

Symphony Plus Combustion Instruments

Multi Fuel Safe Flame Scanner Uvisor™ SF810

ABB has combined the two highly successful flame scanner product lines, Uvisor™ and Safe Flame DFS, into a new advanced Flame Scanner, the Uvisor™ SF810. The Uvisor SF810 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 rugged housing, the Uvisor SF810 embeds the solid state sensor modules, covering the complete flame radiant spectrum (UV-to-IR including a dual sensor UVIR). Terminations are available as screw type removable connectors; as quick release connector for IP66/67 or as quick release connector for II 2GD Ex d IIC T 6 hazardous areas.



The Uvisor SF810 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, for corner fired tilting burners' boilers

Application:

Utility and Industrial boilers

- Wall fired, corner fired, WHRB, down-shot and cyclone burner types Multi fuel
- Natural Gas, Coke Oven Gas
- Light & heavy fuel oil, Orimulsion
- Pulverized coal
- Sulphur gas

Features:

Operation

- UV, VL, IR solid state sensors
- Dual sensor UVIR
- Continuous self-check
- F-FFRT Fast Flame Failure Response Time
- ATEX II 2GD Ex d IIC T6 tD A21 IP66 T80°C
- Line of sight with accessories to give precise alignment with the flame
- Rigid fiber optic cable to improve discrimination performance for deep wind boxes
- Flexible fiber optic cable to maintain flame alignment for tilting burner.

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 Spectral response peak @ 280nm and 920nm
Power supply voltage	Flame Analysis Unit FAU810 Powered
Power consumption	Max 300 mW / 600 mW (Dual Sensor)
Local configuration	No
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 H2O (1" W.C.) above the max wind box pressure measured at the "Y" connection inlet. FOC (Fiber Optic Cable) versions: 300mm H2O (12" W.C.) above the max wind box pressure measured at the "Y" connection inlet.
Maximum fiber 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 tread (Scanner models "T" and "TL") - 16 contacts quick release connector type CVB-EX. Protection mode: Ex d IIC T6 tD A21 IP66/IP67 T85°C (Scanner models "QC") - 16 contacts quick release connector. Protection mode: IP66/IP67 (Scanner models "Q")
Electrical connections (terminal versions)	Removable terminals with screws Allowable cable section: AWG 28-AWG16, 0,08-1.5mm ² Recommended ABB standard cable: - Single Sensor scanner drawing no. EC-DWG-G041ELE803 - Dual Sensor scanner drawing no. EC-DWG-GO41ELE802 Maximum distance between SF810 scanner and FAU810, Flame Analysis Unit 500 meters (1500 feet)
Compatible Control Unit	Refer to the table below for the compatibility of the SF810 flame scanner with the associated Analysis Unit

Scanner Models	Analysis Units		
	DFS	FAU800	FAU810
SF810-IR Series (=/> Rev.E)	X	X	X
SF810-IR Series (< Rev.E)	X	X	X
SF810-UV Series (=/> Rev.E)			X
SF810-UV Series (< Rev.E)	X	X	X
SF810-UVIR Series (=/> Rev.E)			X
SF810-UVIR Series (< Rev.E)		X	X
SF810-VL Series (=/> Rev.E)	X	X	X
SF810-VL Series (< Rev.E)	X	X	X
Safe Flame VL assembly round board (C10-24112)	X	X	X
Safe FlameIR assembly round board (C10-24113)	X	X	X
Safe Flame Full Spectrum assembly round board (c10-24114)	X	X	X
1.5 Deg. PC board (C87-97308)	X	X	X
4 Deg. PC board (C87-97342)	X	X	X
IFM (Ionization Flame Rod)		X	X

Environmental specification

Property	Value
Safety Specifications	EN 61010-1 (IEC 61010-1)
Class of installation	I
Over voltage category	I
Pollution degree Protection (EN 60529)	2 IP66 – IP67
Ambient Operating temperature (EN/IEC 60068-2-1/2/14)	- 40° to 70°C (-40° to 158 °F) in ATEX T6 classified zones - 60° to 80°C (-40° to 176 °F) NO Ex zones - 60° to 105°C (-76° to 221 °F) w/air cooler.
Ambient Storage and transportation temperature (EN/IEC 60068-2-1/2/14)	- 40°C / 85°C (-40 to 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 specification

Property	Value
Dimensions	Diameter 95 mm max (3,7") Overall length: 180mm approx (7")
Weight	1 kg approx. (2.2 lb)
Degree of protection	IP66 – IP67 (CEI EN 60529) Equivalent NEMA 4x

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.

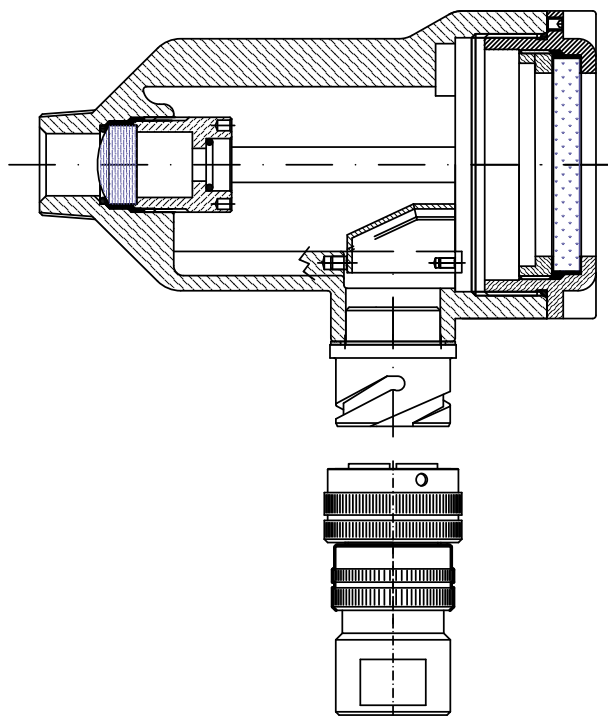
Typical application:

