Document No. ***EVDS/01***
Date ***NOV 2003***

evolution-advanced

INFORMATION
AND
SPECIFICATIONS

Distributed By

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BFPSA
British Fire Protection Systems Association

LPCB — LOSS PREVENTION CERTIFICATION BOARD — UKAS QUALITY MANAGEMENT 007

Quality System Certificate No. 041
Assessed to BS EN ISO 9001:2002

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evolution fire system

evolution-advanced *is an analogue addressable fire detection system representing state-of-the-art sensor processing and data communication technology.*

It is a truly intelligent, analogue addressable fire detection system which, with the use of expert detection algorithms, combines extremely reliable fire detection together with a very high degree of protection against unwanted false alarms.

The loop communication data protocol is guaranteed by FSK communication method supporting 'collision detect' and continuous data checking. Loop 'Global Commands' will also increase their safety of operation and integrity utilising FSK loop communication protocol.

FSK protocol consists of two different sine wave frequencies, each sine wave frequency represents either a digital signal of 1 or 0. This method of communication protocol is technically more superior to the traditional digital clock pulse based protocols because of its unique high resistance to noise.

Currently available digital clock pulse based protocols generate high frequency noise on both the rising edge and falling edge of the waveform, as opposed to evolution *which utilises a sine wave transmission communication protocol which generates minimal high frequency noise.*

Increased immunity is achieved by the inclusion of a 'Specific Waveband Pass' filter circuit which is built into the sensor head. This may be adjusted accordingly to accept only certain and acceptable bandwidths.

All alarm decisions and processing are performed by the loop card software therefore combining reliable sensor technology and progressive decision techniques. This ensures a fast and reliable response to real alarm situations, combined with very high immunity to unwanted alarms.

evolution *is designed to eliminate any transmission errors. Inclusion of a sophisticated check-sum feature, a 'watch dog' timer and an 'auto-reset' of transmission errors ensures a very reliable transmission.*

Very high speed communication transmission is achieved with evolution*. The fire and fault condition decisions are processed directly in the sensor heads, the signal or response is immediately communicated directly to the control equipment. This decision process is not affected by the number of devices on the loop.*

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evolution protocol

evolution*'s communication protocol uses a unique sine-wave shape FSK communication protocol with immunity to noise and minimised emission of noise.*

Protocol: *FSK Frequency shift key protocol.*

Data Format: *8 Data bits, 1 Start and 1 Stop.*

Communication Data Speed: *4334 Bits/second.*

Communication Data Transfer Rate: *394 Bytes/second.*

Operating Current: *40mA*

Error Checking: *8 Bit Checksum error detection.*

Command Types: *Polling, Control, Interrupt and Group.*

Polling Time: *3.3 Seconds per loop. (255 addresses)*

Interrupt Response Time: *1.5 seconds maximum, 1.0 second typical.*

Interrupt Capability: *Built in for call point fast response operation and sensor fire alarm.*

Analogue Data: *High resolution analogue readings (8 Bit) ensures wide dynamic measure of smoke density.*

Device Types: *8 Bit, allows up to 255 device types per loop.*

Group Command: *Group support for sounder activation and synchronisation.*

Loop Addressing: *Supports up to 255 devices per loop.*

evolution - heat sensor

EV-H Analogue Addressable Heat Sensor

1. PHYSICAL & ELECTRONIC CHARACTERISTICS

- *The sensor's 'Sensing Detection Principle' is a combination rate-of-rise and fixed temperature principle.*
- *The sensor conforms to EN 54-5:2000, (Heat detectors - point detectors.).*
- *The sensor uses a custom designed, application specific integrated circuit (ASIC) to guarantee maximum reliability in communications and sensor operation.*
- *The sensor transmits a continuously varying analogue value which corresponds to the local air temperature. This value is interpreted at the CIE as Normal, Fire or Fault status.*
- *The sensor is equipped with an OMNIVIEW™ 360º LED indicator and also has the capability to drive one (1) remote indicator and one (1) 'base control' auxiliary output in order to signal remote fire alarm conditions.*
- *Accidental reverse polarity or faulty loop wiring will not damage the sensor.*

