invenco
by GVR

G7-100 Installation Guide

DCV-00524 S2 R03

S1 Security Level Guide

No Restrictions apply: Customer-facing document.

Document History

Issue	Date of Issue	Description	Originator
R01	07-12-2022	Created document	SP
R02	15-12-2022	Updated ATEX Certification and UKCA declaration to Chapter 3, Approvals	SP
R03	28-02-2024	Updated ADA Module information to include ABC and removed reference to 8"SDC	SJ

Contents

CHAPTER 1

Introduction

G7-100 OPT (Outdoor Payment Terminal) is modular by design and offers outstanding value and capability to meet Outdoor EMV compliance regardless of pump type. The G7 OPT is available with a 15.6 inch display that can be fitted to your requirements.

To get the best use out of your G7-100 make sure that it is installed correctly and properly maintained.

This guide will walk you through basic installation and correct care for your new OPT.

Note: If you are installing an OPT using an approved retrofit kit, the instructions with the kit supersede the instructions in this guide.

1.1. Product model and rating

G7 System: 24Vdc, 3A overall system rating, Class 2 or LPS

ADA (Handicap Assistance Arrow Pad), Model G7ADA

APC (Computer), Model G7APC: 24Vdc 0.2A

UPC (Keypad/Reader), Model G7-100 UPC: 24Vdc, 0.4A nom.

SCC (Secure Contactless Controller), Model P2-400: 5Vdc, 0.5A

SDC 15 inch (Display), Model G7-100 SDC-15 : 24Vdc, 1.0A nom.

1.2. Where can the G7-100 be Installed?

The G7-100 modules consist of a Unified Pin pad and Card reader (UPC), Secure Display Controller (SDC), Application Process Controller (APC) and optional secure contactless controller (SCC) for contactless payments, and optional American Disability Association (ADA) keypad. The G7-100 is an OPT designed for unattended use and complies with industry security standards including PCI and EMV. It operates in a range of outdoor environments in temperatures from -30C (-22 F) through to +70C (158 F).

It has been primarily designed for outdoor use, and as such the design includes the use of special plastics, gaskets, and seals to protect from the harsh impacts of the environment.

The G7-100 is incredibly versatile and can be installed into any physically secure cabinet. This makes it ideal for fuel stations, golf courses, car washes, drive-through, sun, sand, wind or snow - anywhere you want people to pay you, but you don't want to pay someone to stand there and wait to take payments!

Because it is often used in fuel stations, this guide explains the requirements for mounting G7-100 modular components into a fuel pump-head, however the steps are applicable to any cabinet. Specific steps and precautions for pump head installation are highlighted, because Invenco cares about you - our customers - and your safety.

Please, **always** use safety precautions when installing our products.

Safety & Compliance Information

STOP There are hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product.

Important: Before you start, READ! You need to understand the safety information in this manual. Hazards and safety precautions for tasks are always listed.

Fire, explosion, or electrical shock could occur and cause death or serious injury if these safe service procedures are not followed.

2.1. Preliminary Precautions

Fuel stations can be a dangerous place to work - there are flammable fuels, vapors and high voltages.

You should only install, inspect, maintain or service this equipment when you are fully trained and authorized to do so.

2.2. Safely Accessing a Fuel Pump

2.2.1 Evacuation and Barricading

If you need to access a pump/dispenser head, then you **must**:

• Evacuate all unauthorized persons and vehicles.

• Use safety tape or cones as a barricade to the affected unit(s).

2.2.2 Total Electrical Shut-Off

Before accessing the electrical components or the electronics of a pump/dispenser, you **must** carry out a total electrical shut-off of that unit.

To shut off electricity find the switch or circuit breaker and turn it to the "off" position.

If you can't turn off the power, STOP. Do not continue until the electricity has been safely turned off by you or someone else.

2.2.3 Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call an Invenco-authorized service contractor.

WARNING:	For your own safety and that of others, you must understand the procedures before beginning work.

2.3. Follow the Regulations

Regulations exist to keep everyone safe.

You are expected to follow:

- OSH regulations.
- National regulations and codes.
- State regulations and codes.
- Local regulations and codes.

Note: If you do not install, inspect, maintain or service this equipment in accordance with these codes, regulations, and standards, it may affect the safe use and operation of the equipment, or lead to legal citations with penalties.

2.4. Replacement Parts

Use only genuine Invenco replacement parts and retrofit kits on your installation.

Using parts other than genuine Invenco replacement parts could create a safety hazard and violate local regulations.

2.5. Safety Symbols and Warning Words

Throughout this guide you will see warnings and notes in boxes like below. These are used to let you know when you need to take extra caution to avoid hazards and/or potential injury to yourself or another person.

Always follow these instructions!

WARNING:	This alerts you to a hazard or unsafe practice that could result in death or serious injury.

Note: This designates a hazard or unsafe practice which may result in minor injury or a legal issue.

2.6. Prevent Explosions and Fires

Fuels and their vapors will become explosive if ignited.

CHAPTER 2

All fuels cause vapors when they are exposed to air and transferred between containers; spilled or leaking fuels cause even more vapors.

When a customer's tank is filled, vapors leak into the air around the tank and island, and these vapors can potentially catch fire or explode if they are exposed to a spark or flame.

This is why every single person on a fuel station forecourt must be aware of the danger of sparks and open flames and take precautions to avoid explosions and fires.

2.6.1   No Open Flames

Open flames from matches, lighters, welding torches or other sources can ignite the fuel and vapors present on forecourts.

There should **never** be an open flame on a fuel station forecourt for any reason.

2.6.2   No Sparks - No Smoking

Sparks can also start a fire or cause an explosion on a forecourt. Be safety conscious!

Do not:

1. Smoke.
2. Light a match.
3. Use a lighter.
4. Use a mobile phone outside of your car.
5. Start or use power tools.
6. Create a flame of any kind.

Also beware of:

1. Static electricity.
   - Always touch the metal of your vehicle after you get out of it to discharge any electrostatic charge before you approach the dispenser island.

2.7. Working Alone

2.7.1   Best Practice

Always work with at least two people if possible; one to actively work and one as an assistant/backup.

Ideally if you are working around high voltages, the backup/assistant should be trained in providing Cardiopulmonary Resuscitation (CPR).

2.7.2   Safety First!

Whether working alone or with someone else:

1. Advise station personnel where you will be working.
2. Warn station personnel not to turn the power back on while you are working on the equipment.
3. Use the OSH tag out and lock out procedures.
   - If you are not familiar with this requirement, refer to the information in the service manual and the OSH

documentation.

2.7.3   Installer Certification

Many countries' authorities require people working in hazardous environments to hold additional qualifications that prove they are suitably skilled to perform work on fuel station forecourts.

Please ensure that you have the relevant certifications and that they are current, before attending to any site to perform installation work.

2.8 Safety First: Working with Electricity

Always:
1. Use safe and established practices.
2. Follow OSH Lock-Out and Tag-Out requirements before carrying out any service or installation work.
3. Check all devices before use.
   - Is the wiring in good condition?
   - Is the grounding connection firmly attached?
   - Are all sealing devices and compounds intact and in place?

Never:
1. Use devices if they have any damage.
2. Skip over safety procedures for any reason.
   - Faulty wiring or unsafe procedures can cause a fire, explosion, or electrical shock.

Station employees and service contractors must understand and comply with these guidelines completely to ensure safety while the equipment is down.

2.9 Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly.
- Always wear gloves if practical to do so.
- Keep your hands away from your eyes and mouth during installation.
- Wash your hands as soon as possible.

2.10 In an Emergency

Contact your country's emergency number immediately.

Emergency personnel will need the following information:
- Location of accident (e.g., address, front/back of building).
- Nature of accident (e.g., possible heart attack, run over by car, burns).
- Approximate age of victim (e.g., baby, teenager, middle-age, elderly).
- Whether or not victim has received first aid (e.g., stopped bleeding by pressure).
- Whether or not victim has vomited (e.g., if swallowed or inhaled something).

WARNING:	Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

2.11 Computer Programs and Documentation

All Invenco Group Ltd. computer programs (including software on discs and within memory chips) and documentation are copyrighted by, and shall remain the property of, Invenco Group Ltd. Such computer programs and documents may contain trade secret information.

The duplication, disclosure, modification, or unauthorized use of computer programs or documentation is strictly prohibited unless otherwise licensed by Invenco Group Ltd.

Approvals

Invenco develops and maintains its hardware and software products using industry-standard quality processes and is certified under the ISO9001 Quality Management system.

The Invenco G7-100 modules are assessed and certified by UL against applicable safety standards and carry labels similar to this:

The G7-100 OPT has the following safety approvals:

Ordinary Location Safety Certification:

CB certification to IEC 62368-1: Ed. 2 and IEC 60950-22: Ed. 2 (Including EN group and national difference for CE compliance, and Australia / New Zealand national differences).

UL certified to Audio/Video, Information Technology Equipment – Component.

USA: AZOT2.E469526.

Canada: AZOT8.E469526.

Hazardous Location Safety Certification:

UL certified to Class I Division 2 (Groups A, B, C and D).

USA: NWHP2.E480135.

Canada: NWHP8.E480135.

Retrofit Safety Certification:

UL certified to Retrofit Assemblies.

USA: ERKQ.MH61528.

Canada: ERKQ7.MH61528.

EMC compliance:

Complies with CE requirements: EMC Directive (Directive 2014/30/EU)

Complies with UKCA requirements: Electromagnetic Compatibility Regulations 2016 (EN 55032: 2015 +A11:2020 and EN 55035: 2017 +A11:2020).

Complies with FCC 47 Part 15C and ISED (Industry Canada) ICES-003.

Environmental Compliance:

RoHS compliance with Directive 2011/65/EU & Commission delegated directive (EU) 2015/863 and The Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

ATEX Certification (Potentially Explosive Atmospheres)

EN IEC 60079-0 EN IEC 60079-7 EN 60079-11

II 3 G Ex ice c IIC Gc

3.1. European Directives

The G7-100 complies with the necessary European Directives for the CE mark.

3.2. UK Conformity Assessed

The G7-100 complies with the necessary UK Conformity Assessments for the UKCA mark.

3.3. USA EMC Statement

1. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

2. This device may not cause harmful interference, and

3. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

3.4. Australia and New Zealand Compliance

The G7-100 complies with the necessary Australia and New Zealand compliance requirements for the RCM mark.

Product Features

4.1. Location of Features

The modules of the G7-100 are configurable into different layouts for different enclosures. The G7-100 should always be installed with an SDC and UPC, and an APC that is not shown here because it is mounted to the rear of the SDC and hidden from customer view.

The SCC and ADA keypad are optional extras that provide additional functionality and can be installed in a suitable location. Please note that the ADA height must comply with ADA regulations which can be found at www.ada.gov.:

An example of an installed G7-100 with 15" SDC and optional SCC, ADA keypad module.

4.2. G7-100 Modules

4.2.1   Secure Display Controller (SDC)

The SDC is available as a 15" display.

Invenco G7-100 15" SDC.

4.2.2 Unified PIN pad and Card Reader (UPC)

Invenco G7-100 UPC Features.

4.2.3 Secure Contactless Controller (SCC)

Invenco SCC.