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

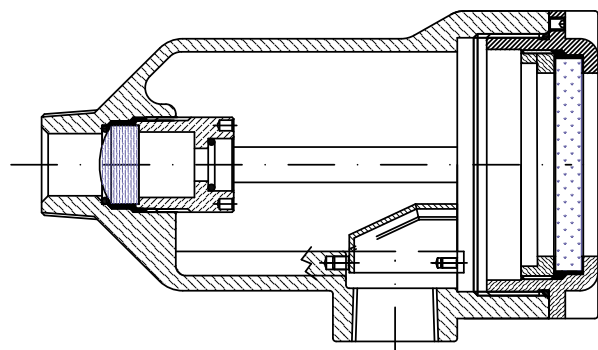
Wiring Options

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

SF810 model LOS with "Quick Release" multipin connector

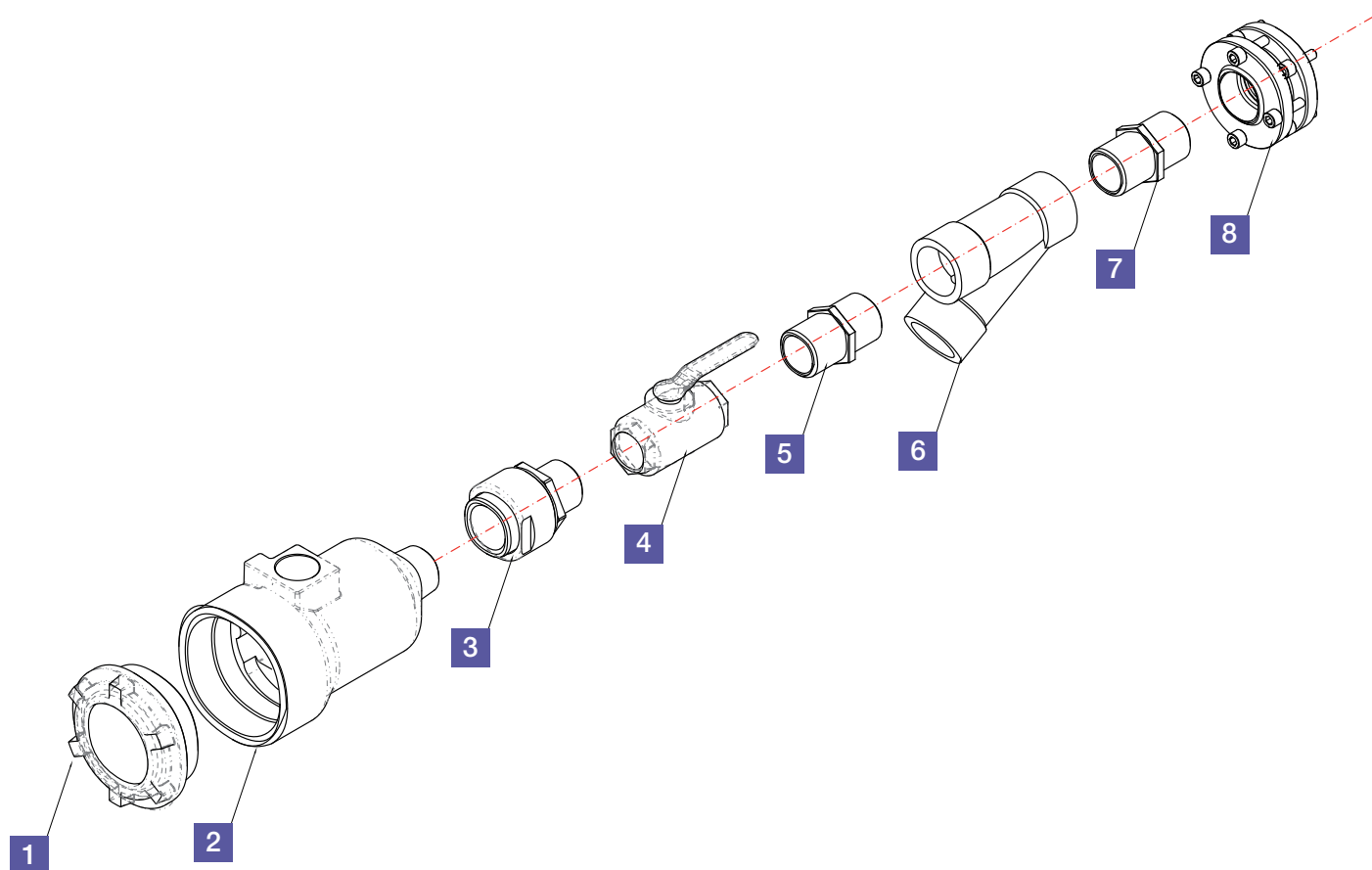


SF810 model LOS with 3/4" NPTF cable entry and terminal strip



SF810 flame scanner

Line of Sight standard assembly layout and parts

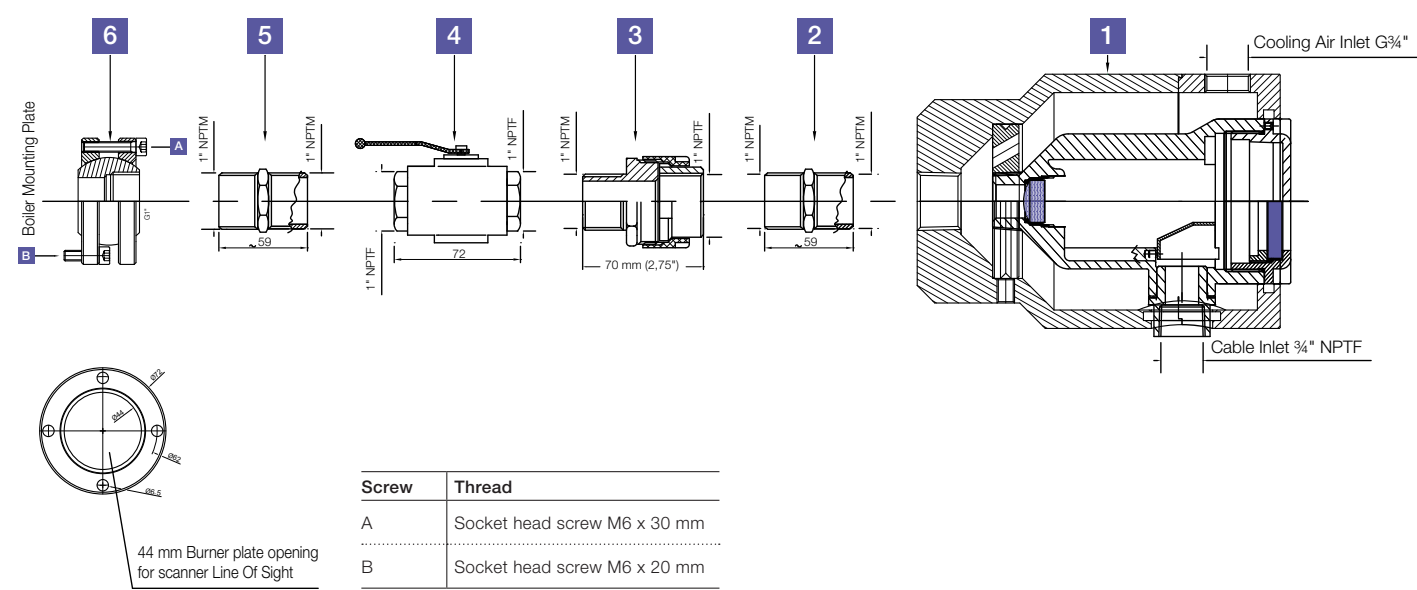


SF810 assembly layout with fitting

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

SF810 flame scanner

Line of Sight standard assembly with cooling cylinder and fitting parts



SF810 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

SF810 flame scanner

Fiber Optic Cable (FOC) standard assembly



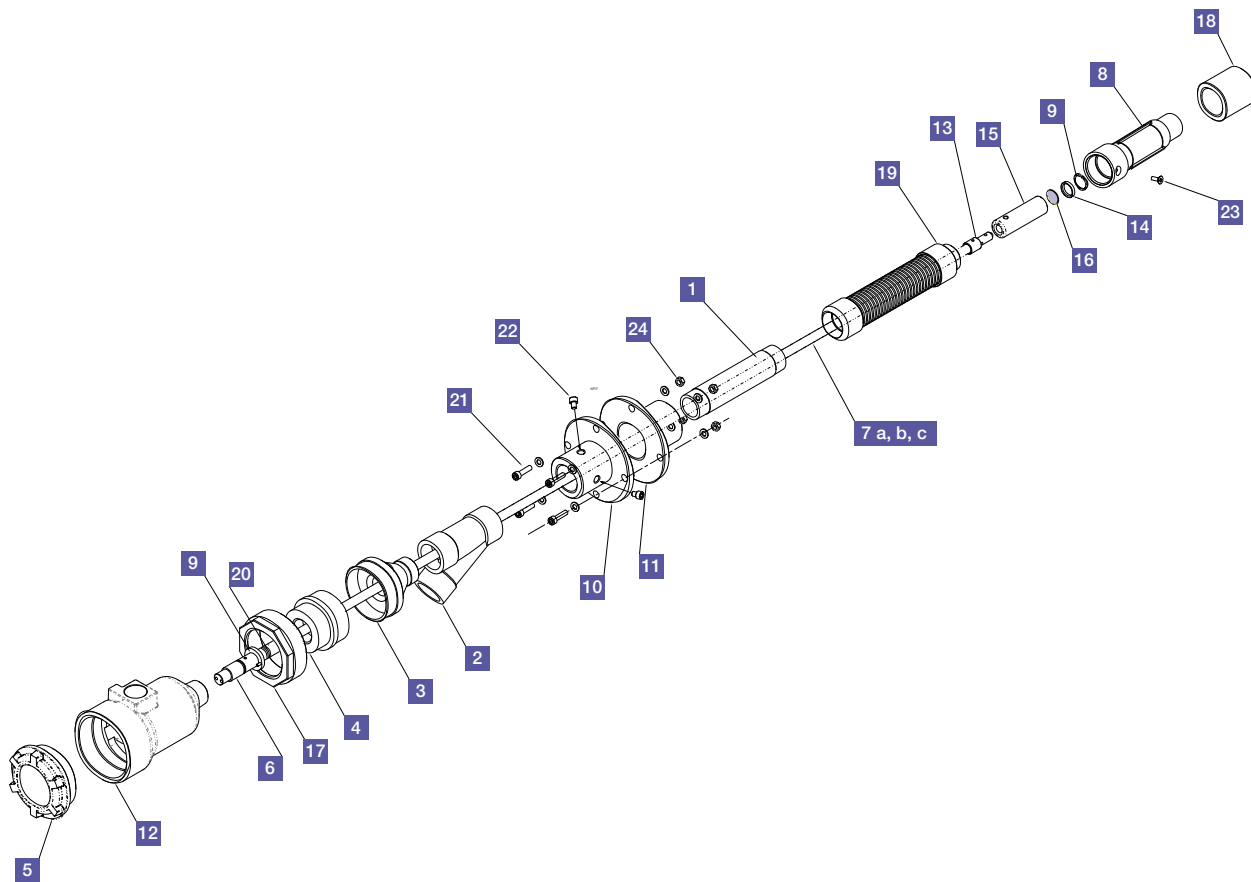
Flexible Fiber Optic installation is recommended on those application where the target burner flame is not visible from the burner mounting front plate. Flexible fiber optic is also the preferred solution to relocate the sensor unit wherever heat, dust and vibration of the burner deck are particularly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

Typical application:

- Tilting burner boilers
- Gas turbine

Fiber Optic Cable (FOC)

Flexible assembly layout and parts



Standard assembly of the SF810 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	VEL_M8X35			SCREW HEXAGON SOCKET. M8 X 35	4
22	VEL_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



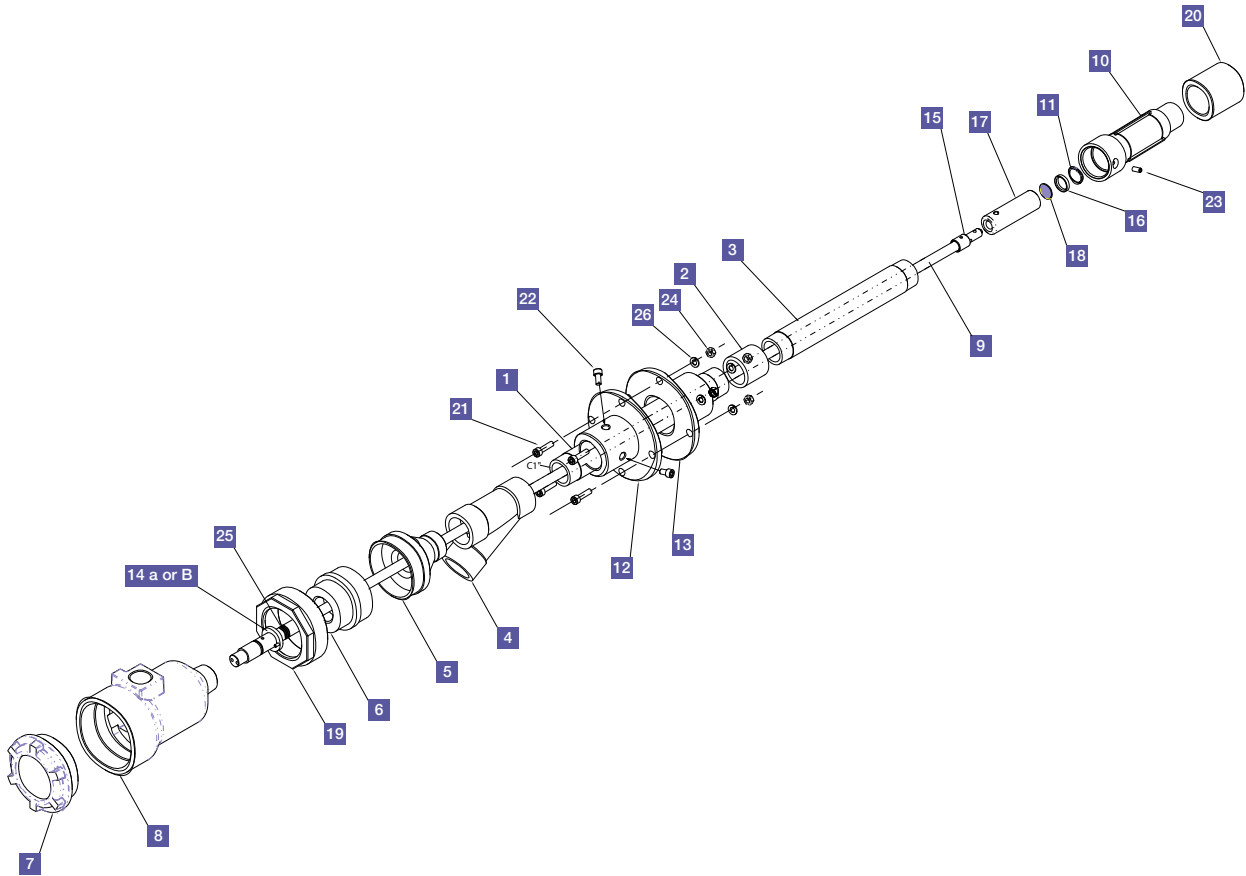
Rigid Fiber Optic installation is typically recommended on those application where the very large windbox prevent an reliable alignment with the standard Line Of Sight assembly from the burner mounting plate.

