

**INNOVATIVE TECHNOLOGY LTD**

**Protocol Manual**

**SSP**

NV9USB, NV10USB, NV11, SMART HOPPER,  
NV200, SMART PAYOUT, BV20, BV50,  
BV100, SMART SYSTEM, SMART TICKET,  
COUPON PRINTER, NV150, FLATBED  
PRINTER, NV12

version GA138\_2\_2\_222A

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## Introduction

This manual describes the operation of the Smiley ® Secure Protocol **SSP**.

ITL recommend that you study this manual as there are many new features permitting new uses and more secure applications.

If you do not understand any part of this manual please contact the ITL for assistance. In this way we may continue to improve our product.

Alternatively visit our web site at [www.innovative-technology.co.uk](http://www.innovative-technology.co.uk)

Enhancements of SSP can be requested by contacting:

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## General Description

Smiley ® Secure Protocol (SSP) is a secure interface specifically designed by ITL ® to address the problems experienced by cash handling systems in gaming machines. Problems such as acceptor swapping, reprogramming acceptors and line tapping are all addressed.

The interface uses a master-slave model, the host machine is the master and the peripherals (note acceptor, coin acceptor or coin hopper) are the slaves.

Data transfer is over a multi-drop bus using clock asynchronous serial transmission with simple open collector drivers. The integrity of data transfers is ensured through the use of 16 bit CRC checksums on all packets.

Each SSP device of a particular type has a unique serial number; this number is used to validate each device in the direction of credit transfer before transactions can take place. It is recommended that the encryption system be used to prevent fraud through bus monitoring and tapping. This is compulsory for all payout devices.

Commands are currently provided for coin acceptors, note acceptors and coin hoppers. All current features of these devices are supported.

### FEATURES:

- Serial control of Note / Coin Validators and Hoppers
- 4 wire (Tx, Rx, +V, Gnd) system
- Open collector driver, similar to RS232
- High Speed 9600 Baud Rate
- 16 bit CRC error checking
- Data Transfer Mode
- Encryption key negotiation
- 128 Bit AES Encrypted Mode

### BENEFITS:

- Proven in the field
- Simple and low cost interfacing of transaction peripherals.
- High security control of payout peripherals.
- Defence against surrogate validator fraud.
- Straightforward integration into host machines.
- Remote programming of transaction peripherals
- Open standard for universal use.

To help in the software implementation of the SSP, ITL can provide, C/C++ Code, C#.Net Code, DLL controls available on request. Please contact: [support@innovative-technology.co.uk](mailto:support@innovative-technology.co.uk)

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## Hardware layer

Communication is by character transmission based on standard 8-bit asynchronous data transfer.

Only four wires are required TxD, RxD, +V and ground. The transmit line of the host is open collector, the receive line of each peripheral has a 10Kohm pull-up to 5 volts. The transmit output of each slave is open collector, the receive input of the host has a single 3k3 ohm pull-up to 5 volts.

The data format is as follows:

Encoding	<b>NRZ</b>
Baud Rate	<b>9600</b>
Duplex	<b>Full</b>
Start bits	<b>1</b>
Data Bits	<b>8</b>
Parity	<b>none</b>
Stop bits	<b>2</b>

**Caution: Power to peripheral devices would normally be via the serial bus. However devices that require a high current supply in excess of 1.5 Amps, e.g. hoppers, would be expected to be supplied via a separate connector.**



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## Transport Layer

Data and commands are transported between the host and the slave(s) using a packet format as shown below:

STX	SEQ/SLAVE ID	LENGTH	DATA	CRCL	CRCH
-----	--------------	--------	------	------	------

STX	Single byte indicating the start of a message - 0x7F hex
SEQ/ Slave ID	Bit 7 is the sequence flag of the packet, bits 6-0 represent the address of the slave the packet is intended for, the highest allowable slave ID is 0x7D
LENGTH	The length of the data included in the packet - this does not include STX, the CRC or the slave ID
DATA	Commands and data to be transferred
CRCL, CRCH	Low and high byte of a forward CRC-16 algorithm using the Polynomial $(X^{16} + X^{15} + X^2 + 1)$ calculated on all bytes, except STX. It is initialised using the seed 0xFFFF. The CRC is calculated before byte stuffing.

### PACKET SEQUENCING

Byte stuffing is used to encode any STX bytes that are included in the data to be transmitted. If 0x7F (STX) appears in the data to be transmitted then it should be replaced by 0x7F, 0x7F.

Byte stuffing is done after the CRC is calculated, the CRC itself can be byte stuffed. The maximum length of data is 0xFF bytes.

The sequence flag is used to allow the slave to determine whether a packet is a re-transmission due to its last reply being lost. Each time the master sends a new packet to a slave it alternates the sequence flag. If a slave receives a packet with the same sequence flag as the last one, it does not execute the command but simply repeats its last reply. In a reply packet the address and sequence flag match the command packet.

This ensures that no other slaves interpret the reply as a command and informs the master that the correct slave replied. After the master has sent a command to one of the slaves, it will wait for 1 second for a reply. After that, it will assume the slave did not receive the command intact so it will re-transmit it with the same sequence flag. The host should also record the fact that a gap in transmission has occurred and prepare to poll the slave for its serial number identity following the current message. In this way, the replacement of the host's validator by a fraudulent unit can be detected.

The frequency of polling should be selected to minimise the possibility of swapping a validator between polls. If the slave has not received the original transmission, it will see the re-transmission as a new command so it will execute it and reply. If the slave had seen the original command but its reply had been corrupted then the slave will ignore the command but repeat its reply. After twenty retries, the master will assume that the slave has crashed. A slave has no time-out or retry limit. If it receives a lone sync byte part way through receiving a packet it will discard the packet received so far and treat the next byte as an address byte.

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## Encryption Layer

### PACKET FORMAT

Encryption is mandatory for all payout devices and optional for pay in devices. Encrypted data and commands are transported between the host and the slave(s) using the transport mechanism described above, the encrypted information is stored in the data field in the format shown below:

STX	SEQ/SLAVE ID	LENGTH	DATA	CRCL	CRCH
-----	--------------	--------	------	------	------

DATA

STEX	Encrypted Data
------	----------------

Encrypted Data

eLENGTH	eCOUNT	eDATA	ePACKING	eCRCL	eCRCH
---------	--------	-------	----------	-------	-------

STEX	Single byte indicating the start of an encrypted data block - 0x7E
eLENGTH	The length of the data included in the packet - this does not include STEX, COUNT, the packing or the CRC
eCOUNT	A four byte unsigned integer. This is a sequence count of encrypted packets, it is incremented each time a packet is encrypted and sent, and each time an encrypted packet is received and decrypted.
eDATA	Commands or data to be transferred
ePACKING	Random data to make the length of the length + count + data + packing + CRCL + CRCH to be a multiple of 16 bytes
eCRCL/eCRCH	Low and high byte of a forward CRC-16 algorithm using the polynomial $(X^{16} + X^{15} + X^2 + 1)$ calculated on all bytes except STEX. It is initialised using the seed 0xFFFF

After power up and reset the slave will stay disabled and will respond to all commands with the generic response KEY\_NOT\_SET (0xFA), without executing the command, until the key has been negotiated. There are two classes of command and response, general commands and commands involved in credit transfer.

General commands may be sent with or without using the encryption layer. The slave will reply using the same method, unless the response contains credit information, in this case the reply will always be encrypted. Credit transfer commands, a hopper payout for example, will only be accepted by the slave if received encrypted. Commands that must be encrypted on an encryption-enabled product are indicated on the command descriptions for each command. The STEX byte is used to determine the packet type. Ideally all communications will be encrypted.

After the data has been decrypted the CRC algorithm is performed on all bytes including the CRC. The result of this calculation will be zero if the data has been decrypted with the correct key. If the result of this calculation is non-zero then the peripheral should assume that the host did not encrypt the data (transmission errors are detected by the transport layer). The slave should go out of service until it is reset.

The packets are sequenced using the sequence count; this is reset to 0 after a power cycle and each time the encryption keys are successfully negotiated. The count is incremented by the host and slave each time they successfully encrypt and transmit a packet. After a packet is successfully decrypted the COUNT in the packet should be compared with the internal COUNT, if they do not match then the packet is discarded.

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## Encryption Keys

The encryption key length is 128 bits. However this is divided into two parts. The lower 64 bits are fixed and specified by the machine manufacturer, this allows the manufacturer control which devices are used in their machines.

The higher 64 bits are securely negotiated by the slave and host at power up, this ensures each machine and each session are using different keys. The key is negotiated by the Diffie-Hellman key exchange method.

See: [en.wikipedia.org/wiki/Diffie-Hellman](http://en.wikipedia.org/wiki/Diffie-Hellman)

The exchange method is summarised in the table below. C code for the exchange algorithm is available from ITL.

Step	Host	Slave
1	Generate prime number GENERATOR	
2	Use command Set Generator to send to slave Check GENERATOR is prime and store	Check GENERATOR is prime and store
3	Generate prime number MODULUS	
4	Use command Set Modulus to send to slave Check MODULUS is prime and store	Check MODULUS is prime and store
5	Generate Random Number HOST_RND	
6	Calculate HostInterKey: = GENERATOR ^ HOST_RND mod MODULUS	
7	Use command Request Key Exchange to send to slave.	Generate Random Number SLAVE_RND
8		Calculate SlaveInterKey: = GENERATOR ^ SLAVE_RND mod MODULUS
9		Send to host as reply to Request Key Exchange
10	Calculate Key: = SlaveInterKey ^ HOST_RND mod MODULUS	Calculate Key: = HostInterKey ^ SLAVE_RND mod MODULUS

Note: ^ represents to the power of

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## Generic Commands and Responses

All devices must respond to a list of so-called Generic Commands as show in the table below.

Command	Code
Reset	0x01
Host Protocol Version	0x06
Get Serial Number	0x0C
Sync	0x11
Disable	0x09
Enable	0x0A
Get Firmware Version	0x20
Get Dataset Version	0x21

A device will respond to all commands with the first data byte as one of the Generic responses list below..

Generic Response	Code	Description
OK	0xF0	Returned when a command from the host is understood and has been, or is in the process of, being executed.
COMMAND NOT KNOWN	0xF2	Returned when an invalid command is received by a peripheral.
WRONG No PARAMETERS	0xF3	A command was received by a peripheral, but an incorrect number of parameters were received.
PARAMETERS	0xF4	One of the parameters sent with a command is out of range.
COMMAND CANNOT BE PROCESSED	0xF5	A command sent could not be processed at that time. E.g. sending a dispense command before the last dispense operation has completed.
SOFTWARE ERROR	0xF6	Reported for errors in the execution of software e.g. Divide by zero. This may also be reported if there is a problem resulting from a failed remote firmware upgrade, in this case the firmware upgrade should be redone.
FAIL	0xF8	Command failure
KEY NOT SET	0xFA	The slave is in encrypted communication mode but the encryption keys have not been negotiated.

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## Protocol Versions

An SSP [Poll](#) command returns a list of events and data that have occurred in the device since the last poll.

The host machine then reads this event list taking note of the data length (if any) of each event.

On order to introduce new events, SSP uses a system of **Protocol Version** levels to identify the event types and sizes a machine can expect to see in reponse to a poll. If this were not done, new unknown events with unknown datasize to a machine not set-up for these would cause the event reading to fail.

A host system should take note of the protocol version of the device connected and ensure that it is not set for a higer version that the one it is expecting to use.

The host can also check that the device can also be set to the higher protocol level, enusing that expected events will be seen.

The listed events in this manual show the protocol version level of each event.

As part of the start-up procedure, the host should read the current protocol level of the device (using the [set-up request](#) command).

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## Banknote Validator

A Banknote Validator is a device which will scan, validate and stack a banknote it detects as valid or reject it from the front if not valid. Some banknote validators can be transformed into payout devices by the addition of a pay-out unit. All ITL™ Banknote validators support the SSP protocol described here.

**The Banknote Validators have a default SSP Address of 0.**

The [setup request](#) reponse table for banknote validator types:

### Protocol versions less than 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x00 = Banknote validator
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device

### Protocol versions greater than or equal to 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	0 = Banknote validator
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device
Expanded channel country code	16 + (n * 2)	n * 3	Three byte ascii code for each channel. This allows multi currency datasets to be used on SSP devices. These bytes are given only on protocol versions >= 6.
Expanded channel value	16 + (n * 5)	n * 4	4 bytes for each channel value. These bytes are given only on protocol versions >= 6.

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## Reject Codes

The banknote validator specification includes a command [Last Reject Code](#).

Use this command after a note has been rejected to return a one-byte code to determine the cause of the note reject.

Table showing reject codes:

0x00	0	NOTE ACCEPTED	The banknote has been accepted. No reject has occurred.
0x01	1	LENGTH FAIL	A validation fail: The banknote has been read but it's length registers over the max length parameter.
0x02	2	AVERAGE FAIL	Internal validation failure - banknote not recognised.
0x03	3	COASTLINE FAIL	Internal validation failure - banknote not recognised.
0x04	4	GRAPH FAIL	Internal validation failure - banknote not recognised.
0x05	5	BURIED FAIL	Internal validation failure - banknote not recognised.
0x06	6	CHANNEL INHIBIT	This banknote has been inhibited for acceptance in the dataset configuration.
0x07	7	SECOND NOTE DETECTED	A second banknote was inserted into the validator while the first one was still being transported through the banknote path.
0x08	8	REJECT BY HOST	The host system issues a <a href="#">Reject</a> command when this banknote was held in escrow.
0x09	9	CROSS CHANNEL DETECTED	This bank note was identified as existing in two or more separate channel definitions in the dataset.
0x0A	10	REAR SENSOR ERROR	An inconsistency in a position sensor detection was seen
0x0B	11	NOTE TOO LONG	The banknote failed dataset length checks.
0x0C	12	DISABLED BY HOST	The bank note was validated on a channel that has been inhibited for acceptance by the host system.
0x0D	13	SLOW MECH	The internal mechanism was detected as moving too slowly for correct validation.
0x0E	14	STRIM ATTEMPT	An attempt to fraud the system was detected.
0x0F	15	FRAUD CHANNEL	Obsolete response.
0x10	16	NO NOTES DETECTED	A banknote detection was initiated but no banknotes were seen at the validation section.
0x11	17	PEAK DETECT FAIL	Internal validation fail. Banknote not recognised.
0x12	18	TWISTED NOTE REJECT	Internal validation fail. Banknote not recognised.
0x13	19	ESCROW TIME-OUT	A banknote held in escrow was rejected due to the host not communicating within the time-out period.
0x14	20	BAR CODE SCAN FAIL	Internal validation fail. Banknote not recognised.
0x15	21	NO CAM ACTIVATE	A banknote did not reach the internal note path for validation during transport.
0x16	22	SLOT FAIL 1	Internal validation fail. Banknote not recognised.
0x17	23	SLOT FAIL 2	Internal validation fail. Banknote not recognised.
0x18	24	LENS OVERSAMPLE	The banknote was transported faster than the system could sample the note.
0x19	25	WIDTH DETECTION FAIL	The banknote failed a measurement test.
0x1A	26	SHORT NOTE DETECT	The banknote measured length fell outside of the validation parameter for minimum length.
0x1B	27	PAYOUT NOTE	The reject code command was issued after a note was payed out using a note payout device.
0x1C	28	DOUBLE NOTE DETECTED	More than one banknote was detected as overlaid during note entry.

0x1D 29 UNABLE TO STACK

The bank was unable to reach it's correct stacking position during transport.



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## SMART Ticket

The SMART Ticket device is an add on unit to the NV200 to enable printing and payout via the NV200 bezel of paper tickets of configurable designs. A range of SSP commands may be implemented to configure, modify and maintain print designs from the host on-the-fly or by pre-configured templates.

The SMART Ticket device is addressed separately from the NV200, the NV200 setup request command will return 0x08 for the Uint type if a SMART Ticket device is attached.

When communicating with the NV200 attached to the printer, optional additional poll events may be enabled. These are enabled by sending an SSP packet with the command header 0x72 to the NV200. Polls will then respond with the same printing (0xA5) and printed (0xA6) poll responses as the printer.

### The SMART Ticket has a default SSP Address of 64 dec 0x40 hex

The [setup request](#) response table for SMART Ticket types:

Data	byte offset	size (bytes)	notes
Unit type	0	1	8 = Addon Printer
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Cutter enabled status	5	1	(0 for disabled)
Tab enabled status	6	1	(0 for disabled)
Reverse validation enabled status	7	1	(0 for disabled)
Font pack code (ASCII)	8	3	e.g. 'FP1'
Printer type	11	1	Printer Type: 0x0 for Fan Fold, 0x1 Paper Roll (Cutter fitted)
SD card fitted status	12	1	1 for detected
Printer darkness/quality setting	13	1	The current protocol version set for this device

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## SMART Hopper

SMART Hopper is a coin payout device capable of discriminating and paying out multi-denominations of stored coins from its internal storage hopper.

Coins added to the hopper can be designated to be routed to an external cashbox on detection or recycled and stored in the hopper unit to be available for a requested payout.

SMART Hopper also supports the addition of a connected cctalk™ or eSSP™ coin mechanism which will automatically add its validated coins to the SMART Hopper system levels.

Note that payout values are in terms of the of the penny value of that currency. So for 5.00, the value sent and returned by the hopper would be 500. All transactions with a SMART hopper must be encrypted to prevent dispense commands being recorded and replayed by an external device.

Addressing

**The SMART Hopper has a default SSP Address of 16 dec 0x10 hex.**

The [setup request](#) reponse table for coin hopper types:

### Protocol version less than 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	3 = SMART Hopper
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Protocol Version	8	1	The current protocol version set for this device
Number of coin values	9	1	The number of coin denominations in this device dataset. [n]
Coin values	10	n * 2	2 byte each value for the coin denominations (e.g. 0.05 coin = 0x05,0x00)

### Protocol version greater or equal to 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	3 = SMART Hopper
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Protocol Version	8	1	The current protocol version set for this device
Number of coin values	9	1	The number of coin denominations in this device dataset. [n]
Coin values	10	n * 2	2 byte each value for the coin denominations (e.g. 0.05 coin = 0x05,0x00)
Country codes	10 + (n * 2)		An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.

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## Coupon Printer

The Coupon Printer device is a stand alone thermal printer designed for printing coupons/receipts/tickets using roll media with a width of 58mm. A range of SSP command may be implemented to configure, modify and maintain print designs from the host on-the-fly or by pre-configured templates.

The commands rely on per-existing resources of images, fonts and templates that are programmed into the Coupon Printer device.

### The Coupon Printer has a default SSP Address of 65 dec 0x41 hex

The [setup request](#) reponse table for Coupon Printer types:

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x0B = Stand Alone Printer
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Cutter enabled status	5	1	(0 for disabled)
Tab enabled status	6	1	(0 for disabled)
Reverse validation enabled status	7	1	(0 for disabled)
Font pack code (ASCII)	8	3	e.g. 'FP1'
Printer type	11	1	Printer Type: 0x0 for Fan Fold, 0x1 Paper Roll (Cutter fitted)
SD card fitted status	12	1	1 for detected
Printer darkness/quality setting	13	1	The current protocol version set for this device

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## SMART Payout

The Smart Payout is an extension of a banknote validator, all commands are sent to the validator using its address (0x00). Information on the types of note that can be handled is obtained from the standard note validator commands.

Note that payout values are in terms of the penny value of that currency. So for 5.00, the value sent and returned by the payout would be 500.

The host simply has to tell the unit the value it wishes to dispense. The unit will manage which notes are stored to be used for payout and their location to minimise the payout time, and which notes, of the type enable for storage, are sent to the stacker. This is the recommended mode of operation.

**The SMART Payout has a default SSP Address of 0.**

The [setup request](#) response table for SMART Payout types:

### Protocol versions less than 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x06 = SMART Payout
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device

### Protocol versions greater than or equal to 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x06 = SMART Payout
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device
Expanded channel country code	16 + (n * 2)	n * 3	Three byte ascii code for each channel. This allows multi currency datasets to be used on SSP devices. These bytes are given only on protocol versions >= 6.
Expanded channel value	16 + (n * 5)	n * 4	4 bytes for each channel value. These bytes are given only on protocol versions >= 6.



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## Smart System

The Smart System device is a multi-coin pay-in, pay-out system with detachable fast coin pay-in feeder.

Coins fed into the pay-in head will be validated and counted and recognised coins are routed to the attached hopper while rejected coins are fed out of the front of the system.

Coin hopper levels are adjusted internally.

The system can function as a stand-alone hopper payout system if the pay-in feeder head is removed.

