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Access Control, Camera and Intercom Specifications Document

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University of Stellenbosch

[1] Access Control, Camera and Intercom General Specifications for Projects

1.1 General Notes, Specifications and Dimensions

- Control Box/Junction Box (ABB – UT10 410mm x 410mm x 165mm)
- Green DMN702G combo - W 90mm x L 90mm x D 55mm
- Gate Motors:
  - Gate motors are to be installed on all new and existing Bicycle Sheds and Pedestrian Gates. **No magnetic locks, rim locks or any other lock types are to be used.**
- Magnetic Locks:
  - Elock LK117 150Kg 12 V for Sliding Doors
  - Elock LK126 360 Kg 12 V for Timber Doors.
  - SEP 300/38M 12V Slimline for Single Aluminium Doors if recessed into stationary panel or post of door.
  - Elock LK118 350 Kg 12 V for Double Aluminium Doors if recessed specifically where Clip 44 Shop Front system will be used. Magnetic lock on inactive leaf and Armature plate of Magnetic lock on active leaf.

1.2 Aluminium, Timber and Glass Door Card Readers

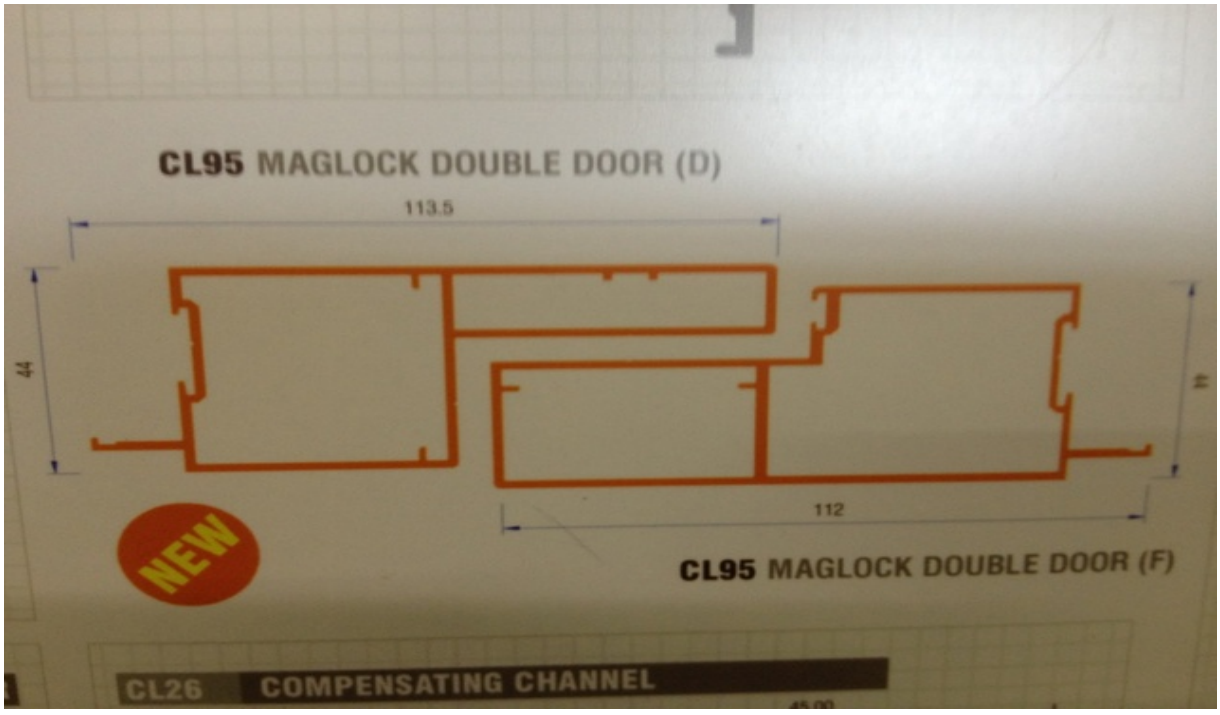
- Please provide MAC Address of device, position/location as well as other needed details to US/TAS Project Coordinator/Manager before installation to register for an IP Address if needed.
- Each Access Controlled Door must have its own **Access Control Box/Junction Box** inside the Ceiling or if not possible below the Ceiling against the wall.
- Access Control Box/Junction Box must be installed on the inside/safe side of the door or building to prevent tampering.
- An **Access Hatch** of 600mm x 600mm must be provided to gain access to Access Control Box/Junction Box for maintenance purposes if to be installed inside ceiling space.
- The location or height of **Access Control Box/Junction Box** or **Access Hatch** must not be lower than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level.
- A **Network Point** must be installed for each Access Controlled Door inside or next to Access Control Box/Junction Box and must not be lower than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level. Type of communication is dependent on user activity or volumes at the access controlled door. If volumes are high we will use **RS485 communication** but the Network Point must still be installed for future use.
- A **220V AC dedicated/red Plug Point** must be installed for each Access Controlled Door that uses a Magnetic Lock or other type of 12V DC lock. The Plug Point must be installed inside or next to the Access Control Box/Junction Box/Access Control Hatch and must not be lower

than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level.

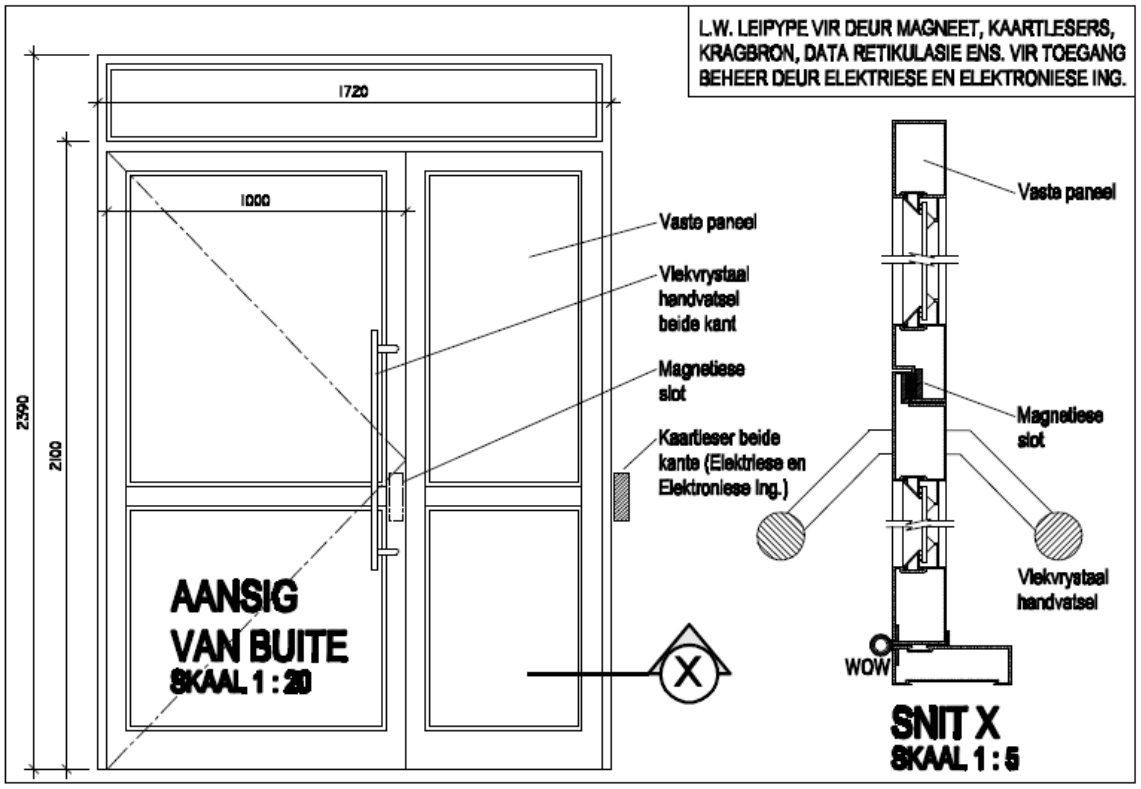
- **Recessed Magnetic Locks** must be installed by manufacturer on Aluminium Doors and Timber Doors if it is a new installation or door.
- **25mm PVC Conduit** route must be provided for Magnetic Lock Cable to Access Control Box/Junction Box.
- **25mm PVC Conduit** route must be provided for both inside card reader and outside card reader to Access Control Box/Junction Box. 25mm PVC Conduit route must be installed at height 0.9 meters from ground for Paraplegic Doors and 1.2 meters from ground for Non-Paraplegic doors like Turnstiles or where there are stairs in front of the door that will not be removed for Paraplegic access purposes.
- **Break Glass Unit** will use the same 25mm Conduit route as the inside card reader or its own. Must be mounted next to reader on right hand side or below reader at **0.9 meters**. For specific Access Controlled doors we will ask for the Break Glass unit as well as the **25mm PVC Conduit** to be installed further away from door to prevent tampering and unauthorized access from outside.
- All Doors must be fitted with a **Door Closer**.
- **Sample Drawings, Pictures and Diagrams are provided below on document.**
- **Please see Hardware Specifications provided below for Impro (2.2) or Salto (3.2) Installations.**

1.3 Door Lock Sample Pictures

Clip 44 Double Aluminium doors Magnetic Lock Shop Front System 1.3.1

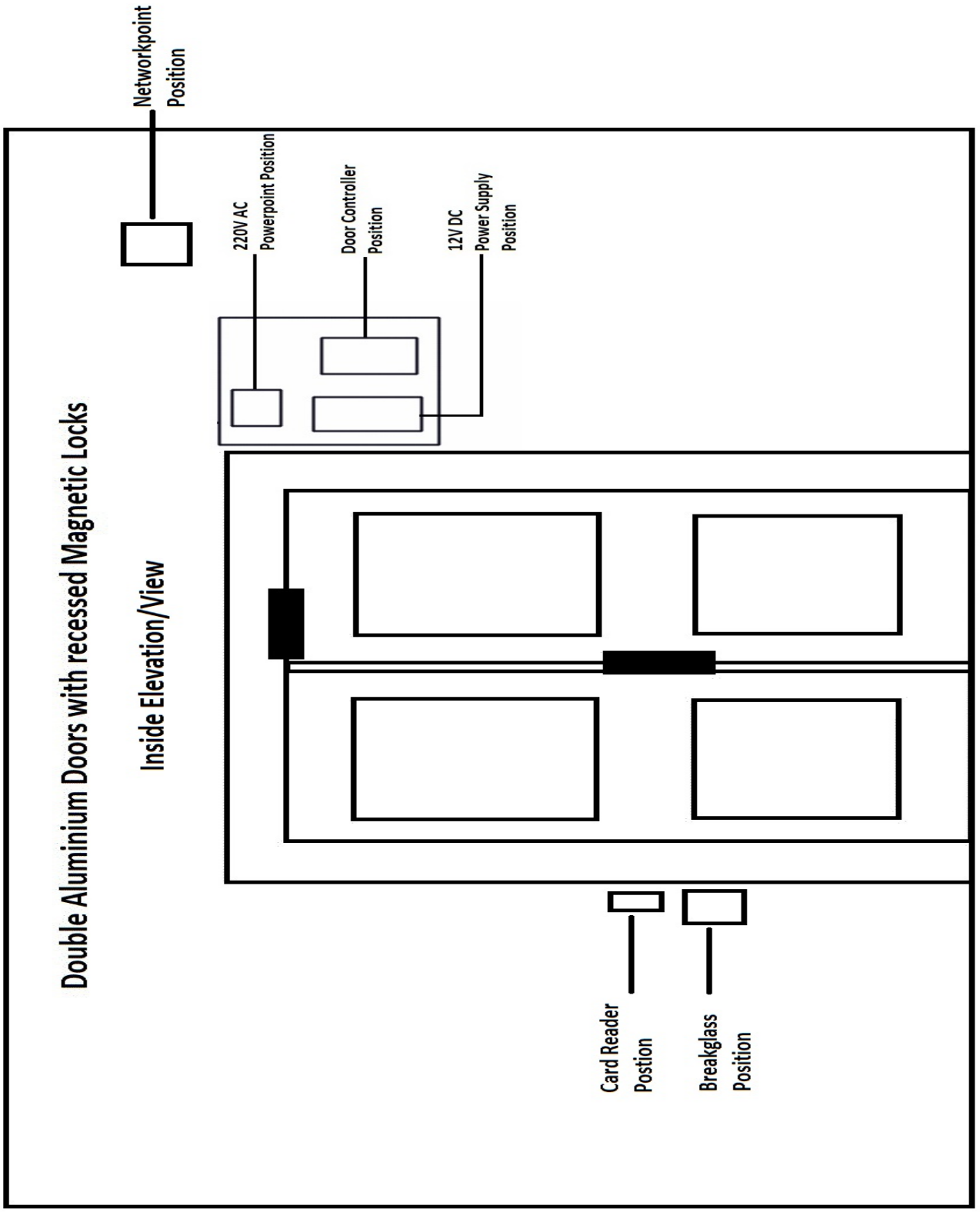


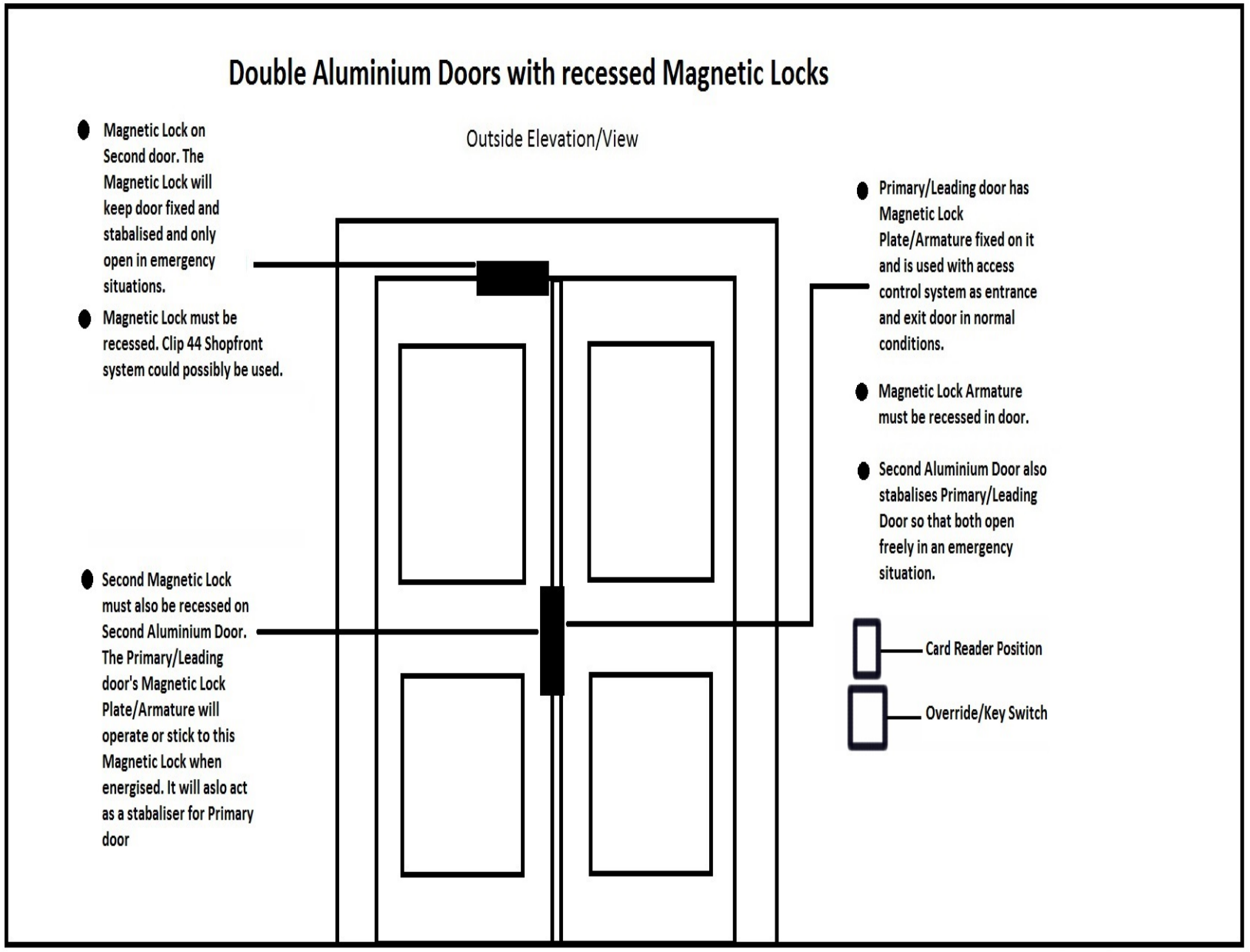
Clip 44 Double Aluminium doors Magnetic Lock Shop Front System 1.3.2



