

Symphony Plus Combustion Instrument

Multi Fuel Safe Flame Scanner Uvisor™ SF810i

ABB has combined the two highly successful flame scanner product lines, Uvisor™ and Safe Flame DFS, into a new advanced Flame Scanner, the Uvisor SF810i. The Uvisor SF810i is a multi-fuel flame scanner designed to provide absolutely reliable information regarding the presence or absence of a burner flame (The primary purpose of a flame scanner), and at the same time continuously monitors the burner flame quality to provide additional operating information to plant personnel.



In a single harsh proven housing, the Uvisor SF810i embeds the state-of-art technology:

Solid State Sensor module, covering the whole flame radiant spectrum (UV-Vis-IR and dual sensor UVIR).

- Signal Processor Unit. An extremely powerful module capable to run the ABB proprietary flame analysis process. Live measurement of the dynamic flame parameters are constantly subjected to an extensive fail-to-safe validation routine, prior to vote the flame status.
- Communication drivers. Two redundant Profibus DP-V1 links (or alternatively Modbus standard), are available to provide high speed data transfer to external monitoring and supervisory system.
- Termination and configuration board. With local display and push-buttons to allow the preliminary set up and online aiming assistance. All I/Os terminations are available on screw type removable connectors.
- The Uvisor™ SF810i flame scanner is available with accessories for the following installations:
 - Line of sight (LOS) for wall fired burners' boilers.
 - Fiber optic cable (FOC) with outer guide pipe, cooling hose and fitting flanges for corner fired tilting burners' boilers

Extended set-up, parameter files archiving, groups view, advanced diagnostic including flame raw data, real time and historical trends of up to 254 scanner heads networked is possible either through the PC based package Flame Explorer™ through t-up, parameter files archiving, groups view, advanced diagnostic including flame raw data, real time and historical trends of up to 254 scanner heads networked is possible either through the PC based package Flame Explorer or with DTM through any Profibus DP-V1 master remote

Multi Fuel Safe Flame Scanner Uvisor SF810i

Application:

Utility and Industrial boilers

- Wall fired, corner fired, WHRB, down-shot and cyclone burner types, Single and Dual fuel Gas Turbine combustor

Multifuel:

- Natural Gas, Coke Oven Gas, Sulphur Gas
- Light & heavy fuel oil, Orimulsion
- Pulverized coal and Biomass

Features:

Operation

- UV, VL, IR solid state sensors
- Dual sensor UVIR
- Continuous self-check
- F-FFRT Fast Flame Failure Response Time
- Digital Inputs for remote setting (Isolated)
- Autotune

Safety, Communication & Signalling

- Redundant Profibus DP-V1. Isolated
- Redundant Modbus. Isolated
- 4-20 mA. Isolated
- Fail-to-safe Flame Relay N.O. contact
- Fail-to-safe Fault Relay N.O. contact
- Live measure of the flame frequency
- Live measure of the flame intensity
- Live Flame Quality display
- Device operating temperature
- Reject mains frequencies and artificial lighting (EN298 compliant)

Configuration

- Flame Explorer monitoring & configuration tool. Proprietary PC based package, running on Windows OS
- DTM or GSD. Profibus DP-V0 / V1
- Local push-button and digital display
- Firmware download utility

Environment

- Ex d IIC T6 Gb (IP66) / Ex tb IIIC IP66 Db T80°C

Installation

- Line of sight with aiming and cooling accessories
- Fibre optic cable through the windbox

Technical specifications

Property	Value
Optical sensor Technology	IR versions: Si photodiode Spectral response peak @ 920nm VL versions: Si photodiode Spectral response peak @ 560nm UV versions: SiC photodiode Spectral response peak @ 280nm UVIR version: Si + SiC photodiode ¹ Spectral response peak @280nm and 920nm ¹ Si and SiC photodiodes signals can be processed individually or both combined as per burner operation
Power supply voltage	24V _{DC} (-25%, +20% = 18 ÷ 29V _{DC})
Power supply current	150mA typical
Power consumption	3.6W typical, 4W max
Inrush current	6A peak, 2ms settling time
FFRT	Flame Failure Response Time: 0.2s to 4s
Flame pull-in time delay	0-10 s
Flame Relay	Contacts: 1 NO, for each relay
Safe Relay	240 V _{AC} / 1.5A cycles ≥100,000 240 V _{DC} / 100 mA 30 V _{DC} / 300mA Minimum load 10mA, 5V _{DC}
Analog output	4÷20 mA (R load ≤ 500) Galvanically isolated Precision: +/-5% f.s.
Digital Inputs, 24 Vdc	Nr. 2 digital inputs (opto coupled), to allow selection of one out of four different sets of parameters; return signal common to both inputs. Nominal voltage 24Vdc (5 mA typical) Max Voltage 36 V _{DC} Off: < 5 V _{DC} On: > 18 Vdc
Communication ports	Two, redundant, RS-485 serial channels configurable in Profibus or Modbus protocols. Profibus: max speed 12 Mbit/s Modbus: max speed 115.200 bit/s
Local configuration interface	4 push-buttons (UP, DOWN , LEFT, RIGHT) 3-digits LED display
Air source for lens cleaning	From clean ambient air
Air flow for lens cleaning	LOS (Line Of Sight) versions: 115 l/min (4 SCFM) Excessive contaminants might require a flow up to 400 l/min (14 SCFM) FOC (Fibre Optic Cable) versions: 400 l/min (14 SCFM)
Minimum cleaning air pressure	LOS (Line Of Sight) versions: 20mm H ₂ O (1" W.C.) above the max wind box pressure measured at the "Y" connection inlet. FOC (Fiber Optic Cable) versions: 400mm H ₂ O (12" W.C.) above the max wind box pressure measured at the "Y" connection inlet.

Multi Fuel Safe Flame Scanner Uvisor SF810i

Technical specifications

Property	Value
Maximum fibre optic continuous operating temperature	482° C (900° F) for VL and IR fiber optic cables 350° C (662° F) for UV and dual sensor UVIR fiber optic cable
Housing mounting thread	1" NPT male
Cable entry thread	3/4" NPT female (N/A for connectorized versions)
Electrical connections (terminal versions)	Removable terminals with screws Allowable cable section: AWG24-AWG12, 0.2-2.5mm ² for Relay contacts (J1 connector) AWG28-AWG16, 0.08-1.5mm ² for all other terminals

Environmental specifications

Property	Value
Safety Specifications	EN 61010-1 (IEC 61010-1)
Class of installation	I
Over voltage category	II
Pollution degree	2
Protection (EN 60529)	IP66 – IP67

Environmental

Ambient Operating temperature (EN/IEC 60068-2-1/2/14)	-40° to 70°C (-40° to 158 °F)
Ambient Storage and transportation temperature (EN/IEC 60068-2-1/2/14)	-40°C / 85°C (-40°F / 185°F)
Relative humidity (EN/IEC 60068-2-78)	40°C, RH 95%
Vibration sinusoidal operating (IEC 654-3 Severity Class VH4) (IEC 60068-2-6)	Frequency range: 5 ÷ 200 Hz, Acceleration: 20m/s ² peak (2 G) Displacement: 0.15 mm peak
Shock operating (IEC 60068-2-27)	Acceleration: 15G - Duration of pulses: 11 ms duration (half sine wave) - Three shocks in each direction (6 pulses in each axis)

Mechanical specifications

Dimensions	Diameter 95 mm max (3,7") Overall length: 180mm approx (7")
Weight	1.3 Kg approx. (2.86 lb)
Degree of protection	IP66 – IP67 (CEI EN 60529)

SF810i flame scanner

Line of Sight (LOS)

Standard assembly



Line of Sight installation is recommended on those application where the target burner flame is visible and unobstructed from the burner mounting front plate through the air vane.

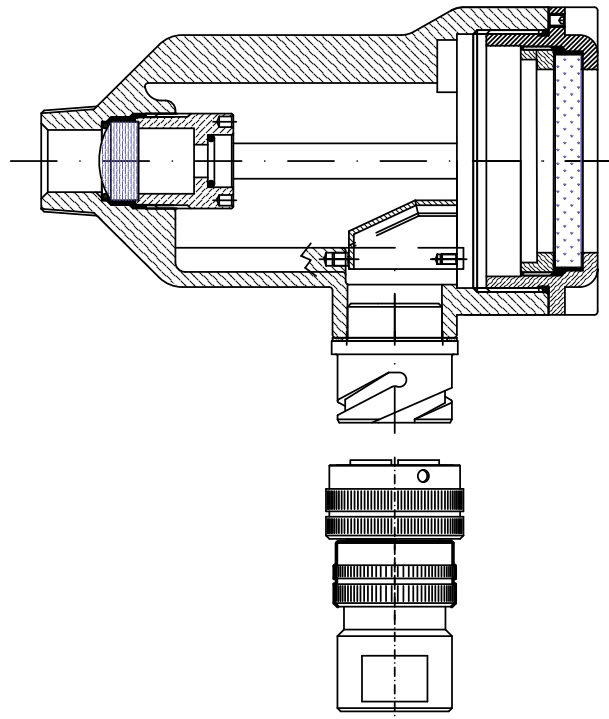
Typical application:

- Front and opposite wall fired boiler
- Single and multiple burners
- Downshot Boilers

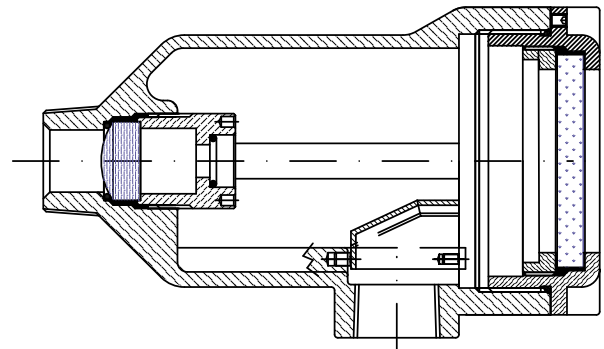
Wiring Options

SF810 Line Of Sight Flame Scanner is available with the following wiring options:

