

# ES20 Compact Sampling System

## Stainless Steel Sampling System



The ES20 Compact Sampling System is designed to reliably and accurately measure dew point or moisture content in a wide variety of industrial gas applications up to 20 barg. This sampling system is an economical and high quality solution with a short lead time.



### Highlights

- Process connection via 6mm or 1/4" tube fittings
- Dew point, moisture content, flow, contamination and pressure control
- Sample inlet pressure up to 20 barg / 290 psig
- Modular design
- Stainless steel tubing and fittings
- Flexible filtration options
- High quality components
- Designed for challenging process environments
- Compatible with various transmitters or hygrometers

### Applications

- Compressed air dryers
- Pneumatics
- Plastic moulding
- Instrument air
- Hydrogen coolants
- Breathing air
- Pure feed gases
- Heat treatment gases
- Inert gases



# ES20 Compact Sampling System

## A Reliable Sampler for Moisture

Michell Instruments designs and manufactures a broad range of sampling systems for a wide spectrum of industries and processes from the economical compressed air market, to the demanding oil and gas process market.

The ES20 sampling system is a standard modular high quality product designed to address the needs for filtration, pressure, and flow control.

## High Quality Materials

To ensure continuous and reliable dew-point or moisture measurement, it is important that the dew-point transmitter is exposed to stable conditions of the gas to be monitored.

The ES20 sampling system utilizes high quality materials (gas wetted parts) which provide the optimum response to moisture changes in the process.

## Filtration Flexibility

If the gas contains impurities it is crucial to remove the contaminants before they reach the sensing device. The ES20 is supplied with a filter housing into which recyclable particulate or coalescing filter cartridges can be inserted.

Filtration methods:

- Particulate filter (solid contaminants)
- Coalescing filter with adjustable drain (solid and liquid aerosol contaminants)
- HDPE guard (filter) for sensing element (standard)
- Air filter with optional vacuum pump (standard)

## Pressure Control and Measurement

Pressure has a direct effect on dew point. The ES20 utilizes a set of configurable components for atmospheric or process system line pressure dew-point measurement.

Pressure control features:

- Pressure gauge (dual scale: bar and psi)
- Metering valves (needle valve type)
- Self-regulating vacuum pump

## Flow Control

The flow rate of a gas can affect the transmitter's response time. Every sampling system contains a set of components which help to maintain optimum flow (1 to 5 liters per minute).

Flow control:

- Flowmeter
- Metering valves (needle valve type)
- Flowmeter with needle valve (with vacuum pump only)

## Mounting Variants

Depending on the application, the sampling system can be supplied in 3 variations:

- Mounted on base plate
- Mounted on base plate inside a windowed GRP enclosure
- Mounted on base plate inside a windowed SS enclosure (316 stainless steel)

## System Designs

Michell Instruments has over 40 years of experience providing dew-point and moisture measurement solutions. Sampling system designs ensure that dew-point and moisture measurements can be performed in the most suitable conditions.

The ES20 compact sampling system can be supplied in various configurations and can be used in conjunction with many Michell's products such as:

- Easidew Transmitter
- Easidew I.S. Transmitter
- Easidew PRO I.S. Transmitter
- Easidew Online Hygrometer
- Cermet II Hygrometer

## Documentation Package

Every ES20 is supplied with a CD-ROM containing the following supplementary files for your sampling system:

- ES20 manual
- Datasheet
- Flow diagrams
- Material certification (optional)
- EC declaration of conformity

For add-on products such as transmitters or hygrometers, a printed version of the product's manual is included.

## System Customization

If your application requires a customized solution, we have a specialized design and manufacturing facility to cover your requirements. Please contact us for more information.

## Technical Specifications

### Electrical Specifications

Supply voltage (vacuum pump only) 230 V AC

### Operating Specifications

#### Operating temperature

##### ES20 fitted with:

Particulate or coalescing filter without monitor -15 to +60°C (+5 to +140°F)  
 Particulate or coalescing filter with monitor 0 to +50°C (+32 to +122°F)  
 Vacuum pump with or without monitor 0 to +40°C (+32 to +104°F)

#### Operating inlet pressure

##### ES20 fitted with:

Particulate filter 0 to 20 barg (0 to 290 psig)  
 Coalescing filter 0 to 20 barg (0 to 290 psig)  
 Vacuum pump -0.3 bar to 1 barg (-4.4 to 14.5 psig)

Flow rate 1 to 5 NI/min (2.1 to 10.6 scfh)