### The SMART System has a default SSP Address of 16 dec 0x10 hex

The [setup request](#) response table for coin hopper types:

#### Protocol version less than 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	3 = SMART Hopper
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Protocol Version	8	1	The current protocol version set for this device
Number of coin values	9	1	The number of coin denominations in this device dataset. [n]
Coin values	10	n * 2	2 byte each value for the coin denominations (e.g. 0.05 coin = 0x05,0x00)

#### Protocol version greater or equal to 6:

Data	byte offset	size (bytes)	notes
Unit type	0	1	3 = SMART Hopper
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Protocol Version	8	1	The current protocol version set for this device
Number of coin values	9	1	The number of coin denominations in this device dataset. [n]
Coin values	10	n * 2	2 byte each value for the coin denominations (e.g. 0.05 coin = 0x05,0x00)
Country codes	10 + (n * 2)		An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.

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**Note Float (NV11)**

The Note Float is an extension of a banknote validator, all commands are sent to the validator using its address (0x00). Information on the types of note that can be handled is obtained from the standard note validator commands.

**The NV11 (Note Float) has a default SSP Address of 0.**

The [setup request](#) reponse table for Note Float types:

**Protocol versions less than 6:**

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x07 = Note Float (NV11)
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device

**Protocol versions greater than or equal to 6:**

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x07 = Note Float (NV11)
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device
Expanded channel country code	16 + (n * 2)	n * 3	Three byte ascii code for each channel. This allows multi currency datasets to be used on SSP devices. These bytes are given only on protocol versions >= 6.
Expanded channel value	16 + (n * 5)	n * 4	4 bytes for each channel value. These bytes are given only on protocol versions >= 6.

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**TEBS**

TEBS or Tamper Evident Bag System is a version of the NV200 banknote validator with a special cashbox attachment which operates as device to store bank notes into a special bag which will then be sealed when the cashbox is extracted.

Each of the bags has a unique barcode which is registered by the TEBS system enabling the host system to register cash amounts in each bag.

The [setup request](#) reponse table for TEBS types:

**Protocol versions less than 6:**

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x0D = TEBS, 0x0E = TEBS with SMART Payout, 0x0F = TEBS with SMART Ticket
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device

**Protocol versions greater than or equal to 6:**

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x0D = TEBS, 0x0E = TEBS with SMART Payout, 0x0F = TEBS with SMART Ticket
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Country code	5	3	ASCII code of the device dataset (e.g. 'EUR')
Value Multiplier	8	3	3 The value to multiply the individual channels by to get the full value. If this value is 0 then it indicates that this is a protocol version 6 or greater compatible dataset where the values are given in the expanded segment of the return data.
Number of channels	11	1	The highest channel used in this device dataset [n] (1-16)
Channel Values	12	n	A variable size array of bytes, 1 for each channel with a value from 1 to 255 which when multiplied by the value multiplier gives the full value of the note. If the value multiplier is zero then these values are zero.
Channel Security	12 + n	n	An obsolete value showing security level. This is set to 2 if the value multiplier is > 0 otherwise 0.
Real value Multiplier	12 + (n * 2)	3	The value by which the channel values can be multiplied to show their full value e.g. 5.00 EUR = 500 EUR cents
Protocol version	15 + (n * 2)	1	The current protocol version set for this device
Expanded channel country code	16 + (n * 2)	n * 3	Three byte ascii code for each channel. This allows multi currency datasets to be used on SSP devices. These bytes are given only on protocol versions >= 6.
Expanded channel value	16 + (n * 5)	n * 4	4 bytes for each channel value. These bytes are given only on protocol versions >= 6.



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## NVR-280 (NV12)

The NVR-280 is an addon printer for the NV9 USB Plus. Combined with the NV9 USB Plus, the device is known as an NV12. This device allows the printing of tickets with will exit through the NV9's note path and out of it's bezel. It also allows the NV9 to read barcodes on these printed tickets.

A range of SSP commands may be implemented to configure, modify and maintain print designs from the host on-the-fly or by pre-configured templates.

The NVR-280 device is addressed separately from the NV9, the NV9 setup request command will return 0x08 for the Unit type if an NVR-280 device is attached.

When communicating with the NV9 attached to the printer, optional additional poll events may be enabled. These are enabled by sending an SSP packet with the command header 0x72 to the NV9. Polls will then respond with the same printing (0xA5) and printed (0xA6) poll responses as the printer.

**The NVR-280 has a default SSP Address of 64 dec 0x40 hex**

The [setup request](#) response table for NVR-280 types:

Data	byte offset	size (bytes)	notes
Unit type	0	1	8 = Addon Printer
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Cutter enabled status	5	1	(0 for disabled, always 1 on this printer)
Tab enabled status	6	1	(0 for disabled, always 0 on this printer)
Reverse validation enabled status	7	1	(0 for disabled)
Font pack code (ASCII)	8	3	e.g. 'FP1'
Printer type	11	1	Printer Type: 0x0 for Fan Fold, 0x1 Paper Roll (Cutter fitted)(Always 0x1 on this printer)
SD card fitted status	12	1	1 for detected
Printer darkness/quality setting	13	1	The current protocol version set for this device

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**Flatbed Printer (FBF-166)**

The Flatbed Printer device is a stand alone thermal printer designed for printing tickets using fanfold media with a width of 65mm. A range of SSP command may be implemented to configure, modify and maintain print designs from the host on-the-fly or by pre-configured templates.

The commands rely on per-existing resources of images, fonts and templates that are programmed into the Flatbed Printer device.

**The Flatbed Printer has a default SSP Address of 65 dec 0x41 hex**

The [setup request](#) response table for Coupon Printer types:

Data	byte offset	size (bytes)	notes
Unit type	0	1	0x0B = Stand Alone Printer
Firmware version	1	4	ASCII data of device firmware version (e.g. '0110' = 1.10)
Cutter enabled status	5	1	(0 for disabled)
Tab enabled status	6	1	(0 for disabled)
Reverse validation enabled status	7	1	(0 for disabled)
Font pack code (ASCII)	8	3	e.g. 'FP1'
Printer type	11	1	Printer Type: 0x0 for Fan Fold, 0x1 Paper Roll (Cutter fitted)
SD card fitted status	12	1	1 for detected
Printer darkness/quality setting	13	1	The current protocol version set for this device

[<< back to index](#)**NV9USB Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Poll With Ack	0x56	86
Event Ack	0x57	87
Get Counters	0x58	88
Reset Counters	0x59	89
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97

**NV9USB Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Channel Disable	0xB5	181
Initialising	0xB6	182
Ticket In Bezel	0xAD	173
Printed To Cashbox	0xAF	175

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## NV10USB Command Table

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97

**NV10USB Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Stacker Full	0xE7	231
Note Cleared Into Cashbox	0xE2	226
Channel Disable	0xB5	181

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**NV11 Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Denomination Route	0x3B	59
Get Denomination Route	0x3C	60
Empty All	0x3F	63
Smart Empty	0x52	82
Cashbox Payout Operation Data	0x53	83
Get Counters	0x58	88
Reset Counters	0x59	89
Get Note Positions	0x41	65
Payout Note	0x42	66
Stack Note	0x43	67
Set Value Report Type	0x45	69
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Get Build Revision	0x4F	79
Enable Payout Device	0x5C	92
Disable Payout Device	0x5B	91
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97

**NV11 Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Channel Disable	0xB5	181
Dispensing	0xDA	218
Halted	0xD6	214
Timeout	0xD9	217
Emptying	0xC2	194
Emptied	0xC3	195
Smart Emptying	0xB3	179
Smart Emptied	0xB4	180
Note Stored In Payout	0xDB	219
Payout Out Of Service	0xC6	198
Note Transferred To Stacker	0xC9	201
Note Held In Bezel	0xCE	206
Note Into Store At Reset	0xCB	203
Note Into Stacker At Reset	0xCA	202
Note Dispensed At Reset	0xCD	205
Note Float Removed	0xC7	199
Note Float Attached	0xC8	200
Device Full	0xCF	207



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**SMART HOPPER Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Setup Request	0x05	5
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Denomination Route	0x3B	59
Get Denomination Route	0x3C	60
Payout Amount	0x33	51
Get Denomination Level	0x35	53
Set Denomination Level	0x34	52
Halt Payout	0x38	56
Float Amount	0x3D	61
Get Min Payout	0x3E	62
Set Coin Mech Inhibits	0x40	64
Payout By Denomination	0x46	70
Float By Denomination	0x44	68
Empty All	0x3F	63
Set Options	0x50	80
Get Options	0x51	81
Coin Mech Global Inhibit	0x49	73
Smart Empty	0x52	82
Cashbox Payout Operation Data	0x53	83
Get All Levels	0x22	34
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Coin Mech Options	0x5A	90
Get Build Revision	0x4F	79
Comms Pass Through	0x37	55
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97
Set Cashbox Payout Limit	0x4E	78

**SMART HOPPER Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Initialising	0xB6	182
Dispensing	0xDA	218
Coins Low	0xD3	211
Hopper Jammed	0xD5	213
Halted	0xD6	214
Floating	0xD7	215
Floated	0xD8	216
Timeout	0xD9	217
Incomplete Payout	0xDC	220
Incomplete Float	0xDD	221
Cashbox Paid	0xDE	222
Coin Credit	0xDF	223
Coin Mech Jammed	0xC4	196
Coin Mech Return Active	0xC5	197
Emptying	0xC2	194
Emptied	0xC3	195
Smart Emptying	0xB3	179
Smart Emptied	0xB4	180
Calibration Failed	0x83	131
Coin Mech Error	0xB7	183
Attached Coin Mech Disabled	0xBD	189
Attached Coin Mech Enabled	0xBE	190

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**NV200 Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Get Barcode Reader Configuration	0x23	35
Set Barcode Reader Configuration	0x24	36
Get Barcode Inhibit	0x25	37
Set Barcode Inhibit	0x26	38
Get Barcode Data	0x27	39
Configure Bezel	0x54	84
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Get Build Revision	0x4F	79
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97
Enable Tito Events	0x72	114

**NV200 Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Cashbox Removed	0xE3	227
Cashbox Replaced	0xE4	228
Barcode Ticket Validated	0xE5	229
Barcode Ticket Ack	0xD1	209
Note Path Open	0xE0	224
Channel Disable	0xB5	181
Initialising	0xB6	182
Ticket Printing	0xA5	165
Ticket Printed	0xA6	166
Ticket Printing Error	0xA8	168
Print Halted	0xAE	174
Ticket In Bezel	0xAD	173
Printed To Cashbox	0xAF	175

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**SMART PAYOUT Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Get Barcode Reader Configuration	0x23	35
Set Barcode Reader Configuration	0x24	36
Get Barcode Inhibit	0x25	37
Set Barcode Inhibit	0x26	38
Get Barcode Data	0x27	39
Configure Bezel	0x54	84
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Denomination Route	0x3B	59
Get Denomination Route	0x3C	60
Payout Amount	0x33	51
Get Denomination Level	0x35	53
Halt Payout	0x38	56
Float Amount	0x3D	61
Get Min Payout	0x3E	62
Payout By Denomination	0x46	70
Float By Denomination	0x44	68
Empty All	0x3F	63
Smart Empty	0x52	82
Cashbox Payout Operation Data	0x53	83
Get All Levels	0x22	34
Get Counters	0x58	88
Reset Counters	0x59	89
Set Refill Mode	0x30	48
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Get Build Revision	0x4F	79
Enable Payout Device	0x5C	92
Disable Payout Device	0x5B	91
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97
Cancel Escrow Transaction	0x76	118
Commit Escrow Transaction	0x77	119
Read Escrow Value	0x78	120
Get Escrow Size	0x79	121
Set Escrow Size	0x7A	122

**SMART PAYOUT Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Cashbox Removed	0xE3	227
Cashbox Replaced	0xE4	228
Barcode Ticket Validated	0xE5	229
Barcode Ticket Ack	0xD1	209
Note Path Open	0xE0	224
Channel Disable	0xB5	181
Initialising	0xB6	182
Dispensing	0xDA	218
Dispensed	0xD2	210
Hopper Jammed	0xD5	213
Halted	0xD6	214
Floating	0xD7	215
Floated	0xD8	216
Timeout	0xD9	217
Incomplete Payout	0xDC	220
Incomplete Float	0xDD	221
Emptying	0xC2	194
Emptied	0xC3	195
Smart Emptying	0xB3	179
Smart Emptied	0xB4	180
Note Stored In Payout	0xDB	219
Payout Out Of Service	0xC6	198
Jam Recovery	0xB0	176
Error During Payout	0xB1	177
Note Transferred To Stacker	0xC9	201
Note Held In Bezel	0xCE	206
Note Into Store At Reset	0xCB	203
Note Into Stacker At Reset	0xCA	202

[<< back to index](#)**BV20 Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97

**BV20 Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Stacker Full	0xE7	231
Channel Disable	0xB5	181
Initialising	0xB6	182



[<< back to index](#)**BV50 Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97

**BV50 Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Disabled	0xE8	232
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Cashbox Removed	0xE3	227
Cashbox Replaced	0xE4	228
Channel Disable	0xB5	181
Initialising	0xB6	182

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## BV100 Command Table

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97

**BV100 Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Cashbox Removed	0xE3	227
Cashbox Replaced	0xE4	228
Channel Disable	0xB5	181
Initialising	0xB6	182

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**SMART SYSTEM Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Get Dataset Version	0x21	33
Set Inhibits	0x02	2
Setup Request	0x05	5
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Denomination Route	0x3B	59
Get Denomination Route	0x3C	60
Payout Amount	0x33	51
Get Denomination Level	0x35	53
Set Denomination Level	0x34	52
Halt Payout	0x38	56
Float Amount	0x3D	61
Get Min Payout	0x3E	62
Set Coin Mech Inhibits	0x40	64
Payout By Denomination	0x46	70
Float By Denomination	0x44	68
Empty All	0x3F	63
Set Options	0x50	80
Get Options	0x51	81
Coin Mech Global Inhibit	0x49	73
Smart Empty	0x52	82
Cashbox Payout Operation Data	0x53	83
Get All Levels	0x22	34
Get Counters	0x58	88
Reset Counters	0x59	89
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Coin Mech Options	0x5A	90
Get Build Revision	0x4F	79
Comms Pass Through	0x37	55
Set Baud Rate	0x4D	77
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97
Get Real Time Clock Configuration	0x62	98
Set Real Time Clock	0x64	100
Get Real Time Clock	0x63	99
Set Cashbox Payout Limit	0x4E	78
Coin Stir	0x5D	93
Payout Amount By Denomination	0x39	57

**SMART SYSTEM Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Initialising	0xB6	182
Dispensing	0xDA	218
Dispensed	0xD2	210
Hopper Jammed	0xD5	213
Halted	0xD6	214
Floating	0xD7	215
Floated	0xD8	216
Timeout	0xD9	217
Incomplete Payout	0xDC	220
Incomplete Float	0xDD	221
Cashbox Paid	0xDE	222
Coin Mech Jammed	0xC4	196
Coin Mech Return Active	0xC5	197
Emptying	0xC2	194
Emptied	0xC3	195
Smart Emptying	0xB3	179
Smart Emptied	0xB4	180
Calibration Failed	0x83	131
Device Full	0xCF	207
Coin Mech Error	0xB7	183
Attached Coin Mech Disabled	0xBD	189
Attached Coin Mech Enabled	0xBE	190
Value Added	0xBF	191
Pay-in Active	0xC1	193

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## SMART TICKET Command Table

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Setup Request	0x05	5
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97
Get Real Time Clock Configuration	0x62	98
Set Real Time Clock	0x64	100
Get Real Time Clock	0x63	99
Ticket Print	0x70	112
Printer Configuration	0x71	113

**SMART TICKET Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Disabled	0xE8	232
Tickets Low	0xA0	160
Tickets Replaced	0xA1	161
Printer Head Removed	0xA2	162
Ticket Path Open	0xA3	163
Ticket Jam	0xA4	164
Ticket Printing	0xA5	165
Ticket Printed	0xA6	166
Ticket Printing Error	0xA8	168
Printer Head Replaced	0xA9	169
Ticket Path Closed	0xAA	170
No Paper	0xAB	171
Paper Replaced	0xAC	172



[<< back to index](#)**COUPON PRINTER Command Table**

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Ssp Set Encryption Key	0x60	96
Ssp Encryption Reset To Default	0x61	97
Get Real Time Clock Configuration	0x62	98
Set Real Time Clock	0x64	100
Get Real Time Clock	0x63	99
Ticket Print	0x70	112
Printer Configuration	0x71	113

**COUPON PRINTER Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Disabled	0xE8	232
Tickets Low	0xA0	160
Tickets Replaced	0xA1	161
Printer Head Removed	0xA2	162
Ticket Jam	0xA4	164
Ticket Printing	0xA5	165
Ticket Printed	0xA6	166
Ticket Printing Error	0xA8	168
Printer Head Replaced	0xA9	169
No Paper	0xAB	171
Paper Replaced	0xAC	172

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## NV150 Command Table

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Set Inhibits	0x02	2
Display On	0x03	3
Display Off	0x04	4
Setup Request	0x05	5
Reject	0x08	8
Uint Data	0x0D	13
Channel Value Data	0x0E	14
Channel Security Data	0x0F	15
Channel Re-teach Data	0x10	16
Last Reject Code	0x17	23
Hold	0x18	24
Get Barcode Reader Configuration	0x23	35
Set Barcode Reader Configuration	0x24	36
Get Barcode Inhibit	0x25	37
Set Barcode Inhibit	0x26	38
Get Barcode Data	0x27	39
Poll With Ack	0x56	86
Event Ack	0x57	87
Set Generator	0x4A	74
Set Modulus	0x4B	75
Request Key Exchange	0x4C	76
Set Baud Rate	0x4D	77

**NV150 Event Table**

	Header code (hex)	dec
Slave Reset	0xF1	241
Read	0xEF	239
Note Credit	0xEE	238
Rejecting	0xED	237
Rejected	0xEC	236
Stacking	0xCC	204
Stacked	0xEB	235
Safe Jam	0xEA	234
Unsafe Jam	0xE9	233
Disabled	0xE8	232
Fraud Attempt	0xE6	230
Stacker Full	0xE7	231
Note Cleared From Front	0xE1	225
Note Cleared Into Cashbox	0xE2	226
Barcode Ticket Validated	0xE5	229
Barcode Ticket Ack	0xD1	209
Note Path Open	0xE0	224

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## FLATBED PRINTER Command Table

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Setup Request	0x05	5
Ssp Set Encryption Key	0x60	96
Get Real Time Clock Configuration	0x62	98
Set Real Time Clock	0x64	100
Get Real Time Clock	0x63	99
Ticket Print	0x70	112
Printer Configuration	0x71	113

**FLATBED PRINTER Event Table**

	Header code (hex)	dec
Tickets Low	0xA0	160
Tickets Replaced	0xA1	161
Printer Head Removed	0xA2	162
Ticket Path Open	0xA3	163
Ticket Jam	0xA4	164
Ticket Printing	0xA5	165
Ticket Printed	0xA6	166
Ticket Printing Error	0xA8	168
Printer Head Replaced	0xA9	169
Ticket Path Closed	0xAA	170
No Paper	0xAB	171
Paper Replaced	0xAC	172
Ticket In Bezel At Startup	0xA7	167

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## NV12 Command Table

	Header code (hex)	dec
Sync	0x11	17
Reset	0x01	1
Host Protocol Version	0x06	6
Poll	0x07	7
Get Serial Number	0x0C	12
Disable	0x09	9
Enable	0x0A	10
Get Firmware Version	0x20	32
Setup Request	0x05	5
Get Barcode Reader Configuration	0x23	35
Set Barcode Reader Configuration	0x24	36
Get Barcode Inhibit	0x25	37
Set Barcode Inhibit	0x26	38
Get Barcode Data	0x27	39
Ssp Set Encryption Key	0x60	96
Get Real Time Clock Configuration	0x62	98
Set Real Time Clock	0x64	100
Get Real Time Clock	0x63	99
Enable Tito Events	0x72	114
Ticket Print	0x70	112
Printer Configuration	0x71	113

**NV12 Event Table**

	Header code (hex)	dec
Tickets Low	0xA0	160
Tickets Replaced	0xA1	161
Printer Head Removed	0xA2	162
Ticket Jam	0xA4	164
Ticket Printing	0xA5	165
Ticket Printed	0xA6	166
Ticket Printing Error	0xA8	168
Printer Head Replaced	0xA9	169
No Paper	0xAB	171
Paper Replaced	0xAC	172



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Command	Code hex	Code decimal
<b>Sync</b>	0x11	17

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

SSP uses a system of sequence bits to ensure that packets have been received by the slave and the reply received by the host. If the slave receives the same sequence bit as the previous command packet then this is signal to re-transmit the last reply.

