

# Pump Specifications (All pumps available in CE mark version)

| Infusion Pumps   |                                   |                                   |                                      |  |  |
|--|-----------------------------------|-----------------------------------|--------------------------------------|--|--|
| Model  | KDS 100                           | KDS 101                           | KDS 200                              | KDS 220  | KDS 250  |
| <b>Syringes<br/>Max. No. and Size</b>  | One<br>10 µl - 60 ml each         | Two<br>10 µl - 10 ml each         | Two<br>10 µl - 140 ml each           | Ten<br>10 µl - 10 ml each<br>Six<br>20 ml - 60 ml each<br>Four<br>100 ml - 140 ml each | Four<br>10 µl - 10 ml each<br>(each syringe can be a different size) |
| <b>Dimensions</b>  | 9 x 6 x 5 in<br>(23 x 15 x 12 cm) | 9 x 6 x 5 in<br>(23 x 15 x 12 cm) | 11 x 9 x 6 in<br>(28 x 23 x 15 cm)   | 11 x 12 x 6 in<br>(28 x 23 x 15 cm)  | 11 x 9 x 6 in<br>(28 x 23 x 15 cm)                                   |
| <b>Weight</b>  | 4.5 lb (2 kg)                     | 5 lb (2.3 kg)                     | 9 lb (4 kg)                          | 9.5 lb (4.3 kg)  | 9 lb (4 kg)  |
| <b>Min. Flow Rate (10 µl syrl)</b>   | 0.1 µl/hr                         | 0.001 µl/hr                       | 0.001 µl/hr                          | 0.001 µl/hr  | 0.001 µl/hr  |
| <b>Max. Flow Rate<br/>10 ml syringe<br/>60 ml syringe<br/>140 ml syringe</b> | 127 ml/hr<br>519 ml/hr<br>-       | 0.351 ml/min<br>-<br>-            | 21 ml/min<br>86 ml/min<br>145 ml/min | 21 ml/min<br>-<br>-  | 21 ml/min<br>-<br>-  |
| <b>Linear Force</b>  | 20 lb (9 kg)                      | 40 lb (18 kg)                     | 40 lb (18 kg)                        | 40 lb (18 kg)  | 40 lb (18 kg)  |
| <b>Advance per Microstep</b>   | 0.529 micron<br>(1/2 step)        | 0.088 micron<br>(1/2 step)        | 0.165 micron<br>(1/16 step)          | 0.165 micron<br>(1/16 step)  | 0.165 micron<br>(1/16 step)  |
| <b>Max. Step Rate (1/2 Step)</b>   | 400/sec                           | 400/sec                           | 1600/sec                             | 1600/sec   | 1600/sec   |
| <b>Min. Step Rate (1/2 Step)</b>   | 1/30sec                           | 1/30sec                           | 1/100sec                             | 1/100sec   | 1/100sec   |
| <b>Accuracy</b>  | ± < 1%                            | ± < 1%                            | ± < 1%                               | ± < 1%   | ± < 1%   |
| <b>Reproducibility</b>   | ± 0.1%                            | ± 0.1%                            | ± 0.1%                               | ± 0.1%   | ± 0.1%   |
| <b>Programmable Model</b>  | -                                 | -                                 | KDS 200P                             | KDS 220P   | KDS 250P   |

|  | Infusion/Withdrawal Pumps            |  |  | Push-Pull Pumps                   |                                    | Continuous Flow                     |
|--|--------------------------------------|--|--|-----------------------------------|------------------------------------|-------------------------------------|
| Model  | KDS 210                              | KDS 230  | KDS 310                                    | KDS 120                           | KDS 260                            | KDS 270                             |
| <b>Syringes<br/>Max. No. and Size</b>  | Two<br>10 µl - 140 ml each           | Ten<br>10 µl - 10 ml each<br>Six<br>20 ml - 60 ml each<br>Four<br>100 ml - 140 ml each | One<br>1 µl - 100 µl                       | One + One<br>10 µl - 15 ml each   | Two + Two<br>10 µl - 60 ml each    | Up to Four<br>10 µl to 60 ml        |
| <b>Dimensions</b>  | 11 x 9 x 6 in<br>(28 x 23 x 15 cm)   | 11 x 9 x 6 in<br>(28 x 23 x 15 cm)   | 7 x 1 x 2 in<br>(17 x 3 x 5 cm)*           | 9 x 6 x 6 in<br>(23 x 15 x 14 cm) | 11 x 9 x 6 in<br>(28 x 23 x 15 cm) | 11 x 9 x 6 in<br>(28 x 23 x 15 cm)  |
| <b>Weight</b>  | 9 lb (4 kg)                          | 9.5 lb (4.3 kg)  | 4 lb (2 kg)                                | 5 lb (2.3 kg)                     | 9.5 lb (4.3 kg)                    | 9.5 lb (4.3 kg)                     |
| <b>Min. Flow Rate (10 µl syrl)</b>   | 0.001 µl/hr                          | 0.001 µl/hr  | 0.01 µl/min**                              | 0.1 µl/hr                         | 0.001 µl/hr                        | 0.001 µl/hr                         |
| <b>Max. Flow Rate<br/>10 ml syringe<br/>60 ml syringe<br/>140 ml syringe</b> | 21 ml/min<br>86 ml/min<br>145 ml/min | 21 ml/min<br>-<br>-  | 127.1 µl/min<br>(100 µl syringe)<br>-<br>- | 127 ml/hr<br>-<br>-               | 21 ml/min<br>86 ml/min<br>-        | 21 ml/min<br>86 ml/min (30 ml)<br>- |
| <b>Linear Force</b>  | 40 lb (18 kg)                        | 40 lb (18 kg)  | 10 oz (0.28 kg)                            | 20 lb (9 kg)                      | 40 lb (18 kg)                      | 40 lb (18kg)                        |
| <b>Advance per Microstep</b>   | 0.165 micron<br>(1/16 step)          | 0.165 micron<br>(1/16 step)  | 6.35 micron<br>(1/2 step)                  | 0.529 micron<br>(1/2 step)        | 0.165 micron<br>(1/16 step)        | 0.165 micron<br>(1/16 step)         |
| <b>Max. Step Rate (1/2 Step)</b>   | 1600/sec                             | 1600/sec   | 400/sec                                    | 400/sec                           | 1600/sec                           | 1600/sec                            |
| <b>Min. Step Rate (1/2 Step)</b>   | 1/100sec                             | 1/100sec   | 1/30sec                                    | 1/30sec                           | 1/100sec                           | 1/100sec                            |
| <b>Accuracy</b>  | ± < 1%                               | ± < 1%   | ± < 1%                                     | ± < 1%                            | ± < 1%                             | ± < 1%                              |
| <b>Reproducibility</b>   | ± 0.1%                               | ± 0.1%   | ± 0.1%                                     | ± 0.1%                            | ± 0.1%                             | ± 0.1%                              |
| <b>Programmable Model</b>  | KDS 210P                             | KDS 230P   | -  | -                                 | KDS 260P                           | KDS 270P                            |

Audible alarm option available with all pumps. Keypad programmable option available with all 200 Series pumps.

**NOTE: KD SCIENTIFIC SYRINGE PUMPS ARE FOR LABORATORY USE ONLY. THEY HAVE NOT BEEN APPROVED BY THE FDA FOR CLINICAL USE ON HUMANS.**

All models available 115/230 VAC 50/60 Hz and with CE mark. All specifications subject to change at any time.

\* Pump head dimensions. \*\* Using 1 µl syringe.