

Short instructions

Installation of third-party cells

Lyza 3000/7000

1 Overview of the cell module

Various types of cells can be integrated into the cell module of Lyza 3000/7000 in order to adapt it to your sample types.

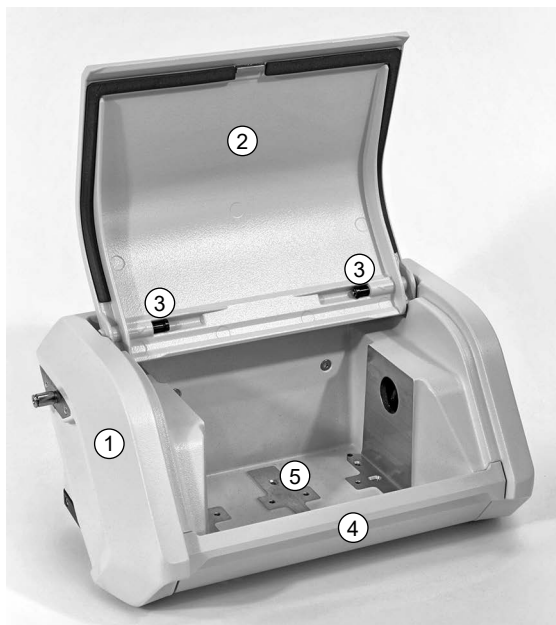


Figure 1: Cell module with top lid opened and bottom cover attached. No measurement cell is mounted.

- 1 Cell module
- 2 Top lid
- 3 Locking pins of top lid
- 4 Bottom cover
- 5 Mounting position for measurement cells

2 Available third-party cells

Three third-party ATR cell models can be mounted on Lyza 3000/7000:

- Pike IRIS – single reflection ATR accessory (diamond or germanium crystal)
- Pike MIRacle – single reflection ATR accessory (ZnSe / diamond)
- Pike HATR – horizontal ATR accessory (ZnSe combi system)

Since the construction of the ATR cells is similar, the installation is more or less the same with only minor differences which will be noted.



Figure 2: Pike MIRacle, Pike IRIS, and Pike HATR (left to right).

A DRIFTS (Diffuse Reflectance Infrared Fourier Transform Spectroscopy) cell model can be mounted on Lyza 7000:

- Pike EasiDiff – diffuse reflectance accessory

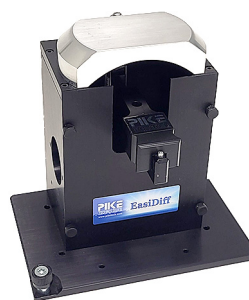


Figure 3: Pike EasiDiff

3 Before you mount the ATR/HATR cell

Perform a background spectrum measurement with the empty cell module. You will need it for the intensity check after mounting the cell.

Use the following settings:

Number of scans	24
Spectral resolution	4 cm ⁻¹
Apodization	Blackman-Harris
Zero padding	1

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4 Mounting the ATR/HATR cell

1. Remove the top lid and the bottom cover from the empty cell module to provide enough space for the third-party cell (see fig. 4).

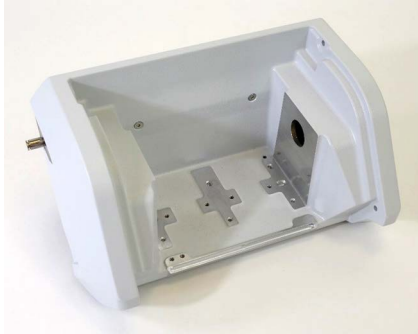


Figure 4: Cell module without top lid and bottom cover. No measurement cell mounted.

2. Verify that the supplied parts of the cell contain a mounted baseplate with captive screws and purge tubes, which shall be mounted on the sides of the cell. Make sure that the purge tubes are properly connected and that the baseplate is tightly fixed to the cell body (ATR, HATR).



Figure 5: MIRacle ATR accessory with mounted baseplate and purge tubes.

