



*Quality. Service. Value.*



*Instruments for Hydroponics  
Monitoring and Control*



[www.tps.com.au/hydroponics](http://www.tps.com.au/hydroponics)

# hydroCHEM - DS Hydroponics Dosing System

## Australian - Made Quality

TPS has been designing and manufacturing instruments and sensors in Australia since 1968. We have extensive experience in all types of instrumentation from precision laboratory equipment to industrial process control. This experience carries over to our hydroponics products which we have been producing for over 20 years.

At TPS, our aim is to provide you with the best quality, service and value for money and the TPS Quality System has been independantly certified in accordance with the AS/NZS ISO 9001 standard.

## 80 Character Display

- Huge 11 mm digits for Conductivity and pH data
- Temperature and Time readout
- Control status readout
- User-friendly menu and help system

## Waterproof Construction

- Enclosure rated to IP65
- Waterproof connectors for sensors and outputs

## Single 24V Power Supply

- No electrical installation required.
- Suitable for installations running on DC power.
- Supplied with AC/DC Adaptor to suit destination country.

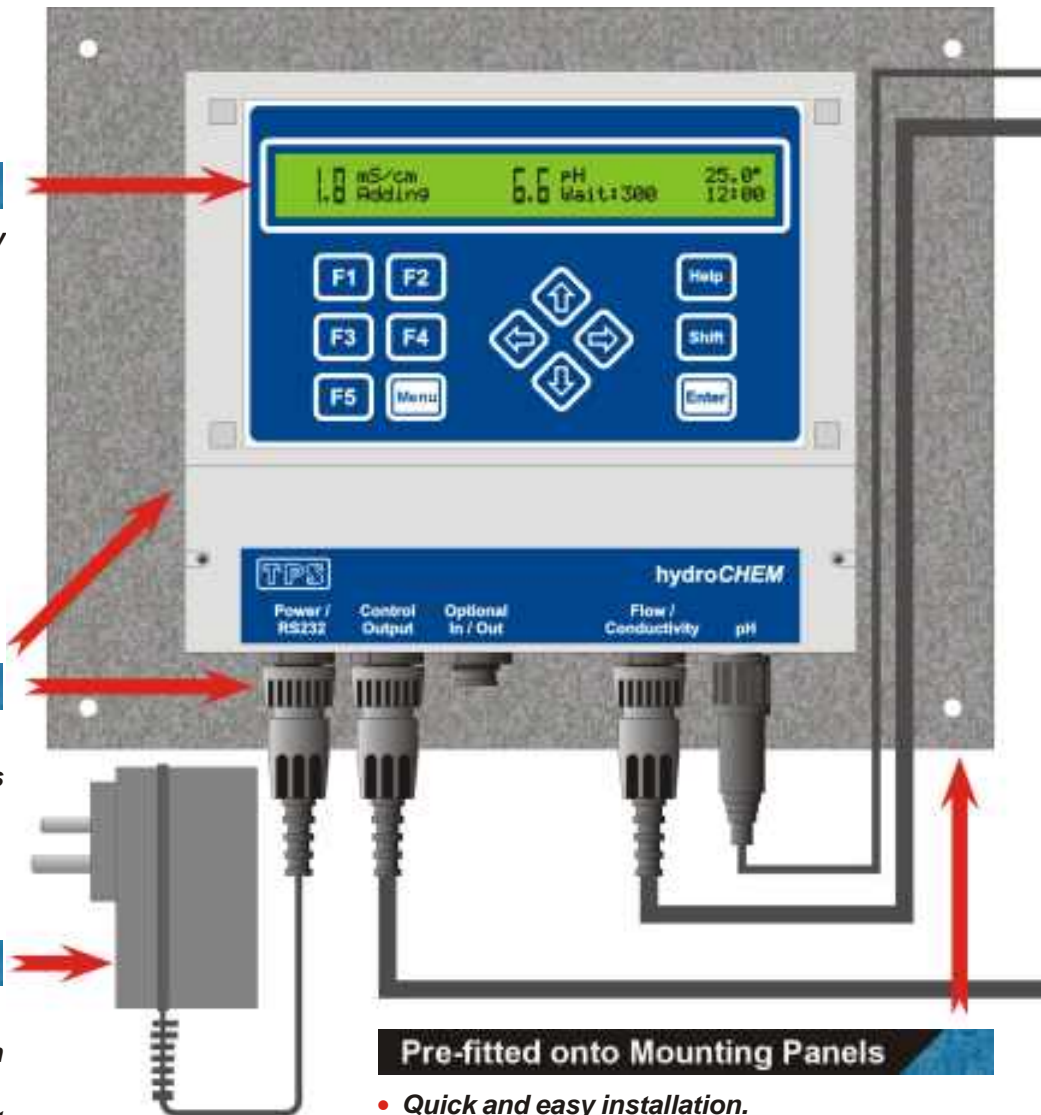
## Pre-fitted onto Mounting Panels

- Quick and easy installation.
- Controller is separate from pump & sample panel, so it can be mounted outside the wet area.

## Optional Datalogging and Computer Interface

The "Plus Pack" option includes the following...

- 24 Hour calendar clock.
- Automatic datalogging facility with memory for up to 2300 sets of readings.
- RS232 Serial computer interface allows remote monitoring of system.
- Selectable High or Low Conductivity and pH display resolution.







