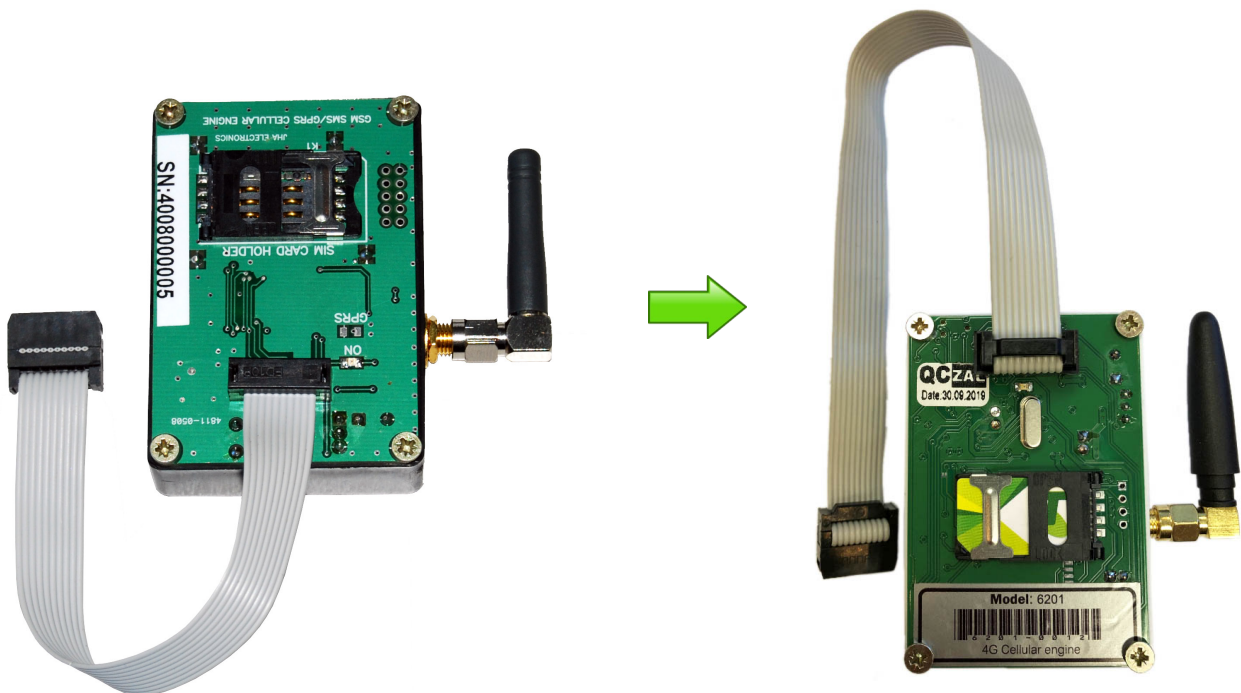


## **Replacing 2G GSM/GPRS Modem with GSM/3G/4G or 4G MODEM CARD Model: DP-OPT-CARD-3G/4G or DP-OPT-CARD-4G**



**Supplied by:**

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***Manufacturer:*** Convergent Water Controls Pty Ltd, Sydney Australia.

***Note:*** On-going product development at Convergent Water Controls may lead to changes in the specifications of this product.

***Warranty:*** This product is guaranteed for a period of 12 months from installation date or 18 months from Invoice date (whichever occurs first). The warranty applies to manufacturing or component defects which may cause the unit to malfunction under specified conditions. The guarantee does not cover damage due to abuse, tampering or improper installation.

***Disclaimer:*** Convergent Water Controls will not be held liable for any consequential damage or loss arising resulting from product malfunction.

# ***Table of Contents***

<b>1. Introduction .....</b>	<b>4</b>
1.1 Features .....	4
<b>2. SIM Card.....</b>	<b>4</b>
<b>3. Installation of 3G/4G Modem.....</b>	<b>5</b>
<b>4. Changing APN if Required for New SIM.....</b>	<b>7</b>
<b>5. DIGICHEM Plus+ Firmware Upgrade.....</b>	<b>8</b>

# 1. Introduction

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The DP-OPT-CARD-GPRS modem card fitted in many DIGICHEM-Plus+ controllers have become redundant due to all Australian mobile networks decommissioning their 2G networks. In order to ensure continuity of connection to the DIGICHEM Plus+ webserver, all these units require the modems to be replaced with the 3G/4G modem, model DP-OPT-CARD-3G/4G.

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## 1.1 Features

- Easy retrofit to controllers installed in the field.
- No firmware upgrade required for versions S0200 ver 1.05 or later.
- Operates with any SIM card on the GSM/3G/4G Network (Telstra, Optus or Vodafone for Australian installations)

## 2. SIM Card

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The SIM card that is already installed in the 2G modem can most likely be used in your new 3G/4G modem without any configuration changes. If you are unsure whether your existing SIM is compatible with the 3G/4G network, please contact the manufacturer or your distributor.

