Installation Manual

P/N 0-360049-02

ScanPlus 1800 Hand-held Scanner

Intermec

A UNOVA Company

ScanPlus 1800 - Installation Manual - Edition 1.5 - compatible with EasySet System sp1800en.cmd - 99/07/26

The ScanPlus 1800 ST is a Class 2 Laser Scanner. Fix the laser warning labels onto the product if they are not already present.
CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.

Regulatory Statements

CE Intermec hereby declares that the ScanPlus 1800 has been tested and found compliant with the below listed standards as required by the EMC Directive 89/336/EEC as amended by 92/31/EEC and by the Low Voltage Directive 73/23/EEC as amended by 93/68/EEC:

EN55022 (1992) EN50082-1 (1998) EN60950 (1993)

USA: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. It generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications. If this equipment causes interference, the user will be required to correct the interference at the user's own expense.

This equipment complies with the UL 1950 standard.

Canada: This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This equipment complies with the UL 1950 standard.
Cet équipement est conforme à la norme UL 1950.

Australia-New Zealand: This equipment has been tested and found to conform to the Australian EMC framework concerning Class B digital devices, prescribed by the Australian and New-Zealander standard AS/NZS 3548. N309

Mexico: Este equipo cumple con la certificatión NOM.
This equipment complies with the NOM certification.

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Contents

1. Using EasySet

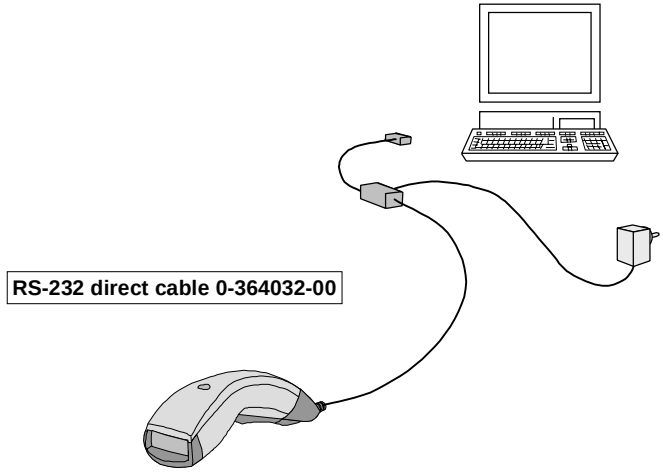
- offline setup
  1. select your Intermec product in EasySet ("Select reader" icon over the product image)
  2. double-click the setup commands in EasySet to send them to the setup sheet
  3. print out the setup sheet and read the configuration codes
- online setup :
  - use RS-232 cable 0-364032-00 for online setup (follow the procedure described under "online setup with RS-232 cable 0-364032-00" in this section)
  - models with cable P/N x-xx5xxx-xx : you can use RS-232 cable 0-364032-00 for online setup with these products, but for data transmission settings (section 4) you must connect your normal product cable and read the codes from the setup sheet (offline setup) !!!

start EasySet online setup

\41\4A\0F\29\60

- only necessary for setup with RS-232 cable 0-364032-00
- double-click the command to send it to the setup sheet
- follow the procedure for online setup with RS-232 cable 0-364032-00

online setup with RS-232 cable 0-364032-00



- online setup with RS-232 cable 0-364032-00 :
  1. connect the RS-232 cable to your product if it is not already connected
  2. connect the RS-232 cable to the serial port of your PC
  3. connect the power supply to the RS-232 cable and provide electrical power
  4. select your Intermec product in EasySet ("Select reader" icon over the product image)
  5. read the "start EasySet online setup" code (double-click to send it to the setup sheet and print it out, or read it from the Getting Started Guide or Installation Manual)
  6. open the "Configure communication PC/Reader" dialog box in the "Reader" menu
  7. select the COM serial port your product is connected to (no parity, 8 data bits, 19200 bauds)
  8. select the "Send to reader" checkbox under the commands window
  9. double-click on the setup commands to send them directly to your product (they are also sent to the setup sheet)
  10. connect your normal product cable to your product (if applicable) when you have finished online setup

2. Reset all parameters

- global reset of all parameter settings - useful for a first-time setup or for a fresh start with a new application
- default settings are indicated by (*)

reset factory defaults

\46\42\60

- resets all configuration parameters to their default values and cancels the terminal / cash register selection
- after a global reset, you must select the terminal / cash register used in your application (>> next section) and customize your setup parameters if required

3. Terminal / cash register used in your application

- terminal selection necessary for transmission to your terminal / cash register !!!
- look for your system configuration in the terminal selector (full list of all supported terminals) or use the predefined terminal selections if applicable
- the number of green LED flashes at power-up indicates the cable / interface configuration of your product
- green LED always on = no terminal / cash register selected
- energy saver trigger models : if the trigger is activated, you will have to press the trigger to see the power-up flashes