Typical application:

- Opposite wall fired boiler
- Downshot boiler

Fiber Optic Cable (FOC)

Rigid assembly layout and parts

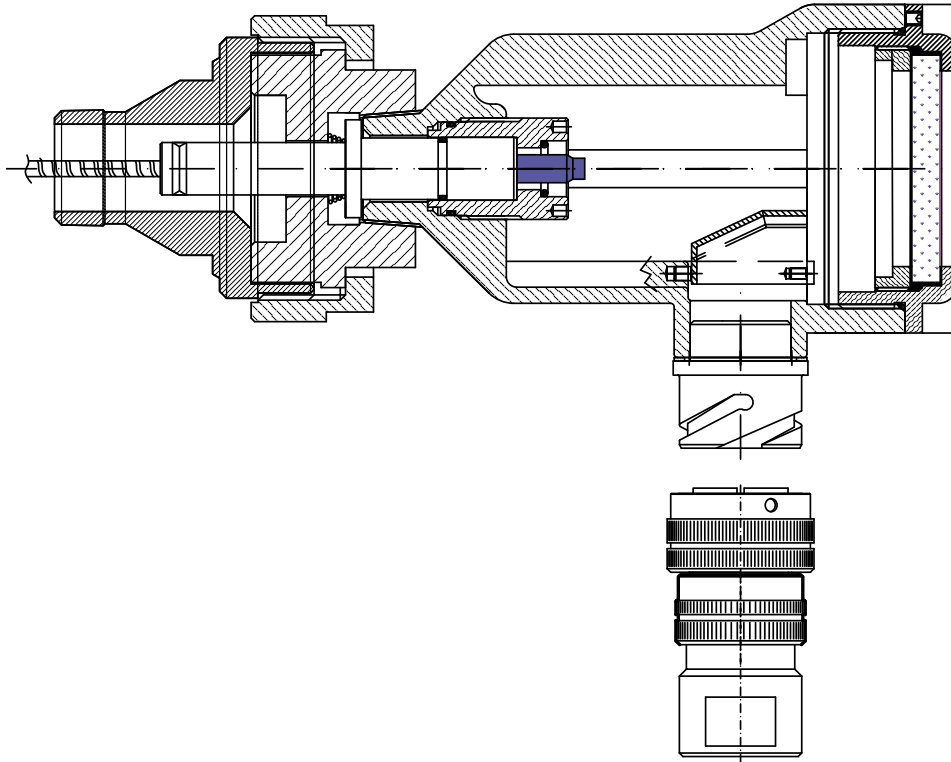


Standard assembly arrangement of the SF810 flame scanner with rigid Fiber Optic Cable

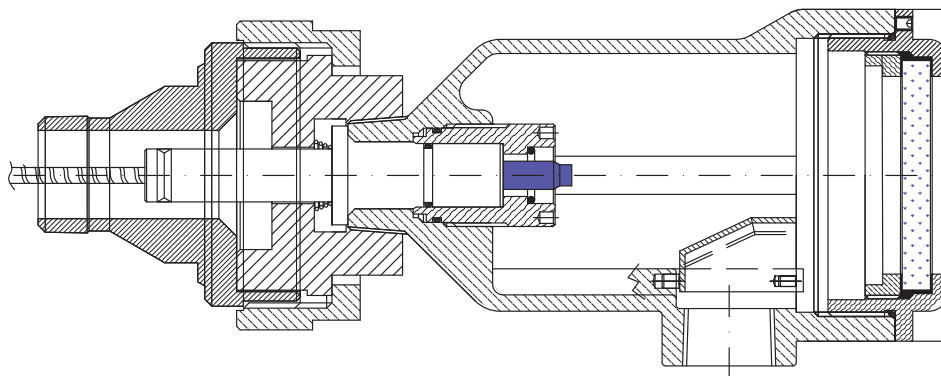
Item	Description	Part number	Material	Note	Q.ty
1	1" RIGID GUIDE PIPE	EC-DWG-G041MEC019-B	STEEL UNI EN 10240	Ref: EC-DWG-G041MEC019-B for assembly details	1
2	1" RIGID PIPE JOINT	EC-DWG-G041MEC026-A	STEEL UNI EN 10241	Ref: EC-DWG-G041MEC019-B for assembly details	1
3	1" RIGID GUIDE PIPE EXTENSION	EC-DWG-G041MEC027-A	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



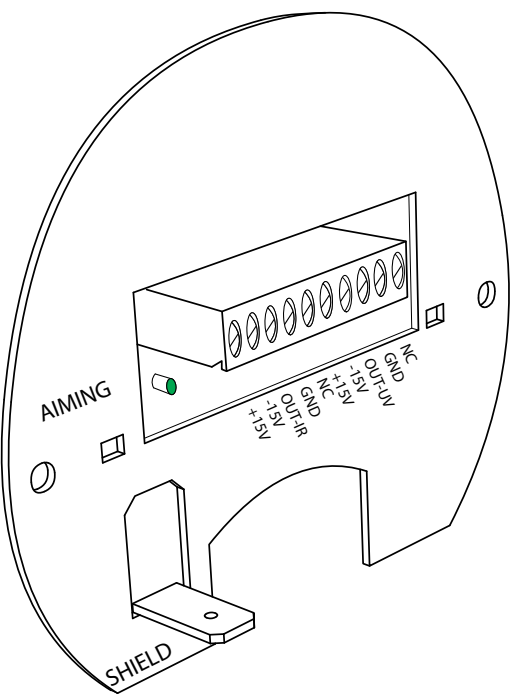
SF810 model FOC with "Quick Release" multipin connector



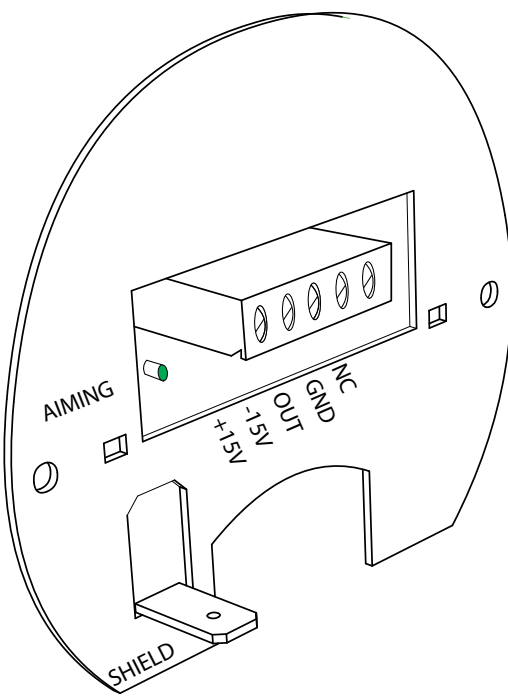
SF810 model FOC with 3/4" NPTF cable entry and terminal strip

SF810 electrical connections

Dual Sensor Faceplate



Single Sensor Faceplate



Connector / Terminal	Signal name	Description
+15 V	+15 V	Power supply positive input from FAU810/DFS Sensor 1 / Sensor 2
-15 V	-15 V	Power supply negative input from FAU810/DFS Sensor 1 / Sensor 2
GND	GND	Return of power supply, ground ref. for all internal electronics. Sensor 1 / Sensor 2
OUT	Signal	Live flame signal. (Single Sensor)
OUT-IR	Signal	IR Live flame signal (Dual Sensor)
OUT-UV	Signal	UV Live flame signal (Dual Sensor)
NC	NC	(Not used)
SHIELD	Shield	Earth connection point for the shields of the cable(s)
	AIMING	Green light blinks faster when flame Intensity signal increases

SF810 Quick Release Connector

Wiring and pin assignment

Applicable to flame scanner models “Q” and “QC ”. (Refer “SF810 Versions and Ordering Code”, [page 19](#))

