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# Team Player

New Eppendorf Microinjectors FemtoJet® 4i and FemtoJet® 4x

# Precise, Compact and Reproducible

Eppendorf's electronic microinjectors FemtoJet 4i and FemtoJet 4x with their simple operation and wide range of functionality are perfectly suited for injecting small to intermediate volumes. With a built-in compressor, the FemtoJet 4i is the tool of choice for injecting small volumes of up to ~100 pL into adherent cells and suspension cells. If your research demands injecting larger volumes and/or longer series at higher pressures, FemtoJet 4x with its external pressure supply delivers the precise and continuous pressure required. Best of all, the new FemtoJets are so quiet that even the refilling steps of the compressor of the FemtoJet 4i are barely audible.



## Product features

- > User-friendly simple and clearly arranged operation for routine tasks
- > Injection volume ranges from femtoliters to microliters
- > Programmable injection guarantees high reproducibility
- > Inject and Clean function can be triggered right on the device using the included foot control or optional hand control
- > Connection to InjectMan®4 or TransferMan®4r enables semi-automatic microinjection
- > Small footprint

## FemtoJet 4i only:

- > Independent pressure supply with built-in compressor
- > Especially well suited for injection volumes from femtoliters to 100 pL

## FemtoJet 4x only:

- > External pressure supply (not included) delivers higher pressure at longer intervals for long serial experiments, larger volumes and/or larger targets
- > Especially well suited for serial injection volumes from 100 pL to 1 µL or more





## Perfect Teamwork

Both the FemtoJet 4i and FemtoJet 4x, can easily be combined with all types of micromanipulators, yet they form the perfect system with Eppendorf micromanipulators. The electronic connection between FemtoJet 4i or 4x and TransferMan® 4r or InjectMan® 4 guarantees simple, rapid and reproducible microinjections into cells simplifying your daily work and speeding up your workflow.

### Applications:

- > Reproducible and serial microinjection into adherent cells when combined with the InjectMan® 4 micromanipulator
- > Microinjection into small organisms and embryos in the early stages of development (e.g., *Drosophila melanogaster*, Zebrafish, etc.)
- > Microinjection into suspension cells when combined with the TransferMan® 4r micromanipulator (e.g. pronuclear injection of fertilized mouse oocytes)

Typical Injection Volume	FemtoJet 4i <span style="float: right;">--&gt;</span> FemtoJet 4x			
Cell nucleus of adherent cells				
Cytoplasm of adherent cells				
Pronucleus of fertilized mouse oocytes				
<i>Caenorhabditis elegans</i>				
Fish embryos in early development phases				
<i>Xenopus laevis</i> oocytes				
Volume (liter, logarithm, measurement unit)	10 <sup>-15</sup>	10 <sup>-12</sup>	10 <sup>-9</sup>	10 <sup>-6</sup>
Unit	femtoliter	picoliter	nanoliter	microliter

FemtoJet 4i is suitable for applications that require lower volume ranges; FemtoJet 4x is better suited for applications that require higher volume ranges. Both feature the same injection time and pressure parameters.

### Technical specifications

	FemtoJet® 4i	FemtoJet® 4x
Pressure display	Can be set to hPa or psi	
Programmable parameters	Injection time, injection pressure, compensation pressure	
Injection time	0; 10–99; 99 s; can be set in increments of 0.01 s	
Injection pressure	0; 5–6,000 hPa (87 psi)	
Compensation pressure	0; 5–6,000 hPa (87 psi)	
Clean function	Maximum rinsing pressure of 6,000 hPa (87 psi)	
Continuous flow function	0; 5–6,000 hPa (87 psi); can be set in increments of 1 hPa (0.01 psi)	
Dimensions (W × H × D)	21.3 cm × 25 cm × 20.7 cm	
Weight	5 kg	3.5 kg
Serial interface	RS-232, USB (for service only)	

### Ordering information

Description	International Order no.	North America Order no.
FemtoJet® 4i, programmable microinjector with integrated pressure supply, including foot control	5252 000.013	5252000021
FemtoJet® 4x, programmable microinjector with external pressure supply (not included), including foot control	5253 000.017	5253000025
<b>Accessories for FemtoJet® 4i and FemtoJet® 4x</b>		
Hand control, for triggering inject function	5252 070.011	5252070011
Universal capillary holder, for Femtotips®, Femtotips II or grip heads	5176 190.002	920007392
Y-cable FJ4, Y-cable for connecting FemtoJet 4i/4x with a PC and TransferMan 4r or InjectMan 4	5192 080.004	5192080004
Y-cable PX, Y-cable for connecting Eppendorf PiezoXpert® or a PC with TransferMan® 4r or InjectMan® 4	5192 081.000	5192081000
<b>Micromanipulators</b>		
TransferMan® 4r, micromanipulator with direct and dynamic movement control (for research use only)	5193 000.012	5193000020
InjectMan® 4, micromanipulator with dynamic movement control (for research use only)	5192 000.019	5192000027
Eppendorf PiezoXpert®, for piezo-assisted micromanipulation	5194 000.016	5194000024
<b>Consumables</b>		
Microloader, 2 Racks à 96 tips, 0.5–20 µL, 100 mm	5242 956.003	930001007
GEloader, 2 Racks à 96 tips, 0.5–20 µL, 62 mm	0030 001.222	022351656
Femtotip, injection capillary, sterile, set of 20	5242 952.008	930000035
Femtotips II, injection capillary, sterile, set of 20	5242 957.000	930000043

[www.eppendorf.com/cellmanipulation](http://www.eppendorf.com/cellmanipulation)

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