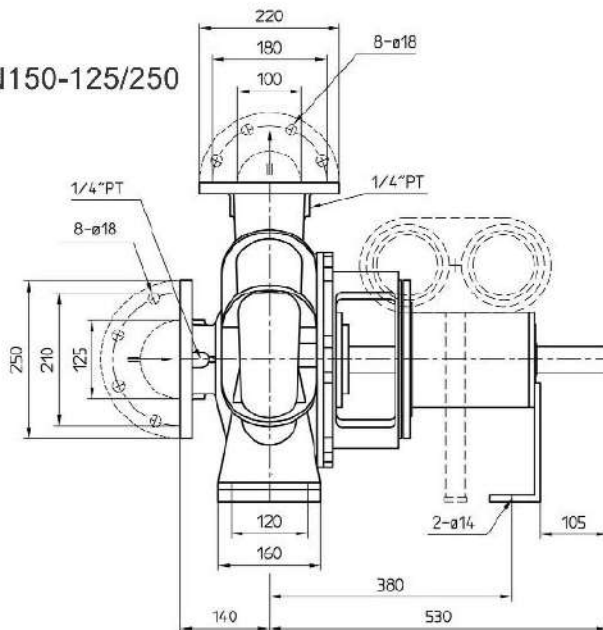
CN125-100/250



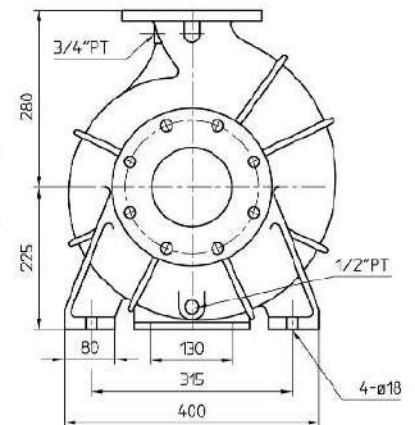
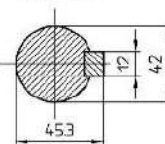
Pump Shaft:



CN150-125/250

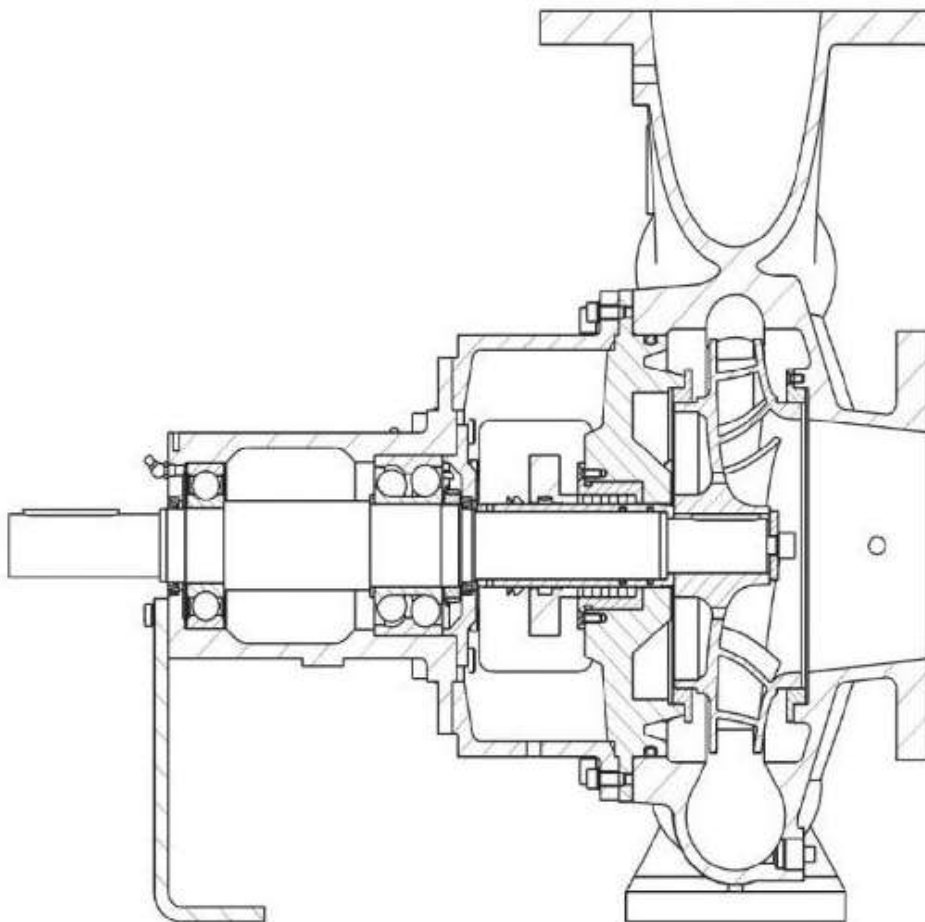
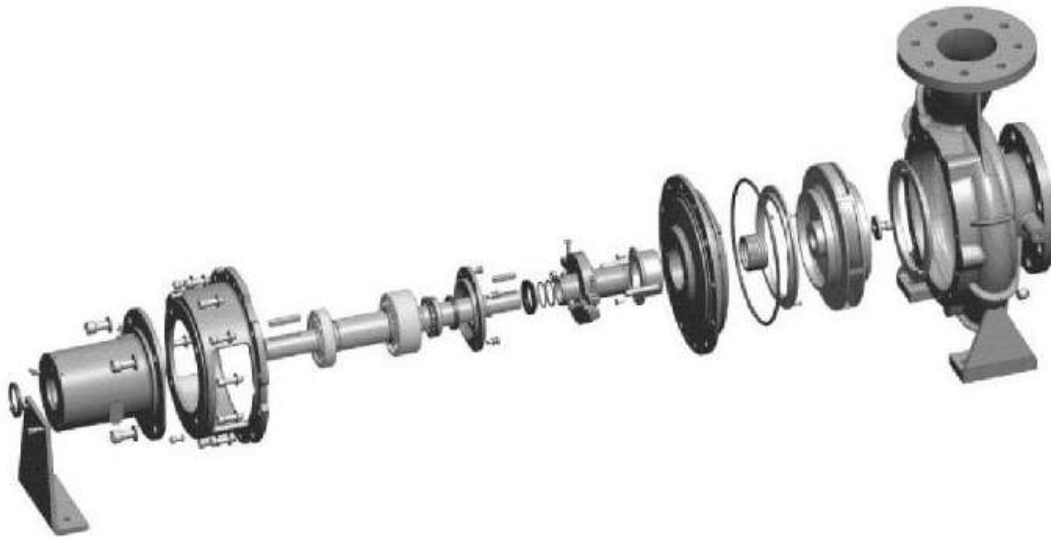


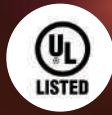
Pump Shaft:



END SUCTION FIRE PUMP

Sectional Drawings





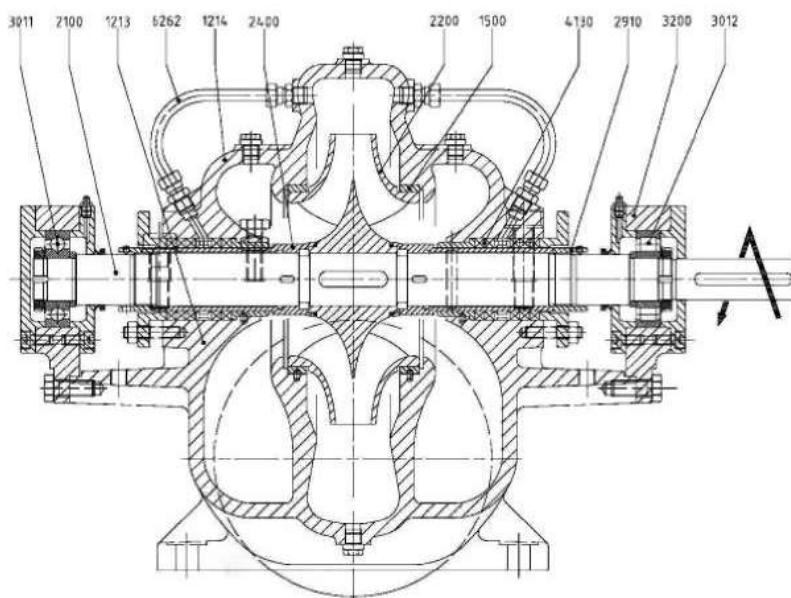
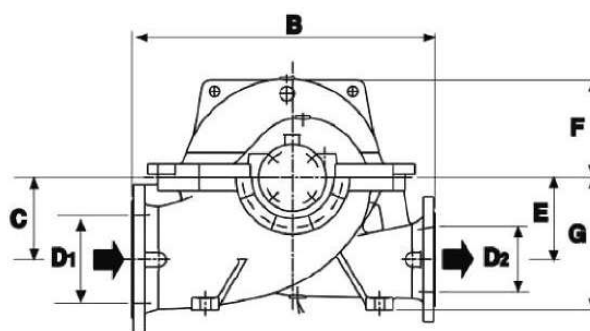
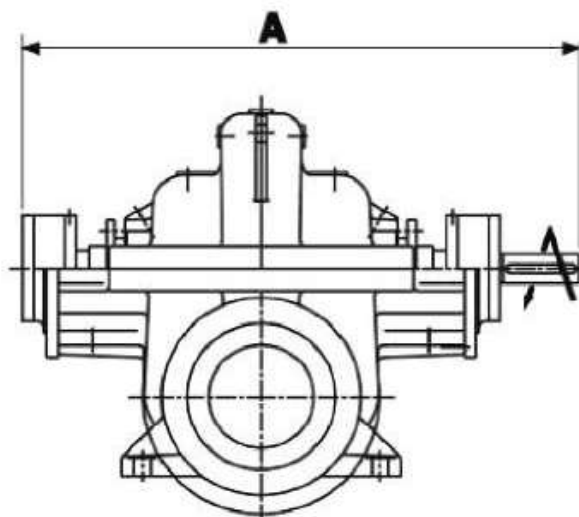
HORIZONTAL SPLIT CASE FIRE PUMP



HORIZONTAL SPLIT CASE FIRE PUMP

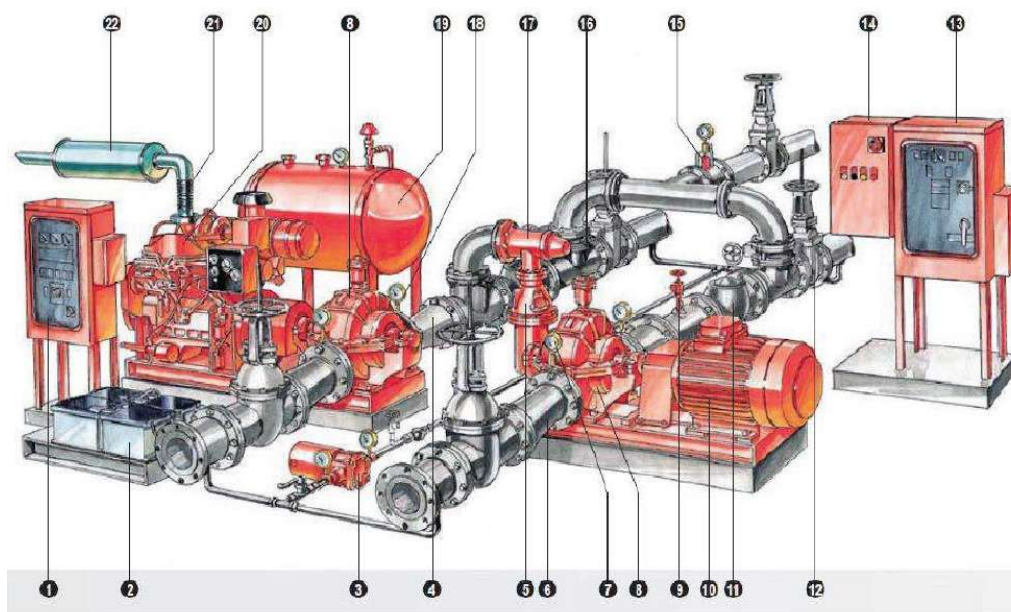
Sectional Drawings

REF	DESCRIPTION	MATERIAL
1213	Casing half lower	Cast iron - G30
1214	Casing half upper	Cast iron - G30
1500	Casing wear ring	Bronze
2100	Shaft	Stainless steel
2200	Impeller	Bronze
2400	Sleeve	Bronze
2910	Shaft nut	Bronze
3011	Radial ball bearing	-
3012	Radial roller bearing	-
3200	Bearing housing	Cast iron - G30
4100	Staffing box	Bronze
4130	Gland packing	PTFE
4200	Mechanical seal	On request
6262	Pipe	Stainless steel

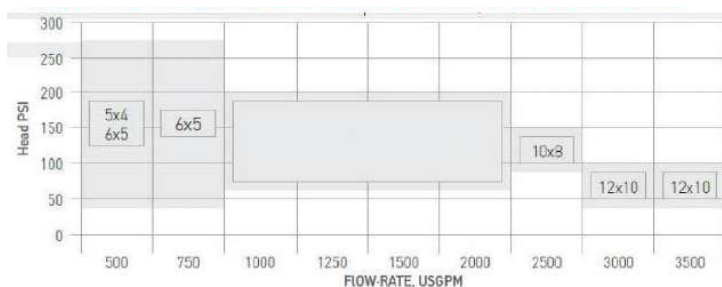


HORIZONTAL SPLIT CASE FIRE PUMP

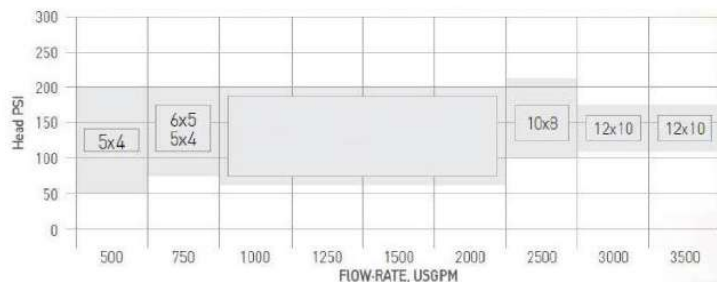
Technical Data Summary



**HORIZONTAL FIRE PUMPS DIESEL ENGINE DRIVEN,
U.L. APPROVED RANGE**

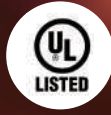


**HORIZONTAL FIRE PUMPS DIESEL ENGINE DRIVEN,
U.L. APPROVED RANGE**

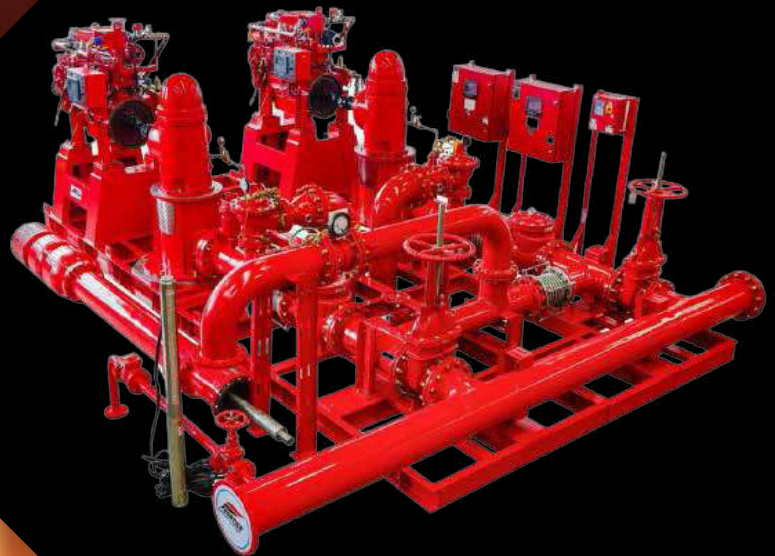


- | | |
|----|-------------------------------------|
| 1 | Diesel engine fire pump controller |
| 2 | Batteries |
| 3 | Jockey pump |
| 4 | Concentric discharge increaser |
| 5 | Enclosed discharge overflow cone |
| 6 | Eccentric suction reducer |
| 7 | Suction pressure gauge |
| 8 | Horizontal pump |
| 9 | Circulation relief valve |
| 10 | Electric motor |
| 11 | Check valve |
| 12 | OS & Y gate valve |
| 13 | Electric motor fire pump controller |
| 14 | Jockey pump controller |
| 15 | Flow meter |
| 16 | Automatic air release valve |
| 17 | Main relief valve |
| 18 | Discharge pressure gauge |
| 19 | Fuel tank |
| 20 | Diesel engine |
| 21 | Flexible exhaust connector |
| 22 | Exhaust muffler |





