FCC ID: E205PQ P900.

HB02/57 4101 Installation Handbook - Addendum

AD007

This addendum accompanies issue 3C of the 4101 Controller Installation Handbook. It gives a brief description of the new 4101-2 Controller and currently available modules.

At present only the 4105-2 Memory Expansion module is available.

The following Installation Notes are included:

- 4101-2 Controller
- 4105-2 Memory Expansion module

Features of the 4101-2 Controller and modules

4101-2 Controller

The 4101-2 Controller has all the same pin connections and module slots as the original 4101 Controller.

The important difference between the 4101 and the 4101-2 is that you must teach the 4101-2 its Distributor Code. You do this by moving a jumper on the motherboard and presenting one of your ordinary access control cards to the RF module (note that the card must be active - a passive card will not work). Every 4101-2 Controller must be taught its Distributor Code individually.

The 4101-2 Controller accepts all old and new modules, except for the 4105 and 4106 Memory Expansion modules - the new 4105-2 Memory Expansion module is the only one which can be used with the 4101-2 Controller.

4105-2 Memory Expansion module

The 4105-2 Memory Expansion module provides extra memory for the 4101-2 Controller.

This module cannot be used with the older 4101 Controller.

AD007
Issue 1A
September 1998

Installation Note

4101 Modular Controller Mk2

IN054

To meet international PTT and EMC regulations and to meet the FCC regulations for a class B digital device, this equipment must be fitted with the ferrite sleeves provided as described in the section entitled "Fitting the ferrite sleeves", and cable screens (shields) must be connected correctly as described in the section entitled "Connecting the cable shields".

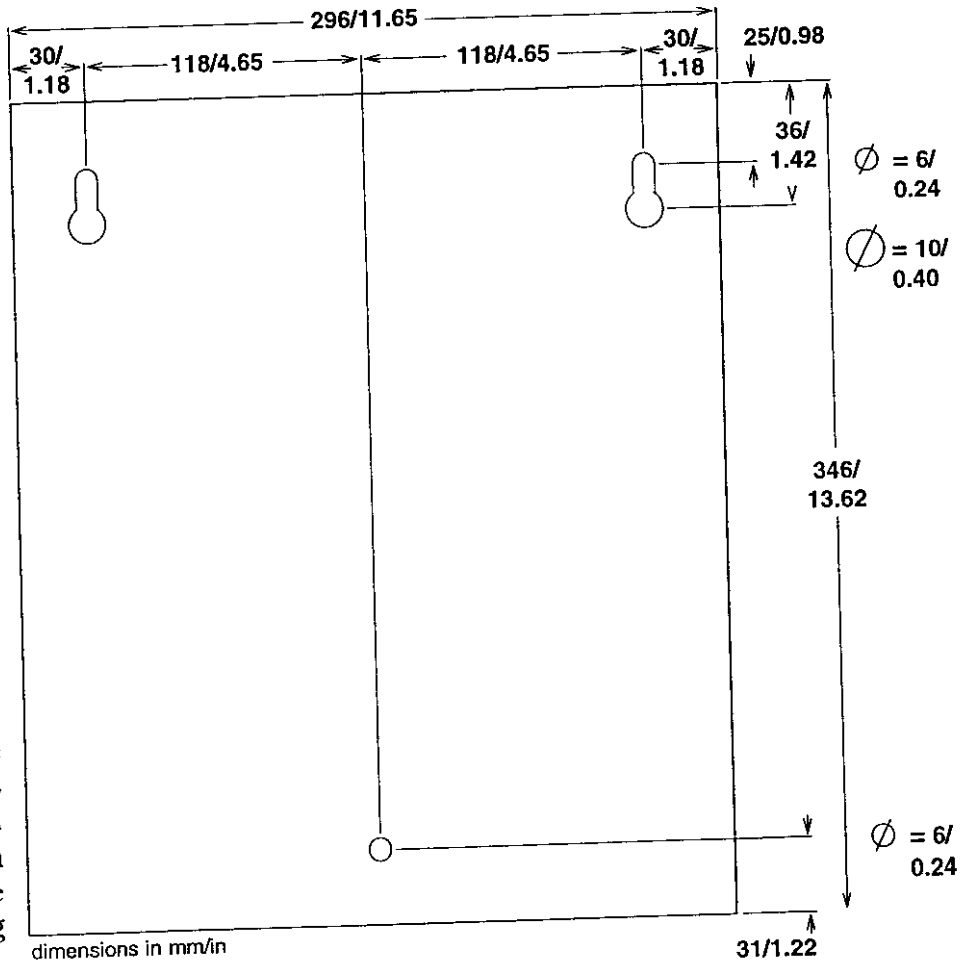
Mounting

The 4101-2 Modular Controller has three mounting holes in the rear of the case. Choose a wall which is **inside** the area protected by the system; so that you have to pass through a secure door to gain access to the controller. You should also ensure that the area containing the controller is accessible by a door with a normal lock and key in the event of system failure. The controller must not be mounted in direct sunlight.