Clip 44 Double Aluminium doors Magnetic Lock Shop Front System 1.3.3


elock


Networkpoint
Position
220V AC
Powerpoint Position
Door Controller
Position
12V DC
Power Supply
Position
Double Aluminium Doors with recessed Magnetic Locks
Inside Elevation/View
Card Reader
Postion
Breakglass
Position

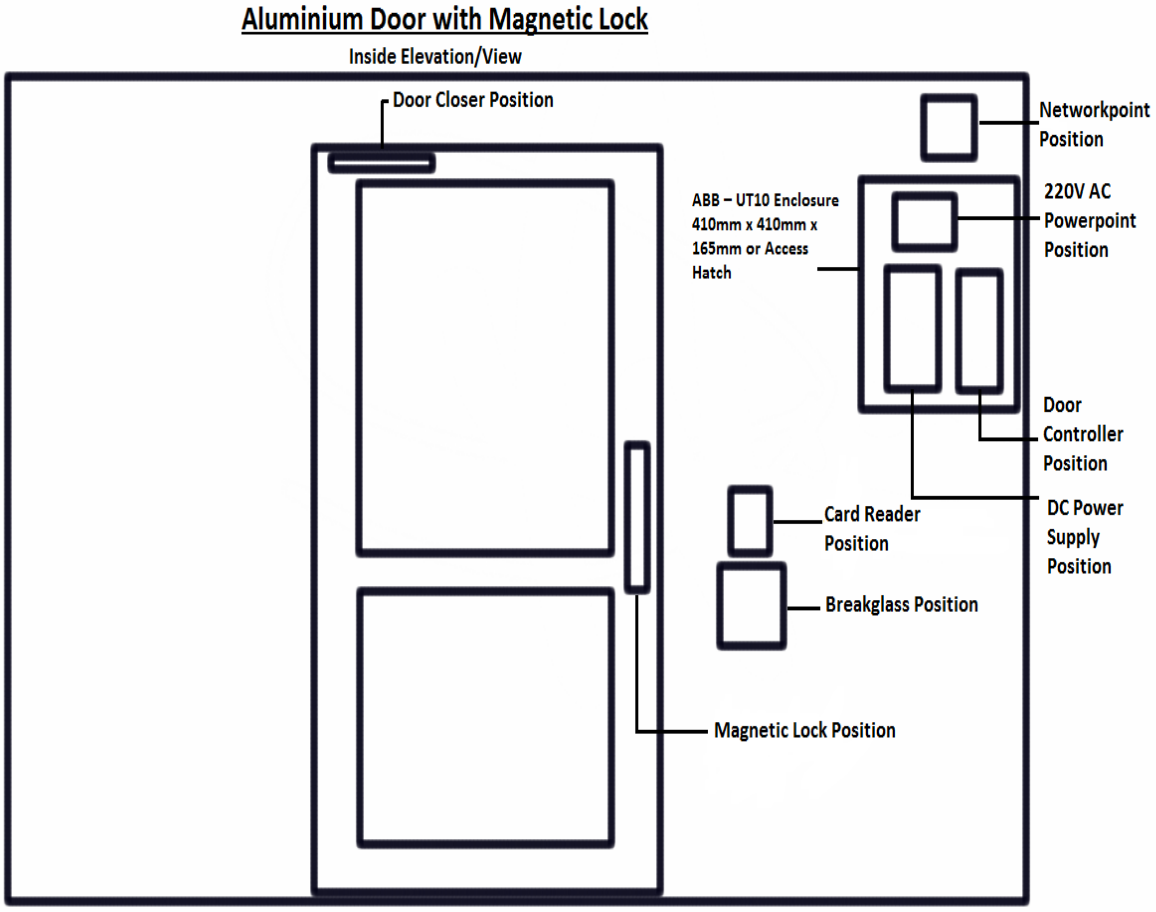

Double Aluminium Doors with recessed Magnetic Locks
Outside Elevation/View
Magnetic Lock on Second door. The Magnetic Lock will keep door fixed and stabalised and only open in emergency situations.
Magnetic Lock must be recessed. Clip 44 Shopfront system could possibly be used.
Second Magnetic Lock must also be recessed on Second Aluminium Door. The Primary/Leading door's Magnetic Lock Plate/Armature will operate or stick to this Magnetic Lock when energised. It will aslo act as a stabaliser for Primary door
Primary/Leading door has Magnetic Lock Plate/Armature fixed on it and is used with access control system as entrance and exit door in normal conditions.
Magnetic Lock Armature must be recessed in door.
Second Aluminium Door also stabalises Primary/Leading Door so that both open freely in an emergency situation.
Card Reader Position
Override/Key Switch

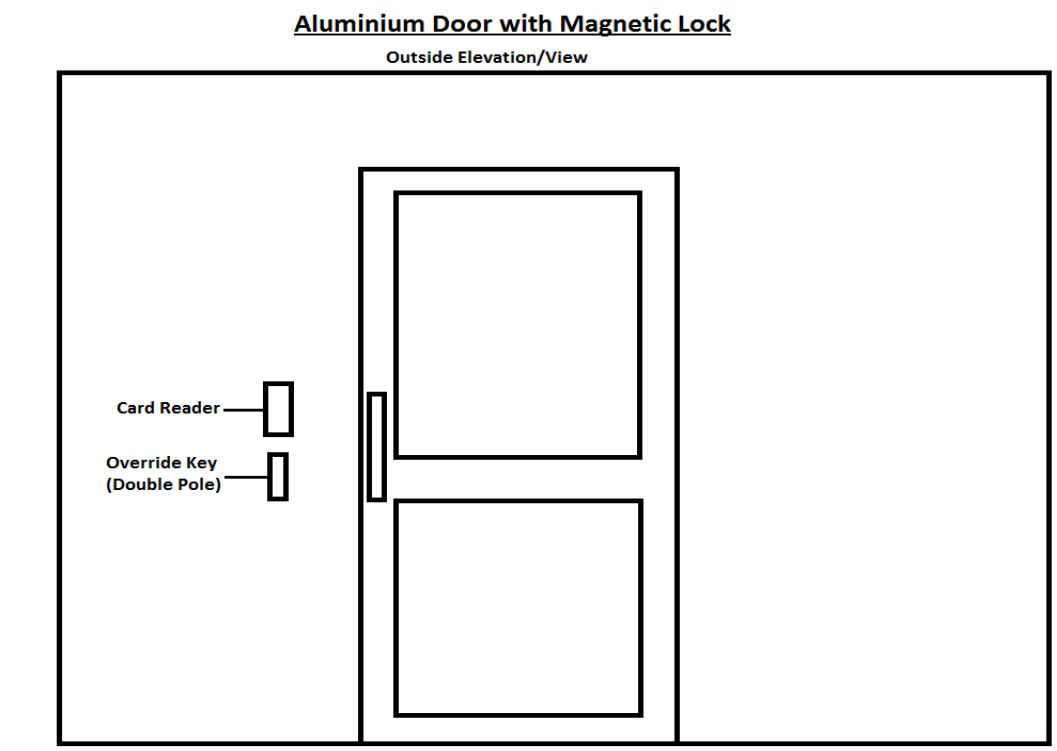
Magnetic Lock Armature Plate on Frameless Glass Door by means of UV Bonding 1.3.4

Magnetic Lock Armature Plate on Frameless Glass Door by means of UV Bonding 1.3.5

Magnetic Lock on Single Aluminium Door with Magnetic Lock Recessed in Stationary Post and Magnetic Lock Plate Recessed in Door 1.3.6


Magnetic lock armature installed in door frame static part.

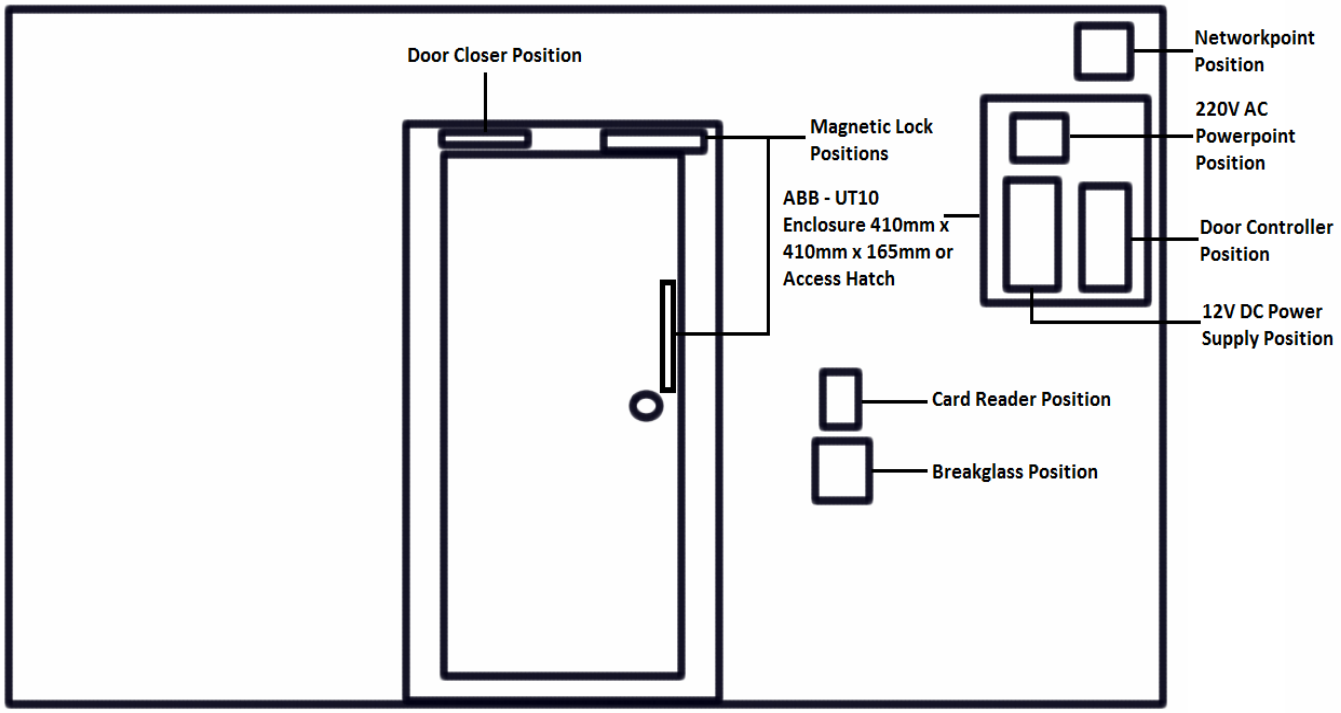

Aluminium Door with Magnetic Lock
Inside Elevation/View
Door Closer Position
Networkpoint Position
220V AC Powerpoint Position
ABB – UT10 Enclosure 410mm x 410mm x 165mm or Access Hatch
Door Controller Position
DC Power Supply Position
Card Reader Position
Breakglass Position
Magnetic Lock Position



Magnetic Lock on Single Timber Door with Magnetic Lock either Recessed in door and frame or with a Custom Made and treated Steele Z-Bracket 1.3.7