2. THE FIRE SYSTEM

- *The sensor is individually identifiable from the control unit by geographical location in the system.*
- *The system uses soft addressing (EEPROM) to define the addresses of the sensor(s).*
- *All electronic circuitry is in the sensor head, therefore no active electronic circuits are the base.*
- *The sensor is connected to the fire control panel via a fully monitored two-wire circuit (class B wiring). Wiring may be unshielded, but should conform to local regulations for fire alarm systems.*
- *The protocol uses a well proven FSK communication method with sophisticated collision detect and data checking techniques, to ensure reliable and robust communication.*
- *The system is able to signal a priority alarm message less than ten (10) seconds after the sensor has acknowleged this situation.*

3. MECHANICAL CHARACTERISTICS

- *The base includes all necessary terminals to connect installation wiring.*
- *The base allows the removal of the sensor without disconnecting the installation loop/wiring.*
- *The sensor can be inserted into or removed from its base by a simple push-twist mechanism, without the need of any special tools.*
- *All sensors utilise the same base and are therefore fully interchangeable on site if necessary.*
- *It is possible to protect the sensor against unauthorised removal from the base via a semi- removable allen keyed grub screw.*
- *A comprehensive range of accessories is available to fulfill requirements for special applications (e.g. duct detection).*

EV-H technical specification

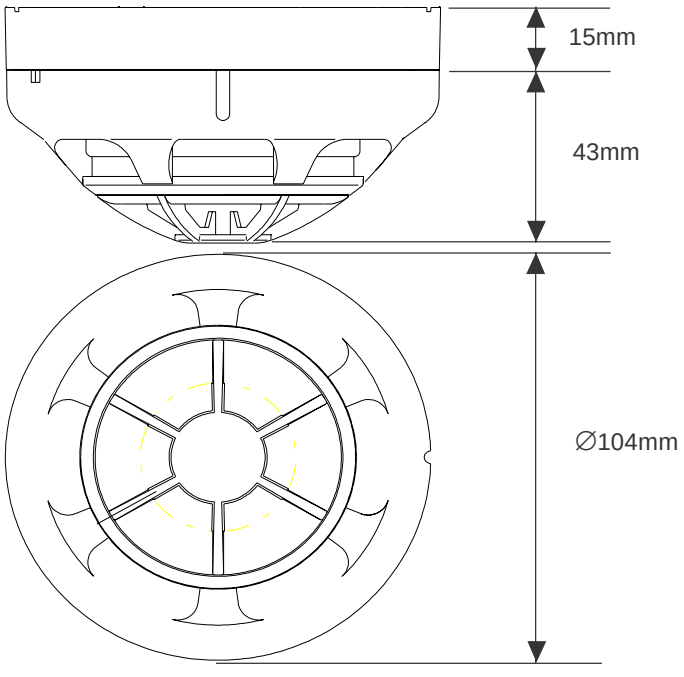
Part Numbers and Product Order Codes:-

Part Number	EV-H-A1R Analogue Addressable Rate of Rise Heat Sensor
	EV-H-CS Analogue Addressable Heat Sensor
Computer Reference Number	EV-H-A1R - F15N82200
	EV-H-CS - F15N82201

Technical Specifications:-

Sensor Element	Thermistor
Operating Voltage	20V d.c. to 38V d.c.
System Voltage	32V d.c.
Quiescent Current	200µA
Alarm Current (Alarm LED on)	5.2mA
Current for external remote LED indicator	3mA
Operating Temperature	– 10°C to + 55°C (A1R)
	– 10°C to + 80°C (CS)
Storage Temperature	– 20°C to + 60°C
Charging Time	20 seconds
Relative Humidity	≤ RH95% non-condensing.
I.P. Protection Rating	IP41
Addressing Method	Soft addressing, Non-Volatile EEPROM.
Colour	Novaloy SF3100 (White)
Dimensions	∅104mm x 43mm (Sensor head)
	∅104mm x 58mm (Sensor head and STB-4-EV base)
Mass	118g (Sensor head)
	183g (Sensor head and STB-4-EV base)
EMC Conformance	EMC conformance to BSEN50130-4:1996
	& BSEN61000-6-3:2001
Standards / Certification	EN54-5:2000 / LPCB certificate 041h/01 and 041h/02