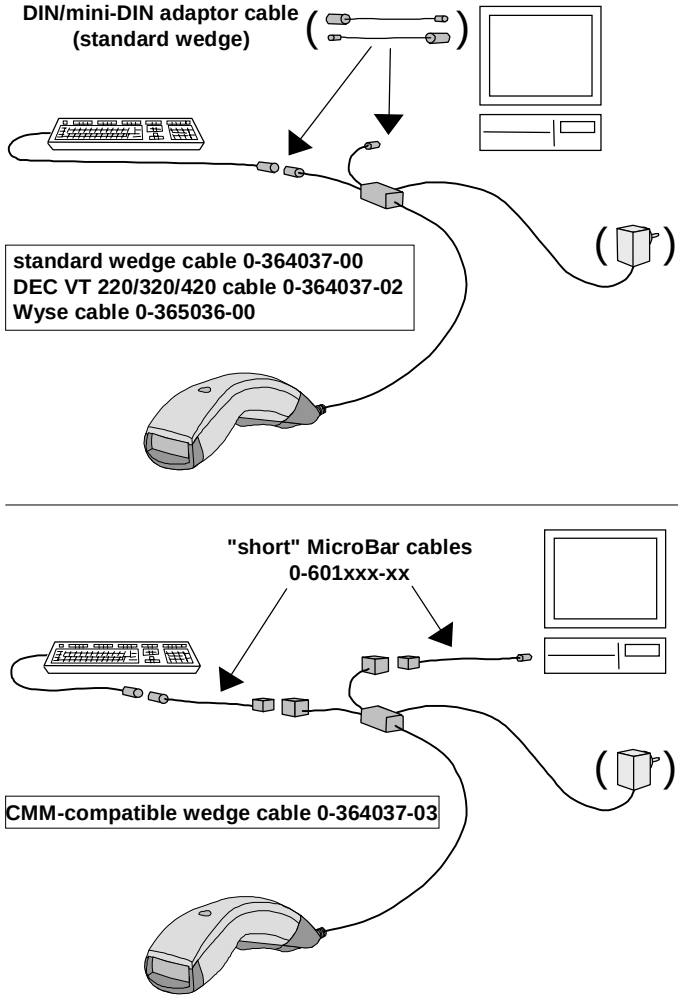
terminal selector (all terminals):

this option only available with EasySet

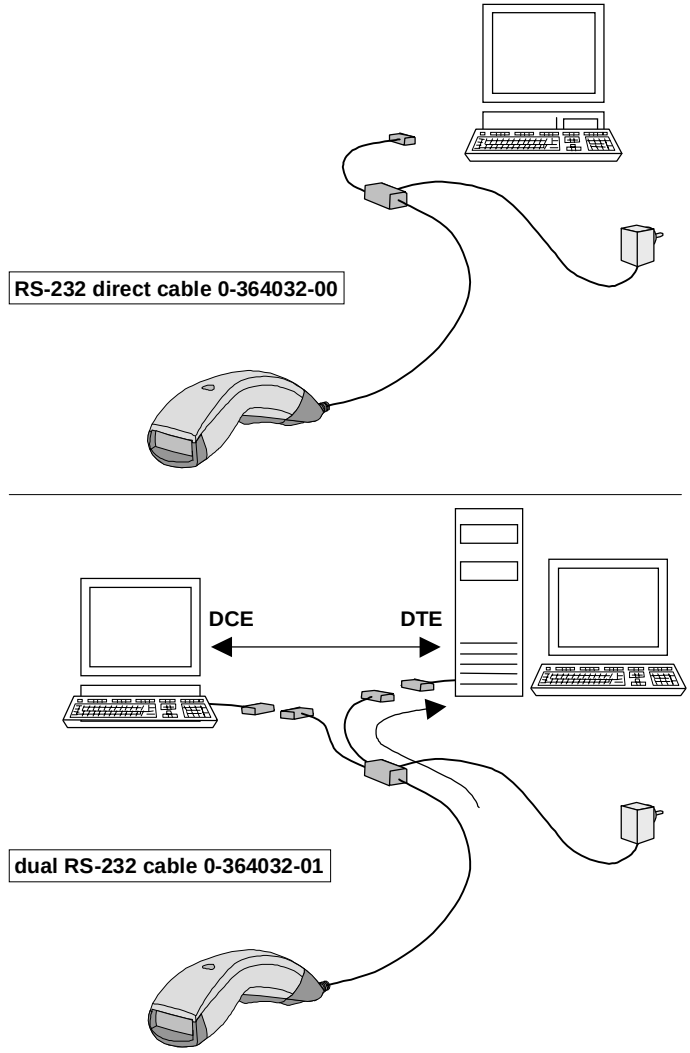
- database of all supported terminals (look for your system configuration in the list)

