



Connecting Cellwatch to 16v Jars

The 16v jar allows for better utilization of space inside a cabinet system. With the introduction of the 16v jar, and the hazardous voltage potentials it can create, requires the technician to rethink how a DCM should be installed.

Using DCM 5

(Requires DCM5 Advanced Features)

The DCM 5 with advanced features can take readings up to 80v DC. This means that a single DCM 5 can be installed on (4) 16v jars. With the DCM 5 there is no longer any need to null the fourth channel. Building the configuration will use the default wiring of 1 DCM for every four jars. With a wider power range, increased resolution, and accuracy the DCM 5 simplifies the setup process for a configuration of any size.

Every negative post method:

To connect the DCM correctly, follow this procedure:-

1. Tab the four jars as follows: double tab the most positive post of the tray, single tab all other negative posts and double tab the most negative post of the tray.
2. Connect the DCM as follows:-
 - a. Red and Brown to the most (double tabbed) positive post.
 - b. Blue and White to the double tabbed most negative post (it should beep).
 - c. Orange to the negative post of the first jar.
 - d. Yellow to the negative post of the second jar.
 - e. Green to the negative post of the third jar.

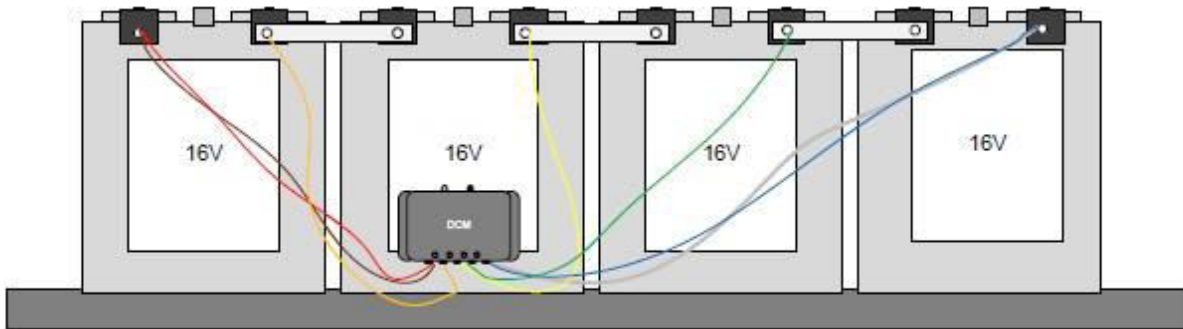
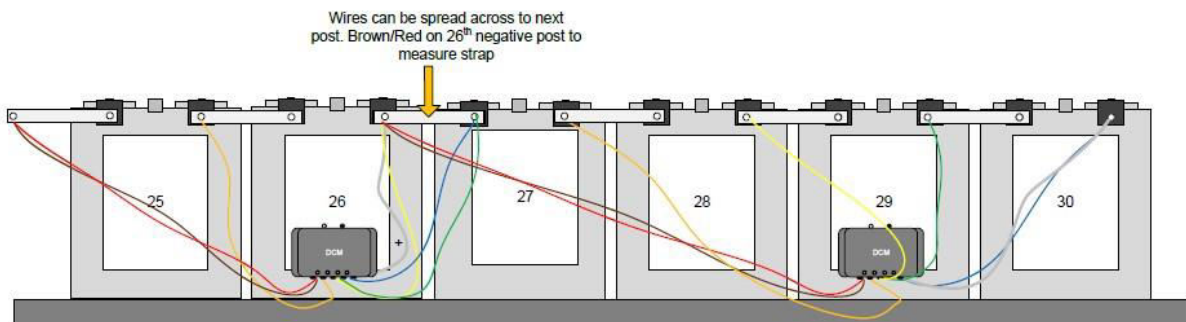


Figure 1 – Connecting a DCM

Setting up a Configuration File (4 jars per DCM)

On a 30 jar string, 2 channels will be nulled when building the default configuration. The Configuration Builder will default to nulling channels 3 & 4 on the second to last DCM. This means the wiring for the second to last DCM (DCM 7) will have the Yellow, Green, Blue, and White wires on the same post (Negative on the 26th jar). You can also spread the wires to the positive of the 27th jar to accommodate the Brown/Red wires from the last DCM. This allows the strap resistance to be included in Jar 27's ohmic value. Example wiring is below:



Option: For cabinets with 3 jars per tray, it may be easier to install one DCM for every 3 jars. Follow the instructions below to install the DCMs using the DCM 2 and DCM Ex layout.

