Sherwood


*The Classic Model 410*


*The Clinical Model 410
shown with diluter*


*The Industrial Model 410
shown with printer*

# Model 410 Flame Photometer *Range*

## Sherwood Scientific's extended Model 410 Flame Photometer Range

We have developed a Digital Interface which replaces the Lineariser Module and provides RS232 communication from the Model 410. This allows for direct attachment of a serial printer and the collection of data via a PC into our sophisticated *BlueNotes*™ software package. While we retain the Classic Model 410 with its robust design, outstanding performance and reliability, we now take the 410 into the Digital age with the New Model 410 Industrial and Clinical versions which come with the Digital Interface fitted as standard. A fully integrated and automated system is also possible via our **update and automate** modules and packages.

# The Model 410 Flame Photometer Range

The principles of flame emission spectroscopy were first investigated by Kirchoff and Bunsen (1860s). In the 1920s Lundengardh refined the technique by incorporating a nebuliser and electro optical detector which paved the way to modern quantitative analysis. A predecessor company Evans ElectroSelenium Ltd (EEL) developed the first Model 100 Flame Photometer in the late 1940s and the Model 410 Flame Photometer developed by Corning is the latest single channel Flame Photometer in that line. The Model 410 has been manufactured and significantly updated by Sherwood Scientific over the last 10 years and represents the world's most successful and best performing low temperature single element Flame Photometer.

## Model 410 Classic

The Sherwood Model 410 Classic Flame Photometer directly measures Sodium (Na), Potassium (K) and Calcium (Ca) as standard, by means of a low temperature flame using Propane, Butane, Mixed LPG or Natural Gas (Propane preferred). Optional filters for determination of Lithium (Li), Caesium (Cs), Barium (Ba), Rubidium (Rb) and Strontium (Sr) are available.

With sensitivity and stability second to none, the Model 410 is also very easy to use with a large up-front working area and easily interchangeable filters for all the above elements

The Model 410 Classic is also the safest Flame Photometer with features such as:

• Optical Detection of flame and fail safe operation

• Air pressure switch to extinguish flame in absence of air

• Auto ignition.

## The Digital Interface/Lineariser Module

The Industrial and Clinical Model 410s are fitted with the **Digital Interface/Lineariser Module.** The module presents two buttons; select between Blank, Calibrator and Sample for the current operation to be printed alongside the value displayed; the other button is the Print command which the user presses once the value displayed is stable.
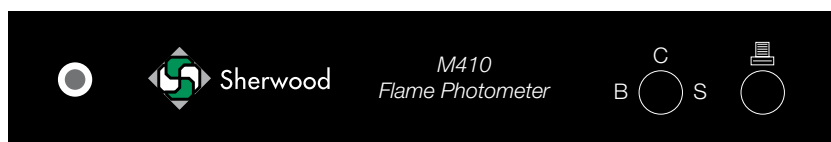
## Model 410 Industrial

Flame Photometry is the technique of choice for the measurement of Na, K and Ca in all sample types in: Mineral Extraction, Oil industry, Paper industry, Pharmaceuticals, Soil analysis, Utilities, Food & Beverage, Chemical Manufacture and Fertilsers.

The Model 410 Industrial with Digital output also has an optional Lineariser built-in to allow higher concentrations of sodium (<40 ppm) to be directly measured using a single point calibration.

The Model 410 Industrial is delivered with Na, K and Ca filters and 1000 ppm standards for each of these analytes ( 6 x 100 ml)

## Model 410 Clinical

For clinical samples flame photometry is the most sensitive and robust method for the determination of Na, K and Li. The Model 410 Clinical is delivered with Na, K and Li filters and an appropriate multi-element calibrator in mmol/l. (1 x 100ml). The Clinical instrument is also fitted with a Lineariser, allowing direct straight line calibration of clinically significant concentrations of Sodium, as well as Potassium and Lithium following suitable dilution.

The model 805 diluter, shown here with the Model 410 Clinical Flame Photometer, gives nominal sample dilution ratios of 1:200 and 1:50. It has been designed to give consistent dilution of Calibrator and samples to the flame photometer.

The Model 410 Industrial and Clinical flame photometers can be further enhanced by the use of the new *BlueNotes*™ software and Model 860 autosampler

With the Digital Interface we can now extend the application of the Model 410. The *BlueNotes™* software enables us to automate the operation of the Model 410 and even add an Autosampler.

UPDATE & AUTOMATE



## Model 860 Autosampler

- Smallest footprint on the market
- 40 sample positions plus Calibrant and Blank position
- Operation controlled by PC and integrated with Flame Photometer using *BlueNotes™* software
- Can be used with or without Model 805 Diluter

## *BlueNotes™* Software

Now with the *BlueNotes™* software on your PC/Laptop you can automate your analysis in stages:

**1st Step** may be to type real names for your samples so that your report meets GLP

**2nd Step** you can run Multipoint calibrations, save them and re-use the same curve

**3rd Step** use *BlueNotes™* to "peak-pick" a reading rather than visually assessing when the reading is stable

**4th Step** add an autosampler for a fully automated walk away system. This can incorporate Drift corrections as your 40 samples take about 30 minutes to run

## Model 805 Diluter

- Continuous flow diluter designed for use with Sherwood Flame Photometers
- Dilution ratios 1:200 and 1:50 (nominal)
- Ensures accurate answers as both calibrant and sample diluted identically

The *BlueNotes™* software when used with the Digital interface, completely transforms the operation of and data flow from the Model 410 Flame Photometer.