connections

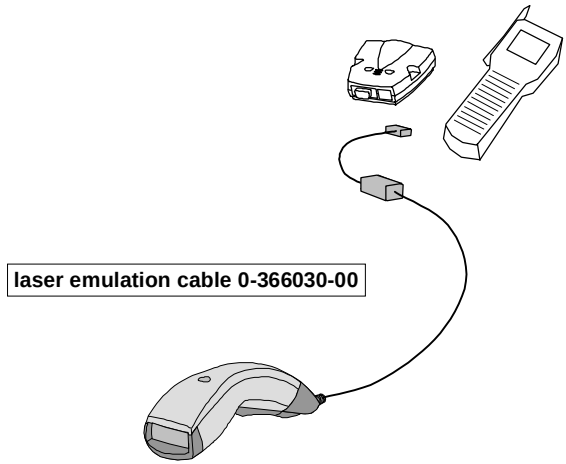
keyboard wedge



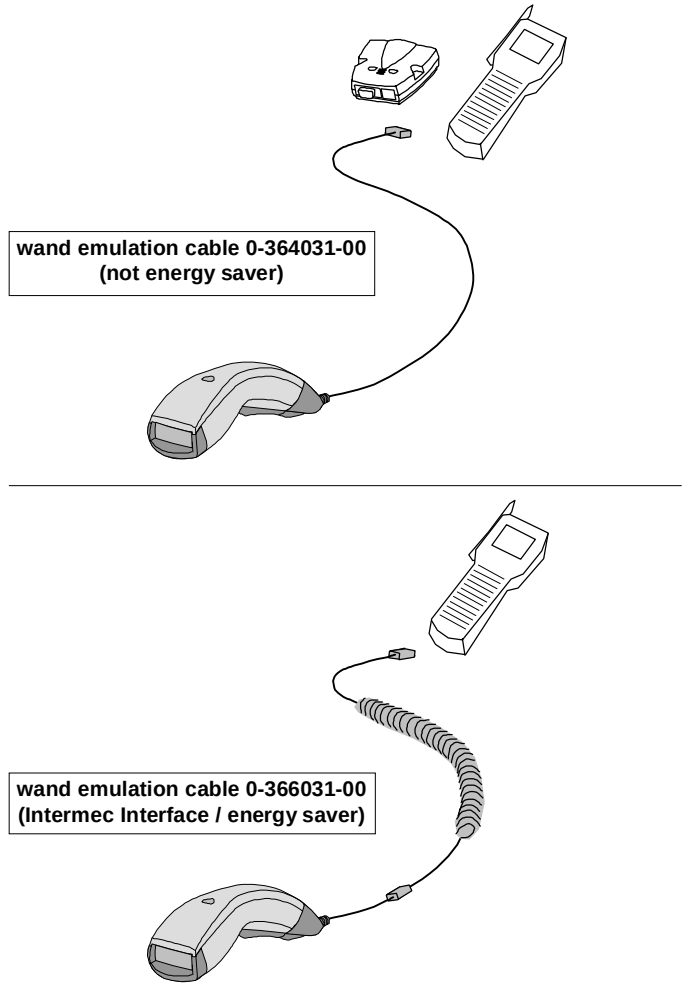
RS-232


RS-232 direct cable 0-364032-00
DCE
DTE
dual RS-232 cable 0-364032-01

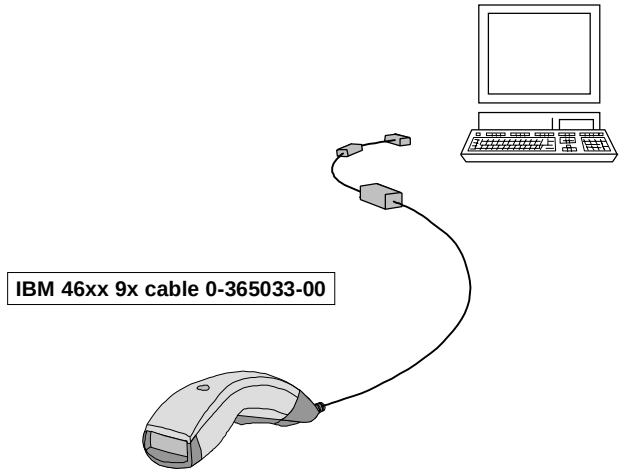
laser emulation



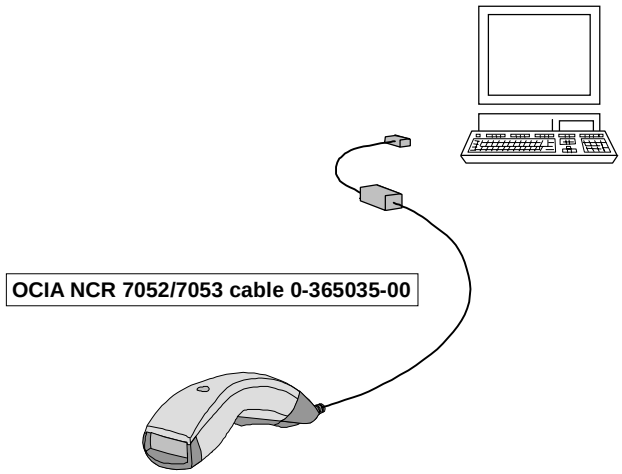
wand emulation



IBM 46xx cash registers



OCIA cash registers



predefined terminal selections

- look in the terminal selector if you cannot find your system configuration in this section

keyboard wedge

- "keyboard wedge" = connection between a keyboard and the host system (data is transmitted in keyboard emulation mode)
- switch off the host system before you connect the cables and optional power supply !
- 7 green LED flashes at power-up

standard PC

- look in the terminal selector if you cannot find your system configuration in this section

QWERTY English

\41\4A\03\08\60

AZERTY French

\41\4A\03\09\60

QWERTZ German

\41\4A\03\0C\60

QWERTY Swedish / Finnish

\41\4A\03\0D\60

QWERTY Italian

\41\4A\03\0E\60

QWERTY Norwegian

\41\4A\03\0F\60

QWERTY Danish

\41\4A\03\10\60

QWERTY Spanish

\41\4A\03\11\60

QWERTZ Swiss / French

\41\4A\1F\24\60

DEC VT 220, 320, 420

- look in the terminal selector if you cannot find your system configuration in this section