Using DCM 2 and DCM Ex



A 16v jar will float around 18volts. With a four jar configuration, the total float voltage is 72v; 12 volts above the maximum voltage for the DCM. Removing a jar is the equivalent of having four 12v jars in series (nominal 48 volts); a safe setup for both the installer and the DCM.

In a 4 jars per tray system (12V or less), each tray has one DCM dedicated to it and no special configuration is necessary. However, if there are only 3 jars per tray as in a 16V jar system the installer has only one option; treat each tray as a short sub-string of only 3 jars and null channel 4 of each DCM.

Each DCM is equipped with 4 channels. Even if utilizing only 3 channels, the last channel must be terminated. To do this, place a third tab on the negative post of the third jar and connect the DCM per the following procedure.

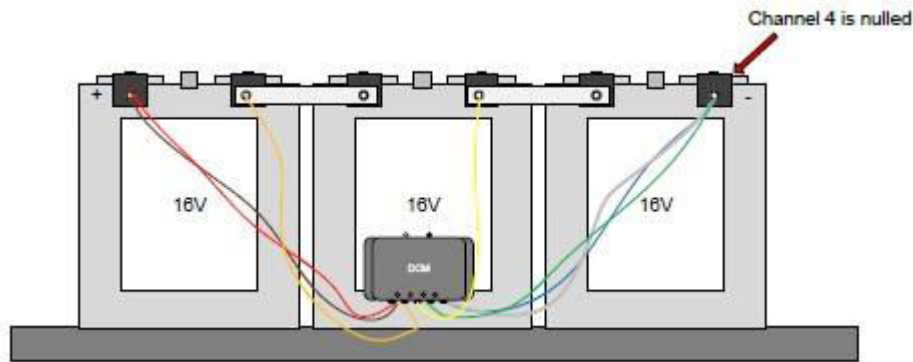


Figure 2 - Connecting a DCM

Figure 2, shown above, demonstrates the wiring requirements for the DCM. A cabinet style installation will only have 3 jars per tray. It is recommended that the DCM is connected in such a way as not to measure the inter-tier strap connecting to another tray. Every negative post method is still used.

To connect the DCM correctly, follow this procedure:-

1. Tab the three jars as follows: double tab the most positive post of the tray, single tab all other negative posts and triple tab the most negative post of the tray.
2. Connect the DCM as follows:
 - a. Red and Brown to the most (double tabbed) positive post.
 - b. Blue and White to two of the triple tabbed negative post (it should beep).
 - c. Orange to the negative post of the first jar.
 - d. Yellow to the negative post of the second jar.
 - e. Green to the spare tab of the most negative post.

This should result in 0 volts being read by the fourth channel of the Cellwatch system which is considered null and therefore not visible on the screen.



A Note on Tabbing

Some battery manufacturers have provided their own double tab connections for battery monitoring systems. While these tabs will work, they have their disadvantages. These tabs:

- Are flat and are not formed with an angle
- Will add slightly to the ohmic value on channels 1 and 4 micro-ohms.
- Are not made to the 'Quick Connect' standards
- Do not contain a retaining hole, which may allow for the quick connect to pull off easier
- Are not long enough

After weighing the disadvantages of these tab connectors, it is recommended that you consider the decision to use them carefully.

If using these connections, an alternate wiring method involves connecting the Blue and Yellow wires to the same double tab on the negative of the second jar. See Figure 3.

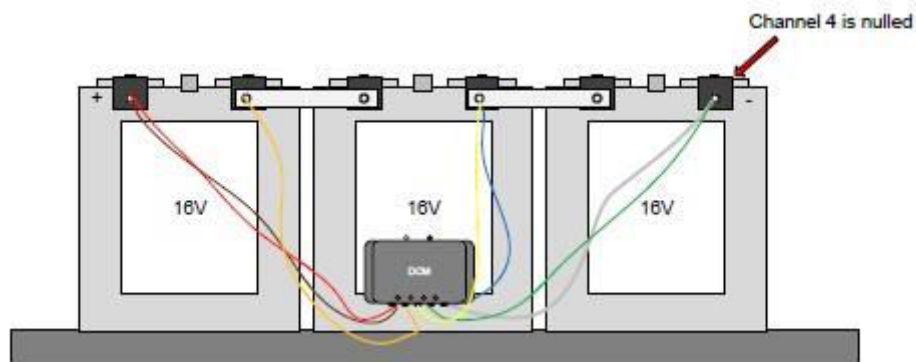


Figure 3-Alternate Wiring Method for Double Tab Connectors

Setting up a Configuration File (3 jars per DCM)

Consider an example system of 30 jars, 16v each on 10 trays, as shown in Figure 4.