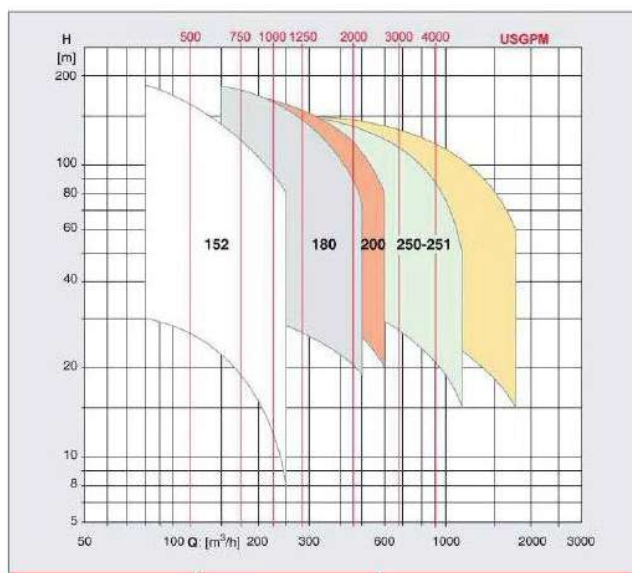
VERTICAL TURBINE FIRE PUMP



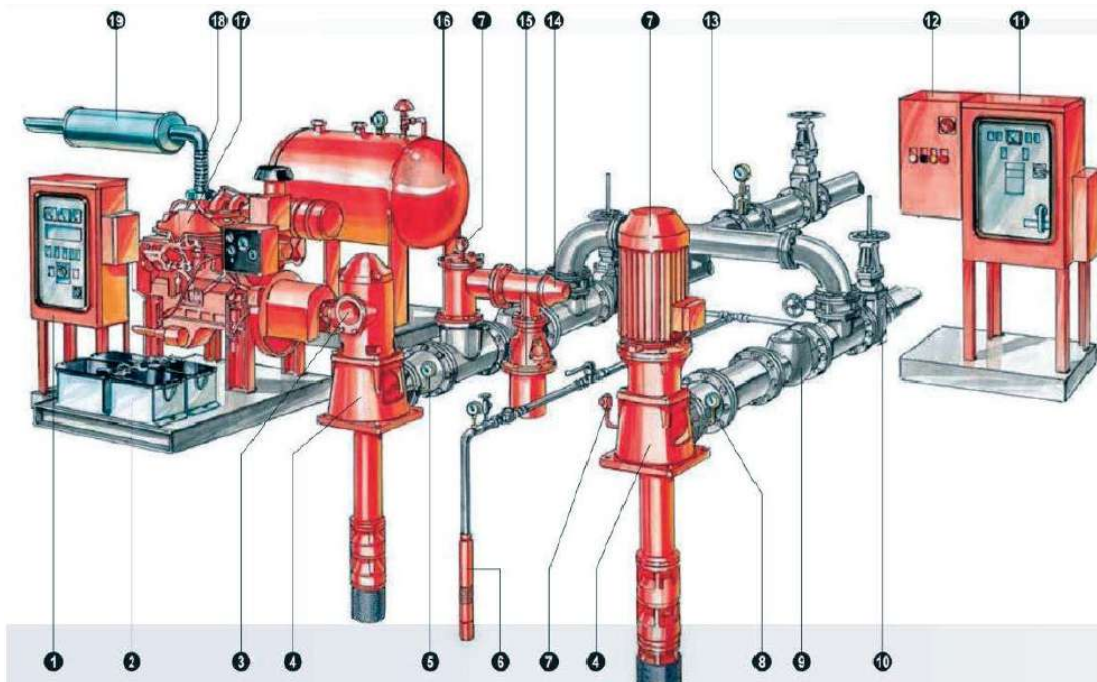
VERTICAL TURBINE FIRE PUMP

Vertical shaft turbine type fire pumps have submerged impellers contained in a series - bowl assembly at the bottom of a vertical shaft. The design is similar to the pumps used extensively for industrial & municipal services. These pumps are UL approved for discharging water from tanks, streams, open sumps, drilled wells. Each pumps consist of a discharge head, motor stand, column pipe, line shaft, bowl assembly and suction strainer.

