

TGA/FTIR Accessory

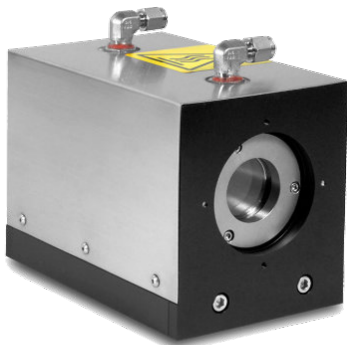
AT A GLANCE

- ▶ GAS CELL DESIGN CONFORMS TO IR BEAM GEOMETRY -
- ▶ MAXIMIZES IR THROUGHPUT WITH MINIMUM CELL VOLUME
- ▶ 100-MM IR BEAM PATHLENGTH FOR MAXIMIZED FTIR SENSITIVITY
- ▶ TEMPERATURE CONTROL SETTABLE UP TO 300 °C FOR FLOW CELL AND TRANSFER LINE
- ▶ USER CHANGEABLE IR TRANSPARENT WINDOWS TO MINIMIZE COST OF OPERATION
- ▶ HEATED, GLASS-LINED STAINLESS STEEL TRANSFER LINE FOR INERT TRANSFER OF TGA EFFLUENT
- ▶ BASEPLATE-MOUNTED IN YOUR FTIR FOR FLEXIBLE SAMPLING



TEMPERATURE CONTROL
OPTIONS AVAILABLE

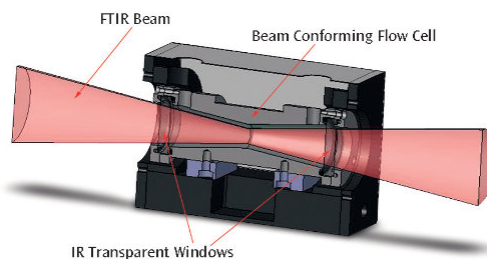
TGA-FTIR Accessory.



The TGA/FTIR accessory is designed to be an interface for evolved gas analysis from a thermogravimetric analyzer (TGA) to your FTIR spectrometer. Qualitative and quantitative measurements are doable from sample masses—typically in the low milligram range.

DESIGN

Evolved gases from the TGA pass through a heated transfer line into the beam conforming flow cell in the FTIR sample compartment. As these evolved gases travel through the flow cell, FTIR spectra are collected and stored for further processing. The PIKE TGA/FTIR Accessory is compatible with most FTIR spectrometers and most TGA instruments.

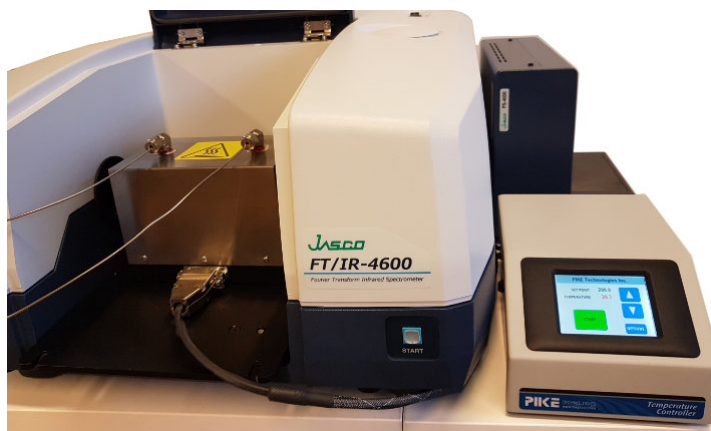


IR beam conforming optical design of TGA/FTIR Accessory.

APPLICATIONS AND MEASURING TECHNIQUES

During the TGA analysis sample mass is lost through a combination of volatilization and degradation of the sample material. The heated TGA/FTIR system maintains the vapor state of the evolved gases throughout the FTIR analysis. Typical samples include polymers, epoxies, fibers and laminates for investigating deformation, thermal stability or comparative study applications.

Typically, the FTIR spectrometer is set to collect spectra at 10-second intervals during the evolved gas analysis using the kinetics software package for your FTIR. With this software you can generate reconstructions of total IR response versus time or temperature (Gram-Schmidt) or specific IR band reconstructions to isolate points of unique component evolutions. FTIR spectra are extracted from the data set and an identification is made by comparing these unknown spectra to vapor phase spectral libraries.