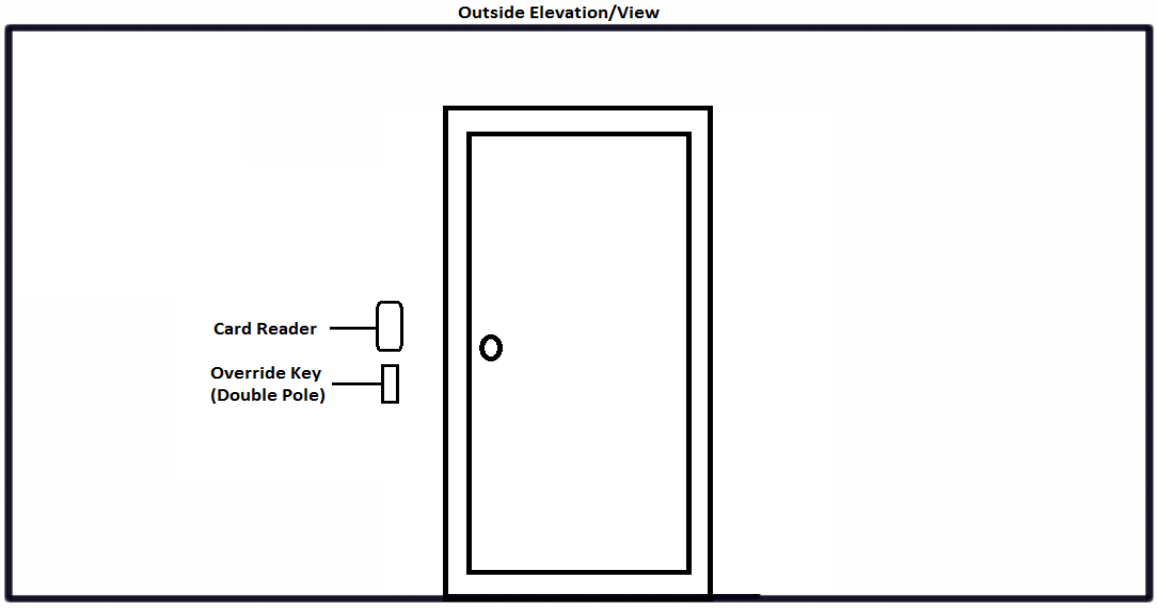
Timber Door with Magnetic Lock

Inside Elevation/View



Timber Door with Maglock

Outside Elevation/View

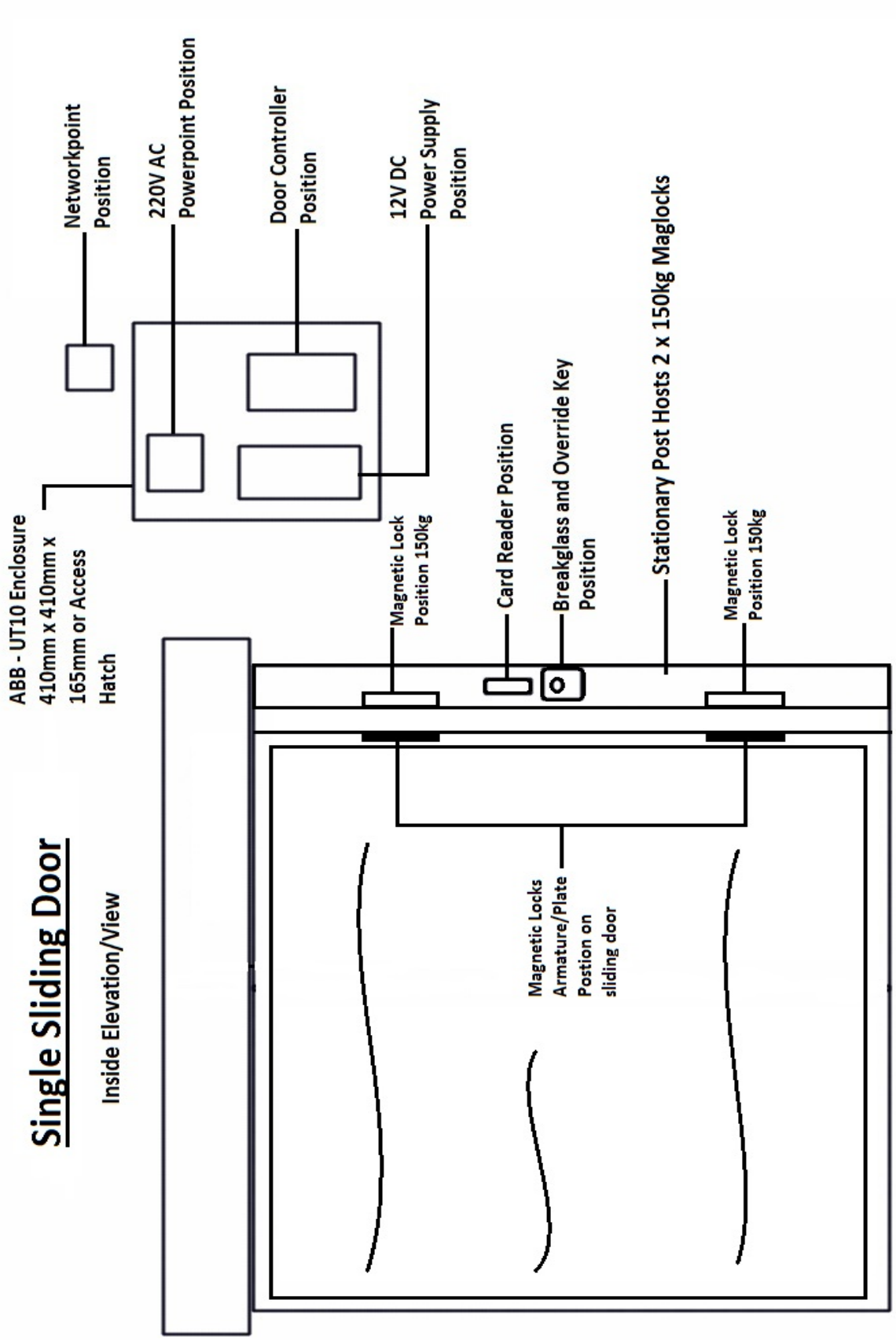


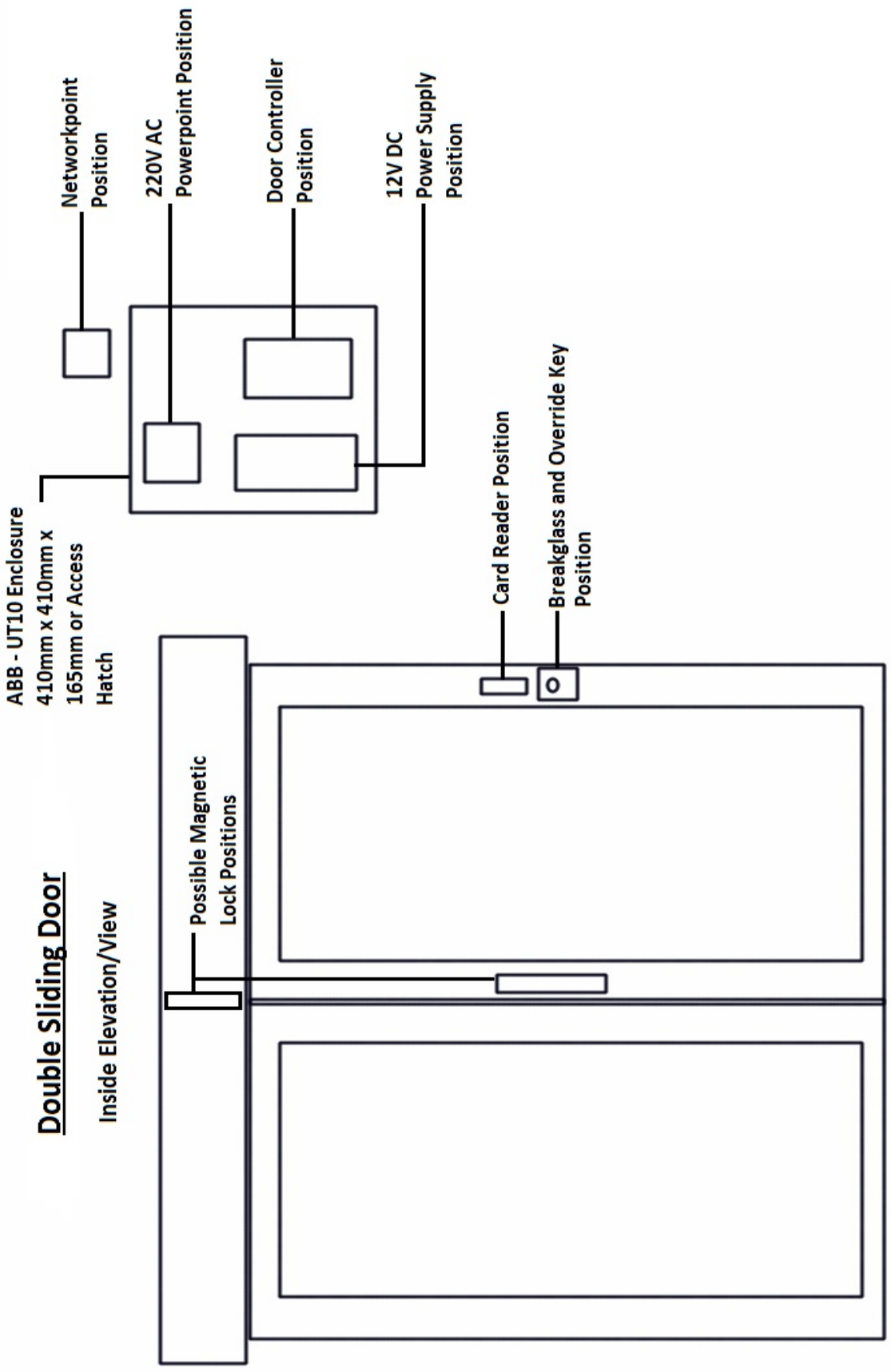
1.4 Sliding Doors

- Please provide MAC Address of device, position/location as well as other needed details to US/TAS Project Coordinator/Manager before installation to register for an IP Address if needed.
- Each Sliding Door must have a battery backup system for power failures that must last 4 hours or more if the Hostel or building does not already have a full power backup system or generator. The battery backup system must be provided by installer or manufacturer upon installation.
- Every Sliding door must be Fail Safe for emergency escape and must not have the possibility of being jammed or forced open under any condition.
- 2 x 150kg E-Lock Magnetic locks must be installed by manufacturer in the frame of the sliding door to prevent door from being tampered with. Locks must be able to be unlocked or its power cut by means of Green Break Glass / Call Point of Access Control system.
- Our preferred Sliding door is a single Sliding Door if space allows for it which makes the 2 x 150Kg Magnetic Lock wiring more easily accessible when installed on the stationary post.
- Each Access Controlled Door must have its own **Access Control Box/Junction Box** inside the Ceiling or if not possible below the Ceiling against wall.
- Access Control Box/Junction Box must be installed on the **inside/safe side** of the door or building to prevent tampering.
- An **Access Hatch** of 600mm x 600mm must be provided to gain access to Access Control Box/Junction Box for maintenance purposes if to be installed inside ceiling space.
- The location or height of Access Control Box/Junction Box or Access Hatch must not be lower than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level.
- A **Network Point** must be installed for each Access Controlled Door inside or next to Access Control Box/Junction Box and must not be lower than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level. Type of communication is dependent on user activity or volumes at the access controlled door. If volumes are high we will use **RS485 communication** but the Network Point must still be installed for future use.
- A **220V AC dedicated/red Plug Point** must be installed for each Access Controlled Door that uses a Magnetic Lock or other type of 12V DC lock or AC/DC Motor. The Plug Point must be installed inside or next to the Access Control Box/Junction Box/Access Control Hatch and must not be lower than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level.
- **25mm PVC Conduit or other** route next to the top of the fixed post hosting the Magnetic Lock must be provided for the Magnetic Locks Cables to Access Control Box/Junction Box.
- **25mm PVC Conduit** route must be provided for both inside card reader and outside card reader to Access Control Box/Junction Box.
- **25mm PVC Conduit** route must be installed at height **0.9 meters** from ground for all Card Readers and Break Glass / Call Point Units.
- **Break Glass Unit** will use the same 25mm Conduit route as the inside card reader or its own. Must be mounted next to reader on right hand side or below reader at **0.9 meters**. For specific Access Controlled doors we will ask for the Break Glass unit to be installed further away from door to prevent tampering and unauthorized access from outside.
- All Doors must be fitted with a **Door Closer**.

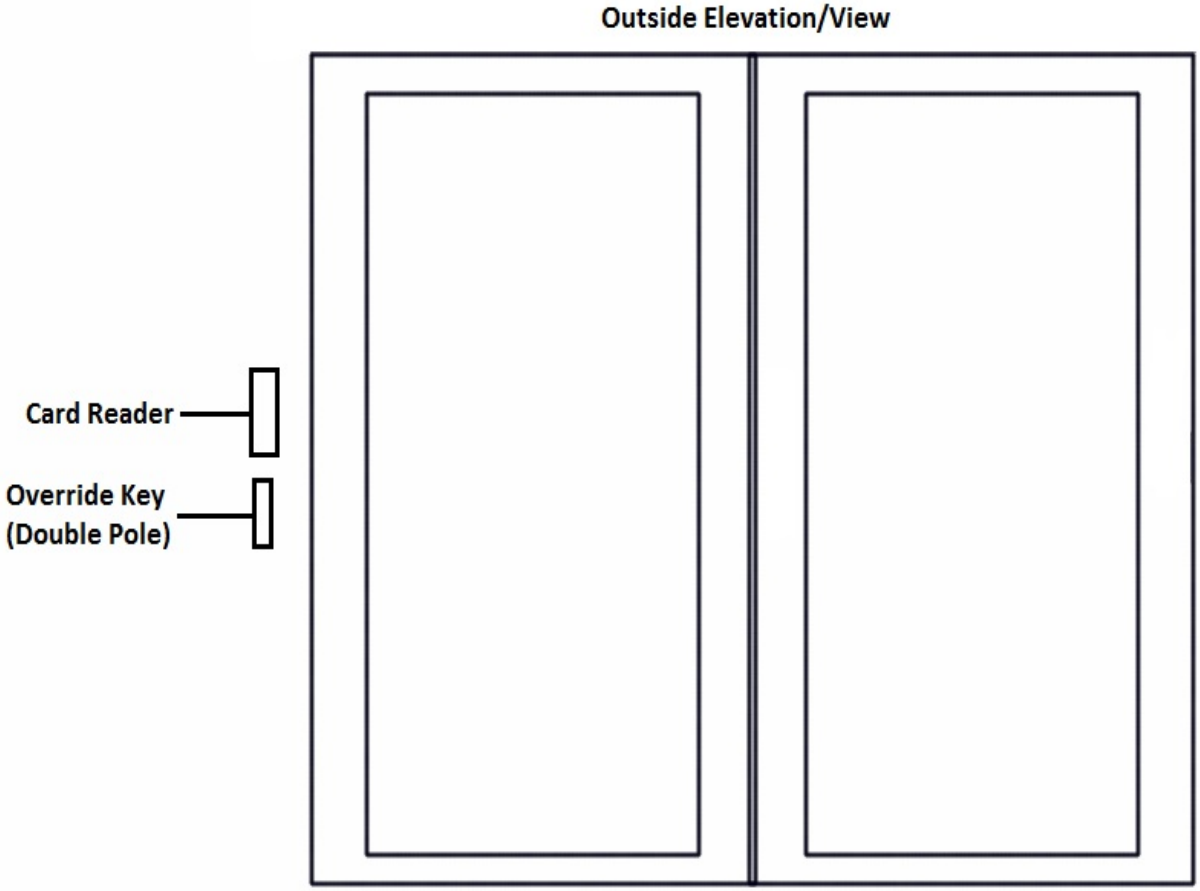
- **Sample Drawings, Pictures and Diagrams are provided below on document.**
- **Please see Hardware Specifications provided below for Impro (2.2) or Salto (3.2) Installations.**

Sliding Doors 1.4.1


Single Sliding Door
Inside Elevation/View
ABB - UT10 Enclosure
410mm x 410mm x
165mm or Access
Hatch
Networkpoint
Position
220V AC
Powerpoint Position
Door Controller
Position
12V DC
Power Supply
Position
Magnetic Lock
Position 150kg
Card Reader Position
Breakglass and Override Key
Position
Stationary Post Hosts 2 x 150kg Maglocks
Magnetic Lock
Position 150kg
Magnetic Locks
Armature/Plate
Postion on
sliding door