### Mechanical Specifications

Process connection and material Inlet/outlet process connections via 6mm or 1/4" tube fittings, 316 stainless steel

Gas wetted parts Stainless steel tube, filter housing and fittings (316 stainless steel), Filter element (borosilicate glass microfibres), Transmitter sample block (316 stainless steel), Flowmeter (borosilicate glass) with Viton seals, Pump (Teflon)

#### Ingress protection

No enclosure No protection (base plate only)  
 GRP & SS enclosures IP66, NEMA 4X

#### Housing material

Base plate 316 stainless steel  
 GRP enclosure Glass fibre reinforced polyester and 4mm (0.2") safety glass  
 SS enclosure 316 stainless steel and 4mm (0.2") safety glass

#### Dimensions

Base plate 457mm x 350mm x 2mm (18" x 13.8" x 0.08") (h x w x d)  
 GRP enclosure 530mm x 430mm x 200mm (20.9" x 16.9" x 7.9") (h x w x d)  
 SS enclosure 500mm x 400mm x 200mm (19.7" x 15.7" x 7.9") (h x w x d)

#### Pressure and flow control

Atmospheric or process pressure Via metering valves, pressure gauge and flowmeter  
 Vacuum pressure Metering valve, pressure gauge, flowmeter with valve and self-regulating vacuum pump

#### Gas filtration

Particulate filter — Borosilicate glass microfibres (99.5+% removal of 0.1 micron particles)  
 Coalescing filter — Borosilicate glass microfibres (99.5+% removal of 0.1 micron particles and aerosols)

#### Electrical connections

Base plate Via terminal rail  
 GPR and SS enclosure Via M20 plastic cable glands

#### Interchangeability

Fully interchangeable components

#### Sample block process connection

Compatible with various dew-point transmitters with 5/8" process connection

### Dew-Point Measurement Specifications (Optional)\*

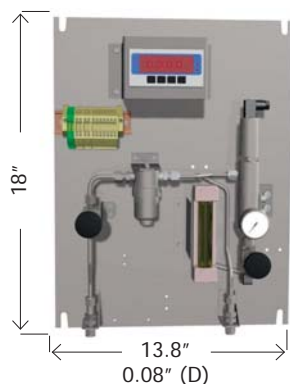
Measurement range (dp) -100 to +20°C (-148 to +68°F) dew point

Accuracy (dp) Up to ±1°C (±1.8°F) dew point  
 Up to ±2°C (±3.6°F) dew point

\*For all other specifications refer to the Easidew Transmitter and Easidew Online datasheets, available from your local Michell Instruments representative or visit [www.michell.com/us](http://www.michell.com/us)

## ES20 Enclosure Configurations

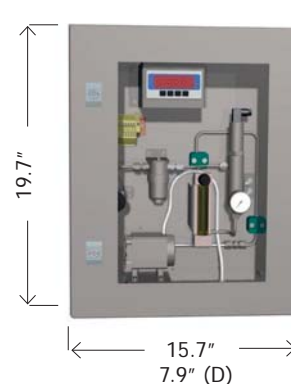
Base Plate



GRP Enclosure



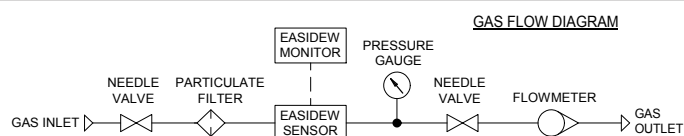
Stainless Steel Enclosure



# ES20 System Configurations

## ES20 Fitted with Particulate Filter

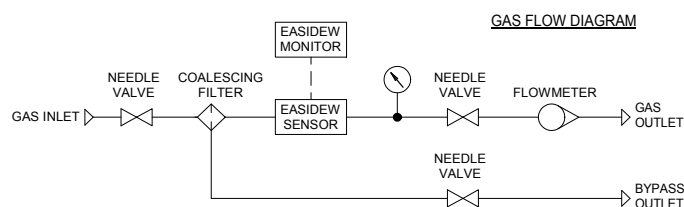
Components used	Specifications
1 Base plate	316 stainless steel
2 Inlet process connection and material	6mm or 1/4" fitting (316 stainless steel)
3 Outlet process connection and material	6mm or 1/4" fitting (316 stainless steel)
4 Metering valve	Needle valve type
5 Filter housing	316 stainless steel (340 barg maximum), gasket (Viton)
6 Particulate filter (inside filter housing)	Borosilicate glass microfibrres (99.5+% removal of 0.1 micron particles)
7 Pressure gauge	Center back mount (dual scale: Bar and PSI)
8 Sensor sample block	5/8" SS sample block (316 stainless steel)
9 Flowmeter	Borosilicate glass (2 to 12 NI/min), seals (Viton)
10 Terminal rail	13 terminals (monitor or vacuum pump fitted only)
11 Process indicator mounting bracket (optional)	1/8 DIN cut-out