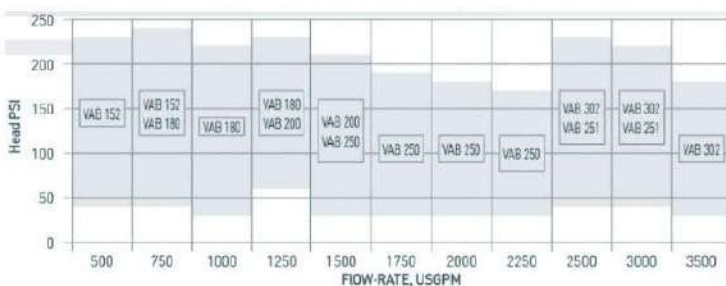
TECHNICAL DATA SUMMARY



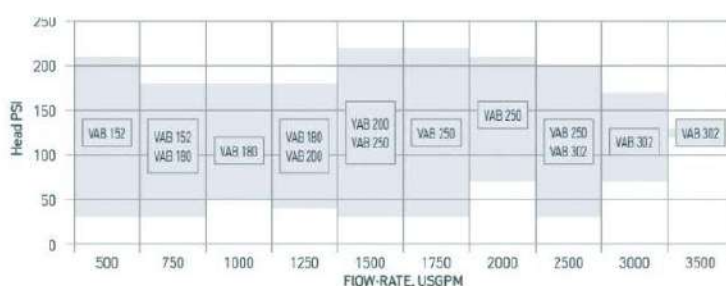
VERTICAL TURBINE FIRE PUMP



HORIZONTAL FIRE PUMPS DIESEL ENGINE DRIVEN, U.L. APPROVED RANGE



VERTICAL PUMPS AT 1700 RPM, APPROVED RANGE HEAD, PSI FLOW. RATE USGPM

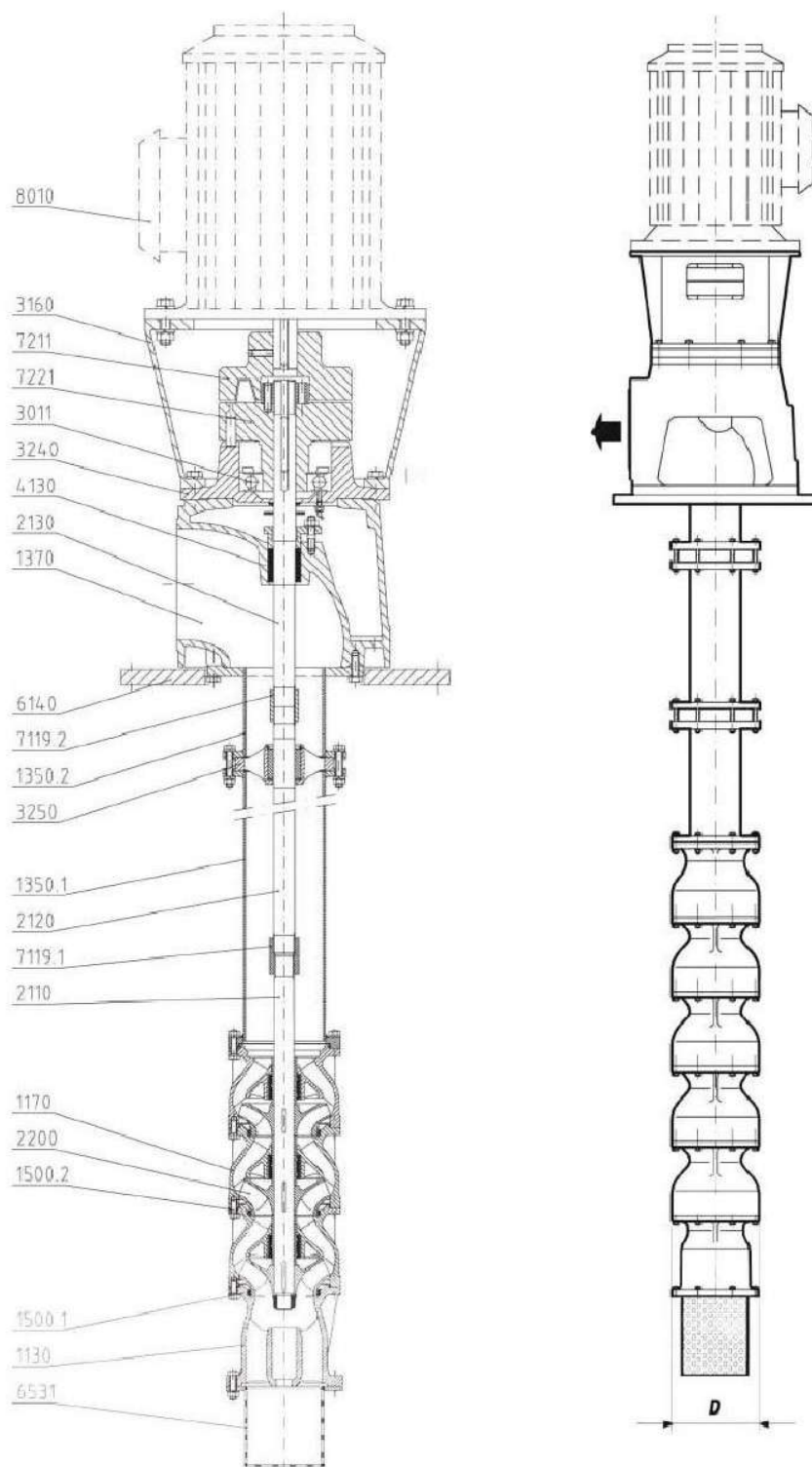


- 1 Diesel engine fire pump controller
- 2 Batteries
- 3 Gear Drive
- 4 Pump
- 5 Suction Pressure Gauge
- 6 Jockey Pump
- 7 Circulation relief valve
- 8 Concentric discharge increaser
- 9 Check Valve
- 10 OS & Y gate valve
- 11 Electric motor fire pump controller
- 12 Jockey pump controller
- 13 Discharge pressure gauge
- 14 Main relief valve
- 15 Enclosed discharge overflow cone
- 16 Fuel Tank
- 17 Diesel Engine
- 18 Flexible Exhaust connector
- 19 Exhaust muffler



VERTICAL TURBINE FIRE PUMP

Sectional Drawings



VERTICAL TURBINE FIRE PUMP

Sectional Drawings

TYPE D(") D(MM)		
152	12"	290
180	12"	300
200	14"	354
250	17"	418
251	17"	418

REF	DESCRIPTION	MATERIAL
1130	Bell mouth	Cast iron – G25
1170	Pump bowl	Cast iron – G25
1350, 1	Column pipe	Stainless steel
1350, 2	Column pipe	Stainless steel
1370	Delivery casing	Cast iron – G25
1500, 1	Wear ring	Bronze
1500, 2	Wear ring	Bronze
2110	Pump shaft	Stainless steel
2120	Intermediate shaft	Stainless steel
2130	Top shaft	Stainless steel
2200	Impeller	Cast iron – G25
3011	Ball bearing	Stainless steel
3160	Motor spool	Cast iron – G25
3240	Bearing housing	Cast iron – G25
3250	Bearing bracket	Cast iron – G25
4130	Gland packing	Teflon Carbon
6140	Foundation plate	Steel Fe 430
6531	Suction strainer	Steel Fe 510
7119, 1	Screwed coupling	AISI 420
7119, 2	Screwed coupling	AISI 420
7211	Coupling half side motor	Cast iron – G25
7221	Coupling half side pump	Cast iron – G25



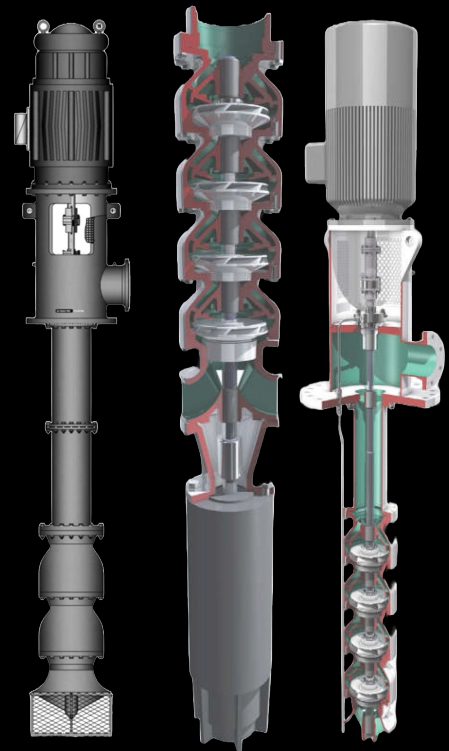


VTP SERIES

VERTICAL TURBINE.

AXIAL FLOW PUMPS API 610 VS1, VS3, VS6.

SUBMERSIBLE VS0.



Frontier Safety LTD UK is specialized in design and manufacturing of all types of pumps with high quality products and services and compliance to latest industry standards.

API 610 VS1, VS3, VS6 - VERTICAL TURBINE PUMP

VS series pumps are excellent where there is very low NPSHa as they create their own. Normally designed to operate in wells or sumps.

APPLICATIONS

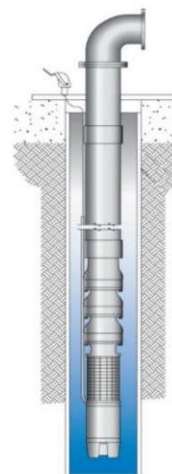
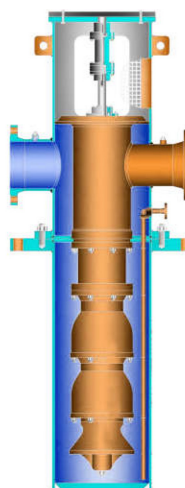
- Condensate transfer
- Chemical transfer
- LNG transfer
- Shipping of LPG
- Crude Oil pipeline booster
- Depropanizer service in cryogenic gas plants

PRODUCTS DETAILS

- FRNVTP-API 610 VS1**
Wet pit, vertically suspended, standard turbine pumps with discharge through the column.
- FRNVAF-API 610 VS3**
Wet pit, vertically suspended, mixed flow and axial flow pumps with discharge through the column.
- FRNVTC-API 610 VS6**
Can type or double casing diffuser, vertically suspended pumps with discharge through the column.
- FRNVTS-Submersible**
Wet pit, vertically without line shaft submersible pump with discharge through the column.



FRNVTP-API 610 VS 1 FRNVAF-API 610 VS 3



FRNVTC-API 610 VS 6 FRNVTS-SUBMERSIBLE





SEWAGE SUBMERSIBLE PUMP



SEWAGE SUBMERSIBLE PUMPS



SEWAGE NON CLOG SUBMERSIBLE PUMPS

FEATURES

- Energy Efficiency : High efficiency motor, hydraulics, low friction bearings - reduced power loss.
- Safety and monitoring features: Thermal, vibration and moisture controls and monitoring with internal and external cooling.
- Custom built designs:
 - Pump hydraulics - vortex impeller, cutters, dredgers.
 - Motor - To suit VSD/other starting.
 - Corrosion and abrasion resistant materials.
- Robustness and durability: Heavy and rigid stainless steel shaft, high LTO heavy duty bearings vibration free operation. Higher thickness pressure castings.
- Serviceability: Modular designs - lower spare parts inventory. External inspection parts - quick and easy evaluation during service.
- Reliability: Maximum durability with Double mechanical seals. Double cable entry-seal system - no moisture entry.
- Wear Resistance: Stainless steel impeller, shaft and hardware, adjustable wear parts - long life and high efficiency.
- Dry Running ability: Designed for 50°C dry running
- Effortless starting: High starting torque - easy starting against heavy solids.
- Choke free: MN/MF range with state of the art wastewater solids handling.



STANDARD DESIGNS CONFORM TO (IEC) GUIDELINES

- Separate sealed terminal box - liberal sizing terminal plate - quick and easy connections of cables.
- High performance values in all mounting arrangements and applications.
- Suitable for frequency converter drives – reliable operation at an extreme speed range.
- Minimum electromagnetic, water-borne structural noise.
- Aerodynamic and acoustic considerations in design. Internal and external forced cooling.
- High quality round enamelled wires. Higher insulation class available.
- Stator impregnated with solvent less resin resulting in good thermal conductivity and high mechanical strength, long life.
- Deep longitudinal fans - Maximum cooling surface area. Cast grooves on lower bearing and seal housing faces - better cooling.
- Unique polyimide based class F, Insulation scheme rated for 155°C with temperature rise limited to class B.

