



Tech20180109-1-2

Wiring DCMs to Strings of Two to Four Containers

Configurations with short strings of two to four containers require special consideration when planning a Cellwatch system configuration. A short string is a battery string with four or fewer containers. Short strings are commonly found in the following applications:

- Generator start batteries
- Telecommunications gear
- Power over Ethernet (POE) applications

When monitoring these small configurations, instinct may be to simply wire a single DCM across those containers. However, doing so will place the DCM in parallel with the charger which will cause inaccurate ohmic readings for that string. This is due to the DCM drawing its current from the charger and subsequent paralleled short strings instead of the containers it is monitoring. Most commonly this is seen on generator start batteries due to small number of containers used in that application.

We have several solutions that will be presented to ensure accurate measurements on "short strings".

DCM 5T DS

The DCM 5T DS (PN: 741123) is designed specifically for use in environments with two to four containers on a single string. In a parallel configuration, a single DCM 5T DS will be used on each string. It features one additional power lead (black) which splits the DCM into two test zones. The design of the module allows the DCM to provide accurate readings for all channels while in parallel with the charger. Implementation of the DCM 5T DS does require special configuration within the Cellwatch system.

The DCM 5T DS can monitor 2, 4, 6, 8, and 12V containers. Do not install the DCM 5T DS to monitor 16v containers.

Zone 1 and 2 of the DCM 5T DS comprise of channels 1-2 and 3-4 respectively. The additional power lead (black) divides the zones and must be placed centrally separating zone 1 and 2. If the black lead is placed on the same potential as either brown or white it could be exposed to the string voltage. Due to the design of the DCM 5T DS each zone should not exceed 30V. This means, in general, it must occupy the same post as the yellow sense lead.

WARNING: To prevent damage to the DCM 5T DS the black wire must be centrally located to the load (brown and white) wires on the DCM.

NOTE: The maximum operating voltage for the DCM5-DS is 60v. It cannot be used with four 16v jars