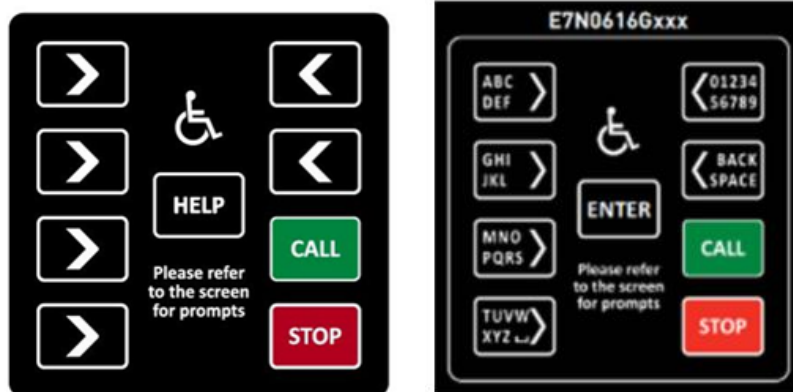## 4.2.4 American Disability Association (ADA) Keypad

This optional module must be installed in compliance with the ADA Accessibility Guidelines. These can be found at: www.ada.gov

There are different variants of the ADA Keypad depending on the dispenser it's being installed in.

Invenco ADA Keypad

GVR Encore 500S/700S ADA Keypad

4.2.5   Stop and Call Buttons

This optional module can be installed when there is an intercom present.

G7-100 General Installation Information

The G7-100 is modular and flexible - it can be mounted into a variety of cabinets and locations.

This guide contains general installation instructions to get your G7-100 connected.

5.1. Order of Installation

The G7-100 modules are designed to be installed in this order:

1. SDC

2. APC

3. SCC & UPC

This guide has a section for each module.

5.2. Cabling

This guide includes a suggested order of connecting the cables and complete wiring diagrams for the G7-100 OPT with different size SDCs connected. You may choose to vary the order in which you connect the cables, and it won't make much difference, however, make sure that you follow the appropriate diagram for the system you are installing and connect all of the correct cables.

5.3. Cutout Sizes

Before you install a G7-100 you should have a prepared cabinet with the correct cutout sizes. The cutouts should be accurate and smooth. Dimensions of each module and the required cutout size for each module are included in this guide.

5.4. Retro-Fit Kits

Alternatively, Invenco offers a range of retrofit kits (RFKs). An RFK is a pre-made adaption panel or door that allows a pre-existing gas pump to provide the mounting and fitting of the OPT to that pump.

Where Invenco has an RFK available, there is also a separate installation guide tailored to that solution. Instructions in an RFK installation guide should always supersede the instructions in this more general installation guide.

5.5. Tools Required

- Philips screwdriver (size 1 and size 2).
- T10 Torx driver.
- M3 nut driver (for G7-100 8" and 15" SDC installation).

Note: All installations should be completed using either specially coated screws or Locktite.

SDC Installation

6.1. Environment

- The SDC must be mounted in some form of cabinet that provides adequate protection of the SDCs rear from the environment.
- The cabinet must restrict access to the rear of the SDC by unauthorized persons.
- The mounting surface must be vertical and flat.
- As required for PIN security compliance, the mounting surface should not be in the direct line-of sight of any video camera, unless the user's body will provide adequate blocking of that view of the SDC in use.
- The SDC can be mounted at any height that is suitable for the majority of users; this would typically be above the mounted height of the associated UPC.
- Although the SDC is rated for use in all weather conditions, the cabinet should be sheltered from rain or should provide a canopy.

6.2. Tools

For this guide, we assume that the cabinet has been prepared with the appropriate cut-out prior to installation.

The SDC requires an M3 nut driver. Tighten nuts to torque 0.55 - 0.60 Ncm.

6.3. Method

1. Check that the cabinet cut-out is free of burrs and ripples and that all the mounting holes are clear.
2. Check the SDC packaging for signs of tampering. If the factory seals are broken DO NOT install the SDC.
3. Unpack the SDC carefully. Again, check for signs of tampering, both with the SDC and with its rubber gasket.
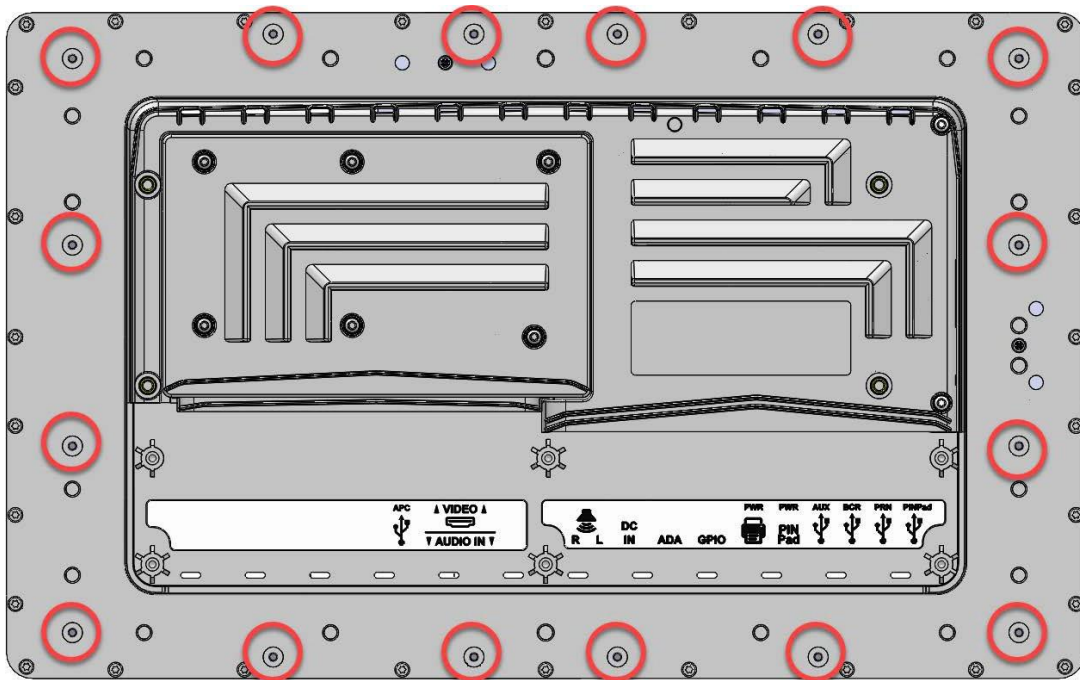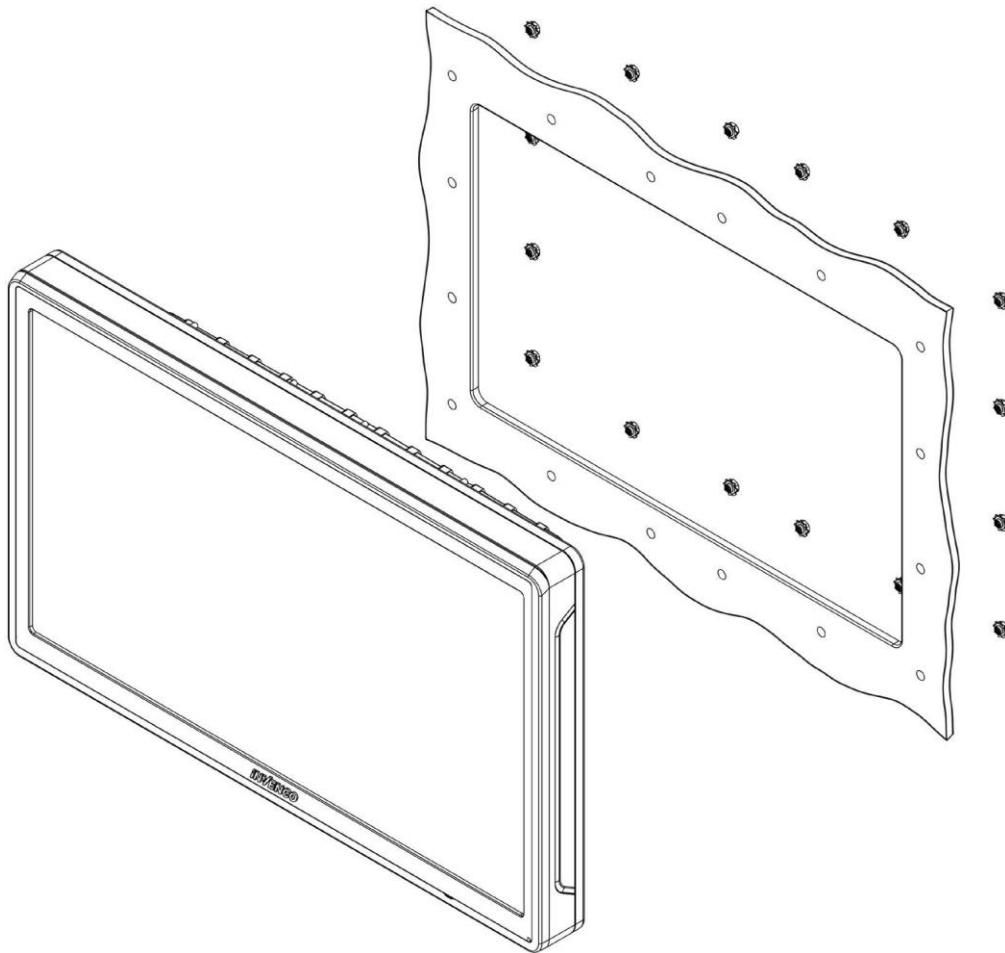

Gasket upside-down.
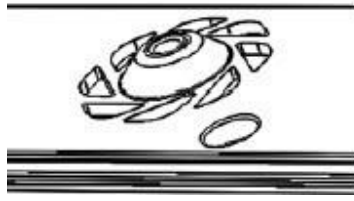
Gasket right way up.

4. Place the SDC from the outside of the cabinet into the cut-out. Check that the SDC sits flat against the cabinet and that the gasket is not rippled or folded anywhere.
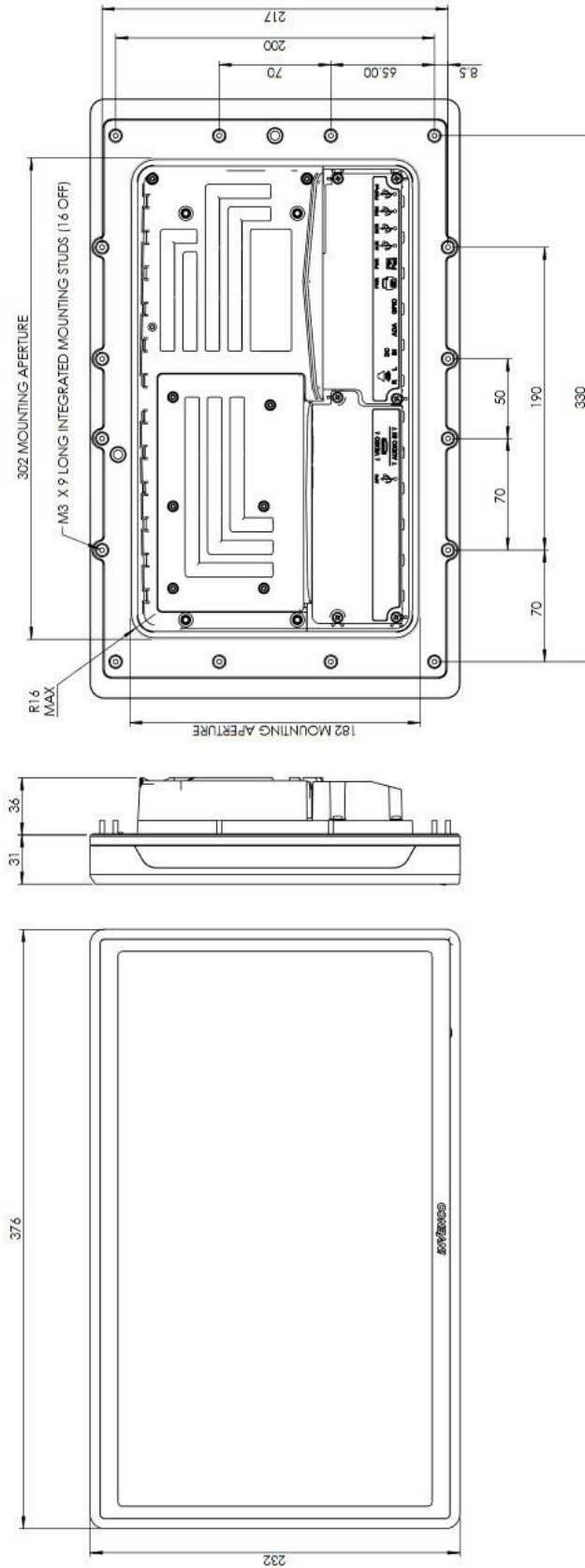

Mounting holes.

