Appendix D

Quick Reference to Message Types

Overview

This appendix is for programmers designing the host control application, also known as Central. It provides a quick reference to the types of message sent between the host and the terminal. For each message type, the message class and sub-class are shown, and each field within the message. This will help you to quickly identify the messages that pass to and from the host.

This appendix does not include information on the protocol-dependent headers and trailers.

Quick Reference to Message Types

Table D-1
Quick Reference to Message Types

Message Class	Message Sub-Class	FS (*See* Table Note 1)	LUNO	FS (*See* Table Note 1)	Fields (*See* Table Note 2)	Message	Destination
1	1	~	000	~~~	...	Transaction Request	Host
1	2	~	000	~~	...	Unsolicited Status	Host
2	2	~	000	~~	...	Solicited Status	Host
2	3	~	000	~~	...	Encryptor Initialisation Data	Host
3	-	~	-	~~	...	TM-Alert (*Not supported*)	Host
6	1	~	~	~~	...	Upload EJ Data	Host
1	-	~	-	~~	...	Terminal Commands	Terminal
3	1	~	-	~~	...	Customisation Data Commands	Terminal
3	2	~	-	~~	...	Interactive Transaction Response *See* Table Note 3	Terminal
3	3	~	-	~~	...	Encryption Key Change *See* Table Note 3	Terminal
3	4	~	-	~~	...	Extended Encryption Key Change *See* Table Note 3	Terminal
4	-	~	000	~	...	Transaction Reply	Terminal
5	-	~	-	~~	...	TM-Alert (*Not supported*)	Terminal
6	1	~	~	~	...	Acknowledge EJ Upload Block	Terminal
6	2	~	~	~	...	Acknowledge and Stop EJ	Terminal
6	3	~	~	~	...	EJ Options and Timers	Terminal

Table Note 1: Each tilda character (~) represents a field separator.

Table Note 2: The fields are identified in the message format tables in the remainder of this appendix.

Table Note 3: The Interactive Transaction Response, Encryption Key Change and Extended Encryption Key Change messages are

described in Table D-11, "Customisation Data Command Fields" on page D-12.

Transaction Request

Table D-2
Transaction Request Message Format

Transaction Request		11~000~~~...
Field	**Description**	**Length**
f	Top of receipt transaction flag:	1
	0 - will not print data at the top of receipt	
	1 - will print data at the top of receipt	
g	Message co-ordination number	1
FS	Field separator	1
h	Track 2 data	Var (39)
FS	Field separator	1
i	Track 3 data	Var (106)
FS	Field separator	1
j	Operation code data	8
FS	Field separator	1
k	Amount entered	8 or 12
FS	Field separator	1
l	PIN buffer A	Var (32)
FS	Field separator	1
m	General purpose buffer B. Minimum data length is 3 digits.	Var (32)
FS	Field separator	1
n	General purpose buffer C	Var (32)
FS	Field separator	1
o	Track 1 identifier	1
p	Track 1 data	Var (78)
FS	Field separator	1
q	Transaction status data identifier	1
r	Last transaction status data	Var (65)

Transaction Request		11~000~~~...
Field	**Description**	**Length**
FS	Field separator	1
av1	CSP Data ID 'U'	1
av2	CSP Data	Var (16)
FS	Field separator	1
aw1	Confirmation CSP Data ID 'V'	1
aw2	Confirmation CSP Data	Var (16)
FS	Field separator	1
ax1	VC data ID 'W'	1
ax2	VC data	1
FS	Field separator	1
ay1	VC data ID 'X'	1
ay2	VC data	1
FS	Field separator	1
az1	VC data ID 'Y'	1
az2	VC data	1
FS	Field separator	1
ba1	VC data ID 'Z'	1
ba2	VC data	1
FS	Field separator	1
bb1	VC data ID '['	1
bb2	VC data ID	1
FS	Field separator	1
bc1	VC data ID '\'	1
bc2	VC data	1
FS	Field separator	1
bd1	Smart Card data ID '5'(EMV/CAM2)	1
bd2	Smart Card data	1
FS	Field separator	1

APTRA™ Advance NDC, Reference Manual

Transaction Request		11~000~~~...
Field	**Description**	**Length**
ca1	Device ID 'w' for BNA/GBRU	1
ca2*	Note Type in hex (01-32); up to 50 types	2
ca3**	Number of notes in escrow for ca2	2 or 3

  * ca2 and ca3 may be repeated for up to 50
** the length depends on option 45 configuration.

