

Cellwatch Battery Monitoring

Technical Application Note



Tech 20060726-01-03

Using the RS-485 Optical Isolator

NDSL can supply a specially designed RS-485 serial data bus Optical Isolator for use in high electrical noise environments.

This is used to break up the RS-485 serial bus into electrically isolated sections and avoid earth/ground noise problems that can cause slow or failing communications.

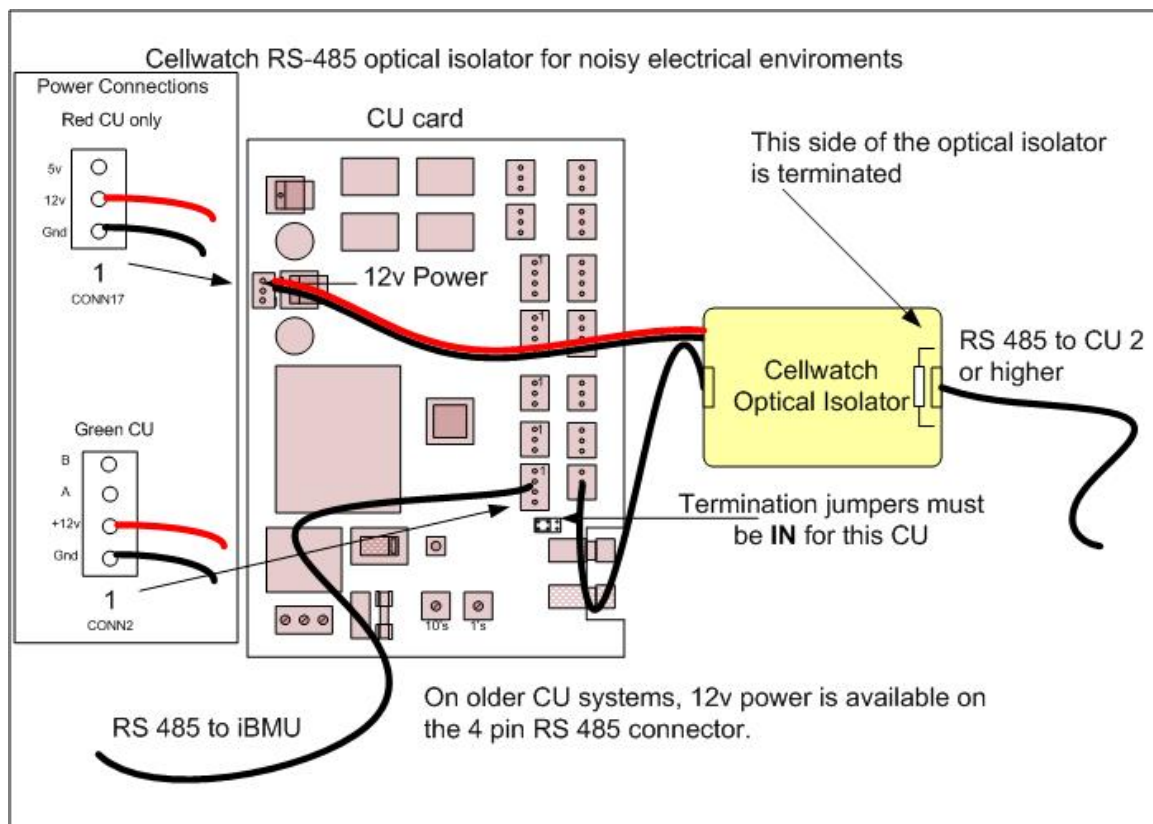
It is designed for location BETWEEN Control Units and is specially supplied for fitting inside one of the two CUs – nearer to the iBMU (usually the lower address number).

Power

It has two wires for power input red (positive) and black (negative) and these must be connected to a 12v DC supply. This can either be to the auxiliary power connector on a “red” Control Unit card or it can be on the 4 pin RS-485 connector on the “green” CU card. See diagram below for pin-outs.

Signal inputs and outputs.

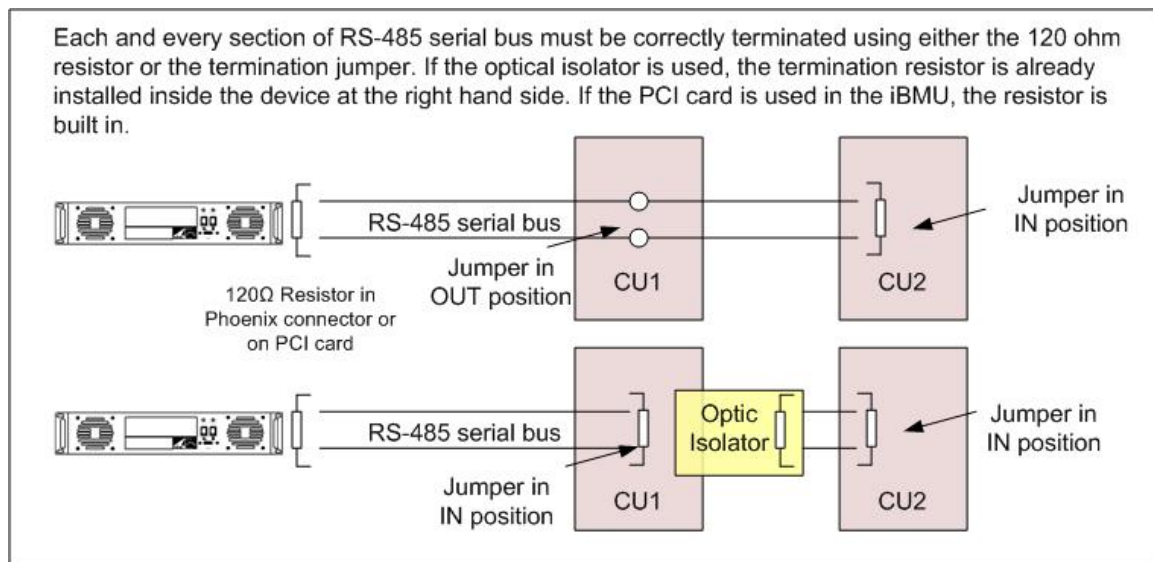
The unit is bidirectional meaning both inputs are also outputs. However one i/o port is fitted with a bus termination resistor and the other one isn't. Therefore the device should be fitted between 2 CUs and in the cabinet of the CU closer to the iBMU.



Connect the left hand three pin socket to the CU card three pin socket using the short cable supplied. Plug the three pin plug leading to the distant CU into the right hand socket.

Termination Resistors.

Ensure that each section of the RS485 serial bus has a termination resistor fitted at both ends. In a normal (none optically isolated bus) this would be achieved by having the termination jumper in the IN position at the high address or distant end of the bus and either by having a 120Ω resistor in the Phoenix connector (if fitted) or by using a MK3 iBMU with integral RS485 card which has in-built termination.



When using the Optical Isolator, however, the termination resistor is built into the right hand side i/o port, so the termination jumpers must be in the IN position in the CU in which the device is installed. See diagram above which clearly shows both halves of the lower, isolated serial bus are correctly terminated.