A mechanism is required to initially set the host and slave to the same sequence bits and this is done by the use of the SYNC command.

A Sync command resets the seq bit of the packet so that the slave device expects the next seq bit to be 0. The host then sets its next seq bit to 0 and the seq sequence is synchronised.

The SYNC command should be the first command sent to the slave during a session.

Packet examples
-----------------

#### Set seq bit to 1

Host transmit: **7F 80 01 11 65 82**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Reset</b>	0x01	1

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Performs a software and hardware reset of the device.

After this command has been acknowledged with **OK (0xF0)**, any encryption, baud rate changes, etc will be reset to default settings.

Packet examples
-----------------

No data parameters, sequence bit set and address 0

Host transmit: **7F 80 01 01 06 02**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Host Protocol Version</b>	0x06	6

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

ITL SSP devices use a system of protocol levels to control the event responses to polls to ensure that changes would not affect systems with finite state machines unable to test for new events with non-defined data lengths.

Use this command to allow the host to set which protocol version to operate the slave device.

If the device supports the requested protocol **OK (0xF0)** will be returned. If not then **FAIL (0xF8)** will be returned

Packet examples
-----------------

The slave supports the protocol version 8

Host transmit: **7F 80 02 06 08 03 94**

Slave Reply: **7F 80 01 F0 23 80**

Host protocol version 9 not supported

Host transmit: **7F 80 02 06 09 06 14**

Slave Reply: **7F 80 01 F8 10 00**

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Command	Code hex	Code decimal
<b>Poll</b>	0x07	7

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

This command returns a list of events occurred in the device since the last poll was sent.

The SSP devices share some common events and have some unique events of their own. See event tables for details for a specific device.

Packet examples
-----------------

Poll command returning device reset and disabled response

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 F1 F8 DC 0C**

Event response note credit channel 1 and note stacked

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 04 F0 EE 01 EB B9 48**

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Command	Code hex	Code decimal
<b>Get Serial Number</b>	0x0C	12

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

This command returns a 4-byte big endian array representing the unique factory programmed serial number of the device.

Packet examples
-----------------

The device responds with 4 bytes of serial number data. In this case, the serial number is 01873452 = 0x1c962c. The return array is formatted as big endian (MSB first).

Host transmit: **7F 80 01 0C 2B 82**

Slave Reply: **7F 80 05 F0 00 1C 96 2C D4 97**

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Command	Code hex	Code decimal
<b>Disable</b>	0x09	9

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Disabled the slave device from operation.

For example, this command would block a banknote validator from allowing any more banknotes to be entered.

For most SSP devices, the default state is to be disabled after reset.

Packet examples
-----------------

Single byte command with no parameters

Host transmit: **7F 80 01 09 35 82**

Slave Reply: **7F 80 01 F0 23 80**

NV11 when note float is jammed/disconnected responds COMMAND\_CANNOT\_BE\_PROCESSED

Host transmit: **7F 80 01 09 35 82**

Slave Reply: **7F 80 01 F5 3D 80**

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Command	Code hex	Code decimal
<b>Enable</b>	0x0A	10

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

This command will enable the SSP device for normal operation. For example, it will allow a banknote validator to commence validating banknotes entered into it's bezel.

Packet examples
-----------------

Single byte command with no parameters

Host transmit: **7F 80 01 0A 3F 82**

Slave Reply: **7F 80 01 F0 23 80**

NV11 when note float is jammed/disconnected responds COMMAND\_CANNOT\_BE\_PROCESSED

Host transmit: **7F 80 01 0A 3F 82**

Slave Reply: **7F 80 01 F5 3D 80**

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Command	Code hex	Code decimal
<b>Get Firmware Version</b>	0x20	32

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Returns a variable length ASCII array containing the full firmware version of the attached device.

Packet examples
-----------------

In this example, the firmware version of the device is: NV02004141498000

Host transmit: **7F 80 01 20 C0 02**

Slave Reply: **7F 80 11 F0 4E 56 30 32 30 30 34 31 34 31 34 39 38 30 30 30 DE 55**

ascii: . **N V 0 2 0 0 4 1 4 1 4 9 8 0 0 0**



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Command	Code hex	Code decimal
<b>Get Dataset Version</b>	0x21	33

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

Returns a variable length ASCII array giving the installed dataset version of the device.

Packet examples
-----------------

This example shows a device with dataset version EUR01610.

Host transmit: **7F 80 01 21 C5 82**

Slave Reply: **7F 80 09 F0 45 55 52 30 31 36 31 30 B8 2A**

ascii: . E U R 0 1 6 1 0

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Command	Code hex	Code decimal
<b>Set Inhibits</b>	0x02	2

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

Sets the channel inhibit level for the device. each byte sent represents 8 bits (channels of inhibit).

Nv200 has the option to send 2,3,or 4 bytes to represent 16,24, or 64 channels, the other BNV devices have the option of sending 1 or 2 bytes for 8 or 16 channel operation.

Set the bit low to inhibit all note acceptance on that channel, high to allow note acceptance.

Packet examples
-----------------

Set channels 1-3 enabled, 4-16 inhibited

Host transmit: **7F 80 03 02 07 00 2B B6**

Slave Reply: **7F 80 01 F0 23 80**

All channels enabled

Host transmit: **7F 80 03 02 FF FF 25 A4**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Display On</b>	0x03	3

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

Allows the host to control the illumination of the bezel. Send this command to show bezel illumination when the device is enabled for banknote validation. (This is the default condition at reset).

Note that the validator will still override the illumination of the bezel, i.e. the bezel will **not** be illuminated if the device is **not enabled** even if this command is sent.

Packet examples
-----------------

Single byte command with no parameters.

Host transmit: **7F 80 01 03 09 82**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Display Off</b>	0x04	4

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

Allows the host to control banknote validator bezel illumination. Use this command to disable illumination when the validator is enabled for note entry.

Packet examples
-----------------

Single byte command with no parameters

Host transmit: **7F 80 01 04 18 02**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Setup Request</b>	0x05	5

Implemented on	Encryption Required
BV100, BV20, BV50, FLATBED PRINTER, NV10USB, NV11, NV12, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description

Request the set-up configuration of the device. Gives details about versions, channel assignments, country codes and values.

Each device type has a different return data format. Please refer to the table information for each individual device.

SMART Ticket/Coupon Printer Response

Smart Ticket Data	Response Offset	Size	Notes
Unit Type	0	1	0x08 = SMART Ticket, 0x0B = Coupon Printer
Firmware Version	1	4	Ascii data of device firmware (eg 0123)
Cutter Enabled	5	1	(0 for disabled)
Tab enabled status	6	1	(0 for disabled)
Reverse validation enabled status	7	1	(0 for disabled)
Font pack code (ASCII)	8	3	e.g. FP1
Printer type	11	1	Printer Type: 0x0 for Fan Fold, 0x1 Paper Roll (Cutter fitted)
SD card fitted status	12	1	(1 for detected)
Printer darkness/quality setting	13	1	value between 0 - 3
SSP Protocol Version	14	1	

Packet examples

This example shows the data returned for a BNV with GBP dataset, firmware version 1.00, 3 channels GBP 5, GBP 10, GBP 20

Host transmit: **7F 80 01 05 1D 82**

Slave Reply: **7F 80 17 F0 00 30 31 30 30 47 42 50 00 00 01 03 05 0A 14 02 02 02 40 00 00 05 61 81**

ascii: . . 0 1 0 0 G B P . . . . . @ .

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Command	Code hex	Code decimal
<b>Reject</b>	0x08	8

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

After a banknote validator device reports a valid note is held in escrow, this command may be sent to cause the banknote to be rejected back to the user.

Packet examples
-----------------

Single byte command with no parameters

Host transmit: **7F 80 01 08 30 02**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Uint Data</b>	0x0D	13

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

A command to return version information about the connected device to the format described in the table below:

byte offset	function	size
0	Generic OK Response (OxF0)	1
1	Unit type: see Uint Type Table for codes	1
2	Firmware version (4 byte ASCII)	4
6	Dataset country (3 byte ASCII)	3
9	Value multiplier	3
12	Protocol version	1

Packet examples
-----------------

This is a response example for a banknote validator EUR 5,10,20 version 3.00 protocol version 7

Host transmit: **7F 80 01 0D 2E 02**

Slave Reply: **7F 80 0D F0 00 30 33 30 30 45 55 52 01 00 00 07 01 85**

ascii:                   . . 0 3 0 0 E U R . . . .

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Command	Code hex	Code decimal
<b>Channel Value Data</b>	0x0E	14

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

Returns channel value data for a banknote validator. Note that this will differ depend on the protocol version used/supported.

For protocol versions less than 6:

byte offset	function	size
0	Generic Ok (0xF0)	1
1	Highest channel in set 1-16 (n)	1
2 : (2 + n)	A byte value for each channel - gives the total channel value when multiplied by the value multiplier. Zero value shows that the channel is not used	n

For protocol versions greater or equal to 6:

byte offset	function	size
0	Generic Ok (0xF0)	1
1	Highest channel in set 1-16 (n)	1
2	A byte value for each channel - gives the total channel value when multiplied by the value multiplier. Zero value shows that the channel is not used	n
2 + n	3 byte for each ASCII country code in set	3 * n
(2 + n) + (3*n)	4 byte value for each denomination	4 * n

Packet examples
-----------------

This example shows a response for notes in channels 1,2,4,6,7 when in protocol version 5

Host transmit: **7F 80 01 0E 24 02**

Slave Reply: **7F 80 09 F0 07 05 0A 00 14 00 32 64 BC DA**

This example shows a response for notes in channels 1,2,4,6,7 when in protocol version 6



Host transmit: **7F 80 01 0E 24 02**

Slave Reply: **7F 80 3C F0 07 00 00 00 00 00 00 00 45 55 52 45 55 52 45 55 52 00 45 55  
52 45 55 52 00 45 55 52 45 55 52 05 00 00 00 0A 00 00 00 00 00 00 14  
00 00 00 00 00 00 00 32 00 00 00 64 00 00 00 D0 DF**

ascii:  
**. . . . . E U R E U R E U R . E U  
R E U R . E U R E U R . . . . .  
. . . . . 2 . . . d . . .**

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Command	Code hex	Code decimal
<b>Channel Security Data</b>	0x0F	15

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

Command which returns a number of channels byte (the highest channel used) and then 1 to n bytes which give the security of each channel up to the highest one, a zero indicates that the channel is not implemented.  
(1 = low, 2 = std, 3 = high, 4 = inhibited).

Packet examples
-----------------

In this example a validator has notes in channels 1,2,4,6,7 all at standard security.

Host transmit: **7F 80 01 0F 21 82**

Slave Reply: **7F 80 09 F0 07 02 02 00 02 00 02 02 94 84**

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Command	Code hex	Code decimal
<b>Channel Re-teach Data</b>	0x10	16

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

This is a vestigial command and may be deprecated in future versions. Do not use. If it is supported in a device it will return all zeros.

Packet examples
-----------------

Always returns zeros if implemented in a device.

Host transmit: **7F 80 01 10 60 02**

Slave Reply: **7F 80 04 F0 00 00 00 98 C1**

Returns COMMAND NOT KNOWN in unsupported devices.

Host transmit: **7F 80 01 10 60 02**

Slave Reply: **7F 80 02 F0 F2 10 22**

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Command	Code hex	Code decimal
<b>Last Reject Code</b>	0x17	23

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT	<b>optional</b>

Description
-------------

Returns a one byte code representing the reason the BNV rejected the last note. See [Reject Code](#) table for details.

Packet examples
-----------------

Note rejected due to a request by the host

Host transmit: **7F 80 01 17 71 82**

Slave Reply: **7F 80 02 F0 08 0C 20**

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Command	Code hex	Code decimal
<b>Hold</b>	0x18	24

Implemented on	Encryption Required
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB	<b>optional</b>

Description
-------------

SSP banknote validators include a poll-time-out of five seconds. If a new poll is not received within this time, then a note held in escrow will be rejected.

The host may require that the note is continued to be held, but a new poll would accept the note.

Send this command to reset the timeout and continue to hold the note in escrow until such time as either a reject or poll command is sent.

Packet examples
-----------------

Returns OK if note is in escrow

Host transmit: **7F 80 01 18 53 82**

Slave Reply: **7F 80 01 F0 23 80**

Returns FAIL if no note in escrow

Host transmit: **7F 80 01 18 53 82**

Slave Reply: **7F 80 01 F8 10 00**

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Command	Code hex	Code decimal
<b>Get Barcode Reader Configuration</b>	0x23	35

Implemented on	Encryption Required
NV12, NV150, NV200, SMART PAYOUT	<b>optional</b>

Description
-------------

Returns the set-up data for the device bar code readers.

Responds (if supported) with five bytes of data formatted as:

byte	function	size
0	Generic OK	1
1	Bar code hardware status (0x00 = none, 0x01 = Top reader fitted, 0x02 = Bottom reader fitted, 0x03 = both fitted)	1
2	Readers enabled (0x00 = none, 0x01 = top, 0x02 = bottom, 0x03 = both)	1
3	Bar code format (0x01 = Interleaved 2 of 5)	1
4	Number of characters (Min 6 max 24)	1

Packet examples
-----------------

Response for device with top and bottom readers fitted, both enabled, interleaved 2 of 5 with 18 chars

Host transmit: **7F 80 01 23 CA 02**

Slave Reply: **7F 80 05 F0 03 03 01 12 D5 58**

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Command	Code hex	Code decimal
<b>Set Barcode Reader Configuration</b>	0x24	36

Implemented on	Encryption Required
NV12, NV150, NV200, SMART PAYOUT	<b>optional</b>

Description
-------------

This command allows the host to set-up the bar code reader(s) configuration on the device.

Three bytes of data define the configuration:

byte	function	size
0	0x00 Enable none, 0x01 enable top, 0x02 = enable bottom, 0x03 = enable both	1
1	Bar code format (0x01 = Interleaved 2 of 5)	1
2	Number of characters (Min 6 Max 24)	1

Packet examples
-----------------

Enable both readers with format interleaved 1 of 5 for 18 characters.

Host transmit: **7F 80 04 24 03 01 12 EC D7**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Get Barcode Inhibit</b>	0x25	37

Implemented on	Encryption Required
NV12, NV150, NV200, SMART PAYOUT	<b>optional</b>

Description
-------------

Command to return the current bar code/currency inhibit status.

If supported, responds with 1 byte bit register data:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
not used	not used	not used	not used	not used	not used	barcode read enable (0 = enabled)	currency read enable (0 = enabled)
1	1	1	1	1	1		

Packet examples
-----------------

A response from a device with bar code disabled, currency enabled

Host transmit: **7F 80 01 25 DE 02**

Slave Reply: **7F 80 02 F0 FE 38 22**



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Command	Code hex	Code decimal
<b>Set Barcode Inhibit</b>	0x26	38

Implemented on	Encryption Required
NV12, NV150, NV200, SMART PAYOUT	<b>optional</b>

Description
-------------

Sets up the bar code inhibit status register.

Send a single data bit register byte formatted as:

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
not used 1	not used 1	not used 1	not used 1	not used 1	not used 1	barcode read enable (0 = enabled)	currency read enable (0 = enabled)

Packet examples
-----------------

Shows a request to enabled bar code, disable currency on the device

Host transmit: **7F 80 02 26 FD 3E D6**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Get Barcode Data</b>	0x27	39

Implemented on	Encryption Required
NV12, NV150, NV200, SMART PAYOUT	<b>optional</b>

Description
-------------

Command to obtain last valid bar code ticket data, send in response to a bar code ticket validated event. This command will return a variable length data stream, a generic response (OK) followed by a status byte, a bar code data length byte, then a stream of bytes of the ticket data in ASCII.

Response is formatted as:

byte	function	size
0	Generic OK	1
1	Status (0=no valid data, 1=ticket in escrow, 2=ticket stacked, 3=ticket rejected)	1
2	data length	1
3	variable length ASCII array of bar code data	v

Packet examples
-----------------

shows ticket is in escrow with data length 6 and data 123456.

Host transmit: **7F 80 01 27 D1 82**

Slave Reply: **7F 80 09 F0 01 06 31 32 33 34 35 36 A1 05**

ascii: . . . **1 2 3 4 5 6**

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Command	Code hex	Code decimal
<b>Configure Bezel</b>	0x54	84

Implemented on	Encryption Required
NV200, SMART PAYOUT	<b>optional</b>

Description
-------------

This command allows the host to configure a supported BNV bezel.

In NV200 firmware 4.28 an extra optional byte was added to specify the bezel type.

Command format:

byte	function	size
0	red pwm (0-255)	1
1	green pwm (0-255)	1
2	blue pwm (0-255)	1
3	Config 0 for volatile,1 - for non-volatile.	1
4	Optional Bezel Type (0 - Enable Solid Colour, 1 - Enable Flashing Colour, 2 - Disable Colour)	1

Packet examples
-----------------


In this example, we want a red bezel fixed to EEPROM.

Host transmit: **7F 80 05 54 FF 00 00 01 48 DC**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Poll With Ack</b>	0x56	86

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	 <b>yes</b>

Description
-------------


A command that behaves in the same way as the Poll command but with this command, the specified events will need to be acknowledged by the host using the EVENT ACK command (0x56).

The events will repeat until the EVENT ACK command is sent and the BNV will not allow any further note actions until the event has been cleared by the EVENT ACK command. If this command is not supported by the slave device, then generic response 0xF2 will be returned and standard poll command (0x07) will have to be used.

Packet examples
-----------------

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Command	Code hex	Code decimal
<b>Event Ack</b>	0x57	87

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	 <b>yes</b>

Description
-------------

This command will clear a repeating Poll ACK response and allow further note operations.


Packet examples
-----------------

Host transmit: **7F 80 01 57 F2 03**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Set Denomination Route</b>	0x3B	59

Implemented on	Encryption Required
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

This command will configure the denomination to be either routed to the cashbox on detection or stored to be made available for later possible payout.

**Note on protocol versions: For protocol versions less than 6 a value only data array is sent. For protocol version greater or equal to 6, a 3 byte country code is also sent to allow multi-currency functionality to the payout.**

**Please note that there exists a difference in the data format between SMART Payout and SMART Hopper for protocol versions less than 6. In these protocol versions the value was determined by a 2 byte array rather than 4 byte array for SMART Hopper.**

For NV11 devices the host must send the required note value in the same form that the device is set to report by (see Set Value Reporting Type command).

Protocol version less than 6 command format:

byte	function	size
0	requested route (0 = payout, 1= cashbox)	1
1	value (2 bytes for hopper, 4 bytes for others)	2 or 4

Protocol version greater of equal to 6 format:

byte	function	size
0	requested route (0 = payout, 1= cashbox)	1
1	value of requested denomination to route (4 byte integer)	4
5	ASCII country code of requested denomination	3

With note payouts, the device responds with COMMAND CANNOT BE PROCESSED and an error byte for request failure:

Error	code
No payout connected	1
Invalid currency detected	2
Payout device failure	3

## Packet examples

An example of a request to route a 10c EUR coin to be stored for payout using protocol version 6

Host transmit: **7F 80 09 3B 00 0A 00 00 00 45 55 52 08 43**

Slave Reply: **7F 80 01 F0 23 80**


Example command with error response Invalid currency detected

Host transmit: **7F 80 09 3B 00 0A 00 00 00 45 55 52 08 43**

Slave Reply: **7F 80 02 F5 02 30 3E**

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Command	Code hex	Code decimal
<b>Get Denomination Route</b>	0x3C	60

Implemented on	Encryption Required
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

This command allows the host to determine the route of a denomination.

**Note protocol versions:**

For protocol versions less than 6 a value only data array is sent. For protocol version greater or equal to 6, a 3 byte country code is also sent to allow multi-currency functionality to the payout.

**Please note that there exists a difference in the data format between SMART Payout and SMART**

**Hopper for protocol versions less than 6. In these protocol versions the value was determined by a 2 byte array rather than 4 byte array**

For NV11 devices the host must send the required note value in the same form that the device is set to report by (see Set Value Reporting Type command).

Protocol version less than 6 command format:

byte	function	size
0	value (2 bytes for hopper, 4 bytes for others)	2 or 4

Protocol version greater of equal to 6 format:

byte	function	size
0	value of requested denomination to route (4 byte integer)	4
4	ASCII country code of requested denomination	3

The device responds with a data byte representing the current route of the denomination.

byte	function	size
0	Generic OK	1
1	Route (0 = recycle for payout, 1 = system cashbox)	1

With note payouts, the device responds with COMMAND CANNOT BE PROCESSED and an error byte for request failure:



Error	code
No payout connected	1
Invalid currency detected	2
Payout device failure	3

Packet examples


This example shows a request to obtain the route of EUR 5.00 note in protocol version 6.  
Returns 0 for payout.