FS	Field separator	1
cb1	Single Cheque Deposit Data ID 'a'	1
cb2	Codeline detected	1
cb3	Codeline value	Var(256)
FS	Field Separator	1
ce1	Field ID 'e' shows that barcode data is being reported	1
ce2	Barcode Format identifier given in ASCII hex. If not known field is set to '0'	4
ce4	Scanned barcode data	Var
cf1*	Field id 'f'. The value 'f' in this field shows that more than four coin hopper types are being reported.	1

*Note: The `cf` fields are only present when buffer 'f' is used because more than four hopper types are configured. Otherwise, counts are shown in field 'r'

cf2	Number of coins dispensed from hopper type 1	2
cf3	Number of coins dispensed from hopper type 2	2
cf4	Number of coins dispensed from hopper type 3	2

:
The field is repeated for each hopper type specified in the Transaction Reply message
:

cf*<n +1>*	Number of coins dispensed from hopper type *n*	2
FS	Field separator	1

Transaction Request		11~000~~~...
Field	**Description**	**Length**
cg1	Field ID 'g' for a bunch cheque deposit	1
cg2	Total Cheques to Return	3
cg3	Must be '0000'	4
cg4	Deposit Currency	3
cg5	Amount Exponent Sign	1
cg6	Amount Exponent Value	2
cg7	Total Customer Amount	12
cg8	Total Derived Amount	12
cg9	Must be '0000'	4
cg10	Cheque Identifier	3
cg11	Customer Cheque Amount	12
cg12	Derived Cheque Amount	12
cg13	Codeline Length	3
cg14	Codeline Data	var
cg15	Group separator	1
cg16	Group separator	1
FS	Field Separator	1
ch1	Passbook Data ID 'h'	1
ch2	Page Number at Which Passbook is Open	2
ch3	Line Number of Next Printable Line	3
FS	Field Separator	1
ci1	Data ID '<' Voice Guidance	1
ci2	Voice Guidance Language Identifier	1
GS	Group separator	1
w	Field separator	1
	Data identifier	1
	Data	Var
FS	Field separator	1
x	Message Authentication Code data	8

Unsolicited Status Messages

Table D-3
Unsolicited Status Message Format

Unsolicited Status Messages		12~000~~(e1)...
Field	**Description**	**Length**
e1	Status identifier	1
	A - Time-of-day clock	
	B - Power failure	
	D - Card reader/writer	
	E - Cash handler	
	F - Depository	
	G - Receipt printer	
	H - Journal printer	
	H - Electronic journal printer	
	K - Night safe depository	
	L - Encryptor	
	M - Camera	
	N - Door access (*not supported*)	
	P - Sensors	
	Q - Touch screen keyboard	
	R - Supervisor keys	
	V - Statement printer	
	X - Passbook	
	Y - Coin dispenser	
	\ - Envelope dispenser	
	q - Cheque processor	
	w - Bunch Note Acceptor (BNA)	

Solicited Status Messages

Table D-4
Solicited Status Message Fields

Solicited Status Messages		22~000~~f~(g1)...
Field	**Description**	**Length**
f	Status descriptor	1
g	Status information	1

Table D-5
Solicited Status Message Field Values

f	g1	Description
8		Device fault
	D	Card reader/writer
	E	Cash handler
	F	Depository
	K	Night safe depository
	V	Statement printer
	X	Passbook
	Y	Coin dispenser
	\	Envelope dispenser
	q	Cheque processor
	w	Bunch Note Acceptor (BNA)
9		Ready
A		Command reject
B		Ready (transaction reply)
C		Specific command reject
	1	MAC failure
	2	Time variant number failure
	3	Security terminal number mismatch
	A	Message format error
	B	Field value error
	C	Illegal message type
	D	Hardware failure
	E	Not supported

f	g1	Description
F		Terminal state
	1	Send configuration information
	2	Send supply counters
	3	Send tally information
	4	Send error log information
	5	Send date/time information
	6	Send configuration ID
	F	EKC retrieve hallmark key *(unsupported)*
	H	Hardware configuration data
	I	Supplies data
	J	Fitness data
	K	Tamper and sensor status data
	L	Software ID and release number data
	M	Local configuration option digits