Most SIM cards supplied in recent years on any network would be 3G/4G and 2G compatible.

It is important to determine the 3G/4G compatibility of your SIM card prior to installation. Otherwise you will need to open the controller again to refit a new SIM card at a later date.

### **IMPORTANT:**

If installing a new SIM card, it is necessary to disable the PIN on the SIM card. Please insert the SIM card into a compatible mobile phone. On start up, if the phone prompts you for a PIN, which is usually 0000, please go into Settings and disable this feature. You can confirm it is disabled by turning the phone off and on again. You should go straight to the main screen on the phone WITHOUT being prompted for a PIN.

### 3. Installation of 3G/4G Modem

The DP-OPT-CARD-3G/4G includes a Velcro attachment, SIM card holder and ribbon cable to be attached to the DIGICHEM Plus+ Controller.

Simply unplug the old 2G modem and fit the 3G/4G in its place. The physical size is identical and so is the electrical connection.

**IMPORTANT:** Ensure you plug the modem into the top port on the DIGICHEM Plus+ motherboard (It should be labelled "GSM/GPRS Port").

**Caution:** This should only be performed by a qualified technician or electrician.



**DIGICHEM Plus+ MOTHER BOARD WITH GSM/3G/4G MODEM CARD INSTALLED**

**Please see the diagram above, and follow the instructions below:**

1. Ensure that the power is switched off and the controller is unplugged from mains power.
2. Remove cover of enclosure.
3. Locate modem top LHS.
4. Unplug modem and pull away from Velcro attached to controller base.
5. Remove SIM card in order to fit it in the new modem.

6. Fit new modem in the same location.
7. Plug the ribbon cable from the Modem into the black socket labelled GSM/GPRS Port, as shown on the diagram above. This is the port at the top.
8. The connector can only plug in one way, with the tab towards the top of the enclosure. Push the connector in all the way.
9. If you plug the modem into either of the ports below, it will not work.

**Now install the SIM CARD as per the steps below:**



Figure 1



Figure 2

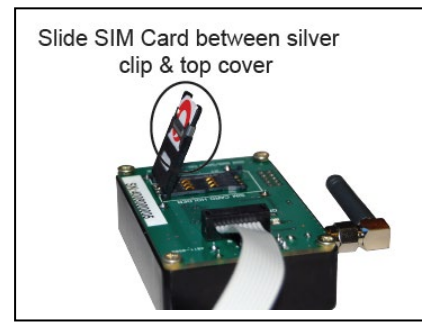


Figure 3

1. To insert the SIM Card into the holder, slide the silver clip as per figure 1 (if already not done), and lift up the top flap.
2. Slide the sim card into the top flap, between the silver clip, and sheath of the top flap as shown above in figures 2 & 3.
3. Make sure the positional tab on the SIM Card is towards the top, left hand corner, as shown in figure 2. Slide the card in all the way – figure 3.
4. Push the top flap down and slide the silver clip as shown below in figure 4.



Figure 4

**Replace the Enclosure Cover of the DIGICHEM Plus+ Controller:**

5. Replace cover of enclosure, ensuring that the seal is in place and no wires are trapped between the lid and the base.
6. Screw the enclosure cover down securely.
7. Plug into mains and switch on.

## 4. Changing APN if Required for New SIM

Each service provider has an APN number, (Access Point Name), which is a unique number that identifies that service provider's network.

Each DIGICHEM Plus+ Modem needs to know this APN number of the service provider.

The APN will only need to be changed if the SIM card has been replaced and the APN is different from the original SIM. The SIM supplier will be able to advise of this if you are unsure.

To send the APN number to the Modem, a text will be required to be sent via the Modem's SIM Card from a mobile phone.

1. Send the text message (SMS) as follows:

**NOTE: All text is CASE SENSITIVE, so please check**  
**The underscore ( \_ ) represents a space character**

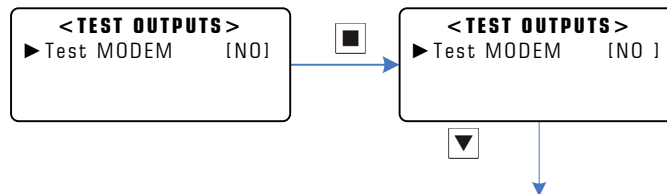
**In the example below, the APN for Vodafone is vfinternet.au with username and password blank. This is why there are 2 spaces after the APN in the string below.**

Service Provider:	Text Message to be sent:
Network	AQUAGPRS,APN=XXX,YYY,ZZZ# Where: XXX = Network APN YYY = Username ZZZ = Password  For many networks, the Username and Password is blank, as per the examples below.
Vodafone	AQUAGPRS,APN=vfinternet.au,_,_#

2. In the 'Send to Number Menu' of your mobile phone, enter the telephone number of the SIM Card into your mobile phone.

3. Enter the TEST Outputs menu of the DIGICHEM Plus+ controller, and test the modem as shown in the diagram below (That will allow the modem to connect to the GSM network and accept the message):

**Main Menu > TEST OUTPUTS.**



Modem will now switch on, and Controller will default to the main screen –  
See Modem messages displayed on the last line

#### Manual Testing of Modem

4. If the APN is successfully changed you will get a reply confirmation SMS. If you do not, please change any setting in the DIGICHEM Plus+ controller and save it. This will force a connection to the server.