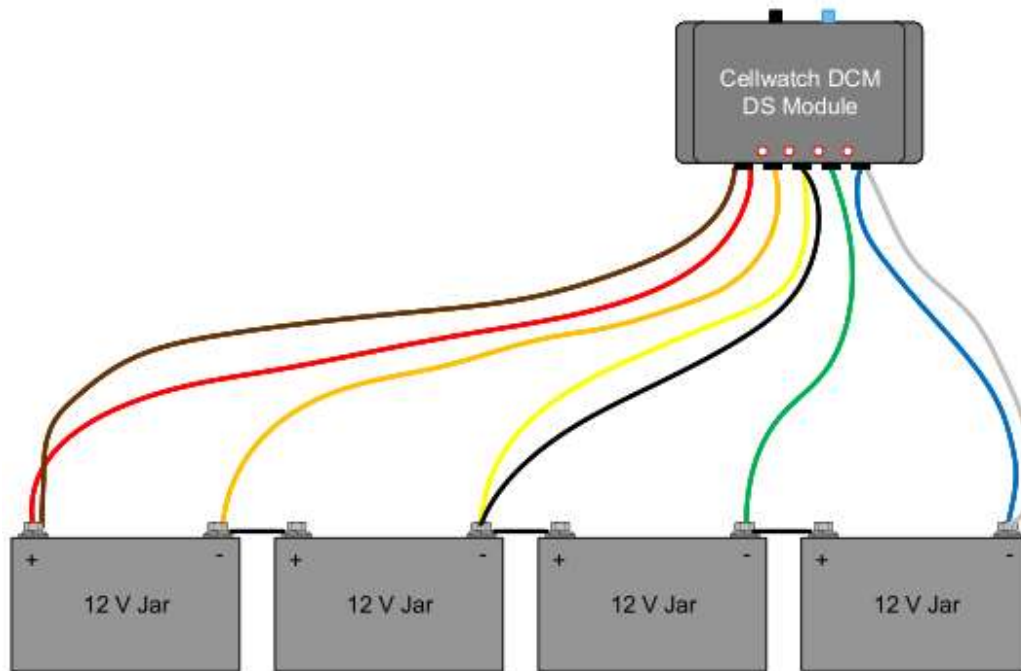


Figure 1 - Recommended installation of DCM 5T DS on a string of four containers

Two Container Strings

Many generators use four jars in two 24v parallel strings. For two container strings, a single DCM 5T DS will be used on each string. However, as before, each container must be monitored by a different zone. The first container would be covered by channel 1 and the second by channel 3. Channel 2 and 4 would be nulled and terminated to the battery as shown in the image below.

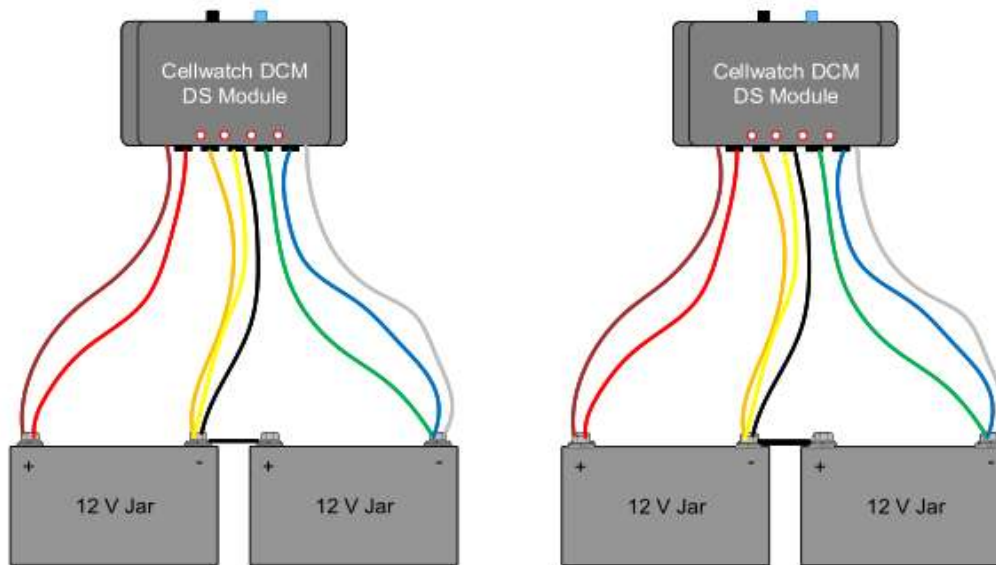


Figure 2 - Recommended installation practice for installation of DCM 5T DS on two strings of two containers

This requires an extra step in the Battery Configuration process to ensure the correct channels are monitored in Cellwatch. After completing the normal configuration wizard portion the user is taken to the “tree view”. In this view, as shown in the image below, add one null channel to each cell in all two cell strings. This step will ensure that channels 1, 2, 3, and 4 are assigned correctly to cell 1, null, cell 2, and null, respectively.

- String: 2	C = 1, T = 0, Cells = 2, CU#1	26.0	27.1
+ Currents	Currents : 1		
Temp. probes	Temp. probes: 0		
- Cells	Cells: 2		
Cell 1	Cell 1, x1, Null=1	12	14.4
Cell 2	Cell 2, x1	12	14.4

Rename

Configure Batteries

Configure string(s)

