

BMS CARD Model: DP-OPT-CARD-OP



- Retrofit to (or supplied with) DIGICHEM[®] Plus⁺ Controllers
- 4-20mA Outputs
- NPN Open Collector Status Outputs for Power Failure, Flow, Alarm & Individual Output Status

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.

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The DP-OPT-CARD-OP BMS card can be fitted to any CWC DIGICHEM-Plus+ controller to remotely monitor the variable being controlled as well as power failure, flow, alarm and output status. The outputs of the card can be connected directly to Building Management Systems (BMS), data loggers or the CWC RSD (Remote SMSlog Diallers). The card works immediately after installation when powered up.

1.1 Features

- Easy retrofit to controllers installed in the field.
- Isolated 4-20mA proportional to µS/TDS, ORP, pH and Temperature
- NPN Open Collector Transistors to signal output status
- Failsafe Power Failure alarm signal (NPN)
- Independent Alarm signal (NPN)
- Flow signal (NPN)
- Separate Independent "Output ON" signals (NPN) for Biocide A, Biocide B/ORP, Inhibitor C, Solenoid Valve, pH & Dispersant

2. Installation & Wiring

The DIGICHEM Plus+ fitted with the DP-OPT-CARD-OP BMS card provides 4 x optically isolated 4-20mA signals for direct interface to a data logger, chart recorder, building management system (BMS). It also has various NPN open collector transistor outputs for remotely monitoring controller and output status. The interface card is an ordering option and can be retro-fitted to the DIGICHEM Plus+, or can be supplied factory fitted.

The DP-OPT-CARD-OP optional kit consists of the BMS card with ribbon cable mounted to a DIN connector to be clipped on the DIN Rail inside the DIGHCEM Plus+ Controller.

Your controller may also require a software upgrade if it does not recognise the card on power-up. The card is recognised if the LED on the card pulses after power up. If you are unsure, please provide your supplier with the serial number of the controller to determine if the software needs upgrading. A software upgrade entails power up the unit with a Dongle with the latest software version.

2.1 Installation of BMS Card into DIGICHEM Plus+ Controller



DIGICHEM Plus+ MOTHER BOARD WITH BMS CARD INSTALLED

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

- 1. Make sure that the power is switched off and the controller is unplugged from mains power.
- 2. Remove cover of enclosure.
- 3. Before clipping the card onto the DIN rail, make sure the position of the card is on the right hand side of the square, grey transformer, with the white spring clip of the card facing the bottom of the controller towards the black cable glands.
- 4. Clip the card onto the DIN rail by first tilting it upward aligning the top section on the DIN rail, then pressing down, until the white clip catches onto the other side of the DIN rail.
- 5. Plug the new interconnecting cable from the BMS card into either one of the I/O ports on the mother board of the DIGICHEM Plus+ Controller.
- 6. Replace cover of enclosure, ensuring that the seal is in place and no wires are trapped between the lid and the base.
- 7. Plug into mains and switch on.

2.2 Wiring Diagram of BMS card



WIRING DIAGRAM OF BMS CARD

Please see the diagram above and follow the instructions below:

2.2.1 Wiring of 4-20mA Outputs

The LED on the BMS card should pulse if it is working correctly.

The common negative is the (-) terminal 12 for all 4-20mA outputs. All 4-20mA outputs use this terminal as a common ground or common (-).

All 4-20mA outputs are isolated.

Wire the positive (+) terminal for the following variables into the respective terminal number.

Conductivity; 0-5000 TDS/ μ S = 4-20mA	: Terminal 16
ORP: 0-1000mV = 4-20mA	: Terminal 15
pH: 0-14pH = 4-20mA	: Terminal 14
Temperature: 0-100°C = 4-20mA	: Terminal 13
Common Ground	: Terminal 12

For a chart recorder, a 250 ohm resistor can be placed on an output terminal to convert the 4-20mA signal to 1-5Vdc. One each is required per variable required for a voltage output. It is important to observe the correct polarity of these connections.

2.2.2 Wiring of Open Collector Status Outputs

The LED on the BMS card should pulse if it is working correctly.

The common negative is the (-) terminal 1 for all NPN Transistor Open Collector outputs.

All the outputs use this terminal as a common ground or common (-).

These outputs are only status outputs, showing an on/off state.

The ground for the NPN outputs is the same ground as the analogue 4-20mA (1-5V) output ie. Terminals 1 & 12 are common.

Wire the outputs from the card as listed below into the respective NPN or voltfree inputs of the BMS system:



Diagram of NPN Outputs (N/O = normally open, N/C = normally closed)

Power Supply:	Ribbon Cable Plugging into O/P Connector on DP+
NPN Open Collector Output Status	 Power ON - NPN N/C, ie opens on power failure Biocide A - NPN N/O, ie closes when pump on Biocide B - NPN N/O, ie closes when pump on Inhibitor C - NPN N/O, ie closes when pump on Bleed - NPN N/O, ie closes when valve opens pH Pump - NPN N/O, ie closes when pump on Dispersant - NPN N/O, ie closes when pump on Flow - NPN N/O, ie closes when flow registered Alarm - NPN N/O, ie closes when alarm is raised
NPN Open Collector Specifications	 Max Open Collector Voltage: 50Vdc Max Continuous Current: 100mA
4-20mA Outputs	Maximum impedance: 500Ω 4-20mA output or 1-5V output with 250 Ω resistor • Conductivity: 0-5000 TDS/µS = 4-20mA • ORP: 0-1000mV = 4-20mA • pH: 0-14pH = 4-20mA • Temperature: 0-100°C = 4-20mA
Accuracy & Repeatability	1% of full scale
LED Indication:	Pulsing indicates correct operation
Controller Enclosure rating:	IP65 (ie. Completely weatherproof), if mounted inside DIGICHEM Plus+ enclosure
EMC compatibility	C-tick approved
Operating Temperature	0 - 50°C

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