EV-H DIMENSIONS



evolution - combined photoelectric/heat sensor

EV-PH Analogue Addressable Combined Photoelectric/Heat Sensor

1. PHYSICAL & ELECTRONIC CHARACTERISTICS

- *The heat sensor's 'Sensing Detection Principle' is a combination rate-of-rise and fixed temperature principle. The photoelectric sensor's 'Sensing Detection Principle' is a scattered IR light detection principle.*
- *The sensor conforms to EN 54-5:2000, (heat detectors - point detectors.) and EN 54-7:2000, (photoelectric detectors)*
- *The sensor uses a custom designed, application specific integrated circuit (ASIC) to guarantee maximum reliability in communications and sensor operation.*
- *The sensor transmits continuously varying analogue values which correspond to the local temperature and smoke density in the sensing chamber. These values are processed at the CIE to determine Normal, Fire or Fault status.*
- *The sensor is equipped with an OMNIVIEW™ 360º LED indicator and also has the capability to drive one (1) remote indicator and one (1) 'base control' auxiliary output in order to signal remote fire alarm conditions.*
- *Accidental reverse polarity or faulty loop wiring will not damage the sensor.*

2. THE FIRE SYSTEM

- *The sensor is individually identifiable from the control unit by geographical location in the system.*
- *The system uses soft addressing (EEPROM) to define the addresses of the sensor(s).*
- *All electronic circuitry is in the sensor head, therefore no active electronic circuits are the base.*
- *The sensor is connected to the fire control panel via a fully monitored two-wire circuit (class B wiring). Wiring may be unshielded, but should conform to local regulations for fire alarm systems.*
- *The protocol uses a well proven FSK communication method with sophisticated collision detect and data checking techniques, to ensure reliable and robust communication, in the harshest of conditions.*
- *The system is able to signal a priority alarm message less than ten (10) seconds after the sensor has acknowleged this situation.*

3. MECHANICAL CHARACTERISTICS

- *The base includes all necessary terminals to connect installation wiring.*
- *The base allows the removal of the sensor without disconnecting the installation loop/wiring.*
- *The sensor can be inserted into or removed from its base by a simple push-twist mechanism, without the need of any special tools.*
- *All sensors utilise the same base and are therefore fully interchangeable on site if necessary.*
- *It is possible to protect the sensor against unauthorised removal from the base via a semi- removable allen keyed grub screw.*
- *A comprehensive range of accessories is available to fulfill requirements for special applications (e.g. duct detection).*

EV-PH technical specification

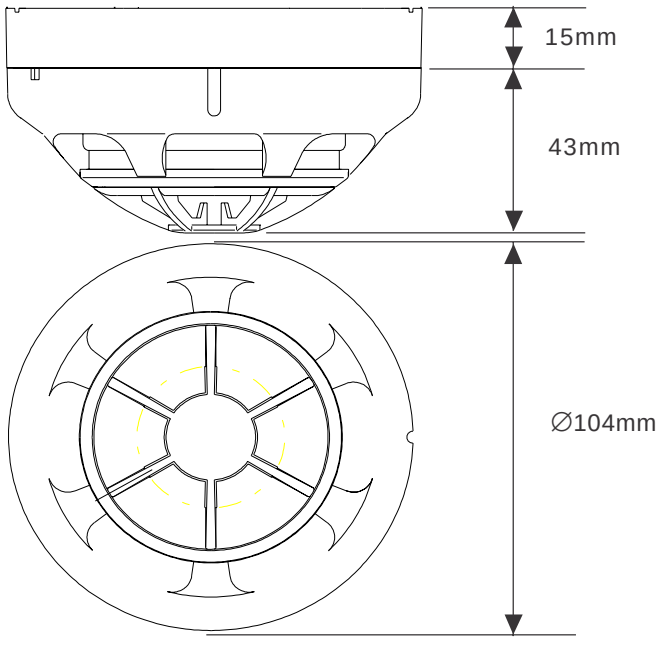
Part Numbers and Product Order Codes:-

Part Number	EV-PH Analogue Addressable Combined Photoelectric/Heat Sensor
Computer Reference Number	F20N82400

Technical Specifications:-

Optical Sensor Method	Scattered light method
Heat Sensor Method	Heat detection method
Optical Sensor Element	IR LED combined with a photodiode
Heat Sensor Element	Thermistor
Operating Voltage	20V d.c. to 38V d.c.
System Voltage	32V d.c.
Quiescent Current	200µA
Alarm Current (Alarm LED on)	5.2mA
Current for external remote LED indicator	3mA
Operating Temperature	– 10°C to + 55°C
Storage Temperature	– 20°C to + 60°C
Charging Time	20 seconds
Relative Humidity	≤ RH95% non-condensing.
I.P. Protection Rating	IP41
Addressing Method	Soft addressing, Non-Volatile EEPROM.
Colour	Novaloy SF3100 (White)
Dimensions	∅104mm x 43mm (Sensor head) ∅104mm x 58mm (Sensor head and STB-4-EV base)
Mass	118g (Sensor head) 183g (Sensor head and STB-4-EV base)
EMC Conformance	EMC conformance to BSEN50130-4:1996 & BSEN61000-6-3:2001
Standards / Certification	EN54-7:2000, EN54-5:2000 / LPCB certificate 041g/01

EV-PH DIMENSIONS



evolution - photoelectric smoke sensor

EV-P Analogue Addressable Photoelectric Smoke Sensor

1. PHYSICAL & ELECTRONIC CHARACTERISTICS

- *The sensor's 'Sensing Detection Principle' is a scattered IR light detection principle .*
- *The sensor conforms to EN 54-7:2000, (photoelectric detectors.).*
- *The sensor uses a custom designed, application specific integrated circuit (ASIC) to guarantee maximum reliability in communications and sensor operation.*
- *The sensor transmits a continuously varying analogue value which corresponds to the smoke density in the sensing chamber. This value is interpreted at the CIE as Normal, Fire or Fault status.*
- *The sensor is equipped with an OMNIVIEW™ 360º LED indicator and also has the capability to drive one (1) remote indicator and one (1) 'base control' auxiliary output in order to signal remote fire alarm conditions.*
- *Accidental reverse polarity or faulty loop wiring will not damage the sensor.*

2. THE FIRE SYSTEM

- *The sensor is individually identifiable from the control unit by geographical location in the system.*
- *The system uses soft addressing (EEPROM) to define the addresses of the sensor(s).*
- *All electronic circuitry is in the sensor head, therefore no active electronic circuits are the base.*
- *The sensor is connected to the fire control panel via a fully monitored two-wire circuit (class B wiring). Wiring may be unshielded, but should conform to local regulations for fire alarm systems.*
- *The protocol uses a well proven FSK communication method with sophisticated collision detect and data checking techniques, to ensure reliable and robust communication, in the harshest of conditions.*
- *The system is able to signal a priority alarm message less than ten (10) seconds after the sensor has acknowleged this situation.*

3. MECHANICAL CHARACTERISTICS

- *The base includes all necessary terminals to connect installation wiring.*
- *The base allows the removal of the sensor without disconnecting the installation loop/wiring.*
- *The sensor can be inserted into or removed from its base by a simple push-twist mechanism, without the need of any special tools.*
- *All sensors utilise the same base and are therefore fully interchangeable on site if necessary.*
- *It is possible to protect the sensor against unauthorised removal from the base via a semi- removable allen keyed grub screw.*
- *A comprehensive range of accessories is available to fulfill requirements for special applications (e.g. duct detection).*