## 5. DIGICHEM Plus+ Firmware Upgrade

If your DIGICHEM Plus+ has firmware version S0200 ver 1.05 or later, then you can skip this step. However, if your DIGICHEM has firmware version older than S0200 ver 1.05, then a firmware upgrade will be required. You will require a firmware dongle in order to achieve this.

If you are unsure of your firmware version, please log on. The version is displayed as follows.

CWC HO
[Back](#)

Test unit : 0830-04153  
**SW S0200 Ver 1.10** 200 ver 1.2

	Conductivity	ORP	pH	Temperature	
Readings	1120 TDS	28 mV	14.00 pH	24 °C	<a href="#">Refresh</a>
Setpoints	4153 TDS	601 mV	7.69 pH	Flow OK	

Readings last updated: 14 Nov 2016 11:45 (Week 1)

[settings](#)
[data log](#)
[events](#)
[graphs](#)
[sms/e-mail](#)

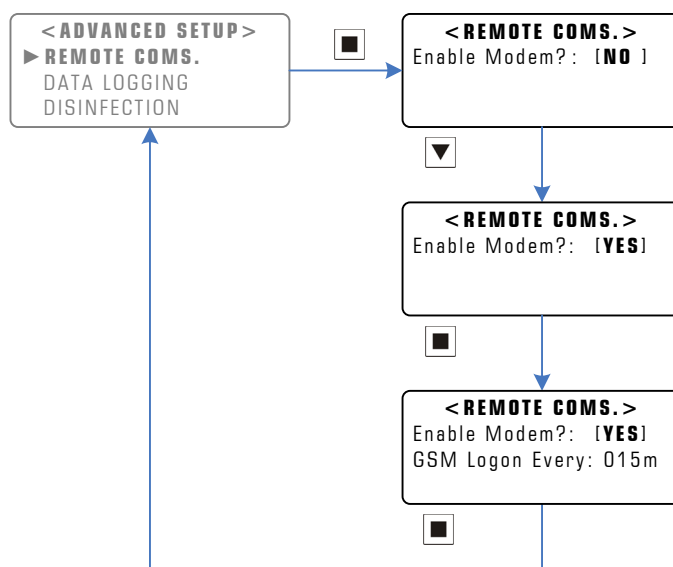
Alternatively hold the RED button of the DIGICHEM Plus+ controller down for 5 seconds and the version no will be displayed.



## Steps:

1. Plug firmware dongle into the Comms Port on the front panel of the controller.
2. Press the UP and DOWN buttons together momentarily to reboot the controller.
3. Controller should recognise the firmware and do an update.
4. When update is complete, remove dongle. (NOTE: You do not need to remove power when removing dongle. Simply unplug)
5. If the firmware does not update, then repeat the steps above whilst pressing the back of the dongle to push it further into the socket.
6. If the firmware does not update, please contact the manufacturer or your distributor.
7. Make note of all the controller settings. This can be done by logging on to [www.digichemplus.com](http://www.digichemplus.com) and printing a report of all the settings. Or you can hold the RED button on the controller down until you come to an information screen. Whilst there, press the UP or DOWN arrow to scroll through all the controller settings.
8. Enter the controller menu by holding the MENU (i.e. DOWN ARROW) button down.
9. Scroll to FACTORY SETTINGS menu
10. Reset to factory settings, but do not reset the calibration when prompted.
11. Go back into the MENU and re-enable the REMOTE COMMS in the SETUP/ADVANCED SETUP menu. Once this is done, the modem will connect to the server.
12. When the upload is complete, reprogram your controller as per all the settings you recorded before.

**Main Menu > SETUP MENU > ADVANCED SETUP > REMOTE COMS.**



**Example:** Enabling the Remote Communications

NOTE: When the firmware upgrade is successful and you have changed your settings, the firmware version of the modem should change too, indicated by the modem # 6200 shown below:

**CWC HO** [Back](#)

 **Test unit :** 0830-04153  
SW S0200 Ver 1.10 **6200 ver 1.2**

settings

data log

events

graphs

sms/e-mail

	Conductivity	ORP	pH	Temperature	
Readings	1120 TDS	28 mV	14.00 pH	24 °C	<a href="#">Refresh</a>
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Readings last updated: 14 Nov 2016 11:45 (Week 1)