



# Team Players

Eppendorf Microinjectors FemtoJet® 4i and FemtoJet® 4x

# Precise, Compact and Reliable

Microinjection has been a key method in cell research for several decades. From classical developmental biology to genome editing with the CRISPR/Cas9 system it allows addressing a wide range of experimental questions.

High-quality microinjection results require precision and reliability. Eppendorf's electronic microinjectors, the FemtoJet® 4i and FemtoJet® 4x, are your tools of choice for reproducibly injecting smallest volumes into oocytes, adherent cells or small organisms/embryos. The FemtoJet 4i and FemtoJet 4x are for research use only.



## Product features

- > User-friendly operation for routine tasks
- > Injection volumes range from femtoliters to microliters
- > Programmable injection guarantees high reproducibility
- > Inject and Clean function can be triggered on the device using the included foot control or optional hand control
- > Connection to InjectMan® 4 or TransferMan® 4r as well as InjectMan® NI 2 enables semi-automatic microinjection
- > Very low noise level during operation
- > Small footprint

## FemtoJet 4i only:

- > Independent pressure supply with built-in compressor
- > Especially well suited for injection volumes from femtoliters to 100  $\mu$ L

## 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  $\mu$ L to 1  $\mu$ L and above





## 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 other Eppendorf instruments and consumables.

The electronic connection of FemtoJet 4i or 4x to the TransferMan 4r or InjectMan 4 guarantees simple, rapid and reproducible microinjections into cells. In addition, all instruments can be connected to the Eppendorf PiezoXpert® for piezo-assisted microinjection. The Eppendorf micromanipulation system is designed to simplify your daily work and speed up your workflow.

### Applications:

- > Microinjection into suspension cells when combined with the TransferMan 4r micromanipulator (e.g. pronuclear injection of fertilized mouse oocytes)
- > 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.)

Injected Specimen	FemtoJet 4i		-->	FemtoJet 4x	
Cell nucleus of adherent cells	[Bar]				
Cytoplasm of adherent cells		[Bar]			
Pronucleus /cytoplasm of fertilized mammalian oocytes			[Bar]		
<i>Caenorhabditis elegans</i>				[Bar]	
Fish embryos in early development phases					[Bar]
<i>Xenopus laevis</i> oocytes					[Bar]
Typical Injection Volume (liters)	$10^{-15}$	$10^{-12}$		$10^{-9}$	$10^{-6}$
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	0.01 s – 99.99 s; can be set in increments of 0.01 s	
Injection pressure	5–6,000 hPa (0.07-87 psi)	
Compensation pressure	5–6,000 hPa (0.07-87 psi)	
Clean function	Maximum rinsing pressure of 6,000 hPa (87 psi)	
Continuous flow function	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
Connecting cable for connecting FemtoJet® 4i/4x to InjectMan® NI 2	5252 070.038	5252070038
<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

Your local distributor: [www.eppendorf.com/contact](http://www.eppendorf.com/contact)

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