Vigilant Expert

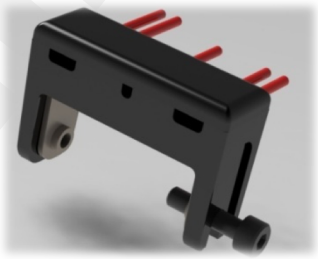
Wiring the System to the Battery

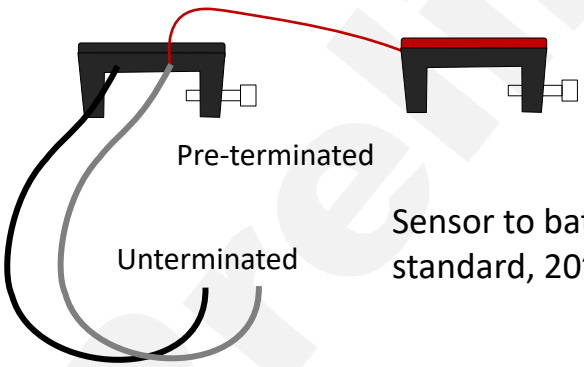
The Vigilant Expert Battery Management System is supplied with battery post attachments to connect the individual sensors to the battery cells, featuring pre-terminated wires at the battery end. The wires are not terminated at the sensor end, but can be quickly cut to length and installed to enable a neat installation without unwanted coils of wire decorating the battery.

Sensor to battery terminal connections

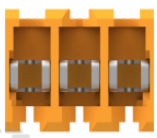
With the exception of the battery to monitor cables, all the items shown in this guide are supplied as standard

Battery post multi-connector
(style may vary, depending on the type of battery system)





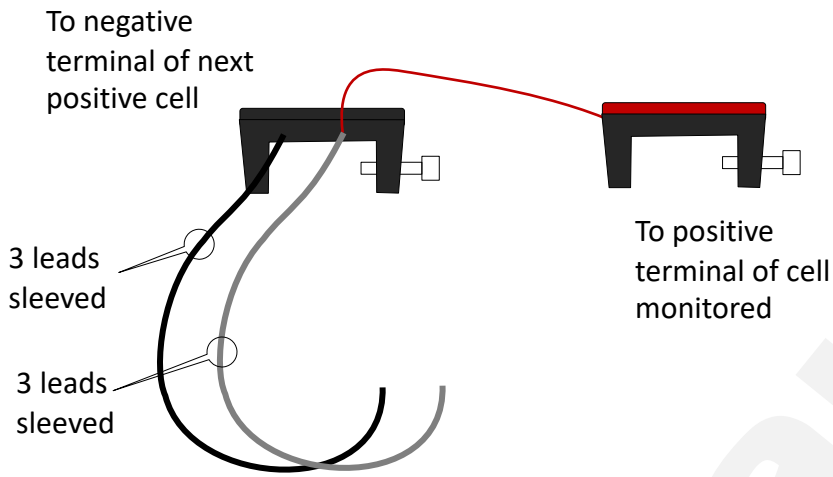
Sensor to battery leads, standard, 20” in length



Sensor Insulation Displacement Connectors (IDC)