SF810i model LOS with "Quick Release" multipin connector

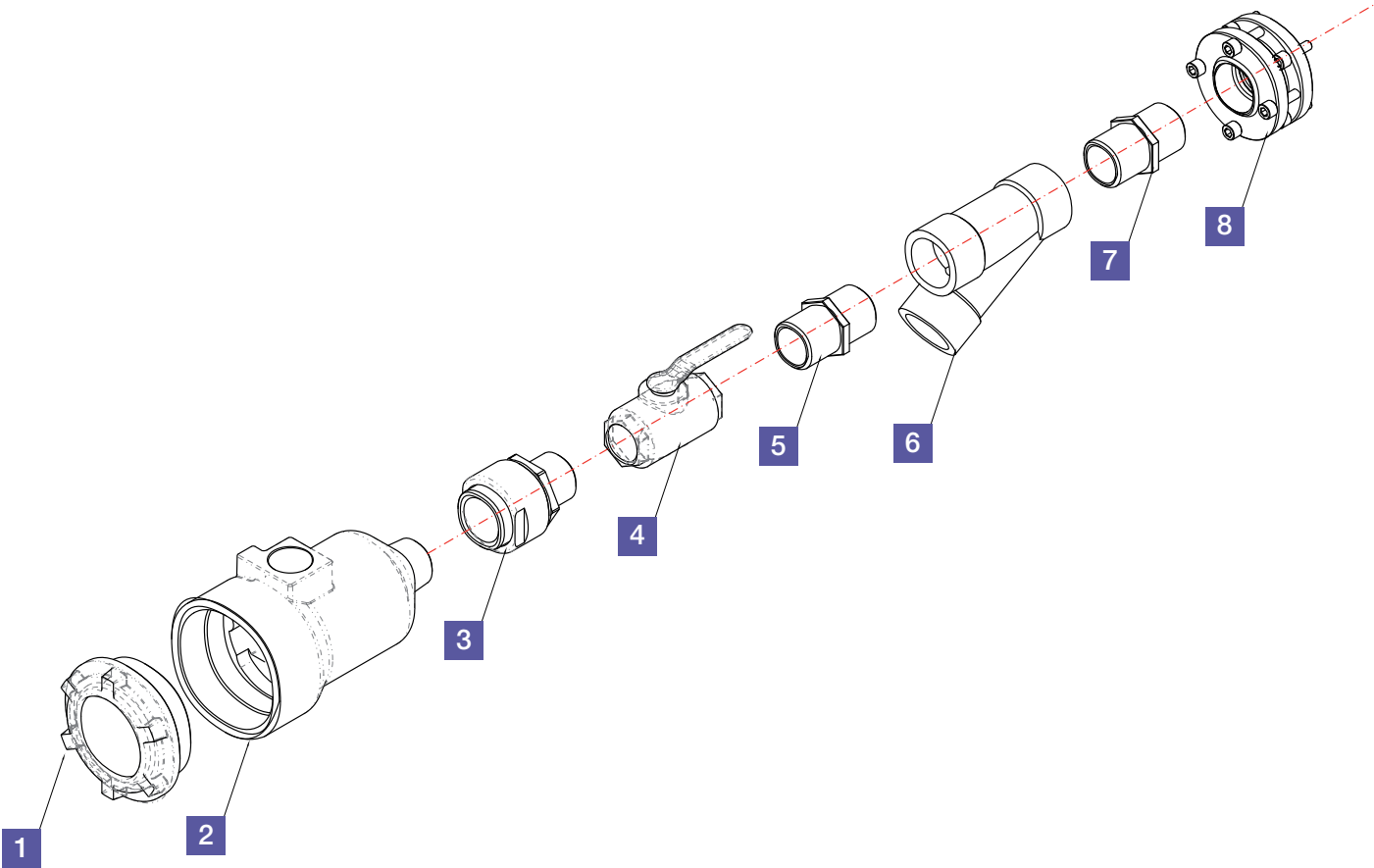


SF810i model LOS with 3/4" NPTF cable entry and terminal strip



SF810i flame scanner

Line of Sight standard assembly layout and parts

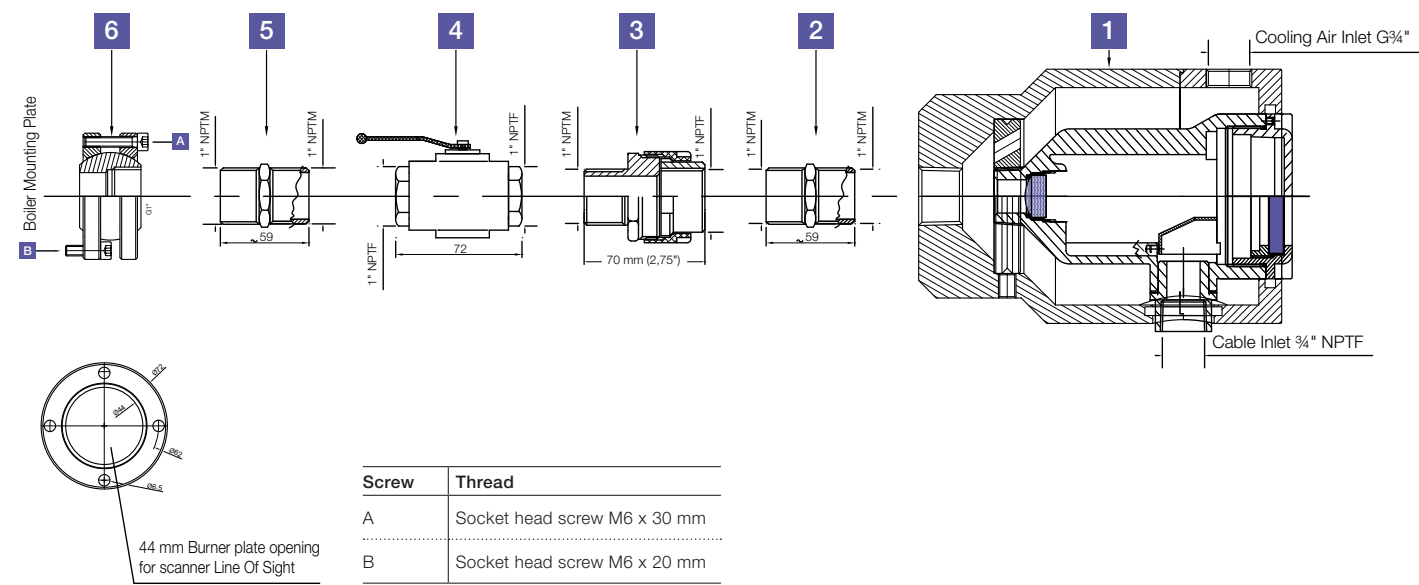


SF810i assembly layout with fitting

Item	Description	Detailed drawing number	Note	Q.ty
1	Uvisor SF810 Flame Scanner		Windowed cover	1
2	Uvisor SF810 Flame Scanner	Ref. SF810 / SF810INT codes	Housing	1
3	Thermal union	EC-DWG-G041MEC011-A		1
4	Isolation valve	EC-DWG-G041MEC108-A		1
5	Nipple 1"NPTM / 1" NPTM	EC-DWG-G041MEC405-A		1
6	Cooling air manifold 1" NPTF	EC-DWG-G041MEC010-A		1
7	Nipple 1"NPTM / 1" NPTM	EC-DWG-G041MEC406-A		1
8	Swivel mounting flange	EC-DWG-G041MEC0101-A		1

SF810i flame scanner

Line of Sight standard assembly with cooling cylinder and fitting parts



SF810i assembly layout with cooling cylinder and fitting

Item	Descriiption	Material	P/N
1	SF810/SF810i-LOS with Air Cooler	DIE CAST ALUMINUM / NYLON	SF810 / SF810INT-LOS-XXXX-X-X-X X= Any SF810 / SF810INT series model EC-DWG-G041-MEC111-A SF810 AIR COOLING CYLINDER
2	1" NPTM / 1" NPTM NIPPLE	GALVANIZED STEEL A37 YELLOW FZN 12 III UNI4721	EC-DWG-G041MEC405
3	THERMAL UNION	POLIAMIDE ZELLAMIND 1100 PA-8F	EC-DWG-G018MEC779
4	Ball Valve	Body and ball:Brass 58UNI 5705/65 NICKEL	EC-DWG-G041MEC108
5	1" NPTM /1" NPTM NIPPLE	GALVANIZED STEEL A37 YELLOW FZN 12 III UNI4721	EC-DWG-G041MEC406
6	SWIVEL MOUNTING FLANGE	"FREE-CUTTING LEADED STEEL" GALVANIZED	EC-DWG-G041MEC101

SF810i flame scanner

Fiber Optic Cable (FOC) standard assembly



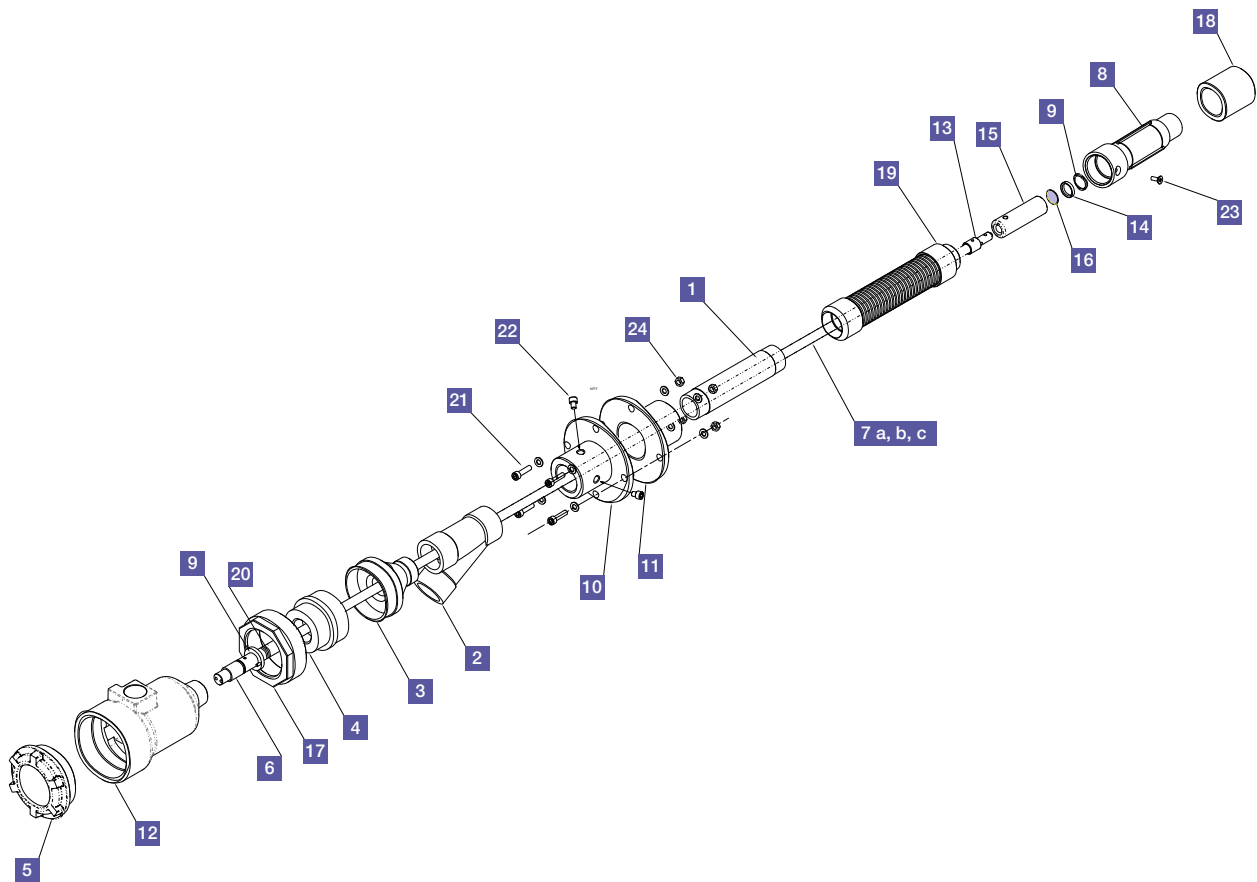
Flexible Fiber Optic installation is recommended on those application where the target burner flame is not visible from the burner mounting front plate. Flexible fiber optic is also the preferred solution to relocate the sensor unit wherever heat, dust and vibration of the burner deck are particularly severe.

