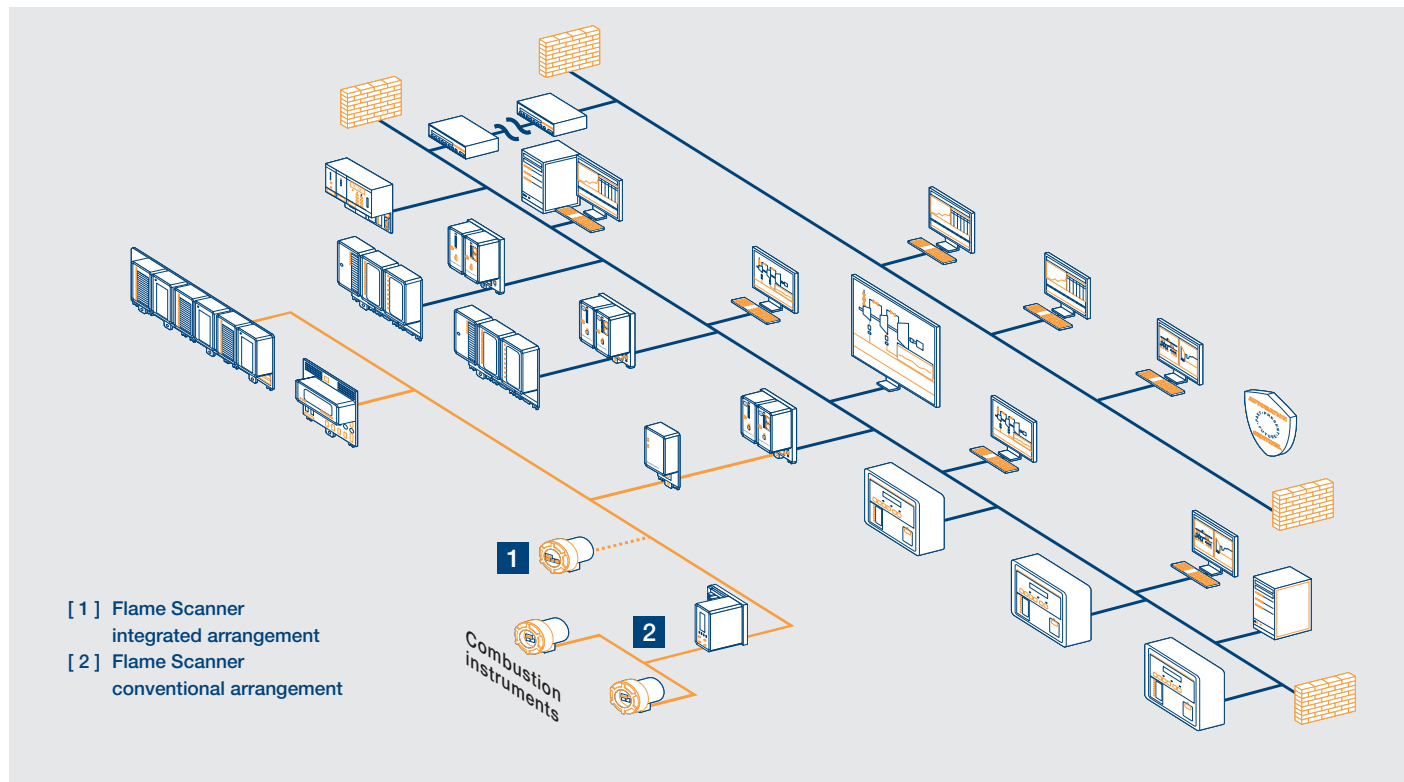




Symphony Plus Combustion instruments

Symphony Plus Combustion instruments



Symphony® Plus is the new generation of ABB's widely acclaimed Symphony family of distributed control systems – the world's most used DCS in the power generation and water industries. In all, there are more than 6,700 Symphony DCS installations in operation all over the world, more than 4,700 of which are in power and water applications. No other automation platform has such a long field record and large installed base as Symphony Plus.

For several decades, ABB has been one of the world's leading providers of combustion monitoring and safety systems, delivering cost efficient and technologically advanced solutions designed to meet the needs of both retrofit and greenfield markets. With Symphony Plus, all this experience comes together in its combustion instrumentation to take ABB's offering to a new unmatched level of functionality and performance.

The specific features built into the system's combustion instrument components are a direct reflection of ABB's diverse in-depth knowledge and experience in measurement accuracy and reliability.

Symphony Plus infrastructure

Combustion instrumentation is a key part of the Symphony Plus technology family, offering tight integration into all of the system's functional areas including: S+ Engineering, S+ Operations and S+ Control & I/O. These environments provide the necessary libraries, faceplates, symbols, function codes, interfaces and graphics necessary for the design, configuration and operation of the entire range of devices. There is no need for additional tools, interfaces or related training. In addition, the tightly integrated Symphony Plus infrastructure eliminates any need for local configuration or calibration of the individual modules.