Waterproof



User Friendly



Calendar Clock



GLP



Notepad Function



Automatic Logging



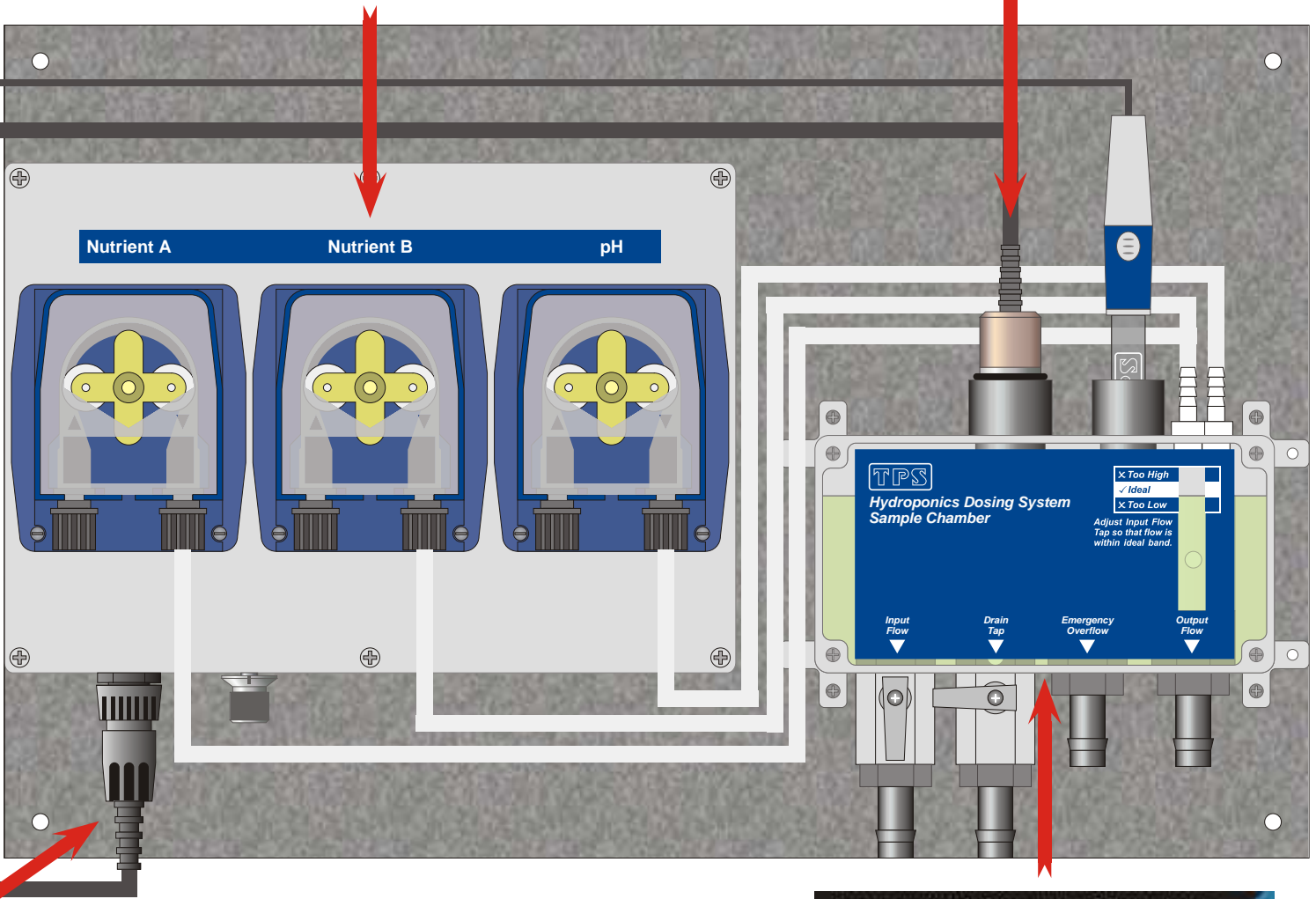
RS232 Port

## Highly Reliable Peristaltic Pumps

- **Waterproof housing design.**
- **Separate pumps supplied for A Nutrient, B Nutrient and pH Adjustor.**
- **Adjustment to fine-tune A and B Nutrient ratio**

## 4 Terminal Conductivity Sensor

- **4 Terminal technology resists fouling for maximum reliability.**



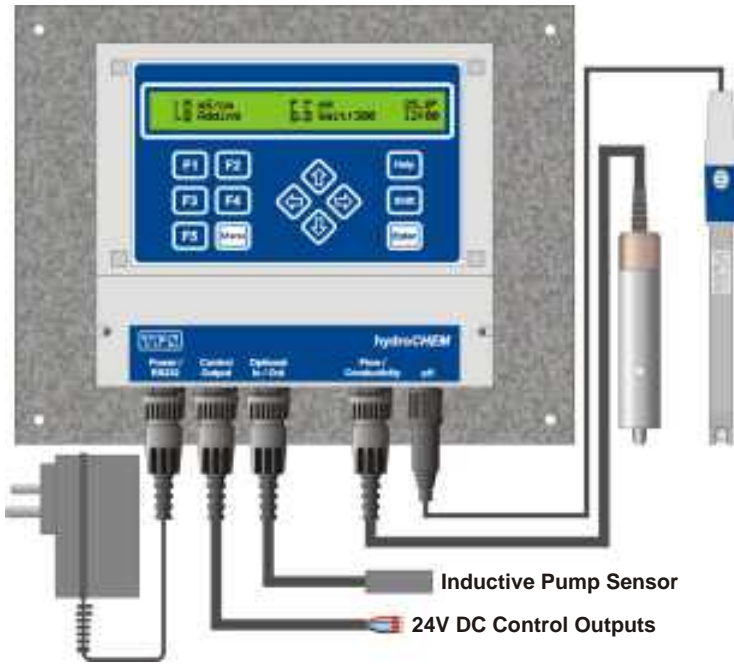
## Integrated Sample Chamber

- **Sample chamber makes probe installation quick and easy.**
- **Flow rate adjustment tap.**
- **System senses flow ensuring that dosing only occurs when pump is running.**

## Other hydroCHEM Features

- **Automatic calibration.**
- **User can choose readout in mS/cm, CF units, dS/m or ppM (TDS).**
- **Quick-dose function to top up chemicals even if readings are OK.**
- **Fully adjustable ON and OFF control cycles eliminate over-dosing.**
- **User can set acid or alkali pH Adjustor.**
- **Password protection, so only qualified users can change set-up or calibration.**
- **Good Laboratory Practices (GLP) brings analytical Q.A. to the Hydroponics farmer.**
- **Emergency shut-off timer stops dosing in case of malfunction.**