Typical application:

- Tilting burner boilers
- Gas turbine

Fiber Optic Cable (FOC)

Flexible assembly layout and parts



Standard assembly of the SF810i flame scanner model FOC with flexible guide pipe

Item	Description	Part number	Material	Note	Q.ty
1	1" RIGID MAIN PIPE	EC-DWG-G041MEC019-A	STEEL UNI EN 10240		1
2	COOLING AIR MANIFOLD 1" NPTF	EC-DWG-G041MEC010-A	CAST ALLUMINUM ALLOY		1
3	MANIFOLD ADAPTER	EC-DWG-G041MEC011-A	ALLUMINUM ALLOY		1
4	THERMAL ISOLATOR	EC-DWG-G018MEC761-B	AISI 321		1
5	UVISOR SF810/SF810i FLAME SCANNER		CAST ALLUMINUM ALLOY	WINDOWED HOUSING COVER	1
6	FIBER OPTIC TERMINAL-COLD SIDE				1
7a	FIBER OPTIC CABLE	EC-DWG-G041MEC020-C	AISI 321	SINGLE SENSOR IR	1
7b	FIBER OPTIC CABLE	EC-DWG-G041MEC021-C	AISI 321	SINGLE SENSOR UV	1
7c	FIBER OPTIC CABLE	EC-DWG-G041MEC022-C	AISI 321	DUAL SENSOR UVIR	1
8	EXTERNAL GUIDE PIPE TERMINAL	EC-DWG-G041MEC012-B	AISI 304		1
9	SEEGER RING			INNER 20MM UNI3654-7437	1
10	BOILER MOUNTING FLANGE	EC-DWG-G041MEC015-A	FE 360 GALVANIZED		1
11	BOILER MOUNTING COUNTER FLANGE	EC-DWG-G041MEC014-A	FE 360 GALVANIZED		1
12	UVISOR SF810/SF810i FLAME SCANNER		CAST ALLUMINUM ALLOY	SCANNER HOUSING	1
13	FIBER OPTIC TERMINAL - HOT SIDE	EC-DWG-G041MEC017-B	AISI 304		1
14	LENS RETAINER	EC-DWG-G041MEC008-A			1
15	LENS HOLDER	EC-DWG-G041MEC005-C	AISI 304		1
16	LENS	EC-DWG-G041MEC006-A			1
17	LOCKING RING NUT	EC-DWG-G041MEC024-A	ALLUMINUM ALLOY ANTICORODAL		1
18	GUIDE COLLAR	EC-DWG-G041MEC016-B	AISI 304		1
19	FLEXIBLE HOSE	EC-DWG-G041MEC013-B	AISI 321	STANDARD LENGTH = 1100MM (43.3")	1
20	LOADING SPRING	EC-DWG-G018MEC771-B			1
21	VEI_M8X35			SCREW HEXAGON SOCKET. M8 X 35	4
22	VEI_M8X10			SCREW HEXAGON SOCKET. M8 X 10	2
23	V5-8--_U7688_PZ			SCREW TSP.CR PZ UNI 7688 M 5X8	1
24	NUT_M8-Z			NUT M8 UNI 5588	4

Fiber Optic Cable (FOC) Rigid assembly layout and parts



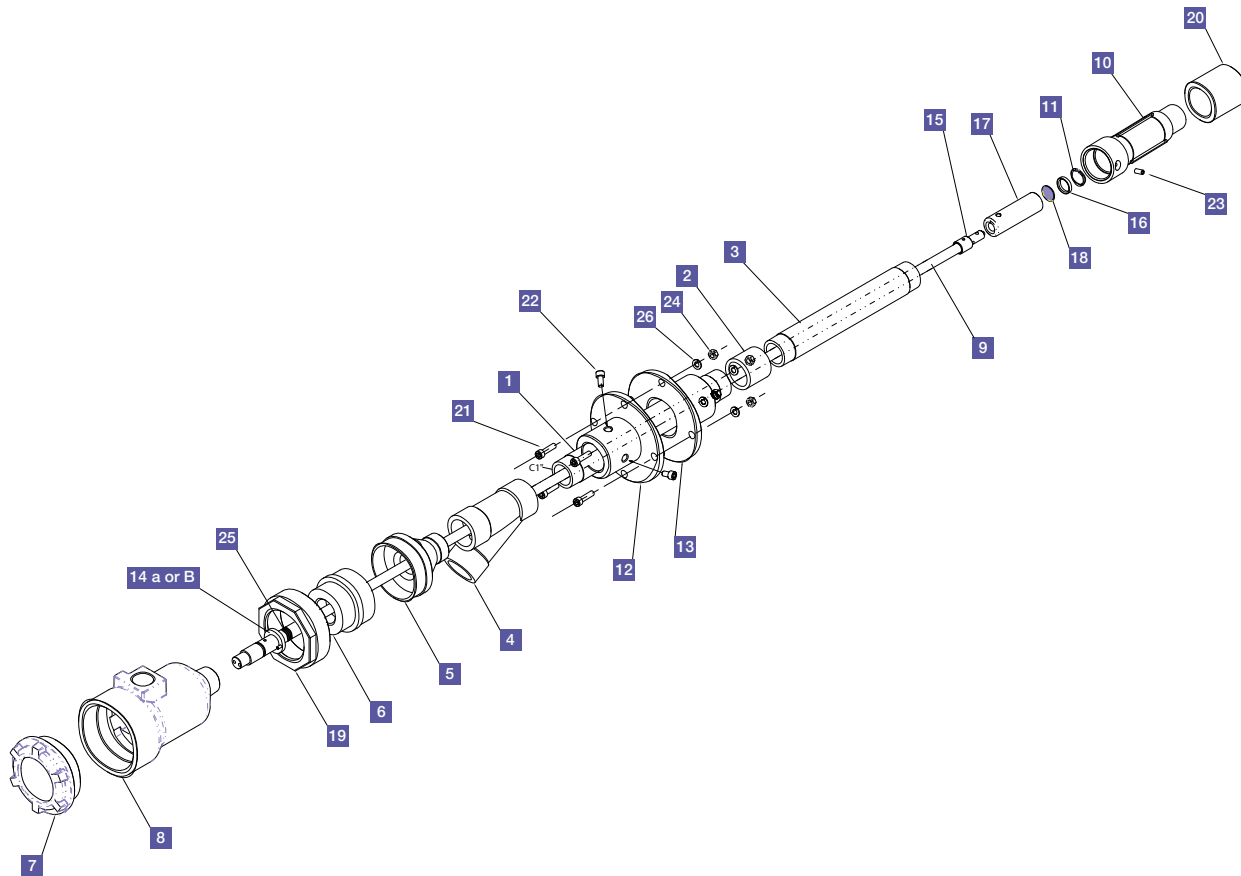
Rigid Fiber Optic installation is typically recommended on those application where the very large windbox prevent an reliable alignment with the standard Line Of Sight assembly from the burner mounting plate.

Typical application:

- Opposite wall fired boiler
- Downshot boiler

Fiber Optic Cable (FOC)

Rigid assembly layout and parts

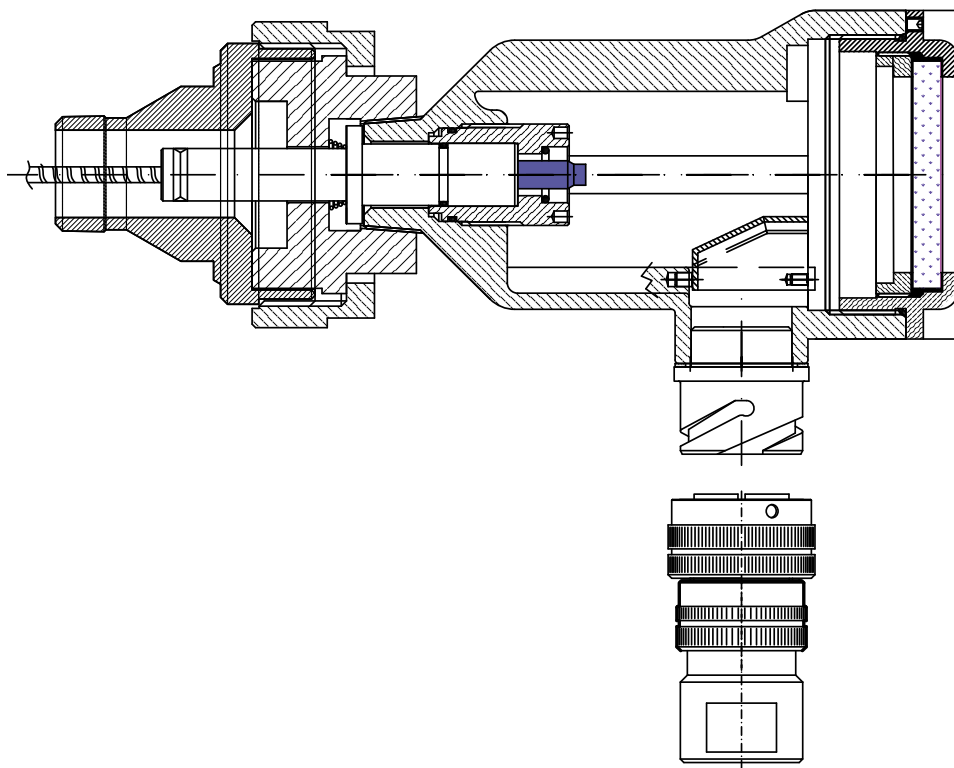


Standard assembly arrangement of the SF810i flame scanner with rigid Fiber Optic Cable

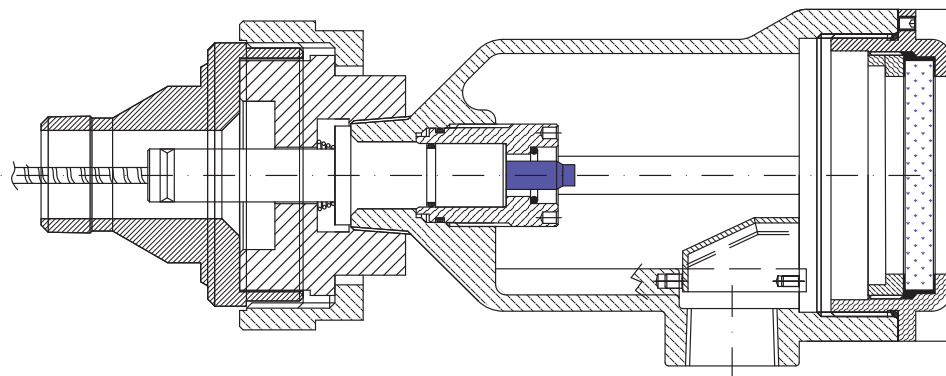
Item	Description	Part number	Material	Note	Q.ty
1	1" RIGID GUIDE PIPE	EC-DWG-G041MEC019-B	STEEL UNI EN 10240	Ref: EC-DWG-G041MEC019-B for assembly details	1
2	1" RIGID PIPE JOINT	EC-DWG-G041MEC026-A	STEEL UNI EN 10241	Ref: EC-DWG-G041MEC019-B for assembly details	1
3	1" RIGID GUIDE PIPE EXTENSION	EC-DWG-G041MEC027-A	STEEL UNI EN 10240	Ref: EC-DWG-G041MEC019-B for assembly details	1
4	COOLING AIR MANIFOLD 1" NPTF	EC-DWG-G041MEC010-A	CAST ALLUMINUM ALLOY		1
5	MANIFOLD ADAPTER	EC-DWG-G041MEC011-A	ALLUMINUM ALLOY ANTICORODAL		1
6	THERMAL ISOLATOR	EC-DWG-G018MEC761-B	AISI 321		1
7	UVISOR SF810/SF810I FLAME SCANNER		CAST ALLUMINUM ALLOY	WINDOWED HOUSING COVER	1
8	UVISOR SF810/SF810I FLAME SCANNER		CAST ALLUMINUM ALLOY	SCANNER HOUSING	1
9	FIBER OPTIC CABLE	EC-DWG-G041MEC020 / 022	AISI 321		1
10	EXTERNAL GUIDE PIPE TERMINAL	EC-DWG-G041MEC012-B	AISI 304		1
11	SEEGER RING		UNI X35CRM017	INNER 20MM UNI3654-7437	1
12	BOILER MOUNTING FLANGE	EC-DWG-G041MEC015-A	FE 360 GALVANIZED		1
13	BOILER MOUNTING COUNTER FLANGE	EC-DWG-G041MEC014-A	FE 360 GALVANIZED		1
14a	FIBER OPTIC TERMINAL-COLD SIDE	EC-DWG-G041MEC023-D	BRASS UNI EN 12164	SINGLE SENSOR (IR or UV)	1
14b	FIBER OPTIC TERMINAL-COLD SIDE	EC-DWG-G041MEC787-D	BRASS UNI EN 12164	DUAL SENSOR (UVIR)	1
15	FIBER OPTIC TERMINAL-HOT SIDE	EC-DWG-G041MEC017-B	AISI 304		1
16	LENS RETAINER	EC-DWG-G041MEC008-A	AISI 304		1
17	LENS HOLDER	EC-DWG-G041MEC005-C	AISI 304		1
18	LENS	EC-DWG-G041MEC006-A	SUPRASIL		1
19	LOCKING RING NUT	EC-DWG-G041MEC024-A	ALLUMINUM ALLOY ANTICORODAL		1
20	GUIDE COLLAR	EC-DWG-G041MEC016-B	AISI 304		1
21	VEI_M8x30			BOLT OR SOCKET HEX. SCREW M8x30	4
22	VEI_M8x16			BOLT OR SOCKET HEX. SCREW M8x16	2
23	V5-5			HEX. SET SCREW M5x5	1
24	NUT_M8-Z			NUT M8 UNI 5588	4
25	LOADING SPRING	EC-DWG-G041MEC771-B	STEEL		1
26	GROWER (UNI 1751 B) for M8				4

