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C2000 Channel Expansion Kit

Instruction for adding a channel input module, 4 - 20mA x 8 channels.



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Components Supplied (Kit FT10463)

1. National Instruments (NI) module NI9203.
2. Perspex cover plate screened with channel numbers.
3. Power cable.
4. 4 - 20mA input plate assembly.
5. Sensor cables (FT10229-05), 8 off.
6. Installation Manual (FT10469 - this document).

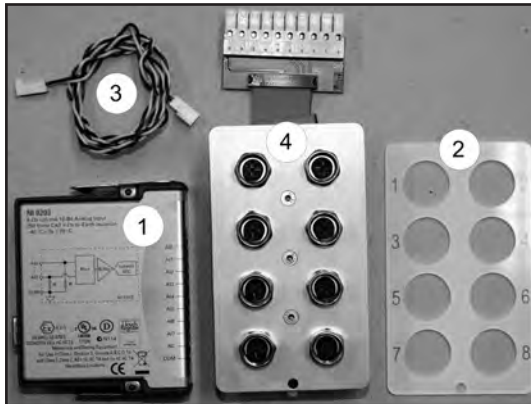


Figure 1. Channel expansion kit (4 - 20mA).

Module Numbering

C2000 channel identification is automatically conducted by the software every time the program is started. The software identifies what modules are fitted to the NI chassis inside the Midbox (figure 7) and assigns hardware line numbers (H/W Line) accordingly. The rules that the software identification rely on and work too are:

1. The 4 - 20mA NI modules are always fitted to the lower numbered NI chassis positions, starting at 1 and without spaces.
2. The 6 channel frequency module is always numerically after any 4 - 20mA modules. At manufacture the 6 channel frequency module is always inserted in to NI chassis position 8; there is no need to change this!
3. In the software 4 - 20mA channels are assigned to H/W Lines on the basis of their associated modules position within the NI chassis (figure 7), eg. "H/W Line Mod 2:3" refers to input 3 of the 4 - 20mA module in NI chassis position 2.
4. The 6 channel frequency module is always assigned H/W Lines starting after the last 4 - 20mA module. In the example of figure 2 the frequency channels will be assigned H/W Lines 3:1 to 3:6, regardless what the physical position of the module is in the NI chassis.

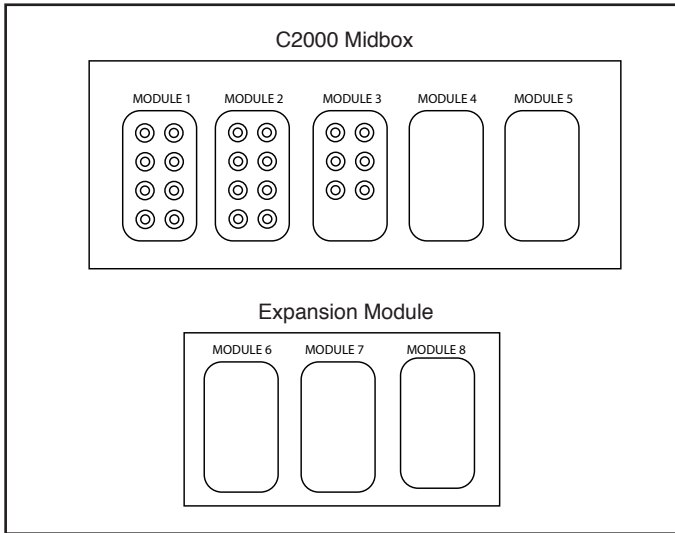


Figure 2. Midbox front connection plate layout (16 x 4 - 20mA, 6 x frequency).

When a 4 - 20mA module is added the process must consider the above points regarding the channel numbering. To ensure the H/W Lines in the software relate to the correct front connection plate the frequency input plate must be moved to the adjacent blank module position.

The additional 4 - 20mA input plate is then added to the vacant position.

Adding one new 4 - 20mA module to the example in figure 2 would move the 6 channel frequency input plate to Module position 4. The new 4 - 20mA input plate would be inserted at Module 3 position. Following the other rules regarding NI chassis position will ensure the software lines correspond to the front input plate designation.

Fitting Instructions

1. Disconnect power from the C2000 rack and turn off the UPS.
2. Access the rear of the C2000 cabinet and remove the power cord and Ethernet cable from the C2000 Midbox, see figure 3.

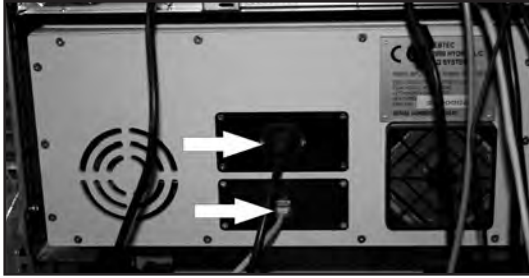


Figure 3. Midbox rear connections.

3. At the front of the C2000 cabinet undo the two latch plate fixing nuts and remove the plate, see figure 4.



Figure 4. Cabinet door latch plate.

4. Remove the cabinet front door.
5. Remove the four Midbox retaining screws (figure 5) and withdraw the Midbox unit from the rack.

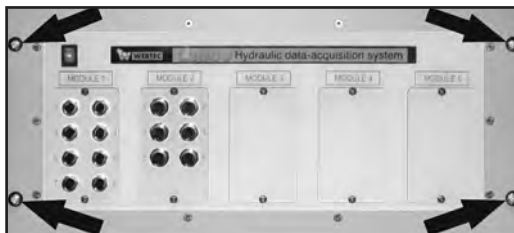


Figure 5. Midbox retaining screws.