Configure alarms

Join string segments

Unjoin string segment

Add null channel



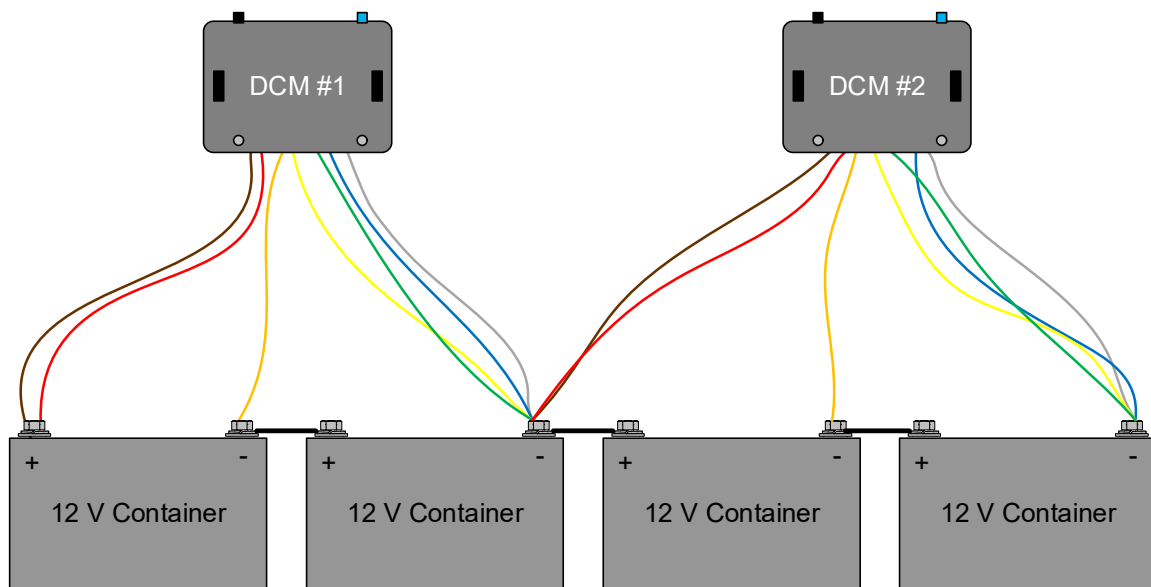
DCM 5, DCM 5T, and DCM6 (all variants)

The DCM 5 (PN: 741001), 5T (PN: 741002) and DCM 6 (PN: 761001 for 6L and 762001 for 6H) can be used to monitor short strings. However, these DCMs cannot be placed in parallel with the DC charger. To avoid placing a single DCM across the charger, multiple DCMs must be used to divide the string into sections. In general, this means that two DCMs must be used, and excess channels nulled out.

NOTE: For outdoor, uncontrolled applications environmentally protected DCMs can be purchased.

- DCM5 EP (PN: 741001-EP)

The method of wiring two DCM 5s to a four-container string is shown below. DCM 6 (L and H) should use the same wiring method.



A standard DCM wiring for a four-container system with two DCMs. Note: Channels 3 and 4 on each DCM are nulled and terminated on the battery. If a post cannot support 6 tabs the green lead can be terminated to any other post, but the Blue lead should always be landed with the White lead.

Strings of Two or Three Containers

A string with two containers will be wired in a similar manner with two DCMs. However, only channel 1 on each DCM will be used and channels 2, 3, and 4 will be nulled and terminated to the battery.

For a string of three containers, one DCM will utilize two channels, while the other DCM will utilize one channel. Follow the instructions above for nulling out two channels and three channels.



Single Container Strings

In the uncommon event that a DCM is monitoring a single container in parallel with the charger, it must be accepted that the majority of the ohmic test current will come from the charger. Actual ohmic value readings will be significantly lower because of the very low resistance of the charger in parallel with the container. The ohmic value reading will change as the container deteriorates. However, due to the paralleled low resistance of the charger, only small changes will be detected by a monitoring system.

If a user decides to monitor a 1 container string, it is recommended to use a standard DCM5T module (PN:741002) to allow for temperature monitoring. In this configuration, if the battery begins to deteriorate, it may be hard to see changes in ohmic value due to the nature of the charger, however increases in temperature can and will be detected.

For best results in monitoring a single container battery, users should periodically and temporarily disconnect the charger to get an accurate ohmic value reading.