IDC terminal cover

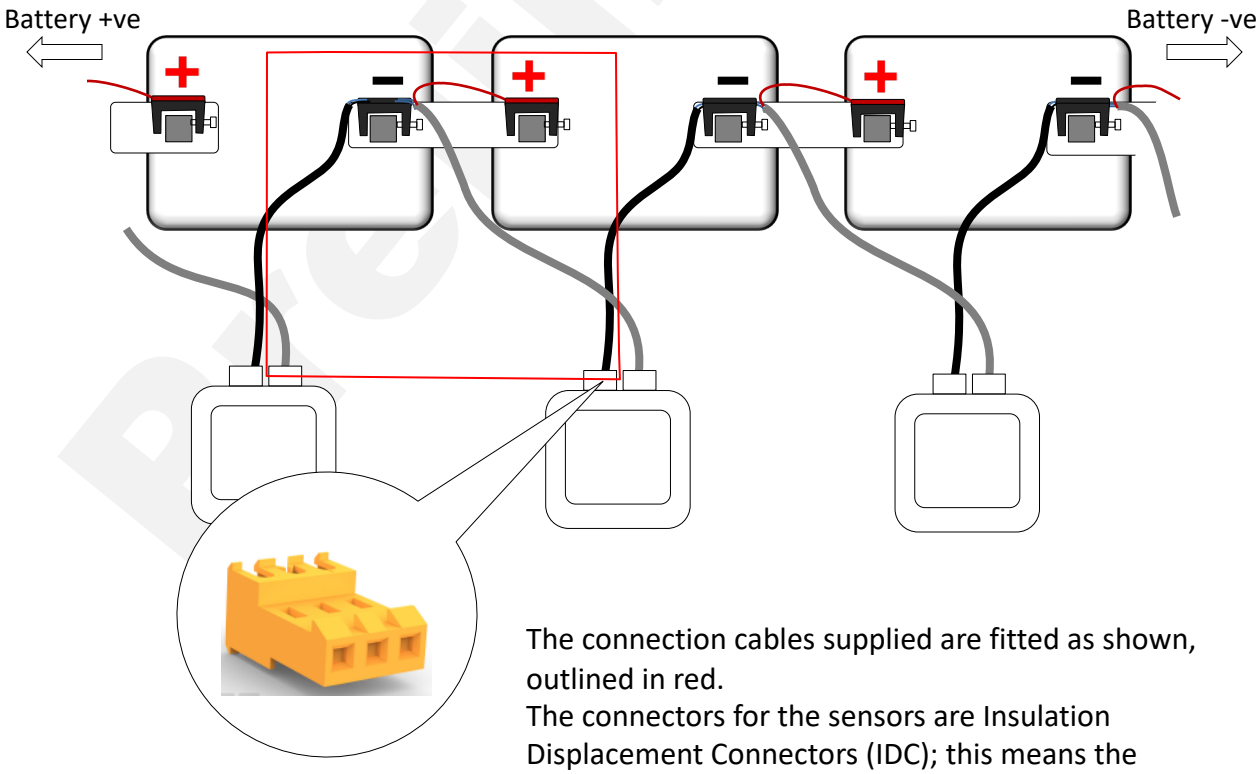
Battery post attachments



The sensor to battery cables are provided as shown above. As the system measures the battery interconnection resistance, it is necessary to connect, not only to the cell being monitored, but to the next most positive cell as well. Care must be taken not to overtighten the attachment, which is firm when attached. The connections are as shown below

Sensor connection scheme (1)

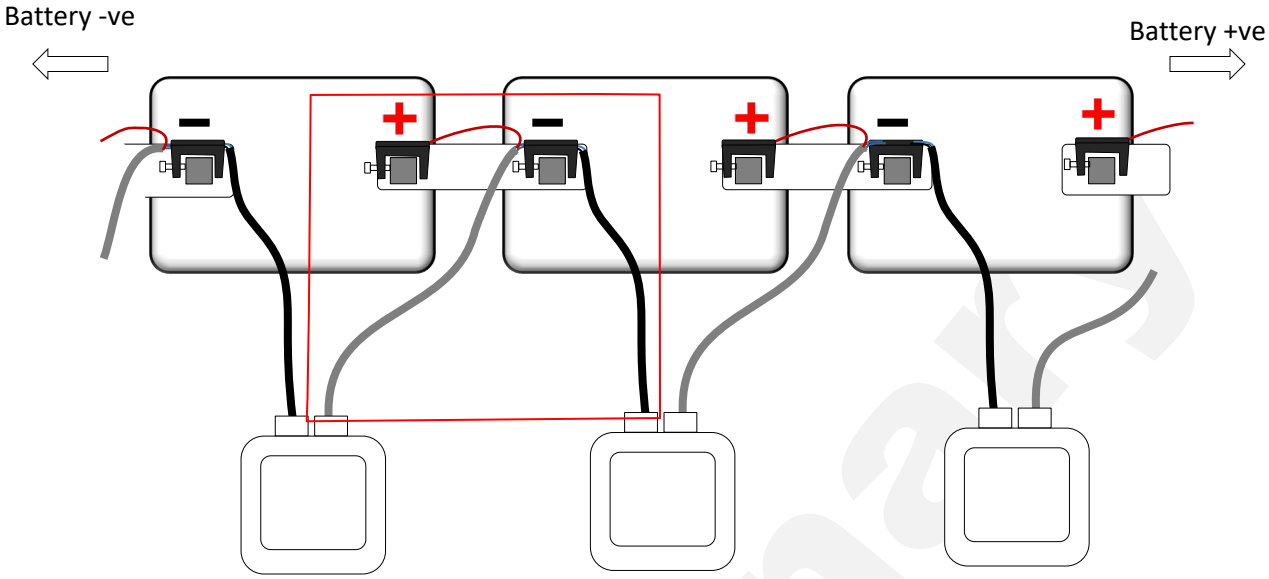
Most positive battery terminal to the left



The connection cables supplied are fitted as shown, outlined in red.
The connectors for the sensors are Insulation Displacement Connectors (IDC); this means the insulation *must not* be stripped from the wire before terminating.