# hydroCHEM Hydroponics Controller



- **hydroCHEM Controller, supplied with Conductivity, pH and Pump sensors.**
- **All the features of the hydroCHEM - DS, but without the pump & sample chamber panel.**
- **3 x 24V DC outputs for Nutrient A, Nutrient B and pH, which can be used to control low power solenoids, pumps etc or relays which can switch larger dosing pumps.**
- **Conductivity and pH Sensors are supplied with 5 metre cables for maximum installation flexibility.**
- **Ideal for large Run-To-Waste operations, which may require higher flow rate pumps.**

hydroCHEM - DS

Ordering Information

hydroCHEM

hydroCHEM-DS Dosing System . . . . Part No 111109

**Kit Includes**

hydroCHEM Hydroponics Controller . . . . .	111103
(pre-fitted onto mounting panel)	
Dosing panel with 3 peristaltic pumps and . . . . .	116320
sample chamber	
4 Terminal Conductivity Sensor, 1m . . . . .	122205
(also used for flow sensing)	
Industrial pH Sensor, 1m . . . . .	121227
Control output cable for pump box . . . . .	130104
pH6.88 Buffer, 200mL . . . . .	121306
pH4.00 Buffer, 200mL . . . . .	121381
2.76mS/cm Cond Standard, 200mL . . . . .	122306
24 V AC/DC Power Adaptor . . . . .	Specify Country
2m of Input Tubing for each pump . . . . .	116358
2m of Output Tubing for each pump . . . . .	116360
Tube weights for feed drums for each pump . . . . .	116354
10m of 13mm black poly pipe . . . . .	NPH.5
4 x 13mm poly pipe clips . . . . .	N13
hydroCHEM Handbook . . . . .	130050

**Instrument Options**

Plus-Pack option (includes RS232 cable) . . . . .	130100
Communication Software for Windows . . . . .	130086
(Windows 95 and all later versions)	
Alarm Siren (105dB) . . . . .	130101

**Spares**

RS232 Computer Interface Cable . . . . .	130041
Spare Pump Tube Assembly . . . . .	116352
Pump Tube Lubricant, 3mL. . . . .	130103

hydroCHEM Controller . . . . . Part No 111103

**Kit Includes**

4 Terminal Conductivity Sensor, 5m. . . . .	122215
Industrial pH Sensor, 5m . . . . .	111224
Inductive Pump Sensor, 2m. . . . .	130102
pH6.88 Buffer, 200mL . . . . .	121306
pH4.00 Buffer, 200mL . . . . .	121381
2.76mS/cm Cond Standard, 200mL. . . . .	122306
24VDC Three-way Control Output Cable. . . . .	130105
24 V AC/DC Power Adaptor . . . . .	Specify Country
hydroCHEM Handbook . . . . .	130050

**Instrument Options**

Plus-Pack option (includes RS232 cable) . . . . .	130100
Communication Software for Windows . . . . .	130086
(Windows 95 and all later versions)	
Alarm Siren (105dB). . . . .	130101

**Spares**

RS232 Computer Interface Cable . . . . .	130041
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## pH

Ranges	2.0 to 12.0 pH 2.00 to 12.00 pH*
Resolutions	0.1 pH 0.01 pH*
Accuracy	+/-0.01pH

## Conductivity

Ranges	0 to 9.9 mS/cm 0 to 9.99 mS/cm* 0 to 99 CF 0 to 99.9 CF* 0 to 9.9 dS/m 0 to 9.99 dS/m*
Resolutions	0.1 mS/cm 0.01 mS/cm* 1 CF 0.1 CF* 0.1 dS/m 0.01 dS/m*
Accuracy	+/-0.5% of full scale

## TDS

Ranges	0 to 9.9 ppK 0 to 9.99 ppK*
Resolutions	0.1 ppK 0.01 ppK*
Accuracy	+/-1.0% of full scale

## Temperature

Range	-10.0 to 120.0 °C
Resolution	0.1 °C
Accuracy	+/-0.2 °C

## Temperature Compensation

Automatic Temperature Compensation for Conductivity and pH. Uses temperature sensor built into Conductivity sensor.

## Calibration

Automatic calibration for all parameters, with automatic standards recognition.

## Enclosure

Tough ABS enclosure, fully waterproof to IP65.

## Display

80 Character alphanumeric LCD with user-friendly menu system and full-text messages.

## Peristaltic Pumps (hydroCHEM - DS only)

3 x 5 Litre / Hour Peristaltic Pumps built into a single pump box.

Chemical resistant Santoprene pump tubing.

## Dimensions

Controller Panel	235 x 300 mm
Pump & Sample Chamber Panel	470 x 300 mm

## Mass

hydroCHEM - DS Full kit	Approx 8.0 kg
hydroCHEM Full Kit	Approx 5.0 kg

## Environment

Temperature	0 to 45 °C
Humidity	0 to 95% R.H.