APPLICATION

- Screened Sewage
- Contaminated Effluents
- Storm water
- Dry and wet Pit
- Drain water, Mine water
- Raw Sewage
- Raw water Intake
- Industrial waste water
- Trench & Tunnel water
- Waste water with solids

RANGE

- Three phase squirrel cage induction motors
- Frame size : 71 to 550
- Output : 1.1 to 1000 Kw; 2 to 16 pole
- Insulation : Class F/H
- Voltage : 415 v, 460 v, 550 v, 3300 v
- Frequency : 50 Hz; 60 Hz; Duty; S1
- Mounting : Foot mounted and Flange mounted
- Enclosure : Totally enclosed
- Water Cooled (TewC)

SPECIAL DESIGNS

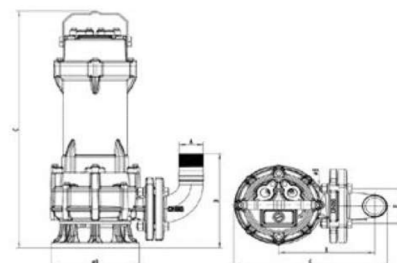
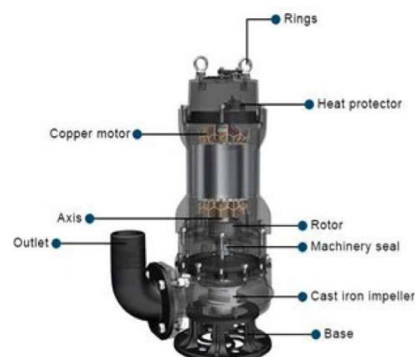
Various custom built designs with explosions proof Type, extra HV protection, internal external cooling systems, special control protection can also be provided.

PAINTS

Painted with three part painting scheme to get excellent finish to the motor and protection against corrosion.

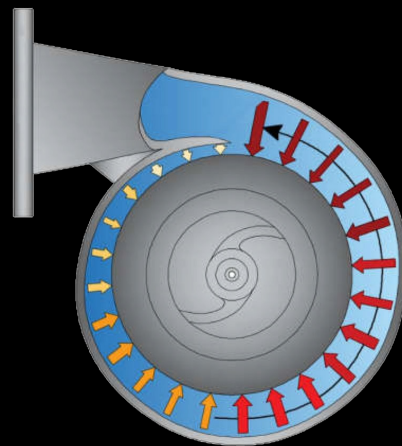
INSTALLATION FLEXIBILITY

Dual mounting flexibility provided for vertical or horizontal installation





VERTICAL VOLUTE PUMPS



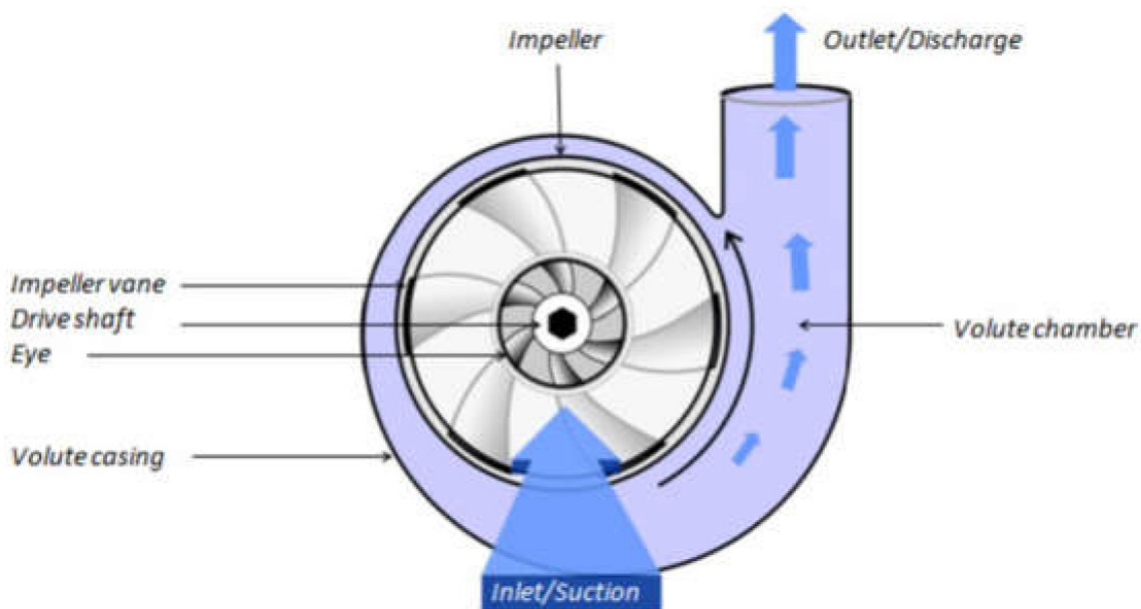
FIELDS OF APPLICATION

- Irrigation water supply system - low head and high head.
- Drainage water pumping.
- Storm water pumping
- Municipal Water supply
- Industrial water supplies
- Power plant Cooling Water system.
- Nuclear power plant applications.
- Sea Water intake pumping.



VARIOUS DESIGN OPTIONS AVAILABLE

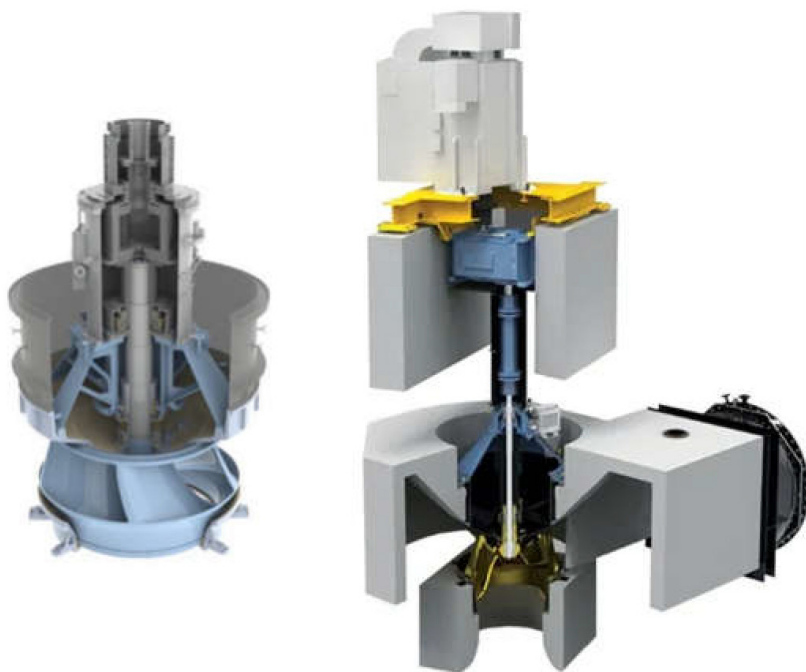
- Volute casing & Suction Draft Tube : Concrete embedment on metal lining or Concrete.
- Impeller : Radial, Mixed Flow, Axial to suit to variable head conditions.
- Flow : 2 M3/Sec to 40 M3/Sec.
- Head : Upto 250 M.
- Power output : Upto 40 MW.



VOLUTE CASING

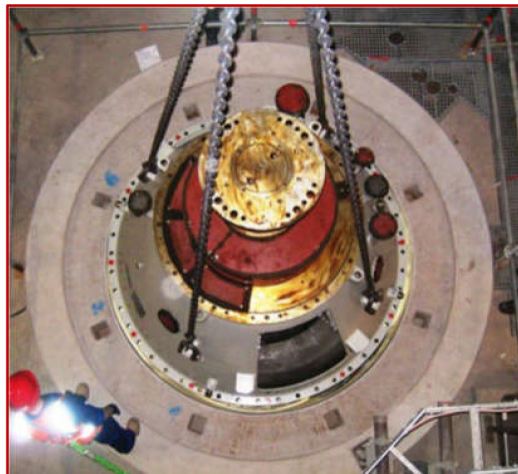
Volute casing options :

- Concrete Volute : Volute formed at site by concreting on wooden formwork. Formwork removed after concreting.



