DOOR ENTRY DIRECT LTD

PC BASED DOOR ACCESS CONTROL

DESKTOP – WEB – MOBILE

Welcome

The following manual details information relating to the correct planning and installation of this door access control system. They replicate and collate instructions that may also be provided with other related electronic devices or sub-systems you have purchased. Details on how to configure and manage your software installation are provided through help pages reachable from the Web Administration Console software directly. It is recommended, if you are planning an installation for the first time, to seek guidance or further training from your supplier.

Door Control Unit Installation

Best results will be achieved when following these instructions as they describe the planning and installation of a single Access Control Door or Entrance. A wiring diagram with notes is shown below, that states clearly all the common associated devices that may be required for each single door installation. The main circuit board can be removed during enclosure installation but must be stored and handled with care.

Planning

The DCU Single Door Control Unit is designed to be installed locally to the door or entrance it will serve in a dry internal location. This allows all cable connections to be short and efficiently run. All connections are made by removable side-entry polarised screw terminals designed for multi-stranded cable types. All cables entering the door control unit housing must not be coiled up inside but routed efficiently through the various edge and rear cable entry knockouts and drill points of the enclosure. Cable tidy anchor points are provided with suitable cable ties provided. Please ensure that the rear enclosure mounting screws do not foul the PCB or terminals.

Power Supply

The DCU can be powered from a single low voltage DC regulated supply only. The voltage input range must be between 12-16 Volts DC; ratings outside of these may cause damage to the control unit and / or its associated devices. The DCU single door control unit has been designed for low power operation. Its quiescent current is only 80mAmp rising to 300mAmp with both proximity readers connected and the lock and alarm relays energised.

> Always use an individual power supply to power each door and its associated local components in isolation. Never share the power supply between adjacent door control unit as ground loops may be created that can cause communication bus faults over the RS485-COMS interconnecting door data-network. The current capacity of the PSU should be greater than the locking peak current consumption by at least 300mAmp (0.3A)

Cable & Wiring Choices

The correct choice of cable types will affect the overall performance and cost of the system installation so care and understanding of the types and when to use them is important.

> Never use of CAT5/6 or similar cable as its solid core construction breaks easily under mild mechanical stress and will make service & fault finding difficult. Always use the correct stated cable types, detailed below

The differing types of cable and when to use them are explained in the table below:

Application	Cable Type	Max Distance	Notes
Communications	BELDEN 8132 BELDEN 9842 PP001165	1000M 1000M 1000M	Use Belden equivalents if required. The screen is connected to communications terminal 'G' from Adapter to the door control units
Readers	BELDEN 9535	20M	Connect the screen to '0V' reader input terminal
Power & Lock	4-6 CORE SECURITY	20M	Any suitable unscreened low voltage multi-stranded cable can be used with sufficient conductor cross sectional area for the current drawn
Egress & Contact	4-6 CORE SECURITY	20M	Any suitable unscreened low voltage multi-stranded cable can be used with sufficient conductor cross sectional area for the current drawn

The total data-network length must not exceed 1000M from a single USB-485 or LAN-IP-485 Adapter and must not contain any spurs or star points. You can connect a total of 32 door control units on one continuous data-network cable segment from one USB-485 or across multiple LAN-IP-485 Adapters to a maximum of 128 door control units.

End of Line Termination

In the last door control unit, which is the one furthest away from the data-network adapter connection, you must employ end-of-line resistor termination. Connect the two 120-Ohm resistors provided with the USB-485 or LAN-IP-485 Adapters, one across the last door control unit terminals T+ & T- and the other across R+ & R-. To check that the termination is correct, disconnect the USB-485 or LAN-IP-485 interface from the computer or network switch and measure with a multi-meter set on the resistance range that you can read between 60 to 70 ohms across the T pair and again across the R pair. The exact readings will depend on the total data-network cable length and its resistance.

Door Monitor Contact Input

The Door Monitor Contact input is used to monitor the physical state of the door in its frame or closed position. This is normally achieved with a standard intruder alarm magnetic contact set. The type required is single pole normally closed when the door is closed. The Door Monitor Contact will only monitor the physical state of the door and not the locked or security status of the lock.   The Door Monitor Contact will activate the Alarm Relay Output (relay 2) when one of the following two conditions are met. If the doors lock mechanism is defeated and the door is opened by force, or if the door is opened through a valid access, but then did not close correctly or fully afterwards. The timing or delay of these events is programmable through the Web Administration Console software.

Alarm Relay Output

The Alarm Relay Output (relay 2) can be used locally to the door or entrance to indicate if the door or entrance is in the alarm state. An alarm state condition is generated when the door monitor contact is fitted, and the door is forced open or left open too long.   Any general-purpose sounder or other device may be switched with a rating

not greater that 24VDC at 2A. The relay has normally open and closed volt free contact set (form C). If the magnetic door contact is not fitted to any door control unit, then this condition is automatically detected and disabled (no need to link it out on the screw terminals).

Exit Request Input

The Exit Request Input is normally used if a button is required to exit through the controlled door or entrance. It can be reassigned on the software to be used as a general-purpose input for other purposes if required. Configurable options available are, intruder alarm set detect, power supply fault detect, general tamper input detect and all-doors release (free access) with a single closing contact. By default (factory) the operation is as an Exit Request Button utilised with a push-to-make momentary switch. If the exit button function input is later reassigned by the software application all functions are normally open with a closing circuit for an active state. If the release (free access) all system doors function is required, only a single connection at one door control unit is required as the host computer running the software, will manage the command for the rest of the system. Never apply a voltage of any kind to this input as damage to the control electronics may occur.

Door Reader Connections

Reader connections are generally of a short distance and so you may use standard intruder alarm connection cable if this is the case. Please review the above cable choices table for exact types, depending on distance to the appropriate reader input on the door control unit. Below are the wiring types and colours for the standard reader types you may encounter:

Reader Model	Type	Connections	Notes
UPR	125KHZ Universal Proximity Reader	RED = 12V BLACK = 0V GREEN = D0 WHITE = D1 BLUE = GLED	Use screened Belden 9535 max 20M
MPROX	125KHZ ASK 26 Bit Wiegand	RED = 12V BLACK = 0V GREEN = D0 WHITE = D1 BLUE = GLED *	Use screened Belden 9535 max 20M. * Blue wire not required with MPROX-ECO variant
MPROX - MF	13.56MHZ Smart Card Reader (CSN)	RED = 12V BLACK = 0V GREEN = D0 WHITE = D1 YELLOW = GLED	Use screened Belden 9535 max 20M
MPROX – MF - KP	13.56MHZ Smart Card Reader (CSN) c/w PIN Keypad	RED = 12V BLACK = 0V GREEN = D0 WHITE = D1 YELLOW = GLED	Use screened Belden 9535 max 20M
HID READERS	125KHZ WIEGAND FAMILY	RED = 12V BLACK = 0V GREEN = D0 WHITE = D1 ORANGE = GLED	Use screened Belden 9535 max 20M

Important Door Control Unit Installation Checklist

For the overall success and long reliable operation of the installation, it is important to observe certain installation rules for each door. The following checklist is designed to ensure qualified installers have adhered to all important installation techniques:

TOPIC	CHECK	✓
Power Supply	each door control unit is powered from a local single DC power supply with the correct current capacity rating for all local devices, including any electronic locks	
Power Supply	the DC input voltage measured at the power input of the T6 screw terminal is between 12 to 16VDC	
Power Supply	with the mains power isolated from the power supply, check there is no resistance or continuity between the 0V (-) DC output terminal and the single-phase mains earth input or metal case chassis	
Power Supply	if you are using fail-safe locks that require DC power to remain locked, then ensure your power supply is a battery backed type and a suitable rechargeable battery is fitted	
Local Cabling	all advised cabling types are being used and never Category 5 or similar single stranded types	
RS485-COMS Data Network Cabling	must be Beldon #8132, #9842 or Pro-Power PP001165 and never Category 5 or similar single stranded types	
Electronic Locking	if any form of inductive electronic locking device is being used, that the supplied protection diode has been fitted and fitted correctly. The supplied diode (1N4001) is polarity conscience and must be installed at or in the electronic locking device	
Exit Button	if installed ensure that this device is a push-to-make momentary action type	
Magnetic Door Contact	if installed ensure this device is a single pole normally closed when the door is closed type	
Door Readers	ensure the correct advised cable types have been used and any reader powered LED, is illuminated. You may also check that the correct DC voltage is present at any reader	
Clock Memory Cell	ensure that the 3V lithium button cell provided is installed carefully and in the correct orientation in the receptor, on the door control unit PCB	

Testing a DCU Door Control Unit Installation Locally

Most of each individual door control unit installation can be tested in isolation to confirm correct installation before connecting to the data-network of other system doors and the host computer. The electric lock, exit button, magnetic door contact, relay 1, relay 2 and both proximity readers if fitted, can be simply checked for correct operation.

1) To test that the Door Lock (relay 1) is operating correctly briefly press the Request to Exit Button. The Door Lock should unlock for approximately 5 seconds and then relock.

2) To test the Door Lock (relay 1) and the Alarm Output (relay 2) briefly press the Request to Exit Button and then open the door thus opening the Magnetic Door Contact. The Door Lock should relock within about 5 seconds. After 20 seconds, if the door is still open (ajar) then the Alarm Output Relay 2 will operate until the door is closed and secure.

3) To test for Door Forced Open you will need to disable the door locking mechanism and without pressing the Request to Exit Button, open the door which in turn opens the Magnetic Door Contact. The Alarm Output Relay 2 will operate until the door is closed and secured once again.

> Other readers are available, but their feedback signals may differ. The door control unit is fitted with two standard 26 Bit Wiegand interfaces so many third-party reader types including biometrics may be used

4) To test each Proximity Reader, present a card or tag at each unit installed. The reader should beep and flash green briefly to indicate the reader has read the presented compatible card or tag. After about 2 seconds the door control unit will flash the red light to green 6 times quickly, to indicate that this token has been read and processed but is unknown to the Door Control Unit (access denied).

> It is not possible to test or check the correct operation of the RS485-COMS data-network at this stage

Door Control Unit Serial Address

It is recommended at this stage, that the 6-digit unique serial number located on a white label is documented along with a descriptive name for the door control unit location. The serial number provides the unique address required to find it on the RS485-COMS data-network segment, so a note of the segment in which it resides is also important. This information will be required when the software is installed on the host computer and the new doors are required to be defined and addressed correctly.

Door Control Unit Wiring Diagram

POWER SUPPLY UNIT
(9 - 12 VOLT DC)
Connect low voltage
DC output to terminal
T6 'PWR'.

USE A BATTERY FOR
FAIL-SAFE LOCKING

CABLE COLOURS
T+ BLUE / WHITE
T- WHITE / BLUE
R+ ORANGE / WHITE
R- WHITE / ORANGE
G SCREEN

RS485 WIRED DOOR NETWORK
< FROM PREVIOUS DOOR OR ADAPTER TO NEXT DOOR >

DUAL TWISTED PAIR + SCREEN
- USE BELDEN 8132 or 9842

STATUS LED'S

RELAY 2 | RELAY 1 | ONLINE | POWER
G R- R+ T- T+
COMS

COMMS DRIVER IC

COMS T1

ENTRY READER
12V 5V GL D1 D0 0V
ENTRY READER T3
WHITE WIRE

EXIT READER
12V 5V GL D1 D0 0V
EXIT READER T2
WHITE WIRE

ENTRY CARD READER

EXIT CARD READER
(OPTIONAL)

GO EX MC - +
INPUTS PWR
DDAB01 T6

NC CM NO
RELAY 1
LOCK T4

NC CM NO
RELAY 2
ALARM T5

PWR
- +

PRESS TO EXIT BUTTON
(PUSH TO MAKE TYPE, OPTIONAL)
PRESS TO EXIT

DOOR MAGNETIC CONTACT
(N/C DOOR CLOSED, OPTIONAL)

EMERGENCY DOOR RELEASE
(N/C AT REST, ONLY REQUIRED FOR FAIL-
SAFE POWER LOCKED DEVICES)

EMERGENCY DOOR RELEASE

ELECTROMAGNETIC LOCKING
(FAIL-SAFE POWER LOCKED SHOWN)

CARD READER WIRING
BLACK - 0V
GREEN - D0
WHITE - D1
BLUE - GL
RED - 12V

Please ensure all unused
reader wires are insulated
from others to avoid contact.

INSTALL LOCKING DIODE SUPPRESSOR
For electromagnetic locking devices
without internal back-emf suppression
components installed, please fit the
supplied power diode directly at the
locking device supply terminals. This
component is polarity sensitive and must
be installed correctly. Connect the
cathode terminal, that is denoted by the
white band to the positive supply of the
locking device. The anode is connected to
the negative supply of the locking device.
Failure to provide adequate suppression
can cause erratic and / or damage to
associated electronic devices and circuits!

ELECTROMAGNETIC LOCK WIRING
The diagram shows a fail-safe (power to
lock) locking device by default. For fail-
secure (power to unlock) types please
move the wire in terminal NC to NO on
connector block T4.

PRESS TO EXIT BUTTON
This should be a push-to-make type
going closed circuit when pressed.
Never keep this input closed for long
periods as the door will remain
unlocked.

USB-485-ISO-TB Data Network Adapter

Best results will be achieved when following these instructions as they describe the installation and best practice for this adapter product. The USB-485-ISO-TB Adapter has been designed to simplify the connection of a data-network of door control units. You can use this product to connect the host computer to up-to 32 door control units from a single USB connection. This adapter variant has been improved to achieve galvanic isolation between the control computer and the data-network. This improves multi-drop RS485-COMS data-networking performance and the reduction in possible ground loop communication errors.

Power Source

The USB-485-ISO-TB Adapter derives its power source directly from the USB port and does not require any additional power sources. This interface consists of two parts, the USB connector cable with 6 coloured terminations and the interface printed circuit board. You will need to first terminate the USB connector cable ends, to the interface printed circuit board at the fixed 6-way USB cable terminal connections. The main RS485-COMS data-network is terminated at the removable 5-way connector end. A small housing is provided with cable strain reliefs to enclose all terminations.

Connections

The data-network connection will allow the network connection of up to 32 door control units with a single continuous multi-drop cable installation. The connections from the adapter output to the first control unit and onward to the next are shown below:

Adapter	First Control Unit	Next Control Unit…
T+	T+	T+
T-	T-	T-
R+	R+	R+
R-	R-	R-
G (Screen)	G (Screen)	G (Screen)

Two LEDs are embedded in the USB cable connector body. When at least one door is defined, and the system software is actively communication with the door(s) then the red LED indicates a transmission to the door control unit(s) and the green LED a reply. With these LED's and the online LED in each door control unit, any data-network cabling faults can be easily diagnosed and remedied. Additionally, there are two jumper links (LK1 & LK2) on the interface printed circuit board which provide receive pair input bias. These should always be connected as supplied, unless otherwise advised.

Adapter Driver Software

The adapter software driver must be installed prior to the connection of the device to your PC. The application driver software is installed automatically when you fully install the software application which is available to download from our website. Once all the data-network connections have been terminated and the main software or USB device driver has been installed you are ready to plug in the adapter to a spare USB port on your PC. Once the device is recognised messages on your screen will prompt you on the progress of the automatic configuration of this adapter. If the software or driver has been installed correctly prior to the physical connection, then this will result in your PC informing you that "The device has been installed correctly" or similar. If you have fully installed the software application, the adapter should be detected automatically, and no further configuration is needed.

LAN-IP-485-USR Data Network Adapter

Best results will be achieved when following these instructions as they describe the installation and best practice for this adapter product. The LAN-IP-485-USR (USR-TCP232-306) Adapter has been designed to simplify the connection of a single multi-drop segment or a complete data-network of door control units. You can use this product to connect the host computer to up-to 128 doors (32 per segment connection), by deploying one or multiple adapters across a local area network (LAN) or wider area network (WAN). This device is supplied as an open frame boxed module with screw terminals .

Power Source

The LAN-IP-485-USR Adapter requires a 5-36VDC power source usually derived from the first door control unit (back-powered) it is connected too. It does not normally require any other external power but can be locally powered (stand-alone) by using the supplied plug-top transformer.

Connections

You can connect a single or segment of door control units (maximum 32) to one LAN-IP-485-USR Adapter and you may also have multiple adapters on one system located in the same or other geographical locations. The connections for the back-powered method to and from the adapter are shown below:

Adapter	First Control Unit	Next Control Unit…
+	+	no connection
T- (B)	T+	T+
T+ (A)	T-	T-
R-	R+	R+
R+	R-	R-
-	G (Screen)	G (Screen)

The connections for the alternative stand-alone method, using the supplied plug-top transformer to and from the adapter differ as shown below:

Adapter	First Control Unit	Next Control Unit…
T- (B)	T+	T+
T+ (A)	T-	T-
R-	R+	R+
R+	R-	R-
-	G (Screen)	G (Screen)

Status LED's

The LAN-IP-485-USR Adapter has six LED indicators on its case top side. The function of these are shown below:

LED	FUNCTION	STATE
PWR	DC power connected	Red power always on
WORK	Adapter running and ready	Pulsing green 2 Hz always
LINK	On when IP communication occurs	Green active
TX	On when data is received from RS485-COM	Green active
RX	On when data is transmitted to RS485-COM	Green active

Adapter IP Addressing

Each LAN-IP-485-USR Adapter installed on your system requires a unique static IP address compatible with the Local Area Network (LAN) it is operating over. To configure this information, you must first connect each device individually to an ethernet interface port of an IP switch or by way of a crossover IP cable to a local PC. Once the connection is made you can run the appropriate LAN Adapter Installer utility after software installation (see later topic). This utility will allow you to find and correctly address each LAN-IP-485-USR Adapter you have. You should only need to configure the following two parameters for a standard application:

IP Address: e.g. 192.168.1.8 (factory setting)

Subnet Mask: e.g. 255.255.255.0

When you first take delivery of one or more LAN-IP-485-USR Adapters they are configured with a fixed IP address (as above), so they can be discovered by the LAN Device Installer utility on the target LAN. In practice, this must be changed for each device, to a unique fixed IP address compatible with your LAN and subnet mask settings. There are many other settings available, but under normal conditions are supplied factory set correctly and do not require any further modification.

Firewall Considerations

For secure LAN and WAN infrastructures it may be necessary to open firewall ports to be able to discover, address and communicate with the LAN-IP-485-USR Adapters. Standard port numbers that may need to be opened are 10001 for standard communication with the adapter from the access control software and standard 80 for device installation, discovery and addressing.

Device Installer Utility

You can launch the LAN Device Installer utility from the desktop (see software installation topic later). It is recommended that you connect, discover, and configure each device one at a time to avoid confusion as to which you are currently attempting to address. Once you have established the correct static IP address and subnet mask, you can move on and configure another in isolation. You can identify each adapter by the unique MAC address which is printed on the adapters lower case.
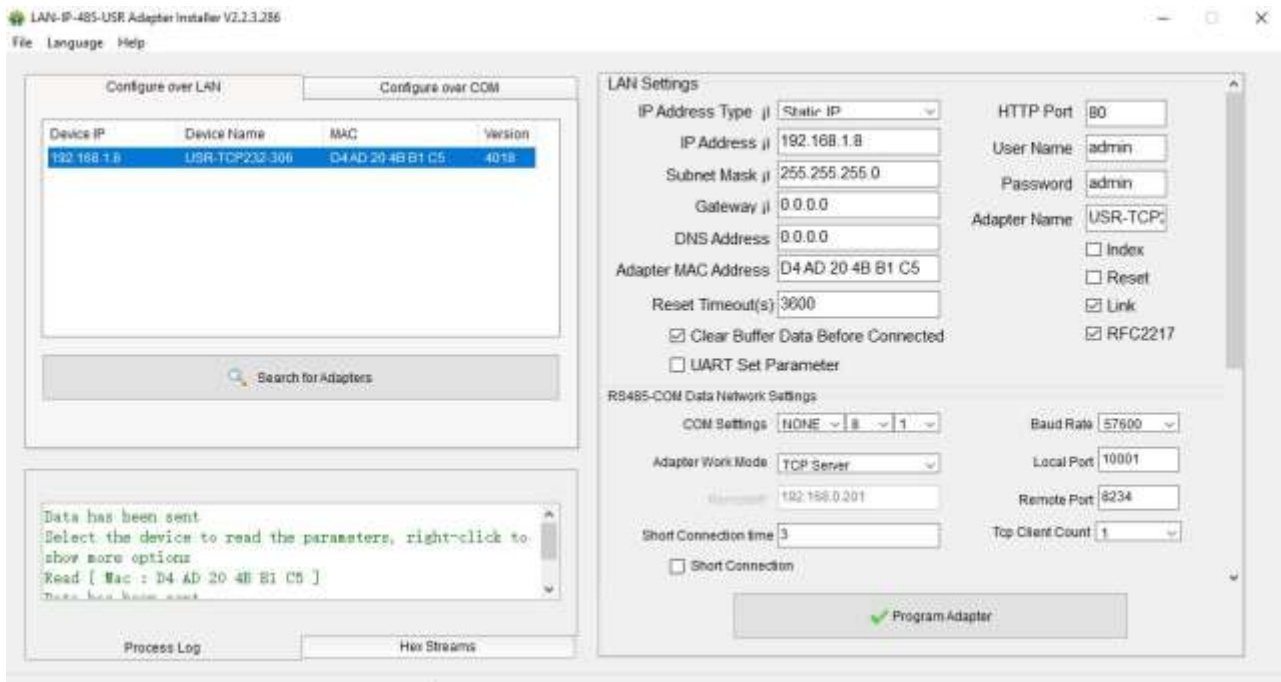
Once you launch the appropriate LAN Device Installer, you can select the Search for Adapters button. If you change, connect, or disconnect any adapters then you can click the search button again at any time, to update the device list of adapters. If you select an adapter from the left-hand device list, it will open on the right-hand side detailing its current settings. You can then procced to set your appropriate Static IP Address and Subnet Mask. Once you have completed the changes select the Program Adapter button to save the changes permanently in the adapter device. It is a good idea to fix a label on the adapter displaying your unique settings. Continue to connect, discover, and configure any further LAN-IP-485-USR Adapters you have.

> Remember, you will need to reference the new static IP address of the newly configured adapter segment, to the door or doors connected to it. Please see the Doors menu help topic on the Web Administration Console for more help and information on this and other door commissioning tips

Advanced Adapter Setup

You should not normally need to configure any more information than detailed in the previous section. You can use the screenshot above to check that all your other settings are compatible.

Data Network Termination

For this adapter device you will need to deploy beginning and end-of-line resistor termination, using the four 120 Ohm resistors supplied. If the LAN-IP-485-USR is connected to one end of the RS485-COM data-network, then connect a resistor across T+ (A) / T- (B) and another across R+ / R-. Then in the last door control unit (end-of-line) connect one across T+ / T- and another across R+ / R-.

With this adapter it is possible to connect it anywhere along the RS485-COM data-network. If this is the case, then you will still need to deploy four resistors but in a slightly different way. The resistors are now connected in the first door control unit and the last door control unit (the ends). They are connected across T+ / T- and R+ / R-. Using this method permits a single RS485-COM data-network to travel in two opposing directions from the adapter, whilst maintaining the essential one beginning and one end technical policy.

LAN-IP-485-TB Data Network Adapter

Best results will be achieved when following these instructions as they describe the installation and best practice for this adapter product. The LAN-IP-485-TB Adapter has been designed to simplify the connection of a single multi-drop segment or a complete data-network of door control units. You can use this product to connect the host computer to up-to 128 doors (32 per segment connection), by deploying one or multiple adapters across a local area network (LAN) or wider area network (WAN). This device is supplied with an internal composite housing complete with cable entry ports.

Power Source

The LAN-IP-485-TB Adapter requires a 12VDC power source usually derived from the first door control unit (back-powered) it is connected too. It does not normally require any other external power sources and the device is reverse polarity protected, but correct polarisation is required for operation.

Connections

You can connect a single or segment of door control units to one LAN-IP-485-TB Adapter and you may also have multiple adapters on one system located in the same or other geographical locations. The connections for the adapter to the first control unit and on to the next are shown below:

Adapter	First Control Unit	Next Control Unit…
12	+	no connection
T+	T+	T+
T-	T-	T-
R+	R+	R+
R-	R-	R-
G	G (Screen)	G (Screen)

Status LED's

The LAN-IP Adapter RJ45 connector has two embedded LED indicators for displaying the status and activity of the adapter:

LEFT LED	LINK STATUS	RIGHT LED	ACTIVITY	NOTE
OFF	No Link	OFF	No Activity	Check Power + (12)
AMBER	10Mbps	AMBER	Half Duplex	
GREEN	100Mbs	GREEN	Full Duplex	

Removable PCB Links

The LAN-IP-485-TB Adapter has three removable links on the PCB that are supplied connected. These are not normally required to be removed, under normal circumstances and should be left connected. The operations of the three links are as below:

Link	Operation	Notes
LK1	RX- PULL UP	Normally Connected
LK2	RX+ PULL DOWN	Normally Connected
LK3	LAN-IP MODULE ENABLED	Normally Connected

Adapter IP Addressing

Each LAN-IP-485-TB Adapter installed on your system requires a unique IP address compatible with the Local Area Network (LAN) it is operating over. To configure this information, you must first connect each device individually to an ethernet interface port of an IP switch or by way of a crossover IP cable to a local PC. Once the connection is made you can run the appropriate LAN Adapter Installer utility after software installation (see later section topic). This utility will allow you to find and correctly address each LAN-IP-485-TB Adapter you have. You should only need to configure the following three parameters:

Fixed IP Address: e.g. 192.168.1.8 (factory setting)

Subnet Mask: e.g. 255.255.255.0

Gateway: e.g. 0.0.0.0

When you first take delivery of one or more LAN-IP-485-TB Adapters they are configured with a fixed IP address (as above) so they can be discovered by the LAN Device Installer utility on the target LAN. In practice, this must be changed for each device, to a unique fixed IP address compatible with your LAN and subnet mask settings. There are many other settings available, but under normal conditions are supplied factory set correctly and do not require any further modification, other than the above.

Firewall Considerations

For secure LAN and WAN infrastructures it may be necessary to open firewall ports to be able to discover, address and communicate with the LAN-IP-485-TB Adapters. Standard port numbers that may need to be opened are 10001 for standard communication with the adapter from the access control software, 9999 for optional TELNET configuration and standard 80 for device installation, discovery and addressing.

Device Installer Utility

You can launch the LAN Device Installer utility from the desktop (see software installation topic later). It is recommended that you connect, discover, and configure each device one at a time to avoid confusion as to which you are currently attempting to address. Once you have established the correct static IP address, subnet mask and gateway, you can move on and configure another in isolation.
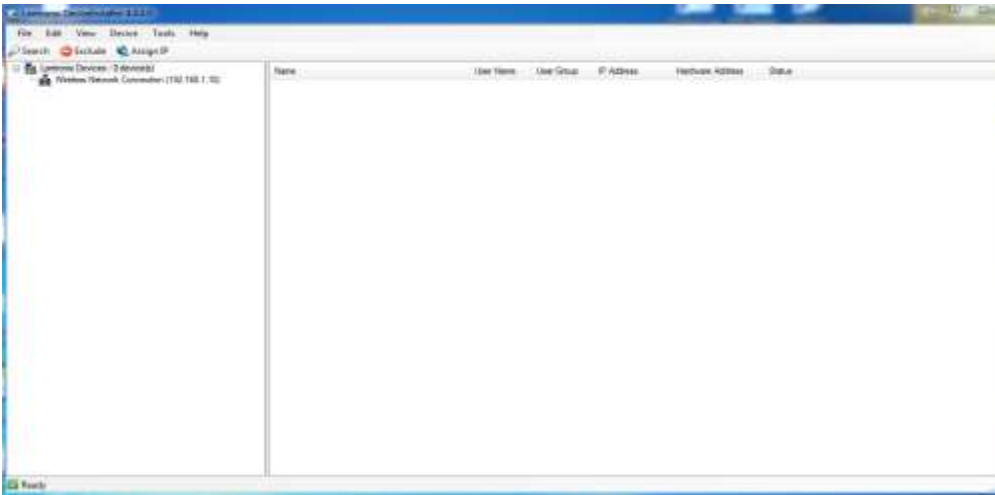
Once you launch the LAN Device Installer utility the search (discovery) for LAN-IP-485-TB Adapters will start automatically. If you change, connect, or disconnect any adapters then you can click the SEARCH button again at any time to update the list of adapters. In the right-hand list you should see your discovered LAN-IP-485-TB. From the right-hand list of discovered adapters select the one you need to configure. Select the ASSIGN IP button. Choose the option to assign a specific IP address and select NEXT. Complete the three boxes IP Address, Subnet Mask and Default Gateway. The latter is usually set at 0.0.0.0 as in itself an adapter is not required to find an internet connection. Knowledge of IP addressing, and subnet mask use is assumed, but you may need to consult the owner of the IT network for more information on allowable static addresses and correct subnet mask usage. Finally select the NEXT and the ASSIGN buttons. The LAN Device Installer utility will update you on the progress of the configuration and prompt you to select FINISH when complete. The list of discovered adapters will automatically update on completion. Continue to connect, discover, and configure any further LAN-IP-485-TB Adapters you have.

> Remember, you will need to reference the new static IP address of the newly configured adapter segment, to the door or doors connected to it. Please see the Doors menu help topic on the Web Administration Console for more help and information on this and other door commissioning tips

Advanced Adapter Setup

You should not normally need to configure any more information than detailed in the previous section. If you feel however, that you need to check all advance settings then you can enter the Web Configuration of any individual LAN Adapter then you can double click on the entry in the right-hand list and select the Web Configuration tab. Then select the green GO arrow button. On doing this a Windows Security dialogue box will appear prompting you to enter a Username and Password. Just select OK as there are no credentials set from the factory. The Line 1 Settings (serial settings) are usually set at the factory as follows:

> RS232, 57600, 8, None, 1, None

If these are not correct, then you can select Serial Settings and make the necessary changes. Do not forget to choose Apply Changes to save all new settings. If you have altered settings and are unsure if you are correct, then you can reset (Apply Defaults) the adapter fully. You will then need to setup the Serial Settings as shown below.

> Remember to select Apply Settings when making any changes!

Channel 1

☐ Disable Serial Port

Port Settings

Protocol: RS232 ⌄   Flow Control: None ⌄

Baud Rate: 57600 ⌄   Data Bits: 8 ⌄   Parity: None ⌄   Stop Bits: 1 ⌄

Pack Control

☐ Enable Packing

Idle Gap Time: 12 msec ⌄

Match 2 Byte Sequence: ○ Yes ● No   Send Frame Immediate: ○ Yes ● No

Match Bytes: 0x 00   0x 00   Send Trailing Bytes: ● None ○ One ○ Two
(Hex)

Flush Mode

Flush Input Buffer

With Active Connect: ○ Yes ● No

With Passive Connect: ○ Yes ● No

At Time of Disconnect: ○ Yes ● No

Flush Output Buffer

With Active Connect: ○ Yes ● No

With Passive Connect: ○ Yes ● No

At Time of Disconnect: ○ Yes ● No

Installing System Doors in Remote Locations

It is possible to connect some or all your doors in a remote building or location and maintain them as one overall system. The doors are managed and communicated with over the world-wide-web using our LAN-IP-485-TB or LAN-IP-485-USR Adapters.

Router & Port Forwarding Considerations

You can connect multiple or single doors to be data-networked using a LAN-IP-485 Adapter plugged into a router or IT network switch in a remote location over the internet. You will need to know the fixed public IP address of the remote location and setup a port forward for port 10001 in the router to the LAN-IP-485 Adapter static IP address. Please specify the IP address in the format e.g., WEB 92.168.177.234:10001 for the door definition in the software.

Multiple Adapters at Remote Locations

If you have multiple LAN-IP-485 Adapters in any one remote building or location, you can and must, provide unique port numbers for them (i.e., 10001, 10002, 10003 ...). To change the port number for a single LAN-IP-485 Adapter you must use the appropriate LAN Adapter Installer utility as described earlier and reprogram the port numbers they listen on accordingly.

WebAdmin Server & Remote Management

Your single installation of the host software includes built-in capability for operating and managing your site installation remotely. You can manage your site from any PC inside and outside of your building, through any web browser or on portable devices such as tablets and smart phones.

Working Over the Internet

It is possible with the correct infrastructure, to open the ability to access the sites Web Administration Console from any external internet enabled device from anywhere in the world. To achieve this, the host computer that is actively running the software, must be connected to the internet and be able to accept incoming remote connections through an opened port of 4001. This is done by your router switch device that is connected to your ISP and setting up a port-forward for port 4001 to the host machines IP address. Remote users would then navigate remotely using your ISP generated IP address (external IP address) and the port number 4001. This can be a complicated topic and it is recommended that you contact Technical Support if you are unsure in anyway.

Starting the WebAdmin Server at Boot Time

To implement a reliable and permanently reachable remote connection, you may want to observe and implement the following modifications to the host computer running the software:

Windows Start-up Group - navigate to the Solo folder in the root of your HDD and find the application SoloServer.exe. Create a shortcut for this and add to your windows start-up group.

Internal IP Address - make sure that the main PC running the software has a fixed internal IP address, so it does not change when rebooted.

External IP Address - if you wish to connect to your installation from remote web browsers, ensure that you have a fixed external IP address from your ISP.

Create a Port Forward - you will also need to create a port forward for port number 4001 to the fixed IP address of the host computer running the software.

USB Desktop Enrolment Reader

The USB Desktop Reader simplifies the validation of our range of proximity cards & key-tags into your system. The simple presentation of a valid proximity card or tag will result in the unique ID number being paced in the relevant field when defining user records.

Installing

The USB Desktop Enrolment Reader can be connected to any Windows computer using the USB cable provided. No other connections or software installation is required.

Testing

To confirm correct operation, you can open any editor on your computer such as Notepad or Microsoft Word. Simply click on the editable page and present any proximity card or key-tag and you should see a 10-digit unique number appear on your screen. If this is the case, then the device is working correctly as an extension to your keyboard and wherever you normally type, this device can be used instead.

Secure Login

The USB Desktop Enrolment Reader also permits secure login to the Web Administration Console. This negates the need to enter a username and password, by simply presenting your ID card or key-tag at login.

Access Control System Schematics

The following schematics detail the possibilities for the Access Control System. With the use of our USB-485 and LAN-IP-485 data-networking adapters, you can create powerful door data-networks in the same or different geographical locations.
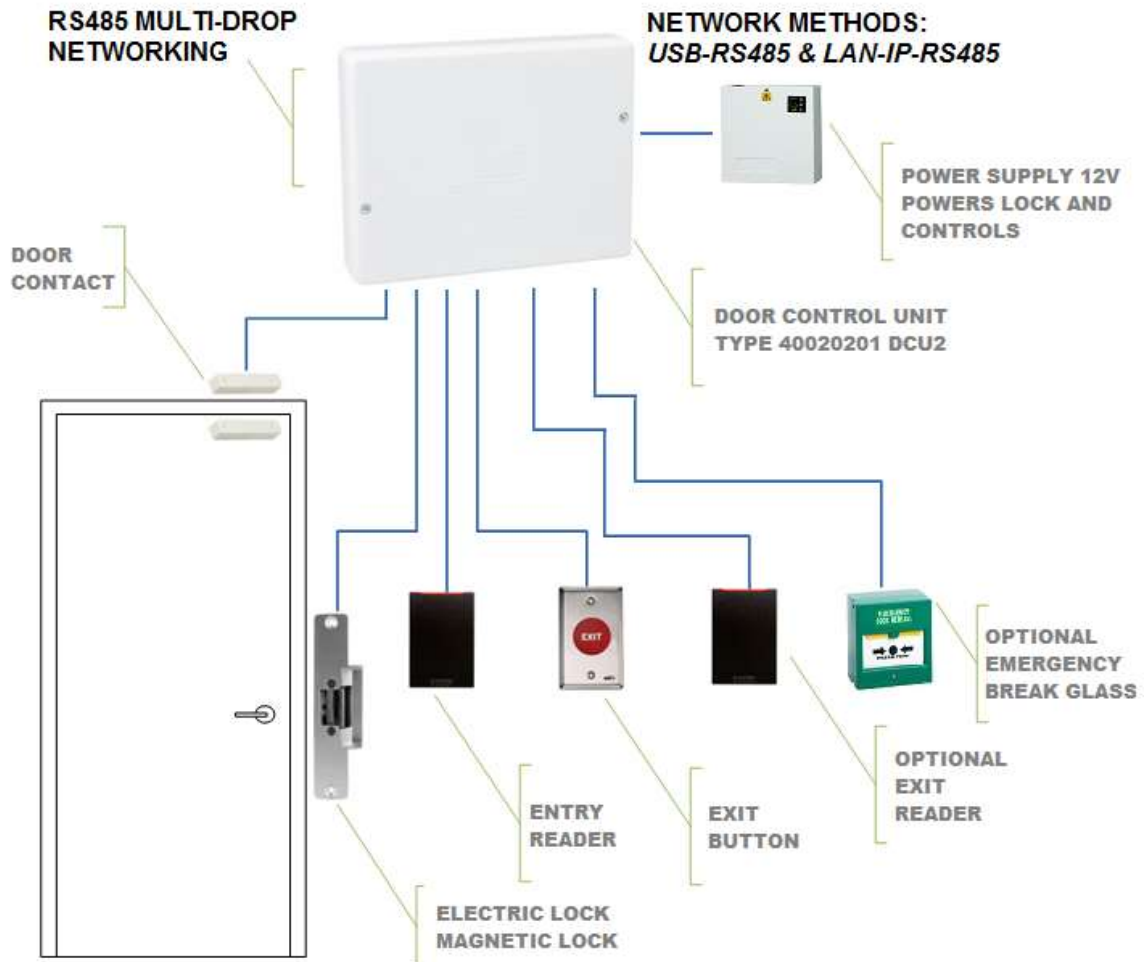
USB-485 Data Networking
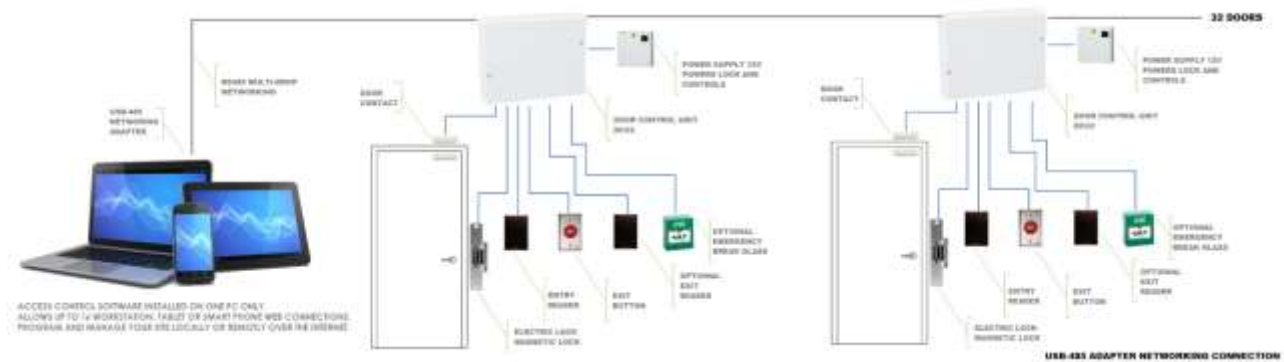
The above scheme represents a basic system connected to the host computer by a single USB-485 adapter. This lead can be extended to a maximum of 1000M and network up to 32 door control units. You may only have one USB-485 Adapter on any single system. Please observe the correct cable types for the installation as detailed earlier in this manual.

USB-485 & LAN-IP-485 Data Networking
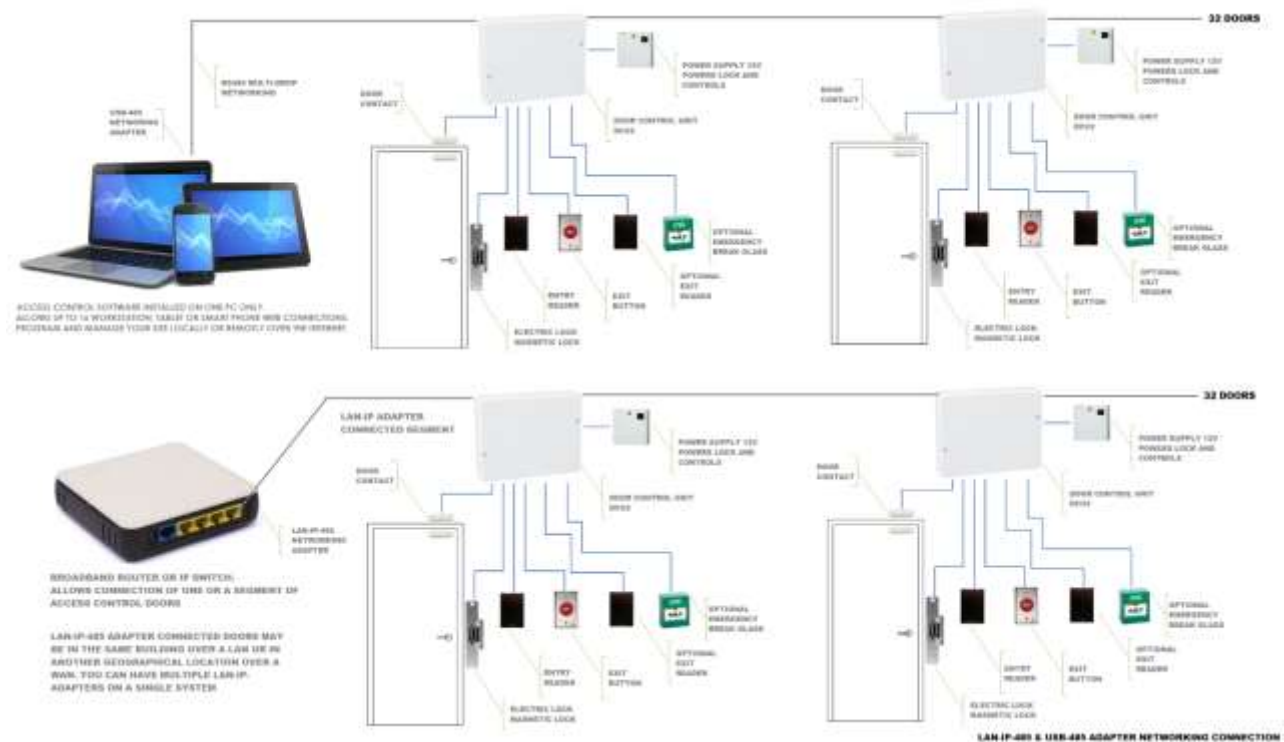
The above scheme represents a more developed topography, including doors connected by a USB-485 adapter and further doors connected through LAN-IP connectivity by use of the LAN-IP-485 adapter. You may have as many LAN-IP-485 Adapters as you wish on your system, providing that the maximum number of 32 doors per segment connection and 128 overall, is not exceeded. Please observe the correct cable types for the installation as detailed earlier in this manual.

Please use the help menus available from the Web Administration Console to assist with the setup and day-to-day use of the access control system

Access Control Software

Once you have completed the installation of the access control hardware and you have tested each door control unit as detailed in this manual, you can install the Web Management Software.

WebAdmin Edition Software

Your supplier will have normally suppled the software installer as a digital link for download, or a website location you can download it from. The software installer is provided as a single compressed ZIP style file for simple download. Ensure sure your ZIP download is stored on the computer that will run the software. Never install the software directly from a USB memory card, thumb drive or IT network location. Once you have the latest software in ZIP format on your computer, you can right-click on it and select run. The compressed ZIP will unpack, and you can similarly run the .exe installer file contained inside. The installer will automatically install all applications, utilities, device drivers and appropriate desktop shortcuts. Once the installer has completed, it will prompt you to confirm the installation of some additional drivers and dependencies you may need for your installation.

Launching the Software

Once the installer has completed it is recommended that you manually reboot your computer. Once your computer has restarted you will observe two desktop shortcuts relating to the new software installation:

The LAN Adapter Installer shortcut is used to locate, configure, and install our LAN-IP-485 series adapters for data-network segments of door control units connected by LAN-IP method. You can read more on how to do this in the LAN-IP-485 Adapter sections earlier.

The Access Control shortcut launches the background Communications Server & Web Administration Server software modules from a single point. Double-click or right-click and select run from this icon to start your access control system for the first time. After a few moments you will notice the Communications Server & Web Administration Server will launch with process messages from the notification bar. Shortly you should see the default web browser automatically launch, with the Web Administration Console running with the Login page ready.

Web Administration Console Login

To get started programming up the system and gain access to the context help menus inside, you must first login to the system with the default credentials.

As this is a brand-new software installation you must use the default username and password of 'admin'. Once entered select the Login button. Once these credentials are accepted, the Events screen and main navigation menu will be displayed. If you have not defined any doors yet, you will be immediately redirected to the Doors installation screen.

