

TARGET CONTROLLED INFUSION SYRINGE PUMP



ESP -2000 dual Target Controlled Syringe Pump is designed for delivery of anesthetic drugs by target controlled infusion (TCI) mode according to the pharmacokinetics. The pump makes good use of the 32 bit CPU and built-in intellectualized operation System, and has two syringe drive systems which can delivery drugs independently and cooperatively. It has the powerful performance of calculation and good expansibility of functions. It is fit for mainlining anesthetic drugs.

Functions and Features:

A. Operation modes: Plasma TCI mode, Effect site TCI mode, Constant flow rate infusion mode, TAVAI mode, volume & time infusion mode and intermittent infusion mode.

1) **Plasma TCI** (target controlled Infusion) mode enables users to set the target plasma concentration.

2) **Effect site TCI** (target Controlled Infusion) mode enables users to set the target effect site concentration.

The pump delivers drugs to maintain the desired concentration according to the pharmacokinetic model. The Infusion rates are altered automatically.

3) **Constant flow rate infusion** mode: It enables the users to control the infusion by setting the flow rate. There are seven flow rate units of available such as ml/h, mg/h, ug/h, mg/kg/h, mg/kg/min, ug/kg/h, ug/kg/min.

4) **TIVAI** mode (Total Intravenous Anesthesia Infusion Mode): enables the user to control the infusion by setting the capacity, the time need for the initial infusing capacity and the maintaining infusion rate. When the initial infusing is finished, the infusion rate will change to maintaining rate automatically.

5) **Volume & time infusion** mode: It enables the users to control the infusion by setting the desired volume and the desired time to be infused.

6) **Intermittent infusion** mode: It enables the user to control the infusion by setting the flow rate to be infused, volume to be infused per interval, intermitted time per interval, and KVO rate during intermitted time. It is fit for infusing the drugs which has long effect duration.

B. Available drugs: Fentanyl, Alfentanil, Sufentanil, Midazolam, Propofol, Etomidate, Vecuronium, Atracurium, Rocuronium, Remifentanyl, Ketamine.

C. Automatic compensation for drug when the infusion is paused and maintain the concentration required.

D. Advanced intelligence, recovery time forecast function help the doctors to stop the infusion at the right time.

E. RS-232 communication: this enables the history data to be transmitted from pump to PC.

F. Bolus function: Help patients to past the stimulative phase safely and steadily. **Bolus rate:** 300ml/h

G. KVO function: Automatically start the KVO (keep the vein open) infusion when the normal infusion stopped.

H. Alarm and Warns: when something abnormal occurs, the pump can give out audible alarm and warning information such as AC power failure, battery low, drug near empty, drug empty, occlusion, end of infusion, syringe disengaged, forget operation, infusion rate abnormal, motor abnormal, pushfit error etc.

SPECIFICATIONS:

Range of flow rate:

5ml syringe:	0.1~150ml/h;
10ml syringe:	0.1~300ml/h;
20ml syringe:	0.1~600ml/h;
30ml syringe:	0.1~900ml/h;
50(60) ml syringe:	0.1~1200ml/h;

Suitable Syringe: all the syringe in the standard capacity set 5ml, 10ml, 20ml, 30ml, 50(60) ml can be used in the pump by custom syringe's setting. **Accuracy:** $\pm 2\%$

Display: A large screen (320x240 pixel), rotary setting with convenient operation interface.

Pill Dosage and Occlusion Threshold:

Pressure level	Low 300 \pm 100mmHg	Medium 500 \pm 150mmHg	High 900 \pm 200mmHg
Reaction Time	≤ 10 minutes	≤ 20 minutes	≤ 35 minutes
Pill Dose	≤ 1 ml	≤ 1.5 ml	≤ 2.5 ml

Power supply : AC 100V -245V 50/60 Hz

Battery: 11.1 V battery can use for more than 5 hours after charged for 10 hours

Input power 30-45 VA

Operating Conditions:

Safety standard: Class IIb (CE standard) complies with

EN60601-1-2:2001, EN60601-1:1990+A1:1993+A11:1993+A12:1993+A2:1995+ A13:1996;

EN60601-2-24:1998, ISO8536-8:2004

Ambient temperature : +5 to +40°C

Relative Humidity (RH): $\leq 90\%$

Dimension (mm): 272(L) x200(W) x270(H)

Weight: 2,5 kg



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