6. Remove the 14 top cover fixing screws from the Midbox and remove the lid (figure 6).

NB. The lid is connected to the box with an earth strap but this does not need to be disconnected

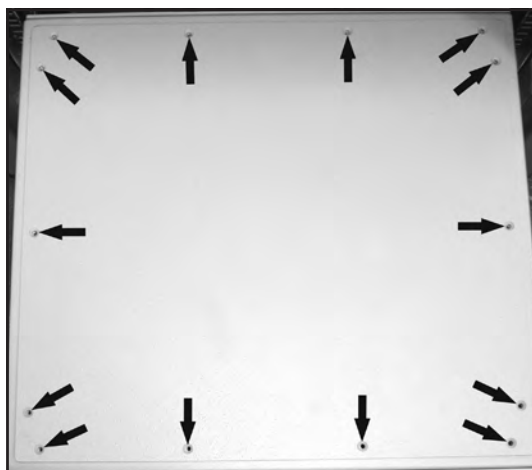


Figure 6. Midbox lid screws.

7. Identify the NI chassis and remove the plastic cover guarding the next available 'D' connector slot (lowest number), see figure 7.



Figure 7. NI chassis next available slot, frequency module always to the Right.

8. Carefully insert the new module NI9203 in to this position ensuring the module slides in vertically and parallel, push down firmly to engage the catches.
9. Identify the six channel frequency input plate (Module 2 in figure 5) and remove the two retaining screws. Remove the Perspex cover plate (figure 8).
10. Remove the three front plate retaining screws (figure 9) and remove the front aluminium plate.
11. At the next available blank module on the front of the Midbox (Module 3 in figure 5) remove the two screws retaining the plastic and aluminium plates and remove the parts; retain the screws.

12. Inside the Midbox move the six channel frequency input plate in to the adjacent vacant module position (Module 3 in figure 5). Re-fit the aluminium plate from outside the box and secure with the three screws. Fit the Perspex cover plate and secure the module with the two screws (figure 8).



Figure 8. Module fixing screws.

13. On the new 4 - 20mA input plate assembly, remove the three countersunk screws on the front plate and separate the plate from the PCB, see figure 9 & 10.

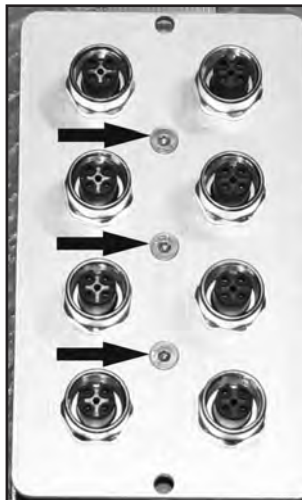


Figure 9. Module front plate retaining screws

14. Re-assemble the aluminium plate and PCB around the open Midbox module aperture, PCB from inside the box and aluminium plate from outside the box. Re-fit the three screws and tighten firmly.

15. Place the Perspex cover plate over the new module, align the top and bottom fixing holes and fit the two screws, tighten the screws (figure 8).
16. Inside the Midbox connect one power cable socket to either of the two way plugs on the rear of the new 4 - 20mA input plate PCB. Connect the other socket to one of the existing front panel input plate PCB plugs; See figure 11.

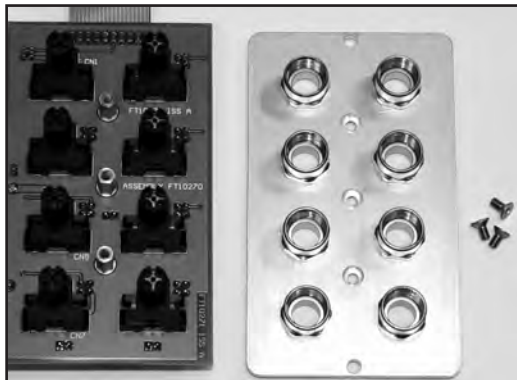


Figure 10. Front panel module assembly ready to fit to Midbox.

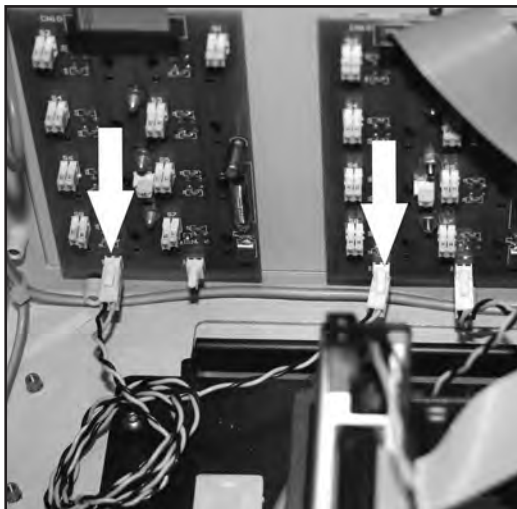


Figure 11. Power cable connections for new module.

17. Insert the plug on the end of the ribbon cable in to the newly inserted NI module (see figure 12), push down firmly.
18. Refer to section 3 of the “C2000 Hydraulic Data Acquisition System” manual for the correct switch settings; these are dependant on sensors to be used.
19. Check that no other cables have become disconnected in the fitting process, in particular the yellow and black interconnecting power wires!
20. Re-fit the Midbox top cover and all the retaining screws (figure 6).
21. Fit the Midbox back in to the C2000 rack and secure with the four screws (figure 5).
22. Re-fit the C2000 rack latch plate and tighten the two nuts (figure 4).
23. Re-fit the C2000 rack door.
24. Re-connect the power and Ethernet cables to the rear of the Midbox unit (figure 3).



Figure 12. Connection to NI 9203.

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