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INDC2000 20090101

DC2000 Smart.net door controller Installation Instructions

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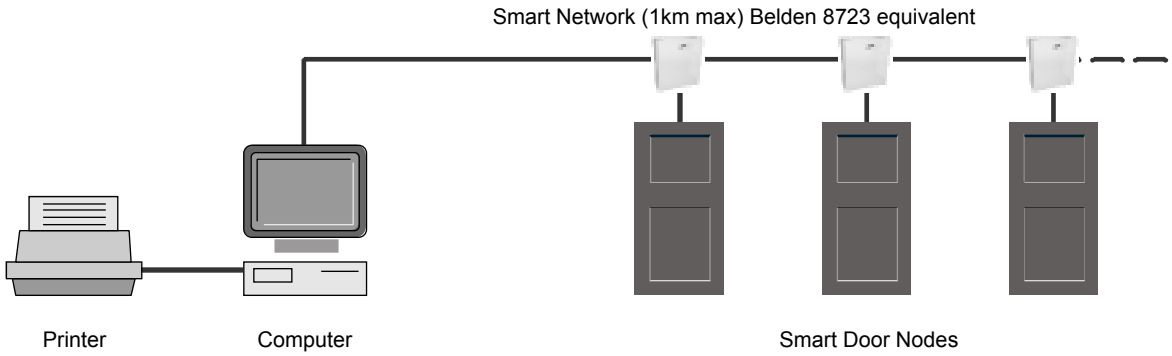


Fig. 1

Welcome

This manual contains details on installing the single door control unit DC2000. The DC2000 is a robust unit and will give long service if the following installation procedure is followed. The DC2000 control unit contains the following,

- Non-volatile memory for 2000 card holders
- 457 off-line event memory
- RS485 communications port for networking
- PC Windows 98 - NT- XP compatible

DO NOT INSTALL THE WINDOWS SOFTWARE UNTIL ALL NODES HAVE BEEN TESTED

The SMART Door Node

The SMART.net System is a based on Single Door Architecture. This means that each SMART Door Controller (DC2000) has total control of one door, this we term the SMART Door Node.

Each DC2000 controls the electric locking and two card readers. In addition inputs are provided for egress button, intruder alarm status and magnetic door contact for monitoring alarm door conditions.

Two card readers are shown (entry and exit readers), both are required for 'Time on Site'reports and 'Roll Call' reports. When using two card readers the egress button will most likely be not used.

Note : If Time on Site reports or Roll Call reports are required the door controller MUST be set as a time recording door. This is set in software on the PC, from the Door Setup window.

Installing a SMART Door Node

Detailed in Fig. 3 is a complete wiring scheme for one SMART Door Node. Two magnetic stripe card readers type MR4 are shown, the second reader is only needed if an exit reader is required.

The DC2000 SMART Door Controller is intended to be mounted close to the door it is to serve. Although the readers and associated wiring can be up to 50 metres away it is more logical to have the components at close proximity to the door.

In the majority of cases exit will be achieved by the egress button. It is important to note that if mechanical egress (eg. a handle directly operating the door lock) is to be used then it is not possible to utilise the magnetic door contact feature as a mechanical egress would be interpreted as a 'Door Forced'condition. In this case the door contact input must be linked out in the DC2000 Door Controller. See testinh a Smart Door Node.

Cable Requirements

Beldon 8723 equiv - Networking cable

Beldon 9536 equiv - Reader Extension Cable

It is important that the access control cables are never installed with or near mains cable installations in order to avoid interference from switching transients.

Cables should take a neat direct route inside the DC2000 Door Controller. Cables should not be coiled inside the DC2000 housing to avoid interference from internal radiated emissions.

The MR4 reader is supplied with 4 metres of screened cable. Ideally this should be the maximum distance from the door for convenience.

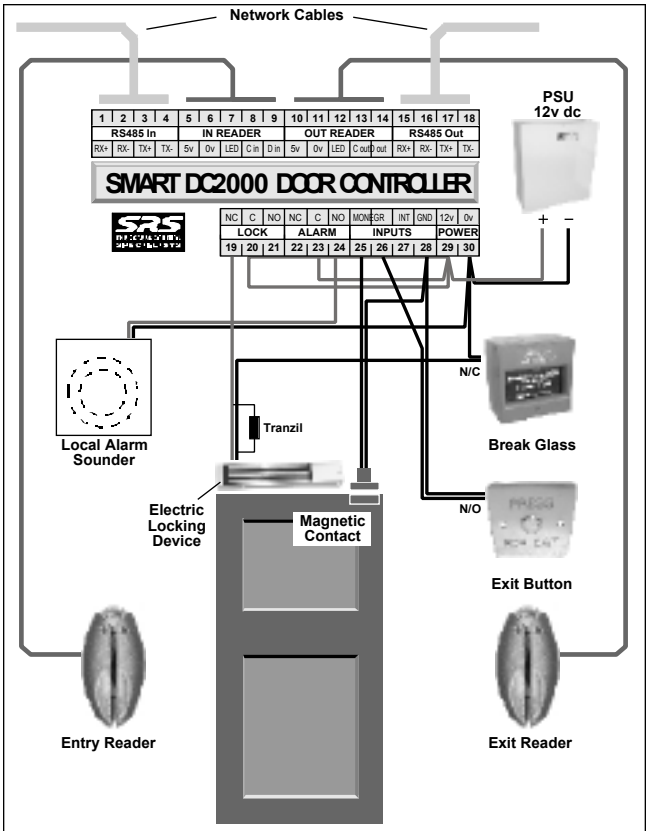
If the SMART Door Node is installed in this way then testing and commissioning will be much easier. In the case of other readers we recommend the use of Beldon 9536 cable to extend the connection to the DC2000 door control unit.

0v MUST NOT BE CONNECTED TO EARTH.

The power supply connection must be of a large enough area to handle the current flow (normally 0.5 mm2). Connect a mains earth bonding cable from the local power supply case earth to the earthing point inside the DC2000 in order to protect the DC2000 from electro static discharge and transients. The cable used should be at least 1mm in diameter.

Reader connections

Never attempt to connect a reader to the DC2000 that is not detailed in Fig. 4. Other clock and data reader types may be compatible but please call technical support for details. When extending card readers (max. 50 metres) always use Beldon 9536 type cable.



Note
For FAIL OPEN locking devices (eg. magnetic locks) a Break Glass Unit should be fitted.
For FAIL LOCKED devices connect locking device directly. ie not via the Break Glass Unit.

Fig. 3

Lock Suppression

A lock release suppressor (Tranzil) is included with each DC2000, and must be connected directly across the locking device terminals on all lock types. Failure to connect the suppressor correctly may result in poor system performance, or even equipment damage. The device supplied is not polarity conscious. If the DC2000 is to operate electronic gate or barrier controls an interface relay (eg. SRS 9334) must be used.

Alternative reader connections

DC2000 In	DC2000 Out	SRS MR4	HID 6008BGP	HID 6008AGP	Indala ASR603MS
5v	5v	Red	Red	Red	Red
0v	0v	Black	Black	Black	Black
LED	LED	Green	Orange		Brown
Clock In	Clock Out	Yellow	White	White	White
Data In	Data Out	White	Green	Green	Green

Do NOT connect the Screen

Fig. 4

Connecting SMART Door Node to an intruder alarm

It may not always be the case that a person who can gain access to a building via the access control system is a keyholder for the intruder alarm. This can give rise to false alarms.

With SMART.net an input is provided on the DC2000 Controller to monitor the buildings intruder alarm. This is used to detect whether the intruder alarm is set or not.

When this input is connected and the intruder alarm is NOTset the door will operate as normal. However when the intruder alarm is SET, only card holders nominated as intruder alarm keyholders will be allowed access.

To grant a card holder these rights you can either make them a member of the 'Keyholders'department (this gives them 24 hour access) or set up a department which uses Time Zone 1 or 2. Refer to the software manual for further information.

Testing a SMART Door Node

When all connections for a single SMART Door Node are installed the 12v dc power supply can be turned on. The DC2000 Door Controller is pre-programmed with a lock release time of 7 seconds.

It is important that the magnetic door contact is checked for closed when door closed, failure of this device will result in incorrect door cycle operation.

If the magnetic door contact is not required or mechanical egress is being used, it must be linked out across terminals 25-28 in the DC2000 Door Controller. In this case you will reduce the functionality of the system. Loosing Time on Site reports, Roll Call reports, Door Held alarm and Access Granted transactions. For this reason we recommend the fitting of the door contact.

Fit the door monitor contact for correct operation of the system.

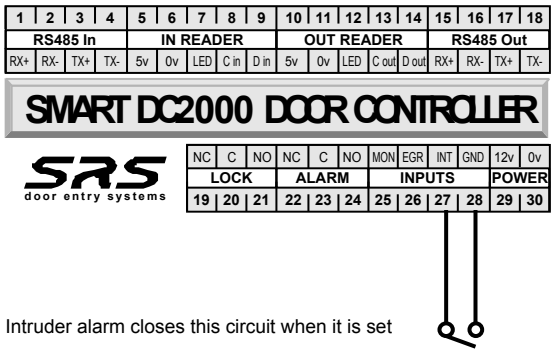


Fig. 5

VERY IMPORTANT

INDIVIDUAL SMART DOOR NODE CHECKLIST

Before proceeding you MUST check the following: √

1) Lock suppressor (Tranzil) fitted across lock terminals

2) Mains earth NOT connected to 0V

3) 12v dc at DC2000 controller (Red LED on the DC2000 is illuminated)

4) Red LED at reader lit

5) Ensure that the door physically unlocks and re locks correctly.

6a) Egress button (NORMALLY OPEN ie. push to make) releases the lock for 7 secs. The green LED on the reader should light while door is unlocked.

6b) Operate the egress (NORMALLY OPEN ie. push to make) button for a 2nd time. This time hold the door open. After 14 secs. (approx) the alarm relay will change state. Closing the door resets the alarm relay. If an alarm device has been connected to the Alarm Relay output, to signal a Local door Alarm this can be tested also. **Please note: that NO unprotected inductive loads must be connected to the alarm relay.**

7) Swiping an invalid card makes the green reader LED flash 3 times. No magnetic card at this stage will unlock the door.

9) For your records write the controller serial number and door name on Master Door List

If all is OK then remove power. Install and test the remaining SMART Door Nodes.

CONNECTING NODES TO SMART.NET

Only when all SMART Door Nodes have been installed and tested as detailed previously should you proceed with the SMART Network connection.

The SMART Network consists of a dual twisted pair and screen cable (BEL 8723) to a maximum length of 1KM (1000Metres) connected to a computer via a Protocol Converter.

Ideally controller IDs should ideally be sequential across the installation. The SMART Network cable enters at one side of the DC2000 and leaves at the other to continue onto the next DC2000. The network terminates on a removable four-way connection block to facilitate the easy isolation of any door controller. It is important that the leaving screen is cut back and insulated to avoid it touching any parts. **The success of the SMART Network is down to following these directions, particularly in respect to screening and termination of the SMART Network cable.**

TIP *Always use one twisted pair for the transmit line (TX+ & TX-), and the other pair for the receive line (RX+ & RX-). Crossing of non-pairs will cause poor communications particularly on long cable runs.*

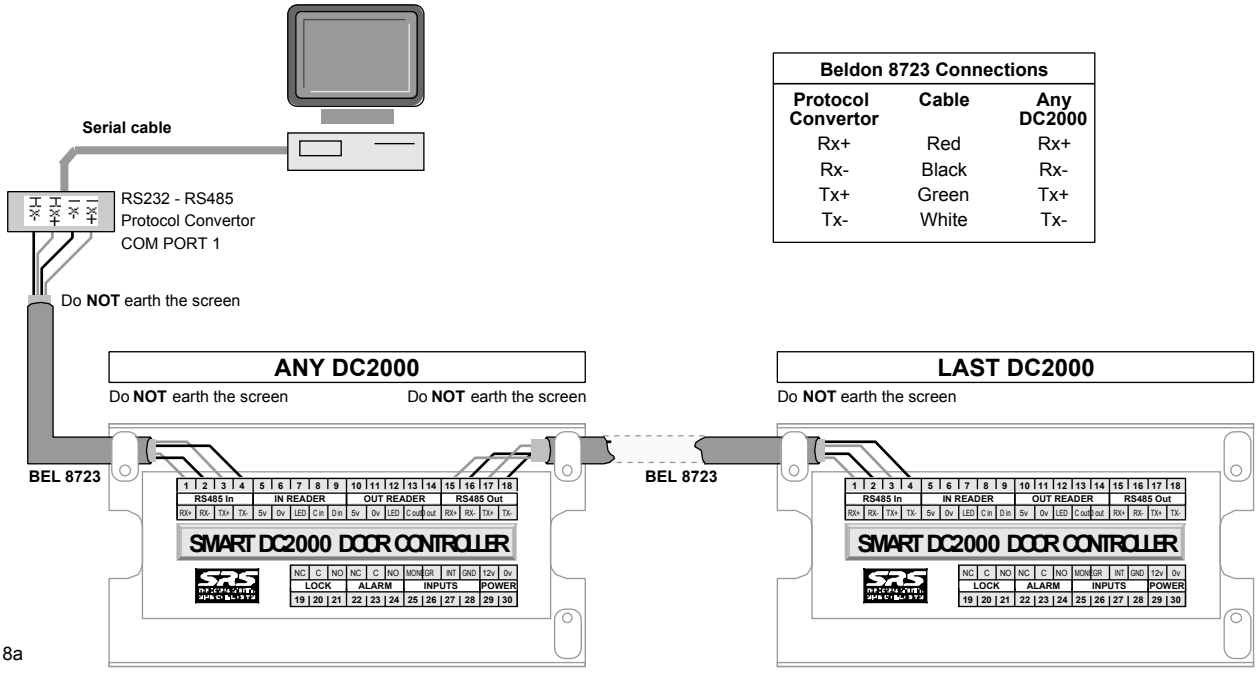
CORRECT EARTHING

Correct connection of Smart.net screening and earthing is critical.
Incorrect screening and earthing will affect both the performance of the network and its reliability against communication chip damage.

1) Test with a meter that Ov of controller is NOT connected either directly or indirectly to earth.

2) Make sure that any additional power supplies used DO NOT have -ve (0v) connected to earth and that each controller is supplied by its own power supply unit.

4) **DO NOT link the earth connections between control units**



Beldon 8723 Connections		
Protocol Convertor	**Cable**	**Any DC2000**
Rx+	Red	Rx+
Rx-	Black	Rx-
Tx+	Green	Tx+
Tx-	White	Tx-

Fig. 8a

IMPORTANT NOTE

Before connecting any DC2000 controller to the network:-

1) Remove power from the protocol convertor

2) Disconnect the protocol converter from the PC

3a) Remove the network cable from the previous controller (RS485 Out) by unplugging the terminal block.

3b) If 3a) is not possible you must remove power from the controller and carry out 3a) above on the next controller towards the PC until you can unplug the RS485 Out. If you attempt to simply remove the wires from the terminals you risk short circuiting the network and damaging ALL communications chips.

PASSIVE NETWORK TEST

Before connecting the protocol converter it is important to carry out the following tests. Please ensure that power is switched off to all door controllers.

Measure across			Result
TX+	&	RX+	greater than 10,000Ω
TX+	&	RX-	greater than 10,000Ω
TX-	&	RX+	greater than 10,000Ω
TX-	&	RX-	greater than 10,000Ω
Screen	&	any conductor	greater than 10,000Ω
Screen	&	0v (-ve)	greater than 10,000Ω

CONNECTING THE SMART NETWORK TO A PC

Only when all SMART Door Nodes are operational and tested as previously described and the passive network tests have been performed should you connect the protocol converter and the PC (Personal Computer).

The protocol converter is plugged into the computer serial port (COM 1) using the cable supplied. This converts the RS232 protocol at the computer into the long distance RS485 that is required for SMART.net. The overall distance from the protocol converter to the last SMART Door Controller (DC2000) must not exceed 1000 metres (1 KM).

Connect the plug-in mains transformer and note that the power light should illuminate on both the transformer and converter housings. There are two further LED's on the protocol converter, one indicating data 'Receive'(Rx) and the other 'Transmit' (Tx). They are useful when monitoring communications between the PC and the door controllers. The LED's flash very quickly in sympathy with the data and as a result are not as bright as the power LED.

TIP *There are 8 DIP switches for line termination, they should ALLbe left switched OFF.*

ADDRESSING SMART DOOR NODES

Each SMART Door Node is required to have a unique electronic address ranging from 1 to 127 set by DIPswitches (see Fig. 6). DIP switch 8 must always be OFF.

TIP *never use the same address twice*

DC2000 TECHNICAL SPECIFICATION

Power Supply	12v dc / 1 A (50mAcontinuous)
Voltage	12v dc (+ / - 10%)
Current	Quiescent 50 mA(operating 100 mA)
Operating Temperature	0 to 50 deg. Centigrade
Module Dimensions	68mm x 126mm x 25mm (HWD)
Clock/Calendar	accurate to 1 sec / month @ 25 deg. Centigrade
Maximum Stored Tokens	2048 (version 7 firmware 2500)
Maximum Time Zones	20
Maximum Holidays	20
Event Buffer Size	457 events
Data Volatility	>5 years
Communications	RS232 / RS485
Protection	+ /- 15 KV line
Lock Relay	24v ac / dc Max (@ 1 amp inductive)
Alarm Relay	24v ac / dc Max (@ 1 amp non inductive)

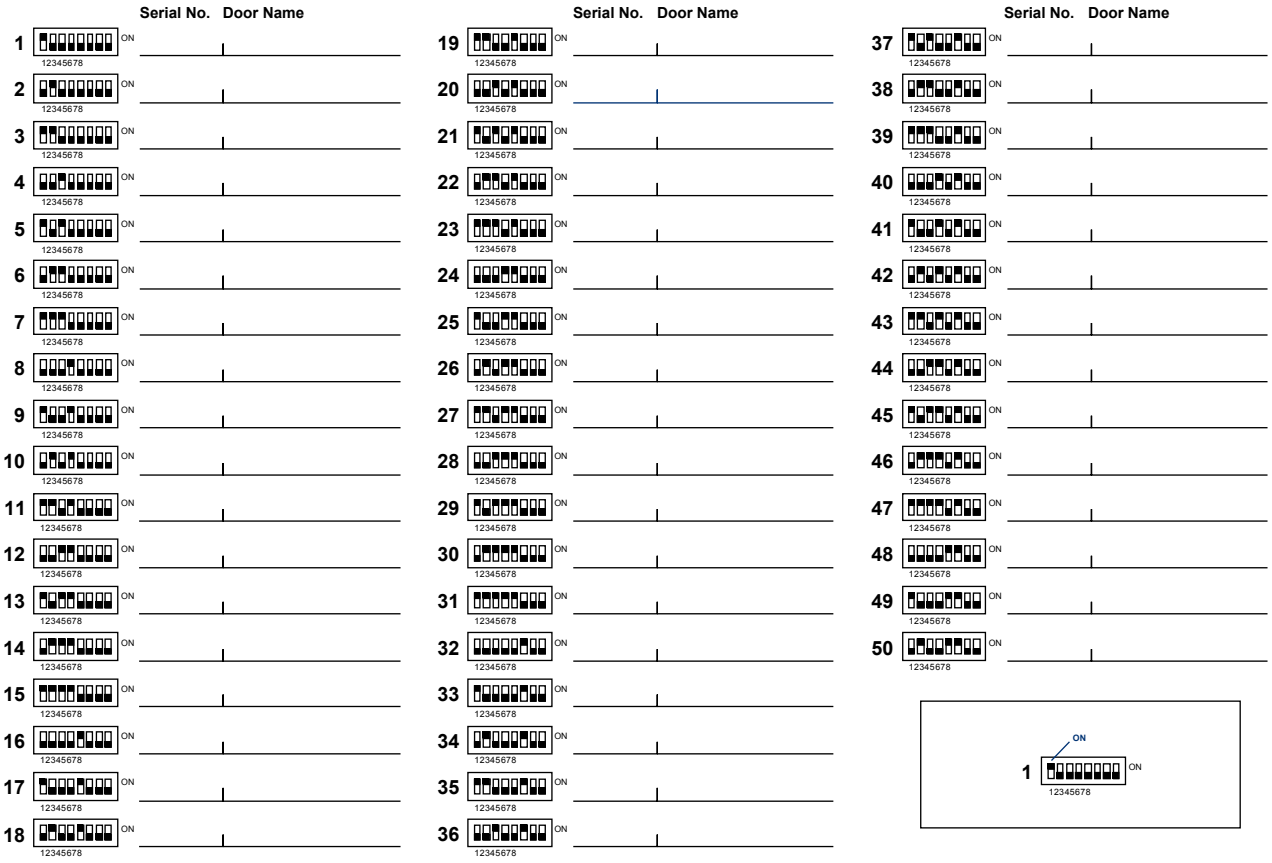


Fig. 6