1. Remove the cover by loosening the two fixing screws at the bottom of the case, pulling it out at the bottom and sliding it up to disengage the two lugs at the top of the case. Unplug the ground cable from its spade connector so you can remove the cover.

2. Remove the chassis on which the circuit board is mounted by loosening the two fixing screws at the top. The keyhole slots enable it to be removed with the fixing screws still in place. Slide the chassis up and lift the top end off the screws. Slide the chassis up a little more and lift the bottom end off its fixings.

3. Mark out and drill three mounting holes for the base and screw it in position on the wall, checking



that the cable entry points are accessible. Do not forget to route cables first, especially if you are using the cable entry points in the back.

4. Replace the chassis and tighten the two fixing screws.

Connections

External connections are made to the controller via cables which can enter through holes in any part of the case using the knockouts provided. There are two clamps on the chassis plate for securing the cables connecting to the motherboard. Cables connecting to modules plugged into the motherboard should be routed to each side of the chassis where there are cable guides provided. This ensures modules can be removed easily without cables snagging. See each module's own installation note for details of these connections.

Connecting the motherboard

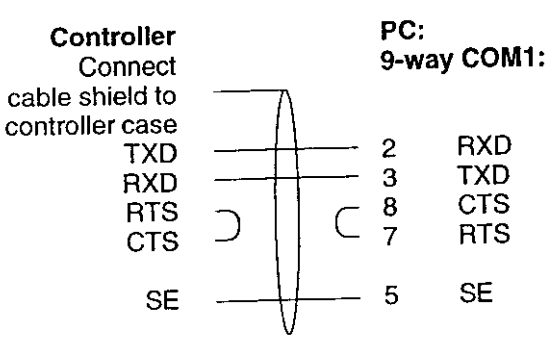
CONN1: RS232 connection to computer serial port COM1: - use for the only controller in a one-controller system, or for the master controller in a two-controller system. Do not use CONN1 in a system with more than two controllers, or on the slave controller in a two-controller system - you need to use CONN2 instead.

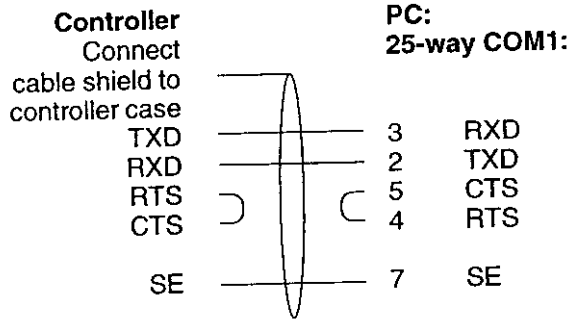
Cable: 3-core, overall shielded, maximum length 15 metres, for example Belden 9533. Connect shield to controller case only - not to computer.

Note: to pass emission regulations, the RS232 cable must pass through the ferrite sleeve provided, see note at the end of this Installation Note.

Pin	Function	Connection
↓	No connection	Connect cable shield to controller case
RXD	Receive Data	to computer TXD, 9-way: pin 3, 25-way: pin 2
TXD	Transmit Data	to computer RXD, 9-way: pin 2, 25-way: pin 3
CTS	Clear To Send	see diagram below
RTS	Ready To Send	see diagram below
0V	Signal Ground	to computer Signal Ground, 9-way: pin 5, 25-way: pin 7

Note: CTS and RTS should be linked together both at the computer and at the controller as shown in the diagrams below:





CONN4 Power supply connections

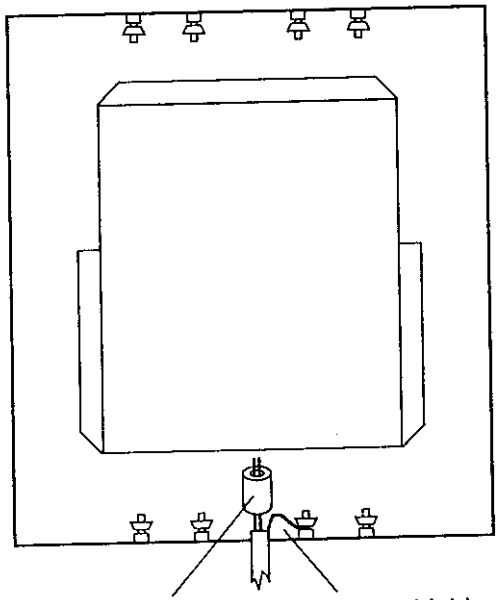
Pin	Function	
+12	+12V DC input	
0V	Ground (DC -ve input)	
⏚	Safety Earth	
AUX IN +	+ve auxiliary input	(Auxiliary input fused via FS2 and then available
AUX IN -	-ve auxiliary input	as an output at CONN5. Used for lock strikes etc.)