## ES20 Fitted with Coalescing Filter\*

Components used	Specifications
12 Drainage connection and material	6mm or 1/4" fitting (316 stainless steel)
13 Coalescing filter (inside filter housing)	Borosilicate glass microfibrres (99.5+% removal of 0.1 micron particles and aerosols)

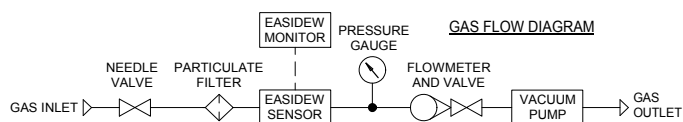
\*In addition to particulate filter fitted components



## ES20 Fitted with Vacuum Pump\*

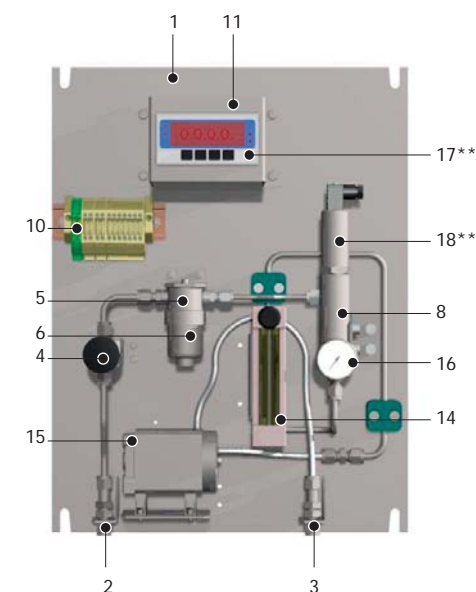
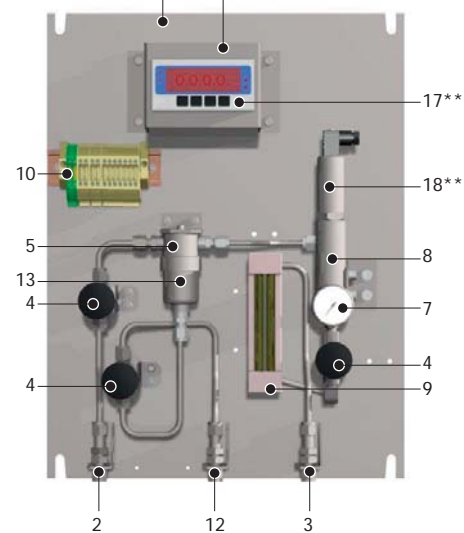
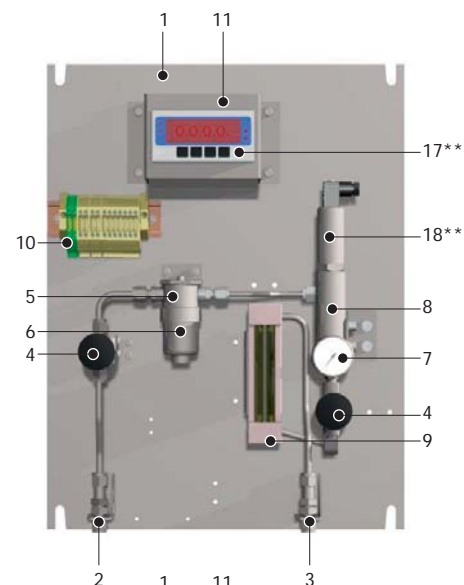
Components used	Specifications
14 Flowmeter with needle valve	Borosilicate glass (2 to 12 NI/min), seals (Viton)
15 Vacuum pump	Anti-overpressure mechanism (Teflon)
16 Pressure gauge	Center back mount (dual scale: Bar and PSI)

\*In addition to particulate filter fitted components



## Optional Dew-Point Measurement Device

Components used	Specifications
17 Monitor (to be ordered separately)**	Refer to Monitor datasheet
18 Dew-Point Transmitter (to be ordered separately)**	Refer to Transmitter datasheet



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Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice.  
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