METAL VOLUTE / CONCRETING ON STEEL LINER

- Volute manufactured at shop by formed metal plates in segments, assembly-checked and then transported to site in segments. At site all segments welded and then concreting done around the metal casing.





FRONTIER JOCKEY PUMPS



VERTICAL MULTISTAGE CENTRIFUGAL PUMP

Product introduction: Performance range

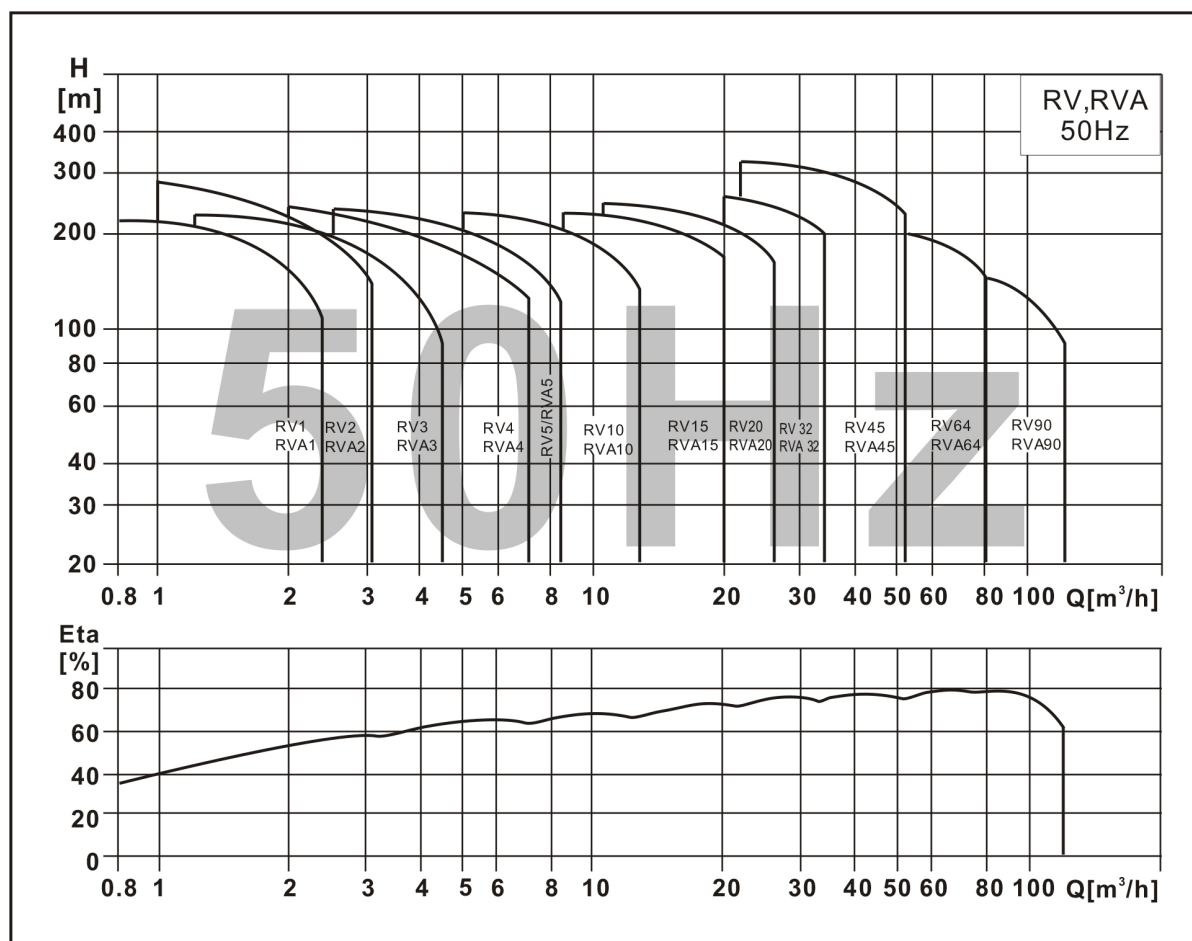
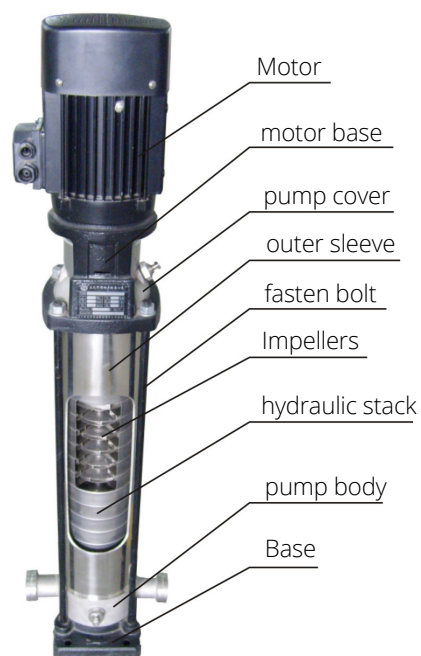


Fig.1 RVA

PUMP

RVA and RV are non-self priming vertical multistage centrifugal pumps. The pumps are available with a standard motor. Inlet and outlets are located at the bottom of the pump (inline type). All pumps are equipped with a maintenance-free mechanical seal set of the cartridge type.



MOTOR

RVA and RV are fitted with a totally enclosed fan-cooled 2-pole three-phase standard motor. 0.37kW to 2.2kW, are also available with a single-phase motor.(1*220-230V/240V).

MOTOR PROTECTION

Single-phase motor have a built-in thermal overload switch. Three-phase motors must be connected to a motor protective circuit breaker according to local regulations.

AMBIENT TEMPERATURE

Ambient temperature: maximum +40 , if the ambient temperature exceeds +40 , or the pump is installed at an altitude exceeding 1000 meters, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases ,it may be necessary to use a motor with a higher rated output.

TERMINAL BOX POSITIONS

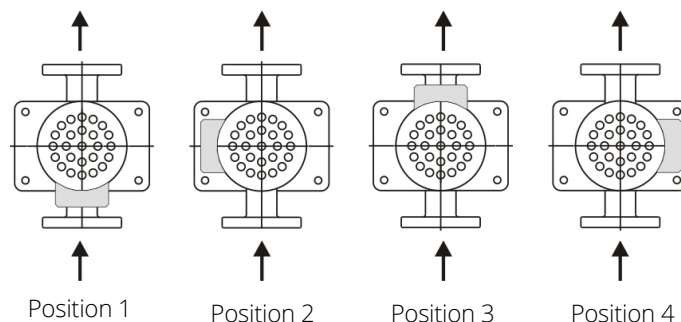
As standard the terminal box is mounted on the suction side of the pump, meanwhile, 0, 90,180, 270 could be adjusted according to the following proceeding:

1. If necessary, disassembling the protective cover of the shaft connector, but do not disassembling the shaft connector.
2. Disassembling the motor fixation screws.
3. Turn the motor to the required direction.
4. Fasten the motor screws.
5. Install the shaft connector's protective cover.

The voltage and frequency are marked on the label, the correct power should be confirm with the label before usage.

Ensure the electric connection is confirmed with to the drawing marked on the label inside the terminal box.

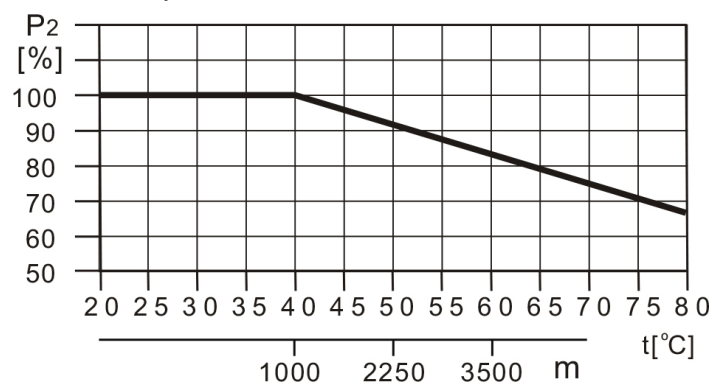
Fig2. Terminal box positions



VISCOSITY

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance and a rise in the power consumption. In such situations the pump should be fitted with a larger motor.