5. Fit 16 x M3 Nuts to threaded rod. Tighten nuts to torque 0.55 - 0.60 Ncm.
6. Discard the SDC packaging in accordance with local regulations.

SDC Drawing

General arrangement.

217
200
70
65.00
8.5

302 MOUNTING APERTURE

M3 X 9 LONG INTEGRATED MOUNTING STUDS (16 OFF)

330
190
50
70
70

R16
MAX

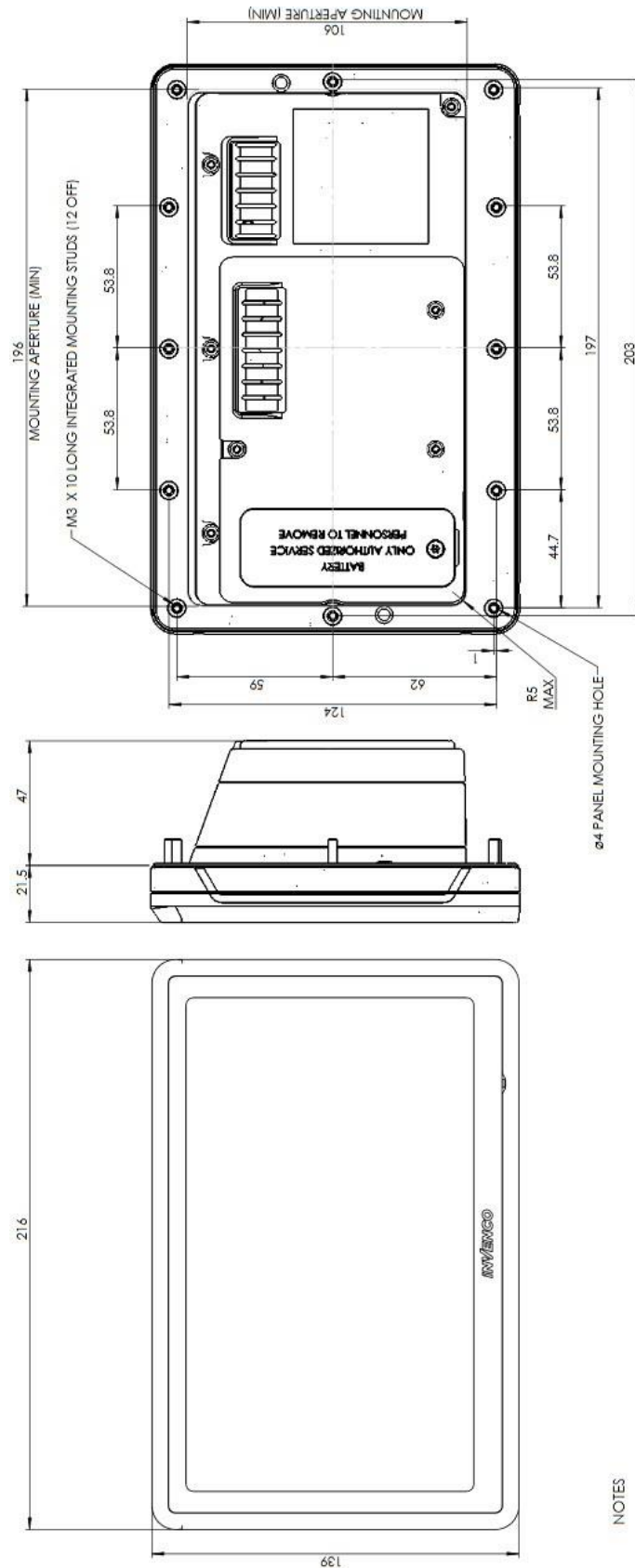182 MOUNTING APERTURE

36
31

376
232

NOTES

1. APPROXIMATE MASS = 3.8kg
2. FOR MOUNTING TO INVENCO RETRO FIT KIT PANELS USE NUT (MN0073) & WASHER (MW0053)
3. RECOMMENDED TORQUE FOR M3 MOUNTING NUTS = 0.6Nm

CHAPTER 7

SDC 15 inch dimensions.

MOUNTING APERTURE (MIN)
106

MOUNTING APERTURE (MIN)
196

M3 X 10 LONG INTEGRATED MOUNTING STUDS (12 OFF)

53.8

53.8

53.8

53.8

197

203

44.7

BATTERY
ONLY AUTHORIZED SERVICE
PERSONNEL TO REMOVE

59

62

124

R5 MAX

1

Ø4 PANEL MOUNTING HOLE

47

21.5

216

139

MVENGO

NOTES
1. APPROXIMATE MASS = 1.2kg
2. RECOMMENDED TORQUE FOR M3 MOUNTING NUTS = 0.6Nm

CHAPTER 7

APC Installation

The APC is designed to mount directly onto the back of a 15" SDC, and onto the back of an 8" SDC with the use of an Invenco Retro-fit Kit (RFK).

The APC should always be installed directly after installing the SDC.

8.1. Tools

T10 Torx driver. Torque to 0.65 - 0.7 Nm.

8.2. Method

1. Check the APC packaging for signs of tampering. If the factory seals are not intact DO NOT install the APC.
2. Unpack the APC and check the product for signs of tampering.

15" SDC:

1. Line up the APC over the holes on the back of the SDC and securely screw it into place, torque to 0.65 - 0.7 Nm.
2. Discard of the packaging responsibly.
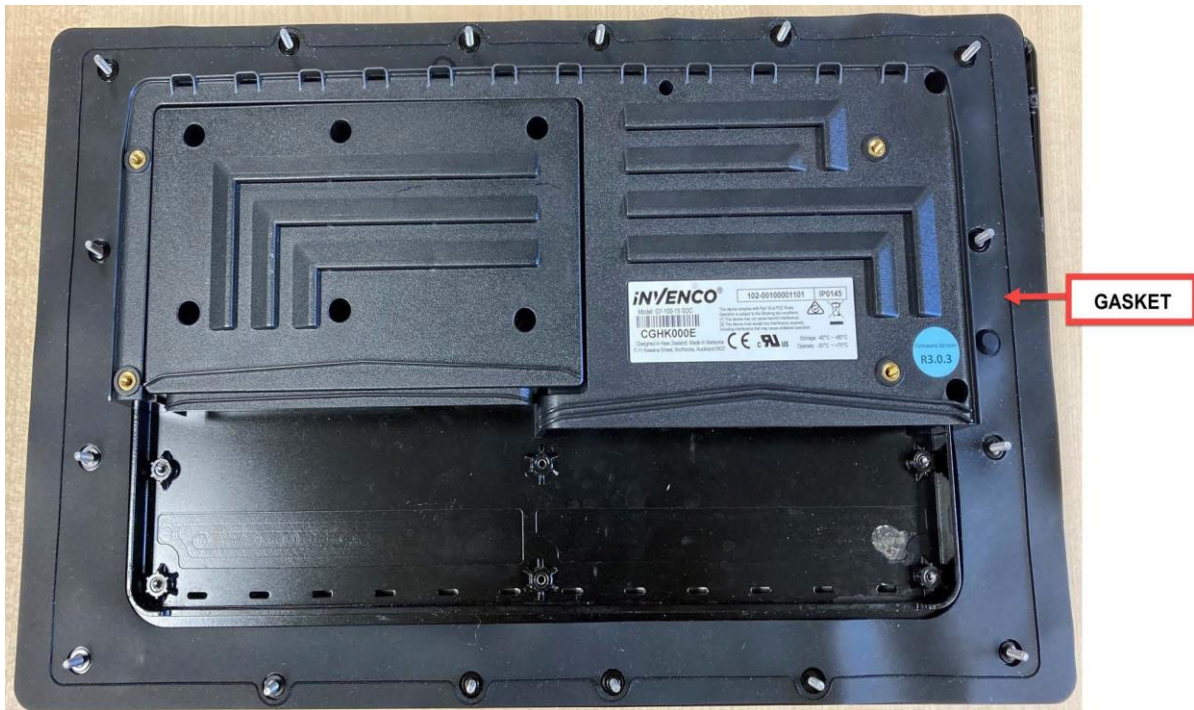
15" SDC.

Note: Make sure there is gasket is present on the SDC before installing the APC.

SCC Installation

The SCC is a standalone peripheral used for making contactless payment.

Before installing the SCC, ensure you have the correct version of firmware installed on the overall system to ensure contactless payment support.

9.1. Installing the SCC

1. Remove the SCC module from the packaging.

SCC Module.

2. Ensure that the Mounting Gasket (MP0194) is fitted and aligned correctly in the module (no folds or squashed parts etc.).

Mounting Gasket.

3. Temporarily unscrew the lock nut pre-fitted on the SCC module from the rear of the module.

Lock Nut.

4. Fit the SCC module into the system panel where the SCC module is to be installed. Push the attached cables in through the opening first and ensure that the module is fitted in the correct orientation by checking that the "Invenco" logo is at the bottom and upright.

SCC Module Installation.

5. Fit the lock nut which was temporarily removed. Feed the cables attached to the SCC through the locknut and secure the module in position by turning the lock nut clockwise until tight.

Fit the Lock Nut.

6. Ensure that the SCC module is aligned and fitted correctly.

Correct orientation.

7. Trace the two cables from the back of the SCC module to the two USB connectors. Identify each connector type and plug the connectors into the appropriate USB sockets on the other G7 modules as follows:

Type A USB connector:

USB Type A.

Insert the type A USB connector into the "USB-L" socket on the back of the APC module.
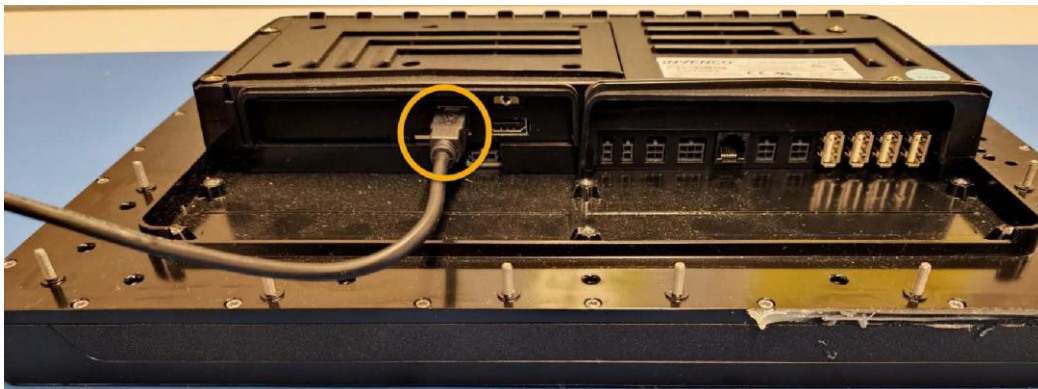

USB Connected to the APC.

Type B USB connector:

USB Type B.

Insert the Type B connector into the "APC-USB" socket on the display SDC module.

• For the G7-100 SDC-15 (15 inch display) or the G7-100 SDC-08 (8 inch display) "APC USB" connector socket:.

Insert USB Type B to the G7 8 or 15 Inch Display APC module.

8. Ensure that all cables are tidy and cannot become snagged or pinched when the door of the cabinet is opened and closed.

UPC Installation

10.1. Environment

- The UPC must be mounted in some form of cabinet that provides adequate protection of the UPC's rear from the environment.
- The cabinet must restrict access to the rear of the SDC by unauthorized persons.
- The mounting surface must be vertical and flat.
- As required for PIN security compliance, the mounting surface should not be in the direct line-of sight of any video camera, unless the user's body will provide adequate blocking of that view of the UPC in use.
- The UPC should be mounted at a height that is suitable for the majority of users; this would typically be below the mounted height of the associated SDC. (Invenco recommends a height of 1200mm for the '5' key).
- Although the UPC is rated for use in all weather conditions, the cabinet should be sheltered from rain or should provide a canopy.

10.2. Method

1. Check that the cabinet cut-out is free of burrs and ripples and that all the mounting holes are clear.
2. Check the UPC packaging for signs of tampering. If the factory seals are not intact DO NOT install the UPC.
3. Unpack the UPC carefully. Again, check for signs of tampering, both with the UPC and with its rubber gasket.
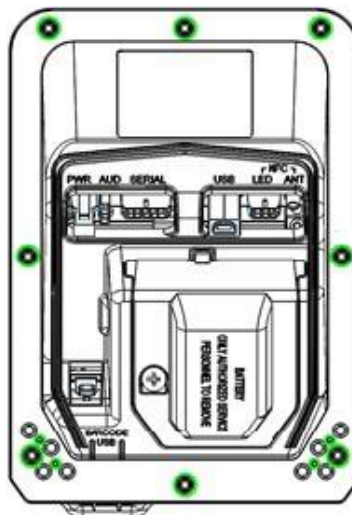4. Check that the rubber gasket is placed the correct way up, flat against the rear of the housing:

Gasket upside-down.

Gasket right way up.

5. Place the housing containing the UPC from the outside of the cabinet into the cabinet cut-out. Check that the housing sits flat against the cabinet and that the gasket is not rippled or folded anywhere.
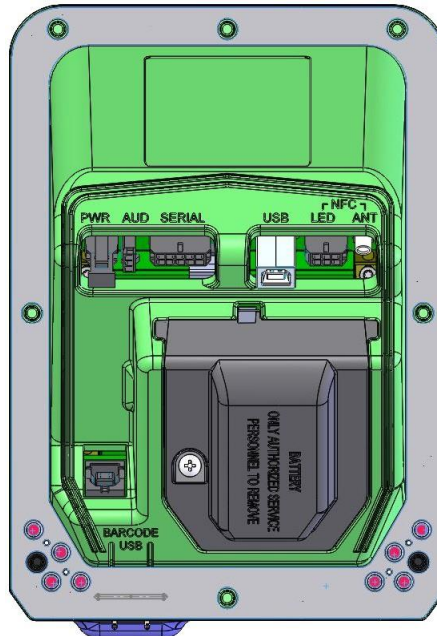

Mounting holes.

6. Insert mounting screws in the top and bottom center holes of the UPC but do not tighten them.

7. Insert the remaining six screws, three along each side.

8. Ensure the housing is aligned neatly in the cutout, then tighten all eight mounting screws to torque 0.55 - 0.60 Ncm.
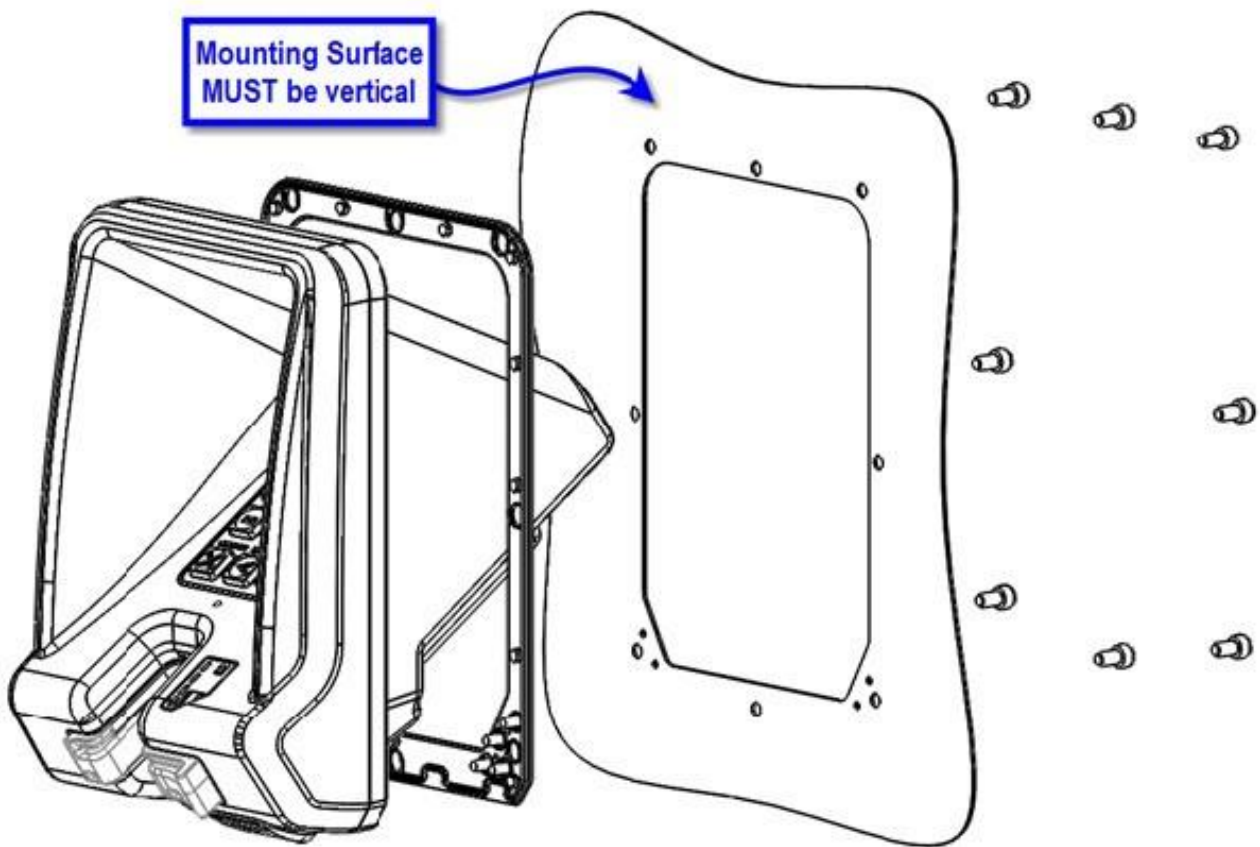
This will arm the eight removal-tamper sensors (colored red in the figure below). These tampers will become active when the UPC is promoted from its removal-tampered state to normal operating mode.
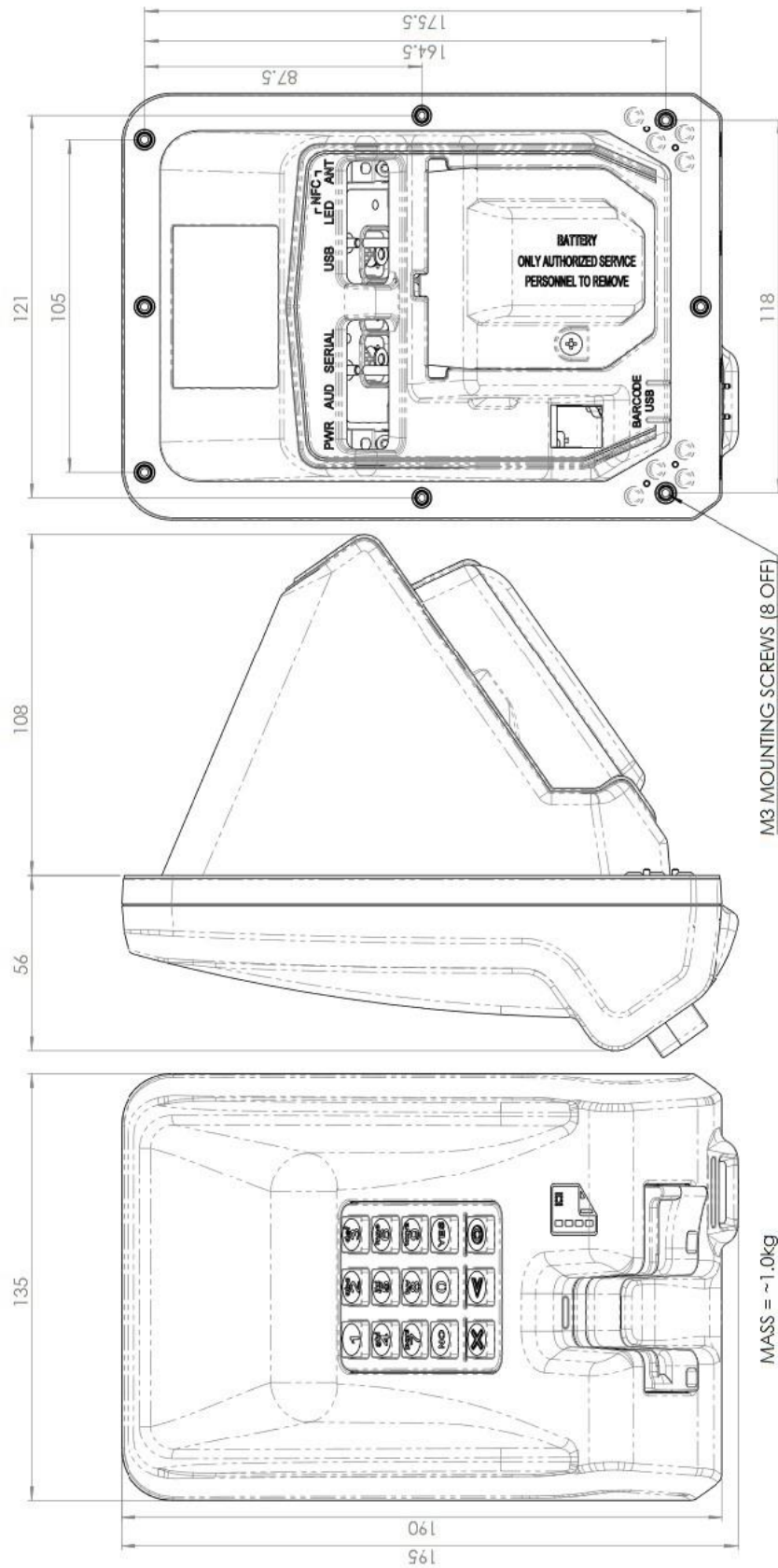

Housing removal-tampers.

9. Discard packaging in accordance with local regulations.

UPC Drawings

Mounting Surface MUST be vertical

General arrangement.