3. Mount the cell into the cell module:
Fix the baseplate by fastening the captive screws with the provided Torx T25 screwdriver, mat. no. 129903 (see fig. 6).



Figure 6: Fastening the captive screws with the Torx T25 screwdriver.

4. Loosen the knurled screws on top of the purge tubes and adjust the tubes on both sides so that they tightly seal the optical path.



Figure 7: Loosen the knurled screws to adjust the purge tubes on both sides of the cell module, then tighten them again.

5. Tighten the knurled screws to fix the purge tubes in their positions.

IMPORTANT: The purge tubes of the HATR cell come with different screws and have to be fixed with a screwdriver provided with the HATR cell (see fig. 8).

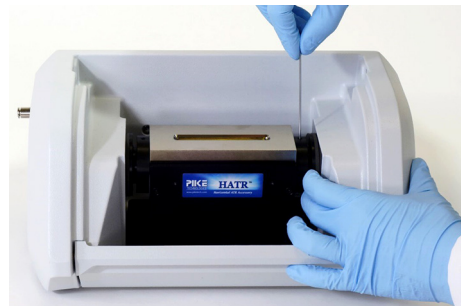


Figure 8: Tightening the purge tubes of the HATR cell with the provided screwdriver.

5 Intensity check of the ATR/HATR cell

The ATR/HATR cell accessories have been aligned and tested by the manufacturer to ensure that they perform according to the manufacturer's specifications. In order to verify this, perform the following steps.

IMPORTANT: Do not measure a new background spectrum with the installed third-party cell. It has already been acquired with the empty cell module before mounting the third-party cell (see section 3).

1. Perform a measurement with the clean and empty cell. Use the setting "Transmittance" (found in the "Advanced settings" in the measurement spot) for the result spectrum and the same measurement settings as used for the background spectrum.

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2. Compare the transmittance of the acquired spectrum with the expected transmittance according to the performance verification (found in the manufacturer's instruction manual).

For example, if you use the MIRacle cell, the manufacturer requires to check the transmittance at 1000 cm^{-1} .

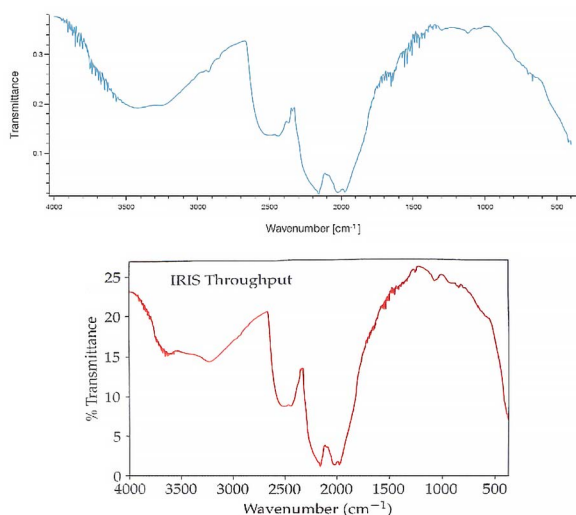


Figure 9: Top: The spectrum acquired by Lyza 3000/7000. Bottom: The spectrum of the performance verification in the manufacturer's instruction manual.

3. Only perform a third-party cell adjustment if the transmittance does not reach the performance verification value given by the manufacturer (see section 6).

If the transmittance value is reached as stated in the manufacturer's manual the installed third-party cell can be used (continue with section 9).

6 Adjustment of the ATR cell

Some third-party cells (Pike IRIS, Pike MIRacle) may require an alignment after the installation into Lyza 3000/7000 due to possible variations in optical alignment between spectrometers. For this purpose, alignment screws are located on the cell.

IMPORTANT: Carefully follow the manufacturer's installation and user guide when you perform the alignment. For Lyza 3000/7000 follow the **right-to-left IR beam-direction** spectrometer instructions.

1. Select *Checks/adjustments* in the menu, then select *Third-party cell adjustment* and follow the instructions on the screen.