EV-P technical specification

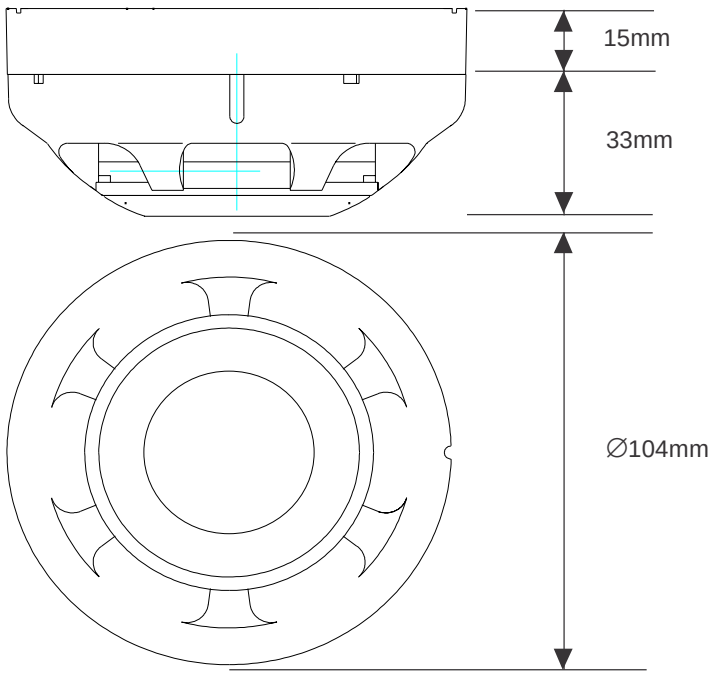
Part Numbers and Product Order Codes:-

Part Number	EV-P Analogue Addressable Photoelectric Sensor
Computer Reference Number	F14N82100

Technical Specifications:-

Sensor Method	Scattered light method
Sensor Element	IR LED combined with a photodiode
Operating Voltage	20V d.c. to 38V d.c.
System Voltage	32V d.c.
Quiescent Current	200µA
Alarm Current (Alarm LED on)	5.2mA
Current for external remote LED indicator	3mA
Operating Temperature	– 10°C to + 55°C
Storage Temperature	– 20°C to + 60°C
Charging Time	20 seconds
Relative Humidity	≤ RH95% non-condensing.
I.P. Protection Rating	IP41
Addressing Method	Soft addressing, Non-Volatile EEPROM.
Colour	Novaloy SF3100 (White)
Dimensions	∅104mm x 33mm (Sensor head) ∅104mm x 48mm (Sensor head and STB-4-EV base)
Mass	118g (Sensor head) 183g (Sensor head and STB-4-EV base)
EMC Conformance	EMC conformance to BSEN50130-4:1996 & BSEN61000-6-3:2001
Standards / Certification	EN54-7:2000 / LPCB certificate 041f/01

EV-P DIMENSIONS



evolution - dual wavelength photoelectric smoke sensor

EV-DP Analogue Addressable Dual Wavelength Photoelectric Smoke Sensor

1. PHYSICAL & ELECTRONIC CHARACTERISTICS

- *The design of the smoke sensitivity system guarantees a uniform response behaviour to all combustion products of early heat-formed flaming and invisible smouldering fires.*
- *The sensor's 'Sensing Detection Principle' is a scattered light detection principle .*
- *The sensor conforms to EN 54-7:2001, (photoelectric detectors).*
- *The sensor uses a custom designed, application specific integrated circuit (ASIC) to guarantee maximum reliability in communications and sensor operation.*
- *The sensor transmits continuously varying analogue values which correspond to the smoke density in the sensing chamber. These values are processed at the CIE to determine Normal, Fire or Fault status.*
- *The sensor is equipped with an OMNIVIEW™ 360° LED indicator and also has the capability to drive one (1) remote indicator and one (1) 'base control' auxiliary output in order to signal remote fire alarm conditions.*
- *Accidental reverse polarity or faulty loop wiring will not damage the sensor.*