Networkpoint Position
220V AC Powerpoint Position
Door Controller Position
12V DC Power Supply Position
ABB - UT10 Enclosure 410mm x 410mm x 165mm or Access Hatch
Card Reader Position
Breakglass and Override Key Position
Possible Magnetic Lock Positions
Double Sliding Door
Inside Elevation/View

Double Sliding Door



1.5 Turnstiles

- Please provide MAC Address of device, position/location as well as other needed details to US/TAS Project Coordinator/Manager before installation to register for an IP Address if needed.
- Each indoor Turnstile in Hostels or Academic buildings must have a battery backup system for power failures that must last 4 hours or more if the Hostel or building does not already have a full power backup system or generator. The battery backup system must be provided by installer upon installation.
- A **Network Point** must be installed for each Access Controlled Door inside or next to Access Control Box/Junction Box and must not be lower than 2.2 meters (two point two meters) or higher than 2.4 meters (two point four meters) from ground level. Type of communication is dependent on user activity or volumes at the access controlled door. If volumes are high we will use **RS485 communication** but the Network Point must still be installed for future use.
- **Card / Proximity reader mounting bracket** and route for cables to turnstile roof at turnstile Control Board or to Access Control Box/Junction Box must be provided for outside and inside access control readers by Turnstile Installer/Contractor.
- **Door Controller** for turnstile must also be installed inside roof of turnstile at turnstile Control Board or inside Access Control Box/Junction Box if there is no space in turnstiles roof.
- **220V AC Power Point** must be installed for Door Controller inside roof of turnstile at turnstile Control Board or Access Control Box/Junction Box if there is no space in turnstile roof by Turnstile Installer/Contractor.
- **220V AC Supply** to Power up Turnstile must be provided by Turnstile Installer/Contractor.
- Turnstile or **turnstile Control Board** must have a build in **Fail Safe functionality**. If there is a power failure then the turnstile must be able to turn freely in all directions. An input must also be provided for an **Emergency trigger** from our Green Call Point/Break Glass unit which will enable turnstile to turn freely in all directions.
- **Trigger cables** must be provided for Door Controller from turnstile Control Board for both in and out rotation to Door Controller or Access Control Box/Junction Box if there is no space in turnstile roof.
- Cable Routes for **Entry and Exit Proximity Card Readers** must be provided on turnstile by turnstile contractor or installer to Access Control Box/Junction Box from each Proximity Card Reader position. Please check with University of Stellenbosch Access Control Project Coordinator for positions before drilling holes.
- **Sample Drawings, Pictures and Diagrams are provided below on document.**
- **Please see Hardware Specifications provided below for Impro (2.2) or Salto (3.2) Installations.**

Turnstiles 1.5.1

1.6 Vehicle, Pedestrian and Bicycle Shed Motorised Gates

- Please provide MAC Address of device, position/location as well as other needed details to US/TAS Project Coordinator/Manager before installation to register for an IP Address if needed.
- Our preferred Gate Motor type is **Centurion** or **ET** motors and the model is dependent on the weight of the gate as well as user activity or volumes.
- All Gates must have a capping or U Bracket system at the top and a pin or bolt that keeps gate in place when closed or when moving to prevent tampering, lifting or moving of gate when not activated by the access control system.
- An **Access Control Box/Junction Box** is required for hardware and Network Point. The **Network Point** must be mounted inside the Access Control Box/Junction Box. Type of communication is dependent on user activity or volumes. If volumes are high we will use **RS485 communication** but the Network Point must still be installed for future use.
- A **Card / Proximity reader mounting bracket or 4 x 2 Box** must be installed against the gates frame on both sides for in and out or 2 x **Goosenecks** . A route for cabling must be provided by Electrical Contractor to Access Control Box/Junction Box. Please check with University of Stellenbosch Access Control Project Coordinator for positions before drilling holes.
- **Door Controller** for turnstile must also be installed inside Access Control Box/Junction Box.
- **220V AC Power Point** must be installed for Door Controller inside Access Control Box/Junction Box by Electrical Contractor.
- **220V AC Supply** to Power the Gate Motor must be provided by Motor Installer/Contractor.
- Route for **Trigger cable** from the Gate Motor to Access Control Box/Junction Box must be provided for Door Controller to trigger the Gate Motor.
- **Sample Drawings, Pictures and Diagrams are provided below on document.**
- **Please see Hardware Specifications provided below for Impro (2.2) or Salto (3.2) Installations.**

Motorised Gates 1.6.1

Motorised Gates 1.6.2

1.7 Wheelchair Accessible Motorised Doors

- Please provide MAC Address of device, position/location as well as other needed details to US/TAS Project Coordinator/Manager before installation to register for an IP Address if needed.
- All wheelchair accessible doors must have a motorised Swing Door Operator installed.
- Our preferred type Swing Door Operator is **Dorma** as it is robust and made according to weight of the door.
- The Swing Door Operator must be **Failsafe** for emergency escape.
- The Swing Door Operator must be tamper free from outside and not be able to be forced open. If not possible then a Magnetic Lock must be installed on the door as well.
- **Please see Hardware Specifications provided below for Impro (2.2) or Salto (3.2) Installations.**

Preferred Dorma Models :

- ***DORMA ED 250 SWING DOOR OPERATOR***
- Swing door operator in modular design for doors with a maximum width of 1600 mm and a weight of up to 250 kg
- With the ED 250 swing door operator DORMA offers an electromechanical swing door operator for various fields of application. The operator may be installed as a push version with standard arm assembly and as a pull version with slide channel.
- ***DORMA ED 100 SWING DOOR OPERATOR***
- Swing door operator in modular design for doors with a maximum width of 1100 mm and a weight of up to 100 kg
- With the ED 100 swing door operator DORMA offers an electromechanical swing door operator for various fields of application. The operator may be installed as a push version with a standard arm assembly or as a pull version with slide channel.

Motorised Wheelchair Accessible Doors 1.7.1

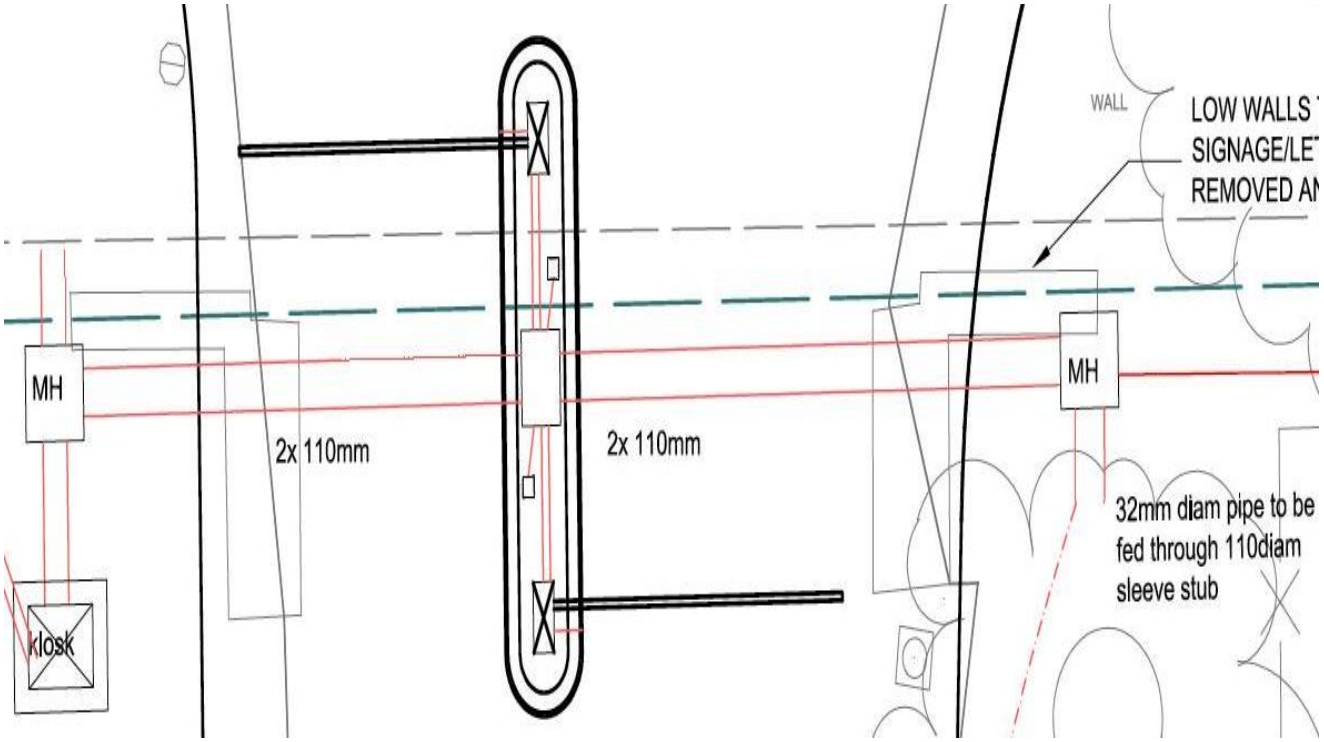
1.8 Drawers, Safes, Cabinets and Lockers

- Salto range of offline locks must be used for drawers, safes, cabinets and lockers.
- **Sample Drawings, Pictures and Diagrams are provided below on document.**

1.9 Vehicle Boom Gates

- Please provide MAC Address of device, position/location as well as other needed details to US/TAS Project Coordinator/Manager before installation to register for an IP Address if needed.
- Stellenbosch University's preferred Boom Gate Systems are the red and white type manufactured Traffic Barrier/Boom. Please see existing red and white booms on campus if not sure for specifications as well as get specifications from Stellenbosch Facilities Management.
- Installation must be done according to manufacturer specifications unless otherwise instructed by US/TAS according their standards.
- Boom Door Controller must be installed inside Dust and Waterproof Junction Box inside the Boom. **If there is no space inside the Boom for the Door Controller then a separate kiosk or U10 Box mounted against a wall must be provided by contractor for TAS Access Control harware, PowerPoint and Network Point.**
- A **Network Point** must be installed for each single or double Access Controlled Boom Gate inside or next to Access Control Box/Junction Box. Type of communication is dependent on user activity or volumes at the Boom Gate. If volumes are high we will use **RS485 communication** but the Network Point must still be installed for future use.
- System Controller must be installed in LAN/IT Network room of the nearest building if necessary.
- All wiring must be clearly marked on Boom Access Controller side for maintenance purposes.
- Fixed Addresses and Description of Boom Access Controller needs to be provided by Contractor to US/TAS who will do the necessary configuration on the software.
- Perform all Work as indicated in the Drawings and Specifications.
- Contractor shall provide a Hardware and Labour guarantee on all Work.
- Contractor guarantee shall cover all costs associated with troubleshooting, repair, and replacement of defective Work, including costs of labour, transportation, lodging, materials, and equipment.
- All wires and connections to hardware must be terminated with ferrules.
- **Very Important:** Only use wires with colour coded sleeves for wiring and not the Foil Shielding or Drain/Wire.
- **Sample Drawings, Pictures and Diagrams are provided below on document.**
- **Please see Hardware Specifications provided below for Impro (2.2) or Salto (3.2) Installations.**

Boom Gates 1.9.1



1.10 IP Cameras and IP Intercoms

- A **POE (Power Over Ethernet) Network Point** must be installed for each IP Camera or IP Intercom.
- **POE Network Point** must be installed below ceiling in a 4 x 4 PVC enclosure box not higher than 2.4 meters (two point four meters) or lower than 2.2 meters (two point two meters) from ground level.
- University of Stellenbosch IP Camera type/manufacturer is **AXIS IP Cameras**.
- University of Stellenbosch IP Intercom type/manufacturer is **2N Helios IP Intercoms**.
- Models of **Axis Cameras** or **2N Helios Intercoms** must be confirmed with University of Stellenbosch Access Control Project Coordinator as they change continually.
- After or while IP Camera is being installed a **snapshot/picture** of where the camera is viewing must be send to University of Stellenbosch Camera Project Coordinator to check whether they are happy with the view and that it is actually focusing on the area that it is supposed to.
- **MAC Addresses of each camera** as well as a description of where it is installed or its position must be sent to the University of Stellenbosch Camera Project Coordinator.
- IP Intercom must be installed at **1.47 meters** (one comma four seven meters) from the ground and not lower than that for non-paraplegic entrances. That means the distance from ground to bottom of the intercom must be 1.47 meters.
- **MAC Addresses of each intercom** as well as a description of where it is installed or its position must be sent to the University of Stellenbosch Camera Project Coordinator.

University of Stellenbosch

[2] Access Control Installation and Hardware Specifications (Impro)

Summary

- Provide Impro IXP400 access control for 13.56 MHz Mifare proximity cards.
- Install and provide labour for access control.
- The Client University of Stellenbosch IT TAS will be referred to from here on as "SU/TAS".
- The Contractor will be referred to from here on as Contractor/Contractor's.

2.1 General Project and Site Conditions

- Power: Electrical plug point will be provided by Main Contractor.
- Network Point: Network Point will be provided by Main Contractor.
- Dust Control: Make provisions to control all dust, dirt, and foreign material caused by performance of work.
- All products shall be new and unused, and shall be of manufacturer's current and standard production.
- Where two or more Hardware items of the same kind are provided, all shall be identical and provided by the same manufacturer.
- Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. Contractor shall provide all components needed for complete and satisfactory operation unless it is a component provided by US/TAS.
- Contractor, prior to submitting a proposal/quote, shall determine product availability and delivery time, and shall include such considerations into his proposed Quotation as an add-on document.
- Contractor shall clean on a daily basis as work progresses, all dirt, dust and debris caused by operations to the satisfaction of on-site representative or project manager.

2.2 Hardware Specifications for all Impro Installations

2.2.1 System Controller

- ImproX IXP400i Ethernet Advanced Controller ECII.
- (Pro. No. : XEC900-1-0-GB).

2.2.2 Door Controller

- Impro iTRT (Pro. No. : XRT920-0-0-GB-07) IP Based.

2.2.3 Card Reader

- Impro (Pro. No. : Impro MDR901-5-0-GB Multi Discipline Reader - W 45mm x L 95mm x D 20mm).

2.2.4 Power Supply

- Powermax 12V 3Amps Switch Mode Power Supply - L 200mm x W 200mm x D 90mm (Model No: S042 BF1380 300 **)**.

2.2.5 Battery (Backup)

- 12V 9aH CSB Deep Cycle Battery for all access controlled doors accept for Boom Gates.

2.2.6 Surge Protector

- Wattronics surge protector which can be supplied by US/TAS at a cost to Project must be installed with all 12 Volt Power Supply units.

2.2.7 Call Point/Breakglass

- Green DMN702G combo - W 90mm x L 90mm x D 55mm. No other model to be used. US/TAS can supply at a cost to project.

