Introduction

EXpert² is a two-door access control unit (ACU) that is administered by a computer (PC) running TDSi's EXguard software. More than one controller can be administered simultaneously from one or more computers, and TDSi manufacture several controller types besides EXpert² that can co-exist in a single system.

The software is used to monitor events and to program ACUs with card numbers, access rules and other parameters such as input and relay functions. The software does not need to be running continuously, as ACUs hold all the information they need, to provide the security features that have been set up.

For detailed installation instructions, please refer to the Installation Manual available from https://www.tdsi.co.uk.

EXpert² IP
Part No: 5002-3012

PC Communication

Make a note of the 10-digit UID of the EXpert² unit (this is visible through a window in the connection label). The UID is needed when you add the ACU details into the EXgarde database. For units connected via Ethernet, you also need to know the IP address. Once the required information has been entered, you can start (or re-start) EXgarde Communications and the computer will start communicating with the ACUs.

Whether you are using serial (RS232 or RS485) or Ethernet (TCP/IP) communications, the quickest way of commissioning the installation is to run the **xsearch** application which is one of the tools available in the EXgarde Toolkit (see UM0062 EXgarde Toolkit User Guide for details).

Dip Switches (RS485)

Re-position the 5 dip-switches accordingly:

- Switch 1 should be OFF (down)
- Switches 2,3,4 & 5 provide RS485 end-of-line termination. Termination is required when connecting multiple ACUs via RS485 from the IP-connected ACU. Only one set of termination switches should be on for the whole RS485 communications line.

When installing multiple ACUs, make a note of the UID number of each unit and its location.

RS232 (to single EXpert2 unit)

PC 9-way	PC 25-way	EXcel Terminal	Function
2	3	7	Receive
3	2	6	Transmit
5	7	5	Ground

RS485 (one or more units over RS485 using EXcel or an EXpert)

RS485 – Connected 5002ACU	RS485 – Connected ACU	Function
1	1	RS485A TX
2	2	RS485B TX
3	3	RS485A RX
4	4	RS485B RX
ACU Chassis	ACU Chassis	Protective screen

Reader Connections

EXprox Proximity Readers (5002-035x)
Digital IR Reader (5002-1781 only)

EXpert Terminal	Reader Connection	Colour
24	Reader 1 MAG-DATA	Yellow
25	Reader 1 MAG-CLK	White
27	Dearer 1 LED	Blue
29	Reader 1 0V	Black
30	Reader 1 12V	Red
30	Reader 2 12V	Red
38	Reader 2 MAG-DATA	Yellow
39	Reader 2 MAG-CLK	White
41	Reader 2 LED	Blue
43	Reader 2 0V	Black

TDSi Optica (5002-039x)
EXprox2 (5002-0395/5002-0396)
Or EXsmart2 (5002-0435/5002-0436, 5002-0433/5002-0434, 5002-0437/5002-0438)

EXpert Terminal	Reader Connection	Optica Pin	EXprox or EXsmart PIN
29	Reader 1 0V	1	2
30	Reader 1 12V	2	1
25	Reader 1 MAG-CLK	3	4
24	Reader 1 MAG-DATA	4	3
27	Reader 1 LED	5	7
43	Reader 2 0V	1	2
30	Reader 2 12V	2	1
39	Reader 2 MAG-CLK	3	4
38	Reader 2 MAG-DATA	4	3
41	Reader 2 LED	5	7

Fail-Locked

EXpert Terminal	Lock Connection
17	Door 1 Lock relay n/c
18	Door 1 Lock relay pole
31	Door 2 Lock relay n/c
32	Door 2 Lock relay pole

Fail-Open

EXpert Terminal	Lock Connection
19	Door 1 Lock relay n/o
18	Door 1 Lock relay pole
33	Door 2 Lock relay n/o
32	Door 2 Lock relay pole

Door Sensors

EXpert Terminal	Function
20	Door 1 Door sense
21	Door 1 Door sense 0V
34	Door 2 Door sense
35	Door 2 Door sense 0V

Egress Buttons

EXpert terminal	Function
21	Door 1 Egress 0V
22	Door 1 Egress Input
35	Door 2 Egress 0V
36	Door 2 Egress Input

Power Supply for Locks

The built-in power supply has four outputs each with a 1A quick blow fuse. Overall supply is 4A across these 4 terminals. 1A is required for the ACU which leaves 3A for locks.