Encryptor Initialisation Data

Table D-6
Encryptor Initialisation Data

Encryptor Initialisation Data

Field	Description	Length
e	Information Identifier	1
	1 - EPP serial number and signature	
	2 - EPP public key and signature	
	3 - New Key Verification Value (KVV)	
	4 - Keys status	
	5 - Key loaded	
	6 - Key entry mode	
	7 - RSA encryption KVV	
	8 - SST certificate	
	9 - SST random number	
	A - PKCS7 key loaded	

Encryptor Initialisation Data		
Field	**Description**	**Length**
	B - Encryptor capabilities and state	
	C - Key deleted	
	D - EPP attributes	
	E - Variable-length EPP serial number and signature	
f	Encryptor Information	Var

Upload EJ Data Message

Table D-7
Upload EJ Data Message

Upload EJ Data Message		61~~~~d
Field	**Description**	**Length**
d	Machine Number	6
e	Date	6
f	Time	6
g	Last Character Previous Block	6
h	Last Character This Block	6
i	Block Length	3
j	Response Data	Var (1 to 350)

Terminal Commands

Table D-8
Terminal Command Fields

Terminal Commands		1~~~fg
Field	**Description**	**Length**
f	Command code	1
g	Command modifier	1

Table D-9
Field Values for Terminal Commands

f	g	Description
1		Go in-service
2		Go out-of-service
	0	Standard out-of-service screen displayed

f	g	Description
	1	'Temporary' out-of-service screen displayed
3		Send configuration ID
4		Send supply counters
	None	Send basic supply counters message
	1	Send basic supply counters message
	2	Send extended supply counters message
5		Send tally information
	A	Processor and system
	B	Communications
	C	System disk
	D	Card reader/writer
	E	Cash handler
	F	Depository
	G	Receipt printer
	H	Journal printer
	I	Reserved
	J	Reserved
	K	Night safe
	L	Encryptor
	M	Camera
	N	Door access (*not supported*)
	O	Off-line disk
	V	Statement printer
	X	Passbook
	Y	Coin dispenser
	\	Envelope dispenser
	w	Bunch note acceptor
	q	Cheque acceptor
6		Send error log information
	A	Processor and system

f	g	Description
	B	Communications
	C	SST devices
7		Send configuration information
	0	Send configuration information
	1	Send hardware information only
	2	Send supplies data only
	3	Send fitness data only
	4	Send tamper and sensor status data only
	5	Send software ID and release number data only
	6	Send enhanced configuration data
	7	Send local configuration option digits
	8	Send BNA note definitions
8		Send date and time information
9		Reserved
:		Reserved
;		Reserved
=		EKC retrieve hallmark key *(not supported)*
<		Reserved
>		Enable FREE JDATA
?		Enable image dumping *(not supported)*
	0	Do not allow access to 'Dump Images'
	1	Allow access to 'Dump Images'

Customisation Data Commands

Table D-10
Customisation Data Command Fields

Customisation Data Commands		3~~~fg
Field	**Description**	**Length**
f	Message sub-class	1
g	Message identifier	1

	f	g	Description
Table D-11 Field Values for Data Commands	1		Customisation data
		1	Screen and/or keyboard data load
		2	State tables load
		3	Configuration parameters load
		4	Reserved
		5	FIT data load
		6	Configuration ID number load
		A	Enhanced configuration parameters load
		B	MAC field selection load
		C	Date and time load
		D	Reserved
		E	Dispenser currency cassette mapping table
		F	Initialise EKC *(not supported)*
		G	Override reserved screens command
	2		Interactive transaction response
		0	Do not display cardholder keyboard entry
		1	Display cardholder keyboard entry
		2	Display '*' for cardholder keyboard entry
	3		Encryption key change
		1	Decipher new master key with current master key
		2	Decipher new communications key with current master key
		3	Decipher new communications key with current communications key
		4	Use locally entered communications key ('B' key) as current MAC key
		5	Decipher new MAC key with current master key
		6	Decipher new MAC key with current communications key

f	g	Description
	7	Use locally entered communications key ('B' key) as current MAC key
	8	Decipher new VISA master key with current VISA master key
	9	Key data is new VISA key table
4		Extended encryption key change
	1	Decipher new master key with current master key
	2	Decipher new communications key with current master key
	3	Decipher new communications key with current communications key
	4	Use locally entered communications key ('B' key) as current MAC key
	5	Decipher new MAC key with current master key
	6	Decipher new MAC key with current communications key
	7	Use locally entered communications key ('B' key) as current MAC key
	8	Decipher new VISA master key with current VISA master key
	9	Key data is new VISA key table
	A	Decipher new VISA master key with current master key
	B	Load Host Security Module (HSM) public key and signature
	C	Load initial master key (A-key) with RSA key
	D	Load new initial communications key (B-key) with RSA key
	E	Load new initial VISA master key (V-key) with RSA key
	F	Send Encrypting PIN Pad (EPP) serial number
	G	Send EPP public key
	H	Send all Key Verification Values (KVVs)
	I	Reserved
	J	Set key entry mode

f	g	Description
	K	Send current key entry mode
	N	Send random ATM number
	Q	Send encryptor capabilities and state
	R	Load NCR Sub public key and signature
	S	Delete HSM public key
	T	Delete NCR Sub public key
	U	Send EPP attributes
	V	Send variable length EPP serial number

Transaction Reply

Table D-12
Transaction Reply

Transaction Reply		4~000~...
Field	**Description**	**Length**
e	Message sequence number	3 or 8
FS	Field separator	1
f	Next state identifier	3
FS	Field separator	1
g1	Number of type 1 notes to dispense	2
g2	Number of type 2 notes to dispense	2
g3	Number of type 3 notes to dispense	2
g4	Number of type 4 notes to dispense	2
g5	Number of type 5 notes to dispense	2
g6	Number of type 6 notes to dispense	2
g7	Number of type 7 notes to dispense	2
GS	Group separator	1
j1	Number of hopper 1 coins to dispense	2
j2	Number of hopper 2 coins to dispense	2
j3	Number of hopper 3 coins to dispense	2
j4	Number of hopper 4 coins to dispense	2
j5	Number of hopper 5 coins to dispense	2
	...	

Transaction Reply		4~000~...
Field	**Description**	**Length**
jn	Number of hopper n coins to dispense	2
FS	Field separator	1
k	Transaction serial number	4
l	Function identifier:	1
	1 - Deposit and print	
	2 - Dispense and print	
	3 - Display and print	
	4 - Print immediate	
	5 - Set next state and print	
	6 - Night safe deposit and print	
	7 - Deposit and print	
	8 - Dispense and print	
	9 - Display and print	
	A - Eject card, dispense and print	
	B - Parallel dispense, print and card eject	
	C - Parallel dispense, print and card eject	
	E - Reserved	
	F - Card before parallel dispense and print	
	O - Reserved	
	P - Print statement and wait	
	Q - Print statement and set next state	
	R - Reserved	
	S - Process document with cash (*Not supported*)	
	T - DPM deposit envelope (*Not supported*)	
	* - Refund notes and print	
	- - Deposit notes and print	
	' - Deposit notes and wait	
	: - Process cheque	

Transaction Reply		4~000~...
Field	**Description**	**Length**
	b - Dispense cash first during valuable media exchange	
	c - Process multiple cheques	
	f - Deposit media first during valuable media exchange	
m	Screen number	3
n	Screen display update	Var
FS	Field Separator	1
o	Message co-ordination number	1
p	Card return/retain flag:	1
	0 - Return card during Close state	
	1 - Retain card during Close state	
q	Printer flag:	1
	0 - Do not print	
	1 - Print on journal only	
	2 - Print on receipt only	
	3 - Print on receipt and journal	
	4 - Print on PPD if Function ID is '1' or '7'	
	5 - Print on PPD and journal if Function ID is '1' or '7'	
	8 - Print on statement only	
	9 - Reserved	
	: - Reserved	
	= - Sideways printing on receipt if Function ID is 'P' or 'Q'	
	'>' or 'w' - Identifies audio data for a voice-guided session	
	a - Stamp cheque, without printer data, if the Function ID is ':' (Process cheque).	
	b - Endorse cheque, with printer data, if the Function ID is ':' (Process cheque)	
r	Printer data	Var (500)