2. THE FIRE SYSTEM

- *The sensor is individually identifiable from the control unit by geographical location in the system.*
- *The system uses soft addressing (EEPROM) to define the addresses of the sensor(s).*
- *All electronic circuitry is in the sensor head, therefore no active electronic circuits are the base.*
- *The sensor is connected to the fire control panel via a fully monitored two-wire circuit (class B wiring). Wiring may be unshielded, but should conform to local regulations for fire alarm systems.*
- *The protocol uses a well proven FSK communication method with sophisticated collision detect and data checking techniques, to ensure reliable and robust communication, in the harshest of conditions.*
- *The system is able to signal a priority alarm message less than ten (10) seconds after the sensor has acknowleged this situation.*

3. MECHANICAL CHARACTERISTICS

- *The base includes all necessary terminals to connect installation wiring.*
- *The base allows the removal of the sensor without disconnecting the installation loop/wiring.*
- *The sensor can be inserted into or removed from its base by a simple push-twist mechanism, without the need of any special tools.*
- *All sensors utilise the same base and are therefore fully interchangeable on site if necessary.*
- *It is possible to protect the sensor against unauthorised removal from the base via a semi- removable allen keyed grub screw.*
- *A comprehensive range of accessories is available to fulfill requirements for special applications (e.g. duct detection).*

EV-DP technical specification

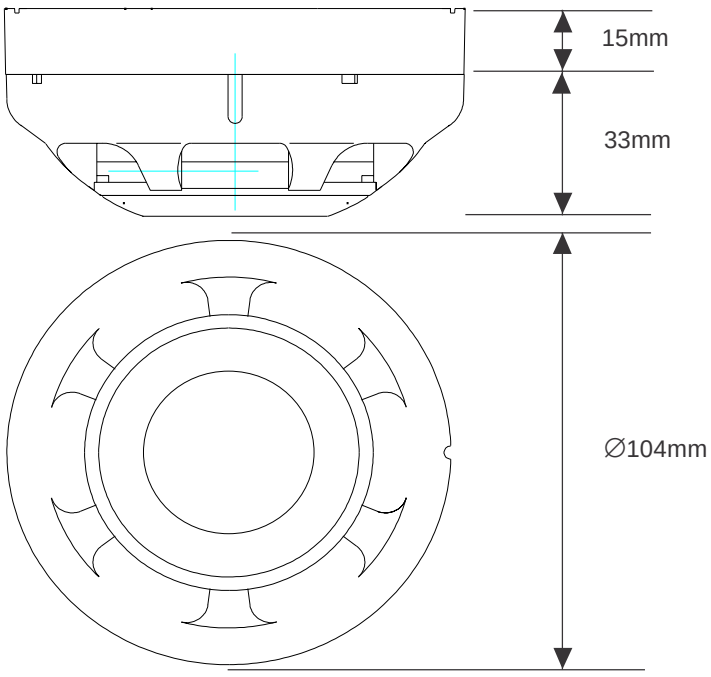
Part Numbers and Product Order Codes:-

Part Number	EV-DP Analogue Addressable Dual Wavelength Photoelectric Sensor
Computer Reference Number	F14N82105