2.2.8 Junction Boxes

- ABB – UT10 - W 410mm x L 410mm x D 165mm for Door Controller and Power Supply if installed inside ceiling or outside.
- Securi Prod IP55 or similar – W 140mm x L 190mm x D 70mm must be used to host Impro iTRT Door Controller for all installations.

2.2.9 Push to Exit Buttons

- ZB4 BA2 (088746) and ZB4 BZ101 (088937) combo if mounted on Junction Box with iTRT inside. Please check with SU/TAS for latest model.
- SW104 if surface mounted on Walls or any other flat surface.

- US/TAS can also provide you with the push to exit buttons at a cost to project.

2.2.10 Key Switch/Override Switch

- All access controlled doors including offices must have a Key Switch installed on the outside of the door.
- If there is more than 1 door that leads to the same room/area then only 1 of the doors needs a Key Switch.
- All Key Switches must follow a pattern/order from 1 direction of the building so that if there is a power failure you will be able to get into all rooms from one direction/side. Please check with SU/TAS if unclear or uncertain.
- Main entrance doors of building must be Double Pole “KB3 ON-OFF Switch in Slimline Box”. Screw heads need to be drilled in the form of a hollow half circle afterwards to prevent tamper or screw driver use.
- Inside doors must be Double Pole “KS36 ON-OFF Keyswitch”.

2.2.11 Cabling

- **Grey Mylar Cable 2 Pair Shielded, Screened with 0.22 mm core size** (Red, Blue, Yellow and Green) must be used for all connections accept for Card Reader and 12V Power Supply to Door Controller. Cable Wiring must be shielded inside to prevent cross talk and noise from interfering.
- **Grey Mylar Cable 4 Pair Shielded, Screened with 0.22 mm core size** (Red, Blue, Yellow, Green, Brown, Orange/Purple, Black and White) must be used for Card Reader connections. Cable Wiring must be shielded inside to prevent cross talk and noise from interfering.
- Where connections run in underground piping or tubing on the outside of buildings a **Waterproof type 2 or 4 pair Mylar cable** must be used with same colour scheme as above 2 and 4 pair cabling specifications. Cable Wiring must be shielded inside to prevent cross talk and noise from interfering.
- **White Cabtyre** cabling must be used for 12 Volt power supply to Door Controller connections.
- **Very Important:** Please no flex wire or any other type of cabling to be used. You will be asked to redo the cabling that do not conform to above cabling specifications.

2.3 Installation Notes

- Installation must be done according to manufacturer specifications unless otherwise instructed by US/TAS according their standards.
- Door Controller must be installed inside Dust and Waterproof Junction Box.
- Door Controller inside Junction Box, Power Supply and Surge Protector must be installed in the roof near the door if provision is made or out of eyesight where possible to prevent tamper. The location must be approved by US/TAS Installation Coordinator or Project Manager prior to installation.
- System Controller must be installed in LAN/IT Network room of the building.
- The placing of surface mounted trunking/conduit on the interior and exterior of any building must be approved by US/TAS Installation Coordinator or Project Manager prior to installation.
- Readers, Green Emergency Exit Break Glass (Call point), Key Switches and Push to Exit Buttons must be flush mounted against walls with no visible wiring or trunking where possible.
- Access Readers, Green Emergency Exit Break Gglass (Call point), and Push to Exit Buttons must be mounted **0,9 metres** from/above the ground for Paraplegic Doors and **1.2 metres** for Turnstiles.
- Green Emergency Exit Break Glass (Call point) and Push to Exit Buttons must be mounted near or next to the door visible to users but not accessible from entrance/outside of door with a stick or other objects to gain entry.
- All wiring must be clearly marked with **Brother Black on Yellow or Black on White Tape** on Door Controller side for maintenance purposes. You will be asked to come back and do/redo if not done properly.
- Fixed Addresses and Description of Door Controllers needs to be provided by Contractor to US/TAS who will do the necessary configuration on the software.
- Perform all Work as indicated in the Drawings and Specifications.
- Contractor shall provide a Hardware and Labour guarantee on all Work.
- Contractor guarantee shall cover all costs associated with troubleshooting, repair, and replacement of defective work, including costs of labour, transportation, lodging, materials, and equipment.
- All wires and connections to hardware must be **terminated with ferrules**.
- **Very Important:** Only use wires with colour coded sleeves for wiring and do not use the Foil Shielding or Drain Wire of the cable for any connections.

2.4 Quality Assurance

- The Installer or technician doing the installation must be certified as an Impro, Salto, Axis or N2 Hellios installer and must provide prove before commencement or acceptance of project or tender. Installer or Technicians must provide/present proof at any time on the installation site when asked to by US/TAS Coordinator or Project Manager.
- If the Contracting Company or its technicians or subcontractors are not certified they will not be allowed to tender or do any of US/TAS access control, camera or intercom installations.
- If the Contracting Company is certified to install any of US/TAS Hardware it does not mean that the technician or subcontractor's technician must not be certified. If the technicians are not certified they will be stopped and prevented from doing any further installations until certified by the manufacturer or affiliates to install their specific hardware products.
- Quality Assurance must be done by Contractor after each individual installation.
- Contractor must at all times take care in doing work neatly and comply with the highest industry standards.

2.5 Commissioning

- After all Work is completed, and prior to requesting the Acceptance test, Contractor shall conduct a final inspection, and pre-test all equipment and system features. Contractor shall correct any deficiencies discovered as the result of the inspection and pre-test.
- Quality Assurance check and inspection will be done separately or in collaboration with Contractor by US/TAS Installation Coordinator.
- Any portions of the Work found to be deficient or not in compliance with the Project and Specifications will be rejected. Contractor will be asked to redo the deficient and non-compliant part of the work.

University of Stellenbosch

[3] Access Control Installation and Hardware Specifications (Salto)

Summary

- Provide Salto access control for 13.56 MHz Mifare proximity cards.
- Install and provide labour for access control.
- The Client University of Stellenbosch IT TAS will be referred to from here on as "SU/TAS".
- The Contractor will be referred to from here on as Contractor/Contractor's.

3.1 General Project and Site Conditions

- **Power:** Electrical 220 AC plug point will be provided by Main Contractor. Must be against the roof or inside ceiling space with trap door to avoid tampering.
- **Network Point:** Network Point will be provided by Main Contractor. Must be next to 220 AC plug point against the roof or inside ceiling space with trap door to avoid tampering.
- **Dust Control:** Make provisions to control all dust, dirt, and foreign material caused by performance of work.
- All products shall be new and unused, and shall be of manufacturer's current and standard production.
- Where two or more Hardware items of the same kind are provided, all shall be identical and provided by the same manufacturer.
- Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. Contractor shall provide all components needed for complete and satisfactory operation unless it is a component provided by US/TAS.
- Contractor, prior to submitting a proposal/quote, shall determine product availability and delivery time, and shall include such considerations into his proposed Quotation as an add-on document.
- Contractor shall clean on a daily basis as work progresses, all dirt, dust and debris caused by operations to the satisfaction of on-site representative or project manager.

3.2 Hardware Specifications for Salto Door Controller Installations

3.2.1 System Controller Online

- SALTO Read-Write on-line control unit with SALTO Virtual Network capabilities. In & out reader options. 2 Relay outputs and IP connection.

3.2.2 Card Reader

- SALTO Modular Wall Reader Proximity DESfire/Mifare (WRM9001 - W 82mm x L 82mm x D 35mm).

3.2.3 Power Supply

- Powermax 12V 3Amps Switch Mode Power Supply - L 200mm x W 200mm x D 90mm (Model No: S042 BF1380 300 **)**.

3.2.4 Battery (Backup)

- 12V 7aH Battery for all doors with Magnetic Locks.

3.2.5 Surge Protector

- Wattronics surge protector which can be supplied by US/TAS at cost to project.

3.2.6 Call Point/Breakglass

- Green DMN702G combo - W 90mm x L 90mm x D 55mm.

3.2.7 Push to Exit Buttons

- ZB4 BA2 (088746) and ZB4 BZ101 (088937) combo if mounted on a Junction Box with space inside.
- SW104 if surface mounted on Walls or any other flat surface.
- US/TAS can also provide you with the push to exit buttons.

3.2.8 Key Switch/Override Switch

- All access controlled doors including offices must have a Key Switch installed on the outside of door.
- If there is more than 1 door that leads to the same room/area then only 1 of the doors needs a Key Switch.
- All Key Switches must follow a pattern/order from 1 direction of the building so that if there is a power failure you will be able to get into all rooms from one direction/side. Please check with SU/TAS if unclear or uncertain.
- Main entrance doors of building must be Double Pole “KB3 ON-OFF Switch in Slimline Box”. Screw heads need to be drilled in the form of a hollow half circle afterwards to prevent tamper or screw driver use.

- Inside doors must be Double Pole “KS36 ON-OFF Keyswitch”.
- Main entrance doors of building must be Double Pole “KB3 ON-OFF Switch in Slimline Box”.
- Inside doors must be Double Pole “KS36 ON-OFF Keyswitch”.
- US/TAS can also provide you with the push to exit buttons at cost to project.

3.2.9 Magnetic Lock:

- Elock LK126 360 Kg 12 V for Timber Doors.
- SEP 300/38M 12V Slimline for Single Aluminium Doors if recessed into stationary panel of door.
- Elock LK118 350 Kg 12 V for Double Aluminium Doors if recessed specifically where Clip 44 Shop Front system will be used. Magnetic lock on inactive leaf and Armature plate of Magnetic lock on active leaf.

3.2.10 Mortise Locks for SALTO Escutcheon Door Lock

- Cisa 44620 Dead-bolt and latch for Aluminium Doors.
- Cisa 55250 Dead-bolt and latch for Wooden Doors.

3.3 Installation Notes

- Installation must be done according to manufacturer specifications unless otherwise instructed by US/TAS according their standards.
- Door Controller must be installed inside Dust and Waterproof Junction Box.
- Door Controller inside Junction Box, Power Supply and Surge Protector must be installed in the roof near the door if provision is made or out of eyesight where possible to prevent tamper. The location must be approved by US/TAS Installation Coordinator or Project Manager prior to installation.
- System Controller must be installed in LAN/IT Network room of the building.
- The placing of surface mounted trunking/conduit on the interior and exterior of any building must be approved by US/TAS Installation Coordinator or Project Manager prior to installation.
- Readers, Green Emergency Exit Break Glass (Call point), Key Switches and Push to Exit Buttons must be flush mounted against walls with no visible wiring or trunking where possible.
- Access Readers, Green Emergency Exit Break Gglass (Call point), and Push to Exit Buttons must be mounted **0,9 metres** from/above the ground for Paraplegic Doors and **1.2 metres** for Turnstiles.
- Green Emergency Exit Break Glass (Call point) and Push to Exit Buttons must be mounted near or next to the door visible to users but not accessible from entrance/outside of door with a stick or other objects to gain entry.

- All wiring must be clearly marked with **Brother Black on Yellow or Black on White Tape** on Door Controller side for maintenance purposes. You will be asked to come back and do/redo if not done properly.
- Fixed Addresses and Description of Door Controllers needs to be provided by Contractor to US/TAS who will do the necessary configuration on the software.
- Perform all Work as indicated in the Drawings and Specifications.
- Contractor shall provide a Hardware and Labour guarantee on all Work.
- Contractor guarantee shall cover all costs associated with troubleshooting, repair, and replacement of defective work, including costs of labour, transportation, lodging, materials, and equipment.
- All wires and connections to hardware must be **terminated with ferrules**.
- **Very Important:** Only use wires with colour coded sleeves for wiring and do not use the Foil Shielding or Drain Wire of the cable for any connections.

3.4 Quality Assurance

- The Installer or technician doing the installation must be certified as an Impro, Salto, Axis or N2 Hellios installer and must provide prove before commencement or acceptance of project or tender. Installer or Technicians must provide/present proof at any time on the installation site when asked to by US/TAS Coordinator or Project Manager.
- If the Contracting Company or its technicians or subcontractors are not certified they will not be allowed to tender or do any of US/TAS access control, camera or intercom installations.
- If the Contracting Company is certified to install any of US/TAS Hardware it does not mean that the technician or subcontractor's technician must not be certified. If the technicians are not certified they will be stopped and prevented from doing any further installations until certified by the manufacturer or affiliates to install their specific hardware products.
- Quality Assurance must be done by Contractor after each individual installation.
- Contractor must at all times take care in doing work neatly and comply with the highest industry standards.

3.5 Commissioning

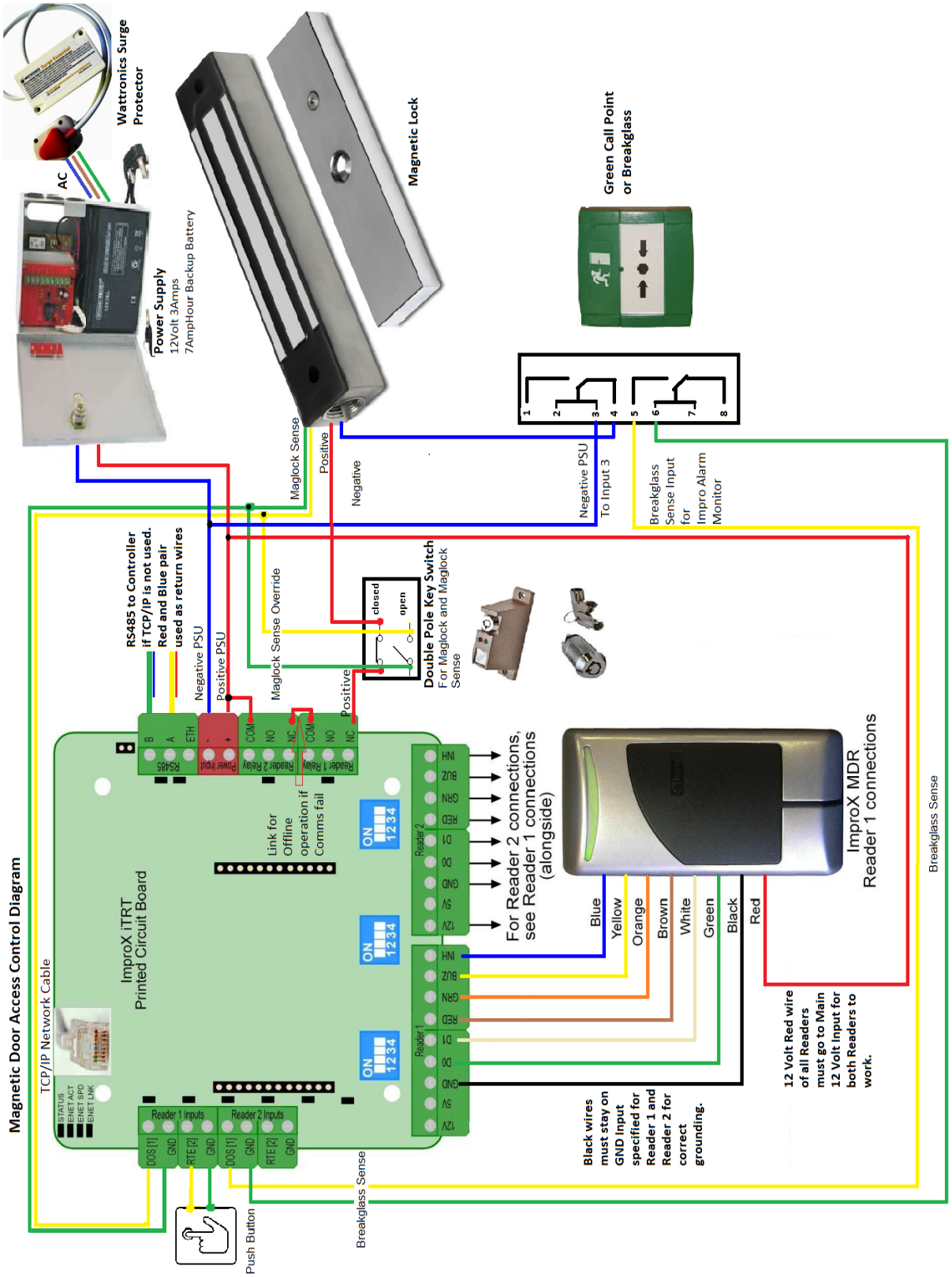
- After all Work is completed, and prior to requesting the Acceptance test, Contractor shall conduct a final inspection, and pre-test all equipment and system features. Contractor shall correct any deficiencies discovered as the result of the inspection and pre-test.