These connections can be found on the small PCB (Output Distribution Board) on the back of the PSU.

| Terminal	Equipment Connection	NOTE
4+	Connected to +12 V IN, Terminal 10 on ACU PCB	In-built PSU can provide up to 3A for locks. Max rating is 4A but 1A is required for ACU and readers. If more than 3A is required for locks, use a separate power supply.
4-	Connected to 0 V, Terminal 11 on ACU PCB	
1+	Door lock Supply (up tp 1 A max.)	
1-	Door lock 0 V	
2+	Door lock Supply (up to 1 A max.)	Allow at least 50% more than the current rating of the lock. For example, a 600mA lock for be allocated at least 900mA overall.
2-	Door lock 0 V	
3+	Door lock Supply (up to 1 A max.)	
3-	Door lock 0 V	

Suppression of Electrical Noise and Spikes

CAUTION! Lock strike suppression devices (2 DIODE SUPPRESSORS ARE SUPPLIED) MUST be fitted directly across all inductive loads such as lock strikes, secondary relays and automatic door openers. Failure to adhere to this notice will invalidate the warranty of this product and may result in irreparable damage to it and other connected equipment.

DC lock strikes must be fitted with suppression components i.e. diode plus capacitor or MOV device (Metal Oxide Varistor).

AC lock strikes must be fitted with a suitable specialised suppressor.

The TDSi suppressor provided with EXpert[4] supports both AC and DC locks: part number 4262-0095.
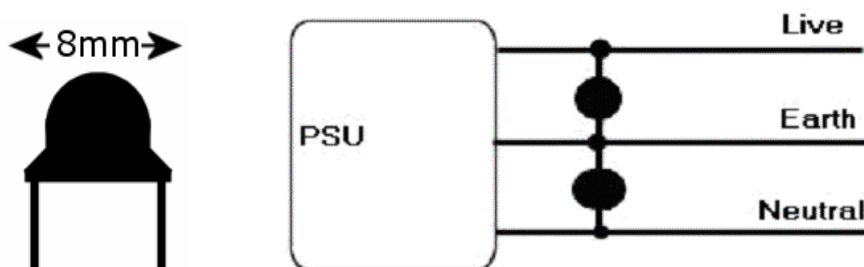
(a) Appearance and dimensions of PSU suppressor and (b) connection to PSU

Testing the Installation

The installation can be tested without using the computer or software. This allows you to check that the hardware is correctly connected and configured. In installer mode, you can check that:

- The cards will work with the readers.
- The doors are opened by a card (any card of the correct reader technology will activate all doors (relays).
- Egress buttons open the doors.

To enter installer mode:

Note. If EXgarde software is already running, disconnect the communications to the ACU by unplugging the 9-way connector.

1. Apply power to the EXpert2. You will need to reset the unit (see box opposite).

   The LED on the reader(s) should start flashing at about two flashes per second.

2. To place the ACU into installer mode:

   a. Press the tamper switch down for 5 seconds.

   b. Release the tamper switch for 5 seconds.

   c. Press the tamper switch down again for 5 seconds.

   d. Release the tamper switch again for 5 seconds.

   e. Press the tamper switch down again for 5 seconds.

   f. Release the tamper switch again for 5 seconds – The ACU will bleep once when in Installer Mode.

   The LED on the reader(s) will start flashing at about two flashes per second.

   Note. If a door sensor is fitted to Door 1, the on-board buzzer may sound after 15 seconds. If this happens it is because the ACU senses that the door is open, and is signalling that the door has been left open too long. If the door is in fact closed, this can be corrected from the EXgarde software. Temporarily, silence the buzzer by opening the door or replacing the factory-fitted link across the door sensor inputs of door 1.

3. Present a correct technology card to one of the readers. The flashing rate should change to one flash every two seconds.

4. Present the card again – relays 1 and 2 should be activated for 5 seconds (until you have run the software, the ACU has not been configured for one-door or two-door installation). Note that until the first card is programmed using EXgarde, ANY card of the correct technology will trigger both relays.

5. Press an egress button (if fitted) and the associated lock should operate for as long as the button is pressed, and remain operational for 5 seconds after the button is released.

6. You can test all the readers, reader ports, relays and locks (if fitted) are working.

7. When you have completed tests, exit installer mode by:

   - Validating a card using the software or EXkeypad.
   - Performing a hardware reset (see box above).

Hardware Reset

A hardware reset clears the unit's memory and restores factory default settings. All card information is deleted except for any Readers configured into special formats will not be changed.

To perform a hardware reset:

1. Switch the unit on.

2. Link the reset jumper J1 together (short with jumper provided) for a few seconds.

3. Remove the jumper ('park' the jumper on 1 pin only).