



Thermo Scientific iCE 3000 Series AAS

# Combined flame and graphite furnace solutions

## Benefits

- A dual atomizer design with flexible background correction options
- A complete trace elemental analysis package with simplicity and superior analytical performance

## Keywords

Dual atomizer, Elemental analysis, Flame, Graphite furnace, Trace analysis

The technique of Atomic Absorption Spectrometry has an unlimited number of applications and is still a popular choice for uncomplicated trace elemental analysis. Flame Atomic Absorption Spectrometry (FAAS) is widely accepted in many industries which continue to utilize the unique and specific benefits of the technique. Graphite Furnace Atomic Absorption Spectrometry (GFAAS) is an established technique for measuring elements at parts per billion concentrations with incredibly low sample volumes.

Combined flame and furnace solutions from the Thermo Scientific™ iCE™ 3000 Series Atomic Absorption Spectrometers are exceptional instruments which allow maximum functionality and flexibility. Both systems have a dedicated flame compartment with automatic control and set-up through the software. Complete user safety and confidence can be ensured with a wide range of safety interlocks, fully automatic gas box and automatic shutdown features.

When furnace analysis is required the unique dual atomizer design of the Thermo Scientific iCE 3500 AAS provides a second sample compartment where the furnace can be left permanently aligned and ready for use. Switch over between the two compartments is software controlled with absolutely no user intervention required and so maximum productivity is achieved.

The full Thermo Scientific SOLAAR™ software suite is provided with every AA spectrometer. There are a variety of wizards, simple guides and comprehensive help text to assist in operation and provide the answer to questions immediately.

## Introduction

### Combined flame and graphite furnace atomic absorption spectrometers

Flame systems provide the ideal solutions for laboratories requiring percent level to parts per million detection of a wide range of elements. Furnace systems offer incredibly low detection limits in the ppb range and the analysis can be fully automated.

The iCE 3000 Series Atomic Absorption Spectrometers provides two options for those users requiring flame and furnace capabilities:

- The Thermo Scientific iCE 3300 AAS Spectrometer with GFS33 Graphite Furnace and Autosampler
- The Thermo Scientific iCE 3500 AAS Spectrometer with GFS35 or GFS35Z Graphite Furnace and Autosampler

### Features and accessories

- The universal 50 mm finned titanium burner allows use of both air/acetylene and nitrous oxide/acetylene flame types and maintains a stable, reproducible flame.
- Accuracy and precision of sample injection is ensured with the furnace autosampler. It can prepare multiple standards from a single master standard, intelligently dilute over-range samples and adds matrix modifiers to complex samples.
- A combined Flame and Furnace Validator package is available, providing Installation Qualification (IQ) and fully automated Operational Qualification (OQ). (Optional).

Table 1. Summary of the flame and furnace solutions from the iCE 3000 Series Atomic Absorption Spectrometers.

Capability	iCE 3300 AAS Flame and/or furnace	iCE 3500 AAS Flame and furnace
<b>General</b>		
Number of sample compartments	1	2
PC control	Yes	Yes
Software	Included as standard	Included as standard
Lamp carousel	Auto aligning	Auto aligning
Lamp capacity	6	6
Lamp type	Coded and uncoded single and multi element	Coded and uncoded single and multi element
<b>Optics</b>		
Monochromator	Ebert	Echelle
Spectral bandwidths	0.2, 0.5 and 1.0 nm	0.1 (below 400 nm), 0.2, 0.5 and 1.0 nm
Reciprocal linear dispersion	2.0 nm/mm at 200 nm	0.5 nm/mm at 200 nm
Grating	1800 lines/mm	2D Spectrum
Optical set up	Automatic	Automatic
Wavelength range	180–900 nm	180-900 nm
Drift correction	Double beam	Double beam
<b>Flame features</b>		
Banner type	Choose 50 mm finned universal burner OR 100 mm burner	Choose 50 mm finned universal burner OR 100 mm burner
Gas box	MFC fully automatic	MFC fully automatic
Flame background correction	Deuterium	Deuterium
Flame autosampler	Compatible with CETAC 280, CETAC 560	Compatible with CETAC 280, CETAC 560
<b>Furnace features</b>		
Furnace model	GFS33	GFS35 or GFS35Z
Furnace vision system (GFTV)	As standard	As standard
Furnace background correction	Deuterium	Deuterium
Automatic flame to furnace change over	No	Yes
Cuvettes	Normal, coated, extended life (ELC), platform	Normal, coated, extended life (ELC), platform
<b>Options</b>		
Vapor upgrade	Yes	Yes
Validator packages	Yes	Yes
Security software	Yes	Yes

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