- Quality Assurance check and inspection will be done separately or in collaboration with Contractor by US/TAS Installation Coordinator.
- Any portions of the Work found to be deficient or not in compliance with the Project and Specifications will be rejected. Contractor will be asked to redo the deficient and non-compliant part of the work.

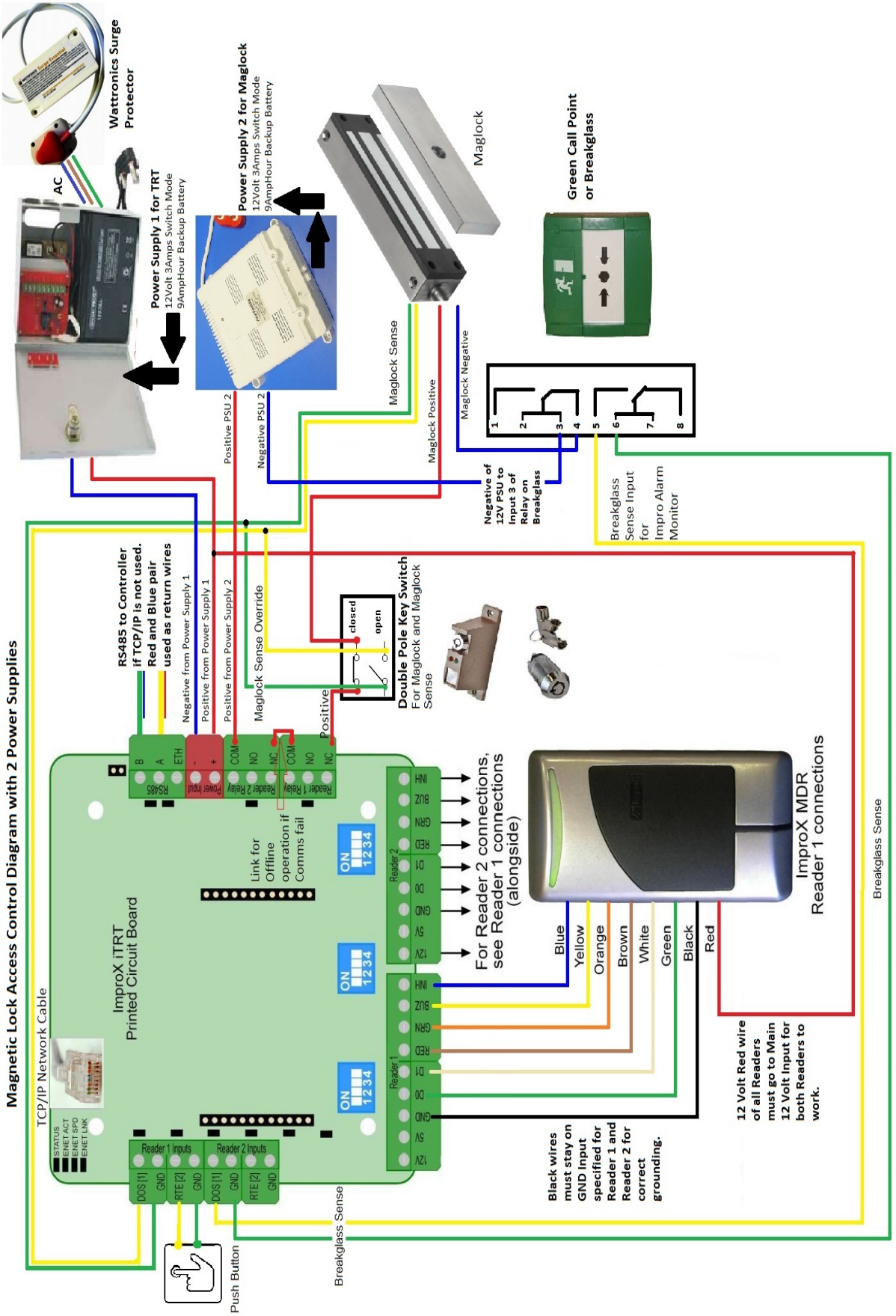
[4] Access Control Technical Diagrams

4.1 Impro Door Controller Diagrams

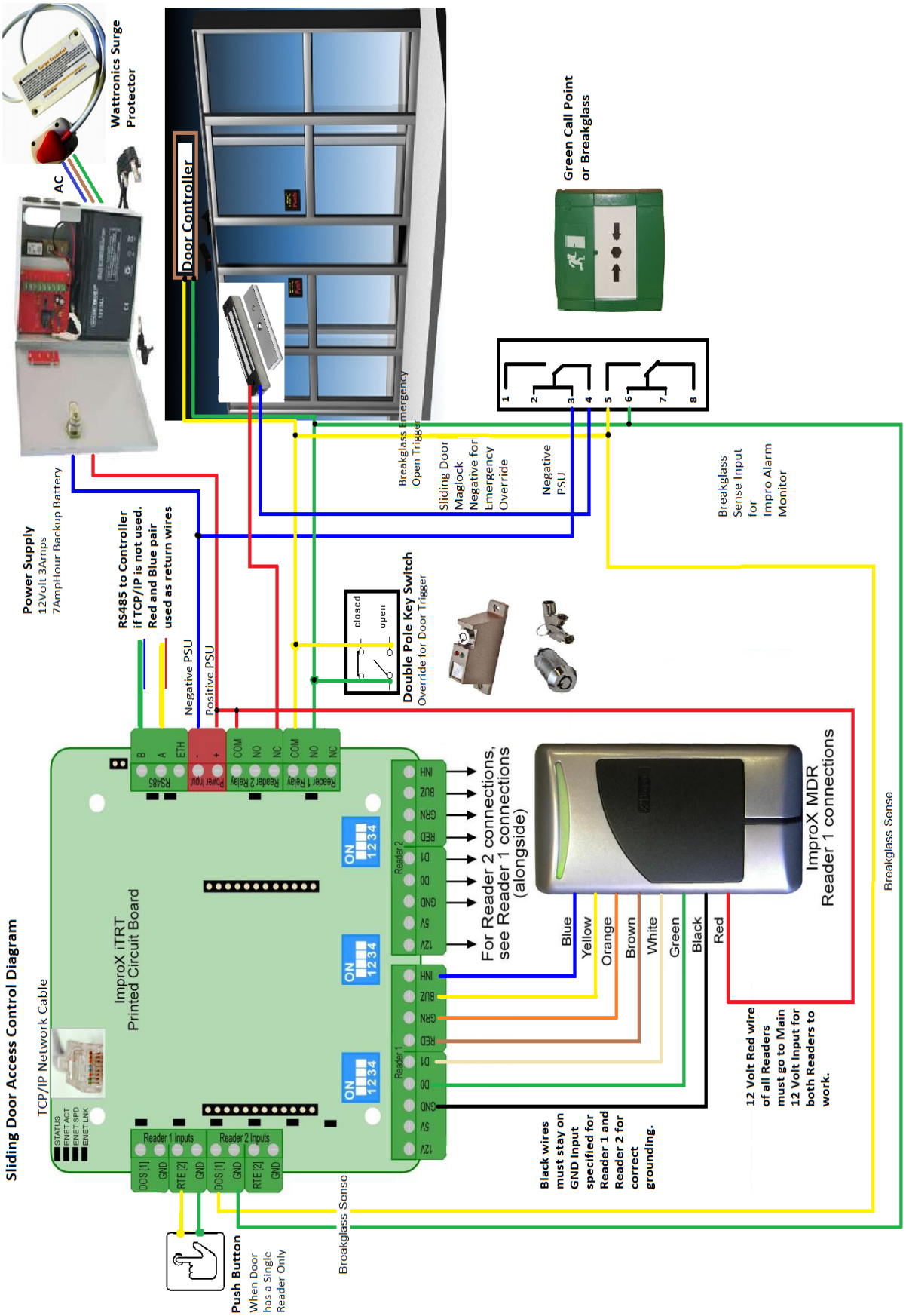
(Diagram 4.1.1)



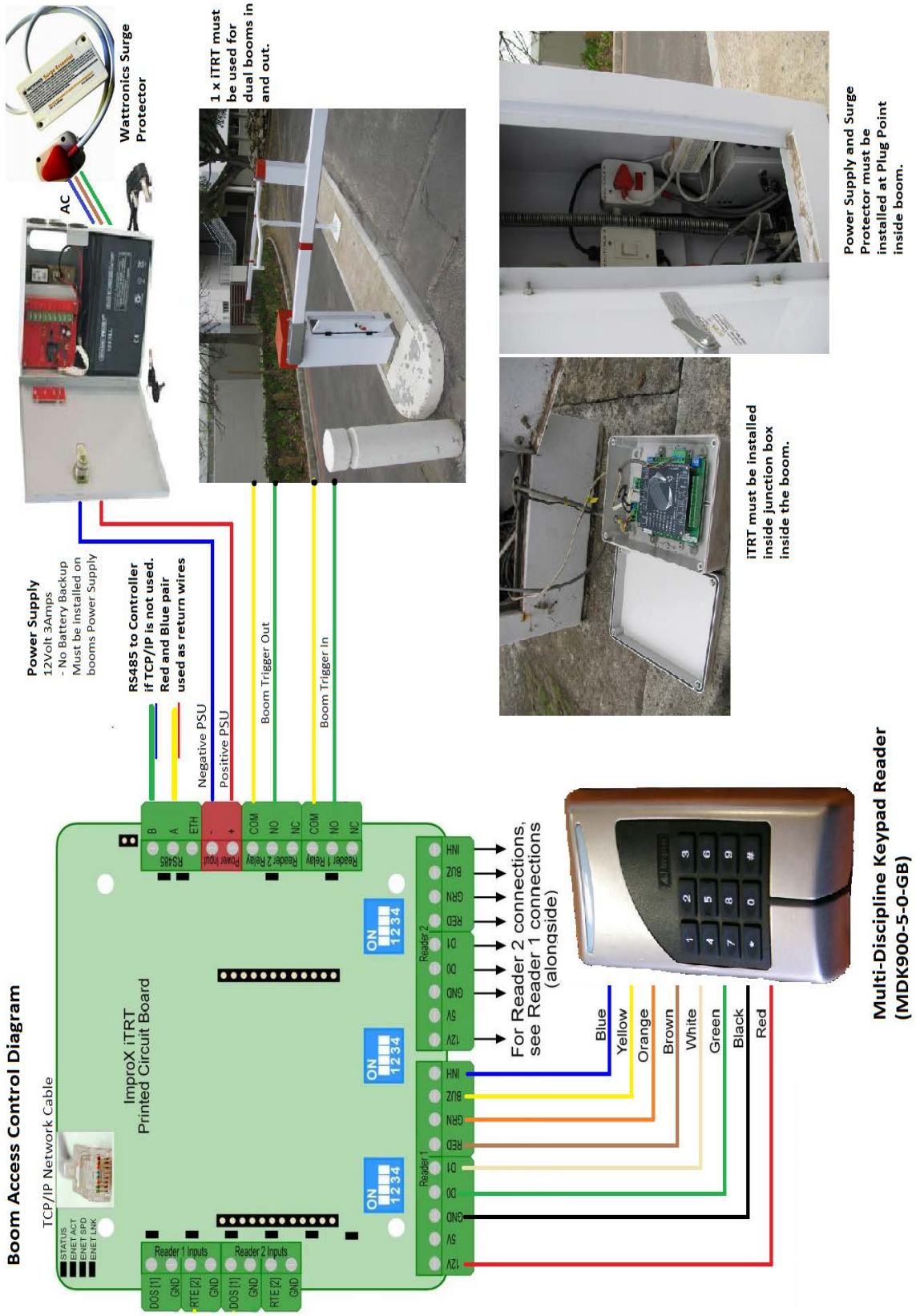
(Diagram 4.1.2)


Magnetic Lock Access Control Diagram with 2 Power Supplies
Wattronics Surge Protector
AC
Power Supply 1 for TRT
12Volt 3Amps Switch Mode
9AmpHour Backup Battery
Power Supply 2 for Maglock
12Volt 3Amps Switch Mode
9AmpHour Backup Battery
Maglock
Green Call Point or Breakglass
Maglock Sense
Maglock Positive
Maglock Negative
Positive PSU 2
Negative PSU 2
Negative of 12V PSU to Input 3 of Relay on Breakglass
Breakglass Sense Input for Impro Alarm Monitor
RS485 to Controller if TCP/IP is not used. Red and Blue pair used as return wires
Negative from Power Supply 1
Positive from Power Supply 1
Positive from Power Supply 2
Maglock Sense Override
Positive
Double Pole Key Switch For Maglock and Maglock Sense
closed
open
TCP/IP Network Cable
ImproX iTRT Printed Circuit Board
Link for Offline operation if Comms fail
For Reader 2 connections, see Reader 1 connections (alongside)
ImproX MDR Reader 1 connections
Blue
Yellow
Orange
Brown
White
Green
Black
Red
Breakglass Sense
12 Volt Red wire of all Readers must go to Main 12 Volt Input for both Readers to work.
Black wires must stay on GND Input specified for Reader 1 and Reader 2 for correct grounding.
Push Button
Breakglass Sense

(Diagram 4.1.3)

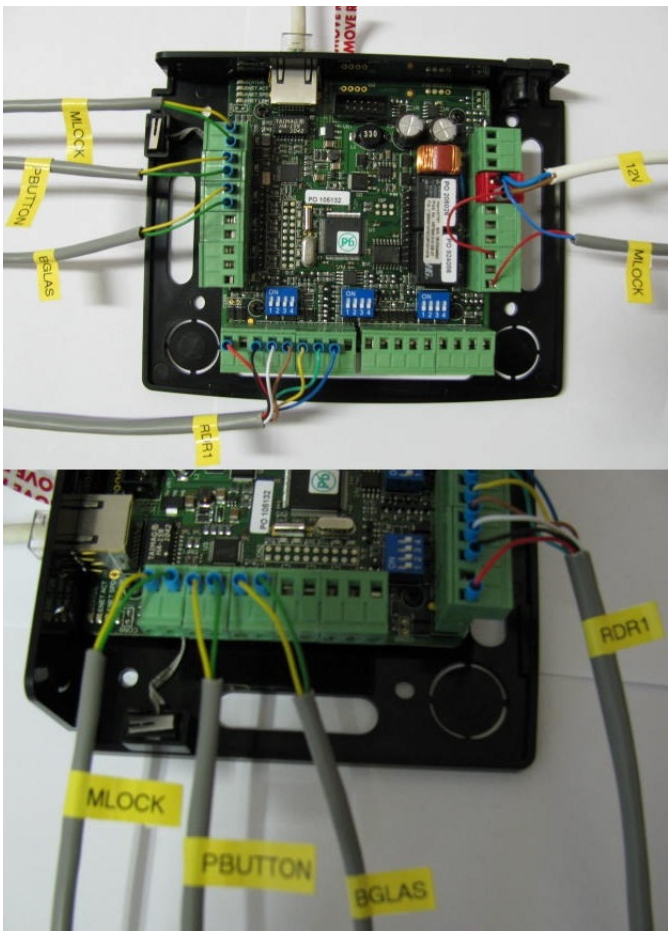

Sliding Door Access Control Diagram
Wattronics Surge Protector
AC
Door Controller
Green Call Point or Breakglass
Power Supply
12Volt 3Amps
7AmpHour Backup Battery
RS485 to Controller if TCP/IP is not used. Red and Blue pair used as return wires
Negative PSU
Positive PSU
Breakglass Emergency Open Trigger
Sliding Door Maglock Negative for Emergency Override
Negative PSU
Breakglass Sense Input for Impro Alarm Monitor
Double Pole Key Switch
Override for Door Trigger
closed
open
TCP/IP Network Cable
ImproX iTRT Printed Circuit Board
For Reader 2 connections, see Reader 1 connections (alongside)
ImproX MDR Reader 1 connections
Blue
Yellow
Orange
Brown
White
Green
Black
Red
Breakglass Sense
12 Volt Red wire of all Readers must go to Main 12 Volt Input for both Readers to work.
Black wires must stay on GND Input specified for Reader 1 and Reader 2 for correct grounding.
Push Button
When Door has a Single Reader Only
Breakglass Sense

(Diagram 4.1.4)


Boom Access Control Diagram
TCP/IP Network Cable
ImproX iTRT
Printed Circuit Board
Wattronics Surge Protector
AC
1 x iTRT must be used for dual booms in and out.
Power Supply
12Volt 3Amps
- No Battery Backup
Must be installed on booms Power Supply
RS485 to Controller if TCP/IP is not used. Red and Blue pair used as return wires
Negative PSU
Positive PSU
Boom Trigger Out
Boom Trigger In
iTRT must be installed inside junction box inside the boom.
Power Supply and Surge Protector must be installed at Plug Point inside boom.
For Reader 2 connections, see Reader 1 connections (alongside)
Blue
Yellow
Orange
Brown
White
Green
Black
Red
Multi-Discipline Keypad Reader
(MDK900-5-0-GB)

4.2 Cable Marking

Impro or Salto System Door Controller



Cable Marking Convention

RDR1 - Remote 1 Reader

RDR2 - Remote 2 Reader

MLOCK – Magnetic Lock

PBUTTON – Push Button

BGLASS – Break Glass

12V – Power Supply 12 Volt

Override Key – Key/ Override Switch

4.3 Installation Component List

Stellenbosch University

Access Control Installation Component List (Impro System)

Building/Department: _____

Access Control Door Name/Number: _____

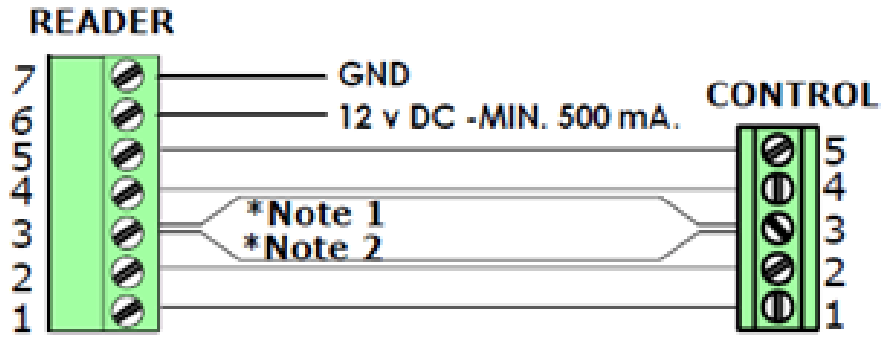
Hardware Components	Total Units
ImproX IXP400i ECII Controller **(XEC900-1-0-GB)**	
Impro iTRT **(XRT920-0-0-GB-07) Ethernet**	
Impro iTRT **(XRT910-0-0-GB-07) RS485**	
Impro Multi Discipline Reader **(MDR901-5-0-GB-12)**	
Yellow Breakglass/Call Point Unit **(DMN787Y and DMN700Y)** Combo Stellenbosch Campus Only	
Relay **(HRM1H-S-DC12V 5Amps 2/Dual Pole)** Inside Breakglass/Call Point Unit	
Powermax 12V 3Amps Switch Mode Power Supply (Model No: S042 BF1380 300 **)**	
Battery Backup **(12V 7aH Battery)** for doors with Maglocks	
Surge Protector Wattronics **(Provided By Stellenbosch University IT/TAS)**	
Push to Exit Button **(ZB4 BA2 {088746} and ZB4 BZ101 {088937})** if mounted on junction Box	
Push to Exit Button **(Impro PT-PB003, PT-PB005 or PT-SW165)** if surface or wall mounted	
Key/Overide Switch **(KB3 ON-OFF Switch in Slimline Box)** for Main Entrance Door to Building	
Key/Overide Switch **(KS36 ON-OFF Keyswitch Double Pole)** for all doors inside Building	
Magnetic Lock **(LK57 12V Timber Doors or LK56 12V Slimline Aluminium Doors)**	
Junction Box **(IP55 190mm x 140mm x 70mm)**	

Comments/Notes:

_____
_____
_____
_____
_____
_____

4.4 Salto Door Controller and Reader Diagrams

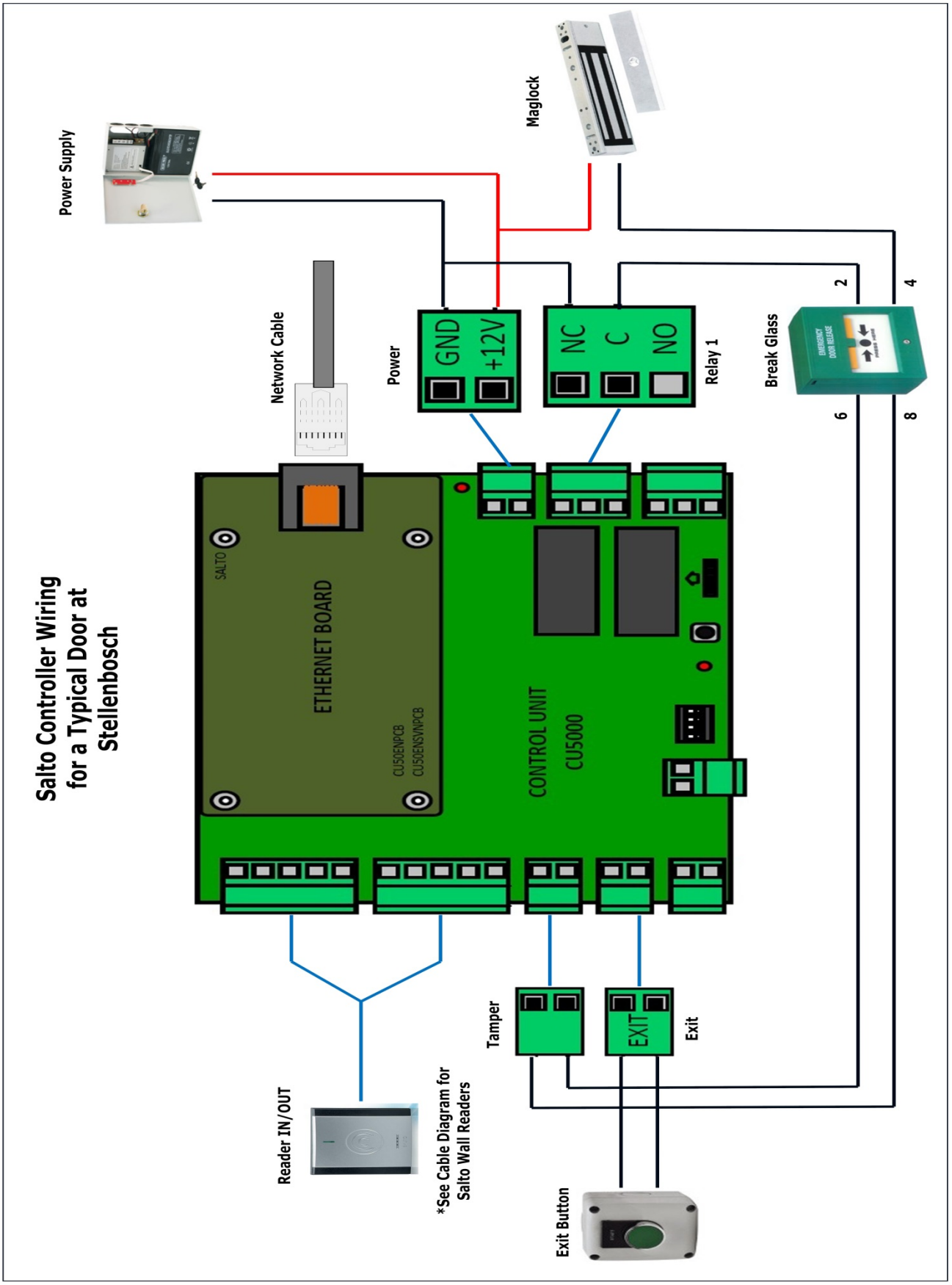
Reader Connection Diagram 4.4.1



Connection: 1 – Orange
2 – Orange /White
3 – Green & Green/White (*Note 1,2)
4 – Blue
5 – Blue/White

* We don't use connection 6 & 7.

Salto Door Controller Wiring Diagram 4.4.2



CU LED meaning

CLR LED – Addressing mode on.
ON LED – Power on.
LINK LED – network on.
TX/RX LED – transit on network.
COMM LED – communication between CU and communication board on.

WALL READER LED Meaning

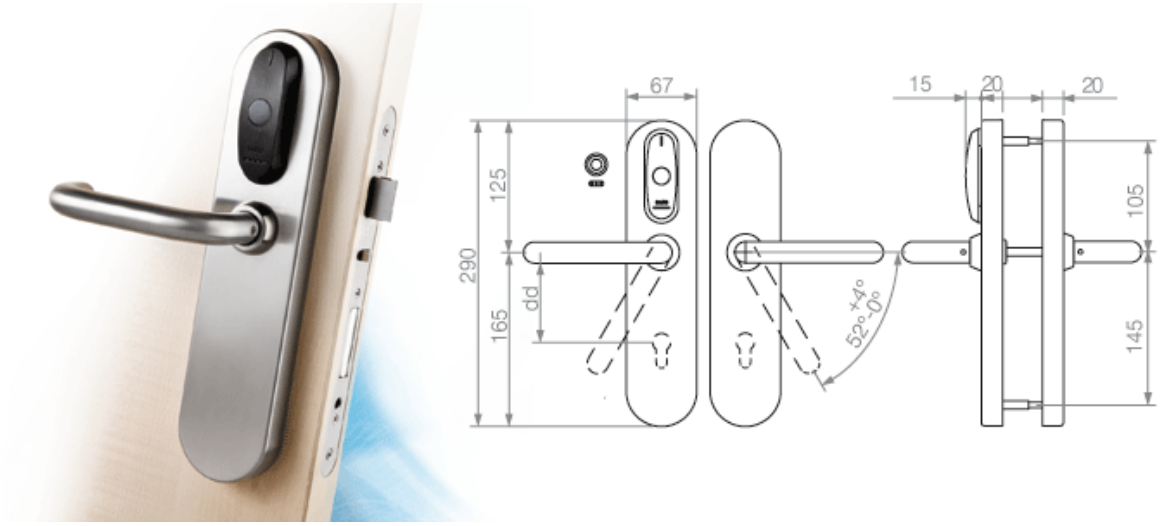
RED Light plus a set of sharp beeps – card access rejected.
GREEN light plus a beep – card access granted.
RED light plus loud beep – normal close.
A set of GREEN lights plus a set of sharp and loud beeps – office mode on.
A set of RED and GREEN lights plus a set of sharp and loud beeps – end office mode.
ORANGE light plus sharp beep – clear button pressed.
BLUE light plus medium beep – SVN mode on card updated.

For SVN

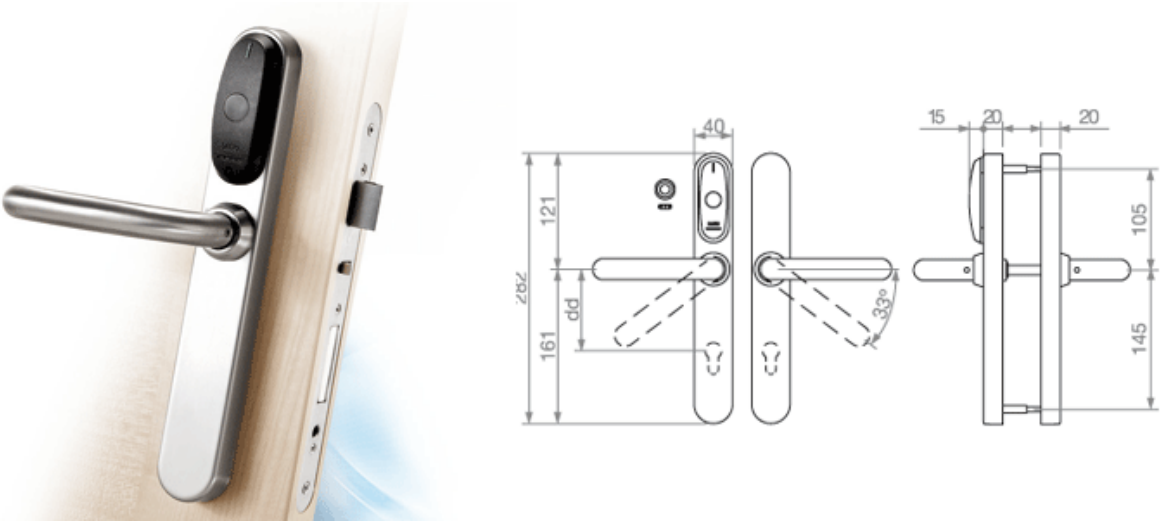
The SALTO Virtual Net work consists on special features based on the software programming.
They are active even when the system is in off-line mode (no communication with the computer).

4.5 Salto Access Control Range

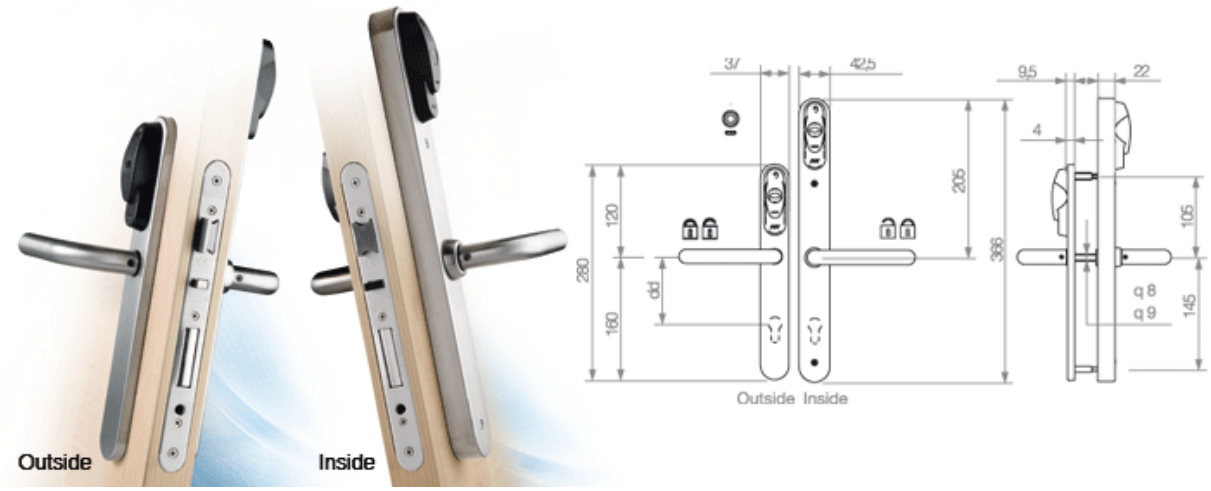
Salto Wide Escutcheon XS4-60 Model: E9650 for Timber Doors



Salto Narrow Escutcheon XS4-40 Model: E9450 for Timber Doors



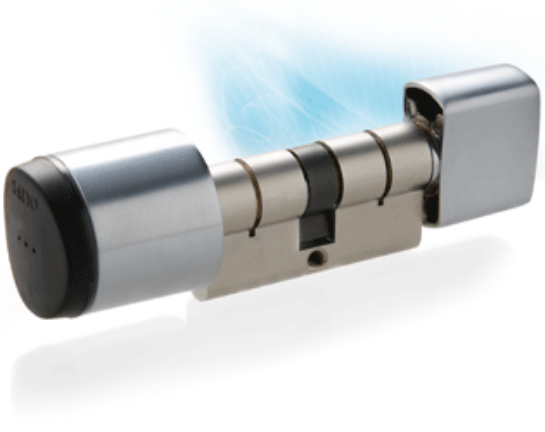
Salto Double Reader Escutcheon XS4 Model

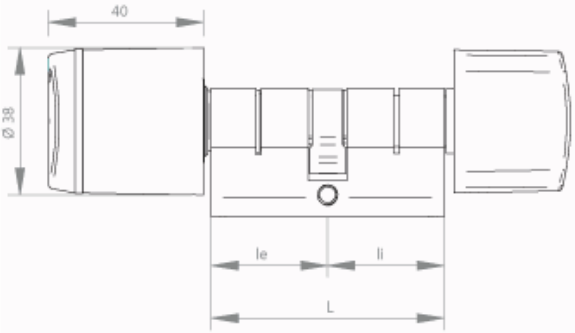


Salto Eschutcheon Finishes

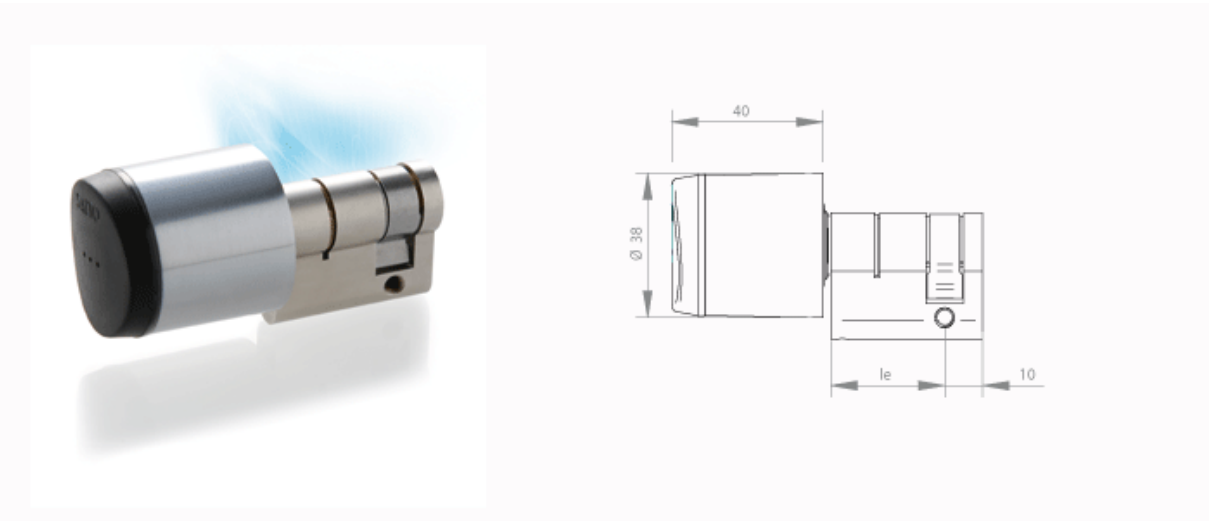
Salto Geo Cam Lock Cylinder for Drawers

Salto Geo European Profile Cylinder with thumb turn

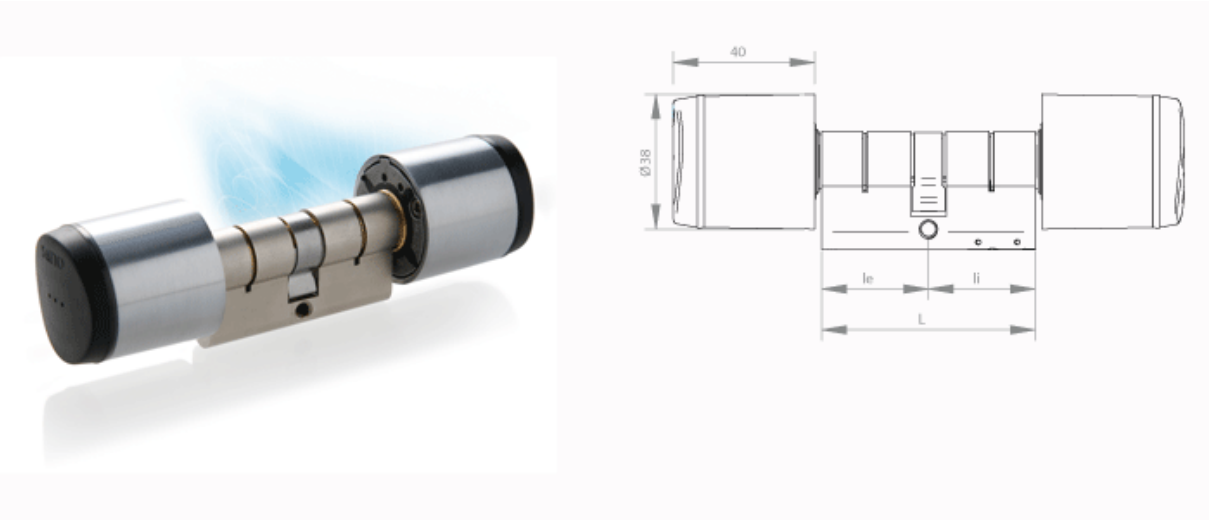




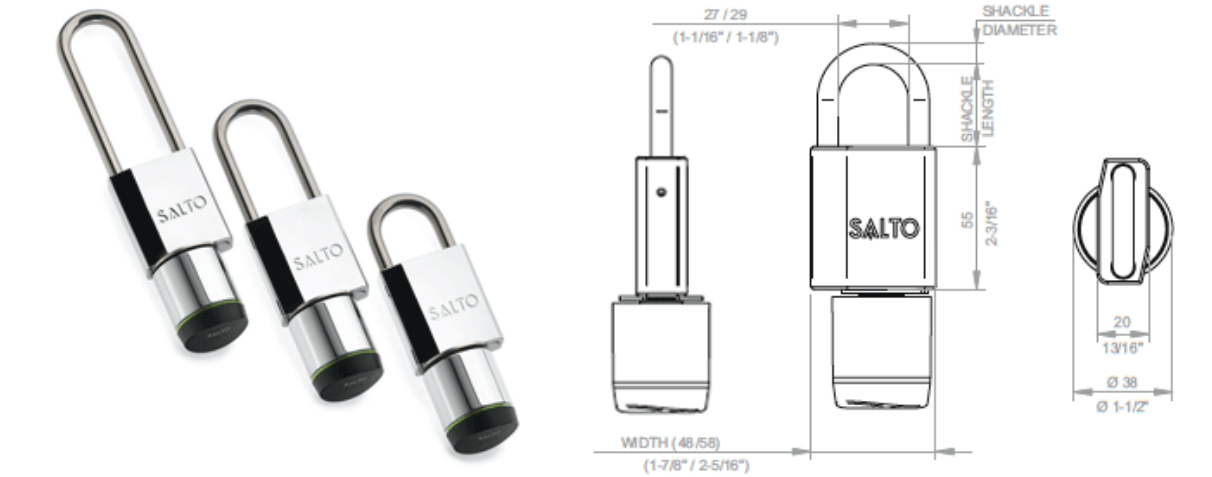
Salto Geo European Profile Half Cylinder



Salto Geo European Profile Double Cylinder



Salto Geo Electronic Padlock 48mm or 58mm

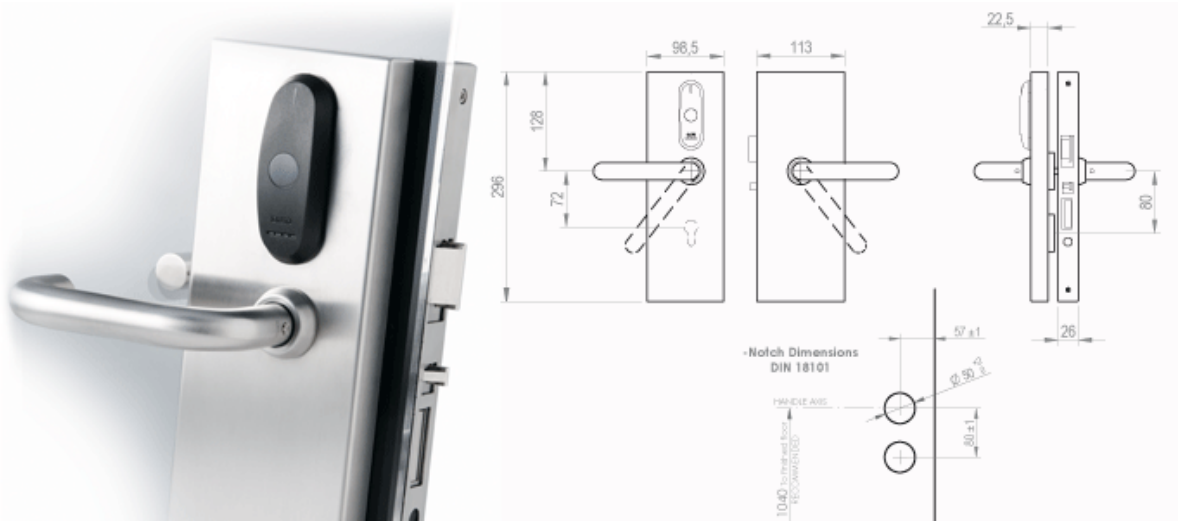


Salto Geo Cylinder for swing handle on server racks (DIRAK, EMKE and others)

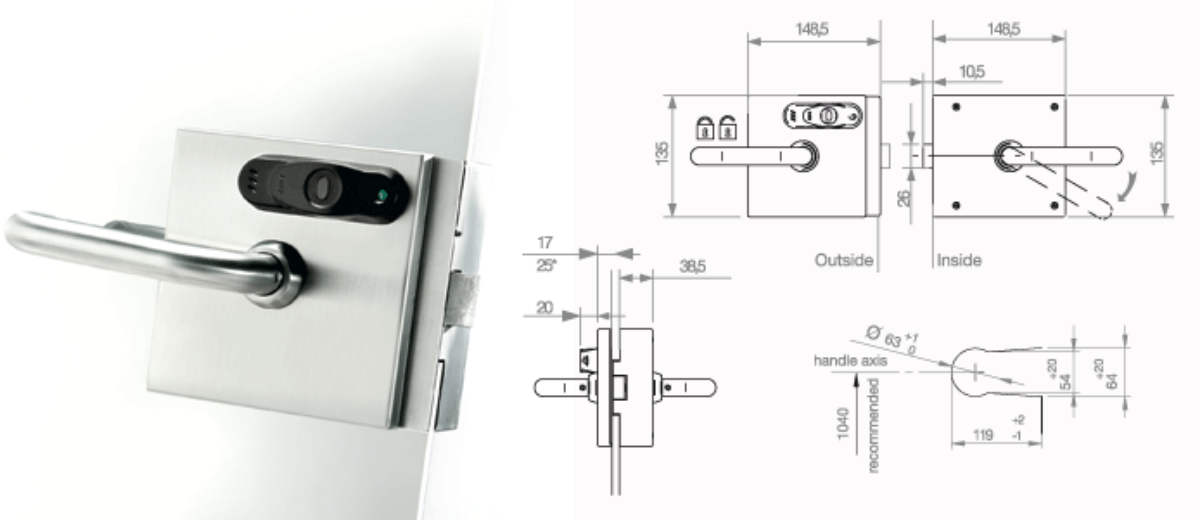
Salto Advanced panic bar solutions

Salto XS4 panic bar PBE9000

Salto XS4 Glass door lock DIN 18101



Salto XS4 Glass door locks



Salto XS4 Locker Lock