Host transmit: **7F 80 08 3C F4 01 00 00 45 55 52 2F 0E**

Slave Reply: **7F 80 02 F0 00 3F A0**

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Command	Code hex	Code decimal
<b>Payout Amount</b>	0x33	51

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

A command to set the monetary value to be paid by the payout unit.

**This command was expanded after and including protocol version 6 to include country codes and payout test option.**

Command format protocol version less than 6:

byte	function	size
0	payout value (4 byte integer of the full penny amount)	4

Command format protocol greater than or equal to 6:

byte	function	size
0	payout value (4 byte integer of the full penny amount)	4
4	ASCII country code of currency to pay	3
8	Option byte (TEST_PAYOUT_AMOUNT 0x19, PAYOUT_AMOUNT 0x58),	1

For request failure, the device responds with COMMAND CANNOT BE PROCESSED and a data byte showing the error code.

Error	Code
Not enough value in device	1
Cannot pay exact amount	2
Device busy	3
Device disabled	4

Packet examples
-----------------

Shows a request to payout EUR 5.00 using protocol version 4

Host transmit: **7F 80 05 33 F4 01 00 00 32 50**

Slave Reply: **7F 80 01 F0 23 80**

Shows an example is a request to payout EUR 5.00 in protocol version 6 with commit option.

Host transmit: **7F 80 09 33 F4 01 00 00 45 55 52 58 C3 EE**

Slave Reply: **7F 80 01 F0 23 80**

Shows an example is a request to payout EUR 5.00 in protocol version 6 failed due to cannot pay exact amount

Host transmit: **7F 80 09 33 F4 01 00 00 45 55 52 58 C3 EE**

Slave Reply: **7F 80 02 F5 02 30 3E**

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Command	Code hex	Code decimal
<b>Get Denomination Level</b>	0x35	53

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

This command returns the level of a denomination stored in a payout device as a 2 byte value.

This command was expanded in protocol version 6 to include country codes for multi-currency functionality.

Protocol version 5 command format:

byte	function	size
0	4 byte value of denomination requested	4

Protocol version 6 and greater command format:

byte	function	size
0	4 byte value of denomination requested	4
4	ASCII country code of denomination required	3

Packet examples
-----------------

Example shows a request to find the amount of 0.10c coins in protocol version 5. Returns a level of 100

Host transmit: **7F 80 05 35 0A 00 00 00 1E 49**

Slave Reply: **7F 80 03 F0 64 00 C5 F0**

Shows a request to find the level of EUR 5.00 notes using protocol version 6. Returns 12.

Host transmit: **7F 80 08 35 F4 01 00 00 45 55 52 19 9E**

Slave Reply: **7F 80 03 F0 0C 00 C3 80**


If the denomination is not in the device, it will respond with COMMAND CANNOT BE PROCESSED

Host transmit: **7F 80 08 35 F4 01 00 00 45 55 52 19 9E**

Slave Reply: **7F 80 01 F5 3D 80**

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Command	Code hex	Code decimal
<b>Set Denomination Level</b>	0x34	52

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>

Description
-------------

A command to increment the level of coins of a denomination stored in the hopper. The command is formatted with the command byte first, amount of coins to add as a 2-byte little endian, the value of coin as 2-byte little endian and (if using protocol version 6) the country code of the coin as 3 byte ASCII. The level of coins for a denomination can be set to zero by sending a zero level for that value.

**This command was updated when using version 6 and greater to allow for larger 4 byte coin values and country codes.**

Protocol version less than 6:

byte	function	size
0	number of coins to add to level (0 will clear the level)	2
2	value fo denimonation to set	2

Protocol version great or equal to 6:

byte	function	size
0	number of coins to add to level (0 will clear the level)	2
2	value of denomination to set	4
6	ASCII country code of denomination	3

Packet examples
-----------------

Example to increase the level of .50c coin by 20 using protocol version 5

Host transmit: **7F 80 05 34 14 00 32 00 63 FD**

Slave Reply: **7F 80 01 F0 23 80**


Example to increase the level of EUR 1.00 coins by 12 on a device set with protocol version 6

Host transmit: **7F 80 0A 34 0C 00 64 00 00 00 45 55 52 C7 28**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Halt Payout</b>	0x38	56

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

A command to stop the execution of an existing payout. The device will stop payout at the earliest convenient place and generate a Halted event giving the value paid up to that point.

Packet examples
-----------------


Ok response for halt command accepted.

Host transmit: **7F 80 01 38 90 02**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Float Amount</b>	0x3D	61

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

A command to float the payout unit to leave a requested value of money, with a requested minimum possible payout level. All monies not required to meet float value are routed to cashbox. Using protocol version 6, the host also sends a pre-test option byte (TEST\_FLOAT\_AMOUT 0x19, FLOAT\_AMOUNT 0x58), which will determine if the command amount is tested or floated. This is useful for multi-payout systems so that the ability to pay a split down amount can be tested before committing to actual float.

**This command was expanded after and including protocol version 6 to include country codes and payout test option.**

Command format protocol version less than 6:

byte	function	size
0	value of minimum payout to remain	2
2	float value (4 byte integer of the full penny amount)	4

Command format protocol greater than or equal to 6:

byte	function	size
0	value of minimum payout to remain	2
2	payout value (4 byte integer of the full penny amount)	4
6	ASCII country code of currency to pay	3
9	Option byte (TEST_FLOAT_AMOUT 0x19, FLOAT_AMOUNT 0x58),	1

For request failure, the device responds with COMMAND CANNOT BE PROCESSED and a data byte showing the error code.

Error	Code
Not enough value in device	1
Cannot pay exact amount	2
Device busy	3
Device disabled	4

Packet examples

Example to request to float to a value of 100.00 leaving a min possible payout of 0.50c for protocol version 5

Host transmit: **7F 80 07 3D 32 00 10 27 00 00 1D 1C**

Slave Reply: **7F 80 01 F0 23 80**

In protocol version greater than 6, we add a 3 byte ascii country code and a test or commit data byte. In this example a request to float to a value of EUR 100.00 leaving a min possible payout of 0.50c

Host transmit: **7F 80 0B 3D 32 00 27 10 00 00 45 55 52 58 A7 DA**

Slave Reply: **7F 80 01 F0 23 80**



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Command	Code hex	Code decimal
<b>Get Min Payout</b>	0x3E	62

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

A command to request the minimum possible payout amount that this device can provide.

For protocol versions less than 6, no parameters are sent.

For protocol version 6 or greater, we add the 3 byte country code of the country we are requesting.

Packet examples
-----------------

Example for protocol version 5 returning min payout of 200

Host transmit: **7F 80 01 3E 84 02**

Slave Reply: **7F 80 05 F0 C8 00 00 00 A7 C2**

Protocol version 6 example returning a min payout value of 5.00 EUR

Host transmit: **7F 80 04 3E 45 55 52 14 E3**


ascii: . . > E U R . .

Slave Reply: **7F 80 05 F0 F4 01 00 00 BA 72**

ascii: . . . . .

&lt;&lt; back to index

Command	Code hex	Code decimal
<b>Set Coin Mech Inhibits</b>	0x40	64

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>

Description
-------------

This command is used to enable or disable acceptance of individual coin values from a coin acceptor connected to the hopper.

Protocol versions less than 6:

byte	function	size
0	Requested inhibit state (0 =inhibit,1=enable)	1
1	coin value (2 byte integer)	2

Protocol versions greater or equal to 6:.

byte	function	size
0	Requested inhibit state (0 =inhibit,1=enable)	1
1	coin value (2 byte integer)	2
3	ASCII country code of value	3


Packet examples
-----------------

Example we want to enable acceptance of EUR 0.50c coins in protocol version 6.

Host transmit: **7F 80 07 40 01 32 00 45 55 52 CA 5E**  
 ascii: . . @ . 2 . E U R . ^  
 Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Payout By Denomination</b>	0x46	70

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

A command to payout the requested quantity of individual denominations.

**Requires Protocol Version 6 or above.**

**Attempting to use the command with an earlier protocol version will generate a response 0xF4 (parameter out of range).**

The quantities of denominations to pay are sent as a 2 byte little endian array; the money values as 4-byte little endian array and the country code as a 3-byte ASCII array.

The host also adds an option byte to the end of the command array (TEST\_PAYOUT\_AMOUT 0x19 or PAYOUT\_AMOUNT 0x58). This will allow a pre-test of the ability to payout the requested levels before actual payout executes.

Command format:

byte	function	size
0	the number of individual requests in this command (max 20)	1
1	the number to pay	2
3	the denomination value	4
7	the denomination ASCII country code	3
10	repeat block for each required denomination	
	The option byte (TEST_FLOAT_AMOUT 0x19 or FLOAT_AMOUNT 0x58).	1

For request failure, the device responds with COMMAND CANNOT BE PROCESSED and a data byte showing the error code.

Error	Code
Not enough value in device	1
Cannot pay exact amount	2
Device busy	3
Device disabled	4


Packet examples
-----------------

Example - A nopper unit has stored 100 x 0.10 EUR, 50 x 0.20 EUR, 50 x 1.00 EUR, 10 x 1.00 GBP, 50 x 0.50 GBP and the host wishes to payout to 5 x 1.00 EUR, 5 x 0.10 EUR, 3 x 1.00 GBP and 2 x 0.50 GBP.

Host transmit: **7F 80 27 46 04 04 00 64 00 00 00 45 55 52 05 00 0A 00 00 00 45 55 52 03**  
**00 64 00 00 00 47 42 50 02 00 32 00 00 00 47 42 50 58 94 B7**  
ascii:       . ' F . . . d . . . E U R . . . . . E U R .  
             . d . . . G B P . . . 2 . . . G B P X . .  
Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Float By Denomination</b>	0x44	68

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

A command to float (leave in device) the requested quantity of individual denominations.

**Requires Protocol Version 6 or above.**

**Attempting to use the command with an earlier protocol version will generate a response 0xF4 (parameter out of range).**

The quantities of denominations to leave are sent as a 2 byte little endian array; the money values as 4-byte little endian array and the country code as a 3-byte ASCII array. The host also adds an option byte to the end of the command array (TEST\_PAYOUT\_AMOUT 0x19 or PAYOUT\_AMOUNT 0x58). This will allow a pre-test of the ability to float to the requested levels before actual float executes.

Command format:

byte	function	size
0	the number of individual requests in this command (max 20)	1
1	the number required to leave in device (little endian array)	2
3	the denomination value (little endian array)	4
7	the denomination ASCII country code	3
10...	repeat block for each required denomination	
last	The option byte (TEST_FLOAT_AMOUT 0x19 or FLOAT_AMOUNT 0x58).	1

For request failure, the device responds with COMMAND CANNOT BE PROCESSED and a data byte showing the error code.

Error	Code
Not enough value in device	1
Cannot pay exact amount	2
Device busy	3
Device disabled	4


Events used to indicate progress:

while floating is being carried out, the floating and floated events are used to keep the host informed.

Packet examples

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Command	Code hex	Code decimal
<b>Empty All</b>	0x3F	63

Implemented on	Encryption Required
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

This command will direct all stored monies to the cash box without reporting any value and reset all the stored counters to zero. See Smart Empty command to record the value emptied.

A poll command during this process will respond with Emptying and Empty events

Packet examples
-----------------


Command format (no parameters) for acknowledged request.

Host transmit: **7F 80 01 3F 81 82**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Set Options</b>	0x50	80

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>

Description
-------------

The host can set the following options for the Smart Hopper. These options do not persist in memory and after a reset they will This command is valid only when using protocol version 6 or greater.

Table below shows the available options for the SMART Hopper. The command data is formatted as a 2 byte register REG\_0 and REG\_1



### Reg\_0 bits and their meaning

Bit	parameter	
0	pay mode	Split by highest value (0x00) The device will attempt to payout a requested value by starting from the highest to the lowest coins available. This mode will payout the minimum number of coins possible. Free pay (0x01) (Default state after reset). The device will payout a coin as it passes its discriminator system if it fits into the current payout value and will leave enough of other coins to payout the rest of the value. This may give a faster payout but could result in a large number of coins of small denominations paid out.
1	level check	Disabled (0x00). The device will not refer to the level counters when calculating if a payout value can be made. Enabled (0x01) (Default state after reset). The device will check the level counters and accept or refuse a payout request based on levels and/or split of available levels.
2	motor speed	Low speed (0x00). Payouts run at a lower motor speed. High Speed (Default state after reset) (0x01). The motors run at max speed for payouts.
3	cashbox pay active	This bit is used in conjunction with Bit 0. If bit 3 is zero, then the Pay modes will be as described in bit 0. If Bit 3 is set then coins routed to the cashbox will be used in coins paid out of the front if they can fit into the current payout request.
4	Route 0 level coins to cashbox	Set to 1 means that any coins detected with a level setting of 0 will be paid to the cashbox, even if it is routed to the payout
5	High efficiency split	Set to 1 to enable a more efficient, smarter coin payout algorithm which will tend to use coins which have higher level counts - thus speeding up the payout process
6	Unknown to payout	Set to 1 means any unknown coins will be paid out during Smart Empty (otherwise they will be routed to cashbox)
7	Value added	set to 0 for coin added event set to 1 for value added event

REG\_1: required but not used so bits set to 0.

#### Response

When responding to this command, the Smart Hopper returns a byte which indicates the current operational mode as follows:

#### Set Options: Response Codes

Code	Meaning
0xFC	Highest split, use coins routed to cashbox in the split
0xFD	Free pay, use coins routed to cashbox in the split
0xFE	Highest split
0xFF	Free pay

## Packet examples


The example shows a request to turn off level check, run at high speed and split by highest value.

Host transmit: **7F 80 03 50 04 00 40 38**

Slave Reply: **7F 80 02 F0 FE 38 22**

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Command	Code hex	Code decimal
<b>Get Options</b>	0x51	81

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>


Description
-------------

This command returns 2 option register bytes described in [Set Options](#) command.

Packet examples
-----------------

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Command	Code hex	Code decimal
<b>Coin Mech Global Inhibit</b>	0x49	73

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>

Description
-------------

This command allows the host to enable/disable the attached coin mech in one command rather than by each individual value with previous firmware versions. Send this command and one Mode data byte: Data byte =0x00 - mech disabled. Date byte = 0x01 - mech enabled.

Packet examples
-----------------


In this example we are sending a command to enable the coin mech.

Host transmit: **7F 80 02 49 01 33 36**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Smart Empty</b>	0x52	82

Implemented on	Encryption Required
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------


Empties payout device of contents, maintaining a count of value emptied. The current total value emptied is given in response to a poll command. All coin counters will be set to 0 after running this command. Use [Cashbox Payout Operation Data](#) command to retrieve a breakdown of the denominations routed to the cashbox through this operation.

Packet examples
-----------------

Host transmit: **7F 80 01 52 EC 03**Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Cashbox Payout Operation Data</b>	0x53	83

Implemented on	Encryption Required
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	 <b>yes</b>

Description
-------------

Can be sent at the end of a SMART Empty, float or dispense operation. Returns the amount emptied to cashbox from the payout in the last dispense, float or empty command.

Response format:

byte	function	size
0	generic OK	1
1	number of denominations in report	2
3	qty of denomination	2
6	denomination value	4
10	denomination country (ASCII)	3
...	<b>repeated above block for each denomination</b>	...
...	quantity of unknown	4

Packet examples
-----------------

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Command	Code hex	Code decimal
<b>Get All Levels</b>	0x22	34

Implemented on	Encryption Required
SMART HOPPER, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

Use this command to return all the stored levels of denominations in the device (including those at zero level).

This gives a faster response than sending each individual denomination level request.

Response data consists of blocks of nine bytes data for each denomination in the device:

byte	function	size
0	Generic OK	1
1	number of denominations in the device	1
2	level of denomination stored	2
4	denomination value (4 byte little endian integer)	4
7	denomination code (3 Byte ASCII)	3
10..	Repeat for each denomination	9

Packet examples
-----------------

In this example, we have a device coin dataset of EURO s with 20c,50c,1 EUR and 2 EUR. It currently has 100 x 20c, 65 x 50x, 0 x 1 EUR and 12 x 2 EUR.

Host transmit: **7F 80 01 22 CF 82**

Slave Reply: **7F 80 26 F0 04 64 00 14 00 00 00 45 55 52 41 00 32 00 00 00 45 55 52 00 00 64 00 00 00 45 55 52 0C 00 C8 00 00 00 45 55 52 84 D0**

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Command	Code hex	Code decimal
<b>Get Counters</b>	0x58	88

Implemented on	Encryption Required
NV11, NV9USB, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

A command to return a global note activity counter set for the slave device. The response is formatted as in the table below and the counter values are persistent in memory after a power down- power up cycle.

These counters are note set independent and will wrap to zero and begin again if their maximum value is reached. Each counter is made up of 4 bytes of data giving a max value of 4294967295.

Response format:

byte	function	size
0	Generic OK	1
1	Number of counters in set	1
2	Stacked	4
6	Stored	4
10	Dispensed	4
14	Transferred to stack	4
18	Rejected	4

Packet examples
-----------------



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Command	Code hex	Code decimal
<b>Reset Counters</b>	0x59	89

Implemented on	Encryption Required
NV11, NV9USB, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

Resets the note activity counters described in Get Counters command to all zero values.

Packet examples
-----------------

Command format (no parameters) for acknowledged request.

Host transmit: **7F 80 01 59 D5 83**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Set Refill Mode</b>	0x30	48

Implemented on	Encryption Required
SMART PAYOUT	<b>optional</b>

Description
-------------

A command sequence to set or reset the facility for the payout to reject notes that are routed to the payout store but the firmware determines that they are un-suitable for storage. In default mode, they would be re-routed to the stacker. In refill mode they will be rejected from the front of the NV200.

Packet examples
-----------------

This example show the sequence of command bytes to set the mode.

Host transmit: **7F 80 06 30 05 81 10 11 01 52 F5**  
 Slave Reply: **7F 80 01 F0 23 80**

This sequence will un-set the mode for normal operation.


Host transmit: **7F 80 06 30 05 81 10 11 00 57 75**  
 Slave Reply: **7F 80 01 F0 23 80**

To read the current refill mode send this sequence: Returns 1 byte: 0x00 the option is not set, 0x01 the option is set. This shows a return with option set.

Host transmit: **7F 80 05 30 05 81 10 01 94 EE**  
 Slave Reply: **7F 80 02 F0 01 3A 20**

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Command	Code hex	Code decimal
<b>Get Note Positions</b>	0x41	65

Implemented on	Encryption Required
NV11	 <b>yes</b>

Description
-------------

This command will return the number of notes in the Note Float and the value in each position. The way the value is reported is specified by the Set Reporting Type command. The value can be reported by its value or by the channel number of the bill validator. The first note in the table is the first note that was paid into the Note Float.

The Note Float is a LIFO system, so the note that is last in the table is the only one that is available to be paid out or moved into the stacker.

Data response format when Report by value is set:

byte	function	size
0	Generic OK	1
1	Number of notes stored	1
2	Value of note in slot 1	4
6	Value of note in slot 2	4
10	Value of note in slot 3	4
...	continues for how many notes stored...	

Data response format when Report by channel is set:

byte	function	size
0	Generic OK	1
1	Number of notes stored	1
2	Channel of note in slot 1	1
3	Channel of note in slot 2	1
4	Channel of note in slot 3	1
...	continues for how many notes stored...	

If the currency in the validator does not match the country of the notes stored, then this command will respond with COMMAND CANNOT BE PROCESSED and error byte 2 (Invalid currency)

Packet examples
-----------------

Response example for 2 notes store value 5 and 10

Host transmit: **7F 80 01 41 85 83**

Slave Reply: **7F 80 09 02 F4 01 00 00 E8 03 00 00 7D CF**


Response given to command when BNV currency does not match stored note currency.

Host transmit: **7F 80 01 41 85 83**

Slave Reply: **7F 80 02 F5 02 30 3E**

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Command	Code hex	Code decimal
<b>Payout Note</b>	0x42	66

Implemented on	Encryption Required
NV11	 <b>yes</b>

Description
-------------

The Note Float will payout the last note that was stored. This is the note that is in the highest position in the table returned by the Get Note Positions Command. If the payout is possible the Note Float will reply with generic response OK.

If the payout is not possible the reply will be generic response COMMAND CANNOT BE PROCESSED, followed by an error code shown in the table below.

Error	Code
not connected	1
empty	2
busy	3
disabled	4

Packet examples
-----------------


Command acknowledged to payout first note in queue.