Technical Specifications:-

Sensor Method	Scattered light method
Sensor Element	2 LEDs combined with a photodiode
Operating Voltage	20V d.c. to 38V d.c.
System Voltage	32V d.c.
Quiescent Current	200µA
Alarm Current (Alarm LED on)	5.2mA
Current for external remote LED indicator	3mA
Operating Temperature	– 10°C to + 55°C
Storage Temperature	– 20°C to + 60°C
Charging Time	20 seconds
Relative Humidity	≤ RH95% non-condensing.
I.P. Protection Rating	IP41
Addressing Method	Soft addressing, Non-Volatile EEPROM.
Colour	Novaloy SF3100 (White)
Dimensions	∅104mm x 33mm (Sensor head) ∅104mm x 48mm (Sensor head and STB-4-EV base)
Mass	118g (Sensor head) 183g (Sensor head and STB-4-EV base)
EMC Conformance	EMC conformance to BSEN50130-4:1996 & BSEN61000-6-3:2001
Standards / Certification	EN54-7:2000 / LPCB certificate 041f/02

EV-DP DIMENSIONS



evolution - ultraviolet flame sensor

EV-UV Analogue Addressable Ultraviolet Flame Sensor

1. PHYSICAL & ELECTRONIC CHARACTERISTICS

- *The UV sensor is designed to detect ultraviolet light (wavelength 185 to 260nm) emitted from flames.*
- *The sensor's 'Sensor Detection Principle' is UV pulse counting.*
- *The sensor conforms to EN54-10:2001.*
- *The sensor uses a custom designed, application specific integrated circuit (ASIC) to guarantee maximum reliability in communications and sensor operation.*
- *The sensor transmits a continuously varying analogue value which corresponds to the prescence and size of a flaming fire. This value is interpreted at the CIE as Normal, Fire or Fault status.*
- *The sensor is equipped with an LED indicator and has the capability to drive one (1) remote indicator.*
- *Accidental reverse polarity or faulty loop wiring will not damage the sensor.*

2. THE FIRE SYSTEM

- *The sensor is individually identifiable from the control unit by geographical location in the system.*
- *EV-UV is DIL switch addressed.*
- *All electronic circuitry is in the sensor head, therefore no active electronic circuits are the base.*
- *The sensor is connected to the fire control panel via a fully monitored two-wire circuit (class B wiring). Wiring may be unshielded, but should conform to local regulations for fire alarm systems.*
- *The protocol uses a well proven FSK communication method with sophisticated collision detect and data checking techniques, to ensure reliable and robust communication, in the harshest of conditions.*
- *The system is able to signal a priority alarm message less than ten (10) seconds after the sensor has acknowleged this situation.*

3. MECHANICAL CHARACTERISTICS

- *The base includes all necessary terminals to connect installation wiring.*
- *The base allows the removal of the sensor without disconnecting the installation loop/wiring.*
- *The sensor can be inserted into or removed from its base by a simple push-twist mechanism, without the need of any special tools.*
- *All sensors utilise the same base and are therefore fully interchangeable on site if necessary.*
- *A comprehensive range of accessories is available to fulfill requirements for special applications (e.g. duct detection).*

EV-UV technical specification

Part Numbers and Product Order Codes:-

Part Number	EV-UV Analogue Addressable Ultraviolet Flame Sensor
Computer Reference Number	F16J71005

Technical Specifications:-

Sensor Method	UV pulse counting.
Sensor Element	UV TRON R2868
Operating Voltage	20V d.c. to 38V d.c.
System Voltage	32V d.c.
Quiescent Current	1mA
Alarm Current (Alarm LED on)	5.2mA
Current for external remote LED indicator	3mA
Operating Temperature	– 10°C to + 50°C
Storage Temperature	– 20°C to + 60°C
Charging Time	20 seconds
Relative Humidity	≤ RH95% non-condensing.
I.P. Protection Rating	IP41
Addressing Method	DIL Switch.
Colour	Novaloy SF3100 (White)
Dimensions	∅104mm x 38mm (Sensor head) ∅104mm x 53mm (Sensor head and STB-4-EV base)
Mass	102g (Sensor head) 164g (Sensor head and STB-4-EV base)
EMC Conformance	-EMC conformance to BSEN50130-4:1996 & BSEN61000-6-3:2001
Standards	Conforms to EN54-10:2001