

advanced
flue gas
sampling system



LAND

Combustion & Environmental Monitoring

An **AMETEK**® Company

ChillerProbe™

advanced flue gas sampling system



The ChillerProbe™ combines a high performance heated filter unit, with an advanced sample cooler to clean and dry the flue gas right at the sampling point. The main benefit being that only dry sample gas is transported to the analyzer.

In addition, the probe is fitted with a heated blow-back system which purges the pre-filter and probe tube with hot compressed air at pre-determined intervals. This action ensures that the sampling system is kept clear, even with wet, dusty process conditions.

The probe is fitted with an internal digital data bus link, which enables remote setup, configuration and output of key operating parameters.

Benefits

- Highest sample integrity is maintained for greater accuracy
- Heated sample lines not required in most applications
- Simple, low cost installation - single flange mounting
- Probe remains clean and particulate free at all times
- Simple maintenance - easily accessible with unique enclosure design

Features

- Large area heated ceramic filter
- 2-stage sample cooler and dryer system
- Heated blow-back to maintain clean probe and filter
- Wide range of probe tubes and pre-filter options
- Easily removable heated filter and probe tube
- Remote digital control from analyzer

**ChillerProbe™ -
an effective and efficient
sampling method for
even the most
demanding applications**



*Typical
ChillerProbe™
installation*

*Split diagonal box for easy
access*

Designed for all industrial environments

- Suitable for flue gas temperatures up to 1700 °C (3100 °F)
- Stainless steel enclosure sealed to IP65 / NEMA 4X
- Range of pre-filters and heated filters suitable for high dust burdens
- Continuous sample and heated filter temperature control
- Continuous condensate monitoring and removal
- Simple, single flange mounting

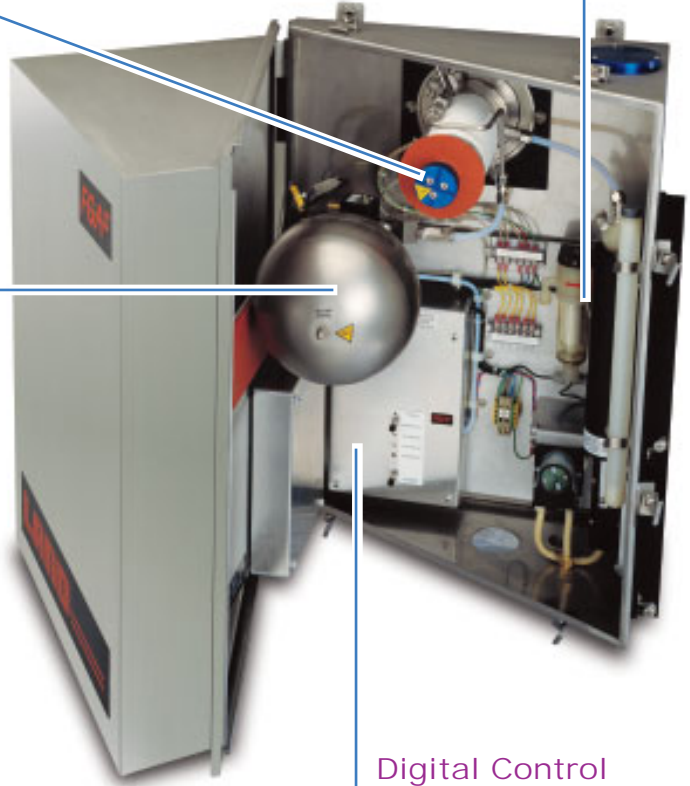
Heated Filter Unit

The filter removes dust particles from the flue gas before it enters the cooler unit. The unique, removable design allows rapid maintenance. The probe pipe and filter unit can be quickly withdrawn, leaving the housing and enclosure in position.



Cooler Unit

The probe uses an integral 2 stage, thermoelectric cooler, for continuous water vapour removal. The sample gas is cooled very rapidly, to prevent any absorption of the soluble gases. All moisture is continuously removed and pumped away. A moisture sensor continuously monitors the cooler function.

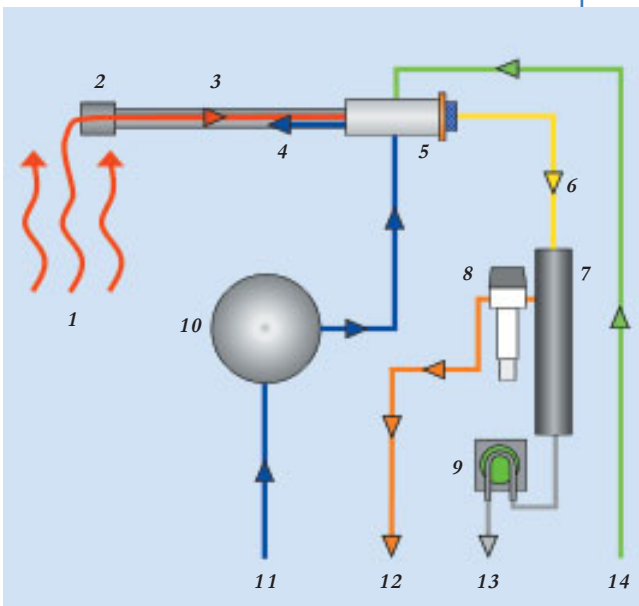


Blow-back Unit

The probe uses an advanced hot air blow-back to prevent blockage of the sample system. Heated, high pressure air is blown at intervals through the filter and down the probe tube, purging all residual particles back into the stack. Blow-back can be triggered either manually, or automatically at pre-set time intervals.