Sensor connection scheme (2)

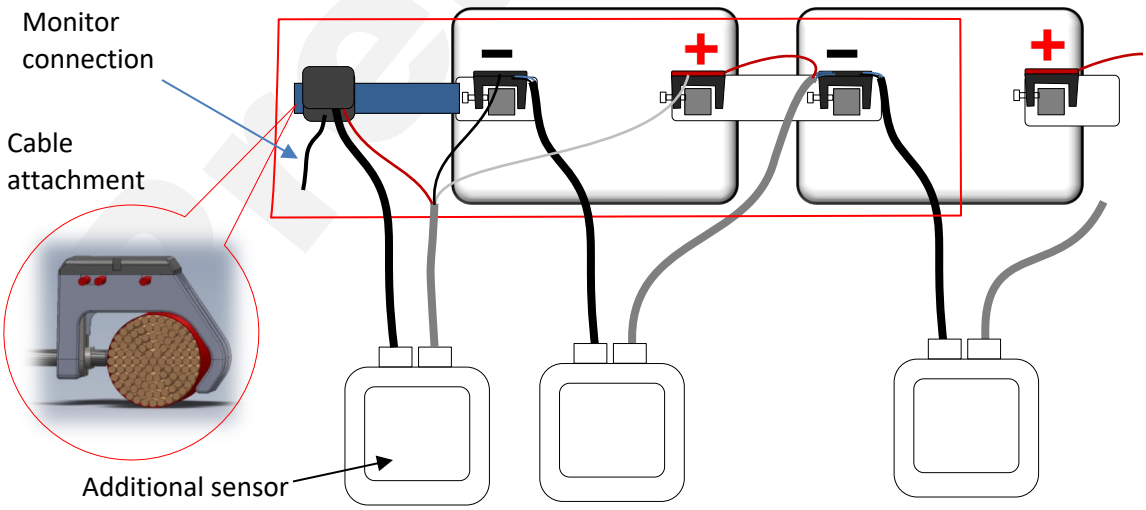
Most positive battery terminal to the right



Sensor connection scheme (3)

NERC: the most negative battery terminal

To comply with NERC, PRC005, both battery terminal connections should be monitored for changes in resistance. Below is the connection scheme for the most negative battery connection, including the main battery cable termination. One more sensor is required than the number of cells in the battery. The termination format is different to the standard format and should be studied before fitting. Four terminal attachments are supplied grouped together, including a battery cable clamp.

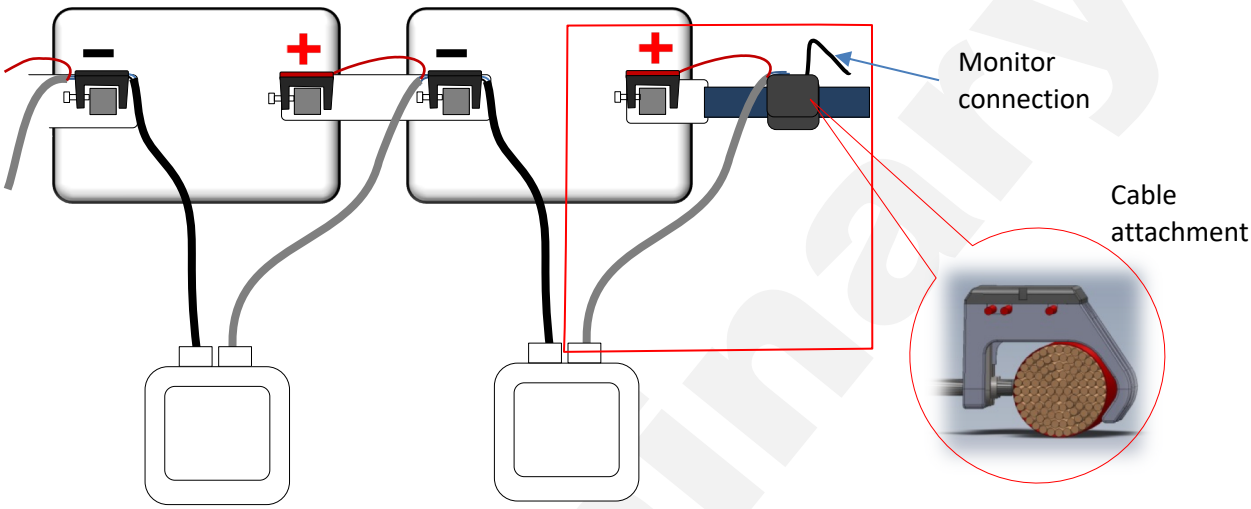


To fit the cable attachment, two suitable holes should be drilled into the cable insulation, using a double insulated battery drill, or insulated bradawl. Care must be taken to avoid a) overstressing the clamp, b) penetrating the conductors and c) any manual contact with the copper conductors in the cable.