Host transmit: **7F 80 01 42 8F 83**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Stack Note</b>	0x43	67

Implemented on	Encryption Required
NV11	 <b>yes</b>

Description
-------------

The Note Float will stack the last note that was stored. This is the note that is in the highest position in the table returned by the Get Note Positions Command. If the stack operation is possible the Note Float will reply with generic response OK.

If the stack operation is not possible the reply will be generic response COMMAND CANNOT BE PROCESSED, followed by an error code shown in the table below.

Error	Code
not connected	1
empty	2
busy	3
disabled	4

Packet examples
-----------------


Command acknowledged to stack first note in queue.

Host transmit: **7F 80 01 43 8A 03**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Set Value Report Type</b>	0x45	69

Implemented on	Encryption Required
NV11	 <b>yes</b>

### Description

This will set the method of reporting values of notes. There are two options, by a four-byte value of the note or by the channel number of the value from the banknote validator. If the channel number is used then the actual value must be determined using the data from the Validator command Unit Data. The default operation is by 4-byte value. Send 0x00 to set Report by value, 0x01 to set Report By Channel.

If the setting is not possible the reply will be generic response COMMAND CANNOT BE PROCESSED, followed by an error code shown in the table below.

Error	Code
not connected	1
empty	2
busy	3
disabled	4

### Packet examples

example to set report by value

Host transmit: **7F 80 02 45 00 36 9E**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Set Generator</b>	0x4A	74

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Part of the eSSP encryption negotiation sequence.

Eight data bytes are sent. This is a 64 bit number representing the Generator and must be a prime number. The slave will reply with OK or PARAMETER\_OUT\_OF\_RANGE if the number is not prime.

Packet examples
-----------------

In this example we are sending the prime number 982451653. This = 3A8F05C5 hex

Host transmit: **7F 80 09 4A C5 05 8F 3A 00 00 00 00 B2 73**

Slave Reply: **7F 80 01 F0 23 80**



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Command	Code hex	Code decimal
<b>Set Modulus</b>	0x4B	75

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Part of the eSSP encryption negotiation sequence.

Eight data bytes are sent. This is a 64 bit number representing the Modulus and must be a prime number. The slave will reply with OK or PARAMETER\_OUT\_OF\_RANGE if the number is not prime.

Packet examples
-----------------

In this example we are sending the prime number 1287821. This = 13A68D hex

Host transmit: **7F 80 09 4B 8D A6 13 00 00 00 00 00 6C F6**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Request Key Exchange</b>	0x4C	76

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

The eight data bytes are a 64 bit number representing the Host intermediate key. If the Generator and Modulus have been set the slave will calculate the reply with the generic response and eight data bytes representing the slave intermediate key. The host and slave will then calculate the key.

If Generator and Modulus are not set then the slave will reply FAIL.

Packet examples
-----------------


An example of Host intermediate key of 7554354432121 = 6DEE29CC879 hex

Host transmit: **7F 80 09 4C 79 C8 9C E2 DE 06 00 00 9D 52**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Coin Mech Options</b>	0x5A	90

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>

Description
-------------

The host can set the following options for the Smart Hopper. These options do not persist in memory and after a reset they will go to their default values.

#### Bit function

0 Coin Mech error events 1 = ccTalk format, 0 = Coin mech jam and Coin return mech open only

1:7 Unused set to 0

If coin mech error events are set to ccTalk format, then event Coin Mech Error 0xB7 is given with 1 byte ccTalk

coin mech error reason directly from coin mech ccTalk event queue. Otherwise only error events Coin Mech

Jam 0xC4 and Coin Mech Return 0xC5 are given.

Packet examples
-----------------

In this example we send register byte configured to return cctalk style events.

Host transmit: **7F 80 02 5A 01 30 DC**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Get Build Revision</b>	0x4F	79

Implemented on	Encryption Required
NV11, NV200, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

A command to return the build revision information of a device. The command returns 3 bytes of information representing the build of the product.

Byte 0 is the product type, next two bytes make up the revision number(0-65536).  
For NV200 and Nv9usb, the type byte is 0, for Note Float, byte is 3 and for SMART Payout the byte is 6.

Packet examples
-----------------


This example is from an NV200 (issue 20) with payout attached (issue 21).

Host transmit: **7F 80 01 4F A2 03**

Slave Reply: **7F 80 07 F0 00 14 00 06 15 00 0F 97**

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Command	Code hex	Code decimal
<b>Enable Payout Device</b>	0x5C	92

Implemented on	Encryption Required
NV11, SMART PAYOUT	 <b>yes</b>

Description
-------------

A command to enable the attached payout device for storing/paying out notes. A successful enable will return OK, If there is a problem the reply will be generic response COMMAND\_CANNOT\_BE\_PROCESSED, followed by an error code.

For NV11 devices, this command uses an addition data byte, a bit register allows some options to be set.

bit	function
0	GIVE_VALUE_ON_STORED. Set to 1 to enable the value of the note stored to be given with the Note Stored event
1	NO_HOLD_NOTE_ON_PAYOUT. Set to 1 to enable the function of fully rejecting the dispensed banknote rather than holding it in the bezel.
2:7	Unused- set to 0

For SMART Payout devices with firmware greater or equal to 4.16, this command uses an addition data byte. A bit register allows some options to be set.

bit	function
0	REQUIRE_FULL_STARTUP. If set to 1, the Smart Payout will return busy until it has fully completed the startup procedure
1	OPTIMISE_FOR_PAYIN_SPEED. If set to 1 The Smart Payout will always move towards an empty slot when idle to try and ensure the shortest pay in speed possible.
2:7	Unused- set to 0


The device responds with COMMAND CANNOT BE PROCESSED and an error byte for failure to enable.

error	code
No device connected	1
Invalid currency detected	2
Busy	3
Empty only (Note float only)	4
Device error	5



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Command	Code hex	Code decimal
<b>Disable Payout Device</b>	0x5B	91

Implemented on	Encryption Required
NV11, SMART PAYOUT	 <b>yes</b>

Description
-------------

All accepted notes will be routed to the stacker and payout commands will not be accepted.

Packet examples
-----------------

Command format (no parameters) for acknowledged request.

Host transmit: **7F 80 01 5B DA 03**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Comms Pass Through</b>	0x37	55

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	<b>optional</b>

Description
-------------

The SMART Hopper includes two serial connections and this command enables the user to convert either of these into a USB to serial convertor so that the host can communicate directly with periferla connected to these ports.

This may be useful for updating or special configurations outside of the scope of the usual SMART Hopper to periferal protocols.

Command data format:

byte	function	size
0	UART select (0 - SSP Uart, 1 - cctalk UART)	1

Once this command is sent the device will respond with OK (0xF0) and from then all serial data via the USB will be routed to the periferal port directly.

To exit this mode, the host waits for at least 500ms since the last communication then sends byte array 0x55,0xAA,0xAA,0x55 waits for 500ms and then sends the array again. The device will then reset and communications will restore to normal.

Packet examples
-----------------

Command format (no parameters) for acknowledged request.

Host transmit: **7F 80 01 37 B2 02**

Slave Reply: **7F 80 01 F0 23 80**



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Command	Code hex	Code decimal
<b>Set Baud Rate</b>	0x4D	77

Implemented on	Encryption Required
BV100, BV20, BV50, NV11, NV150, NV200, SMART HOPPER, SMART PAYOUT, SMART SYSTEM	<b>optional</b>

Description
-------------

This command has two data bytes to allow communication speed to be set on a device.

byte	function	size
0	Required rate (0= 9600, 1=38400, 2= 15200)	1
1	Change persist (1=change will remain over reset, 0=rate sets to default after reset)	1

The device will respond with 0xF0 at the old baud rate before changing. Please allow a minimum of 100 milliseconds before attempting to communicate at the new baud rate.

Packet examples
-----------------


In this example, we want to set the speed to 38400 bd with but to reset to default (9600) on reset.

Host transmit: **7F 80 03 4D 01 00 E4 27**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Ssp Set Encryption Key</b>	0x60	96

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, FLATBED PRINTER, NV10USB, NV11, NV12, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	 <b>yes</b>

### Description

A command to allow the host to change the fixed part of the eSSP key. The eight data bytes are a 64 bit number representing the fixed part of the key. This command must be encrypted.

byte	function	size
0	new fixed key 64 bit, 8 byte	8

### Packet examples

Example to set new fixed key to 0x0123456701234567

Host transmit: **7F 80 09 60 67 45 23 01 67 45 23 01 BF 6F**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Ssp Encryption Reset To Default</b>	0x61	97

Implemented on	Encryption Required
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Resets the fixed encryption key to the device default. The device may have extra security requirements before it will accept this command (e.g. The Hopper must be empty) if these requirements are not met, the device will reply with Command Cannot be Processed. If successful, the device will reply OK, then reset. When it starts up the fixed key will be the default.

Packet examples
-----------------

Command format (no parameters) for acknowledged request.

Host transmit: **7F 80 01 61 46 03**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Get Real Time Clock Configuration</b>	0x62	98

Implemented on	Encryption Required
COUPON PRINTER, FLATBED PRINTER, NV12, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Returns the configuration of the device Real Time Clock.

#### Response

The device responds with 1 data byte giving the configuration of the RTC. Data = 0, the RTC resets on power up and the date/time will need to be setup. Data = 1, the date/time is persistent after a power cycle.

Packet examples
-----------------

In this example the device responds that the RTC does not hold it's settings after a power cycle.

Host transmit: **7F 80 01 62 4C 03**

Slave Reply: **7F 80 02 F0 00 3F A0**

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Command	Code hex	Code decimal
<b>Set Real Time Clock</b>	0x64	100

Implemented on	Encryption Required
COUPON PRINTER, FLATBED PRINTER, NV12, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Send six bytes of parameter data to set the system time and date.

Command data format:

byte	function	size
0	Generic OK	1
1	Day of month (1-31)	1
2	Month of year (1-12)	1
3	Year (0-99)	1
4	Hour of day (0-23)	1
5	Minute of hour (0-59)	1
6	Second of minute (0-59)	1

Packet examples
-----------------

Packet example for setting system time to 21st December 2012 10:22:30

Host transmit: **7F 80 07 64 15 0C 0C 0A 16 1E AF EC**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Get Real Time Clock</b>	0x63	99

Implemented on	Encryption Required
COUPON PRINTER, FLATBED PRINTER, NV12, SMART SYSTEM, SMART TICKET	<b>optional</b>

Description
-------------

Gets the current system RTC date and time. Responds with 6 bytes of data.

Response format:

byte	function	size
0	Generic OK	1
1	Day of month (1-31)	1
2	Month of year (1-12)	1
3	Year (0-99)	1
4	Hour of day (0-23)	1
5	Minute of hour (0-59)	1
6	Second of minute (0-59)	1

Packet examples
-----------------


In this example the system time is 21st December 2012 10:22:30

Host transmit: **7F 80 01 63 49 83**

Slave Reply: **7F 80 07 F0 15 0C 0C 0A 16 1E EC F1**

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Command	Code hex	Code decimal
<b>Set Cashbox Payout Limit</b>	0x4E	78

Implemented on	Encryption Required
SMART HOPPER, SMART SYSTEM	 <b>yes</b>

Description
-------------

Allow the host to specify a maximum level of coins, by denomination, to be left in the hopper.

During any payout operation, if there are coins in the hopper in excess of the set levels, when they are encountered on the conveyor belt they will be sent to the cashbox (beneath the hopper).

This means that over time (and multiple payout operations) any excess coins will be sent to the cashbox and the desired level will be achieved.

It effectively allows the hopper to do the 'floating' for the host machine i.e. it is an auto float mechanism.

NB: If a coin route is changed from cashbox to payout and then back to cashbox then the level for this coin will be reset to 0 (any of the coins will then be sent to cashbox).

Command format.

byte	function	size
0	The number of individual requests	1
1	The level limit to set	2
3	The denomination value	4
7	The denomination country code (3 byte ASCII)	3
...	<b>Repeat above block for each denomination required</b>	...

Packet examples
-----------------

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Command	Code hex	Code decimal
<b>Enable Tito Events</b>	0x72	114

Implemented on	Encryption Required
NV12, NV200	<b>optional</b>

Description
-------------

When communicating with the NV200 attached to the printer, optional additional poll events may be enabled. These are enabled by sending an SSP packet with the command header 0x72 to the NV200. Polls will the respond with the same printing (0xA5) and printed (0xA6) poll responses as the printer.

Packet examples
-----------------

Command format (no parameters) for acknowledged request.


Host transmit: **7F 40 01 72 2F 8C**

Slave Reply: **7F 40 01 F0 23 8F**



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Command	Code hex	Code decimal
<b>Coin Stir</b>	0x5D	93

Implemented on	Encryption Required
SMART SYSTEM	 <b>yes</b>

Description
-------------

Mixes the coins by performs a rotation of the Coin Hopper Motor for a specified time.

Command has 1 parameter, a byte value (1-255) giving the time in seconds for which to stir the coins.

Packet examples
-----------------

Stir the coins for 5 seconds

Host transmit: **7F 80 02 5D 05 28 CE**

Slave Reply: **7F 80 01 F0 23 80**

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Command	Code hex	Code decimal
<b>Ticket Print</b>	0x70	112

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description
-------------

The **Ticket Print** command uses a system of sub commands to allow the host to send printer commands to the device.

See the sub command list for details.

## Sub command of TICKET PRINT

## Add Static Text (01 01 )

Encryption required
yes

Description
-------------

Adds a fixed text item to a ticket template, or to the on the fly ticket buffer.

The font to use, position, rotation, and text to display are sent with this command. The template number to add this text to is also sent, and if 0 is used for this, the item is added to the on the fly buffer.

If added to a numbered template, the text item will be stored in the selected template file and printed every time that template is printed out.

If it is added to the on the fly buffer, it will be printed when the the print ticket command is called with a template parameter of 0. If a template file is printed, it will overwrite the contents of the on the fly buffer and the text will be lost.

The maximum number of charaters to print is 50. The text to display is sent with UTF-16 encoding.

The following table shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	01	1	Add Text Sub Command
3	v	1	Template to Add to (0 for on the fly, 1-255 for other templates)
4	v	1	Font index ID (0-255)
5	v	1	Orientation (0-3, multiples of 90°)
6	v	2	16-bit x Position of Text
8	v	2	16-bit y Position of Text
10	v	v	The Text to Display, Encoded as a UTF-16 String. Maximum of 50 Charaters (100 bytes)

## Packet examples

Add the text \"Hello\" to template 1 with no rotation, at position 20, 25 using font 1

Host  
transmit: **7F 40 14 70 01 03 01 01 00 14 00 19 00 48 00 65 00 6C 00 6C 00 6F 00 1D E2**

Slave  
Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Add Place Holder Text (01 02 )

Encryption required
yes

Description
-------------

Adds a place-holder for text to a template.

This text can then be filled in with the Set Placeholder Variable command, allowing for things such as dynamic counters on a ticket which changes every time while printing from the same template. The maximum number of characters to print is limited to 50 (100 bytes UTF-16).

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Set-up Sub Command
2	02	1	Add Placeholder Text Sub Command
3	v	1	Template to Add to (1-255 only, not allowed to add to on the fly)
4	v	1	Font Index (0-255)
5	v	1	Orientation, (0-3, multiples of 90°)
6	v	2	16-bit x Position of Text
8	v	2	16-bit y Position of Text
10	v	1	Maximum Character Count (max 50)
11	v	1	The Place Holder Reference ID (0-19)

Packet examples

Example to add the text with max 10 characters to template 1 using font 2 with 0 x 90 degrees of rotation at position 20,25 using place holder index 1:

Host transmit: **7F 80 0C 70 01 02 01 02 00 14 00 19 00 0A 01 F7 9B**

Slave Reply: **7F 80 01 F0 23 80**

## Sub command of TICKET PRINT

## Add Static Barcode (01 03 )

Encryption required
yes

Description
-------------

Add a barcode to the ticket.

This is done in the same way as text, and the numbers are passed as UTF-16 characters rather than straight values. The passed in height will be the height of the bar code on the ticket. The width represents the width of a single thin bar in the bar code. The maximum number of characters to print is limited to 50 (100 bytes UTF-16).

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	03	1	Add Static Barcode Sub Command
3	v	1	Template to Add to (0 for on the fly, 1-255 for other templates)
4	v	1	Type of Barcode: 0x00 = Interleaved 2 of 5 (only currently supported format)
5	v	1	Orientation (0-3, multiples of 90°)
6	v	2	16-bit x Position of Barcode
8	v	2	16-bit y Position of Barcode
10	v	2	16-bit Width of Bars
12	v	2	16-bit Height of Barcode
14	v	v	The Barcode Number (UTF-16), Maximum of 50 Characters (100 bytes)

Packet examples

Add the barcode \"1234\" to template 1 with 0 x 90 degrees of rotation at position 20,25 with bar width 5 and height 120

Host transmit: **7F 40 16 70 01 03 01 00 00 14 00 19 00 05 00 78 00 31 00 32 00 33 00 34 00 2B C1**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Get Image Size (05 02 )

Encryption required
optional

Description
-------------

Gets the area, in pixels, that an image will take up on a ticket. The width and height of the image are returned as 16-bit unsigned integers. The command assumes no rotation, and the image is to be rotated, the returned height should be used as width, and the width as height in any layout calculations.

The following table shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	02	1	Get Image Size Sub Command
3	v	1	Image Index (0-255)

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Width of Image (in Dots)
3	v	2	16-Bit Height of Image (in Dots)

Packet examples

Gets the size of image at index 5, and returns the size 30 x 40

Host transmit: **7F 40 04 70 05 02 05 32 CD**

Slave Reply: **7F 40 04 1E 00 28 00 79 E9**

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## Sub command of TICKET PRINT

Get Barcode Size (05 03 )

Encryption required

optional

## Description

Calculates and returns the width, in pixels, that a given barcode will take up on the ticket.

The width of the barcode is returned as a 16-bit unsigned integer. The height is not calculated or returned, as that is set directly by the command to add a barcode.

The following table shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	03	1	Get Barcode Size Sub Command
3	v	1	Type of Barcode: 0x00 = Interleaved 2 of 5 (only currently supported format)
4	v	1	The Width of an individual bar
5	v	v	The Barcode Number (UTF-16), Maximum of 50 Characters (100 bytes)

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Width of Resulting Barcode

## Packet examples

Gets the size of a barcode "1234" and returns the size 256

Host transmit: **7F 40 0D 70 05 03 00 04 31 00 32 00 33 00 34 00 57 65**

Slave Reply: **7F 40 03 F0 00 01 C6 0A**



## Sub command of TICKET PRINT

## Get Ticket Resolution (05 04 )

Encryption required
optional

Description
-------------

Gets the height and width that the ticket image printed can be, in pixels, for use in setting the coordinates of printed elements. Responds with a 16-bit width and 16-bit height.

The following table shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	04	1	Get Ticket Resolution Command

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Width (x) of Ticket
2	v	2	16-Bit Height (y) of Ticket

Packet examples

Gets the 16-bit x and y resolution of the ticket at 1096x520

Host transmit: **7F 40 03 70 05 04 DB 9E**

Slave Reply: **7F 40 05 F0 48 04 08 02 C7 3E**

## Sub command of TICKET PRINT

## Get Font Information (05 05 )

Encryption required
optional

Description
-------------

Gets information about a font. Returns the 16-bit max character width, 16-bit max character height, 16-bit font size, 1 byte bold, 1 byte italic and variable length font name string.

The following table shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	05	1	Get Font Info Sub Command
3	v	1	The Font Index ID (0-255)

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Maximum Character Width in Pixels (in Dots)
4	v	2	16-Bit Maximum Character Height in Pixels (in Dots)
6	v	2	16-Bit Font Size
8	v	1	Bold Flag
9	v	1	Italic Flag
10	v	v	ASCII Windows Font Filename

## Packet examples

Gets the font information for font 2. Returns info on a font with size 10, maximum character width 15, maximum character height 28, and filename consola

Host transmit: **7F 40 04 70 05 05 02 20 DF**

Slave Reply: **7F 40 10 F0 0F 00 1C 00 0A 00 00 00 63 6F 6E 73 6F 6C 61 78 71**

## Sub command of TICKET PRINT

## Get Qr Code Dimensions (05 0C )

Encryption required
optional

Description
-------------

Find the height and width in dots of a QR code.

The get QR code dimensions command can be used to find the height and width in dots of a QR code with a particular set of data (the height and width will always be the same as the QR Code is square.) This can be multiplied by the dot size you intend to use to find out how much room the QR code will take up on the ticket.