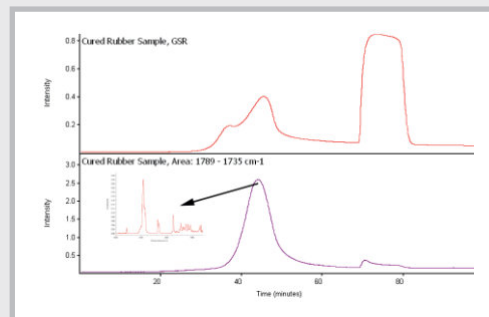


SPECIFICATIONS

Temperature Range	Ambient to 300 °C
Accuracy	+/- 0.5° up to 100 °C +/- 0.5% of set point > 100 °C
Voltage	24 VAC
Sensor Type	3 wire Pt RTD (low drift, high stability)
Controllers	
Input Voltage	115/230 V, switchable
Output Voltage	10 A/24 VAC
Dimensions	91 x 140 x 121 mm (excludes baseplate mount)
(W X D X H)	

APPLICATION

TGA only measures the mass loss caused by evolved gas events. By coupling TGA with an FTIR, unique spectroscopic data as well as functional group information of the evolved gases may be obtained.



TGA/FTIR data for cured rubber sample spectrum. Upper trace is the Gram-Schmidt reconstruct of the TGA evolved gases. Lower trace is a carbonyl reconstruction.

PART NUMBER DESCRIPTION

162-24XX TGA/ FTIR Accessory Flow Cell
Includes mount for your FTIR, exhaust line and high-temperature O-rings

Notes: Replace XX with your spectrometer's Instrument Code listed in the back of the catalog. Complete accessory requires selection of IR transparent windows, heated transfer line and temperature controller. The TGA/FTIR accessory requires installation by a trained service representative – please consult with your FTIR manufacturer.

IR Transparent Windows for TGA/FTIR Accessory (must select 2 or more)

160-1320 Window, KBr, 38 x 6 mm

160-1329 Window, ZnSe, 38 x 6 mm

Notes: For window compatibility please consult our Materials Properties table, available in Transmission chapter. ZnSe windows should not be used above 250 °C.

Heated Transfer Line for TGA/FTIR Accessory (must select one)

115-0001 Heated Transfer Line for Shimadzu TGA50 with evolved gas port modifications

115-0005 Heated Transfer Line for Mettler 851TGA

115-0006 Heated Transfer Line for Mettler 851e/ LF or TGA-DSC1/2/3 TGA

115-0007 Heated Transfer Line for TA Instruments Q600 TGA

115-0008 Heated Transfer Line for TA Instruments Discovery/Q5000R

115-0009 Heated Transfer Line for TA Instruments Q50/Q500 TGA

115-0010 Heated Transfer Line for TA Instruments 2050/2950

115-0011 Heated Transfer Line for Netzsch TGA

115-0012 Heated Transfer Line for PESTA6/4000 110V TGA

115-0013 Heated Transfer Line for SETARAM

115-0014 Heated Transfer Line for PESTA6/4000 220V TGA

PART NUMBER DESCRIPTION

115-0017 TGA Universal Transfer Line
Includes the following adapters; 1/8" to 1/8" union, 1/4" to 1/8" reducing union, 3-mm to 1/8" union, 6-mm to 1/8" reducing union and 6-mm PTFE ferrules

115-0018 PTFE TGA Transfer Line, 230 °C max. Recommended for TGAs with evolved gas ports made of ceramic or moving furnace heads

Notes: Please consult your TGA supplier to ensure compatibility with evolved gas analysis. Contact PIKE Technologies about interfacing to other TGA instruments. Unless noted otherwise, all PIKE transfer lines are 1/8" OD, silica-lined stainless steel, 48" in length and offers a maximum temperature of 300 °C.

Temperature Controllers for TGA/FTIR Accessory (must select one)

076-1120 Dual Digital Temperature Control Module

076-1130 4-Zone Digital Temperature Control Module for Shimadzu TGA

Replacement Parts and Options

162-2309 High-Temperature O-Rings, max temp 325 °C, (1ea.)

162-2308 High-Temperature O-Rings, max temp 325 °C, (4 ea.)

Note: Gas cell requires 4 O-rings. For high-temperature purge tubes and other options, please contact PIKE Technologies.