Single Sensor Connector pin assignment with standard ABB cable

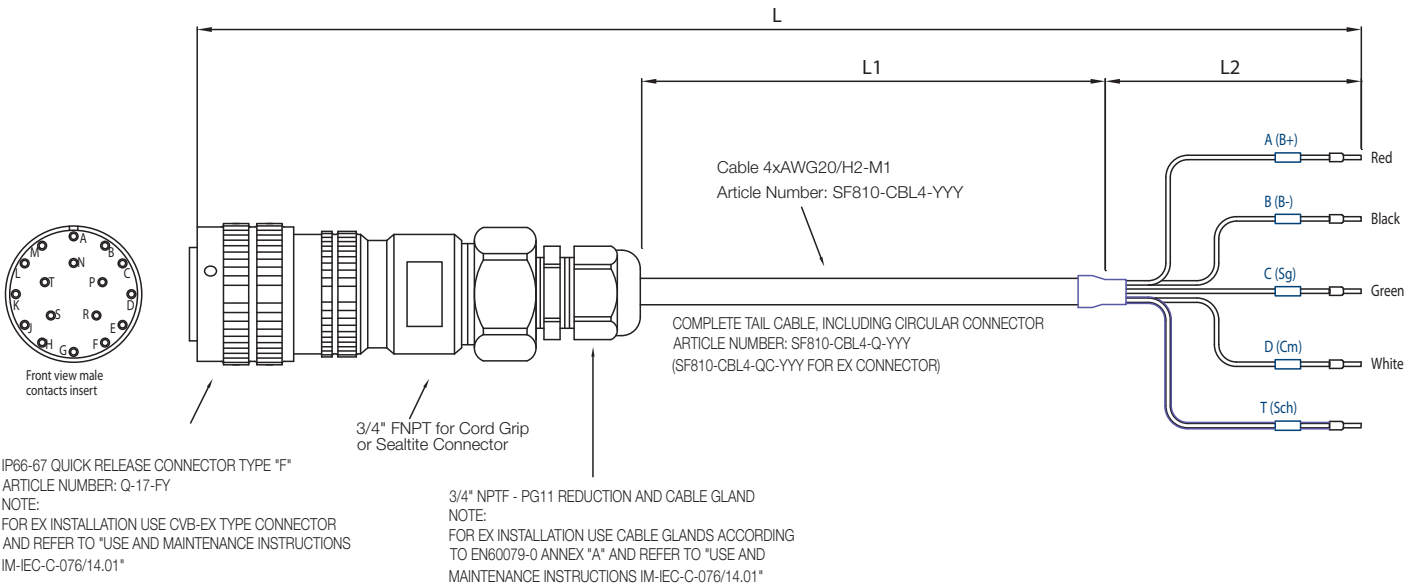


Table 1 - Single Sensor Connector pin assignment

Tail cable connector pin out (Female)	SF810 T.B. Signal name	Tail cable wire color	Pig tail fly end label	Functional description
A	+15V	Red	A (+B)	Power supply +15V from FAU810/DFS
B	-15V	Black	B (-B)	Power supply -15V from FAU810/DFS
C	SIG	Green	C (SIG)	Live flame signal
D	GND	White	D (Comm)	Power supply return Ground reference
E				Not used
F				Not used
G				Not used
H				Not used
J				Not used
K				Not used
L				Not used
M				Not used
N				Not used
P				Not used
R				Not used
S				Not used
T	Shield	Grey	T (Sh)	Cable screen grounding

SF810 Quick Release Connector

Wiring and pin assignment

Dual Sensor Connector pin assignment with standard ABB cable

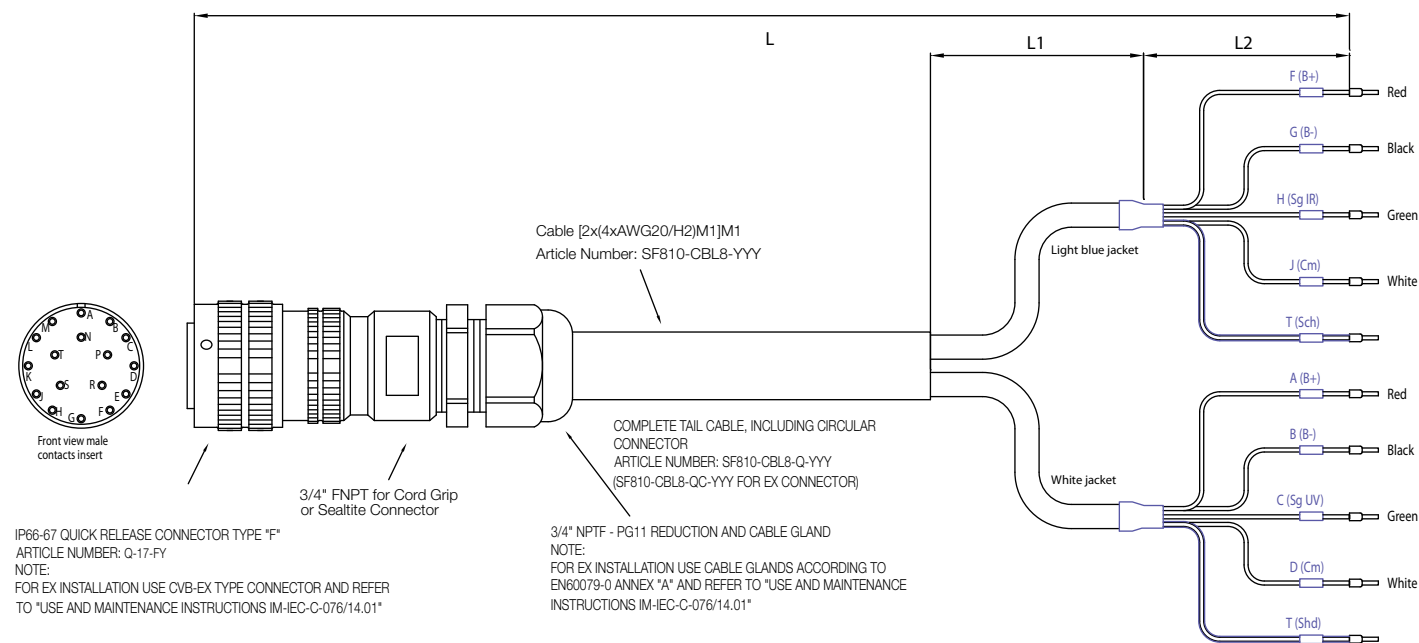
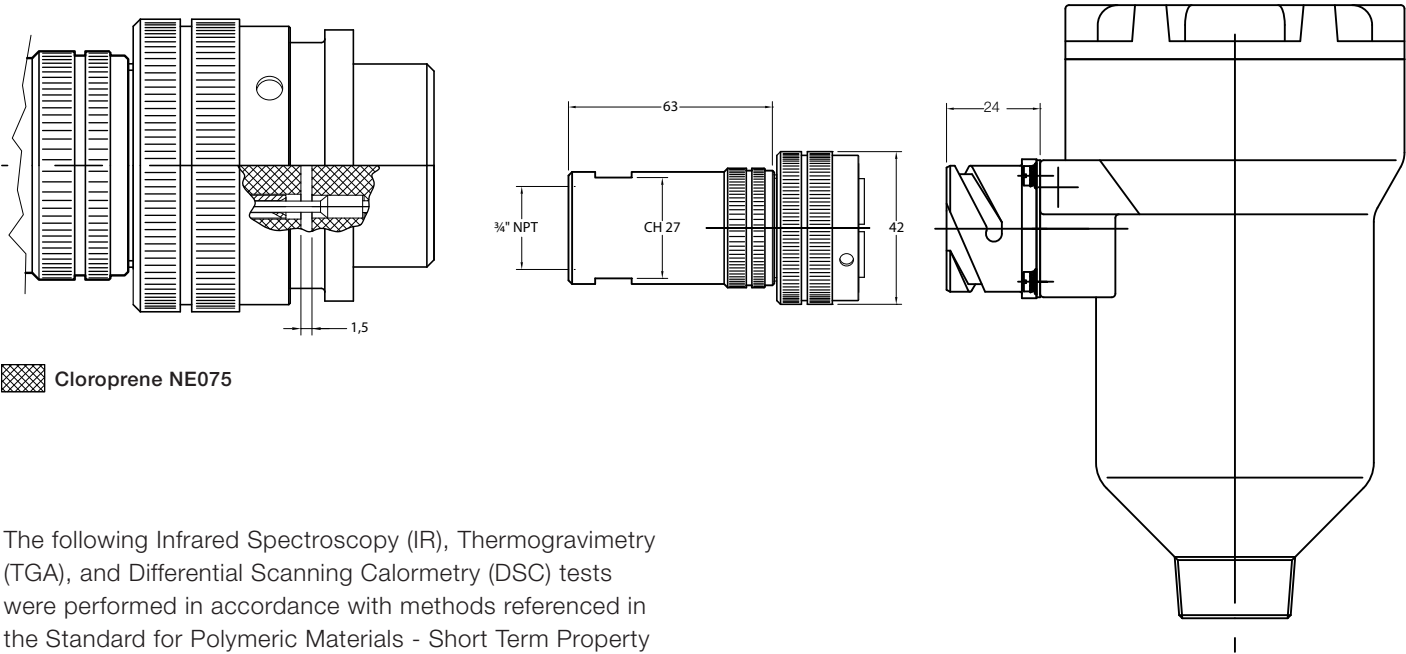


Table 2 - Dual Sensor Connector pin assignment

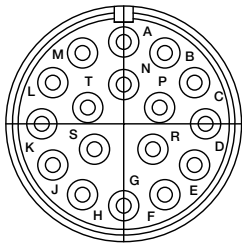
Quick connect pin	SF810 UVIR Term. Board	Signal name	Wires colour	Pig tail fly end label	Functional description
F	1	+15V	Red	F (+B)	Power supply +15V from FAU810/DFS
G	2	-15V	Black	G (-B)	Power supply -15V from FAU810/DFS
H	3	IR SIG	Green	H (SIG.IR)	Live flame signal IR
J	4	GND	White	J (Comm)	Power supply return Ground reference
E	5				Not used
A	6	+15V	Red	A (+B)	Power supply +15V from FAU810/DFS
B	7	-15V	Black	B (-B)	Power supply -15V from FAU810/DFS
C	8	UV SIG	Green	C (SIG.UV)	Live flame signal UV
D	9	GND	White	D (Comm)	Power supply return Ground reference
K	10				Not used
L					Not used
M					Not used
N					Not used
P					Not used
R					Not used
S					Not used
T		Shield	Grey	T (Sh)	Cable screen grounding

SF810 Quick Release Connector Specification



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



Front view male contacts insert

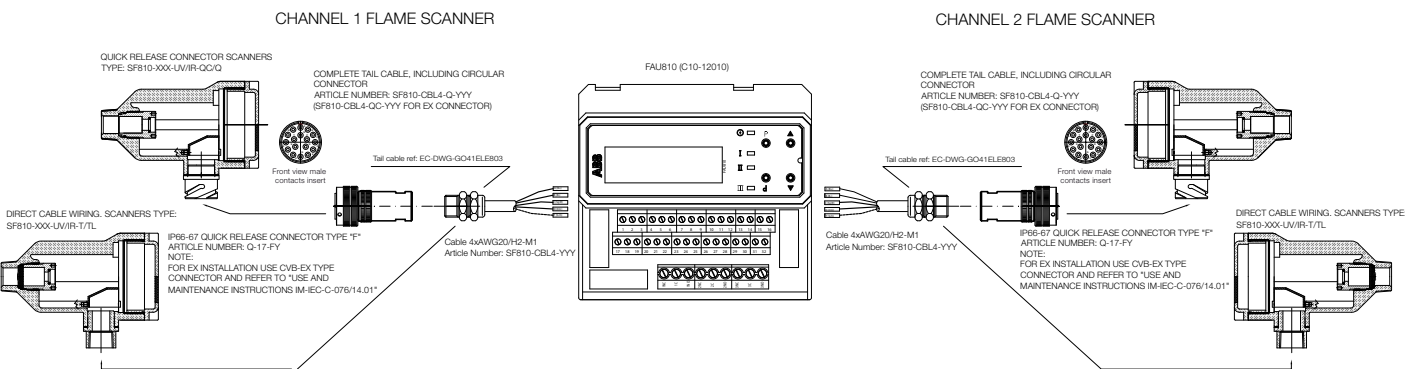
Arrangement	20-29
No. of contacts	17
Contacts size	16
Service rating	A
Rated temperature	-55° to 125°C