The following table shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Setup Sub Command
2	12	1	Get QR Code Dimensions Sub Command
3	v	1	The Length of the ASCII Data to be Used (1-120)

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Width and Height of QR Code (in Dots)

Packet examples

Get the size of a QR code with data of length 21, returning a size of 25

Host transmit: **7F 80 04 70 05 12 15 9E AD**

Slave Reply: **7F 80 02 F0 19 6A 20**

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Sub command of TICKET PRINT

Print Ticket (02 )

Encryption required
yes

Description
-------------

Prints a ticket from a template or on the fly data.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	02	1	Print Ticket Sub Command
2	v	1	Template to Print (1-255) or 0 for On-the-fly Buffer

#### Packet examples

Tell the device to print template 7

Host transmit: **7F 40 03 70 02 07 D2 0C**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Print Blank Ticket (03 )

Encryption required
yes

Description
-------------

Causes a blank (no print) ticket to be dispensed.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	03	1	Print Blank Ticket Sub Command

Packet examples

Host transmit: **7F 40 02 70 03 1E 20**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

Get Text Size (05 01 )

Encryption required
optional

Description
-------------

Finds the amount of space a text string will take up on the ticket. Returns the width and height of the text as 16-bit unsigned integers. Assumes no rotation.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Get Info Sub Command
2	01	1	Get Text Size Sub Command
3	v	1	Font index ID (0-255)
4	v	v	The UTF-16 text string array that will be used (Max 50 characters (100 bytes))

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Width of Text (in Dots)
3	v	2	16-Bit Height of Text (in Dots)

Packet examples

Gets the size of the text \"WIN\" using font 2, and reports back a width of 45, and height of 28

Host transmit: **7F 40 0A 70 05 01 02 57 00 49 00 4E 00 02 4A**

Slave Reply: **7F 40 05 F0 2D 00 1C 00 8A 02**

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## Sub command of TICKET PRINT

## Set Qr Placeholder (01 0B )

Encryption required
yes

Description
-------------

Load the designated QR placeholder with the supplied ASCII data.

QR placeholder values are set with a different command to standard ones, as the data for QR codes is in ASCII format and not UTF-16. There are three QR placeholder buffers available.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	0B	1	Set QR Code Placeholder Sub Command
3	v	1	Placeholder Index to Use (0-2)
4	v	v	The ASCII Data to Place in the Placeholder

Packet examples

Set QR placeholder index 0 to "test"

Host transmit: **7F 80 08 70 01 0B 00 74 65 73 74 85 43**

ascii: . . p . . . t e s t . C

Slave Reply: **7F 80 01 F0 23 80**



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## Sub command of TICKET PRINT

## Add Qr Code (01 09 )

Encryption required
yes

Description
-------------

Adds a QR code image to the ticket.

The size (height and width, which are always the same as each other) of the dots is sent in the command. Unlike other ticket data, the info within the QR code is send as ASCII text, as oppose to UTF-16. The maximum number of ASCII characters the QR code can store is 120.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	09	1	Add Static QR Code Sub Command
3	v	1	Template to Add to (0 for on the fly, 1-255 for other templates)
4	v	1	Dot Size (>=1)
5	v	1	Orientation (0-3, multiples of 90°)
6	v	2	16-bit x Position of QR Code
8	v	2	16-bit y Position of QR Code
10	v	v	ASCII Data (1-120 characters)

Packet examples

Add a QR code to template 2, with a dot size of 4, no rotation, at coordinates 50, 50 with the data "hello"

Host transmit: **7F 80 0F 70 01 09 02 04 00 32 00 32 00 68 65 6C 6C 6F 57 2F**

ascii: . . p . . . . 2 . 2 . h e l l o W /

Slave Reply: **7F 80 01 F0 23 80**

## Sub command of TICKET PRINT

## Add Qr Placeholder (01 0A )

Encryption required
yes

Description
-------------

Adds a placeholder QR code to the ticket.

Placeholder QR codes do not use the same placeholder buffers as other placeholder items, and their placeholders are set with a different command (detailed separately.) The maximum data size for the QR code is sent with the command.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	0A	1	Add Placeholder QR Code Sub Command
3	v	1	Template to Add to (1-255 only, not allowed to add to on the fly)
4	v	1	Dot Size (>=1)
5	v	1	Orientation (0-3, multiples of 90°)
6	v	2	16-bit x Position of QR Code
8	v	2	16-bit y Position of QR Code
10	v	1	Maximum Data Length (1-120 characters)
11	v	1	Placeholder to Use (0-2)

Packet examples

Add QR Placeholder: to template 2, dot size 4, no rotation, at location 320,116, with max data size of 120, using placeholder 0

Host transmit: **7F 80 0C 70 01 0A 02 04 00 40 01 74 00 78 00 D0 59**

Slave Reply: **7F 80 01 F0 23 80**

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## Sub command of TICKET PRINT

## Clear On The Fly Buffer (01 07 )

Encryption required
yes

Description
-------------

Clears all stored information in the on the fly ticket buffer. Send this command before sending a new set of on the fly information.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	07	1	Clear On-the-fly Buffer Sub Command

Packet examples

Host transmit: **7F 40 03 70 01 07 D2 06**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Set Placeholder (01 08 )

Encryption required
yes

Description
-------------

Sets the value of a place holder variable at a given index for the next print. The maximum number of characters to print is limited to 50 (100 bytes UTF-16).

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	08	1	Set Placeholder Variable Sub Command
3	v	1	Placeholder Index (0-19)
4	v	v	The Text to Display, Encoded as a UTF-16 String. Maximum of 50 Charaters (100 bytes)

Packet examples

Sets the placeholder string 6 to contain \"\$3.00\"

Host transmit: **7F 40 0E 70 01 08 06 24 00 33 00 2E 00 30 00 30 00 58 03**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Clear Template (01 06 )

Encryption required
yes

Description
-------------

Clears all stored information for a given template.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	06	1	Clear Template Sub Command
3	v	1	Template to Clear (1-255)

Packet examples

Clears template 13

Host transmit: **7F 40 04 70 01 06 0D 51 55**

Slave Reply: **7F 40 01 F0 23 8F**

## Sub command of TICKET PRINT

## Add Placeholder Barcode (01 04 )

Encryption required
yes

Description
-------------

Adds a place holder barcode to allow dynamic updating of ticket codes. The maximum number of characters to print is limited to 50 (100 bytes UTF-16).

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	04	1	Add Placeholder Barcode Sub Command
3	v	1	Template to Add to (0 for on the fly, 1-255 for other templates)
4	v	1	Type of Barcode: 0x00 = Interleaved 2 of 5 (only currently supported format)
5	v	1	Orientation (0-3, multiples of 90°)
6	v	2	16-bit x Position of Barcode
8	v	2	16-bit y Position of Barcode
10	v	2	16-bit Width of Bars
12	v	2	16-bit Height of Barcode
14	v	1	Maximum Chracter Count (Max 50 characters, 100 bytes)
15	v	1	The Place Holder Reference ID (0-19)

Packet examples

Adds a placeholder to template 9, at position 60, 60, with a bar width of 4, a height of 100, a maximum of 20 characters, using palceholder 3

Host transmit: **7F 40 10 70 01 04 09 00 00 3C 00 3C 00 04 00 64 00 20 03 48 7E**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Add Image (01 05 )

Encryption required
yes

Description
-------------

Allows the host to specify the resource index and placement variables of the image to add to the ticket or template.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	01	1	Setup Sub Command
2	05	1	Add Image Sub Command
3	v	1	Template to Add to (0 for on the fly, 1-255 for other templates)
4	v	1	Image Index ID (0-255)
5	v	1	Orientation (0-3, multiples of 90°)
6	v	2	16-bit x Position of Text
8	v	2	16-bit y Position of Text

Packet examples

Adds image 18 to template 7, at position 300, 50, with 90 degrees rotation

Host transmit: **7F 40 0A 70 01 05 07 12 01 2C 01 00 32 5C EE**

Slave Reply: **7F 40 01 F0 23 8F**

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## Sub command of TICKET PRINT

## Get Ticket Size (05 06 )

Encryption required
optional

Description
-------------

Gets the size of the ticket in mm that the printer is set to use. Returns 16-bit length and 16-bit height.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	06	1	Get Ticket Size Sub Command

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Width of Text (mm)
3	v	2	16-Bit Height of Text (mm)

Packet examples

Gets the ticket size in mm of 155 x 65mm

Host transmit: **7F 40 03 70 05 06 D4 1E**

Slave Reply: **7F 40 05 F0 9B 00 41 00 B9 F4**



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## Sub command of TICKET PRINT

## Get Free Storage (05 07 )

Encryption required
optional

Description
-------------

Gets the amount of free storage, in KB, on either the printer internal memory, or an inserted sd card as 32 bit little endian number.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	07	1	Get Free Storage Sub Command
3	v	1	Location of Memory to Check (0 for Internal Memory, 1 for SD Card.)

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	4	32-Bit Amount of Free Space in KB

Packet examples

Get the free storage on the internal flash, returning 1964 KB

Host transmit: **7F 40 04 70 05 07 00 2C D3**

Slave Reply: **7F 40 05 F0 AC 07 00 00 DA 5E**

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Sub command of TICKET PRINT

Check For Template (05 08 )

Encryption required
optional

Description
-------------

Check if a template with a given index exists on the device.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	08	1	Check for Template Sub Command
3	v	1	Template Index to Check

Response

If a template with the requested index exists, the command will return a generic SSP OK (0xF0) and will return a Parameter Out of Range (0xF4) if it does not.

#### Packet examples

Checks to see if template 18 exists

Host transmit: **7F 40 05 70 70 05 08 12 B9 62**

Slave Reply: **7F 40 01 F0 23 8F**







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Sub command of TICKET PRINT

Get Template Info (05 0D )

Encryption required
optional

Description
-------------

Returns the information about the make-up of a particular stored template index.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	0D	1	Get Template Info Sub Command
3	v	1	Template Index

Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	1	Total Number of Items in Template
2	v	1	Number of Static Text Items
3	v	1	Number of Placeholder Text Items
4	v	1	Number of Static Barcode Items
5	v	1	Number of Placeholder Barcode Items
6	v	1	Number of Image Items
7	v	1	Number of Static QR Code Items
8	v	1	Number of Placeholder QR Code Items

Packet examples

Gets information about template 2, which has a total of 6 items: 4 static texts, 1 placeholder barcode, and 1 images

Host transmit: **7F 40 04 70 05 0D 02 23 6F**

Slave Reply: **7F 40 09 F0 08 04 00 00 01 03 00 00 C7 C2**

Sub command of TICKET PRINT

Get Template Item Info (05 0E )

Encryption required
optional

Description
-------------

Returns the information about the make-up of a particular stored template index.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	0E	1	Get Template Item Info Sub Command
3	v	1	Template Index
4	v	1	Item index *

\* This index is obtained using the Get Template Info command. If this returns 7 items on a template then the indexes of the items will be (0-6).

Response

The returned data varies based on the item type. The start of the data is generic and is formatted as follows:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	1	Type of Item (1 = Static Text, 2 = Placeholder Text, 3 = Static Barcode, 4 = Placeholder Barcode, 5 = Image, 8 = Static QR Code, 9 = Placeholder QR Code)
2	v	2	16-Bit x Position of Item
4	v	2	16-Bit y Position of Item
6	v	1	Orientation (0-3, multiples of 90°)

**Static Text Item Information**



Byte	Value (hex)	Size	Function
7	v	1	Text Font ID
8	v	v	UTF-16 Item Text

**Placeholder Text Item Information**

Byte	Value (hex)	Size	Function
7	v	1	Text Font ID
8	v	1	Placeholder Index
9	v	1	Maximum Length

**Static Barcode Item Information**

Byte	Value (hex)	Size	Function
7	v	1	Barcode Type
8	v	2	Thin Bar Width
10	v	2	Barcode Height
12	v	v	UTF-16 Item Code

**Placeholder Barcode Item Information**

Byte	Value (hex)	Size	Function
7	v	1	Text Font ID
8	v	2	Thin Bar Width
10	v	2	Barcode Height
12	v	1	Placeholder Index
13	v	1	Maximum Length

**Image Item Information**

Byte	Value (hex)	Size	Function
7	v	1	Text Font ID
8	v	v	Image Index

**Static QR Code Item Information**

Byte	Value (hex)	Size	Function
7	v	1	Dot Size
8	v	v	ASCII QR Code Data

**Placeholder QR Code Item Information**

Byte	Value (hex)	Size	Function
7	v	1	Dot Size
8	v	1	Placeholder Index
9	v	1	Maximum Data Length

Packet examples

Gets information about template item 6 in template 2, which is a static text item at position 534, 406, with no rotation, using font 1, with the text \"SMART Ticket\"

Host transmit: **7F 40 05 70 05 0E 02 06 49 DA**

Slave Reply: **7F 40 20 F0 01 16 02 96 01 00 01 53 00 4D 00 41 00 52 00 54 00 20 00 54 00 69 00 63 00 6B 00 6E**

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## Sub command of TICKET PRINT

## Get Image File Checksum (05 0F )

Encryption required
optional

Description
-------------

Returns the CRC check sum for an image stored on the SMART Ticket file system. This may be useful for checking which images are present on a system. (Seed = 0xFFFF, same function as the packet check sum for SSP).

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	0F	1	Get Image Checksum Sub Command
3	v	1	Image Index (0-255)

## Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit CRC Checksum of the File on the Printer

Packet examples

Gets a checksum of image 3, which has a checksum of E5AA (hex)

Host transmit: **7F 40 04 70 05 0F 03 25 63**

Slave Reply: **7F 40 03 F0 AA E5 94 F4**

Sub command of TICKET PRINT

Get Ticket Bounds (05 10 )

Encryption required
optional

Description
-------------

A ticket printer command to get information about the printable area of the ticket (pixel offsets).

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	10	1	Get Pixel Bounds Sub Command

Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	2	16-Bit Top-most Printable Pixel Coordinate
3	v	2	16-Bit Bottom-most Printable Pixel Coordinate
5	v	2	16-Bit Left-most Printable Pixel Coordinate
7	v	2	16-Bit Right-most Printable Pixel Coordinate

Packet examples

Returns the ticket bounds of 28, 224, 80, 1176

Host transmit: **7F 40 05 70 70 05 10 03 DF 32**

Slave Reply: **7F 40 09 F0 1C 00 24 02 50 00 98 04 1B 62**

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Sub command of TICKET PRINT

Get Pixel Density (05 11 )

Encryption required

optional

Description

Returns the DPI or DPmm of the device printer.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	70	1	Print Command
1	05	1	Get Info Sub Command
2	11	1	Get Pixel Density Sub Command
3	v	1	Return Type. 0 = Dots Per mm, 1 = Dots Per Inch

Response

The following table shows the structure of the response data:

Byte	Value (hex)	Size	Function
0	F0	1	Generic OK
1	v	1	Pixel Density in the Selected Unit

#### Packet examples

Gets back the pixels per mm of 8

Host transmit: **7F 40 04 70 05 11 00 2F 27**Slave Reply: **7F 40 02 F0 08 2E 20**

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Command	Code hex	Code decimal
<b>Printer Configuration</b>	0x71	113

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description
-------------

The **Printer Configuration** command uses a system of sub commands to allow the host to send printer configuration commands to the device.

See the sub command list for details.

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Sub command of PRINTER CONFIGURATION

Set Ticket Mode (01 )

Encryption required
optional

Description
-------------

Packet examples

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## Sub command of PRINTER CONFIGURATION

## Set Ticket Width (02 )

Encryption required
optional

Description
-------------

Sets the width (size in the direction of print) of the ticket (x direction, and direction of ticket travel) in mm using a 16-bit integer.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	02	1	Set Ticket Width Sub Command
2	v	2	Ticket Width (mm)

Packet examples

Sets the ticket width to 130mm

Host transmit: **7F 40 03 71 02 82 D8 0F**

Slave Reply: **7F 40 01 F0 23 8F**



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## Sub command of PRINTER CONFIGURATION

## Set Ticket Height (03 )

Encryption required
optional

Description
-------------

Sets the height (size perpendicular to the direction of print) of the ticket (y direction) in mm using a 16-bit integer.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	03	1	Set Ticket Height Sub Command
2	v	2	Ticket Height (mm)

Packet examples

Sets the ticket height to 50mm

Host transmit: **7F 40 03 71 03 32 78 0A**

Slave Reply: **7F 40 01 F0 23 8F**

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Sub command of PRINTER CONFIGURATION

Set Printing Quality (06 )

Encryption required
optional

Description
-------------

Packet examples

Host transmit: **7F 80 01 71 25 83**

Slave Reply: **7F 80 01 00 03 82**

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Sub command of PRINTER CONFIGURATION

Enable Reverse Validation (07 )

Encryption required
optional

Description

Packet examples

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Sub command of PRINTER CONFIGURATION

Disable Reverse Validation (08 )

Encryption required
optional

Description

Packet examples

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## Sub command of PRINTER CONFIGURATION

## Enable Reverse Validation (07 )

Encryption required
optional

Description
-------------

Enables reverse validation on printers which attach to a validator.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	07	1	Enable Reverse Validator Sub Command

Packet examples

Host transmit: **7F 40 02 71 07 06 26**

Slave Reply: **7F 40 01 00 03 8D**

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## Sub command of PRINTER CONFIGURATION

## Disable Reverse Validation (08 )

Encryption required
optional

Description
-------------

Disables reverse validation on printers which attach to a validator.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	08	1	Disable Reverse Validator Sub Command

Packet examples

Host transmit: **7F 40 02 71 08 24 26**

Slave Reply: **7F 40 01 00 03 8D**

Sub command of PRINTER CONFIGURATION

Delete File (0A )

Encryption required
optional

Description
-------------

Deletes a selected resource file of the selected type, on the selected drive.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	0A	1	Delete File Sub Command
2	v	1	The type of file to be deleted. 0x01 for templates, 0x02 for fonts, 0x03 for images.
3	v	1	The location to delete the file from. 0x01 for internal flash, 0x02 for SD card, 0x03 for both.
4	v	1	The index of the file to delete (0-255)

Packet examples

Delete font 6 from the internal flash

Host transmit: **7F 40 05 71 0A 02 01 06 C2 9C**

Slave Reply: **7F 40 01 F0 23 8F**

Sub command of PRINTER CONFIGURATION

Delete File Group (0B )

Encryption required
optional

Description
-------------

Removes all instances of a selected type of resource from a selected drive.

The table below shows the command format:

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	0B	1	Delete File Group Sub Command
2	v	1	The type of file to be deleted. 0x01 for templates, 0x02 for fonts, 0x03 for images.
3	v	1	The location to delete the file from. 0x01 for internal flash, 0x02 for SD card, 0x03 for both.

Packet examples

Delete all templates from the SD card

Host transmit: **7F 40 04 71 0B 01 02 FB 53**

Slave Reply: **7F 40 01 F0 23 8F**



Sub command of PRINTER CONFIGURATION

Set Paper Saving Mode (0D )

Encryption required
optional

Description
-------------

Sets the paper saving mode on printers which support variable length tickets. With paper saving mode enabled, if the contents of the ticket doesn't take up the entire ticket length, a shorter ticket will be printed.

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	0D	1	Set Paper Saving Mode Sub Command
2	v	1	The Paper Saving Setting. 0x00 for Disabled, 0x01 for Enabled

Packet examples

Turn on paper saving mode

Host transmit: **7F 40 03 71 0D 01 D1 AE**

Slave Reply: **7F 40 01 F0 23 8F**

Sub command of PRINTER CONFIGURATION

Set Bezel Type (0E )

Encryption required
optional

Description

Sets the bezel type on printers which support bezels of different length. This will effect the minimum ticket length, as the length of the ticket must be able to exit the bezel.

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	0E	1	Set Bezel Type Sub Command
2	v	1	The Bezel Type Setting

Packet examples

Host transmit: **7F 40 02 71 E001 12 26**

Slave Reply: **7F 40 01 F0 23 8F**

Sub command of PRINTER CONFIGURATION

Set Printing Quality (06 )

Encryption required
optional

Description
-------------

Sets the quality setting for printed tickets. Higher values will produce a better quality print, but print times will be increased.