Symphony Plus

Flame scanner Uvisor™ SF810i



Certified



Unmatched overall capability and performance

Symphony Plus flame scanners take advantage of the system's architecture, its unmatched scalability and simplicity, CPU power and communication speed. It is this high-performance infrastructure, in combination with the Uvisor™ SF810i flame scanner, which makes for the ideal flame failure protection system.

The Uvisor™ SF810i is a multi-fuel scanner designed to provide stable and reliable information of both the presence of flame and its quality on utility and industrial boiler burners. In a single rugged housing, the Uvisor™ SF810i embeds state-of-art technology:

- Solid state sensor modules, covering the whole flame radiant spectrum (UV-VL-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: redundant PROFIBUS DP-V1 links (or alternatively redundant standard Modbus), are available to provide high speed data transfer to an external monitoring and supervisory system
- Termination and configuration board, with local display and push-buttons to allow the preliminary set up and on-line aiming assistance. The integrated scanner has screw type removable terminals as standard and are available with either IP66/67 or ATEX II 2GD EX d IIC T6 quick release connectors for ease of maintenance for non-hazardous and hazardous areas respectively

The Uvisor™ SF810i flame scanner is available with accessories for the following installations:

- Line of sight (LOS) for wall fired burners
- Fiber optic cable (FOC) with outer guide pipe, cooling hose and fitting flanges for corner fired tilting burners
- Extended set-up, parameter files archiving, groups view, advanced diagnostic including raw flame data, real-time and historical trends of up to 254 scanner heads networked is possible through the PC based package Flame Explorer™ or the PROFIBUS Device Type Manager (DTM)

Applications

- Utility and industrial boilers (wall fired, corner fired, supplementary fired WHRB, down-shot and cyclone burner types)
- Process heaters
- Sulphur recovery
- Gas turbine
- Off-shore boiler and furnace installation (Stainless steel housing (AISI 316L))

Multi fuel

- Natural, coke oven, and sulphur gas
- Light and heavy fuel oil
- Orimulsion
- Pulverized coal
- Biomass

Features

Operation

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

Safety, Communication and 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
- Real time flame flicker frequency display
- Real time flame intensity display
- Real time flame quality display
- Rejects mains frequencies and artificial lighting (EN298 compliant)

Symphony Plus

Flame scanner Uvisor™ SF810i

Complete Safety Instrumented System (SIS) solution protects boiler and plant

- Symphony Plus TÜV certified safety system includes SIL 2 and SIL 3 rated field instruments including the SF810i flame scanner, controllers, I/O modules, valve positioners and actuators
- Delivered and supported in accordance with the strictest standards, including IEC 61508, EN-230, EN-298, NFPA 72 and NFPA 85

PROFIBUS communication interface

Uvisor™ SF810i modules are fully integrated through a built in, convenient and fast PROFIBUS DP interface. The main features of this interface are:

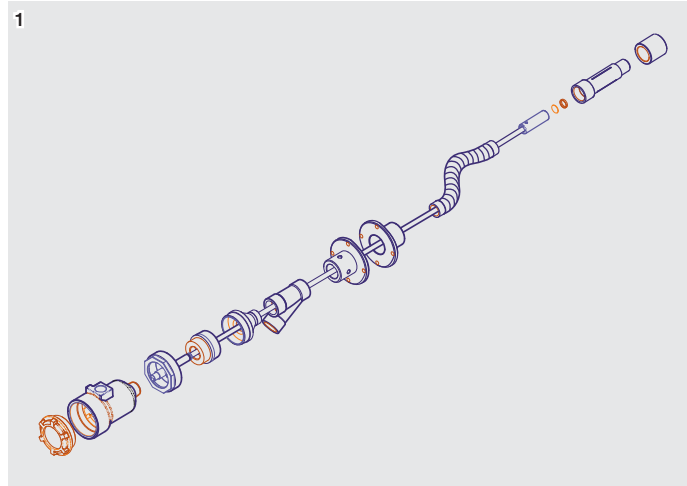
- DP/V1 communication standard
- Up to 12 MBd communication rate
- Conforms to PROFIBUS PNO slave specification
 - System (master) redundancy
 - Flying (line) redundancy
- 2 independent PROFIBUS slave hardware interfaces in each module
- DTM and GSD files available

The PROFIBUS interface is used to exchange parameters, commands and process variables with Symphony Plus controllers, eliminating the need for local adjustment of jumpers or switches.

TÜV Rheinland SIL certification

The flame failure trip functionality of the SF810i module is SIL 2 certified for functional safety and complies with EN-230 and EN-298 safety codes.

1 SF810i FOC assembly



Configuration

- Flame Explorer™ monitoring and configuration tool
 - Proprietary PC based package, running on Windows OS
- Local push-button and digital display
- Firmware download utility
- Autotuning

Flame Explorer

When the SF810i is part of a Modbus network or if an individual SF810i is to be configured or interrogated, ABB provides the Engineering Tool Flame Explorer. This tool will configure and interrogate the unit. With it the trained operator with the correct password can set the flame drop out and pull in limits and the parameters used to optimize the flame discrimination between burners. In addition the Flame Explore evaluates and records trend of the important flame parameters including intensity, flicker frequency and flame quality. Monitoring of these parameters will enable the operator to spot deterioration in a burner before it becomes critical and to plan preventive maintenance.

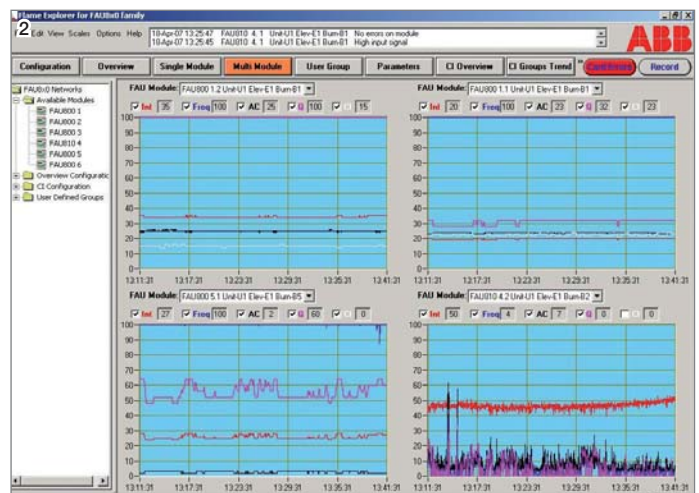
Environment

- ATEX II 2GD Ex d IIC T6 Gb Ex tb IIIC T 80°C Db IP66/67
- ICEPI 06 ATEX 03C024

Installation

- Line of sight with sighting accessories
- Fibre optic cable through the windbox

2 Flame Explorer trends



Symphony Plus

Flame analysis unit Uvisor™ FAU810



Certified



Uvisor™ Flame Analysis Unit

The Uvisor™ Flame Analysis Unit 810 (FAU810) is ABB's leading-edge flame analysis device. The Uvisor™ FAU810 is designed from the ground up for maximum flexibility, usability and reliability. It takes advantage of the latest technologies available to make flame analysis optimize operation costs, while retaining ABB's rock-solid reputation as the most reliable instruments in the industry. The Uvisor™ FAU810 is easy to install and configure, flexible to operate, and uses redundant PROFIBUS DP-V1 or redundant standard Modbus interfaces for easy and reliable data exchange and tuning with Symphony Plus process controllers. One can connect almost any type of ABB Flame sensing device to the FAU810. This makes the Uvisor™ FAU810 the standard module for all ABB Flame Scanner application and an ideal solution for retrofitting an existing installation. The unit determines if the current flame signal value is within the programmed predefined limits.

A variety of limits can be configured in the Uvisor™ FAU810 to account for almost any situation that may occur in utility or industrial boilers.

Flame detector interrogation

The Uvisor™ FAU810 interrogates and analyses the flame signals generated by the Flame Detector.

Calculates signal quality

The Uvisor™ FAU810 measures the quality of the flame signal to provide an indication of changes in the burner flame. Flame quality values act as a barometer for forecasting when a burner flame-out is likely to occur. This can help the operator to anticipate changes and take action to mitigate problems before they can develop.

Continuous fault diagnosis

The instrument automatically monitors the electronic components of the Flame Detector and Uvisor™ FAU810 unit to detect system problems or faults. If the diagnostics of Uvisor™ FAU810 detects a fault that could lead to an unsafe condition, the unit reliably indicates a flame-out condition to the boiler protection system to take the predetermined action on loss of flame.

Flame Explorer

When part of a Modbus network or if an individual FAU810 is to be configured or interrogated, ABB provides the Engineering Tool Flame Explorer™. This tool is used to configure and interrogate the Flame analysis unit. With it the trained operator with the correct password can set the flame drop out and pull in limits and the parameters used to optimize the flame discrimination between burners. In addition the Flame Explorer evaluates and records trend of the important flame parameters including intensity, flicker frequency and Flame quality. Monitoring of these parameters will enable the operator to spot deterioration in a burner before it becomes critical and to plan preventive maintenance.

Symphony Plus

Flame analysis unit Uvisor™ FAU810

Uvisor™ FAU810 specifications

Each Flame Analysis Unit consists of two independent channels. Each channel can receive and process a flame detector signal. The two Detectors may be in any combination of the following device types:

- SF810 Flame scanner heads
- All DFS Flame scanner heads
- 4 - 20 ma sensor heads
- 0 - 5-volt sensor heads
- Ionization flame rod

Each Detector is independently configurable from the Uvisor™ FAU810 pushbuttons and display, with Flame Explorer™ tool or via a PROFIBUS DTM.

The Uvisor™ FAU810 can be powered by a single or redundant 24 VDC source.

The Uvisor™ FAU810 has built-in diode auctioneering for power source isolation.

Inputs and outputs

- Two digital inputs (optically isolated) available for fuel/load parameter switching
- Two SPDT contacts for main flame relay
- One SPDT contact for alarm or marginal flame relay
- Two 4-20mA isolated analog output

Flexible installation configurations

- DIN rail mountable
- Standard 24 VDC power supplies (redundant)
- Reuse of existing cabinet installation for retrofits
- Remote mounting eliminates wiring for new installations

PROFIBUS communication interface

Uvisor™ FAU 810 modules are fully integrated through a built-in, convenient and fast PROFIBUS DP interface. The main features of this interface are:

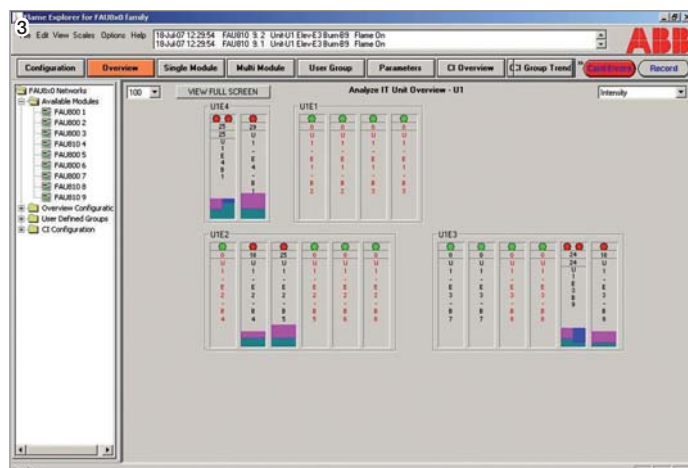
- DP/V1 communication standard
- Up to 12 MBd communication rate
- Conforms to PROFIBUS PNO slave specification
 - System (master) redundancy
 - Flying (line) redundancy
- 2 independent PROFIBUS slave hardware interfaces in each module
- DTM and GSD files available

The PROFIBUS interface is used to exchange parameters, commands and process variables with the main Symphony Plus controller eliminating the need for local adjustment of jumpers or switches.

Standalone capability

While these modules have been developed to integrate tightly within Symphony Plus, they have also been provided with the ability to operate in stand-alone mode, without the presence of a master controller.

3 Flame Explorer groups overview



Symphony Plus Flame scanner Uvisor™ SF810



Certified



Applications

- Utility and industrial boilers (wall fired, corner fired, WHRB, down-shot and cyclone burner types)
- Process heaters
- Sulphur recovery
- Gas turbine
- Off-shore installation (Stainless steel AISI 316L case)

Fittings

Burner mounting fittings are available for

- Purging air
- Thermal isolation
- Adjustable aiming
- Cabling

SF810 is available with the following connection methods:

- Direct wiring to the on-board screw terminals
- Quick release connector

Environment protection

SF810 units are supplied for the following environments:

- ATEX II 2GD Ex d IIC T6 Gb Ex tb IIIC T 80°C Db IP66/67
- IP66/67

Unmatched overall capability and performance

Symphony Plus Flame Scanners takes advantage of the system's architecture, its unmatched scalability and simplicity, CPU power and communication speed. It is this high-performance infrastructure, in combination with the Uvisor SF810 flame scanner, and the FAU810 module, that makes for the ideal flame failure protection system.

The Uvisor™ SF810 is a multi-fuel flame scanner designed to provide stable and reliable information of both flame presence or absence and the flame quality on utility and industrial boiler burners. In a single rugged housing, the Uvisor™ SF810 embeds the solid state sensor modules, covering the whole flame radiant spectrum (UV-to-IR including a dual sensor UVIR). The scanners have screw type removable terminals as standard and are available with either IP66/67 or ATEX II 2GD EX d IIC T6 quick release connectors for ease of maintenance for non-hazardous and hazardous areas respectively.

The Uvisor™ SF810 flame scanner is available with accessories for the following installations:

- Line of sight (LOS) for wall fired burner boilers
- Fiber optic cable (FOC) with outer guide pipe, cooling hose and fitting flanges for corner fired tilting burners

Sensor elements

- SF810 is available with the following three basic sensor modules covering the whole flame radiant spectrum of all fuels for boilers and industrial burners
- UV
- VL
- IR
- Dual sensor UVIR



4 Uvisor™ Fiber optic cable (FOC) assembly

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