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

SF810 wiring diagram

Single Sensor flame scanner



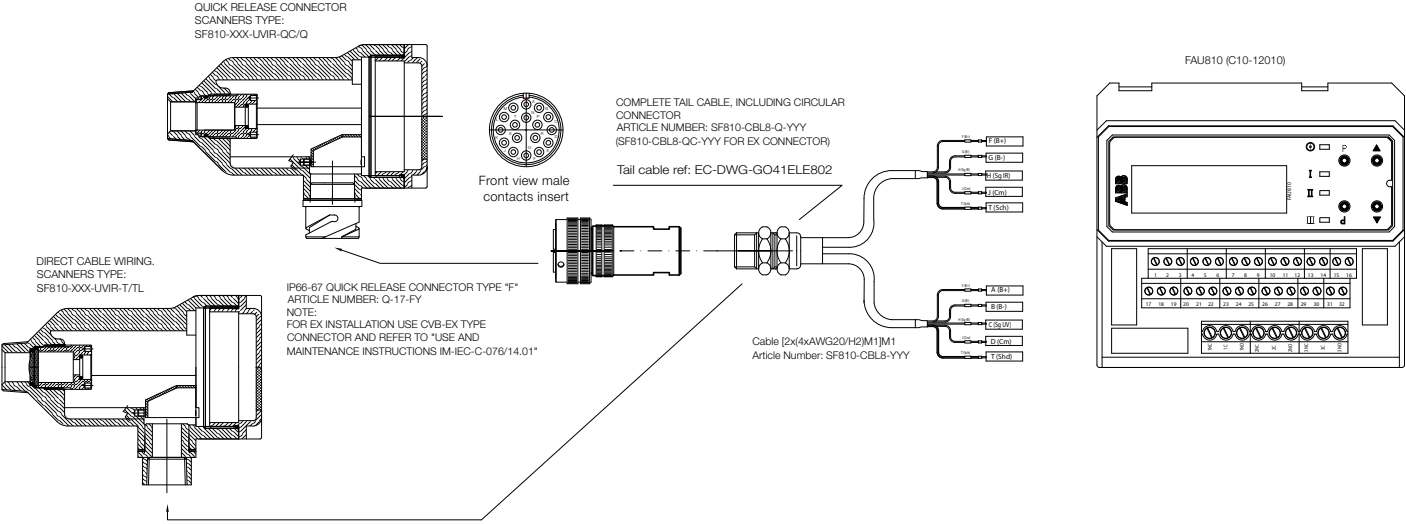
SF810 Single Sensor #1 Terminal Board	FAU810 Terminal board	Signal
+15 V	+B (18)	+15VDC
-15 V	-B (21)	-15VDC
OUT	IN (19)	Live flame signal
GND	COM (20)	GND
NC		NC (not used)
SHIELD	Ext. Ground Bar	SHIELD

SF810 Single Sensor #2 Terminal Board	FAU810 Terminal board	Signal
+15 V	+B (23)	+15VDC
-15 V	-B (26)	-15VDC
OUT	IN (24)	Live flame signal
GND	COM (25)	GND
NC		NC (not used)
SHIELD	Ext. Ground Bar	SHIELD

Wiring Note:
Flame Analysis Unit FAU810 has two (2) configurable sensor input channels. Each channel must be configured for the sensor being connected. Please refer to FAU810 User Manual for configuration instruction

SF810 wiring diagram

Dual Sensor flame scanner



SF810 UVIR Terminal Board	FAU810 Terminal board	Signal
+15V	+B (18)	+15VDC
-15V	-B (21)	-15VDC
Out_IR	IN (19)	Live flame signal IR
GND	COM (20)	GND
NC		NC (not used)
SHIELD	Ext. Ground Bar	SHIELD
+15V	+B (23)	+15VDC
-15V	-B (26)	-15VDC
Out_UV	IN (24)	Live flame signal UV
GND	COM (25)	GND
NC		NC (not used)

Wiring Note:
 Flame Analysis Unit FAU810 has two (2) configurable sensor input channels. Each channel must be configured for the sensor being connected. Please refer to FAU810 User Manual for configuration instruction

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			
SF810 - 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.
SF810 - FOC-IR							
SF810 - 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.
SF810 - FOC-VL							
SF810 - 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.
SF810- FOC-UV							
SF810 - LOS-UVIR							Stable signal and excellent target flame discrimination in the whole operating range. Recommended in combined fuel operation.
SF810 - 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

SF810

Versions and ordering codes

ABB SF810 SafeFlame Scanner is offered with several mounting and wiring options to suite customer needs. The standard version comes with removable terminals. Quick release connector and preassembled connecting cable is also available. Contact your local ABB organization for additional details.

Feature	Available models	Uvisor SF810 ordering codes
Installation type	FOC (Scanner head for Fiber Optic Cable)	SF810 - FOC - - ...
	LOS (Scanner head for Line Of Sight)	SF810 - LOS - - ...
Spectral range	IR	SF810 - - IR - ...
	UV	SF810 - - UV - ...
	VL	SF810 - - VL - ...
	IR+UV (dual sensor)	SF810 - - UVIR - ...
Cabling method, protection index, hazardous areas	Removable screw terminals IP66/IP67 - EX	SF810 - - - T
	Removable screw terminals IP66/IP67	SF810 - - - TL
	Quick-release connector IP66/IP67	SF810 - - - Q
	Quick-release connector IP66/IP67 - EX	SF810 - - - QC
Housing	Stainless steel AISI316 case	SF810 - - - TX
Notes	IP66/IP67 and EX certificates on FOC assemblies are guaranteed only with ABB fiber optic cable P/N: - EC-DWG-G041MEC020 - EC-DWG-G041MEC021 - EC-DWG-G041MEC022	

Spare Parts

Assembly type	Article number	Description
SF810-FOC all models	Lens SF810-FOC	19mm Quartz Lens for SF810(i)
SF810-FOC all models	Lens holder SF810-FOC	SF810 FOC Lens Holder with Seeger ring and retainer
SF810-IR all models	SF810_IR Card	PCB IR Sensor for SF810-IR Flame Scanner
SF810-UV all models	SF810_UV Card	PCB UV Sensor for SF810-IR Flame Scanner
SF810-UVIR all models	SF810_UVIR Card	PCB UVIR Sensor for SF810-IR Flame Scanner

Fiber Optic Cable Assembly

Feature	Available choices	Article number							
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> XX = Sensor scanner type: - IR Infrared - UV Ultraviolet - UVIR Ultraviolet and Infrared XXXX = length (in mm) See Figure "A" Fiber optic flexible assembly includes: - 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> XX = Sensor scanner type: - IR Infrared - UV Ultraviolet - UVIR Ultraviolet and Infrared XXXX = length (in mm) See Figure "B" Fiber optic rigid assembly includes: - 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 (SF810-FOC-xx-T and SF810-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> Fiber Optic Cable for SF810/SF810i sensor IR Length = base length 1500mm Addintional step 250mm to specify with the PO. Ref. Figure "C" for the ordering length	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> Fiber Optic Cable for SF810/SF810i sensor UV Length = base length 1500mm Addintional step 250mm to specify with the PO. Ref. Figure "C" for the ordering length	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> Fiber Optic Cable for SF810/SF810i sensor UVIR Length = base length 1500mm Addintional step 250mm to specify with the PO. Ref. Figure "C" for the ordering length	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> Guide pipe for SF810/SF810i Rigid Extension for all type sensors Length = base length 1500mm Ref. Figure "B" for the ordering length	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> Guide pipe for SF810/SF810i Flexible Extension for all type sensors Length = base length 1500mm Ref. Figure "A" for the ordering length	SF810	-	OGP	-	FE	-	XXXX	
SF810	-	OGP	-	FE	-	XXXX			