- A powerful tool with many components that can be tailored to your requirements.
- An introduction tutorial allows for fault-free installation
- Automatic curve-fit for multipoint calibration
- Stores Methods and Calibration routines and curves, which can be used for subsequent analyses.
- Methods etc. can be locked under password control
- Type real names/numbers for your samples and automatically prepare professional reports
- If you opt to use an autosampler the main screen shows which sample is being analysed and how long it will take
- Automatic drift correction

### *BlueNotes™* in operation; everything on one page

Sample naming with repeat facility

Very easy setup with user prompts

Multipoint calibration facility with auto curve fit
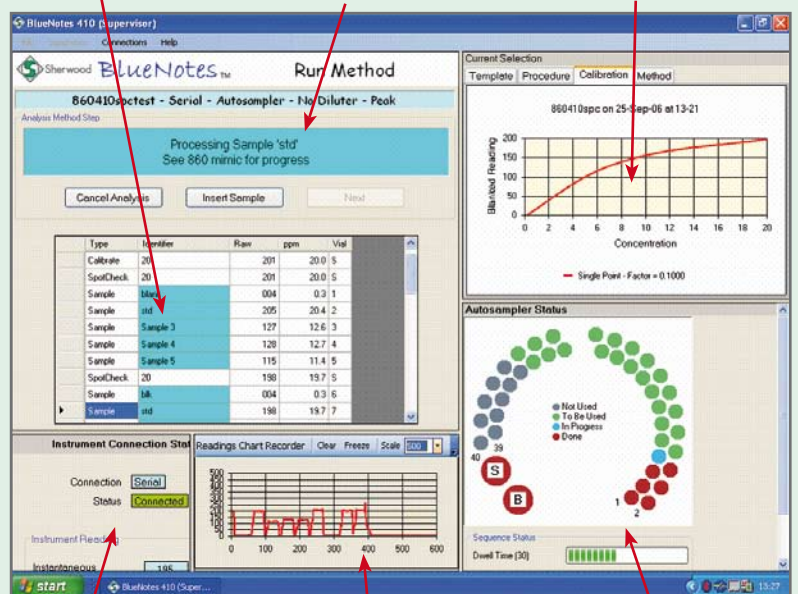


Positive connection confirmation

Analogue trace for dynamic stability monitoring
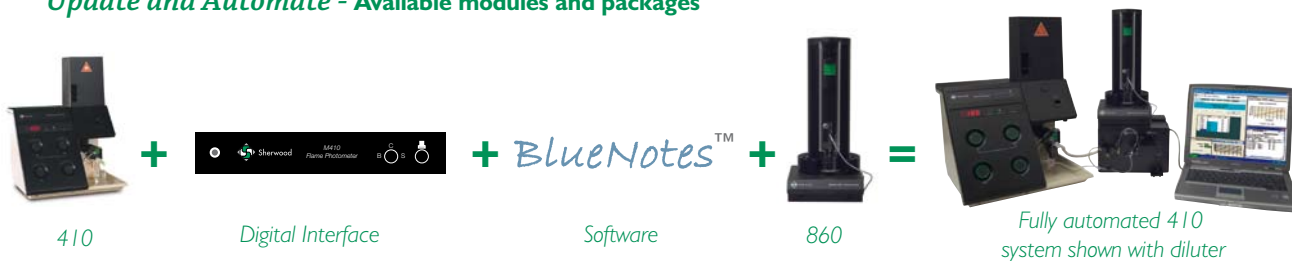
Autosampler status display

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## Feature Comparison - Model 410 Family

| | Model 410 Classic (47541200) | Model 410 Industrial (47541201) | Model 410 Clinical (47541301) |
|---|---|---|---|
| Sodium (Na) | ✔ | ✔ | ✔ |
| Potassium (K) | ✔ | ✔ | ✔ |
| Calcium (Ca) | ✔ | ✔ | |
| Lithium (Li) | Optional | Optional | ✔ |
| Cs, Rb, Ba, Sr filters | Optional | Optional | Optional |
| Lineariser | N/A | Optional | ✔ |
| Industrial Calibrators | ✔ | ✔ | N/A |
| Clinical Calibrators | N/A | N/A | ✔ |
| Diluter | Optional | Optional | Optional |
| Propane/LPG/Butane/Natural Gas | (Propane preferred) | (Propane preferred) | ✔ |
| Analogue Output | ✔ | ✔ | ✔ |
| Digital Interface (41086001) | Optional | ✔ | ✔ |

Full technical specifications available on request from; info@sherwood-scientific.com

## Update and Automate - Available modules and packages



410     +     Digital Interface     +     BlueNotes™ Software     +     860     =     Fully automated 410 system shown with diluter

| Modules \ Packages | Digital Interface (41086001) | BlueNotes™ Software (41066000) | BlueNotes™ Update (41086002) | BlueNotes™ Automate (41086004) | BlueNotes™ Update and Automate (41086003) |
|---|---|---|---|---|---|
| Digital Interface (41086001) | Retrofittable to any Model 410 | | ✔ | Requires Digital Interface | ✔ |
| BlueNotes™ Software (41066000) | | Requires Digital Interface | ✔ | ✔ | ✔ |
| Model 860 Autosampler (86000009) | | | | ✔ | ✔ |

Unmarked fields indicate a module which is not included with the package

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