## Power

hydroCHEM - DS	24V DC, 400mA Max with all pumps on.
hydroCHEM	24V DC, 50mA Max for controller. Up to 150mA can be supplied out of each 24V DC control output.

AC/DC Adaptor to suit specified country is supplied.

## Good Laboratory Practices

All calibration information and user-adjustable set-up information is stored in memory, and can be recalled on the display at any time. This information can also be printed or downloaded to a computer when the optional Plus Pack is fitted.

The unit's serial number is stored in memory. This is displayed at turn-on, and included with GLP information.

## Plus-Pack Option

The Plus Pack option includes the following items...

- RS232 Serial Interface for printing or downloading data.
- Datalogging capability.
- 24 Hour Calendar Clock.
- Selectable High or Low resolution.

## Datalogging\*

Memory	: 2300 readings, including date and time.
Notepad	: Records reading into memory at the touch of a button.
Automatic Datalogging	: User selectable for one reading every... 1, 2, 5, 10, 15, 20 or 30 minutes or every... 1, 2, 3, 4, 6, 8, 12 or 24 hours

## RS232 Serial Interface\*

300, 9600 and 19200 Baud.  
8 Bits, No Parity, 1 Stop Bit, XON/XOFF Protocol

## Calendar Clock\*

24 Hour Calendar Clock

\* These items applicable when Plus-Pack option is fitted.





- **Fully Waterproof Design**
- **Simultaneous Readout of Conductivity/TDS, pH & Temperature**
- **Easy to Use**
- **One-Touch Calibration**
- **Large Digit Mode (for one parameter)**
- **Fold-out Stand for Bench Use**



**Specifications and Ordering Information**

**Specifications**

	<b>Range</b>	<b>Resolution</b>	<b>Accuracy</b>
<b>pH</b>	0 to 14.00 pH	0.01 pH	+/-0.01 pH
<b>Cond</b>			
k=1.0	0 to 20.00 mS/cm	0.01 mS/cm	+/-0.04 mS/cm
k=10	0 to 200.0 mS/cm	0.01 mS/cm	+/-0.4 mS/cm
k=0.1	0 to 2000 uS/cm	0.01 mS/cm	+/-4 uS/cm
<b>TDS</b>			
k=1.0	0 to 10.00 ppK	0.01 ppK	+/-0.05 ppK
k=10	0 to 100.0 ppK	0.01 ppK	+/-0.5 ppK
k=0.1	0 to 1000 ppM	1 ppM	+/-5 ppM
<b>Temp</b>	-10.0 to 120.0 °C	0.1 °C	+/-0.2 °C

**Temperature Compensation**

Automatic Temperature Compensation for Conductivity, TDS and pH. Uses temperature sensor built into Conductivity sensor.

**Calibration**

One-Touch calibration in automatically recognised standards for Conductivity, TDS and pH.

**Enclosure**

IP65 Waterproof ABS plastic case. The instrument will float if dropped into water.

**Display**

24 character alphanumeric LCD with full text messages.

**Battery Saver Function**

On . . . . . Auto switch-off after 5 minutes  
 Off . . . . . Continuous use

**Power**

9V Alkaline Battery for approx 70 hours continuous use.

**Dimensions**

150 x 80 x 31 mm

**Mass**

Instrument only . . . . . Approx 250 g  
 Full Kit. . . . . 1.5 kg

**Environment**

Temperature . . . . . 0 to 45 °C  
 Humidity . . . . . 0 to 95% R.H.

**Ordering Information**

**Aqua - CP Complete Kit** . . . . . **121134** Part No

**Kit Includes**

Plastic body, k=1 Conductivity Sensor, 1m . . . . . 122201  
 pH Sensor with Porous Teflon Junction, 1m . . . . . 121207  
 pH6.88 Buffer, 200mL . . . . . 121306  
 pH4.00 Buffer, 200mL . . . . . 121381  
 2.76mS/cm Cond Standard, 200mL. . . . . 122306  
 2.00 ppK TDS Standard, 200mL . . . . . 122307  
 9V Alkaline Battery . . . . . 130026  
 Aqua - CP Handbook . . . . . 130050

**Options**

Aluminium Carry Case . . . . . 130057  
 (holds meter, sensors and standard solutions)



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