Fiber Optic Cable Assembly Ordering Data

Fiber Optic Assembly type: SF810-FOA-FE



Figure A

Fiber Optic Assembly type: SF810-FOA-RE

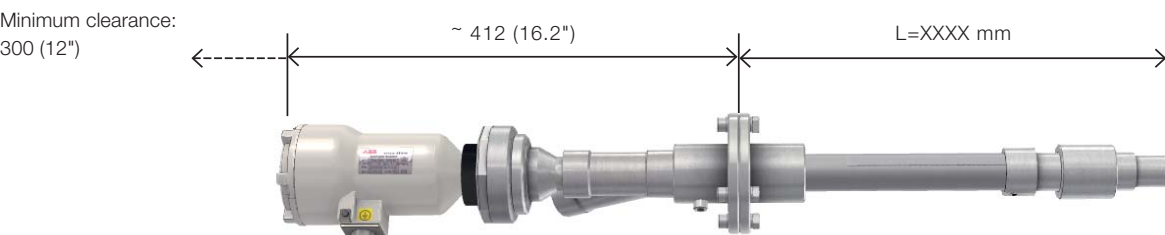


Figure B

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

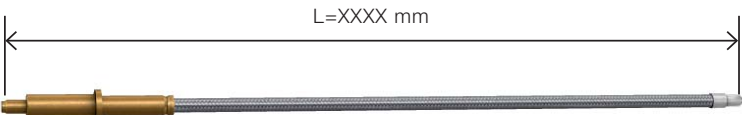


Figure C

SF810 Connecting Cables

Cable	Article number	Length "L" (meter)	Description
ABB cable for SF810 Single Sensor Cable only, no connectors	SF810-CBL4 -YYY YYY= meters		Cable type: 4x20 AWG/ST - M1 – BLU - R.5015 - H/F UV RESIST. -20°C +90°C (-4°F +194°F) OD: 6.8±0.2
ABB tail cable for SF810. Cable with pre-assembled quick-release "M" plug at one side only (IP66 / IP67)	SF810-CBL4-Q-YYY YYY= meters	L=	Cable type: 4x20 AWG/ST - M1 – BLU - R.5015 - H/F UV RESIST. -20°C +90°C (-4°F +194°F) OD: 14.0±0.5 preassembled with connector EC-DWG-GO18MEC773-B and Cable Gland
ABB tail cable for SF810 Cable with pre-assembled quick-release "M" plug at one side only. Ex. IP66 / IP67	SF810-CBL4-QCYYY YYY= meters	L=	Cable type: 4x20 AWG/ST - M1 – BLU - R.5015 - H/F UV RESIST. -20°C +90°C (-4°F +194°F) OD: 14.0±0.5 preassembled with connector CVB-EX and Cable Gland
ABB cable for SF810 Dual Sensor Cable only, no connectors	SF810-CBL8 -YYY YYY= meters	L=	Cable type: 2x [4x20 AWG/ST - M1] – BLU - R.5015 - H/F UV RESIST. -20°C +90°C (-4°F +194°F) OD: 14.0±0.5
ABB tail cable for SF810. Cable with pre-assembled quick-release "M" plug at one side only (IP66 / IP67)	SF810-CBL8-Q-YYY YYY= meters	L=	Cable type: 2x [4x20 AWG/ST - M1] – BLU - R.5015 - H/F UV RESIST. -20°C +90°C (-4°F +194°F) OD: 14.0±0.5 preassembled with connector EC-DWG-GO18MEC773-B and Cable Gland
ABB tail cable for SF810. Cable with pre-assembled quick-release "M" plug at one side only. Ex. IP66 / IP67	SF810-CBL8-QCYYY YYY= meters	L=	Cable type: 2x [4x20 AWG/ST - M1] – BLU - R.5015 - H/F UV RESIST. -20°C +90°C (-4°F +194°F) OD: 14.0±0.5 preassembled with connector CVB-EX and Cable Gland
Quick-release connector "F" type. Loose item. IP66 / IP67	Q-17-FY		Drawing ref: EC-DWG-GO18MEC773-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 Instrucion

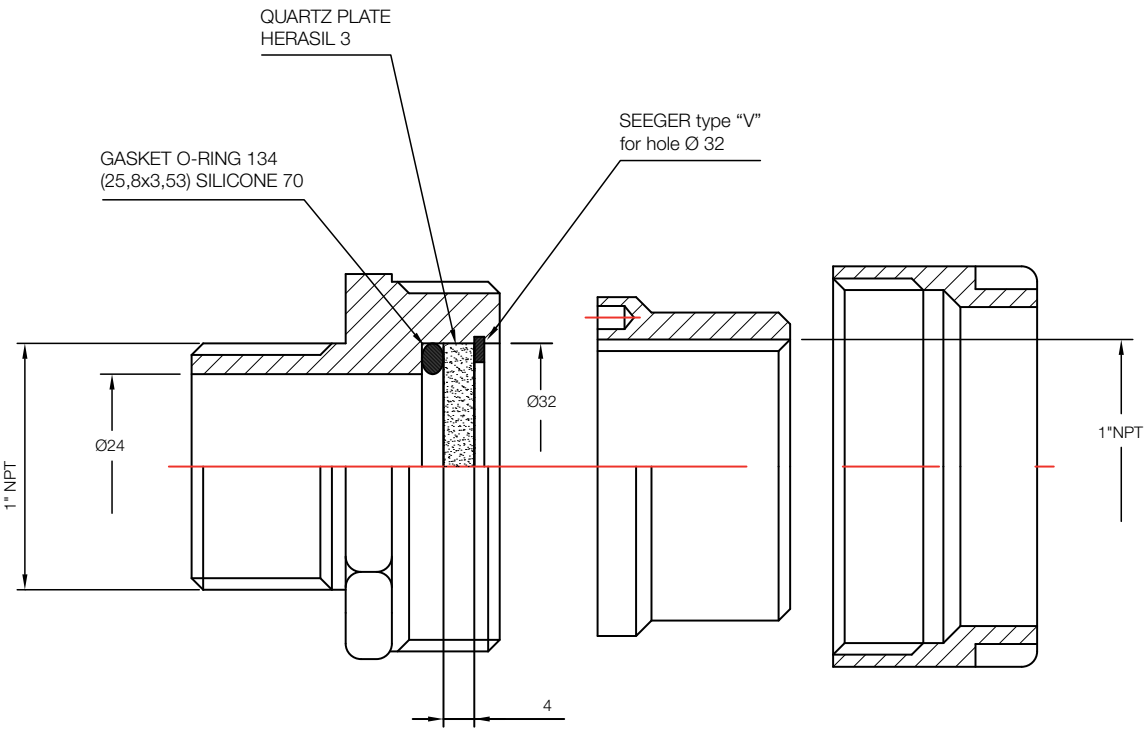
SF810 Series Fitting Accessories

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_KIT01	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

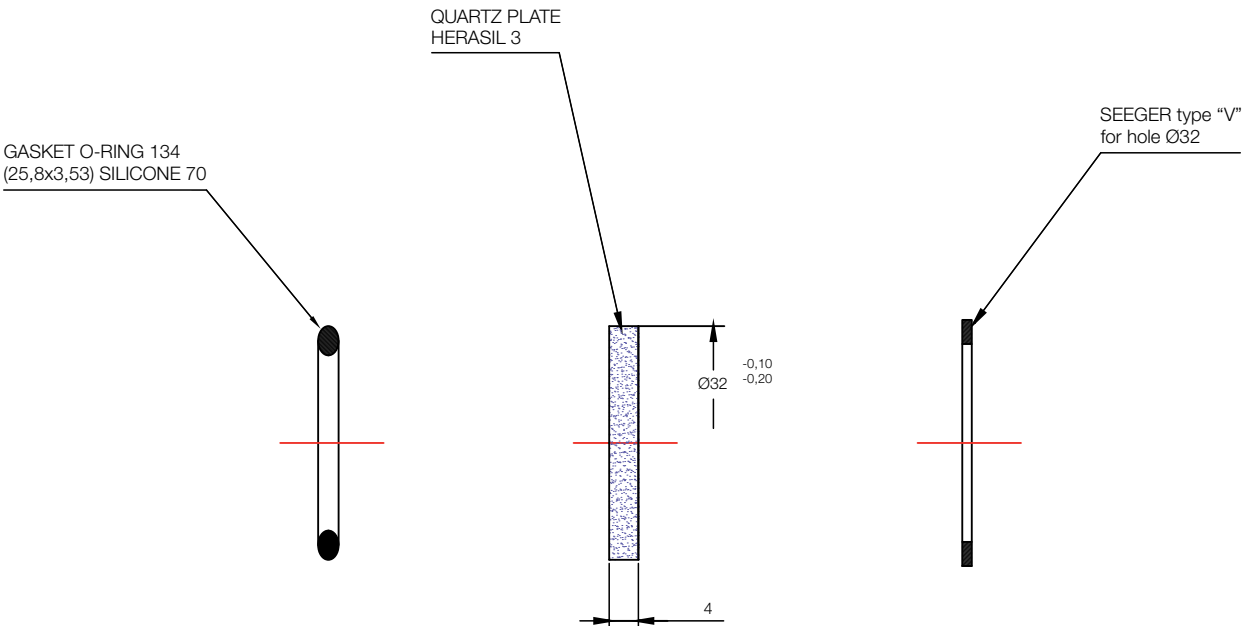
Fitting options

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

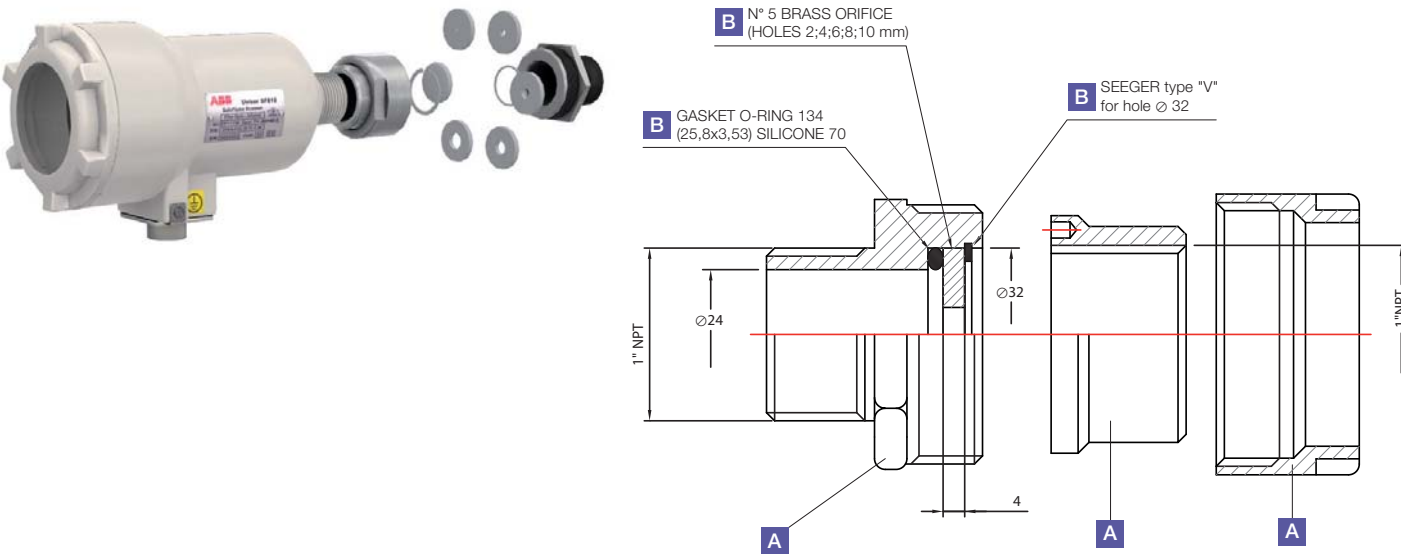


The quartz isolation plate is used to interpose an additional seal between the flame scanner and the furnace through the sight tube. It prevents the furnace pressure and heat from wearing the scanner viewing lens. Article number: TU_KIT02