Fiber Optic Cable (FOC) scanners

Wiring Options

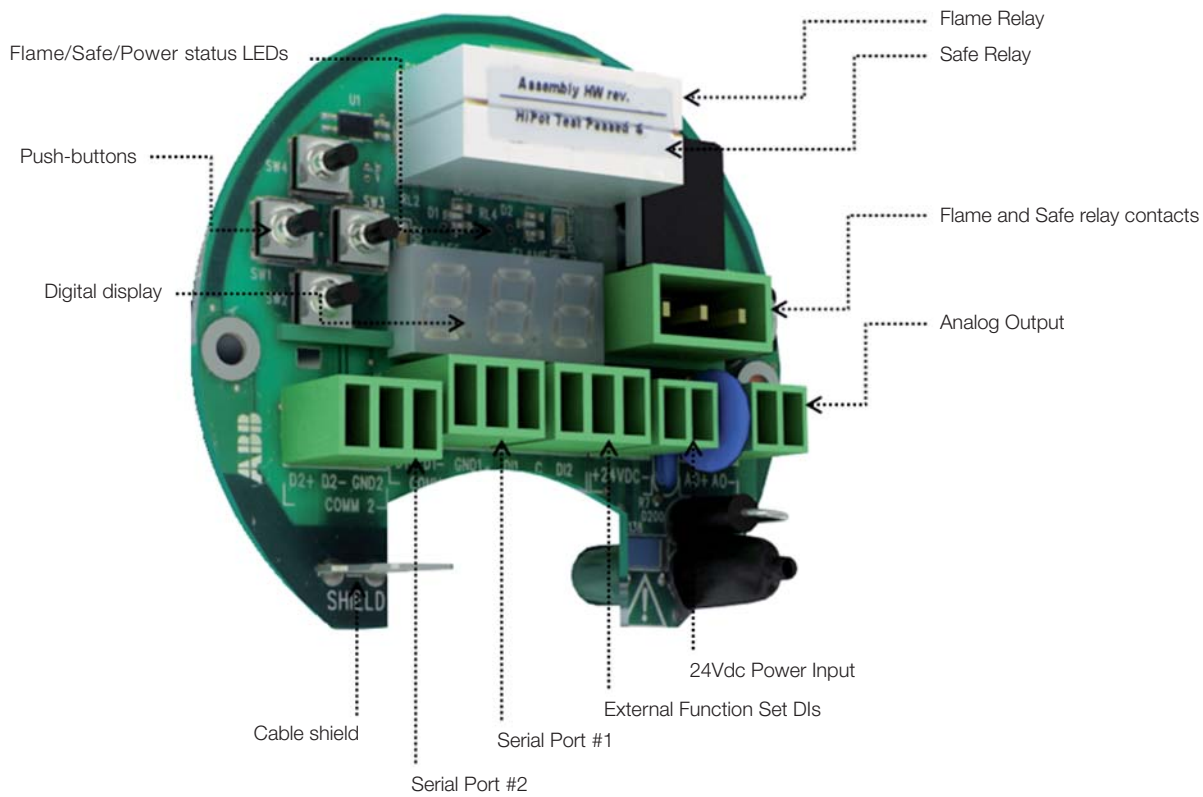


SF810i model FOC with "Quick Release" multipin connector



SF810i model FOC with 3/4" cable entry and terminal strip

Uvisor SF810i faceplate and Terminal Board



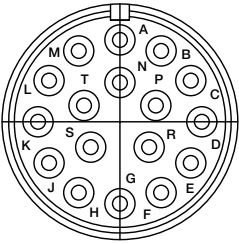
Connector / Terminal	Signal name	Description
24VDC / +	+24VDC	Power supply positive input
24VDC / -	GND	Return of power supply, ground ref. for all internal electronics
J4 / AO+	AO+	Analog output (4-20mA) positive
J4 / AO-	AO-	Analog output (4-20mA) negative
J2 / DI1	DI1	Digital input 1
J2 / DI2	DI2	Digital input 2
J2 / C	DL_common	Common return for DI1 and DI2
COMM1 / D1+	D1+	Serial communication port 1, data TX/RX, positive
COMM1 / D1-	D1-	Serial communication port 1, data TX/RX, negative
COMM1 / GND1	GND1	Ground ref. for serial comm. Port 1
COMM2 / D2+	D2+	Serial communication port 2, data TX/RX, positive
COMM2 / D2-	D2-	Serial communication port 2, data TX/RX, negative
COMM2 / GND2	GND2	Ground ref. for serial comm. Port 2
J1 / SAFE	SAFE	Safe relay contact (NO)
J1 / FLAME	FLAME	Flame relay contact (NO)
J1 / C	Common	Common for both Safe and Flame relay contacts
Shield	Shield	Earth connection point for the shields of the cable(s)

Uvisor SF810i

Quick Release Connector wiring and pin assignment

Applicable to flame scanner models “Q” and “QC”. (Refer to “SF810i Versions and Ordering Code”, page 18). For the tail cable refer to Doc. EC-DWG-G041ELE805 UVISOR SF810i Quick Connector Tail Cable Wiring.

Quick Connector (mail pins)	SF810i TB	Signal SF810i TB	Internal wiring colour	Internal wiring Section (mm ²)	Funcion
A	J3-1	D2+	Green/Orange	0,22	Serial communication port 2, data TX/RX, positive
B	J3-2	D2-	Green/Purple	0,22	Serial communication port 2, data TX/RX, negative
C	J3-3	COM2	Green/Blue	0,22	Ground ref. for serial comm. Port 2
D	J6-1	D1+	Green/Black	0,22	Serial communication port 1, data TX/RX, positive
E	J6-2	D1-	Green/Red	0,22	Serial communication port 1, data TX/RX, negative
F	J6-3	COM1	Green/Blue	0,22	Ground ref. for serial comm. Port 1
G	J2-1	DI1	Yellow/Red	0,25	Digital input 1
H	J2-2	COM	Yellow/Blue	0,25	Common return for DI1 and DI2
J	J2-3	DI2	Yellow/Brown	0,25	Digital input 2
K	J5-1	+24Vdc	Red	1	Main power supply
L	J5-2	-24Vdc	Black	1	Return of power supply, ground ref. for all internal electronics
M	J4-1	AO+	White/Red	0,22	Analog output (4-20mA) positive
N	J4-2	AO-	White/Black	0,22	Analog output (4-20mA) negative
P	J1-1	SAFE	Orange	1,5	Safe relay contact (NO)
R	J1-2	C	Light Blue	1,5	Common for both Safe and Flame relay contacts
S	J1-3	FLAME	Pink	1,5	Flame relay contact (NO)
T	Ground	SHIELD	Grey	1,5	Earth connection point for the shields of the cable(s)

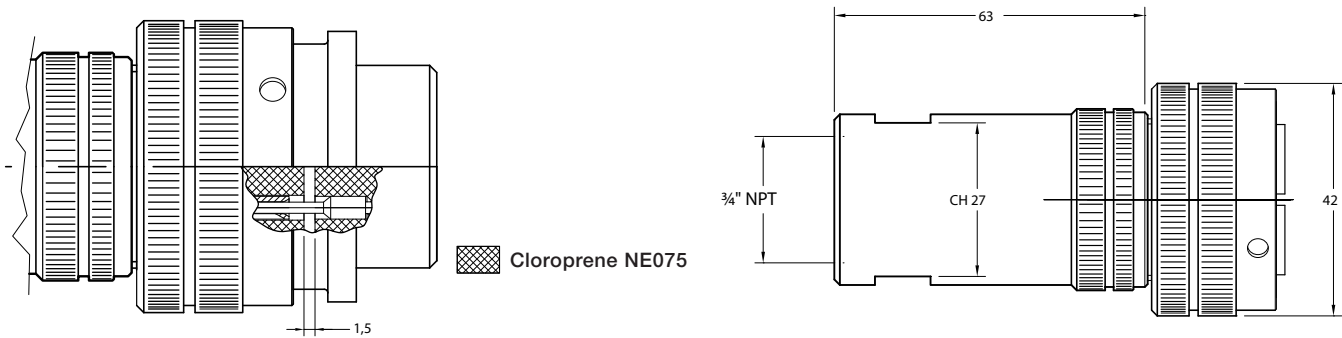


Front view male contacts insert

Arrangement	20-29
No. of contacts	17
Contacts size	16
Service rating	A
Rated temperature	-55° to 125°C

Applicable to flame scanner models “Q” and “QC”. (Refer “SF810i Versions and Ordering Codes”, page 18).
 The following Infrared Spectroscopy (IR), Thermogravimetry (TGA), and Differential Scanning Calormetry (DSC) tests

were performed in accordance with methods referenced in the Standard for Polymeric Materials - Short Term Property Evaluation, UL 746A.



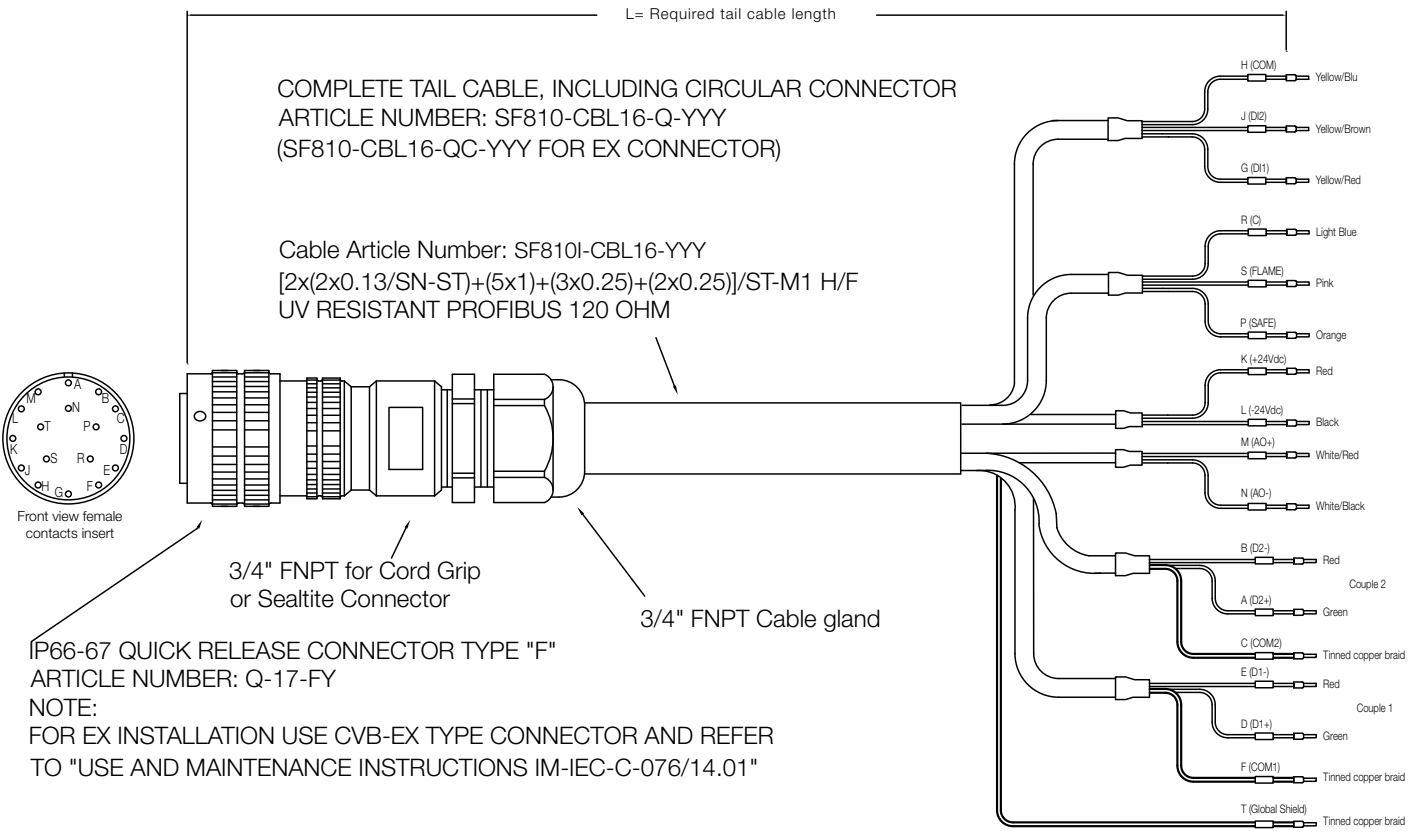
Grade designation	Sample Ticket No.	Composition Ascertained from Infrared Analysis	Reference Dates		
			IR	TGA	DSC
NE075	M211555	CR	08/12/99	02/03/99	06/11/99

Service rating	Min. distance air spacing guaranteed	Min. distance creepage guaranteed
A	1.6mm	3.2mm

Service rating	Operating voltage V D.C.	Operating voltage V A.C.	Test voltage V A.C. RMS	Minimum flashover V A.C. RMS
A	700	500	2000	2800

SF810i































Standard Tail cable






Quick Connector (mail pins)	SF810i TB	Signal SF810i TB	Internal wiring colour	Tail cable wires Section (mm²)	Function
A	J3-1	D2+	Green/Orange	0,22	Serial communication port 2, data TX/RX, positive
B	J3-2	D2-	Green/Purple	0,22	Serial communication port 2, data TX/RX, negative
C	J3-3	COM2	Green/Blue	0,22	Ground ref. for serial comm. Port 2
D	J6-1	D1+	Green/Black	0,22	Serial communication port 1, data TX/RX, positive
E	J6-2	D1-	Green/Red	0,22	Serial communication port 1, data TX/RX, negative
F	J6-3	COM1	Green/Blue	0,22	Ground ref. for serial comm. Port 1
G	J2-1	DI1	Yellow/Red	0,25	Digital input 1
H	J2-2	COM	Yellow/Blue	0,25	Common return for DI1 and DI2
J	J2-3	DI2	Yellow/Brown	0,25	Digital input 2
K	J5-1	+24Vdc	Red	1	Main power supply
L	J5-2	-24Vdc	Black	1	Return of power supply, ground ref. for all internal electronics
M	J4-1	AO+	White/Red	0,25	Analog output (4-20mA) positive
N	J4-2	AO-	White/Black	0,25	Analog output (4-20mA) negative
P	J1-1	SAFE	Orange	0.5	Safe relay contact (NO)
R	J1-2	C	Light Blue	0.5	Common for both Safe and Flame relay contacts
S	J1-3	FLAME	Pink	0.5	Flame relay contact (NO)
T	Ground	SHIELD	Grey		Earth connection point for the cables shields

Ref. "SF810i Connecting Cable" next for detail Article Number

Flame scanners application table

Fuel	Gas (Hydrogen, Propane, NG)		Oil (Heavy Oil with steam atomisation)		Oil & Gas		Low NO _x Pulverized Coal/Oil & Coal			Gas/ Light fuel oil Pilot	Gas Turbine	Notes
Scanner	W . F	T . F	W . F	T . F	W . F	T . F	W . F	T . F	D . S			
SF810i - LOS-IR												Stable signal and excellent target flame discrimination in wall and cornered fired multi burner boiler. Side Igniters and GT application can also be supported.
SF810i - FOC-IR												
SF810i - LOS-VL												Stable signal and excellent target flame discrimination in wall and CF fired multi burner boiler. Side igniters and GT application can also be supported.
SF810i - FOC-VL												
SF810i - LOS-UV												Stable signal and excellent target flame discrimination in wall and CF fired multi burner boiler. Side igniters and GT application can also be supported.
SF810i- FOC-UV												
SF810i - LOS-UVIR												Stable signal and excellent target flame discrimination in the whole operating range. Recommended in combined fuel operation.
SF810i - FOC-UVIR												

Abbreviation and symbols:

W.F	Wall Fired Boilers
D.S	Down Shot Boilers
T.F	Tangential Fired Boilers
FOC	Fiber Optic Cable (Through the windbox)
LOS	Line of Sight (Direct view)
	Acceptable Performance
	Good performance
	Excellent performance

SF810i

Versions and ordering codes

ABB SF810i SafeFlame Scanner is offered with several mounting and wiring options to suite customer needs. The standard version comes with removable screw terminals. Quick release connector and preassembled connecting cable is also available. Contact your local ABB organization for additional details.

Feature	Available models	Uvisor SF810i ordering codes							
Installation type	FOC (Scanner head for Fiber Optic Cable)	<table><tr><td>SF810i</td><td>-</td><td>FOC</td><td>-</td><td>.....</td><td>-</td><td>...</td></tr></table>	SF810i	-	FOC	-	-	...
	SF810i	-	FOC	-	-	...		
LOS (Scanner head for Line Of Sight)	<table><tr><td>SF810i</td><td>-</td><td>LOS</td><td>-</td><td>.....</td><td>-</td><td>...</td></tr></table>	SF810i	-	LOS	-	-	...	
SF810i	-	LOS	-	-	...			
Spectral range	IR	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>IR</td><td>-</td><td>...</td></tr></table>	SF810i	-	-	IR	-	...
	SF810i	-	-	IR	-	...		
	UV	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>UV</td><td>-</td><td>...</td></tr></table>	SF810i	-	-	UV	-	...
	SF810i	-	-	UV	-	...		
VL	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>VL</td><td>-</td><td>...</td></tr></table>	SF810i	-	-	VL	-	...	
SF810i	-	-	VL	-	...			
IR+UV (dual sensor)	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>UVIR</td><td>-</td><td>...</td></tr></table>	SF810i	-	-	UVIR	-	...	
SF810i	-	-	UVIR	-	...			
Cabling method, protection index, hazardous areas	Screw terminals IP66/IP67 - Ex	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>.....</td><td>-</td><td>T</td></tr></table>	SF810i	-	-	-	T
	SF810i	-	-	-	T		
	Screw terminals IP66/IP67	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>.....</td><td>-</td><td>TL</td></tr></table>	SF810i	-	-	-	TL
	SF810i	-	-	-	TL		
	Quick-release connector IP66/IP67	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>.....</td><td>-</td><td>Q</td></tr></table>	SF810i	-	-	-	Q
SF810i	-	-	-	Q			
Quick-release connector IP66/IP67 - Ex	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>.....</td><td>-</td><td>QC</td></tr></table>	SF810i	-	-	-	QC	
SF810i	-	-	-	QC			
Quick-release connector (Future)	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>.....</td><td>-</td><td>QE</td></tr></table>	SF810i	-	-	-	QE	
SF810i	-	-	-	QE			
Housing	Stainless steel AISI316 case	<table><tr><td>SF810i</td><td>-</td><td>.....</td><td>-</td><td>.....</td><td>-</td><td>TX</td></tr></table>	SF810i	-	-	-	TX
SF810i	-	-	-	TX			
Notes		IP66/IP67 and ATEX certificates on FOC assemblies are guaranteed only with ABB fiber optic cable P/N: - EC-DWG-G041MEC020 - EC-DWG-G041MEC021 - EC-DWG-G041MEC022							

Fiber Optic Cable Assembly

Feature	Available choices	Part number assignment							
Fiber optic complete assembly	Flexible extension	<table><tr><td>SF810</td><td>-</td><td>FOAFE</td><td>-</td><td>XX</td><td>-</td><td>XXXX</td></tr></table> <p>XX = Sensor scanner type</p> <ul style="list-style-type: none">- IR Infrared- UV Ultraviolet- UI Ultraviolet and Infrared <p>XXXX = length (in mm) See Figure "A"</p> <p>Fiber optic flexible assembly includes:</p> <ul style="list-style-type: none">- Inner fiber optic cable with lens assembly- Flexible external guide pipe with coupling flange and guide ring	SF810	-	FOAFE	-	XX	-	XXXX
	SF810	-	FOAFE	-	XX	-	XXXX		
Rigid extension	<table><tr><td>SF810</td><td>-</td><td>FOARE</td><td>-</td><td>XX</td><td>-</td><td>XXXX</td></tr></table> <p>XX = Sensor scanner type:</p> <ul style="list-style-type: none">- IR Infrared- UV Ultraviolet- UI Ultraviolet and Infrared <p>XXXX = length (in mm) See Figure "B"</p> <p>Fiber optic rigid assembly includes:</p> <ul style="list-style-type: none">- Inner fiber optic cable with lens assembly- Rigid external guide pipe with coupling flange and guide ring	SF810	-	FOARE	-	XX	-	XXXX	
SF810	-	FOARE	-	XX	-	XXXX			

Warning:

The Ex certified scanners versions (SF810i-FOC-xx-T and SF810i-FOC-xx-QC) must be mandatory used together with the ABB Ex ABB fiber optic cable P/N:

- EC-DWG-G041MEC020
- EC-DWG-G041MEC021
- EC-DWG-G041MEC022

Feature	Available choices	Article Number							
Fiber optic cable	Fiber Optic Cable for IR sensor	<table><tr><td>SF810</td><td>-</td><td>FO</td><td>-</td><td>G</td><td>-</td><td>XXXX</td></tr></table> <p>Fiber Optic Cable for SF810/SF810i sensor IR Length = base length 1500mm Additnional step 250mm to specify with the PO. Ref. Figure "C" for the ordering length</p>	SF810	-	FO	-	G	-	XXXX
	SF810	-	FO	-	G	-	XXXX		
	Fiber Optic Cable for UV sensor	<table><tr><td>SF810</td><td>-</td><td>FO</td><td>-</td><td>Q</td><td>-</td><td>XXXX</td></tr></table> <p>Fiber Optic Cable for SF810/SF810i sensor UV Length = base length 1500mm Additnional step 250mm to specify with the PO. Ref. Figure "C" for the ordering length</p>	SF810	-	FO	-	Q	-	XXXX
SF810	-	FO	-	Q	-	XXXX			
Fiber Optic Cable for UVIR sensor	<table><tr><td>SF810</td><td>-</td><td>FO</td><td>-</td><td>GQ</td><td>-</td><td>XXXX</td></tr></table> <p>Fiber Optic Cable for SF810/SF810i sensor UVIR Length = base length 1500mm Additnional step 250mm to specify with the PO. Ref. Figure "C" for the ordering length</p>	SF810	-	FO	-	GQ	-	XXXX	
SF810	-	FO	-	GQ	-	XXXX			
Guide Pipe	Rigid	<table><tr><td>SF810</td><td>-</td><td>OGP</td><td>-</td><td>RE</td><td>-</td><td>XXXX</td></tr></table> <p>Guide pipe for SF810/SF810i Rigid Extension for all type sensors Length = base length 1500mm Ref. Figure "B" for the ordering length</p>	SF810	-	OGP	-	RE	-	XXXX
	SF810	-	OGP	-	RE	-	XXXX		
Flexible	<table><tr><td>SF810</td><td>-</td><td>OGP</td><td>-</td><td>FE</td><td>-</td><td>XXXX</td></tr></table> <p>Guide pipe for SF810/SF810i Flexible Extension for all type sensors Length = base length 1500mm Ref. Figure "A" for the ordering length</p>	SF810	-	OGP	-	FE	-	XXXX	
SF810	-	OGP	-	FE	-	XXXX			

Fiber Optic Cable (FOC) Cable Assembly Ordering Data

Fiber Optic Assembly type: SF810-FOA-FE



Figure A

Fiber Optic Assembly type: SF810-FOA-RE

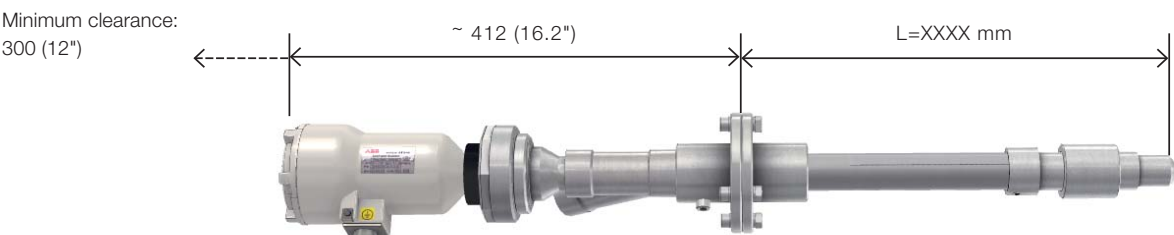


Figure B

Fiber Optic Cable type: SF810-G / Q / GQ



Figure C

SF810i Connecting Cables

Cable	Article Number	Length "L" (meter)	Description
ABB tail cable for SF810INT Cable only, no connectors	SF810I-CBL16-YYY YYY= meters		Cable type: [2x(2x0.13/SN-ST)+(5x1)+(3x0.25)+(2x0.25)]/ST-M1 H/F UV RESISTANT PROFIBUS 120 OHM. OD: 16.5±0.5 P/N: MMCNTSH/06EC
ABB tail cable for SF810INT cable with pre-assembled quick-release plug at one side only (IP66 / IP67)	SF810I-CBL16-Q-YYY YYY= meters	L=	Cable type: [2x(2x0.13/SN-ST)+(5x1)+(3x0.25)+(2x0.25)]/ST-M1 H/F UV RESISTANT PROFIBUS 120 OHM. OD: 16.5±0.5 P/N: MMCNTSH/06EC preassembled with connector EC-DWG-G018MEC773-B and Cable Gland
ABB tail cable for SF810INT Cable with pre-assembled quick-release plug at one side only. Ex. IP66 / IP67	SF810I-CBL16-QC-YYY YYY= meters	L=	Cable type: [2x(2x0.13/SN-ST)+(5x1)+(3x0.25)+(2x0.25)]/ST-M1 H/F UV RESISTANT PROFIBUS 120 OHM. OD: 16.5±0.5 P/N: MMCNTSH/06EC preassembled with connector CVB-EX and Cable Gland
Quick-release connector "F" type. Loose item. IP66 / IP67	Q-17-FY		Drawing ref: EC-DWG-G018MEC773-B
Quick-release connector "F" type. Loose item. Ex. IP66 / IP67	QC-17-FY		Model: CVB-EX WARNING! Ref. doc. IM.C-110/07.01rev. 02 for Installation and Maintenance Instruction

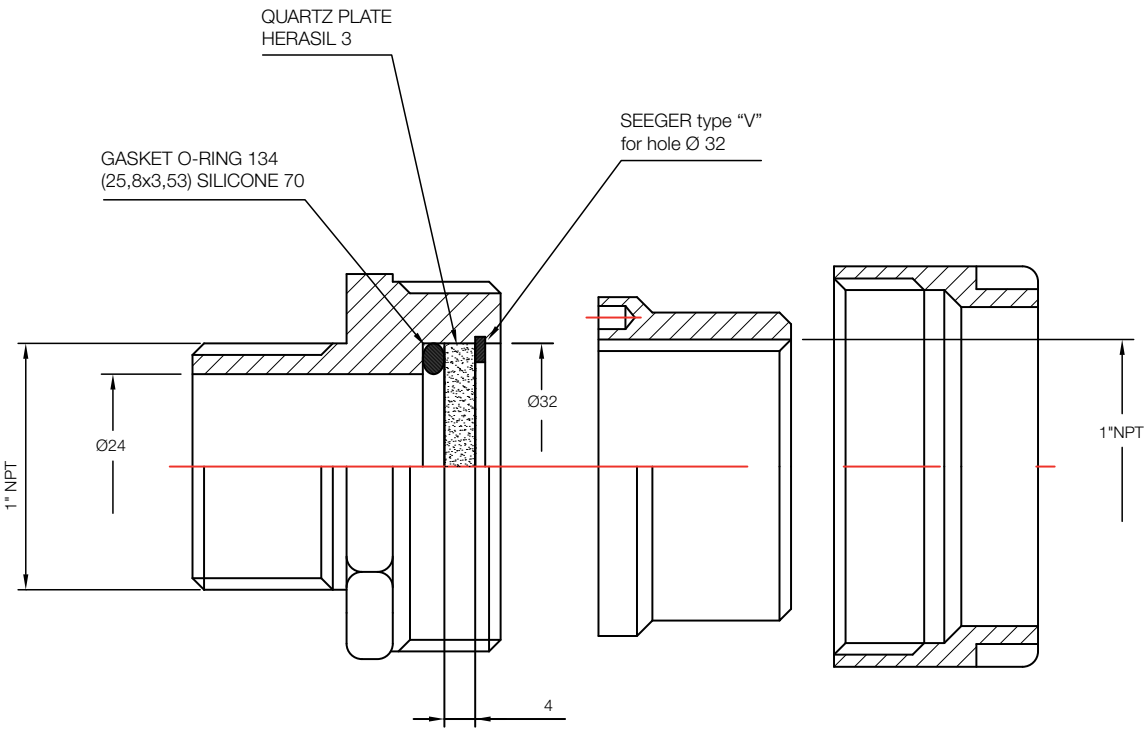
SF810i Series Fitting Accessories

Fitting	Article Number	Notes
1" NPTM / 1" NPTF Thermal isolation union	THU-1NPTMF	Drawing: EC-DWG-G018MEC779
Isolating Valve 1" NPTF / 1" NPTF	IV-1NPTF	Drawing: EC-DWG-G041MEC108
Purging air "Y" 1" NPTF / 1" NPTF Air inlet ¾" NPTF with Nipple 1" NPTM / 1" NPTM	PAY-1NPTFF	Drawing: EC-DWG-G041MEC010-B
Swivel flange assembly with 1" NPTM nipple and gasket ØEXT=100 mm (3.937")	SWF-1NPTM-100	Drawing: SWF-1NPTM-100
Swivel flange assembly with 1" NPTM nipple and gasket ØEXT=72 mm (2.834")	SWF-1NPTM	Drawing: EC-DWG-G041MEC101-A
Purging air flexible hose - Armoured hose type 2TE DIN 2021 EN854 ND-19 Temperature -30 to 80°C (-22 to 176°F) L=1200 mm	84410-S-0400000	
ND-25 Temperature -30 to 80°C (-22 to 176°F) L=1200 mm (47.2") 2021 EN854 (47.2") Purging air flexible hose - Armoured hose type 2TE DIN	84410-S-0400001	
Armoured cable gland ATEX II 2GD T6 IP66 (gas & dusts)	CG3/4-EEEx	
Counter flange for FOC external guide pipe	84410-S-0400002	Drawing: EC-DWG-G041MEC014-A
Set of diaphragms (Ø 4/6/8 mm) to be installed in THU-1NPTMF to reduce the irradiation to sensor	TU_KIT0	Drawing: EC-DWG-G041MEC107-A
Quartz isolating air tight kit to be installed in THU-1NPTMF to isolate scanner from combustion chamber	TU_KIT02	Drawing: EC-DWG-G041MEC106-A
Set of diaphragm suitable for FOC LENS HOLDER ASSEMBLY Part: EC-DWG-G041MEC005 (Ø 2/4/6 mm)	TU_KIT03	Drawing: EC-DWG-G041MEC109-B
Cooling air jacket for SF810-SF810INT LOS type scanners	CAC-LOS	Drawing: EC-DWG-G041-MEC111-A