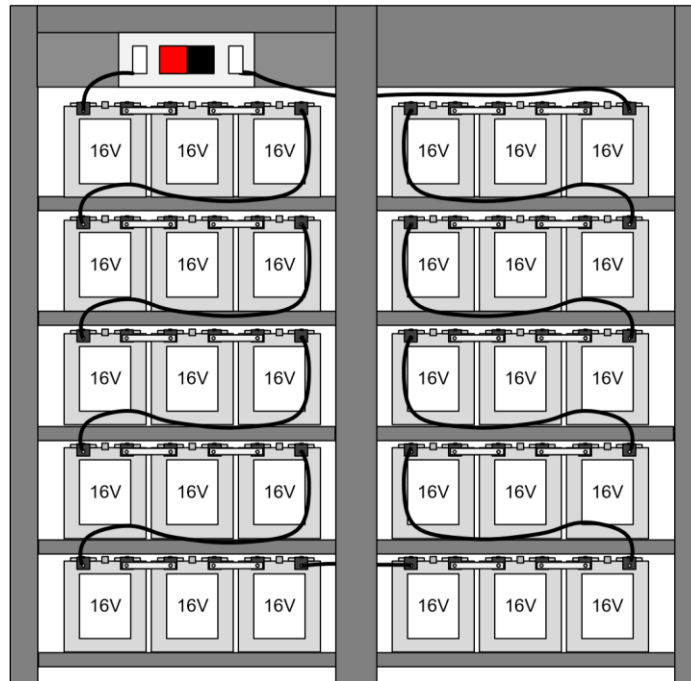


Figure 4 - 480v Cabinet with 16v jars

In the Configuration Builder the user can easily setup a string consisting of 30, 16v jars. To do this, the sub-string feature in the Configuration Builder should be used. The substring feature allows the user to 'break' the 30 jar configuration into groups, i.e. cabinet trays. For this example, a configuration would be built using 10 sub-strings, each containing 3 channels or jars.

Using 10 sub-strings allows for a configuration of 3 jars per tray, as well as 3 jars per DCM. The last channel, channel 4, is automatically considered null in the configuration (see Figure 4).



Entire System		Low Alarm	High Alarm
- 16v Jar System	Strings = 1, CU#1		
- String: 1	C = 1, T = 1, Cells = 30, Subs=10, CU#1		
+ Currents	Currents : 1		
+ Temps	Temperatures : 1		
- Cells	Cells : 30		
- Cell 1	Cell 1, x1	16	19.2
- Cell 2	Cell 2, x1	16	19.2
- Cell 3	Cell 3, x1, Null=1	16	19.2
- Cell 4	Cell 4, x1	16	19.2
- Cell 5	Cell 5, x1	16	19.2
- Cell 6	Cell 6, x1, Null=1	16	19.2
- Cell 7	Cell 7, x1	16	19.2
- Cell 8	Cell 8, x1	16	19.2
- Cell 9	Cell 9, x1, Null=1	16	19.2
- Cell 10	Cell 10, x1	16	19.2
- Cell 11	Cell 11, x1	16	19.2
- Cell 12	Cell 12, x1, Null=1	16	19.2
- Cell 13	Cell 13, x1	16	19.2
- Cell 14	Cell 14, x1	16	19.2
- Cell 15	Cell 15, x1, Null=1	16	19.2
- Cell 16	Cell 16, x1	16	19.2

Figure 5-Using Sub-strings in a Configuration File

Final Notes on 16v Jars

Always use caution when working in and around batteries and battery cabinets. Take proper safety precautions in accordance with local laws and regulations before working on these jars, and always have another person present.

Cellwatch works on 16v jars as it does with any other system. The DCM 5 allows for connection of up to four 16v jars, where the DCM 2 and Ex can only monitor 3 jars. This is due to the maximum operating voltage of the DCM 2 and DCM Ex at 60 volts. The DCM 2 and Ex may survive being placed across the full potential of four 16v jars, however it will not function. Do not leave a DCM 2 or Ex connected across four 16 volt jars for long periods of time as you may cause irreversible damage to the DCM.

If there are questions about special configurations or about Cellwatch in general, contact Technical Support for more information.