Probe Operation

The sample gas passes through the particle filters and is then rapidly cooled. All condensate is removed. The cool, clean, dry gas is then transported to the analyzer.



Digital Control

The probe can be configured and controlled from the analyzer, using the integral digital bus system.

Set-up and control in addition to diagnostic information is accessible through the analyzer user interface.

Alternatively, the probe can be configured to operate automatically. A manual blow-back control and alarm contact outputs are provided.

Key

- 1 Flue gas ———
- 2 Probe pre-filter (optional)
- 3 Probe tube
- 4 Hot blow-back air flow
- 5 Heated filter unit
- 6 Hot, filtered sample gas ———
- 7 2-stage sample cooler
- 8 Moisture sensor
- 9 Peristaltic pump
- 10 Heated blow-back accumulator
- 11 Compressed air ———
- 12 Dry, clean sample gas to analyzer ———
- 13 Condensate drain ———
- 14 Calibration gas input ———

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Specifications

Sample Conditioning	
Particle filter:	Heated unit with replaceable element 180 °C / 356 °F suitable for most applications 280 °C / 536 °F for applications where ammonia is present in the flue gas 1.0µm ceramic
Filter element:	
Sample cooler:	2-stage cooler system (incorporating Peltier unit) with automatic condensate removal
Blow-back	
Method:	Heated, filtered, compressed air
Trigger:	Internal timer; External trigger (via digital link); Manual (push button); +24 V external drive
Temperature:	150 °C / 300 °F
Timer interval:	15 minutes to 24 hours user selectable
Duration:	3 secs.
Control System	
Communications:	Remote control via RS 485 digital link
Automatic controls:	Filter temperature; Cooler temperature; Condensate removal; Blow-back timing; Blow-back air temperature
Manual controls:	Blow-back trigger
Status LEDs:	Power; Blow-back; System OK; Communications
Status outputs (via digital link):	Filter temperature; Blow-back air temperature; Blow-back pressure; Cooler temperature; Enclosure temperature; Condensate pumps active; Sample gas temperature (optional)
Alarms (indicated at analyzer):	Filter temperature (low/high) Blow-back accumulator temperature (low/high) Cooler temperature (low/high) Blow-back accumulator low pressure; Moisture slip Pump fault
Relay outputs:	System OK; Blow-back in progress; Filter cold; Cooler fault
Additional output:	Power for anti-freeze condensate sample line
Environmental	
Operating temperature:	-25 to +55 °C / -13 to +131 °F (option to -40 °C / -40 °F)
Enclosure:	Stainless steel enclosure, sealed to IP 65 / NEMA 4X
Compliance	
Electrical safety:	Conforms to EN-61010-2
EMC:	Conforms to EN-61326 (Class A)
Power	
Power supply:	110 or 230 V a.c. ±10%, 50 or 60 Hz
Power consumption:	900 W
Air Requirements for cooling	Dependent upon ambient temperature and process conditions
Dimensions (H x W x D):	695 x 514 x 406 mm / 27½ x 20¼ x 14 inches
Weight:	56 kg / 124 lb
Mounting:	Single flange - 3" ANSI, 150 lb type
Flange temperature:	up to 180 °C / 356 °F without adaptor up to 500 °C / 932 °F with adaptor
Optional flange adaptors	2", 3", or 4" ANSI 150 lb; DN65 PN6
Probe Pipes and Materials	
316 stainless steel:	up to 600 °C / 1112 °F
Hastelloy C-276:	up to 900 °C / 1652 °F
Hastelloy X:	up to 1200 °C / 2200 °F
Mullite:	up to 1700 °C / 3100 °F
Lengths*:	0.5 m / 1.6 ft; 1.0 m / 3.3 ft; 1.5 m / 5 ft; 2.0 m / 6.6 ft
Probe pre-filter#:	2.0µm Sintered stainless steel (Temp. < 400 °C / 750 °F) 2.0µm Hastelloy (Temp. up to 800 °C / 1470 °F)
* Mullite probes only available in 0.5m and 1.0m lengths #available with all probe types except Mullite	
Options	
Sample gas cooler temp. sensor:	Type K thermocouple
Air blower for instrument cooling:	Low capacity or high capacity blower units

Continuous product development may make it necessary to change these details without notice

LAND has a comprehensive range of Combustion & Environmental Monitoring Instrumentation.



Approval applies to products designed and manufactured in the UK

Approval applies in the USA

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