Line of Sight (LOS) Assembly

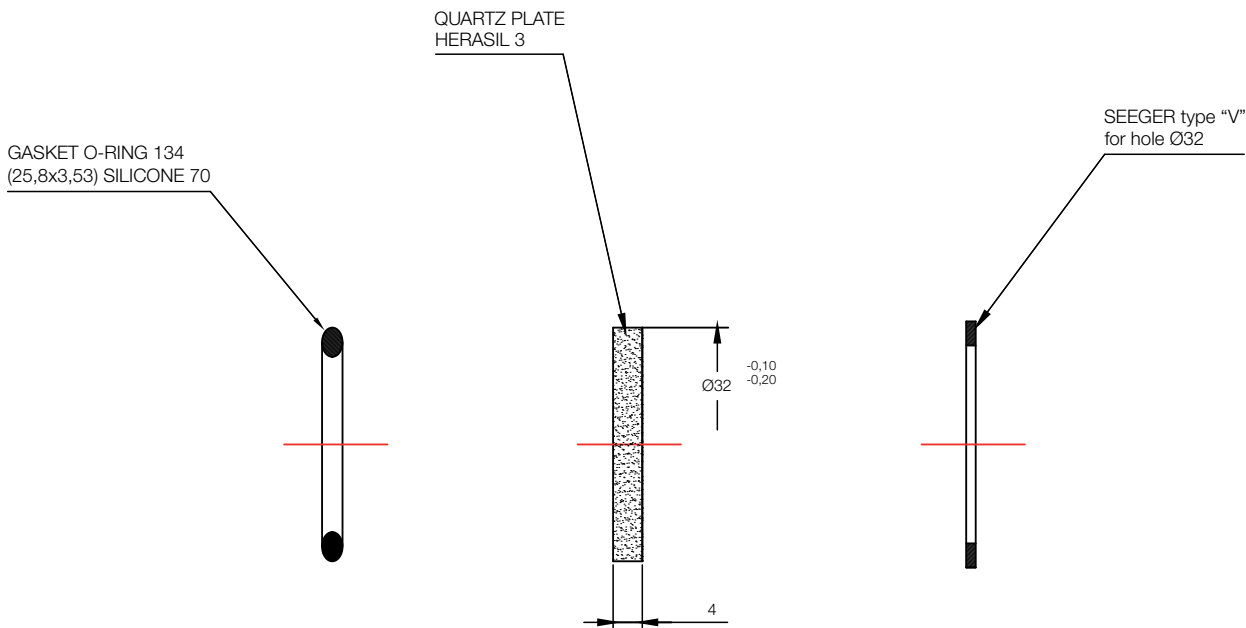
Fitting options

Thermal Union with Quartz Isolation P/N: EC-DWG-G041MEC104



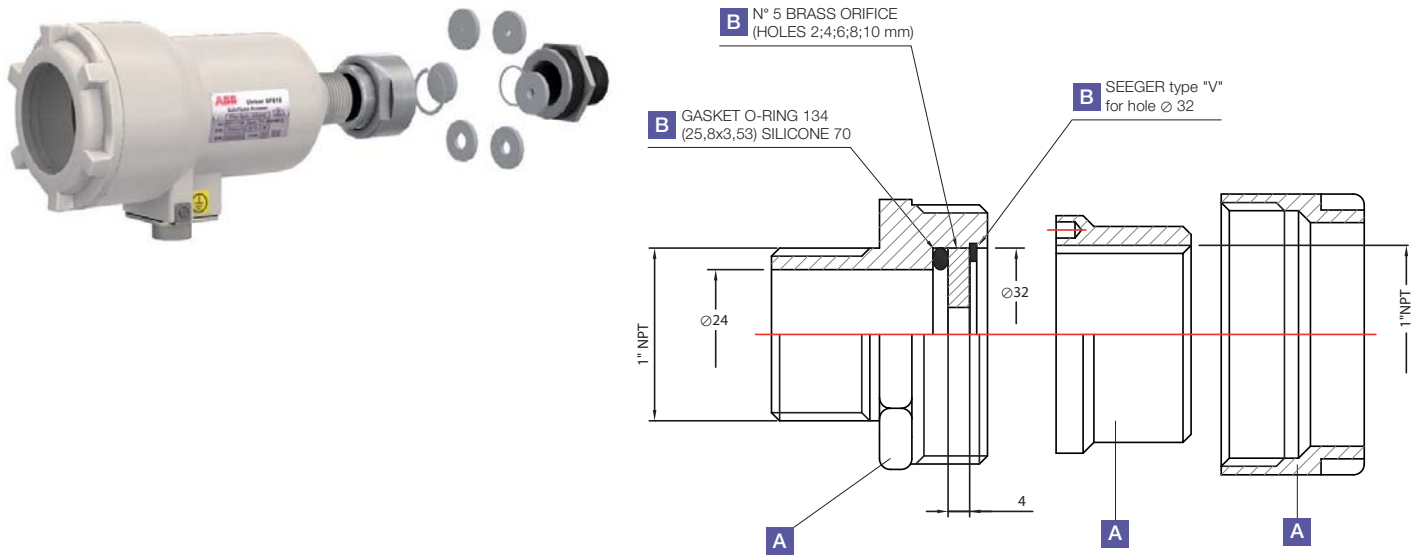
The quartz isolation plate is used to interpose an additional seal between the flame scanner and the furnace through the sight tube. It prevents the furnace pressure and heat from wearing the scanner viewing lens. Article number: TU_KIT02

Quartz Isolation Kit P/N: EC-DWG-G041MEC106



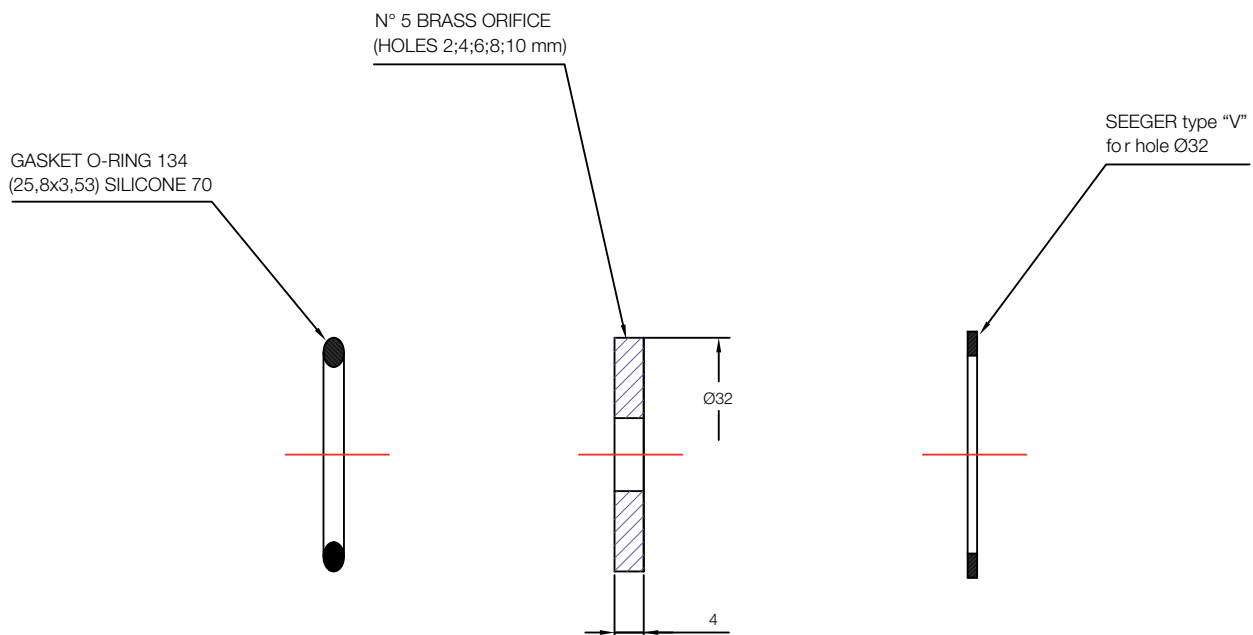
Fiber Optic Cable (FOC) Bailey FlameOn Direct Replacement

Thermal Union with orifice P/N: EC-DWG-G041MEC105



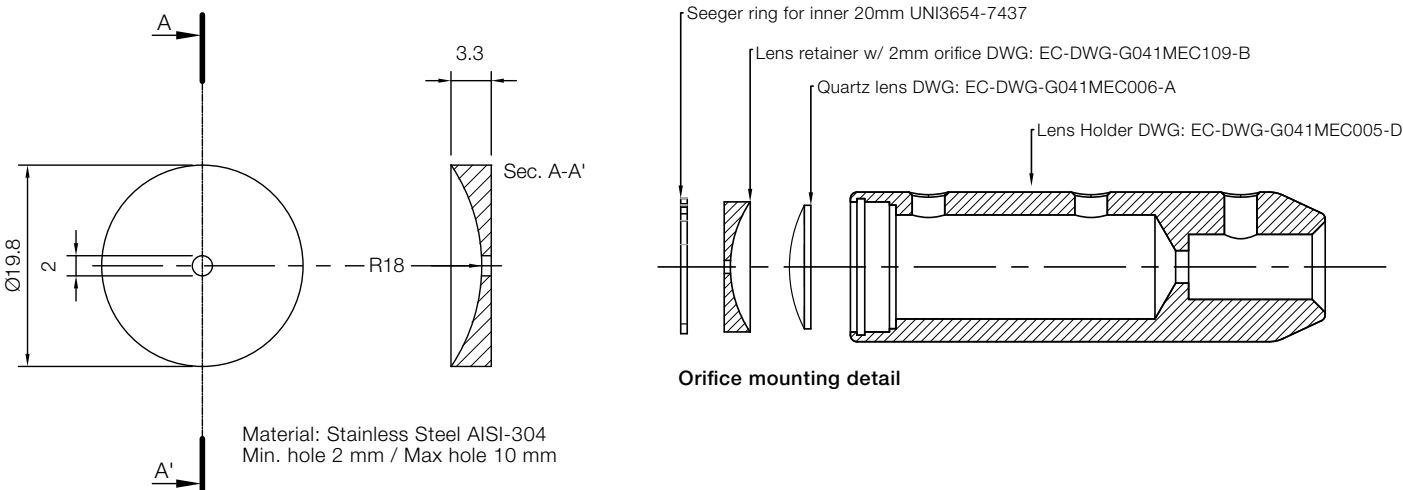
The use of orifice, available with different size, restricts the field of view (target area) and increase discrimination between target flame and adjacent, opposite or background radiation. The orifice is firmly secured in the thermal union and is prevented from falling apart. Once installed, assure the performance within the burner operation range. Article number: TU_KIT01

Orifice Kit P/N: EC-DWG-G041MEC107



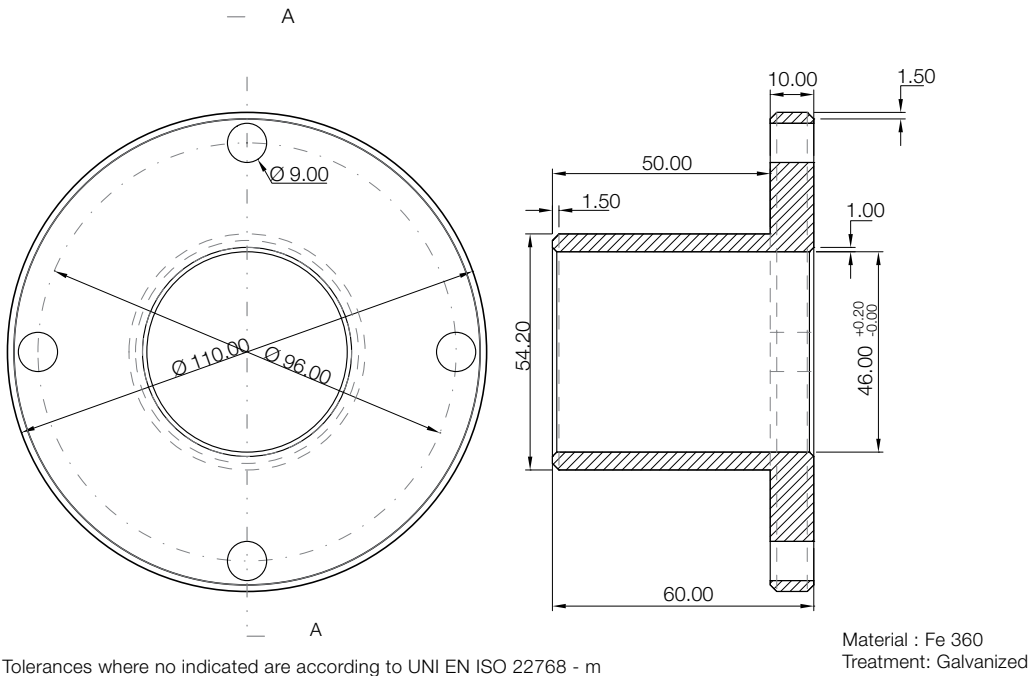
Fiber Optic Cable (FOC) Assembly Fitting options

Orifice Kit for flexible and rigid FOC assemblies



The use of orifice, available with different size, restricts the field of view (target area) and increase discrimination between target flame and adjacent, opposite or background radiation. The orifice is firmly secured in the lens holder assembly and is preventer from falling apart. Once installed, assure the performance within the burner operation range. Article number: TU_KIT03