Fig.3 Relationship between motor output (P2) and temperature



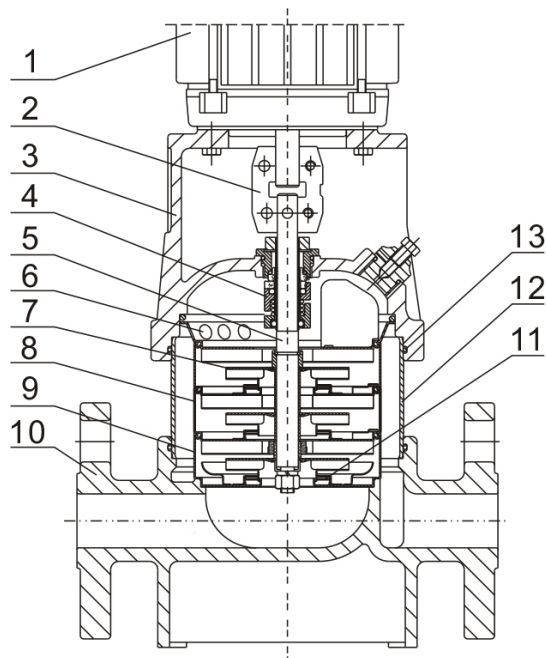
EXAMPLE

From Fig.3, the pump is installed at an altitude exceeding altitude 3500 meters, P2 will decrease to 88%. If the ambient temperature is up to 70 ,P2 will decrease to 78%.



CONSTRUCTION

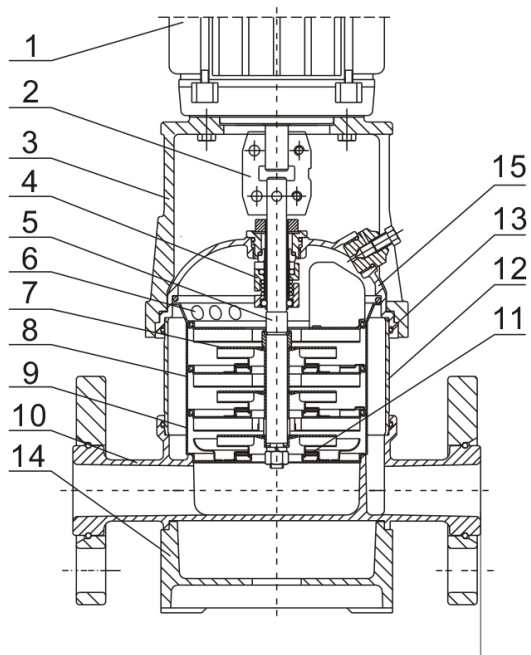
**RV1,2,3,4,5
SECTIONAL DRAWING**



MATERIAL RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor	-	-	-
2	Shaft connector	-	-	-
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Mechanical seal	-	-	-
5	Shaft	S.S	-	AISI420
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	Cast iron	EN-JL1030	ASTM25B
11	Neck ring	PTFE	-	-
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM	-	-

**RVA1,2,3,4,5
SECTIONAL DRAWING**

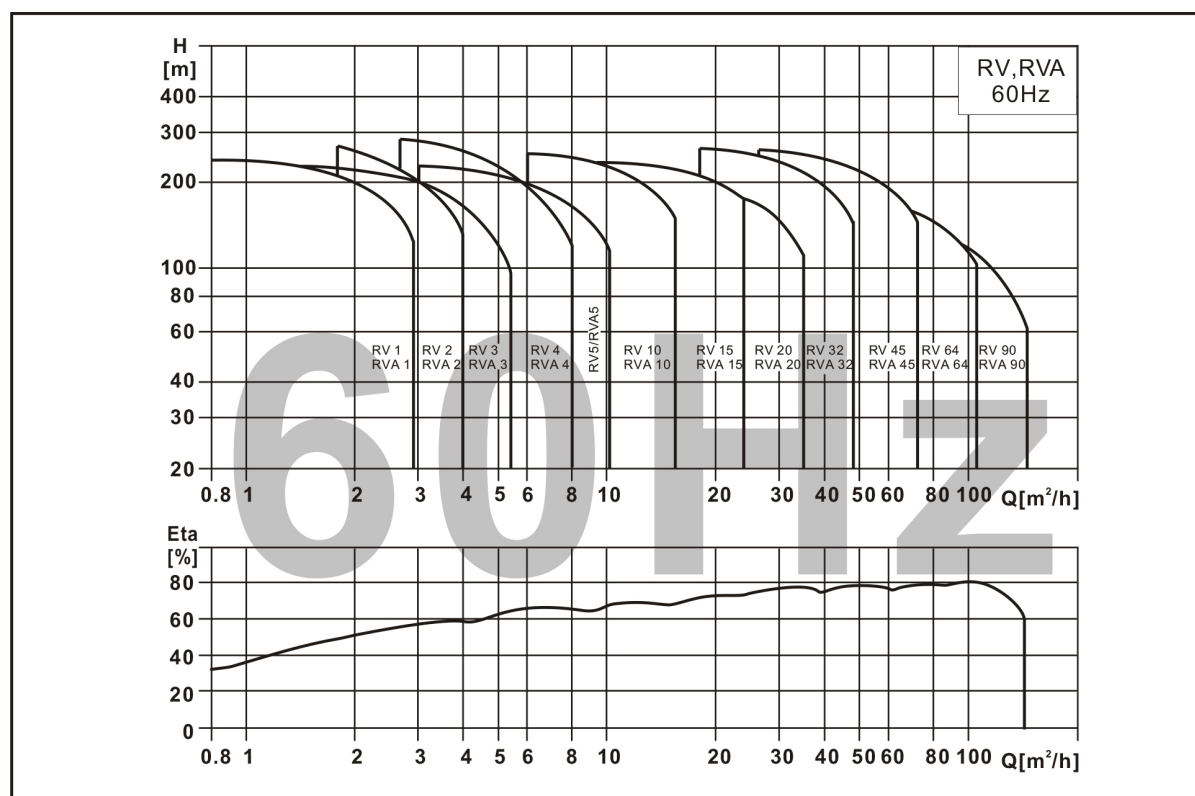


MATERIAL RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor	-	-	-
2	Shaft connector	-	-	-
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Mechanical seal	-	-	-
5	Shaft	S.S	1.4057	AISI431
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	S.S	1.4301	AISI304
11	Neck ring	PTFE	-	-
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM	-	-
14	Bottom base	Cast iron	EN-JL1030	ASTM25B
15	Pump cover	S.S	1.4301-	AISI304



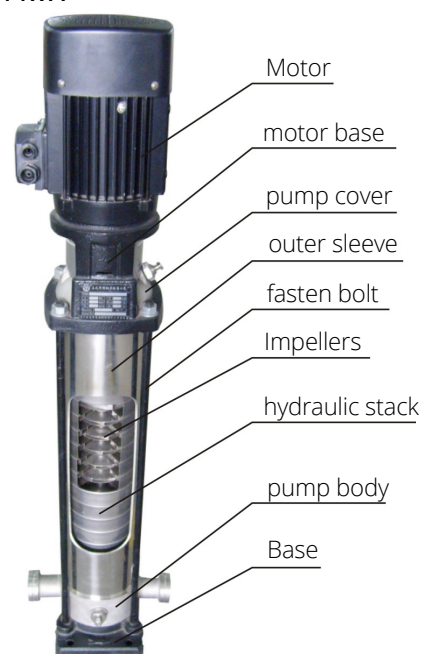
Product introduction: Performance range



PUMP

RVA and RV are non-self priming vertical multistage centrifugal pump, the pumps are available with standard motor, the inlet and outlet are located at the pump bottom at the same plane (inline type). All pumps are equipped with a maintenance-free mechanical seal set of the cartridge type.

Fig.1 RVA



MOTOR

RVA and RV are fitted with a totally enclosed fan-cooled 2-pole three-phase standard motor. 0.37kW to 2.2kW, are also available with a single-phase motor.(1*220-230V/240V).

MOTOR PROTECTION

Single-phase motor have a built-in thermal overload switch. Three-phase motors must be connected to a motor protective circuit breaker according to local regulations.

AMBIENT TEMPERATURE

Ambient temperature: maximum +40 , if the ambient temperature exceeds +40 , or the pump is installed at an altitude exceeding 1000 meters, the motor must not be fully loaded due to the risk of overheating. Overheating may result from excessive ambient temperatures or the low density and consequently low cooling effect of the air.

In such cases ,it may be necessary to use a motor with a higher rated output.

