



### MEASURES COLOUR CHANGES IN A LIQUID PROCESS STREAM

The Model 7613 Colour Monitor is a completely automatic process stream instrument measuring colour changes in the ASTM D156, D1209 or D1500 ranges.

#### TYPICAL APPLICATIONS

- Fuel monitoring - transportation fuels may be coloured in order to facilitate their correct allocation. Mistakes, such as putting the wrong fuel into a tank, can be avoided.
- Dying of gas oil - the same fuel can be taxed by governments at different levels depending on their application, so different coloured dyes are used to distinguish them.
- On-line blending - the 7613 can be used to check the colour of a product during blending.
- Interface detection - liquids of very similar density, alternately using a common pipeline, can be identified and directed to the correct storage tank.
- Oil heat exchanger breakthrough.

If the comparison shows the sample is more than a predetermined amount darker than selected, the alarm operates. Alternatively, by means of links in the printed circuit card, the alarm can operate where the sample is lighter than selected. The only external control is a self re-setting twist-to-set facility which enables the light beams to be unbalanced in order to test the system. A continuous 4 to 20 mA floating output is generated based on the ratio of the two beams. This can be calibrated in terms of % transmission of light. There are internal controls for the alarm level, zero and span.

#### PRINCIPLE OF OPERATION

The colour monitor responds to colour changes by measuring the differential light absorption at two wavelengths and the ratio of these absorptions.

A source of filtered light from a tungsten lamp is modulated by a mechanical chopper which has two coloured filters. One filter (reference) is chosen so that the light beam produced is minimally absorbed regardless of colour changes in the sample. The other filter (measurement) is chosen so that the light beam produced is appreciably absorbed as the sample colour changes (e.g. ordinary oil will absorb blue light quite strongly as oil becomes more yellow).

The emergent light is passed via the sample cell onto the photocell. The rotation of the chopper is coordinated so that alternative outputs from the photocell (reference - measurement) may be amplified, individually stored and then compared to each other.



**ONE OF THE ATAC RANGE OF PROCESS ANALYSERS**

## SPECIFICATION

### Colour ranges

ASTM	0 to 2, 0 to 3, 0 to 7, 3 to 7, or 4 to 7 (ASTM D 1500)
SAYBOLT	+30 to -16, +30 to 0, +30 to +12 or 0 to -15 (ASTM D 156)
HAZEN	0 to 100, 0 to 200, 0 to 300 or 0 to 500 (ASTM D 1209)

Dye in gasoil  
Other ranges and special ranges available on request

### Check facilities

Externally mounted spring loaded knob providing twist-to-test, (standard feature). This may be changed to twist-to-calibrate on ASTM colour ranges - see options.

### Monitor performance

Precision Within the requirements of the American Standard Test Method corresponding to the range in use, i.e. ASTM D 156 or D 1500 or D 1209.

### Output signal (Relay contact)

Alarm 1 fully adjustable alarm point having 2 c/o contacts rated at 250V, 5A, 100VA non-inductive. Transition to light or dark operation available by selection of inter links, reversal of the Twist-to-test facility and minor adjustments of internal controls.

### Output signal (analogue)

Range 4 - 20 mA (isolated) into 500 ohms max.

### Sample conditioning required at inlet

Pressure 80 bar (max. continuous) (tested to 400 bar)

Temperature -25°C to +150°C

Flow 1 litre / minute (recommended)

### Sample conditioning

Complete systems can be supplied to pre-condition process sample to the conditions required at the analyser.

### Sample disposal

Return to process or recovery system. Sample recovery systems can be supplied.

### Utility requirements

Power supply  
Voltage 110/127V or 200/250V ±10%, single phase

Frequency 50Hz or 60Hz (±5Hz)

Consumption 20 W

### Standard connections

Sample inlet ¼" NPT(female)

Sample outlet ¼" NPT(female)

Electrical 20mm conduit (2 off)

Earth M6 screws on bottom of case

### Explosion protection

The analyser is ATEX certified  
II 2G EEx d IIB T6 (T<sub>amb</sub> +55)  
for use in zone 1 hazardous areas.  
Certificate no. DEMKO 04 ATEX 136616.

### Environmental protection

IP54  
-25°C to +55°C

### Dimensions and weight

Width 475 mm  
Depth 185 mm  
Height 420 mm  
Weight 23 kg

### Access dimensions

Length 875 mm  
Depth 800 mm  
Height 750 mm

### Options

- Twist-to-calibrate facility (for ASTM ranges only)
- Configuration for CSA local approval
- Steam-traced sample cell
- Sample cell in special materials e.g. PTFE
- Addition of a separate local indicator
- Zero mA alarm feature; the 4 - 20mA output is disconnected under alarm conditions

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For further information contact :-



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