QWERTY PC type

\41\4A\06\1A\60

AZERTY PC type

\41\4A\06\1B\60

QWERTZ PC type

\41\4A\06\1E\60

QWERTY PC type Swedish / Finnish

\41\4A\06\1F\60

RS-232

- switch off the host system before you connect the cables and power supply !
- 2 green LED flashes at power-up

standard RS-232 C (9600, 7, E, 2)

\41\4A\01\24\60

- predefined terminal selection also available with the terminal selector
- PC serial port compatible
- customize individual RS-232 settings to suit your system after reading this parameter

special RS-232 configurations

TTL logical 0 = 0V (9600, 7, E, 2)

\41\4A\01\24\60

- customize individual RS-232 settings to suit your system after reading this parameter

TTL logical 0 = 5V (9600, 7, E, 2)

\41\4A\01\24\40\50\60

- customize individual RS-232 settings to suit your system after reading this parameter

PC Term (19200, 8, none, 2)

\41\4A\01\26\60

slave mode (9600, 7, E, 2)

\41\4A\01\29\60

- for RS-232 C and RS-232 TTL with logical 0 = 0V
- allows the ScanPlus 1800 to be configured or controlled directly by the host system via the RS-232 serial port
- optimized high-security Code 128 transmission (start/stop, hexadecimal characters, checksum)

1. use "display data string mode" (see section 7 "Configuration modes and utilities") to display on a terminal screen the data string and checksum for the setup commands you want to send to the ScanPlus 1800 in slave mode (the EasySet "View - Data String" command displays the command data strings but does not display the checksum !)

   Example: "Code 39 - active" = \ 41 \ 4C \ 60 \ 5E ("5E" = checksum)

Calculating the checksum

1. Calculate the weighted sum of the data string values (weight increases by 1 for each successive value) and include startB with weight 1 at the beginning :

data string :	startB		0x41		0x4C		0x60		
weight :	1		1		2		3		
weight * value :	(1 * 0x68)	+	(1 * 0x41)	+	(2 * 0x4C)	+	(3 * 0x60)	=	0x261

2. Calculate the modulo 103 value (modulo 67 hex) of the sum:

   0x261 modulo 0x67 = 0x5E (= checksum)

   (0x261 / 0x67 = 0x5 with remainder 0x5E)

3. Add the checksum to the data string

   Example: "Code 39 - active" = \41\4C\60\5E

2. remove the backslash separator characters from the data strings and adapt each string to slave mode format :

<start>	**<command>**	**<checksum>**	**<stop>**
< 6 8 >	x x x x x x	x x	< 6 A >

Example: slave mode command = 68 41 4C 60 5E 6A

3. activate "slave mode" and reconfigure the standard RS-232 output parameters to suit your system if required

- the ScanPlus 1800 goes into "temporary configuration mode" (see section 7 "Configuration modes and utilities")

4. send the commands from the host terminal to the ScanPlus 1800 (individually or as a list in a batch file)

- the values displayed in "display data string mode" are hexadecimal values, make sure that the values you send from the host system correspond to these values - in our example, the ScanPlus 1800 must receive the hexadecimal value 41 or its equivalent (ASCII character "A" for example), not the decimal value "41" !

5. send "update current configuration" (0x68 0x46 0x41 0x02 0x60 0x4C 0x6A) if you want to save the new configuration you have sent to the ScanPlus 1800 (see section 7 "Configuration modes and utilities")

simplified slave mode (9600, 7, E, 2)

\41\4A\01\2D\60

- for RS-232 C and RS-232 TTL with logical 0 = 0V
- allows the ScanPlus 1800 to be configured or controlled directly by the host system via the RS-232 serial port
- easy-to-monitor character string (same as the strings displayed with the EasySet "View - Data String" command) but less secure than standard "slave mode" (no start/stop or checksum)

1. use the EasySet "View - Data String" command to obtain the data strings for the commands you want to send to the ScanPlus 1800

   Example: command for "Code 39 - active" = \ 4 1 \ 4 C \ 6 0

- if you use "display data string mode" (see section 7 "Configuration modes and utilities"), do not use the last 2 digits (checksum)

2. activate "simplified slave mode" and reconfigure the standard RS-232 output parameters to suit your system if required

- the ScanPlus 1800 goes into "temporary configuration mode" (see section 7 "Configuration modes and utilities")

3. send the commands in ASCII format from the host terminal to the ScanPlus 1800 (individually or as a list in a batch file)

4. send "update current configuration" (\ 4 6 \ 4 1 \ 0 2 \ 6 0) if you want to save the new configuration you have sent to the ScanPlus 1800 (see section 7 "Configuration modes and utilities")

laser emulation

- switch off the host system before you connect the cable !
- no LED flash at power-up
- activates "energy saver mode - active for read duration (2 s), standby after good read" (see section 6, "Operating settings - trigger activation")

laser with trigger

\41\4A\02\04\60

- predefined terminal selection also available with the terminal selector

wand emulation

- predefined terminal selections also available with the terminal selector
- switch off the host system before you connect the cable !
- 1 green LED flash at power-up
- connecting a wand cable activates general wand interface default settings (see section 4, "Data transmission settings") if a specific wand interface is not already selected

analog wand emulation (white high)