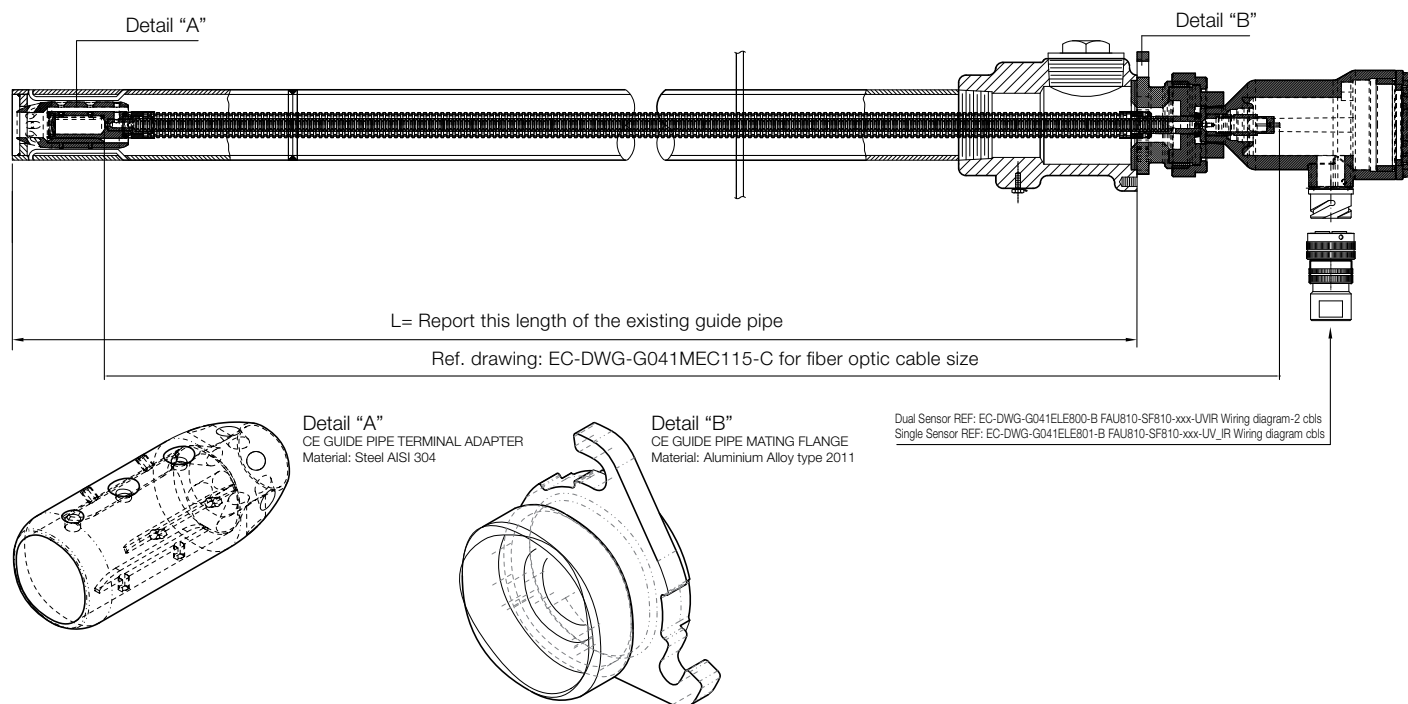
Boiler mounting counter flange for FOC assemblies P/N: EC-DWG-G041MEC014



The boiler mounting counter flange matches the mounting flange of the standard FOC assemblies (Ref. figures A and B).
WARNING! This flange has a galvanic treatment. Following the applicable recommendation for welding, operator is recommended to wear an FFP2 dust mask. Preliminary remove the Zinc from the welding surface(s). Weld the Zinc-free carbon-steel surfaces and restore the corrosion resistance with high in elemental zinc (i.e., "Zinc-rich") paint. This paint can be applied to the weld after wire brushing to remove all welding slag followed by wiping the weld clean with a rag. Article number: 84410-S-0400002

Fiber Optic Cable (FOC) Assembly

DFS Direct Replacement

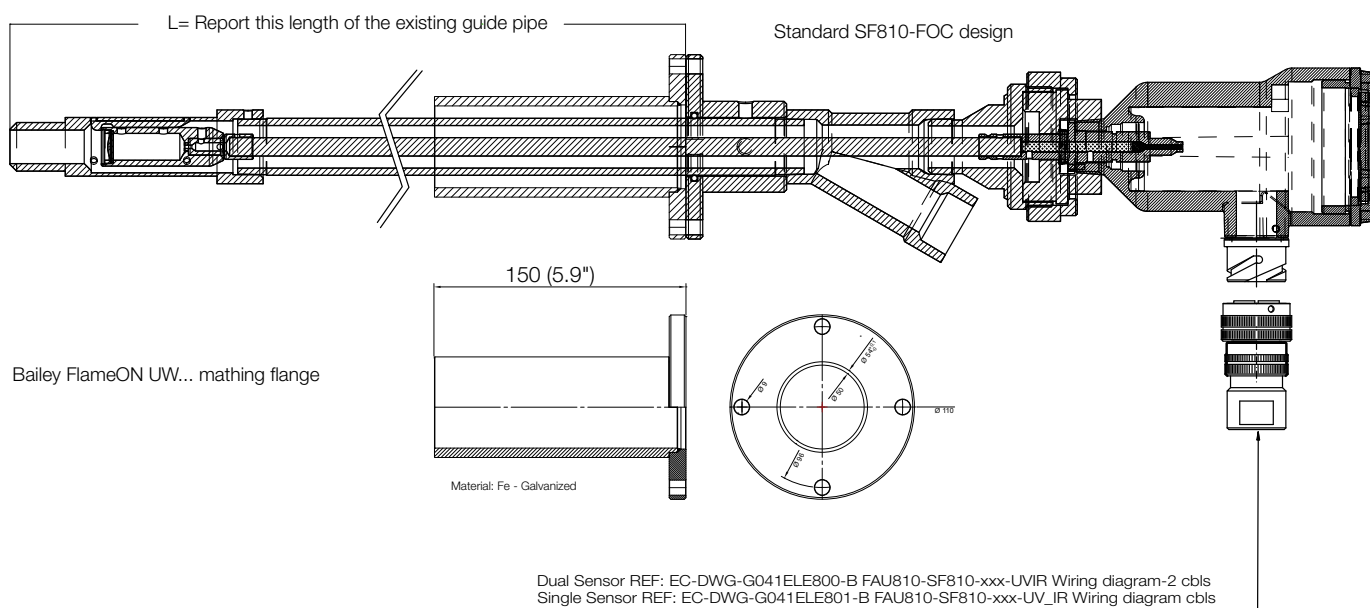


This option provides the user with a convenient solution to upgrade an existing DFS flame scanner installation, relieving from the external guide tube replacement with all that involves (Major boiler shutdown, scaffolding, cut & welding). SF810i-FOC final equipment selection is based on the specific customer and application needs.

Ref. Assembly P/N: EC-DWG-G041MEC115 Article Number: SF810-FOACE-IR (UV; UVIR)

For more details ref. User Manual SF810i User Manual 9AKK101130D3798-E3

Fiber Optic Cable (FOC) Bailey FlameOn Direct Replacement

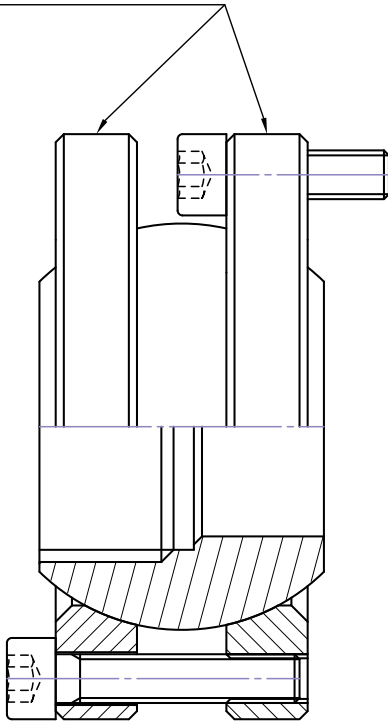


This option provides the user with a convenient solution to upgrade an existing Bailey FlameOn flame serie UM...UW...flame scanner with flexible fiber optic design or reflecting tube.
SF810i-FOC final equipment selection is based on the specific customer and application needs. Ref. Assembly P/N: EC-DWG-G041MEC119
For more details ref. User Manual SF810i User Manual 9AKK101130D3798-E3

Swivel Mounting Flange assembly

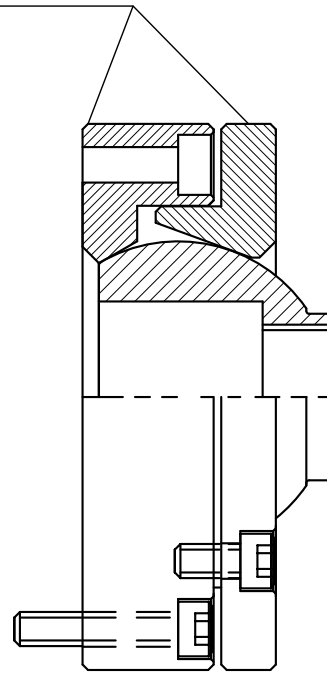
Recommended to adjust the scanner sighting angle after the scanner has been installed. Article number: SWF-1NPTM-72

(72 mm OD - 2.83")



Recommended to adjust the scanner sighting angle after the scanner has been installed. Article number: SWF-1NPTM-100

(100 mm OD - 3.937")



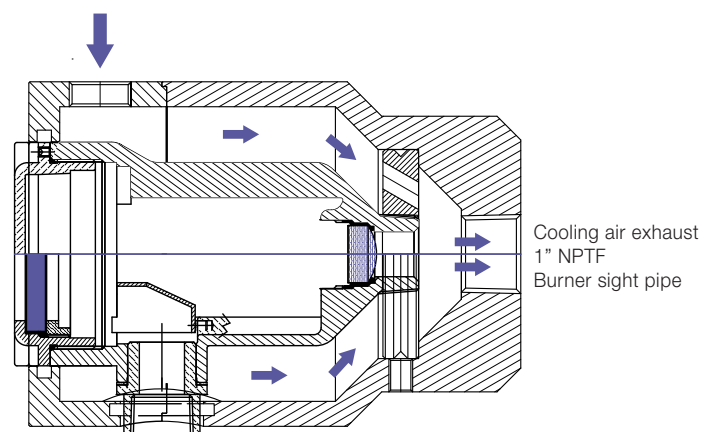
Cooling air Cylinder

The cooling air cylinder is designed to use the low pressure purging air to drain heat away from the scanner body thus to allow operation on severe high temperature environment, up to 95°C (203°F)

- No additional air provision other than the standard purging air
- Recommended air inlet temperature less than 30°C (86°F).
- Air consumption 115 l/min (4 SCFM) @ 20mm H₂O (1" W.C.) above the maximum windbox pressure

Article number: CAJ

Cooling air inlet ¼" NPTF



SF810i Flame Scanner

Contact us

ABB S.p.A.

Power Generation

Via Albareto, 35

16153 Genoa, Italy

powergeneration@it.abb.com

www.abb.com/powergeneration

www.abb.com/symphonyplus

Technical and Sale support e-mail to:

CN-CI.SupportCenter@abb.com

© Copyright 2014 ABB

All rights reserved. Specifications subject to change without notice. Pictures, schematics, and other graphics contained herein are published for illustration purposes only and do not represent product configurations or functionality.