QAL 260

PRØSCATTER™
INSIDE

Light-Scattering

Particulate

Emission Monitor

MCERTS
Sira MC160307

EN
15267-3
certified

TÜV

patent pending

- *ProScatter*® Backscatter sensor technology with superior minimum detection <1 mg/m³

- Certified to 15 mg/m³ for processes with low typical emission limits

- Manual and remote Zero and Span (reference) checks available to ensure optimal instrument performance and to comply with EN 13284 / QAL I

- Automatic Functionality Check – fully interrogates the optical system

- Purge Flow Fail Sensor option with inbuilt automatic optical shield activation

2013   2017

SYSTEM DESCRIPTION

PCME's **QAL 260** sensor series is suitable for measuring dust concentrations in Incineration, Combustion and other industrial stacks and is compliant with EN 14181. Having a 0–15 mg/m³ certification range, the **QAL 260** sensor can be used at low or high dust levels. Due to dynamic ranging the sensor is also suitable for much higher dust levels found in Power, Cement and Metals smelting processes.

Conveniently mounted on one side of the stack, with no secondary light absorber or beam dump requirement, the **QAL 260** series is non-intrusive and has no measurement components protruding into the stack, so process gases are not disturbed. As critical optical components remain outside the stack, the risk of contamination is reduced. Contamination reduction is managed by an optical shield*, which is automatically activated when the Purge air flow greatly reduces or fails. In addition, a Flue gas blocker can be fitted to ensure any flue gases do not escape when the unit is opened for auditing or maintenance purposes.

The **QAL 260** is ideal for medium to larger stacks that require high accuracy, low maintenance, flexible system configuration and compliance with International Standards. As an alternative to opacity monitors, the **QAL 260** offers a more reliable PM dust measurement as it is calibrated as a PM monitor (and not as a smoke or opacity monitor), where emissions are to be reported in mg/m³ and early indication of increased dust emissions is required at lower dust concentrations.

patent pending

PRINCIPLE OF OPERATION

TELESCOPE FIELD-OF-VIEW

SENSOR-TO-STACK CONNECTION

OUTGOING LASER BEAM
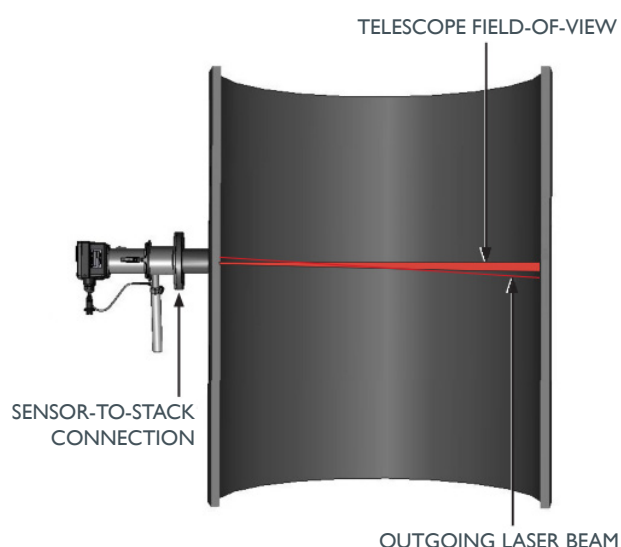
The **QAL 260** is based on PCME's class-leading *ProScatter*® Backscatter technology. Particles in the stack are illuminated by a laser and the amount of laser light scattered back from the particles is measured by a detector. Stray scattering and ambient light are eliminated by tuning the instrument's field-of-view and by use of a modulated laser source.

The instrument response is proportional to dust concentration. It is calibrated to provide a mg/m³ measurement by comparison to results of a standard reference (isokinetic) test.

The **QAL 260** sensor is able to measure dust levels of less than 1 mg/m³, and so can be used in applications where emissions are well below the sensitivity limit of traditional opacity instruments.

TYPICAL USE AND APPLICATIONS

The **QAL 260** is well-suited for use in medium to larger stacks and is suitable for low to high dust concentration measurements, regardless of dust velocity or charge. It is a reliable alternative to Opacity in power plant and combustion applications, where emissions are to be reported in mg/m³ and early indication of increases in dust emissions is required.

COMPLIANCE AND QUALITY ASSURANCE

To comply with EN 14181, the **QAL 260** is supported with optional manual reference materials (audit unit or audit filters) for convenient linearity and functionality tests that are required at the time of the QAL 2 and Annual Surveillance Test (AST) or drift and calibration Relative Accuracy Test Audit (RATA) tests.

The automatic functionality check system (patent pending) ensures that any optical variances are measured, defined and adjusted to ensure zero and span drift is kept to a minimum.


QAL 260 shown with a multi-value Manual Audit Unit and attenuator

The sensor is available as a standalone version, the compact **QAL 260c**, or the **QAL 260s**, which is combined with a PCME control unit to provide either a standard, single-channel system or a multi-channel **PRO** system for an extensible multi-sensor network (for up to 32 sensors).

Using a Multiple-Sensor System based on a ProController allows other sensors from the PCME range to be added for Mass Emissions Monitoring (including Gas Flow, Temperature and Pressure sensors), Bag-Filter Management using PCME's Baghouse Performance sensors, or as part of a CEM system, including gas analysers.
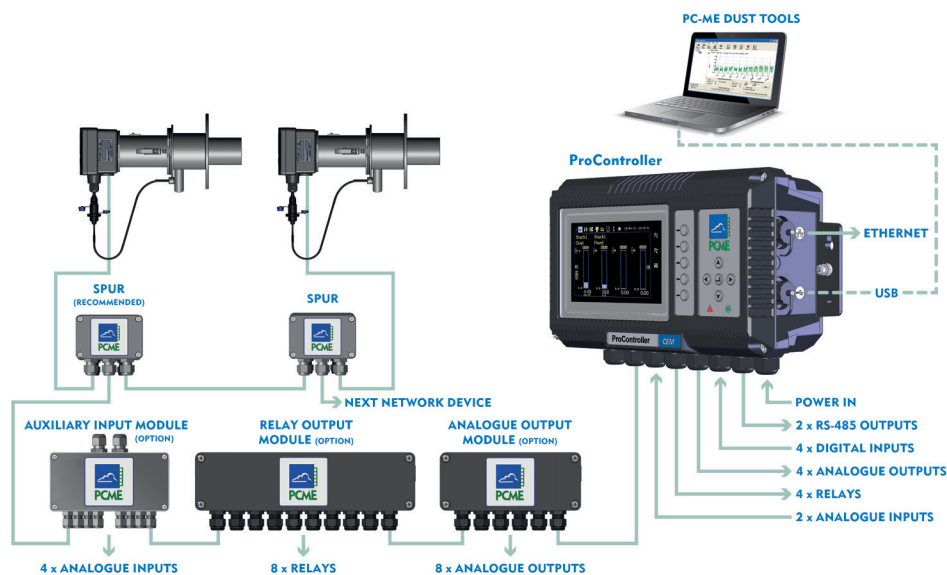
QAL 260s sensors used in a network system

PCME CONTROL UNITS

The **QAL 260s PRO** system is powered by PCME ProController, which provides central communications for analysing emissions data and trends, compliance reporting as well as data recording for plant networks with multiple sensors (up to 32) and links the sensors into data acquisition systems (DAHS/DCS). Alternatively, the **QAL 260s Standard** system is for simple, single-sensor systems and is powered by the PCME Standard Controller.

ProController

Standard Controller

QAL 260s	PROCONTROLLER	STANDARD CONTROLLER
Performance Specifications		
Number of Sensors/Channels	1–32	1
Display	High-contrast, anti-glare 7" (viewable) TFT LCD	Two-tone grey, backlit grapical LCD
Screen Resolution	800 x 480 pixels, WVGA	320 x 240 pixels
PCME Net Modules	Suitable for use with all PCME network modules	n/a
Electrical Specifications		
Power Supply Voltage	85–265 V AC (50/60 Hz)	100–240 V AC (50/60 Hz)
Standard I/O*	1x RS-485 (Modbus RTU), 1x RS-232	1x RS-485 (Modbus RTU), RS-232
	4x Relay outputs (3A @ 250 V AC/24V DC, configurable)	2x Relay outputs (2A @ 250 V, configurable)
	4x 4-20mA outputs (500 Ω)	1x 4-20mA output (isolated, 500 Ω)
	4x Digital inputs (voltage free)	2x Digital inputs (for Plant OFF indication)
	2x 4-20mA inputs	
Advanced I/O	Ethernet (100 Mb/s)	none
	USB 2.0	
Network Modules (optional)	**Auxiliary Input Module (AIM):** 4x 4-20 mA (500 Ω) inputs or 4x Digital inputs **Analog Output Module (AOM):** 8x 4-20 mA outputs (500 Ω) **Relay Output Module (ROM):** 8x Relays (1A @ 250 V)	n/a
Operating Specifications		
Protection Rating	IP66	IP65
Ambient Temperature	-20°C to 50°C	-20°C to 50°C
Mechanical Specifications		
Weight	5.7 kg	1.6 kg
Enclosure Dimensions	W 390 x H 221 x D 118 mm	W 220 x H 124 x D 80 mm

* in addition to the sensor outputs

PROCESS / APPLICATION CONDITIONS

Application Suitability	Suitable for measurement in non-condensing flue gases
Location Suitability	This equipment is for outdoor or sheltered use; safe for use in an ambient temperature of -20 to 50°C (-4°F to 122°F)
Flue Gas Temperature (at monitoring point)	-20°C to 250°C (-4°F to 482°F) option: up to 400°C (752°F)
Stack Pressure	±20 mbarg
Stack Diameter (plus stack connector)*	>1.5 m (>5 ft.)
Flue Gas Composition	Non-condensing
Hazardous Zone Classification	Zone 2
Stack Connections	• 3" 150 lb ANSI flange • DN80 PN10 / PN16 flanges • JIS 100-5k, -10k flanges

*application specific

MEASUREMENT INFORMATION

Measurement Type	Light scattering
Resolution	0.1 mg
Response Time	2 seconds
Certification Range	0–15 mg/m³
Dust Levels	<1 to 500 mg/m³

PURGE OPTIONS

		QAL 260c	QAL 260s
Medium Blower	Purge Blower	option	option

Warning!
Class 3R laser product: AVOID EYE EXPOSURE!

SENSOR OPTIONS

Sensor Variants	**QAL 260c** – compact standalone **QAL 260s** – with a Standard Controller or a ProController
Sensor Material	316 Stainless Steel
Sensor Dimensions	L 454 x H 217 x D 204 mm, incl. flange (18 x 8.5 x 8 in.)
Zero/Span Sensor Checks	Manual and remote initiation of inbuilt check mechanism
Protection Rating	IP65
Power Supply Voltage	100–240V AC or 24V DC (via control unit, PSR or from local source)
I/O	1x RS-485 Modbus, 2x Relay outputs 1x 4-20 mA output, 1x Digital input
Manual Audit Capability	Single, compact unit or manual unit with 5 attenuators
Air Purge Flow Sensor	Option, standard for high-temperature sensors
Filter Display Module (FDM)	Remote display unit (option)

NETWORK MODULES (available only with the QAL 260s)

		QAL 260s Standard or PRO network systems
AOM	Analogue Output Module, 8x 4-20 mA	Option
ROM	Relay Output Module, 8x Relays	Option
AIM	Auxiliary Input Module, 4x 4-20 mA or 4x digital inputs	Option
Network Spur	For 'spur-linked' sensor networks	Option
Interconnecting Cable	From sensor to PCME control unit	10 m supplied as standard, max. length 500 m

PC-ME DUST TOOLS SOFTWARE

PC-ME DUST TOOLS is a powerful and customisable software suite for downloading, displaying, analysing and reporting data from PCME control units and sensors to PCs, enabling ease of access to emissions data from plant-wide sources.

QAL 260c	
Device Set	Configuration of settings in standalone sensor devices with integrated user setup and display
Online	Access to real-time data from both PCME control units and standalone integrated sensor systems
Predict	Analysis tool for the location of failing and faulty bagfilter media before gross filter failure occurs
QAL 260s	
Predict View	Full Predict module functionality for real-time and historical logged data
System Set	Full configuration of advanced systems and convenient access to control unit settings for multi-channel networked systems
Data Downloader	Automatic data transfer at configurable, timed intervals
AutoDownload	Automated downloading between PCME control units and PCs
Data Viewer	Instantaneous and long-term trend analysis of emissions data

Note: for detailed information relating to product options please consult the relevant Order Codes Guide, available on request from PCME.

THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2013

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ISO 14001 REGISTERED Environmental Assurance UKAS QUALITY MANAGEMENT

ISO 9001 REGISTERED Quality Assurance UKAS QUALITY MANAGEMENT

PCME has a continuous development programme aimed at further improving and developing its products. All specifications are, therefore, subject to change. © PCME Limited 2017

DISTRIBUTOR

PCME Ltd
Clearview Building
60 Edison Road
St. Ives Cambs UK
PE27 3GH

Tel: +44 (0)1480 468 200
Fax: +44 (0)1480 463 400
Email: contact@pcme.com

www.pcme.com

Part of the Environnement S.A Group