\41\4A\02\03\60

- bar = 0, space = 1, margin = 1, quiet zone = 1
- good read beeps after transmission, pulse duration = 1.32 ms, intermessage delay = 750 ms

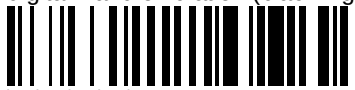
analog wand emulation (Intermec Interface, white high)

\41\4A\02\07\60

- bar = 0, space = 1, margin = 1, quiet zone = 1
- energy saver mode, active while trigger pressed, standby after good read (see section 6, "Operating settings - trigger activation")
- beeps not active, good read LED before transmission, pulse duration = 0.15 ms, no intermessage delay
- for Intermec products such as 97XX wedge products, JANUS 2010 hand-held computers, TRAKKER Antares 242X terminals, use :

ScanPlus 1800 product	**P/N**
ScanPlus 1800 SR + wand emulation cable	0 - 3 6 0 0 5 1 - 0 1
ScanPlus 1800 ST + wand emulation cable	0 - 3 6 6 0 5 1 - 0 1
wand emulation cable	0 - 3 6 6 0 3 1 - 0 0

digital wand emulation (black high)



\41\4A\02\02\60

- bar = 1, space = 0, margin = 0, quiet zone = 0
- good read beeps after transmission, pulse duration = 0.85 ms, intermessage delay = 750 ms

IBM 46xx cash registers

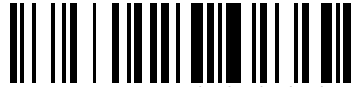
- predefined terminal selections also available with the terminal selector
- switch off the host system before you connect the cable !
- 3 green LED flashes at power-up
- setup is independent of the physical link with the cash register (you can configure for Port 9x or Port 5x as required by the host)

Port 9x

\41\4A\01\2E\60

- you cannot send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal IBM product cable connected)

Port 5x



\41\4A\01\2F\60

- you cannot send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal IBM product cable connected)

OCIA cash registers

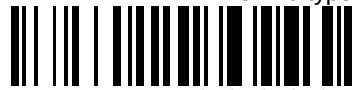
- look in the terminal selector if you cannot find your system configuration in this section
- switch off the host system before you connect the cable !
- 5 green LED flashes at power-up
- if you have problems with your OCIA configuration, switch off the system to reset the cash register and your product and try another OCIA type

TEC 1st type

\41\4A\01\38\60

- you cannot send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal OCIA product cable connected)

TEC 2nd type



\41\4A\01\39\60

- you cannot send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal OCIA product cable connected)

NCR

\41\4A\01\3A\60

- you cannot send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal OCIA product cable connected)

custom interface number

compose: [range: 100-30000]

\41\4A\60

- enter a number string and scan End Selection (Appendix C)
- for special host system configurations

4. Data transmission settings

- interface-specific communication parameters
- modify data transmission settings to optimize performance

keyboard wedge

- default values (*) are for IBM PC AT and compatible - QWERTY English

preamble

[preamble] [symbology id] <data> [postamble]

none (*)

\45\53\3E\00\60

compose:

\45\53\60

- enter an ASCII / Special Wedge Characters string and scan End Selection (Appendix A and B)
- maximum = 20 characters

symbology identifier

[preamble] [symbology id] <data> [postamble]

AIM

[preamble] [symbology id] <data> [postamble]

- optional 3-character symbology identifiers standardized by the AIM Committee
  Example: "] A 0 " identifies standard Code 39 without check digit
- refer to the official AIM documentation on symbology identifiers for full information on the different processing options supported

symbology	]	<symbology_id>	<processing_option>
Codabar	]	F	0, 2, 4
Code 39	]	A	0, 1, 2, 4
Code 93	]	G	0
Code 128/EAN 128	]	C	0, 1
Interleaved 2 of 5	]	I	0, 1, 2
Matrix 2 of 5	]	X	0
Standard 2 of 5	]	S	0, 1, 2
MSI Code	]	M	0, 1
PDF417	]	L	0
Plessey Code	]	P	0
Telepen	]	B	0, 1
UPC/EAN (1)	]	E	0, 3, 4
UPC/EAN (2)	]	X	0

(1) UPC/EAN "standard" lengths = 8, 13, 15 (add-on 2), 18 (add-on 5) characters
(2) UPC/EAN other lengths (no check digit, . . .)

not transmitted (*)

\47\59\60

transmitted

\47\58\60

- activates AIM symbology identifier transmission for all symbologies

custom

[preamble] [symbology id] <data> [postamble]

not transmitted (*)

\45\56\60

transmitted

\45\55\60

- activates custom symbology identifier transmission for all symbologies

compose

- compose 1 custom character

Codabar: [range: 1]

\45\59\04\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Code 39: [range: 1]

\45\59\01\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = *

Code 93: [range: 1]

\45\59\0D\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Code 128 / EAN 128: [range: 1]

\45\59\0B\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

EAN-8: [range: 1]

\45\59\07\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = FF

EAN-13: [range: 1]

\45\59\06\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = F

Interleaved 2 of 5: [range: 1]