UPC cutout

The following labels and dimensions appear in the drawing:

- 175.5
- 164.5
- 87.5
- 121
- 105
- 118
- NFC
- LED
- ANT
- USB
- BATTERY
- ONLY AUTHORIZED SERVICE
- PERSONNEL TO REMOVE
- PWR AUD SERIAL
- BARCODE
- USB
- M3 MOUNTING SCREWS (8 OFF)
- 108
- 56
- 135
- 190
- 195
- MASS = ~1.0kg

PARTS TRACEABILITY NOTE:

PARTS MUST BE LABELLED IN ACCORDANCE WITH INVENCO DOCUMENT DQS-00033.
REQUIREMENTS, SUPPLIER PARTS LABEL AND CERTIFICATE OF COMPLIANCE.
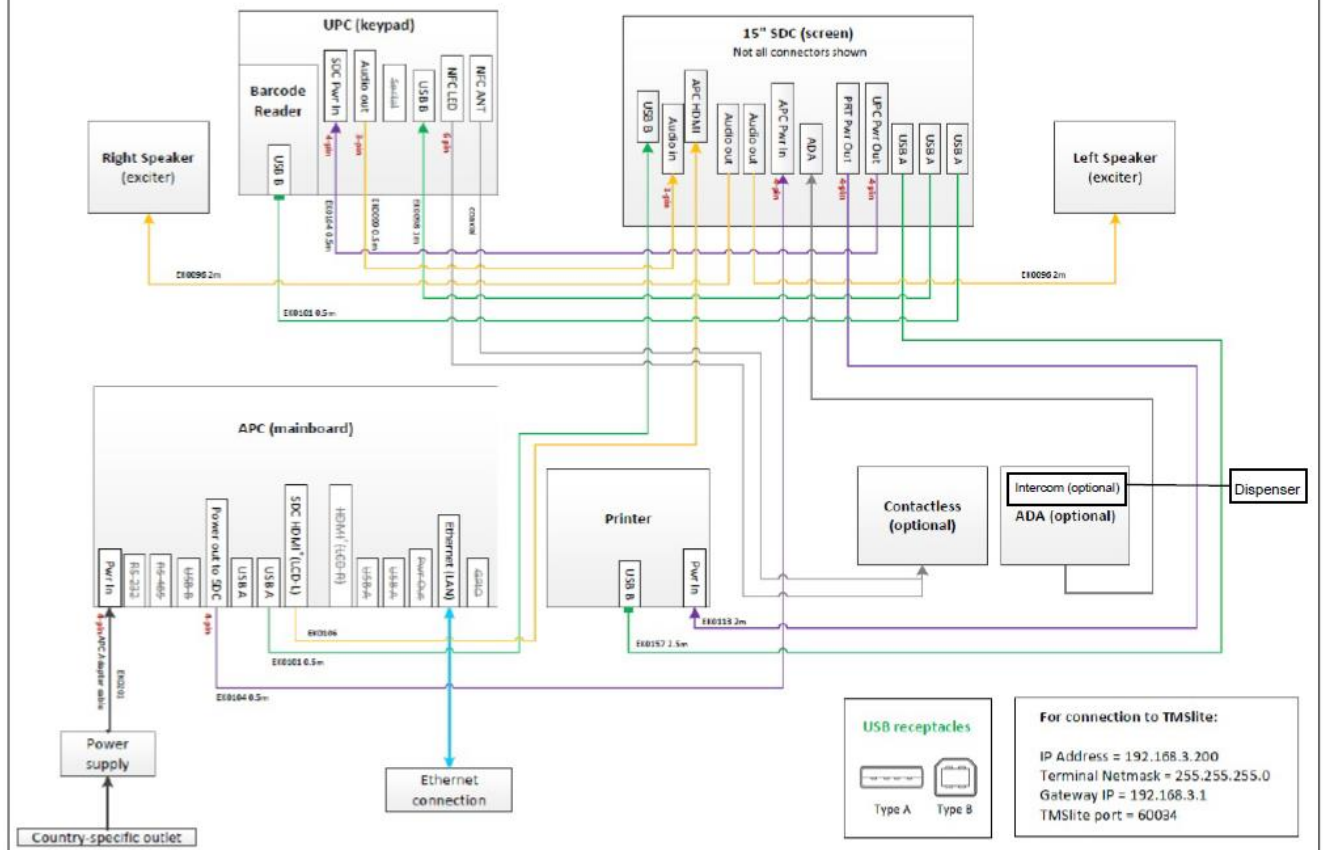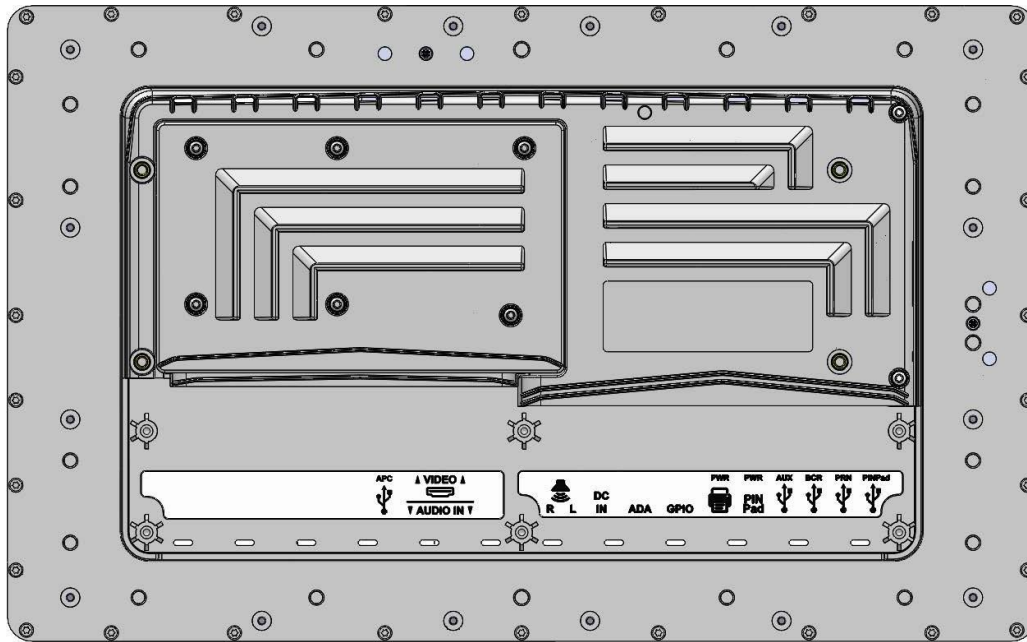
15" Wiring Diagram

15 Inch SDC

Figure 13-2. G7-100 (15") Connection Diagram

Once both the SDC, APC and UPC are installed, continue with the electrical connection. There are wiring diagrams on the previous pages or use the following steps to guide you through the initial wiring.
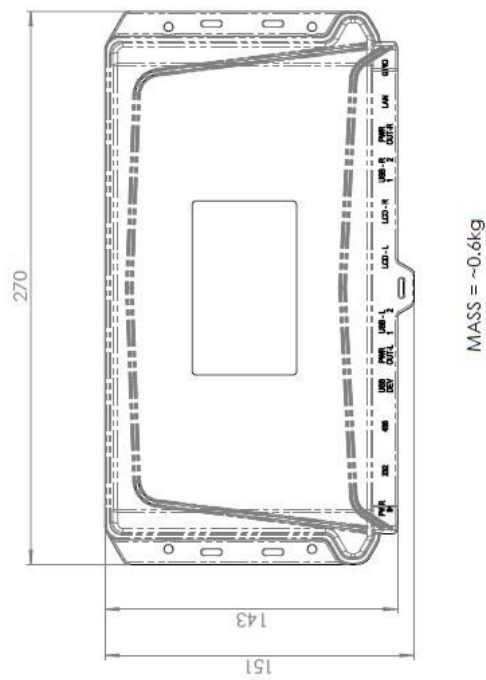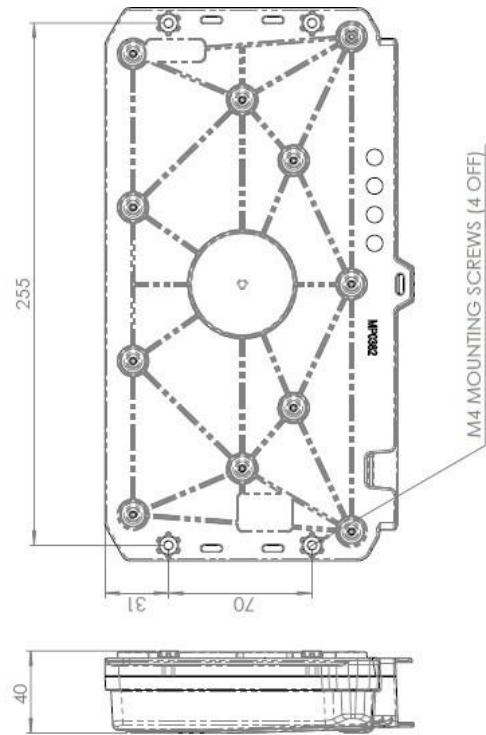
Connections.

Connect the Cables

1. Connect a **DC power Cable** between the APC PWR In socket on the SDC and the PWR OUT socket on the APC.
2. Connect a **USB A-B Cable** between the APC Data USB-B port on the SDC and the USB-A port on the APC.
3. Connect an **HDMI Cable** between the APC VIDEO socket on the SDC and the LCD-L socket on the APC.
4. Connect a **DC power cable** between the UPC PWR socket on the SDC and the PWR socket on the UPC.
5. Connect a **USB A-B Cable** between the UPC USB-A port on the SDC and the USB-B port on the UPC.
6. Connect an **Audio Cable** between the UPC AUDIO socket on the SDC and the AUD socket on the UPC.
7. Connect a **USB A-B** cable between the BAR CODE socket on the SDC and the BARCODE USB port on the UPC.
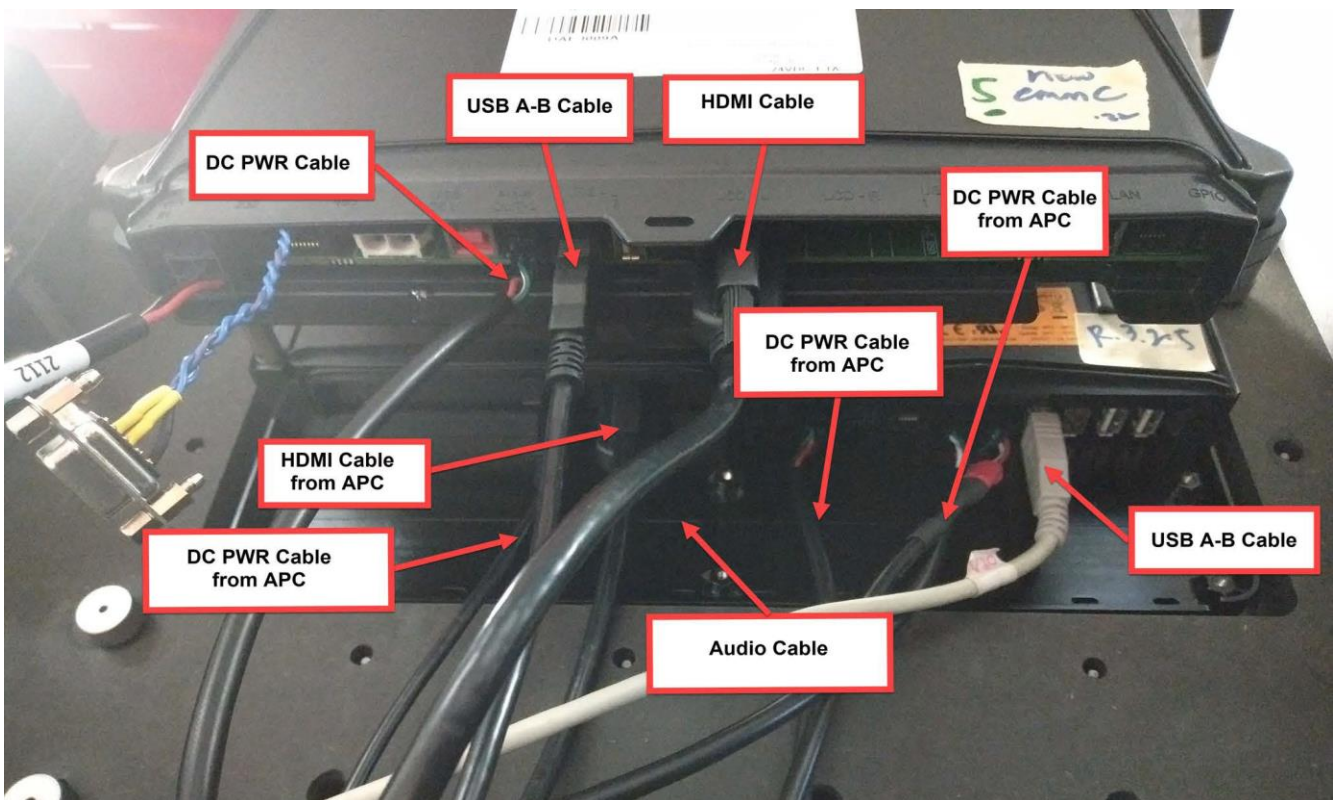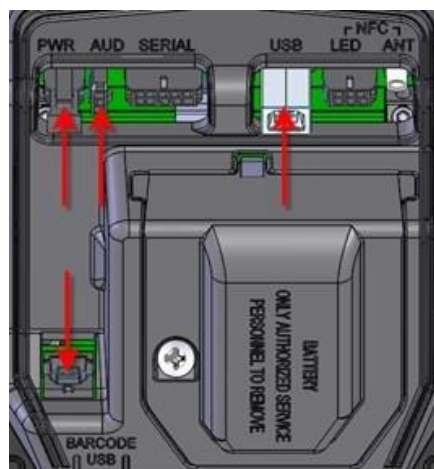