Byte	Value (hex)	Size	Function
0	71	1	Printer Config Command
1	06	1	Set Print Quality Sub Command
2	v	1	The Quality Setting. 0x00 = High Speed, 0x01 = Standard, 0x02 = High Quality

Packet examples

Set the print quality setting to high quality

Host transmit: **7F 40 03 71 06 02 D8 14**

Slave Reply: **7F 40 01 F0 23 8F**

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Command	Code hex	Code decimal
<b>Cancel Escrow Transaction</b>	0x76	118

Implemented on	Encryption Required
SMART PAYOUT	<b>optional</b>

Description

Packet examples

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Command	Code hex	Code decimal
<b>Commit Escrow Transaction</b>	0x77	119

Implemented on	Encryption Required
SMART PAYOUT	<b>optional</b>

Description

Packet examples

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Command	Code hex	Code decimal
<b>Read Escrow Value</b>	0x78	120

Implemented on	Encryption Required
SMART PAYOUT	<b>optional</b>

Description

Packet examples

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Command	Code hex	Code decimal
<b>Get Escrow Size</b>	0x79	121

Implemented on	Encryption Required
SMART PAYOUT	<b>optional</b>

Description

Packet examples

Command	Code hex	Code decimal
<b>Set Escrow Size</b>	0x7A	122


Implemented on	Encryption Required
SMART PAYOUT	<b>optional</b>

Description

Packet examples



Command	Code hex	Code decimal
<b>Payout Amount By Denomination</b>	0x39	57

Implemented on	Encryption Required
SMART SYSTEM	 <b>yes</b>

Description

This command is similar to 'Payout Amount' but has two values in the payout which you can select the denominations for each.

Packet examples

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Event	Code hex	Code decimal
<b>Slave Reset</b>	0xF1	241

Implemented on
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET

Description
-------------

An event given when the device has been powered up or power cycled and has run through its reset process.

Protocol minimum version 4			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Poll returns slave reset event

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 01 F1 26 00**

Event	Code hex	Code decimal
<b>Read</b>	0xEF	239

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description
-------------

An event given when the BNV is reading a banknote.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>1</b>	<b>yes</b>	<b>no</b>

Additional infomation

If the event data byte is zero, then the note is in the process of being scanned and validated.

If the data byte value changes from zero to a vaule greater then zero, this indicates a valid banknote is now held in the escrow position. The byte value shows the channel of the banknote that has been validated. A poll command after this value has been given will cause the banknote to be accepted from the escrow position. The host can also issue a reject command at this point to reject the banknote back to the user.

Protocol minimum version 9

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>yes</b>	<b>no</b>

Additional infomation

**For the SMART Currency device only** - 7 data bytes are given. If all bytes are zero then a banknote is in the process of being scanned and validated. Non zero show the country code and value of a validated banknote held in escrow.

data byte	function	size
0	3 byte ASCII code for country validated	3
3	4 byte code for banknote value	4

Packet examples
-----------------

Poll response showing a biil being read but not yet validated.

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 03 F0 EF 00 CF CA**

Poll response showing channel 3 bill held in escrow

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 03 F0 EF 03 C5 CA**

Event	Code hex	Code decimal
<b>Note Credit</b>	0xEE	238

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description
-------------

This event is generated when the banknote has been moved from the escrow position to a safe position within the validator system where the banknote cannot be retrieved by the user.

At this point, it is safe for the host to use this event as it's 'Credit' point.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>1</b>	<b>yes</b>	<b>yes</b>

Additional information

The data byte indicates the dataset channel of the banknote to be credited.

Protocol minimum version 9

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>yes</b>	<b>no</b>

Additional information

**For the SMART Currency device only** - 7 data bytes are given showing the country code and value of a Credited banknote.

data byte	function	size
0	3 byte ASCII code for country validated	3
3	4 byte code for banknote value	4

Packet examples

Poll response showing bill credit channel 4

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 EE 04 D7 CC**

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Event	Code hex	Code decimal
<b>Rejecting</b>	0xED	237

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description
-------------

A bill is in the process of being rejected back to the user by the Banknte Validator.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples
-----------------

Poll response showing bill rejecting

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 ED 51 A2**

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Event	Code hex	Code decimal
<b>Rejected</b>	0xEC	236

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description

A bill has been rejected back to the user by the Banknote Validator.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Poll response showing bill rejected by the validator.

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 02 F0 EC 54 22**

Event	Code hex	Code decimal
<b>Stacking</b>	0xCC	204

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB

Description

The bill is currently being transported to and through the device stacker.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples

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Event	Code hex	Code decimal
<b>Stacked</b>	0xEB	235

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description

A bill has been transported through the banknote validator and is in its stacked position.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Poll response showing stacked bill seen

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 EB 45 A2**



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Event	Code hex	Code decimal
<b>Safe Jam</b>	0xEA	234

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description

A bill has been detected as jammed during it's transport to the stacked position. A Sfae jam indicates that the bill is not retrievable by the user at this point.

Protocol minimum version 4			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples

Poll response showing safe jam detected

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 02 F0 EA 40 22**

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Event	Code hex	Code decimal
<b>Unsafe Jam</b>	0xE9	233

Implemented on
BV100, BV20, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

### Description

A bill has been detected as jammed during it's transport through the validator. An unsafe jam indicates that this bill may be in a position when the user could retrieve it from the validator bezel.

Protocol minimum version 4			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

### Packet examples

Poll response showing unsafe bill jam detected

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 02 F0 E9 4A 22**

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Event	Code hex	Code decimal
<b>Disabled</b>	0xE8	232

Implemented on
BV100, BV20, BV50, COUPON PRINTER, NV10USB, NV11, NV150, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM, SMART TICKET

Description
-------------

A disabled event is given in response to a poll command when a device has been disabled by the host or by some other internal function of the device.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Response to poll showing disabled event

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 02 F0 E8 4F A2**

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Event	Code hex	Code decimal
<b>Fraud Attempt</b>	0xE6	230

Implemented on
BV100, BV20, NV10USB, NV150, NV200, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description

The validator system has detected an attempt to maipulate the coin/banknote in order to fool the system to register credits with no monies added.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Fraud</b>	<b>1</b>	<b>no</b>	<b>yes</b>

Additional infomation

The data byte indicates the dataset channel of the banknote that is being tampeted with. A zero indicates that the channle is unknown.

Packet examples

Poll response showing fraud attempt seen on channel 2

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 E6 02 C0 7C**

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Event	Code hex	Code decimal
<b>Stacker Full</b>	0xE7	231

Implemented on
BV100, BV20, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description
-------------

Event in response to poll given when the device has detected that the stacker unit has stacked it's full limit of banknotes.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Poll response showing stacker full

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 E7 6D A2**

Event	Code hex	Code decimal
<b>Note Cleared From Front</b>	0xE1	225

Implemented on
BV100, BV50, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description
-------------

During the device power-up sequence a bill was detected as being in the note path. This bill is then rejected from the device via the bezel and this event is issued. If the bill value is known then the channel number is given in the data byte, otherwise the data byte will be zero value.

Packet examples
-----------------

Poll response showing unknown bill rejected from the front at power-up

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 E1 00 CC 6E**

Event	Code hex	Code decimal
<b>Note Cleared Into Cashbox</b>	0xE2	226

Implemented on
BV100, BV50, NV10USB, NV11, NV150, NV200, NV9USB, SMART PAYOUT

Description
-------------

During the device power-up sequence a bill was detected as being in the stack path. This bill is then moved into the device cashbox and this event is issued. If the bill value is known then the channel number is given in the data byte, otherwise the data byte will be zero value.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Pay-in</b>	<b>1</b>	<b>no</b>	<b>yes</b>

Packet examples
-----------------

Poll response showing a channel 2 bill moved to the cashbox at power-up

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 E2 02 C3 E4**

Event	Code hex	Code decimal
<b>Cashbox Removed</b>	0xE3	227

Implemented on
BV100, BV50, NV200, SMART PAYOUT

Description
-------------

The system has detected that the cashbox unit has been removed from it's working position.

The system will remain disabled for bill entry until the cashbox unit is replaced into it's working position.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples
-----------------

Poll response showing cashbox removed

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 E3 76 22**



<< back to index

Event	Code hex	Code decimal
<b>Cashbox Replaced</b>	0xE4	228

Implemented on
BV100, BV50, NV200, SMART PAYOUT

### Description

The device cashbox box unit has been detected as replaced into it's working position.  
 The validator will re-enable if it has not alreday been disabled by the host system.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

### Packet examples

Poll response showing cashbox replaced

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 02 F0 E4 67 A2**

Event	Code hex	Code decimal
<b>Barcode Ticket Validated</b>	0xE5	229

Implemented on
NV150, NV200, SMART PAYOUT

Description
-------------

A barcode ticket has been scanned and identified by the system and is currently held in the escrow position.

The host can send the [Get Barcode Data](#) command to retrieve the number of the ticket scanned. The host can then send a Reject or Poll command to reject or accept the ticket as required.

Packet examples
-----------------

Poll response showing bar code held in escrow

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 02 F0 E5 62 22**

Event	Code hex	Code decimal
<b>Barcode Ticket Ack</b>	0xD1	209

Implemented on
NV150, NV200, SMART PAYOUT

### Description

The device has moved the barcode ticket to a safe stack position.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>yes</b>

### Packet examples

Poll response showing bar code ticket ack

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 D1 D9 A2**

Event	Code hex	Code decimal
<b>Note Path Open</b>	0xE0	224

Implemented on
NV150, NV200, SMART PAYOUT

### Description

The device has detected that it's note path has been opened. The device will be disabled for bill entry until the note path is re-closed.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

### Packet examples

Poll response showing note path open

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 E0 7C 22**

Event	Code hex	Code decimal
<b>Channel Disable</b>	0xB5	181

Implemented on
BV100, BV20, BV50, NV10USB, NV11, NV200, NV9USB, SMART PAYOUT

### Description

The device has had all its note channels inhibited and has become disabled for note insertion.

Protocol minimum version 7			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

### Packet examples

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 B5 82 23**

Event	Code hex	Code decimal
<b>Initialising</b>	0xB6	182

Implemented on
BV100, BV20, BV50, NV200, NV9USB, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

This event is given only when using the Poll with ACK command. It is given when the BNV is powered up and setting its sensors and mechanisms to be ready for Note acceptance. When the event response does not contain this event, the BNV is ready to be enabled and used.

Protocol minimum version 7			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>yes</b>
Additional information			

**This event is only given when using the [Poll With Ack](#) command.**

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 B6 88 23**

Event	Code hex	Code decimal
<b>Dispensing</b>	0xDA	218

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

The device is in the process of paying out a requested value. The value paid at the poll is given in the event data.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>yes</b>	<b>no</b>

Additional information

\$ byte data giving the amount dispensed up to the poll.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>yes</b>	<b>no</b>

Additional information

An array of data giving the dispensed at the poll point for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value dispensed up to this point	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples

Protocol version 5 poll response showing 12.50 dispensed at this point

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 05 F0 E2 04 00 00 F8 4A**

Protocol version 6 poll response showing 23.00 EUR and 12.00 GBP dispensed to this point

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 10 F0 02 FC 08 00 00 45 55 52 B0 04 00 00 47 42 50 04 B3**  
 ascii:           . . . . . **E U R** . . . . **G B P**

Event	Code hex	Code decimal
<b>Dispensed</b>	0xD2	210

Implemented on
SMART PAYOUT, SMART SYSTEM

Description
-------------

Show the total value the device has dispensed in response to a [Dispense](#) command.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>yes</b>

Additional information

4 byte value showing total value dispensed.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

An array of data giving the total dispensed for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value dispensed	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples
-----------------



Event	Code hex	Code decimal
<b>Coins Low</b>	0xD3	211

Implemented on
SMART HOPPER

Description
-------------

Packet examples
-----------------

Event	Code hex	Code decimal
<b>Hopper Jammed</b>	0xD5	213

Implemented on
SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

An event showing the hopper unit has jammed and giving the value paid/floated up to that jam.

On the smart payout this event is used when a jam occurs during a payout / float / empty operation.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>4</b>	<b>yes</b>	<b>no</b>

Additional information

4 bytes showing the value dispensed up to the jam point

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>variable</b>	<b>yes</b>	<b>no</b>

Additional information

An array of data giving the dispensed/floated at the jammed point for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value dispensed/floated up to this point	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples
-----------------

Protocol version 5 poll response showing 2.30 paid up to the jam point

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 06 F0 D5 E6 00 00 00 49 DB**

Event	Code hex	Code decimal
<b>Halted</b>	0xD6	214

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

Triggered when payout is interrupted for some reason.

**Protocol Version 6 and earlier**

This event is given when:

- the host has requested a halt to the device.
- the payout is automatically cancelled (due to a jam/reverse validation fail/cashbox error etc.)

The value paid at the point of halting is given in the event data.

**Protocol Version 7 and later**

This event is given when:

- the host has requested a halt to the device.

The value paid at the point of halting is given in the event data.

Note: a different event 'Error During Payout' is generated when errors occur

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>no</b>

Additional information

4 byte showing the value paid up to the halt point

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>no</b>	<b>no</b>

Additional information

An array of data giving the dispensed/floated at the poll point for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value dispensed/floated up to this point	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples

Protocol version 6 poll response showing 15.30 GBP to the halt point

```

Host transmit: 7F 80 01 07 12 02
Slave Reply: 7F 80 0A F0 D6 01 FA 05 00 00 45 55 52 4D 49
ascii: . . . . . E U R

```

Event	Code hex	Code decimal
<b>Floating</b>	0xD7	215

Implemented on
SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

Event showing the amount of cash floated up to the poll point

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>yes</b>	<b>no</b>

Additional information

4 bytes showing the value floated to the cashbox up to the poll

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>yes</b>	<b>no</b>

Additional information

An array of data giving the floated value at the poll point for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value floated to this point	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples
-----------------

Protocol version 5 poll response showing 45.00 floated

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 05 F0 94 11 00 00 E8 F3**

Event	Code hex	Code decimal
<b>Floated</b>	0xD8	216

Implemented on
SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description

Event given at the end of the floating process which will display the amount actually floated.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>yes</b>

Additional information

4 Bytes showing the amount floated

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

An array of data giving the floated value at the end of the process for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value floated	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples

Protocol version 6 poll response showing a floated value of 20.50 EUR

```
Host transmit: 7F 80 01 07 12 02
Slave Reply: 7F 80 0A F0 D8 01 02 08 00 00 45 55 52 81 C0
ascii: . . . . . E U R
```

Event	Code hex	Code decimal
<b>Timeout</b>	0xD9	217

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description

The device has been unable to complete a request. The value paid up until the time-out point is given in the event data.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>yes</b>

Additional information

4 bytes showing the value dispensed or floated to that point.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

An array of data giving the dispensed/floated at the poll point for each of the countries supported in the dataset. The first byte gives the number of countries in the set the a block of data for each of the countries.

byte	function	size
0	number of countries in set	1
1	value dispensed/floated up to this point	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples

Event	Code hex	Code decimal
<b>Incomplete Payout</b>	0xDC	220

Implemented on
SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description

The device has detected a discrepancy on power-up that the last payout request was interrupted (possibly due to a power failure). The amounts of the value paid and requested are given in the event data.

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Pay-out</b>	<b>8</b>	<b>no</b>	<b>yes</b>

Additional information

Eight data bytes showing the value dispensed and the value requested.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Pay-out</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

An array of data giving the value dispensed and the original value requested before the power down for each of the countries supported in the dataset. The first byte gives the number of countries in the set then a block of data for each of the countries (see table below).

byte	function	size
0	number of countries in set	1
1	value dispensed	4
5	value requested	4
9	country code (ASCII)	3
...	repeat above block for each country in set	..

Packet examples

Protocol version 5 poll response showing 25.20 paid out of request for 50.00

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 09 F0 D8 09 00 00 58 0D 00 00 3B C9**

Protocol version 6 poll response showing 23.00 EUR paid out of a request to payout 50.00 EUR

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 0D F0 01 FC 08 00 00 88 13 00 00 45 55 52 C3 E5**  
 ascii: . . . . . **E U R**



Event	Code hex	Code decimal
<b>Incomplete Float</b>	0xDD	221

Implemented on
SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

The device has detected a discrepancy on power-up that the last float request was interrupted (possibly due to a power failure). The amounts of the value paid and requested are given in the event data.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Pay-out</b>	<b>8</b>	<b>no</b>	<b>yes</b>

Additional information

8 data bytes giving the value of floated and the float value requested before the power was interrupted

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Pay-out</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

An array of data giving the value floated and the original value requested before the power down for each of the countries supported in the dataset. The first byte gives the number of countries in the set then a block of data for each of the countries (see table below).

byte	function	size
0	number of countries in set	1
1	value floated	4
5	value requested	4
9	country code (ASCII)	3
...	repeat above block for each country in set	..

Packet examples
-----------------

Event	Code hex	Code decimal
<b>Cashbox Paid</b>	0xDE	222

Implemented on
SMART HOPPER, SMART SYSTEM

Description
-------------

Coin values have been detected and paid to the cashbox since the last poll.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>no</b>

Additional information

Data bytes show the coin value paid

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>no</b>	<b>no</b>

Additional information

Data bytes give country codes and values for each of the currencies in the dataset:

byte	function	size
0	number of countries in set	1
1	value dispensed	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples

Protocol version 5 poll response showing 2.00 (200 c) coin paid to cashbox

Host transmit: **7F 90 01 07 51 83**  
 Slave Reply: **7F 90 06 F0 DE C8 00 00 00 68 00**

Protocol version 6 poll response showing 5.30 GBP adn 0.20 EUR paid to cashbox

Host transmit: **7F 90 01 07 51 83**  
 Slave Reply: **7F 90 11 F0 DE 02 12 02 00 00 47 42 50 14 00 00 00 45 55 52 3A 50**  
 ascii: . . . . . G B P . . . . E U R

Event	Code hex	Code decimal
<b>Coin Credit</b>	0xDF	223

Implemented on
SMART HOPPER

Description
-------------

A coin has been detected as added to the system. This would be usually via the separate coin mech attached to the system port.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>no</b>

Additional information

Data gives 4 byte value of the coin added

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>no</b>	<b>no</b>

Additional information

Data bytes give 4 byte coin value and 3 byte ASCII country code of the coin added

Packet examples
-----------------

Protocol version 5 poll response showing 1.00 (100 c) coin added

Host transmit: **7F 90 01 07 51 83**  
 Slave Reply: **7F 90 05 F0 64 00 00 00 97 A3**

Protocol version 6 poll response showing 5.00 GBP coin added

Host transmit: **7F 90 01 07 51 83**  
 Slave Reply: **7F 90 09 F0 DF F4 01 00 00 47 42 50 89 0F**  
 ascii:                   . . . . . **G B P**

Event	Code hex	Code decimal
<b>Coin Mech Jammed</b>	0xC4	196

Implemented on
SMART HOPPER, SMART SYSTEM

Description
-------------

The attached coin mechanism has been detected as having a jam.

Protocol minimum version 5			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Poll response showing coin mech jam

Host transmit: **7F 90 01 07 51 83**

Slave Reply: **7F 90 02 F0 C4 A2 62**

Event	Code hex	Code decimal
<b>Coin Mech Return Active</b>	0xC5	197

Implemented on
SMART HOPPER, SMART SYSTEM

Description
-------------

The attached coin mechanism has been detected as having it's reject or return button pressed.

Protocol minimum version 5			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Event	Code hex	Code decimal
<b>Emptying</b>	0xC2	194

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

The device is currently performing is empty operation following an [Empty](#) command request.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples
-----------------

Poll response showing device emptying

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 C2 B0 22**

Event	Code hex	Code decimal
<b>Emptied</b>	0xC3	195

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

The device has completed it's empty operation in response to the [Empty](#) command.

Protocol minimum version 5			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Poll response showing device emptied

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 C3 B5 A2**

Event	Code hex	Code decimal
<b>Smart Emptying</b>	0xB3	179

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

The device is in the process of carrying out its Smart Empty command from the host. The value emptied at the poll point is given in the event data

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>yes</b>	<b>no</b>

Additional information

4 byte integer showing the value emptied so far.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>yes</b>	<b>no</b>

Additional information

Data bytes give country codes and values for each of the currencies in the dataset:

byte	function	size
0	number of countries in set	1
1	value dispensed	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples

A device has emptied 22.60 EUR up to this poll with protocol version 5

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 07 F0 B3 01 D4 08 00 00 53 F7**

A device has emptied 22.60 EUR up to this poll with protocol version 6

Host transmit: **7F 80 01 07 12 02**  
 Slave Reply: **7F 80 0A F0 B3 01 D4 08 00 00 45 55 52 44 F6**  
 ascii:           . . . . . **E U R**



Event	Code hex	Code decimal
<b>Smart Emptied</b>	0xB4	180

Implemented on
NV11, SMART HOPPER, SMART PAYOUT, SMART SYSTEM

Description
-------------

The device has completed its Smart Empty command. The total amount emptied is given in the event data.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>4</b>	<b>no</b>	<b>yes</b>

Additional information

4 byte interger showing the total value emptied in this session.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

Data bytes give country codes and values for each of the currencies in the dataset of the total amount emptied.

byte	function	size
0	number of countries in set	1
1	value dispensed	4
5	country code	3
...	repeat above block for each country in set	..