Sensor connection scheme (4)

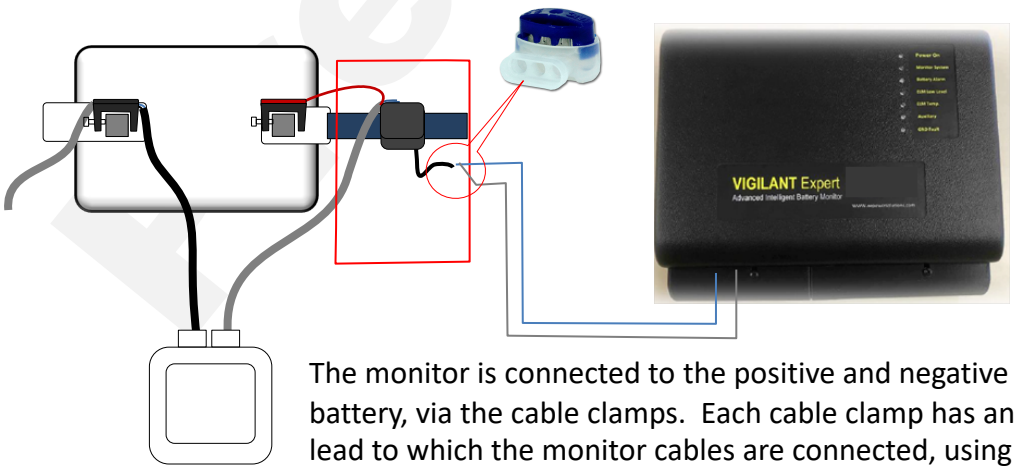
NERC: the most positive battery terminal

To comply with NERC, PRC005, both battery terminal connections should be monitored for changes in resistance. Below is the connection scheme for the most positive battery connection, including the main battery cable termination.



To fit the cable attachment, two suitable holes should be drilled into the cable insulation, using a double insulated battery drill, or insulated bradawl. Care must be taken to avoid a) overstressing the clamp, b) penetrating the conductors and c) any manual contact with the copper conductors in the cable. To fit the most positive battery sensor, the black sleeve from the cable clamp, together with the three wires it contains, should be neatly cut off close to the cable clamp and removed.

Monitor battery connections



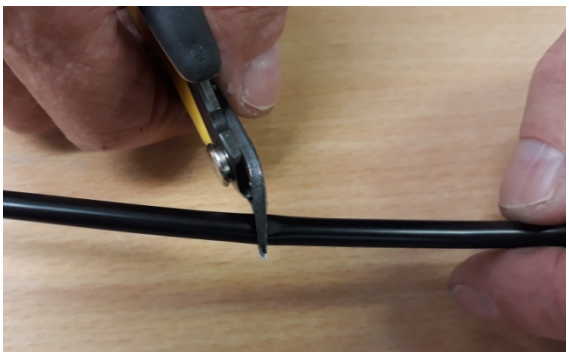
The monitor is connected to the positive and negative ends of the battery, via the cable clamps. Each cable clamp has an additional lead to which the monitor cables are connected, using the three-way gel-filled IDC connectors provided. The IDC connectors are rated by Lloyds as the equivalent of a soldered connection for adverse conditions.

The IDC connector should be neatly situated and not left hanging untidily.

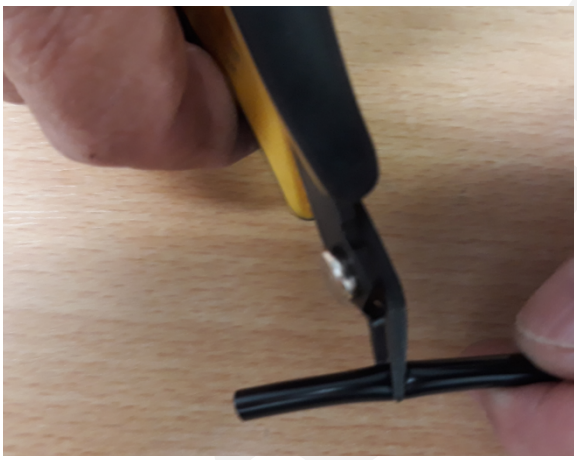
NDS 03/09/19

Terminating the wires at the sensor:
Preparing the double insulating safety sleeve