SDC, APC, and UPC Connections.

255

31

70

M4 MOUNTING SCREWS (4 OFF)

MPO862

40

270

143

151

MASS = ~0.6kg

APC Dimensions.

15.1 UPC Connections

This section assumes that the UPC will be installed at the same time as a G7 SDC, matching SCC, and ADA keypad (if required).
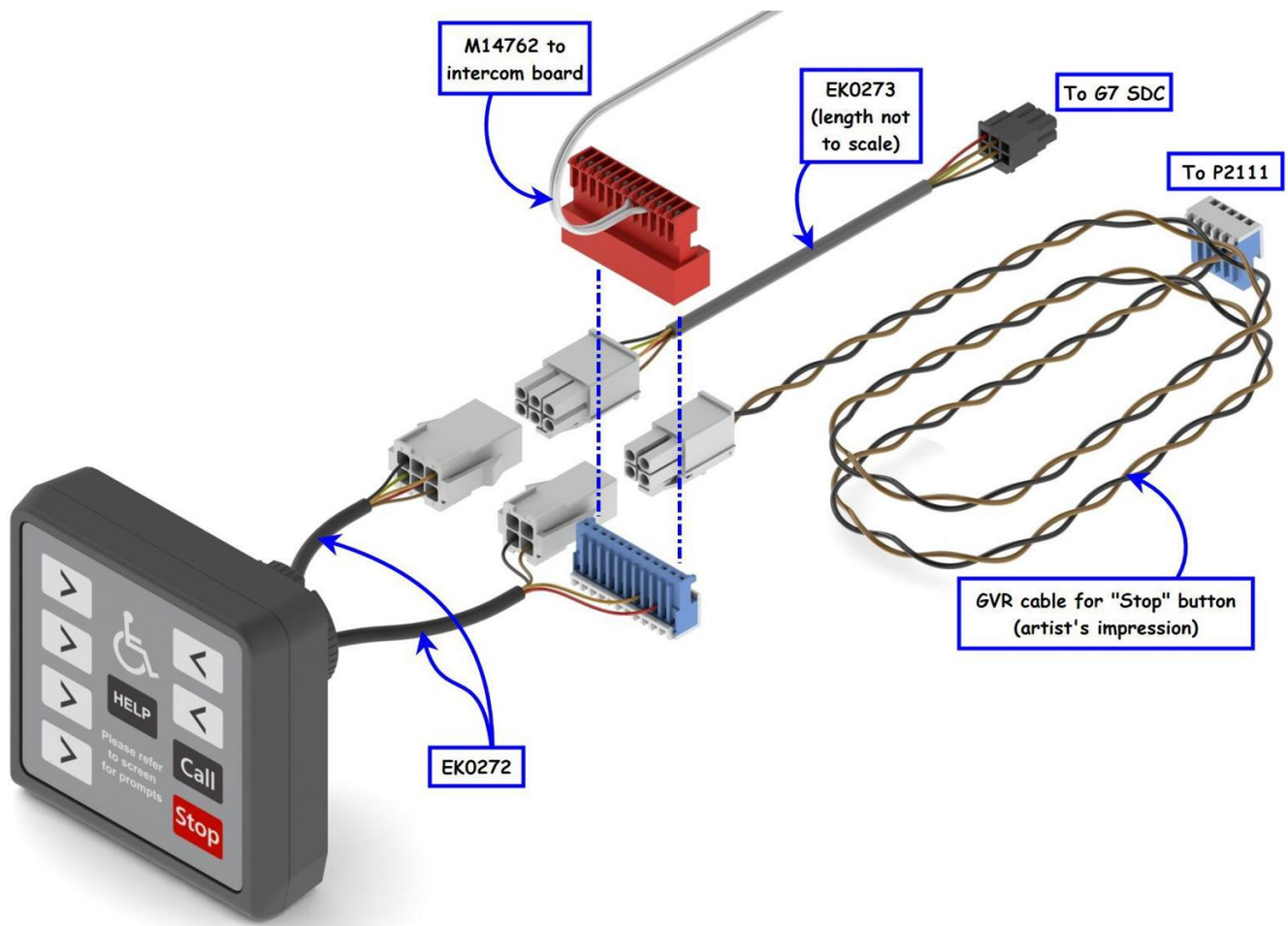

UPC connections.

Carefully make the following connections to the UPC:

1. Check that there is a connected **DC Power Cable** between the UPC's PWR socket and the UPC PWR socket on the SDC.

2. Check that there is a connected **USB A-B Cable** between the UPC's USB -B port and the UPC USB-A port on the SDC.

3. Check that there is a connected **Audio Cable** between the UPC's AUD socket and the UPC AUDIO socket on the SDC.

4. Check that there is a connected **USB A-B Cable** between the UPC's BARCODE USB socket and the BAR CODE port on the SDC.

15.2 ADA and Intercom Connections

The below diagram shows connections from the ADA module and also the Intercom to the dispenser
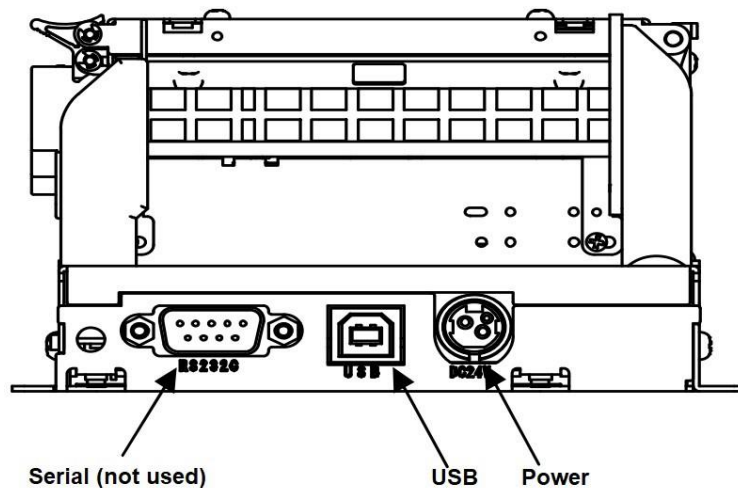

ADA connections:

1. Connect EK0272 from the ADA module to EK0273 cable which is connected to the G7 SDC

Intercom connections:

1. Connect EK0272 from the Stop Call button to M14762 to intercom board
2. Connect EK0272 from the Stop Call button to the GVR cable for "Stop" button

16.1 G7-100 Nippon printer connections.

The G7-100 printer requires two connections, USB (data) and power.


G7-100 printer connection panel.

The power cable (supplied) connects to the "PRINTER PWR" socket on the back of the G7-100 Secure Display Controller (SDC). The USB cable (standard type A male to type-B male, supplied) connects to the "PRINTER USB" socket on the back of the G7-100 SDC. The supplied cables are quite long (approx. 2m) as this length is often required in production.

16.2 Refiling Paper

16.2.1 Insert paper roll (G7-100)

Paper holder PH-8L

16.2.1.1   Open the paper roll as shown in the following figure and put the paper support shaft through the paper roll. Pay attention to the print surface and direction of the paper roll.
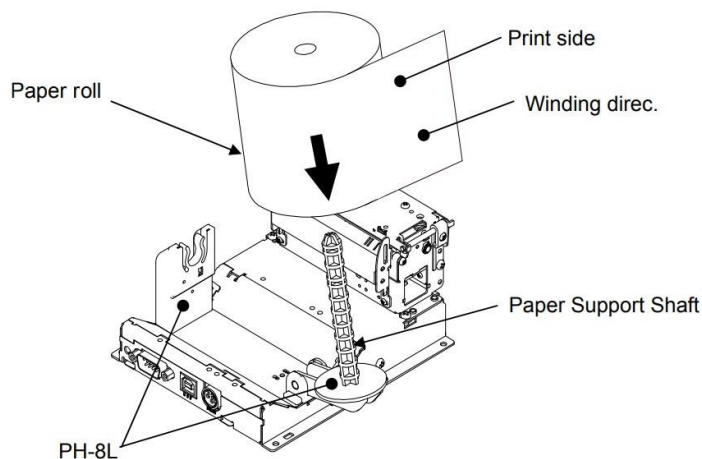
Setting paper roll in paper holder PH-8L.
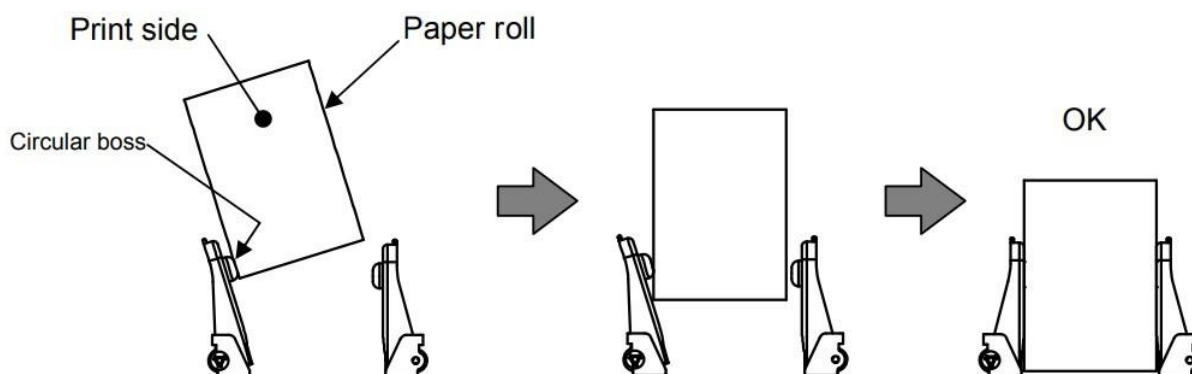
16.2.1.2   Return the paper support shaft to the original (closed) position.

Paper holder PH-10

1. Slightly tip the paper roll and lean this against the circular boss on one side of the paper holder. Pay attention to the print surface and direction of the paper roll.
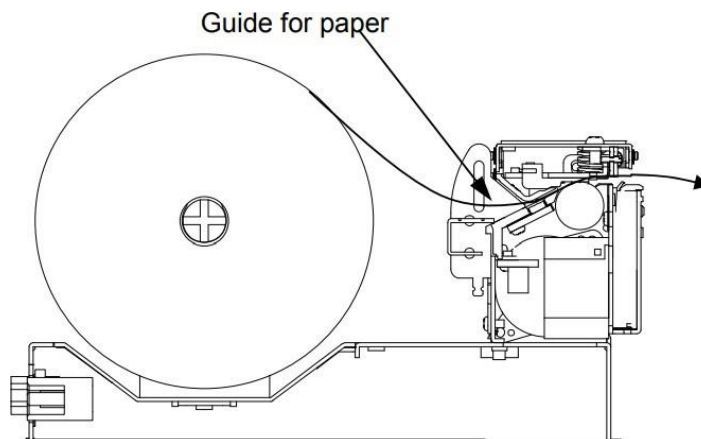

Setting paper roll in paper holder PH-10.

2. Fit and inset paper core to circular boss.

16.2.2 Setting paper by auto-loading function

16.2.2.1   Insert the paper roll following the above instructions.

16.2.2.2   Insert paper edge into paper entrance. Ensure paper is inserted straight.

Insert paper into paper guide (G7-100).

16.2.2.3   Paper sensor will detect and automatically pull the inserted paper.

16.2.2.4   On the G7-100 a test print will be performed, ready for normal operation.

Note: Remove the old core before inserting the new paper roll.

**Note:** Set paper correctly with no slack (this may cause a paper jam).

Note: The print side must be the external side on the roll, and it must be upward when inserted into the paper entrance.

Note: If the paper is torn or tapered, paper loading may not operate correctly.

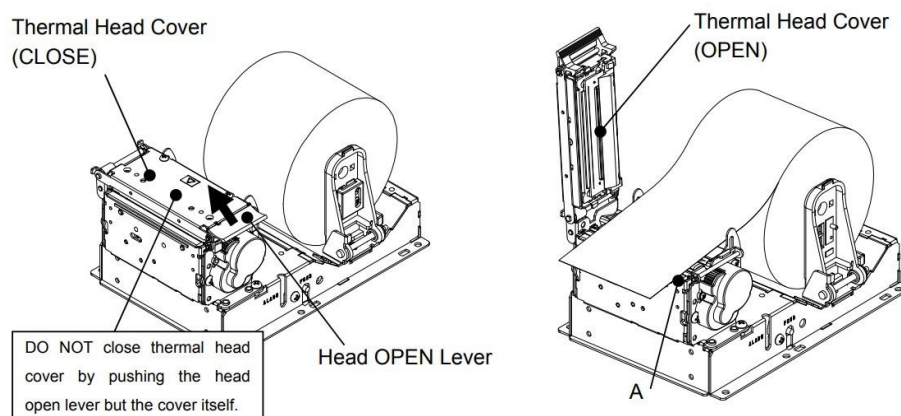**Note:** On the G7-100, the thermal head may be very hot right after printing, beware not to touch it.

Note: The leading edge of the paper must be straight and at a right angle, if not, cut with scissors:

The edge of paper
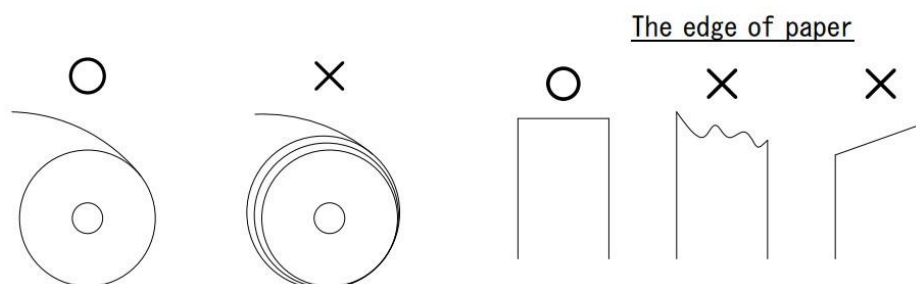
Paper precautions.

16.2.3 Setting paper by opening thermal head cover (G7-100)

16.2.3.1 Insert the paper roll following the above instructions.

16.2.3.2 Open the thermal head cover by lifting the head open lever.

16.2.3.3 Pull the paper until it passes through the printing mechanism. Paper must stay within the paper guides.

Thermal Head Cover (CLOSE)

DO NOT close thermal head cover by pushing the head open lever but the cover itself.

Head OPEN Lever

Thermal Head Cover (OPEN)

A

Open thermal head cover and set paper.

16.2.3.4 Completely close the thermal head cover until it clicks and locks.

Do NOT press the head open lever but the plate when closing the thermal head cover.
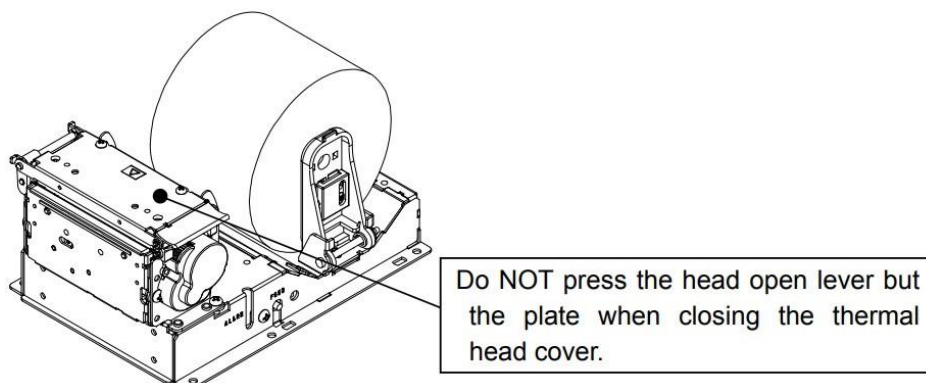
Close thermal head cover.

Note: Remove the old core before inserting new paper roll.

Note: Set paper correctly with no slack (this may cause a paper jam).

Note: Make sure not to apply excessive force on the thermal head cover when opening or closing it.

Note: The thermal head may be very hot right after printing, beware not to touch it.
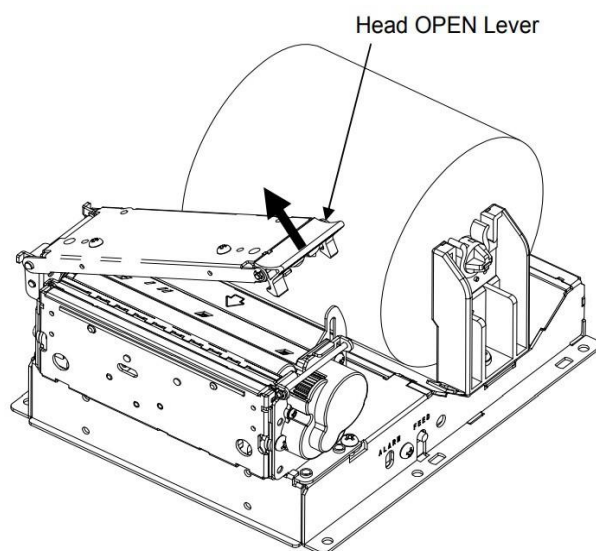
Note: If the inserted paper is not straight or flat, open the head cover and straighten the paper. Do not use force and beware not to cut your hands or fingers on the cutting blade.

16.3 Removing jammed paper

16.3.1 G7-100 Nippon printer

To remove jammed paper:

16.3.1.1   Open the thermal head cover by lifting the head open lever.

Removing paper jam.

16.3.1.2   Remove all paper from paper path.

16.3.1.3   Pull any damaged paper beyond the thermal head cover.

16.3.1.4   Completely close the thermal head cover until it clicks. If your printer is powered on, excess damaged paper will be cut and removed.

Note: The thermal head may be very hot right after printing, beware not to touch it.
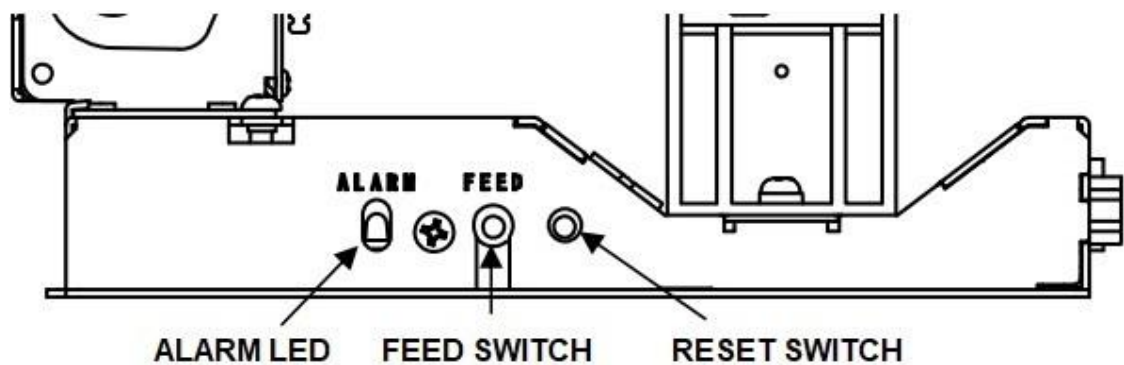
Beware not to touch cutter blade because it may fall out from the unit.

Make sure not to apply force or an excessive angle when opening the thermal head cover.

Beware of your hands and fingers when closing the thermal head cover.

16.4 G7-100 Nippon printer operation panel

The operation panel on the side of the printer has the following:

Printer operation panel.

16.4.1 Alarm LED

The alarm LED (red) will blink in the following patterns for error conditions:

Display pattern	Printer status	Priority (9:High~1:Low)
1 / 0 (Normal — solid)	Normal Print(receive) enable	1
1 / 0 (0.2sec / 0.2sec blink)	Paper near end	2
1 / 0 (single step)	Paper-out	3
	Thermal head cover opened	4
1 / 0 (2.2sec / 2.2sec)	Head temperature abnormal (approx. 70ºC or more) Or inappropriate head connection Or presenter ejection error	5
1 / 0 (0.2sec / 0.2sec / 1.0sec)	Auto cutter error	6
	Paper detection error(black mark or Bezel sensor or presenter)	7
	Presenter clamp condition (Paper-extraction sensor sensing paper)	8
1 / 0 (0.1sec / 0.1sec)	Firmware update in progress	9

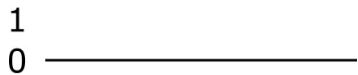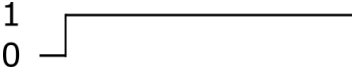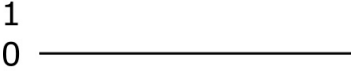**Alarm LED display patterns.**

16.4.2 Feed switch

Press the feed switch to feed paper in the forward direction.