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

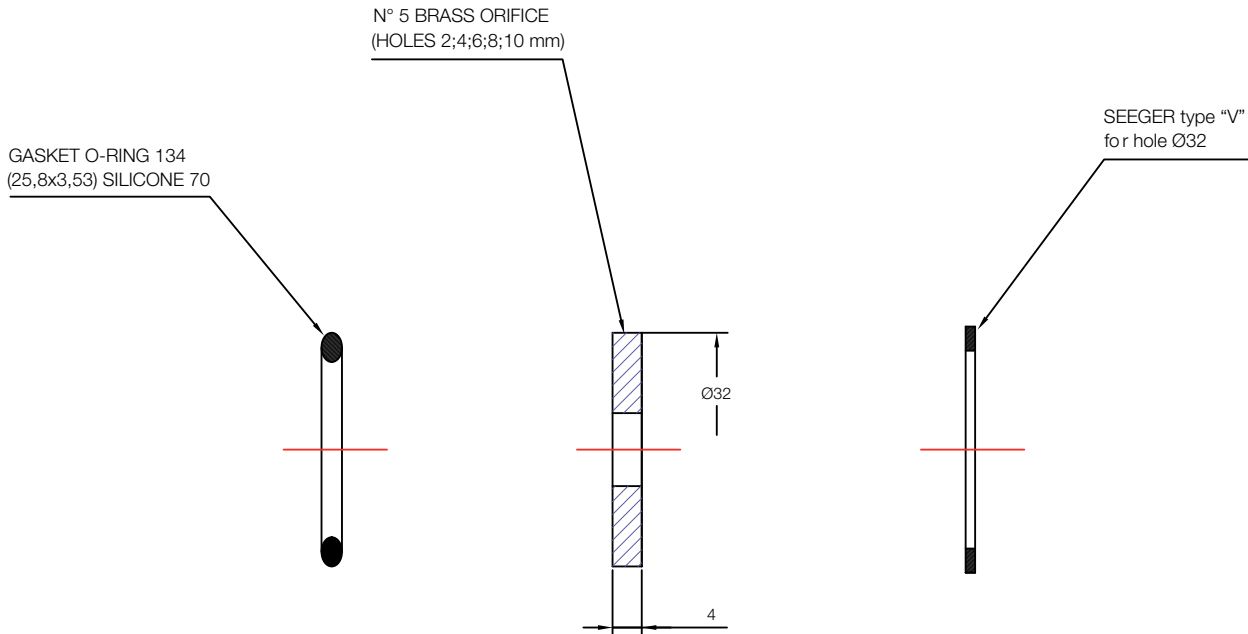


Thermal Union with orifice P/N: EC-DWG-G041MEC105



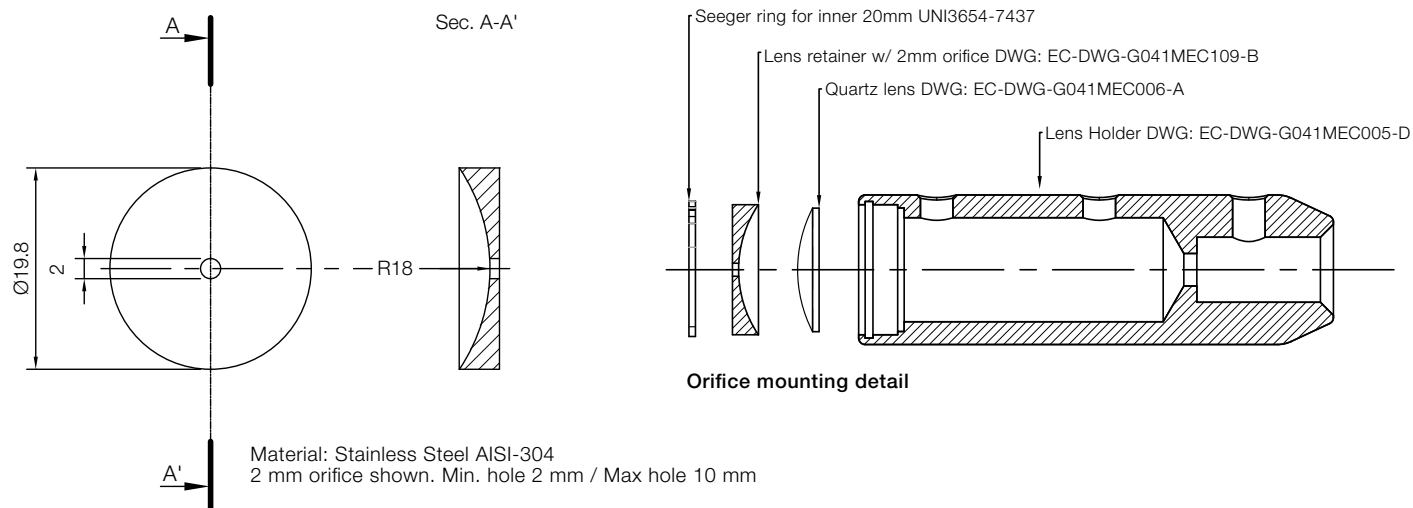
The use of orifice, available with different size, restricts the field of view (target area) and increase discrimination between target flame and adjacent, opposite or background radiation. The orifice is firmly secured in the thermal union and is prevented from falling apart. Once inst alled, assure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

Orifice Kit P/N: EC-DWG-G041MEC107



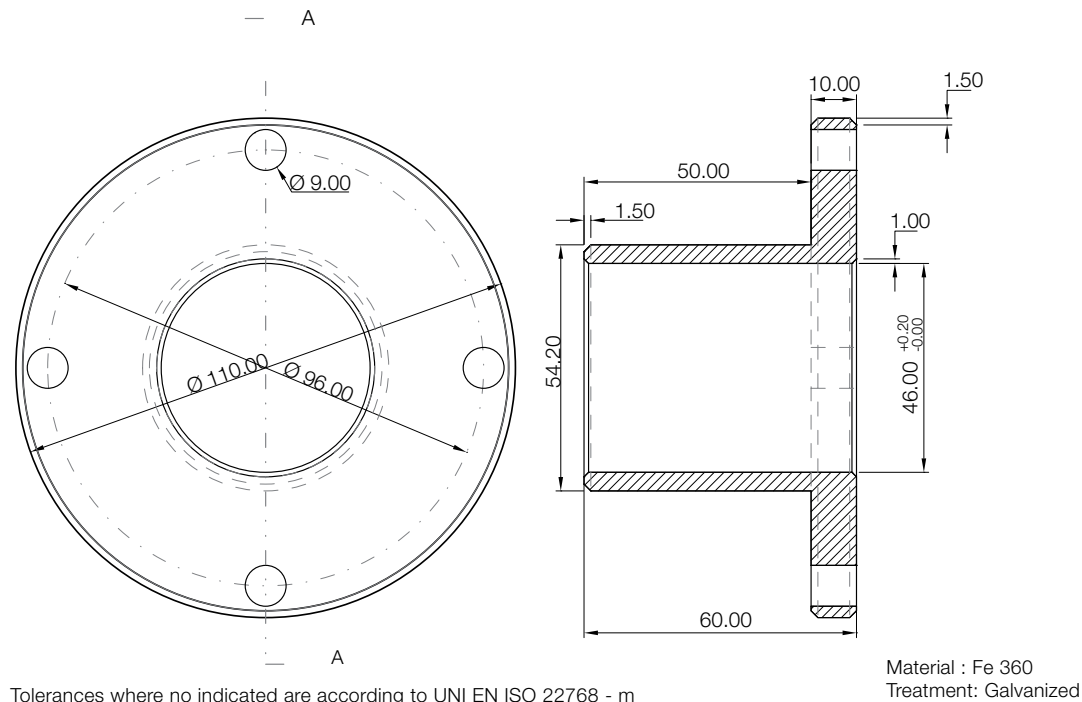
Fiber Optic Cable (FOC) Assembly Fitting options

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 prevented from falling apart. Once installed, assure the performance within the burner operation range. Article number: TU_KIT03

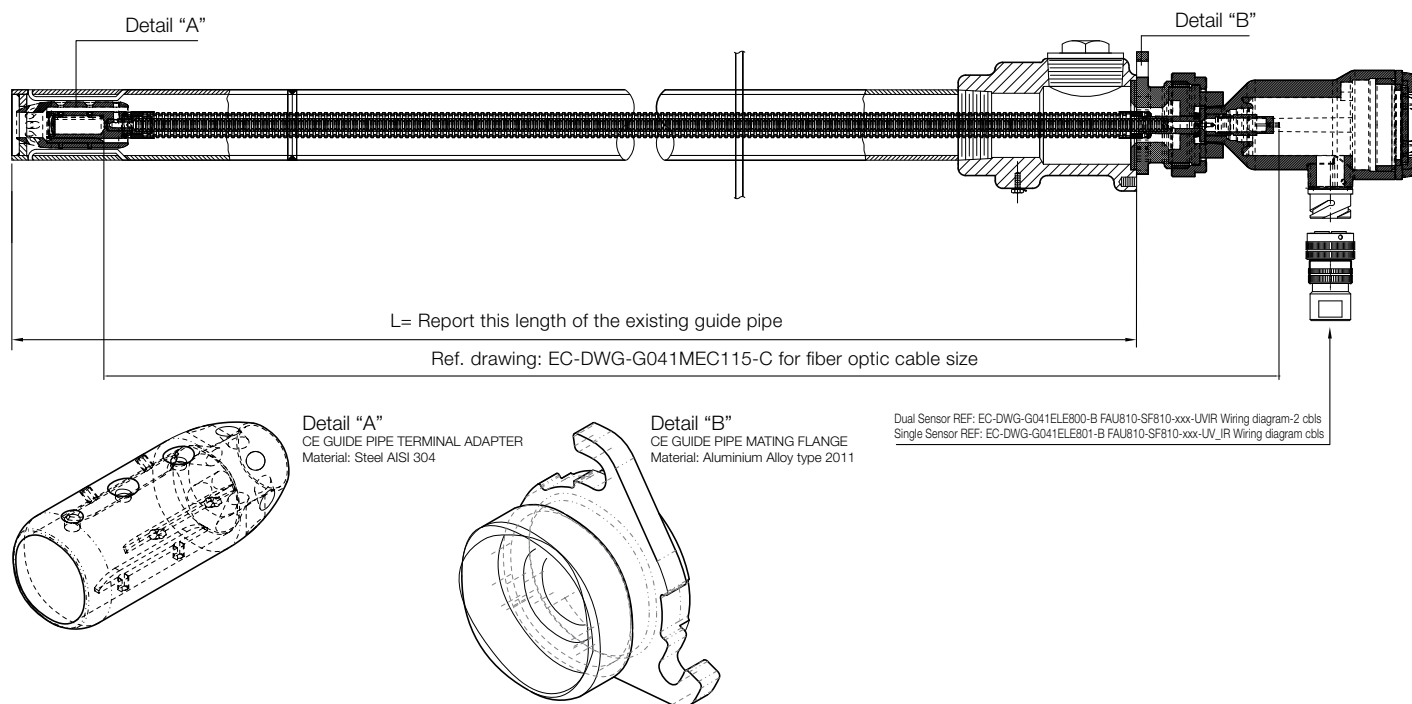
Boiler mounting counter flange for FOC assemblies P/N: EC-DWG-G041MEC014



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

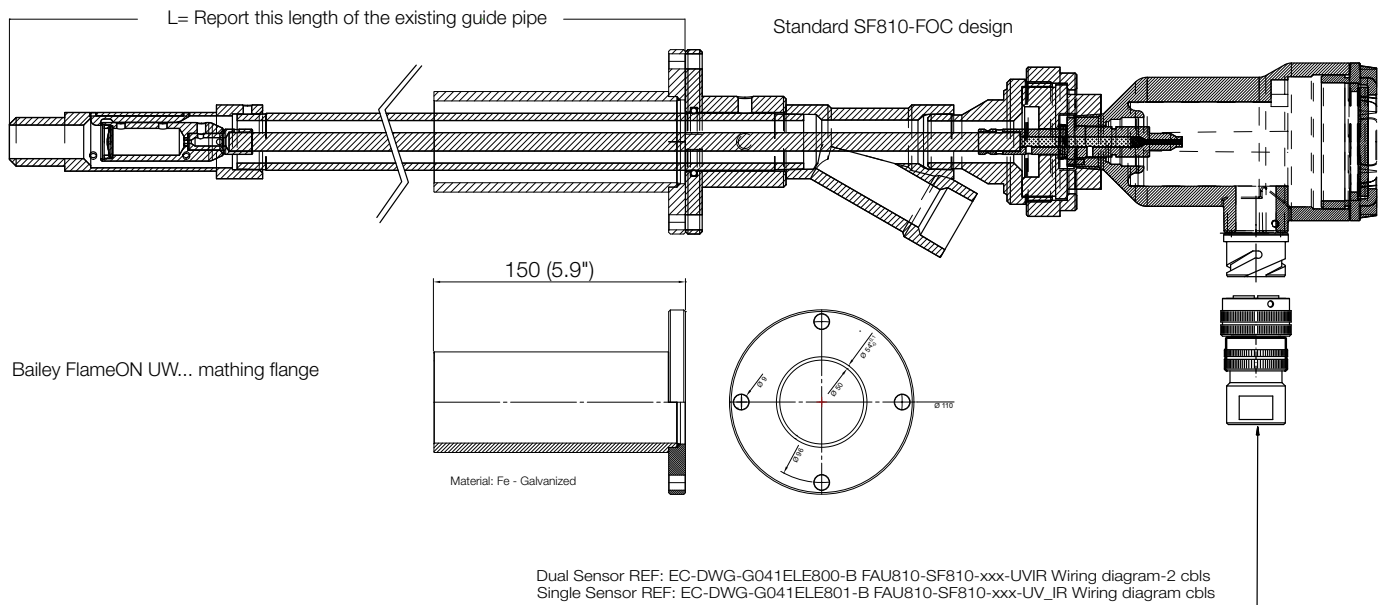


This option provides the user with a convenient solution to upgrade an existing DFS flame scanner installation, relieving from the external guide tube replacement with all that involves (Major boiler shutdown, scaffolding, cut & welding). SF810i-FOC final equipment selection is based on the specific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

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

For more details ref. 9AKK101130D3800-B1 SF810 User Manual

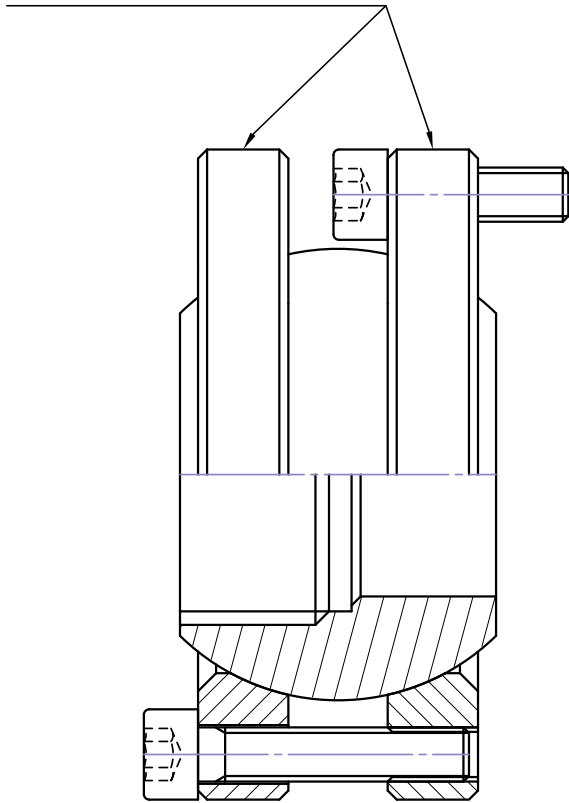
Fiber Optic Cable (FOC) Bailey FlameOn Direct Replacement



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. 9AKK101130D3800-B1 SF810 User Manual

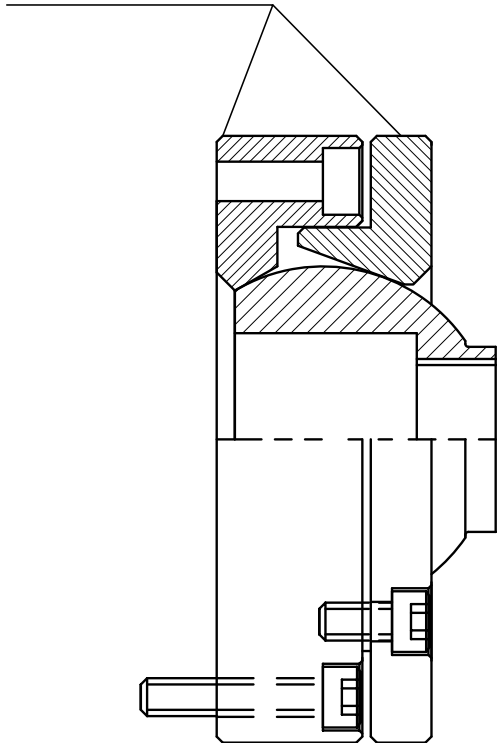
Swivel Flange assembly

(72 mm OD - 2.83")



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

(100 mm OD - 3.937")



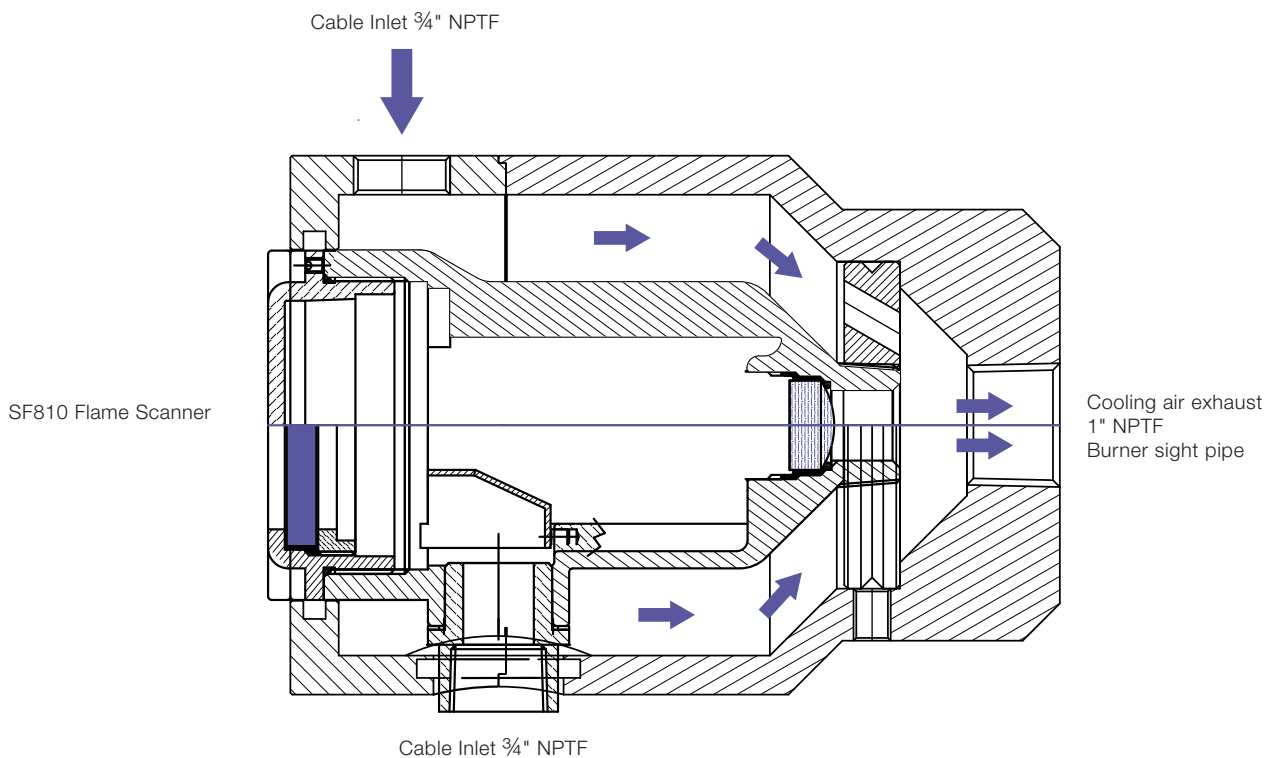
Recommended to adjust the scanner sighting angle after the scanner has been installed. Article number: SWF-1NPTM-100

Cooling air jacket

The cooling air jacket 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 105°C (221°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



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