\45\59\02\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = I

Matrix 2 of 5: [range: 1]

\45\59\0E\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

MSI Code: [range: 1]

\45\59\0A\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

PDF417: [range: 1]

\45\59\13\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = *

Plessey Code: [range: 1]

\45\59\0C\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Standard 2 of 5: [range: 1]

\45\59\03\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Telepen: [range: 1]

\45\59\0F\60

- enter an ASCII string and scan End Selection (Appendix A)
- default = *

UPC-A: [range: 1]

\45\59\08\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = A

UPC-E: [range: 1]

\45\59\09\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = E

postamble

[preamble] [symbology id] <data> [postamble]

none

\45\54\3E\00\60

Enter (*)

\45\54\04\02\01\60

Carriage Return

\45\54\04\02\02\60

Tab

\45\54\04\02\08\60

Field Advance

\45\54\04\02\04\60

Field Exit

\45\54\04\02\05\60

Down Arrow

\45\54\04\02\0F\60

compose:

- enter an ASCII / Special Wedge Characters string and scan End Selection (Appendix A and B)
- maximum = 20 characters

special keys interpretation (Code 39)

- certain dual-character combinations in Code 39 bar codes can be interpreted and transmitted as special keyboard keys (Code 39 is not full ASCII and does not support direct encoding of special keyboard keys such as <Enter> and <Tab>)
- only for keyboard wedge applications with Code 39 bar codes !!! (your product must be enabled to read Code 39 codes with the correct barcode length settings)

emulated key	characters	emulated key	characters
DEL	.A	PF1	0A
ENTER	.B	PF2	0B
RETURN	.C	PF3	0C
SEND	.D	PF4	0D
FIELD +	.E	PF5	0E
FIELD EXIT	.F	PF6	0F
HOME	.G	PF7	0G
END	.H	PF8	0H
TAB	.I	PF9	0I
ALT	.J	PF10	0J
BACK TAB	.K	PF11	0K
BACKSPACE	.L	PF12	0L
right arrow	.M	PF13	0M
left arrow	.N	PF14	0N
up arrow	.O	PF15	0O
down arrow	.P	PF16	0P
CLEAR	.Q	PF17	0Q
FIELD -	.R	PF18	0R
DUP	.S	PF19	0S
ESC	.T	PF20	0T
LINE FEED	.U	PF21	0U
RESET	.V	PF22	0V
CTRL	.W	PF23	0W
SPECIAL	.X	PF24	0X

not active (*)

\42\57\60

- special dual-character combinations not interpreted (original code string transmitted without interpretation)

  Example (. I dual-character combination = <Tab>)

original Code 39 code:	**interpreted and transmitted as:**
msg . Ixx	msg . Ixx
. I	. I
x - . I	x - . I
msg - . Ixx	msg - . Ixx

always active

\42\58\60

- special dual-character combinations always interpreted as special keys

  Example (. I dual-character combination = <Tab>)

original Code 39 code:	**interpreted and transmitted as:**
msg . Ixx	msg<Tab>xx
. I	<Tab>
x - . I	x <Tab>
msg - . Ixx	msg<Tab>xx

separate 2 character label

\42\5A\60

- special dual-character combinations interpreted if only 2 characters in the original code

  Example (. I dual-character combination = <Tab>)

original Code 39 code:	**interpreted and transmitted as:**
msg . Ixx	msg . Ixx
. I	<Tab>
x - . I	x - . I
msg - . Ixx	msg - . Ixx

separate 2 character label or preceded by a hyphen

\42\59\60

- special dual-character combinations interpreted if only 2 characters in the original code or if there is a hyphen in front of the 2 characters

  Example (. I dual-character combination = <Tab>)

original Code 39 code:	**interpreted and transmitted as:**
msg . Ixx	msg . Ixx
. I	<Tab>
x - . I	x <Tab>
msg - . Ixx	msg<Tab>xx

special keys transmission

- only symbologies that support the full ASCII character set allow the encoding of special keyboard keys such as <Return> and <Tab>
- no symbologies support the encoding of other function keys such as <PF1> and <PageDown>
- the special keys transmission codes allow you to transmit special keyboard keys as a single keyboard character, a [<Ctrl> + character] combination, or an [<Alt> + decimal_sequence] combination

control character conversion

- emulates PC AT keyboard [<Ctrl> + character] sequence or transmits certain keyboard functions directly as single keyboard characters

on (*)

\47\4D\60

- transmits the following characters directly as single keyboard characters:

ASCII character:	transmitted as:
8	<Backspace> (not <Ctrl> H)
9	<Tab> (not <Ctrl> I)
10	(not transmitted)
13	<Enter> (not <Ctrl> M)
27	<Escape> (not <Ctrl> [ )

- useful to avoid confusion for applications that already use control sequences as commands

off

\47\4E\60

- transmits ASCII characters for decimal numbers 1 to 27 with the corresponding [<Ctrl> + character] sequence

Alt mode

- emulates PC AT keyboard [<Alt> + decimal_sequence] function (for bar codes containing ASCII characters not on your keyboard)

off (*)

\41\47\60

on

\41\46\60

- use only if necessary as transmission is slower !!! (all characters are transmitted as <Alt> sequences)

Example

"A { B" is transmitted as:

<Alt> + <6> + <5> <Alt> + <1> + <2> + <3> <Alt> + <6> + <6>

inter-character delay

- avoids dropping characters if transmitting decoded data too fast for the host system
- do not use for IBM 46xx cash registers or laser/wand emulation !!!

none (*)

\52\00\60

10 ms

\52\0A\60

20 ms

\52\14\60

30 ms

\52\1E\60

40 ms

\52\28\60

50 ms

\52\32\60

compose (ms): [range: 1-999 ms]

\52\60

- enter a number string and scan End Selection (Appendix C)

inter-message delay

- avoids dropping characters if transmitting decoded data too fast for the host system

none (*)

\53\00\60

10 ms

\53\0A\60

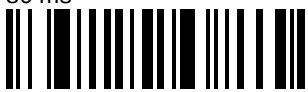
30 ms

\53\1E\60

50 ms

\53\32\60

80 ms



\53\01\10\60

100 ms

\53\01\24\60

compose (ms): [range: 1-999 ms]

\53\60

- enter a number string and scan End Selection (Appendix C)

end-of-transmission keyboard character status

- sets keyboard to lower case or upper case at end of transmission
- Code 39 is transmitted in upper case
- Code 128 is transmitted in lower case / upper case (full ASCII)

lower case (*)

\41\44\60

upper case

\41\45\60

RS-232

- default values (*) are for standard RS-232 C (9600, 7, E, 2)

baud rate

75

\41\00\60

150

\41\01\60

300

\41\02\60

600

\41\03\60

1200

\41\04\60

2400

\41\05\60

4800

\41\06\60

9600 (*)

\41\07\60

19200

\41\08\60

38400

\41\09\60

data bits

7 (*)

\42\60

8

\43\60

parity

even (*)

\46\01\60

odd

\46\02\60

none

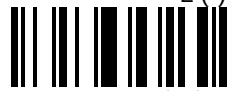
\46\00\60

stop bits

1

\44\60

2 (*)



\45\60

hardware/software protocols timeout

- the same timeout applies to all RS-232 protocols supported

1000 ms (*)

\51\0F\28\60

unlimited

\51\00\60

compose (ms): [range: 0-2500 ms]

\51\60

- enter a number string and scan End Selection (Appendix C)

ENQ

- ENQ not used: barcode data is transmitted without receiving a request from the host system
- ENQ used: data is transmitted if ENQ character received from host system before end of hardware/software protocols time-out

not used (*)

\47\3E\00\60

used (ENQ 05h)

\47\3E\05\60

compose:

\47\60

- enter an ASCII character and scan End Selection (Appendix A)

ACK

- activating ACK or NAK activates the ACK/NAK protocol
- before reading a new bar code after transmission, the product waits for an ACK (positive acknowledge) from the host system or until the end of the hardware/software protocols time-out

not used (*)

\48\3E\00\60

used (ACK 06h)

\48\3E\06\60

compose:

\48\60

- enter an ASCII character and scan End Selection (Appendix A)

NAK

- activating ACK or NAK activates the ACK/NAK protocol
- a NAK (negative acknowledge) indicates an unsuccessful transmission attempt
- after 3 unsuccessful transmission attempts, message is aborted

not used (*)

\49\3E\00\60

used (NAK 15h)

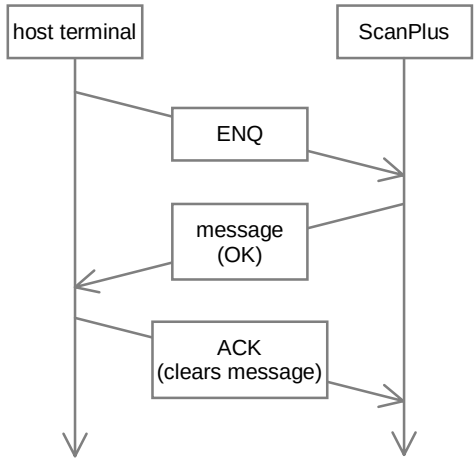
\49\3E\15\60

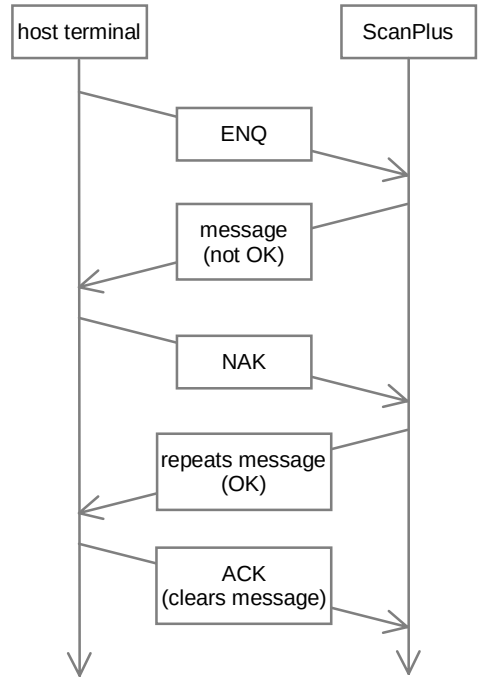
compose:

\49\60

- enter an ASCII character and scan End Selection (Appendix A)