CONN5 Auxiliary power output, normally connected to aux power connector strips.

Pin	Function	
AUX OUT +	+ve auxiliary output	(Auxiliary output fused via FS2 if power applied
AUX OUT -	-ve auxiliary output	to AUX IN connections. Used for lock strikes etc.)

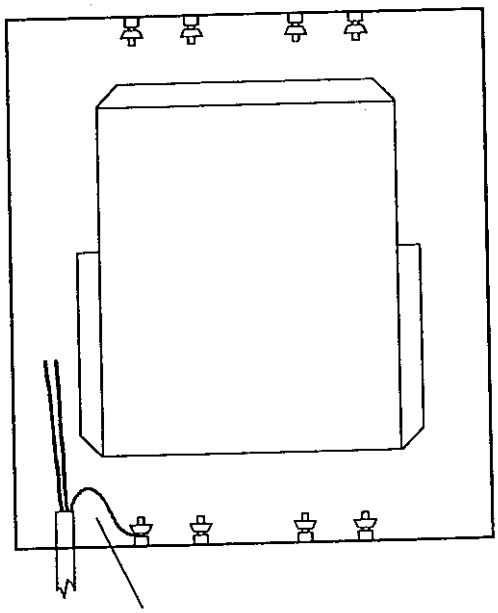
Fitting the ferrite sleeves

A ferrite sleeve (part number Q122) must be fitted over any RS232 or RS485 serial cable that enters or leaves the Modular Controller housing. Each sleeve can be fastened in position on the cable by pulling a cable tie tight on each side of it. The sleeve should be on the inside of the case, as near as possible to the point where the cable exits the case, as shown in the diagram.



Connecting the cable shields

All cables entering/leaving the controller housing must be shielded. Each shield must be connected to the nearest chassis binding post to where the cable enters the controller, as shown in the diagram. Note that this applies to cables to/from the controller motherboard and cables to/from the modules.



The only cables which do not need to be shielded are those from the Power Supply Unit to the controller, provided that they are close to each other.

For door connections, we recommend that you use 812 Cable (part number D02/743) which provides enough twisted pairs and singles for a single door - Tx and Rx, lock, LEDs, horn, door monitoring, door exit control.

If you are using 812 cable, connect the overall shield to the nearest binding post as shown above and connect the individual shields to the shield connections on the motherboard or module. If you are using separate shielded cables, then each cable shield must be connected to the nearest binding post to the cable entry point and the inner cores should then run unshielded to the connections on the motherboard or module.

Installing the RF module and teaching the controller its Distributor Code

Note: if this controller is to be used with RF reader modules, you must install the RF module and teach the controller its Distributor Code before installing any other modules. You do not need to teach the Distributor Code to a controller used only for swipe readers and/or I/O.

1. Disconnect the power to the controller before installing the RF module.
2. The chassis in the Controller has six module slots. The RF module must be plugged into the bottom slot (the one with the smaller connector).
3. With the components on the underside, slide the module down and locate its connector with the one on the chassis.

4. Press the module home by applying downward pressure on the board directly over the connector on the motherboard.
5. Move the jumper labelled LEARN which is just above and to the left of the RF module to the "up" position.
6. Switch on the power to the controller.

   The green STATUS LED should now be flashing twice as fast as normal.
7. Hold an active card or tag containing the correct Distributor Code flat against the left hand side of the RF module, either above it or below it, and move the card or tag around in contact with the RF module until the STATUS LED stops flashing and glows steadily.

   The controller has now learnt its Distributor Code.
8. Remove the power to the controller.
9. Move the LEARN jumper back to its "down" position, or just remove it completely.
10. Install the required modules in the controller and set up the controller as described in the rest of this Installation Note.

The controller can only learn the Distributor Code once - you cannot change it once learned.

Installing the modules

Connection details are supplied with each module. To install a module proceed as follows:

1. Disconnect the power to the controller. This is important - if power is not removed, damage may be done to the motherboard.
2. Remove the controller cover by loosening the two fixing screws at the bottom of the case, pulling it out at the bottom and sliding it up to disengage the two lugs at the top of the case. Unplug the ground cable from its spade connector so that the cover can be removed completely.
3. The chassis in the controller has six module slots. The table following shows the recommended allocation of the slots to modules:

Slots	Reader Module	*Communications Module	I/O Module	RF Module
0 1	✔(1)	✔(5)	✔(5)	-
2 3	✔(2)	✔(4)	✔(4)	-
4 5	✔(3)	✔(3)	✔(3)	-
6 7	✔(4)	✔(2)	✔(2)	-
8 9	-	✔(1)	✔(1)	-
bottom	-	-	-	✔

Notes:
- Figures in brackets show preferred installation priority.
- Modules' identities:
  Reader module - 4322, 4422
  Communications module - 4230/2/5
  I/O module - 4253
  RF module - 4210

*Maximum of two Comms modules allowed per controller.

4. Hold the module on the side with the two fixing screws and with the component side of the module circuit board facing upwards. Locate the edges of the module circuit board in the module guides on the sides of the chassis.
5. Slide the module towards the motherboard and locate its connector with the one on the motherboard.
6. Press the module home by applying pressure to the right half of the module directly over the connector on the motherboard.
7. Tighten the two module fixing screws.
8. Replace the cover.
9. Re-apply power to the controller.

Setting up the controller

On a system comprising only one controller:

- Set switch 4 of SW3 up, leave switch 3 down.
- Set the RS232 baud rate on JU1. This must be set to the same value as the computer. It is normally in the 9600 position.

On a system comprising two Controllers:

- On the Controller connected to the computer (the master Controller), set switches 3 and 4 of SW3 up.
- On the Controller not connected to the computer (the slave Controller), set switches 3 and 4 of SW3 down.
- On the Controller not connected to the computer (the slave Controller), set the rotary address switches SW1 and SW2 to 01.
- On the master Controller, set the RS232 baud rate on JU1. This must be set to the same value as the computer. It is normally in the 9600 position.

On a system comprising more than two controllers:

- Set switches 3 and 4 of SW3 down.
- Set the address of the Controller on the two rotary switches SW1 and SW2. The address can be any number from 00 to 99, but must be different from the address of any other Controller on the same branch.

Installing a System

When you install a system, make a note of the Controller/Module address for each reader and its location in the building. This information is necessary when you set up the Access Points database in the Software. If someone else is setting up the Software then make sure they have the list of addresses and locations for **all** Access Points in the system.

If you install one or more 4253 Input/Output modules, you must note the address and function of each input and output. Again, if someone else is setting up the Software then make sure they have the list of addresses and functions for **all** inputs and outputs in the system.

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect equipment into an outlet on a circuit different from that to which the receiver is connected.

Installation Note

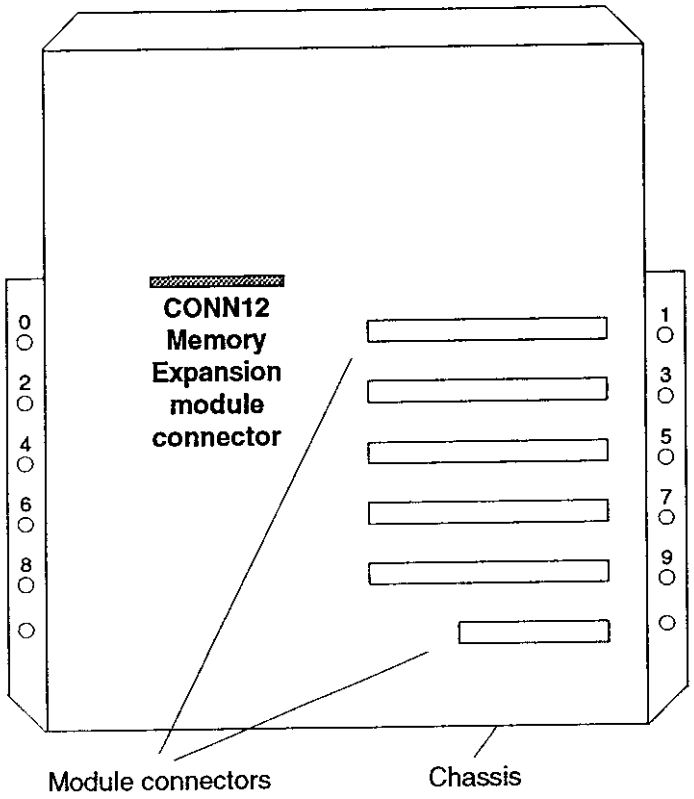
4105-2 Memory Expansion module

IN053

Installing a 4105-2 Memory Expansion module in a 4101-2 Controller

The memory expansion module plugs into its own special connector in the 4101-2 Controller motherboard. The connector is labelled CONN12.

1. Disconnect the power to the Controller.
2. The position of CONN12 is shown in the diagram below.



3. The memory expansion module must be installed with the component side of the board facing the top of the controller motherboard as shown below.

4. Insert the connector on the memory expansion module into CONN12. Make sure that all the pins are engaged and that none are hanging over the side of CONN12.

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect equipment into an outlet on a circuit different from that to which the receiver is connected.