At this point you are not limited to programming the system on this the host machine. As you have proved that the system is running you can now use any other computer, tablet or smart device that is connected to this computer. Simply launch the web browser on the new device and enter the local host computer IP address and port number e.g., 192.168.1.100:4001. To find your Web Administration Console local IP address for all remote workstation connections, just look to the web browser window on the host machine in the address bar.

Help Resource

The Web Administration Console has an integrated help resource that can be viewed from the Site | Help menu link. On each page you will see a '?' icon on the right-hand side of the screen that is used to jump directly to the help topic, in context with the page you are in. It is this resource that will take over to guide you through the installation, configuration, and commissioning of all your access control doors.

Appendix A

Access Control Server

The following topics are included so installation engineers can better understand the structure and operation of the software system. With this expanded knowledge engineers and alike can better solve problems, improve performance, and maintain and support the installation over its lifetime.

ACS Console

At the heart of the software system is the Access Control Server (ACS) component. This should be a continuously running program on the host machine, managing the entire access control system. The ACS can only run on a Windows 8, 10 or 11 based operating system and is not compatible with Windows Server editions. The ACS when launched, runs in the background and is not available to view from the normal Windows Task Bar. It is instead, available to view from the Windows Tool Bar at the bottom right of your computer screen. You will note a black squared icon with a tick or magnifying glass indicating this important running background task. You can access the ACS Console by double-clicking on this icon

Server Tasks

Access Control Server

The ACS component has three main tasks to perform:

Access Control Communications	The access control communication task is responsible for communicating with all systems doors over all segments of the RS485-COM data-network. The communication task can handle bidirectional connections by USB, LAN-IP, and WAN-IP hardware connectivity. The communications also handle SMTP emails of important alarms and events.
Database Management	The database task is active in creating, maintaining, and updating all locally stored information relating to historical events and system configuration. The database tables are compatible with SQL syntax queries and uses an SQLite3 type engine.
Web Administration Clients	The client web server element is responsible for handling and managing all incoming http-based web browser connections. This element can handle up to 16 concurrent client connections.

It is evident from this explanation, that the importance of the ACS running continuously can not be understated. Whilst all your access controller doors will continue to operate and log events regardless of the state of the ACS, it is an important software system to keep running. A running ACS ensures that your events history log is continuous and all changes to system setup are always up to date. Some of the most successful and reliable installations use a dedicated laptop computer away from prying eyes (and hands), which is dedicated to running the ACS system. Then all day-to-day administration and monitoring can be done by remote Web Administration Clients on separate computers, tablets or smart devices.

> You can include the Access Control Software executable SoloServer.exe in the Windows startup group to ensure it runs at boot time

Communications Monitor

The ACS has three monitoring tabs to show communication activity to and from your access-controlled doors. The **Communications** tab displays each communication packet event that occurs, with the most recent packet at the top of the list. Each row in the list clearly shows what event is taking place and thel results of this, in the TX and RX columns. Many faults or errors can be diagnosed from this view. The **Updates** tab displays a sub-list of all active updates about to be sent to your access-controlled doors. It is worth noting here, that if any access-controlled door is off-line (uncontactable) then active updates will not be created or actioned. The **Warnings** tab can be used as a communication debug tool when issues around door-network communications have arisen. Once enabled and left to run for a sustained period, any and only communication errors are logged in this list. This will allow greater understanding of where any installation faults may exist at any of your access-controlled doors. All errors logged in this list can be exported to an external file for later analysis, or for use by any second line technical support assistance.

Server Tools

Whilst the Access Control Server component is mainly an automated process with passive monitoring there are some useful tools for maintenance engineers available from the **System** tab. These tools can be used to perform various quick and useful corrective functions outside of any password control. The various tools and their uses are explained below:

Create History Backup	Create a full back-up of the entire event history of your access control system, so safe copies can be removed off-site should database recovery or replication be required later. All backups are stored in the \SOLO/wwt/htdocs/backups folder clearly time and date stamped.
Create Site Backup	Create a full back-up of the entire site configuration for your access control system, so safe copies can be removed off-site should database recovery or replication be required later. All backups are stored in the \SOLO/wwt/htdocs/backups folder clearly time and date stamped.
Create PhotoID Backup	Create a full back-up of all your PhotoID badge designs for your access control system, so safe copies can be removed off-site should database recovery or replication be required later. All backups are stored in the \SOLO/wwt/htdocs/backups folder clearly time and date stamped.
System Options	Create and modify basic global settings.
SMTP Email Settings	If you are going to use SMTP Email to send alarms and important notices, then you can configure the SMTP settings and protocol here.
LAN-IP-485-TB Adapter Configurator Utility	Directly launches the external application to configure this type of RS-485-COM data-network adapter.

LAN-IP-485-USR Adapter Configurator Utility	Directly launches the external application to configure this type of RS-485-COM data-network adapter.
Update Global Time & Date	From this link you can update the current date & time to all you access-controlled doors. The ACS will use the host computers current time and regional settings, so ensure these are accurate.
Purge Communications Update Queue	Used only if erroneous or outdated door-network updates are residing in the update queue. This function should be used with care as all updates will be deleted upon use.
Refresh Communication Timeout Values	Used to refresh all communications timeout settings after any change is made to the tout.txt file.

Communication Timeout Values

When a communication transmission is sent from the Access Control Server a permissible amount of time is allowed for any door control unit to respond. If a response is not received within the allowed time, then it has deemed to have failed and process will continue to the next task. These values do not normally need to be changed as the defaults are usually satisfactory. There are three values associated with this function and are displayed on the ACS status bar by default as 600/1000/1000. These are numeric values stated in milliseconds where 1000 milliseconds are 1 second. These three values represent USB, LAN-IP, and WEB-IP communication segment timeout values respectively. Increasing these values is only required if very slow IT networks are encountered and data transmission & reception is erratic. Decreasing these values will speed up RS485-COM data-network throughput and overall communications performance.

> Make any changes with caution and please discuss with second line technical support first

Timeout Values File

If you decide to modify the communication time out values, then you can do this by editing the tout.txt file contained in the /SOLO/ directory folder. There are three values, line 1 is the local USB adapter value, line 2 is the local LAN-IP-485 adapter over a standard LAN/WAN connection and finally line 3 which is for LAN-IP-485 adapter connectivity in other locations connected over the world wide web. Once the appropriate values have been changed and saved, you can use the Refresh Communication Timeout Values server tool at the ACS Console. Changes will be immediately displayed on the ACS Console status bar.

END OF DOCUMENT