Packet examples
-----------------

Event	Code hex	Code decimal
<b>Calibration Failed</b>	0x83	131

Implemented on
SMART HOPPER, SMART SYSTEM

Description

During the devices normal re-calibration process, an error has been detected which indicates a sensor failure or out-of-range issue. This usually indicate a hardware failure and the device should be taken out of service until the cause is found.

Protocol minimum version 7

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>1</b>	<b>no</b>	<b>no</b>

Additional information

A data byte error reason is given detailed in the table below.

Error	Code
	0
Payout flap sensor	1
Exit sensor	2
Coil 1 sensor	3
Coil 2 sensor	4
Unit not initialised	5
Checksum error	6
Recalibration by command required (obsolete)	7
Motor opto slot error	8,9
Exit sensor error 2	10

Packet examples

The example below shows a calibration fail due to an issue with coil 1.

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 83 03 C0 22**

Event	Code hex	Code decimal
<b>Note Stored In Payout</b>	0xDB	219

Implemented on
NV11, SMART PAYOUT

Description
-------------

The note has been passed into the note store of the payout unit.

**Note that NV11 devices report a value of note stored if Report By Value option has been set.**

Protocol minimum version 4

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Additional information

SMART Payout protocol version 4 note stored

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>8</b>	<b>no</b>	<b>no</b>

Additional information

NV11 protocol version 6 with report by value option set.

Packet examples
-----------------

Poll response showing note stored in payout for SMART Payout

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 DB E5 A2**

Event	Code hex	Code decimal
<b>Payout Out Of Service</b>	0xC6	198

Implemented on
NV11, SMART PAYOUT

### Description

This event is given if the payout goes out of service during operation. If this event is detected after a poll, the host can send the ENABLE PAYOUT DEVICE command to determine if the payout unit comes back into service.

Protocol minimum version 4			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

### Packet examples

Poll response showing payout out of service

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 C6 AB A2**

Event	Code hex	Code decimal
<b>Jam Recovery</b>	0xB0	176

Implemented on
SMART PAYOUT

Description
-------------

The SMART Payout unit is in the process of recovering from a detected jam. This process will typically move five notes to the cash box; this is done to minimise the possibility the unit will go out of service.

Protocol minimum version 7			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 B0 9C 23**

Event	Code hex	Code decimal
<b>Error During Payout</b>	0xB1	177

Implemented on
SMART PAYOUT

Description
-------------

Returned if an error is detected whilst moving a note inside the SMART Payout unit. The cause of error (1 byte) indicates the source of the condition - see table below for error causes.

In the case of the incorrect detection, the response to Cashbox Payout Operation Data request would report the note expected to be paid out.

Protocol minimum version 7

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

The data with this event has variable length depending on the number of dataset denominations in the device:

byte	function	size
0	number of countries in set	1
1	value dispensed	4
5	country code	3
...	repeat above block for each country in set	..
last	Final byte is an error code (see table below)	1

Error Code (final byte from above):

Value	Meaning
0x00	note not correctly detected as it is routed (reverse validation fail)
0x01	note jammed in transport*
0x02	cashbox error e.g. stacker full. removed, jammed**
0x03	payout stalled e.g. unable to seek note in payout
0x04	payout cancelled due to poll timeout

\* this error can be reported for different fault types - such as a note missing from the cashbox - as the unit only knows that the note does not arrive at payout exit

\*\* stacker may be required during payout (for recovery or stacking poor condition notes)

Packet examples
-----------------

Payout error due to jam after GBP 50.00 and EUR 20.00 have been paid

Slave Reply: **7F 80 0F F0 B1 02 88 13 00 00 47 42 50 D0 07 00 00 01 34 B3**

Event	Code hex	Code decimal
<b>Note Transferred To Stacker</b>	0xC9	201

Implemented on
NV11, SMART PAYOUT

Description

Reported when a note has been successfully moved from the payout store into the stacker cashbox.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>no</b>	<b>yes</b>

Additional information

Seven bytes data giving the value and country code of the note moved to stacker.

Packet examples

Poll response showing 5.00 EUR note moved from payout to stacker

```
Host transmit: 7F 80 01 07 12 02
Slave Reply: 7F 80 09 F0 C9 F4 01 00 00 45 55 52 DA C9
ascii:      . . . . . E U R
```



Event	Code hex	Code decimal
<b>Note Held In Bezel</b>	0xCE	206

Implemented on
NV11, SMART PAYOUT

Description

Reported when a dispensing note is held in the bezel of the payout device.

Protocol minimum version 8

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>yes</b>	<b>no</b>

Additional information

Seven bytes giving the value and country code of the note held.

Packet examples

Poll response showing 10.00 EUR bill held in bezel

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 09 F0 CE E8 03 00 00 45 55 52 08 54**  
ascii:           . . . . . E U R

Event	Code hex	Code decimal
<b>Note Into Store At Reset</b>	0xCB	203

Implemented on
NV11, SMART PAYOUT

Description

An event showing that a bill was moved into the payout storage as part of the power-up procedure.

Protocol minimum version 8

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>no</b>	<b>yes</b>

Additional information

Seven bytes giving the value and country code of the note stored.

Packet examples

Poll response showing a 20.00 GBP note move to payout store during power-up

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 09 F0 CB D0 07 00 00 47 42 50 B7 2D**  
ascii: . . . . . **G B P**

Event	Code hex	Code decimal
<b>Note Into Stacker At Reset</b>	0xCA	202

Implemented on
NV11, SMART PAYOUT

Description
-------------

Reported when a note has been detected as paid into the cashbox stacker as part of the power-up procedure.

Protocol minimum version 8

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>no</b>	<b>yes</b>

Additional information

Seven bytes giving the value and country code of the note stacked.

Packet examples
-----------------

Poll response showing 5.00 EUR note stacked at power up

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 09 F0 CA F4 01 00 00 45 55 52 D0 F9**  
ascii:           . . . . . **E U R**

Event	Code hex	Code decimal
<b>Note Dispensed At Reset</b>	0xCD	205

Implemented on
NV11

Description

Reported when a note has been dispensed as part of the power-up procedure.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>7</b>	<b>no</b>	<b>yes</b>

Additional information

Seven bytes giving the value and country code of the note stored.

Packet examples

Poll response showing 10.00 EUR note stored at power up

```
Host transmit: 7F 80 01 07 12 02
Slave Reply: 7F 80 09 F0 CD E8 03 00 00 45 55 52 02 64
ascii:      . . . . . E U R
```

Event	Code hex	Code decimal
<b>Note Float Removed</b>	0xC7	199

Implemented on
NV11

Description
-------------

Reported when a note float unit has been detected as removed from its validator.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Poll response showing note float unit removed

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 C7 AE 22**

Event	Code hex	Code decimal
<b>Note Float Attached</b>	0xC8	200

Implemented on
NV11

Description

Reported when a note float unit has been attached to its validator.

Protocol minimum version 5

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Poll response showing note float attached

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 C8 8C 22**

Event	Code hex	Code decimal
<b>Device Full</b>	0xCF	207

Implemented on
NV11, SMART SYSTEM

Description

The device has detected that it is full of coins/banknotes and no more can be added.

Protocol minimum version 5			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples

Event	Code hex	Code decimal
<b>Coin Mech Error</b>	0xB7	183

Implemented on
SMART HOPPER, SMART SYSTEM

Description
-------------

**This event will only be generated if the [Coin Mech Options](#) command has been sent to the device with data bit set to enable error events.**

The data byte given with this event indicates the error type.

Code

Error

Description

1

Reject coin

A coin was inserted which did not match any of the programmed types. The coin is returned to the customer and no credit is given.

2

Inhibited coin

A coin was inserted which did match a programmed window type but was prevented from accepting by the inhibit register. The inhibit register can be controlled serially but may also be linked to external DIL switches.

3

Multiple window

A coin was inserted which matched more than one enabled window type. This coin was rejected as the credit code was indeterminate.

4

Wake-up timeout

A coin acceptor fitted with a wake-up sensor picked up a coin entering the acceptor but it was not seen subsequently in the validation area. Possible coin jam.

5

Validation timeout

A coin was detected entering the validation area but failed to leave it. Possible coin jam.

6

Credit sensor timeout

A coin was validated as true but never made it to the post-gate credit sensor. Possible coin jam.

7

Sorter opto timeout

A coin was sent into the sorter / diverter but was not seen coming out. Possible coin jam.

8

2nd close coin error

A coin was inserted too close to the one in front. One or both coins will have rejected.

9

Accept gate not ready

A coin was inserted while the accept gate for the coin in front was still operating. Coins have been inserted too quickly.

10

Credit sensor not ready

A coin was still over the credit sensor when another coin was ready to accept. Coins have been inserted too quickly.

11

Sorter not ready

A coin was inserted while the sorter flaps for the coin in front were still operating. Coins have been inserted too quickly.

12

Reject coin not cleared

A coin was inserted before a previously rejected coin had time to clear the coin acceptor.



13

Validation sensor not ready

The validator inductive sensors were not ready for coin validation. Possible fault developing.

14

Credit sensor blocked

There is a permanent blockage at the credit sensor. The coin acceptor will not accept any more coins.

15

Sorter opto blocked

There is a permanent blockage at the sorter exit sensor. The coin acceptor will not accept any more coins.

16

Credit sequence error

A coin or object was detected going backwards through a directional credit sensor. Possible fraud attempt.

17

Coin going backwards

A coin was detected going backwards through the coin acceptor. Possible fraud attempt.

18

Coin too fast ( over credit sensor )

A coin was timed going through the credit sensor and was too fast. Possible fraud attempt.

19

Coin too slow ( over credit sensor )

20

C.O.S. mechanism activated

( coin-on-string )

A specific sensor for detecting a 'coin on string' was activated. Possible fraud attempt.

21

DCE opto timeout

A coin acceptor fitted with a Dual Coin Entry chute saw a coin or token which was not seen subsequently in the validation area. Possible coin jam.

22

DCE opto not seen

A coin acceptor fitted with a Dual Coin Entry chute saw a coin which was not seen previously by the chute sensor. Possible fraud attempt.

23

Credit sensor reached too early

A coin was timed from the end of the validation area to the post-gate credit sensor. It arrived too early. Possible fraud attempt.

24

Reject coin ( repeated sequential trip )

A coin was rejected N times in succession with no intervening true coins. Statistically unlikely if N greater than or equal to 5. Possible fraud attempt.

25

Reject slug

A coin was rejected but was identified as a known slug type - this may be a pre-programmed fraud coin or a known fraud material.

26

Reject sensor blocked

There is a permanent blockage at the reject sensor. The coin acceptor will not accept any more coins. Not all coin acceptors have a reject sensor.

27

Games overload

Totaliser mode : A game value was set too low - possibly zero. This is a product configuration error.

28

Max. coin meter pulses exceeded

Totaliser mode : A meter value was set too low - possibly zero. This is a product configuration error.

29

Accept gate open not closed

The accept gate was forced open when it should have been closed.

30

Accept gate closed not open

The accept gate did not open when the solenoid was driven.

31

Manifold opto timeout

A coin was sent into the manifold module ( coin diverter ) but was not seen coming out. Possible coin jam.

32

There is a permanent blockage at the manifold module sensor ( coin diverter ). The coin acceptor will not accept any more coins.

128

Inhibited coin ( Type 1 )

A true coin ( type 1, coin in position 1 ) was inserted but was prevented from accepting by the inhibit register.

...

Inhibited coin ( Type n )

A true coin ( type n, coin in position n ) was inserted but was prevented from accepting by the inhibit register.

159

Inhibited coin ( Type 32 )

A true coin ( type 32, coin in position 32 ) was inserted but was prevented from accepting by the inhibit register.

253

Data block request ( note a )

A 'not yet used' mechanism for a coin acceptor to request attention from the host machine. Perhaps it needs some data from the host machine or another peripheral.

254

Coin return mechanism activated

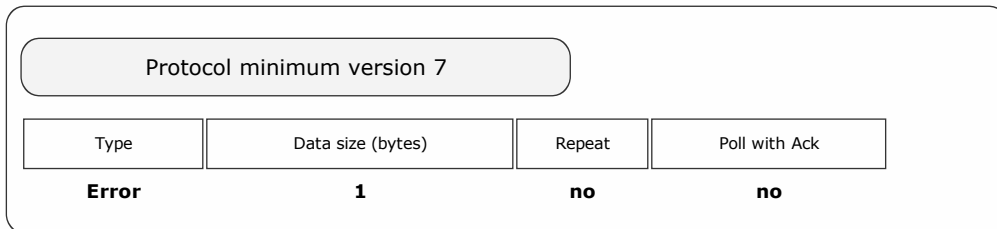
( Flight deck open )

An attempt to clear a coin jam by opening the flight deck was detected. The coin acceptor cannot operate until the flight deck is closed.

255

Unspecified alarm code

Any alarm code which does not fit into the above categories.



### Packet examples

A coin error: too slow detected

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 B7 14 B1 1A**

Event	Code hex	Code decimal
<b>Attached Coin Mech Disabled</b>	0xBD	189

Implemented on
SMART HOPPER, SMART SYSTEM

Description
-------------

The device separate coin mechanism attached to this device has been disabled.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Poll response showing coin mech disabled

Host transmit: **7F 90 01 07 51 83**

Slave Reply: **7F 90 02 F0 BD B7 E3**

Event	Code hex	Code decimal
<b>Attached Coin Mech Enabled</b>	0xBE	190

Implemented on
SMART HOPPER, SMART SYSTEM

Description

The separate coin mechanism attached to this device has been enabled.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Poll response showing coin mech enabled

Host transmit: **7F 90 01 07 51 83**

Slave Reply: **7F 90 02 F0 BE BD E3**

Event	Code hex	Code decimal
<b>Value Added</b>	0xBF	191

Implemented on
SMART SYSTEM

Description
-------------

An event giving the cumulative value of currency detected as added to the system since the last poll.

Protocol minimum version 7

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Pay-in</b>	<b>variable</b>	<b>no</b>	<b>yes</b>

Additional information

Data bytes give country codes and values for each of the currencies where value has been added

byte	function	size
0	Generic OK	1
1	Event code	1
2	number of countries in data	1
3	value added (4 byte integer)	4
7	country code (3 Byte ASCII)	3
...	repeat above block for each country data	..

Packet examples
-----------------

5.50 EUR has been added since the last poll

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 0A F0 BF 01 26 02 00 00 45 55 52 ED 91**

2.20 EUR and 3.60 GBP have been added since the last poll

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 11 F0 BF 02 DC 00 00 00 45 55 52 68 01 00 00 47 42 50 D1 05**

Event	Code hex	Code decimal
<b>Tickets Low</b>	0xA0	160

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description
-------------

This event is reported when the level of tickets in the device are detected as being at a low level on the device's ticket level sensor.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Additional information

Notify to refill tickets.

Packet examples
-----------------

Host transmit:

Slave Reply: **7F 80 02 F0 A0 FF A3**

Event	Code hex	Code decimal
<b>Tickets Replaced</b>	0xA1	161

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description
-------------

This event is reported when the level of tickets has been detected as going over the low level again.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 A1 FA 23**

Event	Code hex	Code decimal
<b>Printer Head Removed</b>	0xA2	162

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description

The head for the printer has been taken out and tickets cannot be printed.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Additional information

Replace head for operation

Packet examples

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 A2 F0 23**



Event	Code hex	Code decimal
<b>Ticket Path Open</b>	0xA3	163

Implemented on
FLATBED PRINTER, SMART TICKET

Description

The printer's path has been opened, and tickets cannot be printed.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Additional information

Close path to enable device.

Packet examples

Event	Code hex	Code decimal
<b>Ticket Jam</b>	0xA4	164

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description
-------------

A jam occurred when attempting to print a ticket.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Additional information

Clear jam from path and reset device.

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 A4 E4 23**

Event	Code hex	Code decimal
<b>Ticket Printing</b>	0xA5	165

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, NV200, SMART TICKET

Description
-------------

A ticket is currently being printed. On an NV200 this event will only be reported if there is a SMART Ticket attached, and ticket events have been enabled.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 A5 E1 A3**

Event	Code hex	Code decimal
<b>Ticket Printed</b>	0xA6	166

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, NV200, SMART TICKET

Description
-------------

A ticket has successfully been printed and dispensed. On an NV200 this event will only be reported if there is a SMART Ticket attached, and ticket events have been enabled.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 A6 EB A3**

Event	Code hex	Code decimal
<b>Ticket Printing Error</b>	0xA8	168

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, NV200, SMART TICKET

Description
-------------

Unable to print the requested ticket. The event includes a data byte indicating the reason for failure:

Error	Code	Devices
No paper	0	SMART Ticket, Coupon Printer
Load fail	1	SMART Ticket, Coupon Printer
No head	2	SMART Ticket, Coupon Printer
Diverter did not open	3	SMART Ticket
Diverter did not close	4	SMART Ticket
Burst fail	5	SMART Ticket
Cut fail	6	SMART Ticket, Coupon Printer
Reverse validate fail	7	SMART Ticket, NV200
Jam	8	SMART Ticket, NV200
NV200 fail	9	SMART Ticket
NV200 Timeout	10	SMART Ticket
NV200 Cashbox Error	17	NV200
SMART Ticket Timeout	19	NV200

On an NV200 this event will only be reported if there is a SMART Ticket attached, and ticket events have been enabled.

The SMART Ticket will report reasons 0 to 10 as an error. If the error is with the NV200, it will report NV200 Fail or NV200 Timeout. The NV200 will report reason 7, 8, 17 or 19. The two devices will generally report different errors. Jam from a SMART Ticket refers to a specific jam in transit from the SMART Ticket to the NV200 when reported from the SMART Ticket. From the NV200, a jam could be any of the jam conditions the SMART Ticket may encounter, and the event data from the SMART Ticket should be deferred to.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>1</b>	<b>no</b>	<b>no</b>
Additional information			

Packet examples

Show print fail response due to jam

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 03 F0 A8 08 F9 58**

Event	Code hex	Code decimal
<b>Printer Head Replaced</b>	0xA9	169

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description
-------------

The printer head was replaced after being removed.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 A9 C9 A3**

Event	Code hex	Code decimal
<b>Ticket Path Closed</b>	0xAA	170

Implemented on
FLATBED PRINTER, SMART TICKET

Description

The ticket path was closed after being opened.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 AA C3 A3**



Event	Code hex	Code decimal
<b>No Paper</b>	0xAB	171

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description

There is no paper currently fed into the device.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Error</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Additional information

Fit ticket paper.

Packet examples

Host transmit: **7F 80 01 07 12 02**  
Slave Reply: **7F 80 02 F0 AB C6 23**

Event	Code hex	Code decimal
<b>Print Halted</b>	0xAE	174

Implemented on
NV200

Description

The ticket printing process stopped.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 AE D8 23**

Event	Code hex	Code decimal
<b>Ticket In Bezel</b>	0xAD	173

Implemented on
NV200, NV9USB

Description

Printed ticket is held in bezel.

Protocol minimum version 6

Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 AD D2 23**

Event	Code hex	Code decimal
<b>Paper Replaced</b>	0xAC	172

Implemented on
COUPON PRINTER, FLATBED PRINTER, NV12, SMART TICKET

Description

Ticket paper was replaced in the device.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 AC D7 A3**

Event	Code hex	Code decimal
<b>Printed To Cashbox</b>	0xAF	175

Implemented on
NV200, NV9USB

Description
-------------

A printed ticket has been stored in the device cashbox.

Protocol minimum version 6			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>no</b>	<b>no</b>

Packet examples
-----------------

Host transmit: **7F 80 01 07 12 02**

Slave Reply: **7F 80 02 F0 AF DD A3**

Event	Code hex	Code decimal
<b>Pay-in Active</b>	0xC1	193

Implemented on
SMART SYSTEM

Description
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The pay-in function of the system is active.

Protocol minimum version 7			
Type	Data size (bytes)	Repeat	Poll with Ack
<b>Status</b>	<b>0</b>	<b>yes</b>	<b>no</b>

Packet examples
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Poll response showing pay-in function is active

Host transmit: **7F 90 01 07 51 83**

Slave Reply: **7F 90 02 F0 C1 BC 62**

Event	Code hex	Code decimal
<b>Ticket In Bezel At Startup</b>	0xA7	167

Implemented on
FLATBED PRINTER

Description
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A ticket was dispensed out of the front of the device at startup due to power loss during a print. It's possible this ticket print was incomplete, and so any data printed on the ticket should be invalidated.

Packet examples
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