2. In small steps, adjust the cell in a way that the signal intensity increases and reaches a maximum. Use the signal intensity live screen to monitor the current signal intensity reaching the detector.
3. When you have finished the adjustment, tap *Done* to close the screen.

7 Installation of EasiDiff Accessory

1. Perform a background spectrum measurement with the empty cell module.

Use the following settings:

Number of scans	24
Spectral resolution	4 cm^{-1}
Apodization	Blackman-Harris
Zero padding	1

2. Place the EasiDiff accessory into the cell module and fix the baseplate by fastening the captive screws with the provided Torx T25 screwdriver (mat.no. 129903).
3. Take the alignment mirror from the sampling kit and insert it into the front position of the sample holder.
4. Place the sample holder into the accessory and slide it all the way into the accessory.
5. Select *Checks/adjustments* in the menu, then select *Third-party cell adjustment* and follow the instructions on the screen.
6. Slowly turn the micrometer adjustment on the top of the accessory to maximize signal intensity.

8 Intensity check of the EasiDiff cell

1. Make sure the alignment mirror is placed in the sample holder and measure a transmittance spectrum using the same settings as for the background spectrum.

IMPORTANT: Do not measure a new background spectrum with the installed third-party cell. It has already been acquired with the empty cell module before mounting the third-party cell.

2. Compare the transmittance of the acquired spectrum with the expected transmittance according to the performance verification (found in the manufacturer's instruction manual).

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9 Changing the third-party cell type

After mounting and adjusting the cell, the third-party cell type of the cell module has to be changed in the software.

1. Select *Settings* in the menu, then under *Hardware* select *Components*.
2. Select the connected cell module (indicated by a green check mark).
3. Select the correct third-party cell type from the drop-down list.
Optionally define a name for the cell module.

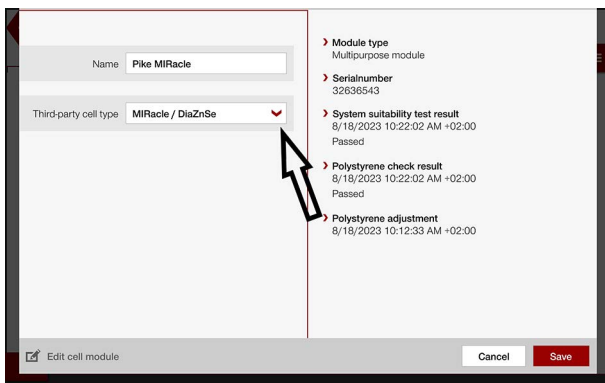


Figure 10: Select the correct third-party cell type.

4. Tap *Save*.
5. A polystyrene adjustment is required when the third-party cell type has been changed:
When the notification pops up, tap *Continue* to start it.
6. You are automatically redirected to the polystyrene adjustment wizard, which will guide you through the procedure.
Follow each step on the screen.

7. At the end of the polystyrene adjustment, apply the adjustment.
The adjustment report will show. Tap *Done* to close it.
8. Perform a system suitability test (SST).

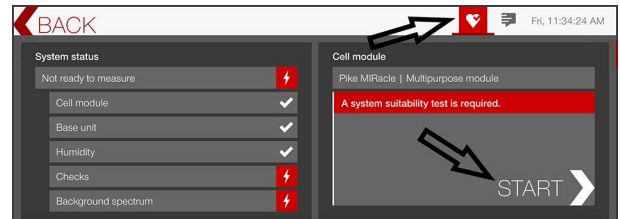


Figure 11: The SST can be started directly from the system status.

After the SST has passed, the instrument is ready for measurements.

10 Other optional accessories

For the installation of other optional accessories, refer to the particular instructions coming with the accessories.

11 First steps after installation

1. After installation set the instrument settings.
2. Wait for instrument stability (at least 15 minutes) before you perform reference measurements.
An instrument warm-up time notification will appear if the instrument has not reached stability.

IMPORTANT: If you do continue without waiting for stability, reduced accuracy of the measurements is possible.

3. Conclude the initial setup with a background spectrum measurement to prepare your instrument for sample measurements.