TERMINAL BOX POSITIONS

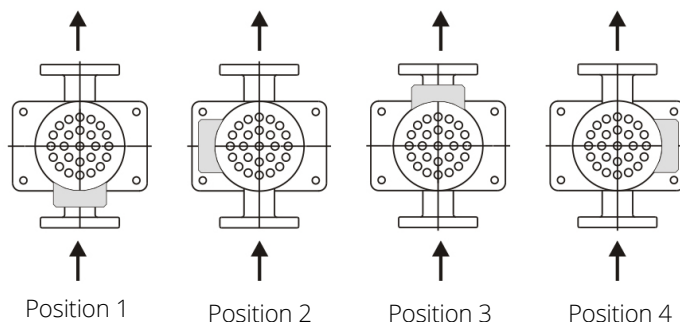
As standard the terminal box is mounted on the suction side of the pump, meanwhile, 0, 90, 180, 270 could be adjusted according to the following proceeding:

1. If necessary, disassembling the protective cover of the shaft connector, but do not disassembling the shaft connector.
2. Disassembling the motor fixation screws.
3. Turn the motor to the required direction.
4. Fasten the motor screws.
5. Install the shaft connector's protective cover.

The voltage and frequency are marked on the label, the correct power should be confirm with the label before usage.

Ensure the electric connection is confirmed with to the drawing marked on the label inside the terminal box.

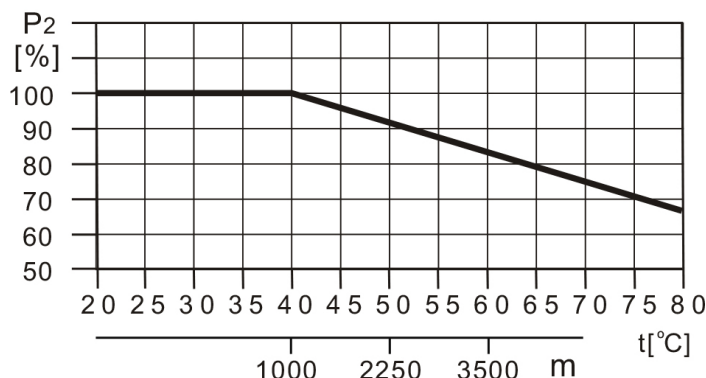
Fig2. Terminal box positions



VISCOSITY

The pumping of liquids with densities or kinematic viscosities higher than those of water will cause a considerable pressure drop, a drop in the hydraulic performance, and a rise in the power consumption. In such situations the pump should be fitted with a larger motor

Fig.3 Relationship between motor output (P2) and temperature



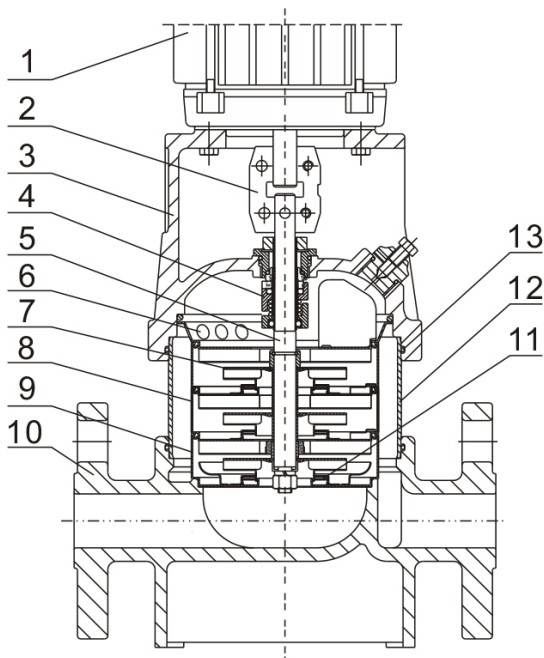
EXAMPLE

From Fig.3, the pump is installed at an altitude exceeding 3500 meters, P2 will decrease to 88%. If the ambient temperature is up to 70 ,P2 will decrease to 78%.



CONSTRUCTION

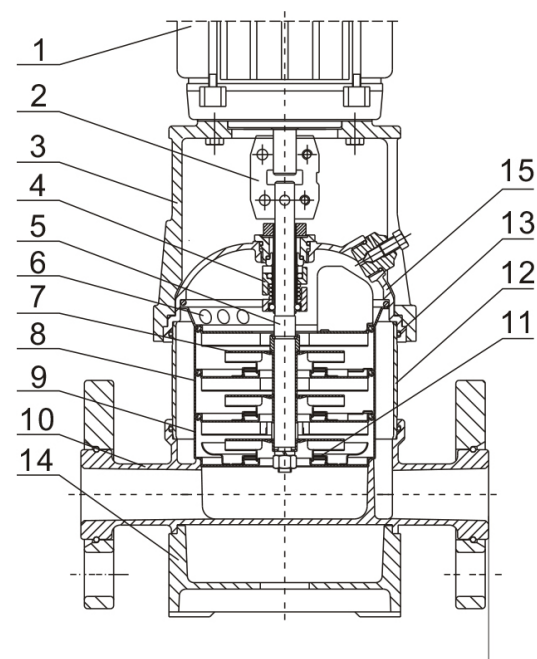
RV1,2,3,4,5 SECTIONAL DRAWING



MATERIAL RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor	-	-	-
2	Shaft connector	-	-	-
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Mechanical seal	-	-	-
5	Shaft	S.S	-	AISI420
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	Cast iron	EN-JL1030	ASTM25B
11	Neck ring	PTFE	-	-
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM	-	-

RVA1,2,3,4,5 SECTIONAL DRAWING



MATERIAL RV

No.	Description	Material	EN/DIN	AISI/ASTM
1	Motor	-	-	-
2	Shaft connector	-	-	-
3	Pump head	Cast iron	EN-JL1030	ASTM25B
4	Mechanical seal	-	-	-
5	Shaft	S.S	1.4057	AISI431
6	Outlet	S.S	1.4301	AISI304
7	Impeller	S.S	1.4301	AISI304
8	Hydraulic stack	S.S	1.4301	AISI304
9	Inlet	S.S	1.4301	AISI304
10	Pump body	S.S	1.4301	AISI304
11	Neck ring	PTFE	-	-
12	Outer sleeve	S.S	1.4301	AISI304
13	O-ring	EPDM/FKM	-	-
14	Bottom base	Cast iron	EN-JL1030	ASTM25B
15	Pump cover	S.S	1.4301-	AISI304





FIRE FOAM TRAILER WITH FOAM MONITOR



I. Introduction

Fire Foam Trailer With Foam Monitor is a new type of mobile foam firefighting product with a large flow rate, long range, simple operation, convenient and flexible.

This series can be set up in flammable and explosive petrochemical enterprises, oil tanks, oil transmission terminals, hangars, ship berths, large buildings and other places.

II. Technical parameters

Model Specification	PLY20/300	PLY30/500	PLY50/1000
Rated working pressure (MPa)		0.8	
Working pressure range (MPa)		0.6 ~ 1.6	
Mixing ratio		3% or 6%	
Flow rate (L/S)	20	30	50
Range (m)		≥20	
Max. working pressure (MPa)		1.6	
Slewing angle (°)		360	
Pitch angle (°)		-45 ~ +80	
Tank Capacity		200-2000 Liter	
Fire Monitor Flow Range		500-3800LPM	





VALVES



VALVE




1

DIN F4 Resilient seated NRS gate valve-flange end


2

BS5163 Resilient seated NRS gate valve-flange end


3

AWWA C515 Resilient seated NRS gate valve-flange end


4

AWWA C515 Resilient seated NRS gate valve-flange end with indicator post flange


5

Resilient seated NRS gate valve grooved end


6

DIN F4 Resilient seated OS&Y gate valve-flange end


7

BS5163 Resilient seated OS&Y gate valve-flange end


8

AWWA C515 Resilient seated OS&Y gate valve-flange end


9

Resilient seated OS&Y gate valve-grooved end


10

Butterfly valve with tamper switch wafer style


11

Butterfly valve with lever handle wafer style


12

Butterfly valve with tamper switch grooved end





13

Butterfly valve with lever handle
grooved end



14

Swing check valve with
flange end



15

Swing check valve with
grooved end



16

Y strainer with
flange end



17

Y strainer with
grooved end



18

Deluge Valve



19

Alarm Check Valve



20

Pressure Reducing Valve



21

Wet Barrel Hydrant





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