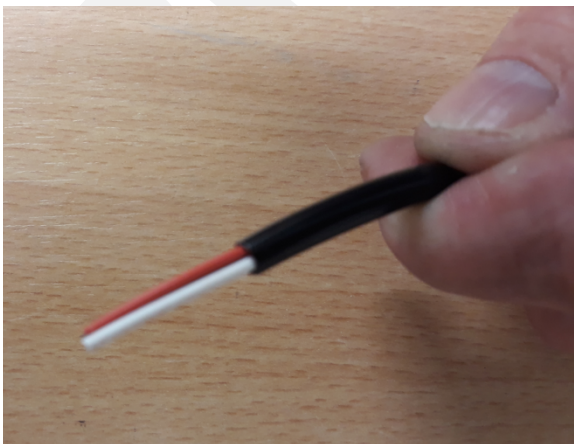
At the unterminated end of the sensor/battery connecting cables, the cables should be trimmed to an appropriate length to reach the sensors by the neatest route



Once the neatest cable route to the sensor has been determined the cable, including the sleeve, should be cut appropriately

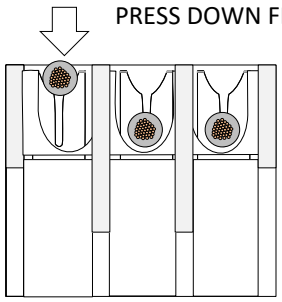


The sleeve can then be slipped out to an appropriate distance from the ends of the wires (1” in this case), and the end of the sleeve cut off.

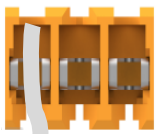


The sleeve may now be slid back up the wires, leaving 1” of the three wires protruding, such that the wires can now be terminated in the IDC connectors

Terminating the wires:
The sensor IDC connectors

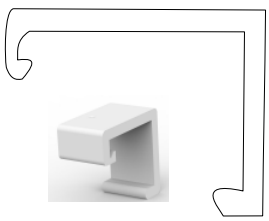


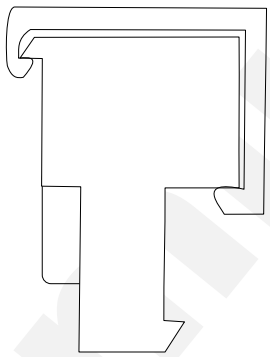
Rear



Cut the wire to be attached to the appropriate length, but do not strip the insulation

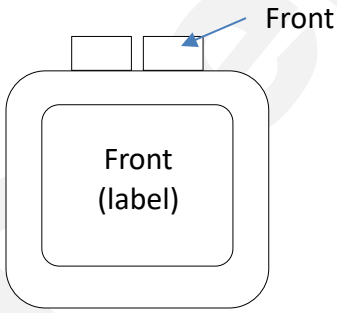
Place the wire across the IDC and press down firmly with an appropriate tool.



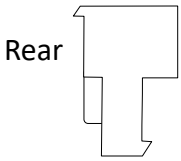


The safety cap is clipped over the connector as shown, to shroud the live terminals

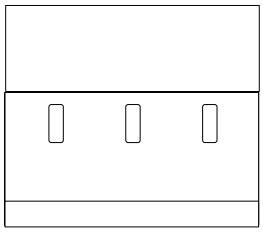
To insert the IDC into the sensor, the front of the IDC connector should be facing the same way as the front of the sensor



Sensor



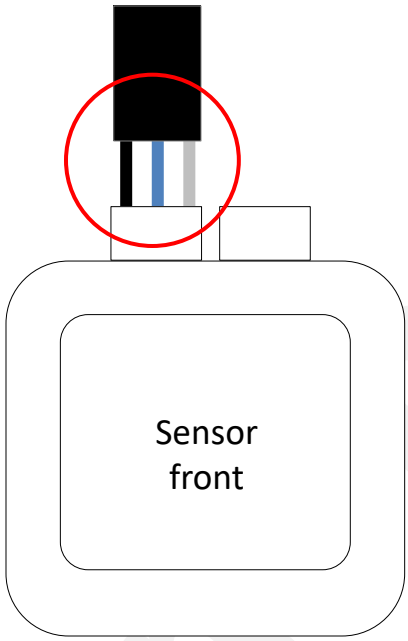
Insulation Displacement Connector (IDC)



Front

Terminating the wires:
The wiring placement

Looking from the front of the sensor, the three-wire sleeve from the negative post of the next most positive cell is connected to the left side connector, in the colour order shown so:



Looking from the front of the sensor, the three-wire sleeve from the negative post of the cell the sensor is monitoring is connected to the three right-hand pins of the right side connector, In the colour order shown, so: