CONTENTS

1 INTRODUCTION

This document provides information and resources that explain how to implement and integrate products from Innovative Technology Ltd. into a cash handling application.

This document is intended for those who will be implementing ITL products into a cash handling system.

This manual is intended for use alongside the product manuals that are free for downloaded on www.innovative-technology.co.uk. This manual is intended as a guide and reference to assist with implementing ITL products into a machine.

Please contact your local support for more information.

WARNING

- If you do not understand any part of this document please contact your local support office for assistance; contact details are over the page. In this way we may continue to improve our products.
- Innovative Technology Ltd has a policy of continual product improvement. As a result the products supplied may vary from the specification described here.

1.1.1.1

MAIN HEADQUARTERS

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!!! TO BE CHANGED to new version !!!

2 GENERAL DESCRIPTION

ITL products can be used for a wide range of different machines and different applications such as gaming, amusement, vending, kiosk, retail or ticketing. These machines might have various different requirements to a cash handling device.

In order being capable and compatible to these requirements ITL products support many standard communication protocols like SSP, ccTalk, MDB, etc. Furthermore ITL products provide various hardware interfaces like open collector, RS232 and USB for an easy integration.

This guide is an overview of the possibilities how to integrate ITL products into a cash handling application.

3.1 SSP SETUP OPTIONS

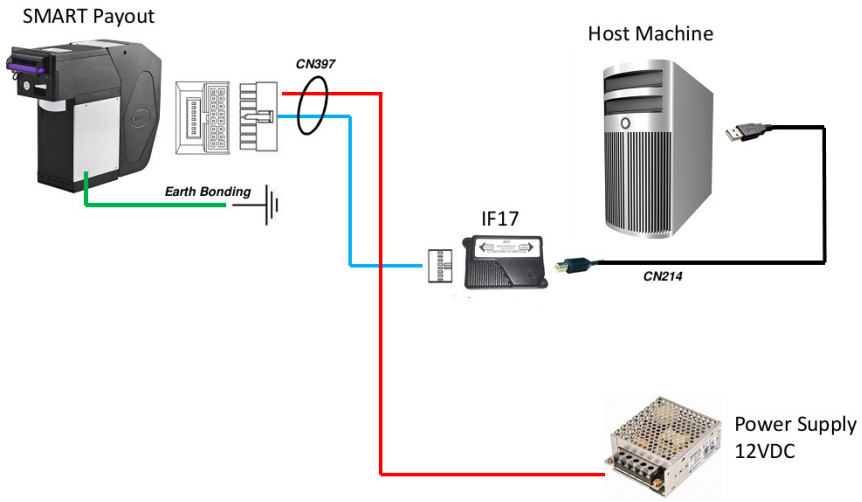
Smiley Secure Protocol (SSP) is a serial communication protocol designed by Innovative Technology LTD to address problems historically experienced by cash handling systems in gaming machines. Problems such as acceptor swapping, reprogramming acceptors and line tapping.

Since its first release in May 1998 the SSP protocol has developed and expanded to include the functionality offered by the latest generation of cash handling devices. The interface uses a master slave communication model, the host machine is the master and the devices (Note Validator, SMART Hopper, SMART Payout) are the slaves. The devices will respond to commands sent from the host machine using a bi-directional serial transmission. Please refer to product documentation and GA138 (eSSP Specification) for full explanations on SSP.

The following section describes the options how to connect ITL payin and payout devices into a SSP host machine using available cables and interfaces.

3.1.1 SSP SETUP OPTION USB 01

This setup option shows how to connect a SMART Payout into a host machine via a USB COM port by using available ITL cables and interfaces.



Drawing 1 – SSP SETUP OPTION USB 01

Part Name	Description	Quantity
SMART Payout	Multi Denomination Note Payout	1
IF17	USB Interface Converter	1
CN397	SMART Payout to Host Cable Assembly	1
CN214	USB A to B Cable Assembly	1

Table 1 – Content Table ITL products SSP SETUP OPTION USB 01

Power Requirements

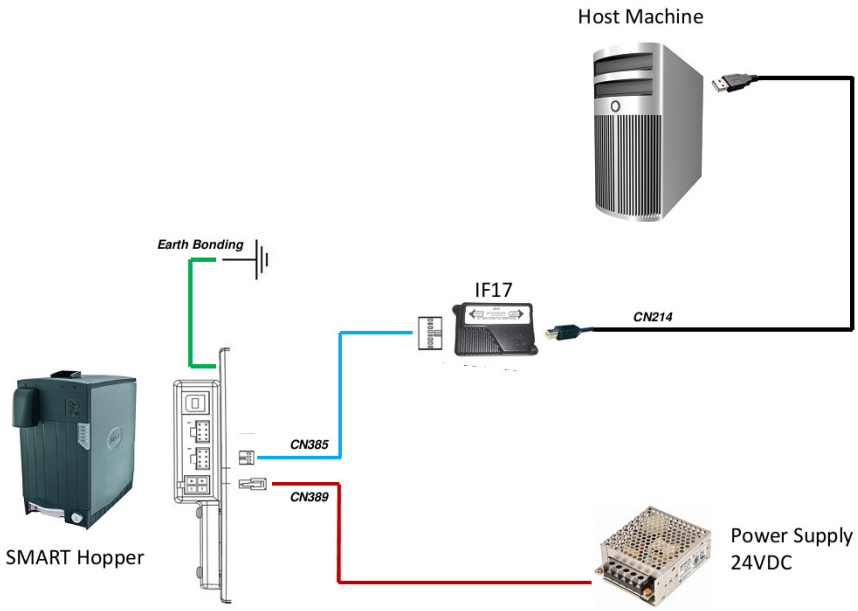
This setup option requires a stable 12VDC / 3A power supply for only the SMART Payout according to the product specification. Please refer to the SMART Payout Manual Set GA860 for full details of SMART Payout's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

Cautions

It is very important that the cashbox chassis of the SMART Payout is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Payout should be made to any of the 8 holes in the side of the cashbox and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the cashbox and the Earth pin on the mains plug should be less than 0.7 ohms.

3.1.2 SSP SETUP OPTION USB 02

This setup option shows how to connect a SMART Hopper into a host machine via a USB COM Port by using available ITL cables and interfaces.



Drawing 2 – SSP SETUP OPTION USB 02

Part Name	Description	Quantity
SMART Hopper	Multi Denomination Coin Payout	1
IF17	USB Interface Converter	1
CN385	SMART Hopper User Interface Cable Assembly	1
CN389	Hopper Interface Power Cable	1
CN214	USB A to B Cable Assembly	1

Table 2 – Content Table ITL products SSP SETUP OPTION USB 02

Power Requirements

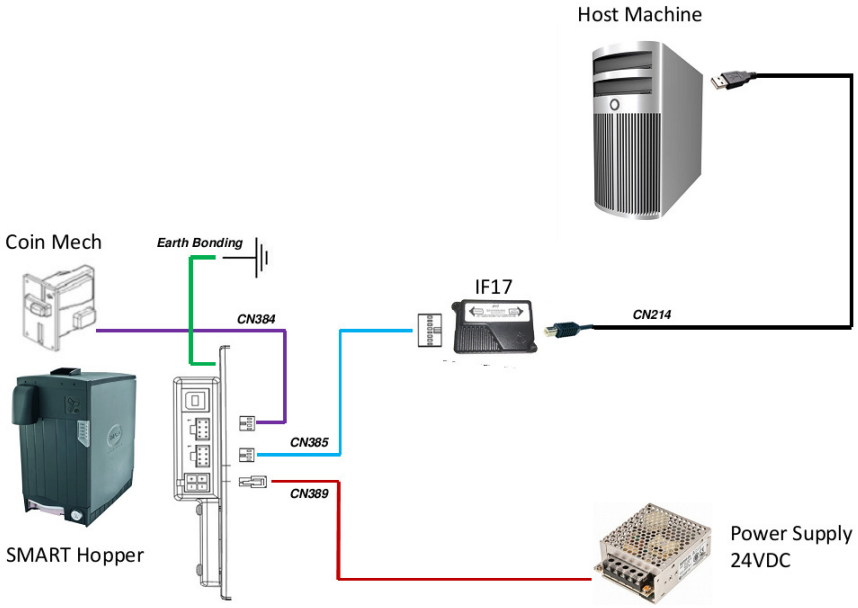
This setup option requires a stable 24VDC / 6,5A power supply for only the SMART Hopper according to the product specification. Please refer to the SMART Hopper Manual Set GAxxx for full details of SMART Hopper's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

Cautions

It is very important that the base plate of the SMART Hopper is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Hopper should be made to the intended connection on the base plate right next to the USB connector and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the base plate and the Earth pin on the mains plug should be less than 0.7 ohms.

3.1.3 SSP SETUP OPTION USB 03

This setup option shows how to connect a SMART Hopper with an attached coin mech into a host machine via a USB COM Port by using available ITL cables and interfaces.



Drawing 3 – SSP SETUP OPTION USB 03

Part Name	Description	Quantity
SMART Hopper	Multi Denomination Coin Payout	1
IF17	USB Interface Converter	1
CN385	SMART Hopper User Interface Cable Assembly	1
CN384	Hopper to Coin Mech Cable Assembly	1
CN389	Hopper Interface Power Cable	1
CN214	USB A to B Cable Assembly	1

Table 3 – Content Table ITL products SSP SETUP OPTION USB 03

Power Requirements

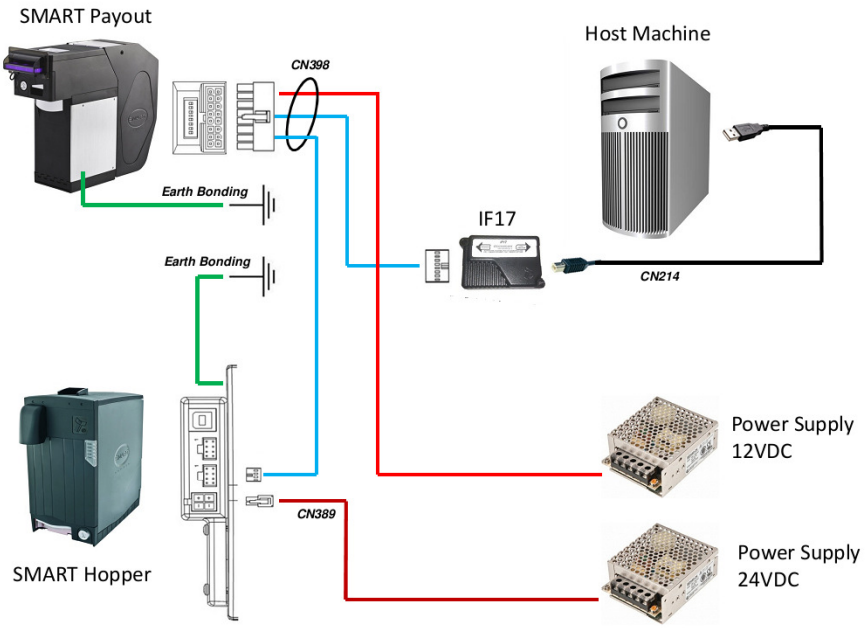
This setup option requires a stable 24VDC / 6,5A power supply for only the SMART Hopper according to the product specification. Please refer to the SMART Hopper Manual Set GAxxx for full details of SMART Hopper's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

Cautions

It is very important that the base plate of the SMART Hopper is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Hopper should be made to the intended connection on the base plate right next to the USB connector and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the base plate and the Earth pin on the mains plug should be less than 0.7 ohms.

3.1.4 SSP SETUP OPTION USB 04

This setup option shows how to connect a SMART Payout and a SMART Hopper into a host machine via a USB COM port by using available ITL cables and interfaces.



Drawing 4 – SSP SETUP OPTION USB 04

Part Name	Description	Quantity
SMART Payout	Multi Denomination Note Payout	1
SMART Hopper	Multi Denomination Coin Payout	1
IF17	USB Interface Converter	1
CN398	Dual eSSP Interface Cable Assembly	1
CN389	Hopper Interface Power Cable	1
CN214	USB A to B Cable Assembly	1

Table 4 – Content Table ITL products SSP SETUP OPTION USB 04

Power Requirements

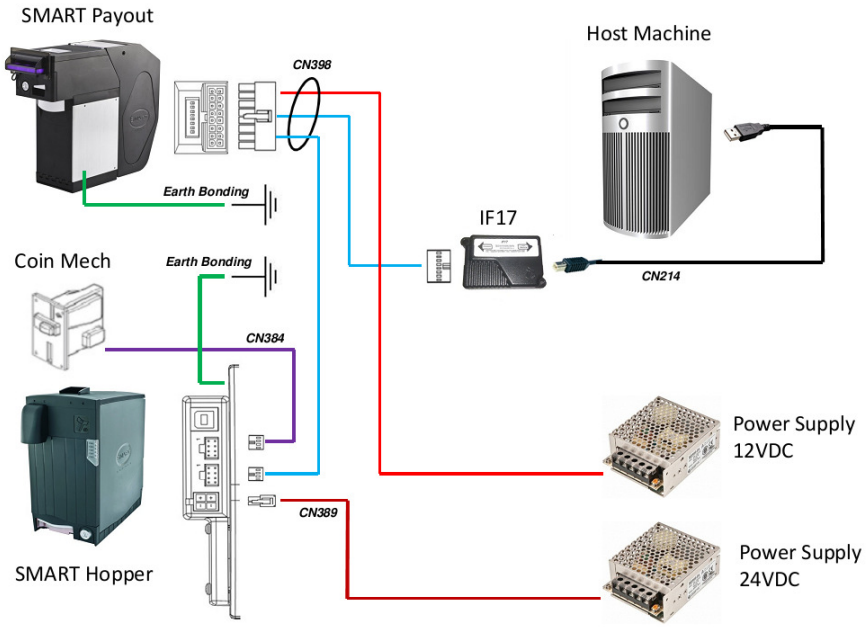
This setup option requires a stable 12VDC / 5A power supply for only the SMART Payout according to the product specification. Please refer to the SMART Payout Manual Set GA860 for full details of SMART Payout's power requirements.
This setup option requires a stable 24VDC / 6,5A power supply for only the SMART Hopper according to the product specification. Please refer to the SMART Hopper Manual Set GAxxx for full details of SMART Hopper's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

Cautions

It is very important that the cashbox chassis of the SMART Payout is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Payout should be made to any of the 8 holes in the side of the cashbox and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the cashbox and the Earth pin on the mains plug should be less than 0.7 ohms.
It is very important that the base plate of the SMART Hopper is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Hopper should be made to the intended connection on the base plate right next to the USB connector and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the base plate and the Earth pin on the mains plug should be less than 0.7 ohms.

3.1.5 SSP SETUP OPTION USB 05

This setup option shows how to connect a SMART Payout and a SMART Hopper with an attached coin mech into a host machine via a USB COM port by using available ITL cables and interfaces.



Drawing 5 – SSP SETUP OPTION USB 05

Part Name	Description	Quantity
SMART Payout	Multi Denomination Note Payout	1
SMART Hopper	Multi Denomination Coin Payout	1
IF17	USB Interface Converter	1
CN398	Dual eSSP Interface Cable Assembly	1
CN384	Hopper to Coin Mech Cable Assembly	1
CN389	Hopper Interface Power Cable	1
CN214	USB A to B Cable Assembly	1

Table 5 – Content Table ITL products SSP SETUP OPTION USB 05

Power Requirements

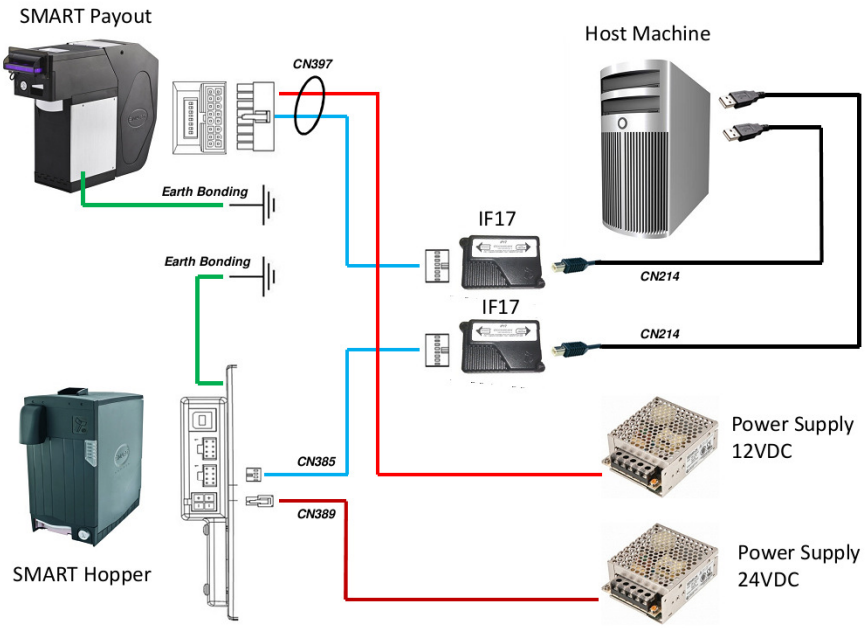
This setup option requires a stable 12VDC / 5A power supply for only the SMART Payout according to the product specification. Please refer to the SMART Payout Manual Set GA860 for full details of SMART Payout's power requirements.
This setup option requires a stable 24VDC / 6,5A power supply for only the SMART Hopper according to the product specification. Please refer to the SMART Hopper Manual Set GAxxx for full details of SMART Hopper's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

Cautions

It is very important that the cashbox chassis of the SMART Payout is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Payout should be made to any of the 8 holes in the side of the cashbox and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the cashbox and the Earth pin on the mains plug should be less than 0.7 ohms.
It is very important that the base plate of the SMART Hopper is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Hopper should be made to the intended connection on the base plate right next to the USB connector and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the base plate and the Earth pin on the mains plug should be less than 0.7 ohms.

3.1.6 SSP SETUP OPTION USB 06

This setup option shows how to connect a SMART Payout and a SMART Hopper into a host machine via two USB COM ports by using available ITL cables and interfaces.



Drawing 6 – SSP SETUP OPTION USB 06

Part Name	Description	Quantity
SMART Payout	Multi Denomination Note Payout	1
SMART Hopper	Multi Denomination Coin Payout	1
IF17	USB Interface Converter	2
CN397	SMART Payout to Host Cable Assembly	1
CN385	SMART Hopper User Interface Cable Assembly	1
CN389	Hopper Interface Power Cable	1
CN214	USB A to B Cable Assembly	2

Table 6 – Content Table ITL products SSP SETUP OPTION USB 06

Power Requirements

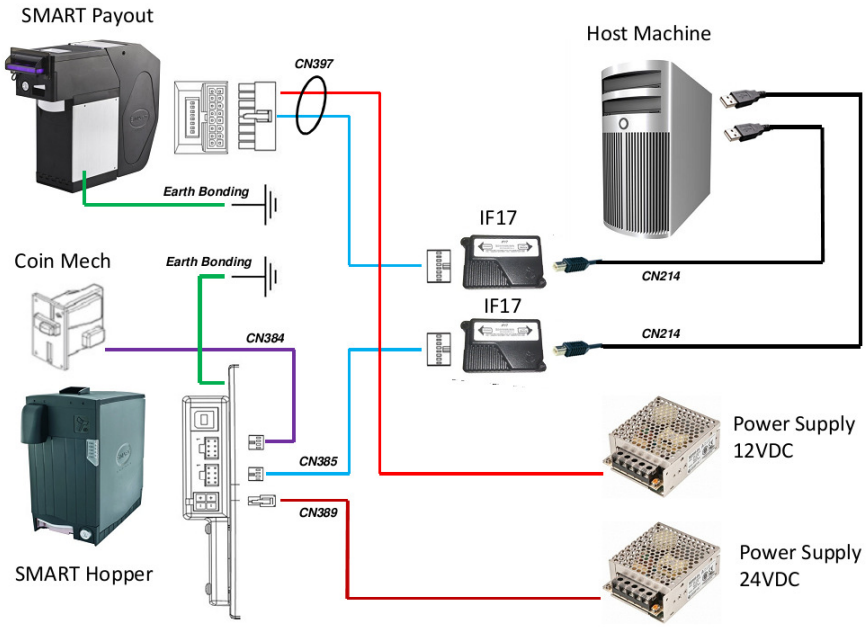
This setup option requires a stable 12VDC / 5A power supply for only the SMART Payout according to the product specification. Please refer to the SMART Payout Manual Set GA860 for full details of SMART Payout's power requirements.
This setup option requires a stable 24VDC / 6,5A power supply for only the SMART Hopper according to the product specification. Please refer to the SMART Hopper Manual Set GAxxx for full details of SMART Hopper's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

Cautions

It is very important that the cashbox chassis of the SMART Payout is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Payout should be made to any of the 8 holes in the side of the cashbox and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the cashbox and the Earth pin on the mains plug should be less than 0.7 ohms.
It is very important that the base plate of the SMART Hopper is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Hopper should be made to the intended connection on the base plate right next to the USB connector and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the base plate and the Earth pin on the mains plug should be less than 0.7 ohms.

3.1.7 SSP SETUP OPTION USB 07

This setup option shows how to connect a SMART Payout and a SMART Hopper with an attached coin mech into a host machine via two USB COM ports by using available ITL cables and interfaces.



Drawing 7 – SSP SETUP OPTION USB 07

Part Name	Description	Quantity
SMART Payout	Multi Denomination Note Payout	1
SMART Hopper	Multi Denomination Coin Payout	1
IF17	USB Interface Converter	2
CN397	SMART Payout to Host Cable Assembly	1
CN385	SMART Hopper User Interface Cable Assembly	1
CN384	Hopper to Coin Mech Cable Assembly	1
CN389	Hopper Interface Power Cable	1
CN214	USB A to B Cable Assembly	2

Table 7 – Content Table ITL products SSP SETUP OPTION USB 07

Power Requirements

This setup option requires a stable 12VDC / 5A power supply for only the SMART Payout according to the product specification. Please refer to the SMART Payout Manual Set GA860 for full details of SMART Payout's power requirements.
This setup option requires a stable 24VDC / 6,5A power supply for only the SMART Hopper according to the product specification. Please refer to the SMART Hopper Manual Set GAxxx for full details of SMART Hopper's power requirements.
Please check the power requirements of your host machine and other peripherals to dimension a proper power environment for your system setup.

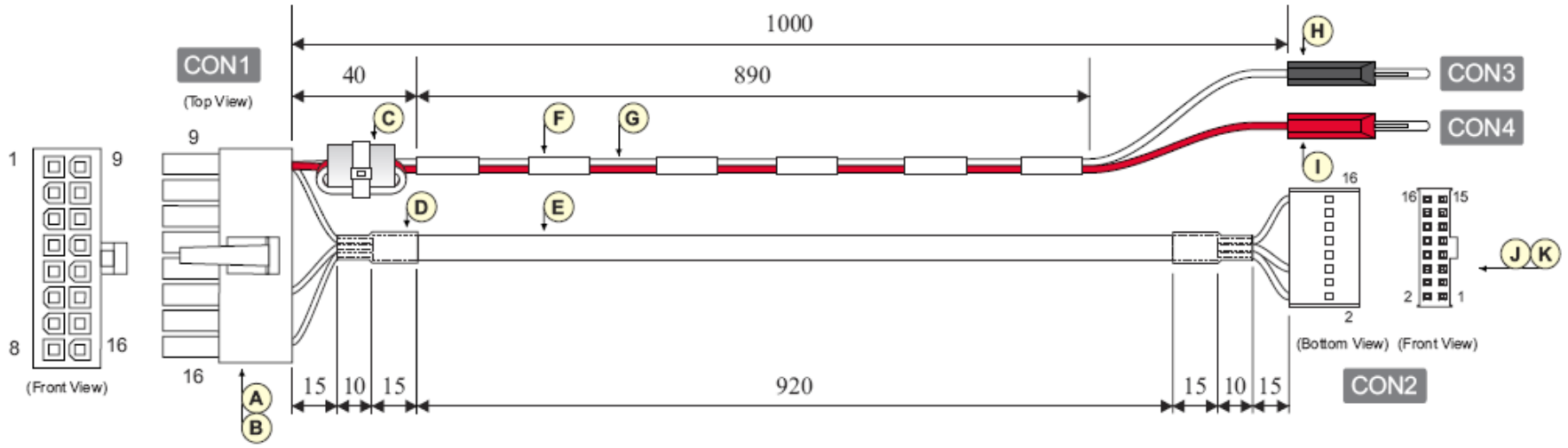
Cautions

It is very important that the cashbox chassis of the SMART Payout is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Payout should be made to any of the 8 holes in the side of the cashbox and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the cashbox and the Earth pin on the mains plug should be less than 0.7 ohms.
It is very important that the base plate of the SMART Hopper is bonded to earth, as lack of proper bonding can cause communication issues and failures. The earth bond on a SMART Hopper should be made to the intended connection on the base plate right next to the USB connector and be bonded to mains earth, typically through the Power Supply Unit. The resistance between the base plate and the Earth pin on the mains plug should be less than 0.7 ohms.
It is possible for a static charge to appear during normal operation. The SMART Hopper should be discharged by bonding the SMART Hopper base plate to earth.

4 APPENDIX

A Cable Drawings and Schematics

Part Number	Description	Details
CN397	SMART Payout eSSP interface cable	Provides 12V supply and eSSP communications to SMART Payout



COMMENTS:

Please consult the tables on the next page for pin out and connector information.

WARNING!

Use correct wire gauges and length

If you choose to make your own cables, you must make sure that the wire gauges are suitable for use with the SMART Payout unit. The minimum wire gauge for the CN397 power cables is **24 AWG**, with **22 AWG** being recommended.
The cable length of 1 meter is approved, however a cable length of 2 meters should work stable in a proper environment.

CN397 Parts List

Item	Qty	Description	Supplier	Alternative
A	1	2 x 8 way 4.2mm pitch latched housing, 6A derated	Molex 3901-2165	Farnell 1632113
B	4	Tin plated female crimp	Molex 39-00-0038	Farnell 1462545
C	1	Type 'T' toroidal core, 16.5 x 8.2 x 16mm	Paddiford 10-13-165082160-0	RS 261-8928
D	2	Black heat shrink sleeving	---	---
E	1	3 core 24 AWG stranded cable, AWM type 2464	---	---
F	10	Black heat shrink sleeving	---	---
G	2	22 AWG stranded wire, PVC insulated	---	---
H	1	Stackable black 4mm banana plug	Deltron 553-0100-01	Farnell 1101106
I	1	Stackable red 4mm banana plug	Deltron 553-0500-01	Farnell 1101199
J	1	2 x 8 way 2.54mm pitch housing with key	Molex 90142-0016	Farnell 3291613
K	4	Tin plated crimp	Molex 90119-2110	Farnell 9733272

CN397 Connectivity

CON1	CON2	CON3	CON4	Gauge	Colour	Comments
Pin						
16	1	---	---	24 AWG	Orange	SSP_Txd
14	5	---	---	24 AWG	Brown	SSP_Rxd
9	---	---	1	22 AWG	Red	V IN
1	16	1	---	24/22 AWG	Black	GND

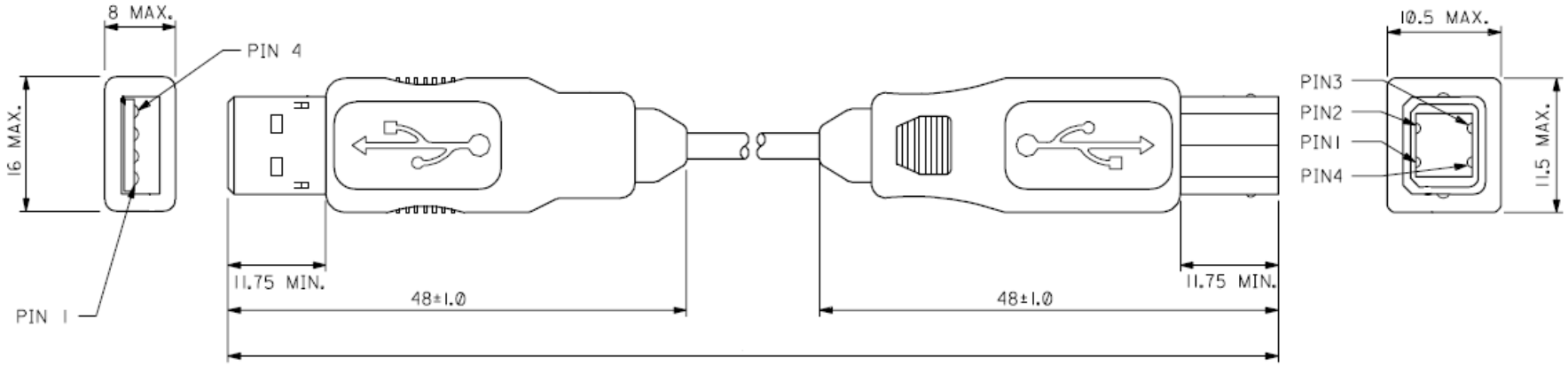
Notes:
CON1 Pin 1 has two wires crimped together. CON2 Pin 15 has a crimp fitted but this is not connected.

CN398
To be created

CN385
To be created

CN389
To be created

ITL Part Number	Description	Details
CN214	USB Cable	USB 2.0 Compliant Type A to Type B cable



COMMENTS:

Any commercially available USB 2.0 compliant Type A to Type B cable is suitable – these are available from many different sources. The cable should be electrically shielded and less than 5 metres long.

Version History

Initial Draft