16.4.3 Reset switch

This switch restarts the printer. This process will empty the buffer within the printer (note this is not the print queue, which is in the APC); this should not be performed while in the process of printing.

16.4.4 Red LEDs
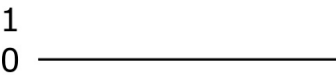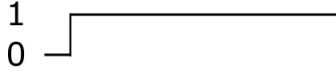
The red alarm LEDs will display in the following patterns:

Display Pattern	Printer Status	Priority (7:HIgh~1:Low)
Red Alarm OFF 1 0 ―――――――――	Normal Print (receive) enable)	1
Red Alarm ON 1 ┌――――――――― 0 ―┘	Paper-out	2
	Printer cover opened	3
	Head temperature abnormal (approx. 70°C/158°F or more) Or inappropriate head connection Or presenter ejection error	4
	Paper jammed	5
	Communication fault detected	7
Red Alarm OFF 1 0 ―――――――――	Firmware update in progress	6

Red Alarm LED display patterns.

16.4.5 Green LEDs

The green alarm LEDs will display in the following patterns:

Display Pattern	Printer Status	Priority (7:HIgh~1:Low)
Green Alarm BLINKING 1 ⎍⎍⎍⎍⎍ 0	Normal Print (receive) enable	1
Green Alarm OFF 1 0 —————————	Paper-out	2
	Printer cover opened	3
	Head temperature abnormal (approx. 70°C/158°F or more) Or inappropriate head connection Or presenter ejection error	4
	Paper jammed	5
	Communication fault detected	7
Green Alarm ON 1 ⌐———————— 0 ⌐	Firmware update in progress	6

Green Alarm LED display patterns.

16.5 Troubleshooting

16.5.1 Common printer errors

Problem	Possible fix
Paper jammed	• Open the printer and check for stuck paper (either in the back or where the paper exits) • Close printer and check if error clears • If error does not clear, technical support is required
Printer not feeding	• Remove/clean paper dust built up from printer mechanism • Ensure printer mechanism is closed properly • Ensure paper is correctly placed and loaded
Printer seems to function but receipts are blank	• Paper may be loaded upside down; ensure print side of paper is facing upwards • Paper may be incorrect type (e.g., not thermal)
OPT shuts down when sending a print command	• Power supply is insufficient amperage for the printer, upgrade OPT power supply
Head temperature abnormal	• May occur after continuous printing periods • Error should clear after a period of non-use • If error does not clear, technical support is required

Common printer troubleshooting table

16.5.2 G7-100 Nippon printer errors

Problem	Possible fix
Printer not cutting	• Start Diagnostic application and test printer capabilities • Check cutter is able to move freely (unpowered) • Ensure paper is fed correctly
Printer not sensing paper correctly	• Start Diagnostic application and test printer paper level (ensure printer is fully closed) • Ensure correct type of paper is being used
Printer faulty / missing line / printing blur	• Remove/clean paper dust built up from printer mechanism • Start Diagnostic application and test printer capabilities

G7-100 printer troubleshooting table

Tampers

When a G7-100 OPT is installed for the first time, the Unified PIN Pad and Card Reader (UPC) and Screen Display Controller (SDC) modules may be in a removal-tampered state. Before first use, these tampers must be reset.

Please refer to the following Invenco documents for instructions on how to reset removal tampers:

• DCV-00260 User Guide: G7-100 and G6-300 Service App, Chapter 12.

• DCV-00284 User Guide: ICS Portal, Chapter 23.

18.1 Built in Security

The G7-100 has built-in tamper detections, but you should also regularly check your G7-100 for signs of tampering or alteration.

If it looks different to normal, then there could be a hidden camera or PIN-disclosing bug - you might have a problem that threatens customer security.

18.2 Extra Security Checks

Use this section to carry out extra security checks, and if you're still not sure about your G7-100 then call Customer Support.

The following pages include photos and descriptions of what the G7-100 components should look like. If your G7-100 looks different in any way, DO NOT use it.

Follow the Escalation procedure if you have any doubts at all about the integrity of your OPT.

Each G7-100 component has a smooth finish with an uninterrupted surface. Any breaks or uneven surfaces should be inspected as a potential security concern.

19.1 SDC (Display screen)
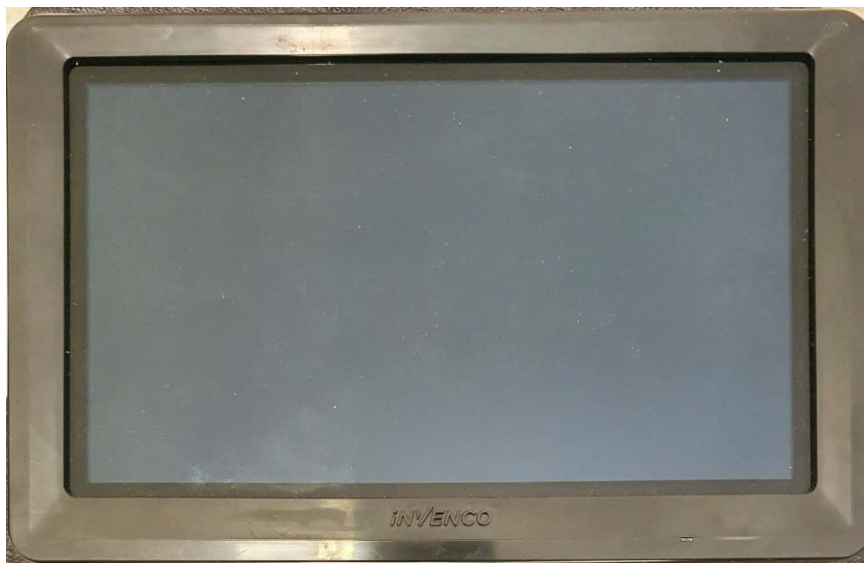
Example 15" SDC.

The G7-100 15 inch SDC has a black low gloss border with a recessed touch screen fitted snugly inside

it.

- Check for any gaps, cracks, bumps or holes.
- Check for any wires or overlays.
- Check for any other signs that it may have been altered or tampered with.

19.2 UPC (Keypad)

Example of keypad and privacy shield.

1. The G7-100 keypad has a matt black surround with matt key tops.

    • The key-tops are back-lit.

    • The numbers must be illuminated when the keypad is active.

        - If the numbers don't light up when the keypad is active, then check the keypad for signs of tampering or an overlay.

2. The matt black surround is a flush mount to the G7-100 front fascia.

    • If it appears not to be flush with the front fascia surface, check to see why.

3. The key-pad privacy shield is a smooth, uninterrupted surface, and should be inspected for uneven surfaces, cracks or holes that could be as a result of a PIN disclosing camera being placed on/into the UPC.

19.3 Card Reader Slot

Front of card slot.

What to check for:

  19.3.1   Are there any wires of any kind coming out of the Card Slot?

        19.3.1.1 There should be no visible wires at all on or around the Card Slot.

19.3.2 Is the OPT finish uninterrupted and consistent across the Card Slot?

        19.3.2.1 There should be no cracks, holes or bumps of any kind.

19.3.3 Does the card slot acceptor light:

        19.3.3.1 Flash green when it is ready and waiting to accept a card?

        19.3.3.2 Turn red when a card is inserted, and a transaction is processing?

        19.3.3.3 Turn blue only when the card can be safely removed?

19.4 SCC

SCC Contactless Payment.

What to check for:

      19.4.1   Are there any wires of any kind coming out of the SCC?

      19.4.2   The surface should be smooth and unbroken. There should be no visible wires anywhere on or around the puck

      19.4.3   Is the finish smooth and uninterrupted across the SCC?

      19.4.4   There should be no cracks, holes or bumps of any kind.

      19.4.5   Are the four lights orientated correctly above the contact pad?

      19.4.6   The first light should flash green when the SCC is ready to detect a card.

All lights will light up and stay a steady green when a payment is processing.

        19.4.6.1 The lights will go out when the SCC has finished the transaction.

        19.4.6.2 The lights will go red if a transaction declines for any reason.

Note: Remember, if your G7-100 does not look or act like it should, do not use it. Contact Invenco immediately for further assistance.

19.5 Escalation

If you think that your G7-100 has been tampered with:

19.5.1   Contact the vendor's security person or support desk immediately.

19.5.2   If neither of those contacts are available, contact Invenco's security officer at the Auckland address detailed at the end of this document.

19.5.3   Notify local law-enforcement immediately.

Basic maintenance

20.1 Cleaning

The G7 modules are intended for use outside in all environments, and a little basic maintenance will keep them looking good.

• Use a clean, soft cloth dampened with water for daily cleaning.

• If grime builds up, use a diluted mild detergent on a soft cloth.

• Take extra care when cleaning the display window:

  - Use only a diluted, mild, liquid soap or detergent and a soft, clean cloth.

  - Rinse the detergent off carefully, using minimal pressure. Dry the display with a clean, dry, lint-free or microfibre cloth.

CAUTION: **Do NOT** rub the display if it is dry. Accumulated dust may scratch the surface and degrade the bar code-reading function.

CAUTION: **Do NOT** use petroleum-based solvent cleaners. They may damage surfaces, making the unit much harder to clean, and shorten the life of the parts.

CAUTION: **Do NOT** use a high-pressure hose to clean the front area of the dispenser where the G7-100 modules are located.

20.2 Battery replacement

20.2.1 Battery type and precautions

The backup battery in the UPC is 3.6V and non-rechargeable.

The battery employs lithium thionyl chloride technology; its contents are toxic.

The backup battery in the SDC is an LTC AA and non-rechargeable.

WARNING:	THERE IS A RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCOR- RECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUC- TIONS.

The battery must not be recharged, short-circuited or disassembled; hazardous-waste precautions must be observed when disposing of it.

20.2.2 Before you begin

Batteries must be changed by a trained technician only. Make sure that you have a new battery ready to use.

During battery replacement **leave the module connected to the system it is integrated with**. This includes removal-tamper sensors; they can remain connected.

While changing the battery, you could trigger one or more removal tampers which will suspend normal operation of the module and temporarily prevent all financial transactions. If this happens, it can be reset onsite by calling Invenco support.

Note: Note: If you disconnect the module before removing the battery it will lose all power and trigger a destructive tamper. A destructive tamper can only be cleared by returning the module.

Both the SDC and the UPC have their own battery. The procedure to change the battery is the same, just locate the correct battery that you wish to change.

20.2.2 Procedure

20.2.2.1   Leave the device powered on and functioning.

20.2.2.2   Find the battery compartment at the rear of the module, within the plastic housing.

20.2.2.3   Undo the screws on the lid with a Philips #2 screwdriver, then remove the compartment lid.

20.2.2.4   Carefully unstick the velcro strip that secures the battery into its holder.

20.2.2.5   Disconnect the battery and remove it.

20.2.2.6   Fit a replacement battery.

The battery connector is keyed; it cannot be plugged in with incorrect polarity.

20.2.2.7   Plug in the connector for the new battery.

20.2.2.8   Re-stick the velcro down to secure the new battery into its compartment.

20.2.2.9   Re-secure the compartment lid.

20.2.2.10   Check that no connections to the G7 SDC have been displaced, fixing if required.

20.2.2.11   If a removal tamper has occurred, follow the instructions under Section 19 to clear the removal tampered state and restore the module and overall system to normal operation.

20.2.2.12   Ensure that details of the battery change are recorded correctly.