Transaction Reply		4~000~...
Field	**Description**	**Length**
GS	Group separator	1
s	Printer flag	1
t	Printer data	Var (500)
GS	Group separator	1
u	Printer flag	1
v	Printer data	Var (500)
GS	Group separator	1
v1	Printer flag	1
v2	Printer data	Var (500)
	:	
	GS, v1 and v2 may be repeated up to nine further times	
	:	
FS	Field separator	1
w	Buffer identifier	1
x	Track 3 data	Var (106)
FS	Field separator	1
ak1	Buffer identifier K	1
ak2	Track 1 Data	Var (78)
FS	Field Separator	1
al1	Buffer identifier L	1
al2	Track 2 Data	Var (39)
FS	Field Separator	1
am1	VC data ID 'M'.	1
am2	VC data	Var
FS	Field Separator	1
an1	VC data ID 'N'.	1
an2	VC data	Var
FS	Field Separator	1

Transaction Reply		4~000~...
Field	**Description**	**Length**
ao1	VC data ID 'O'.	Var
ao2	VC data	Var
FS	Field Separator	1
ap1	VC data ID 'P'.	1
ap2	VC data	Var
FS	Field Separator	1
aq1	VC data ID 'Q'.	1
aq2	VC data	Var
FS	Field Separator	1
ar1	VC data ID 'R'.	1
ar2	VC data	Var
FS	Field Separator	1
as1	Buffer identifier S (*Reserved for internal use*)	1
as2	Cash handler number (0 or 1)	1
as3	1st cassette type in specified cash handler	3
as4	Number of bills to dispense from 1st type	3
as5	2nd cassette type in specified cash handler	3
as6	Number of bills to dispense from 2nd type	3
as7	3rd cassette type in specified cash handler	3
as8	Number of bills to dispense from 3rd type	3
as9	4th cassette type in specified cash handler	3
as10	Number of bills to dispense from 4th type	3
...		
as(n)	Last cassette type in specified cash handler	3
as(n+1)	Number of bills to dispense from last type	3
FS	Field Separator	1
at1	Smart card data ID '5'	1
at2	Smart card data	1
FS	Field Separator	1

Transaction Reply		4~000~...
Field	**Description**	**Length**
ba1	Cheque(s) destination data ID 'a'	1
ba2	Cheque(s) destination data	1
	1 - Deposit cheque(s) into pocket 1	
	2 - Deposit cheque(s) into pocket 2	
	3 - Deposit cheque(s) into pocket 3	
	4 to 9 - Deposit cheque(s) into pocket 4 to 9 (*Not supported*)	
	a to f - Deposit cheque(s) into pocket 10 to 15 (*Not supported*)	
	E - Eject the cheque(s)	
FS	Field Separator	1
bb1	Buffer identifier B	1
bb2	Cheque identifier	3
bb3	Cheque destination	2
bb4	Cheque stamp	1
bb5	Reserved	4
bb6	Cheque endorse text	Var
GS	Group Separator	1
FS	Field Separator	1
bc	EMV dynamic currency conversion	1
FS	Field Separator	1
bd1	Buffer Identifier 'd'	1
bd2	Reserved	10
bd3	Customer/Transaction Data Element Identifier	3
bd4	Customer/Transaction Data Element Buffer	Var
bd5	Group separator (GS)	1
y	MAC data	8

Acknowledge EJ Upload Block Command

Table D-13
Acknowledge EJ Upload Block Command

Acknowledge EJ Upload Block command		6~~~1d.
Field	**Description**	**Length**
d	Last Character Received	6

Acknowledge and Stop EJ Command

Table D-14
Acknowledge and Stop EJ Command

Acknowledge and Stop EJ command		6~~~2d.
Field	**Description**	**Length**
d	Last Character Received	6

EJ Options and Timers Command

Table D-15
EJ Options and Timers Command

EJ Options and Timers command		6~~~3d.
Field	**Description**	**Length**
d	Option Number	2
e	Option Value	3
f	Timer Number	2
g	Timer Value	3