Typical ENQ / ACK / NAK scenarios





XON / XOFF software protocol

- the host system controls the flow of data from the reader
- XOFF (ASCII character DC3) from the host at the end of the hardware/software protocols time-out interrupts transmission
- XON (ASCII character DC1) restarts the data flow

not active (*)

\4B\60

active

\4A\60

RTS / CTS hardware protocol

- CTS is tested before transmission of each character - data is only transmitted when CTS is activated
- RTS is activated before data is transmitted
- RTS can be deactivated after transmission of each character, after transmission of the whole message, or after an RTS pulse which can be emitted when each character is transmitted

not active (*)

\47\5F\00\60

active, RTS idle after each character

\47\5F\01\60

active, RTS idle after whole message

\47\5F\03\60

active, RTS pulse on each character

\47\5F\02\60

compose delay before RTS idle (ms): [range: 0-2500 ms]

\47\5E\60

- enter a number string and scan End Selection (Appendix C)
- default = 10 ms
- delay for RTS idle after each character / idle after whole message
- not valid for RTS pulse on each character

preamble

[preamble]	[symbology id]	<data>	[postamble]

none (*)

\45\53\3E\00\60

compose:

\45\53\60

- enter an ASCII string and scan End Selection (Appendix A)
- maximum = 20 characters

preamble / postamble

[preamble]	[symbology id]	<data>	[postamble]

STX / ETX

\45\53\3E\02\45\54\3E\03\60

symbology identifier

[preamble] [symbology id] <data> [postamble]

AIM

[preamble] [symbology id] <data> [postamble]

- optional 3-character symbology identifiers standardized by the AIM Committee
  Example: "] A 0 " identifies standard Code 39 without check digit
- refer to the official AIM documentation on symbology identifiers for full information on the different processing options supported

symbology	]	<symbology_id>	<processing_option>
Codabar	]	F	0, 2, 4
Code 39	]	A	0, 1, 2, 4
Code 93	]	G	0
Code 128/EAN 128	]	C	0, 1
Interleaved 2 of 5	]	I	0, 1, 2
Matrix 2 of 5	]	X	0
Standard 2 of 5	]	S	0, 1, 2
MSI Code	]	M	0, 1
PDF417	]	L	0
Plessey Code	]	P	0
Telepen	]	B	0, 1
UPC/EAN (1)	]	E	0, 3, 4
UPC/EAN (2)	]	X	0

(1) UPC/EAN "standard" lengths = 8, 13, 15 (add-on 2), 18 (add-on 5) characters
(2) UPC/EAN other lengths (no check digit, . . .)

not transmitted (*)

\47\59\60

transmitted

\47\58\60

- activates AIM symbology identifier transmission for all symbologies

custom

[preamble] [symbology id] <data> [postamble]

not transmitted (*)

\45\56\60

transmitted

\45\55\60

- activates custom symbology identifier transmission for all symbologies

compose

- compose 1 custom character

Codabar: [range: 1]

\45\59\04\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Code 39: [range: 1]

\45\59\01\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = *

Code 93: [range: 1]

\45\59\0D\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Code 128 / EAN 128: [range: 1]

\45\59\0B\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

EAN-8: [range: 1]

\45\59\07\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = FF

EAN-13: [range: 1]

\45\59\06\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = F

Interleaved 2 of 5: [range: 1]

\45\59\02\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = I

Matrix 2 of 5: [range: 1]

\45\59\0E\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

MSI Code: [range: 1]

\45\59\0A\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

PDF417: [range: 1]

\45\59\13\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = *

Plessey Code: [range: 1]

\45\59\0C\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Standard 2 of 5: [range: 1]

\45\59\03\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = D

Telepen: [range: 1]

\45\59\0F\60

- enter an ASCII string and scan End Selection (Appendix A)
- default = *

UPC-A: [range: 1]

\45\59\08\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = A

UPC-E: [range: 1]

\45\59\09\60

- enter an ASCII character and scan End Selection (Appendix A)
- default = E

postamble

[preamble] [symbology id] <data> [postamble]

none

\45\54\3E\00\60

Carriage Return + Line Feed (*)

\45\54\3E\0D\3E\0A\60

Carriage Return

\45\54\3E\0D\60

Line Feed

\45\54\3E\0A\60

compose:

\45\54\60

- enter an ASCII string and scan End Selection (Appendix A)
- maximum = 20 characters

LRC (longitudinal redundancy check)

not active (*)

\4F\60

active

\4E\60

inter-character delay

- avoids dropping characters if transmitting decoded data too fast for the host system
- do not use for IBM 46xx cash registers or laser/wand emulation !!!

none (*)

\52\00\60

10 ms

\52\0A\60

20 ms

\52\14\60

30 ms

\52\1E\60

40 ms

\52\28\60

50 ms

\52\32\60

compose (ms): [range: 1-999 ms]

\52\60

- enter a number string and scan End Selection (Appendix C)

inter-message delay

- avoids dropping characters if transmitting decoded data too fast for the host system

none (*)

\53\00\60

10 ms

\53\0A\60

30 ms

\53\1E\60

50 ms

\53\32\60

80 ms

\53\01\10\60

100 ms

\53\01\24\60

compose (ms): [range: 1-999 ms]

\53\60

- enter a number string and scan End Selection (Appendix C)

laser emulation

- default values (*) are for standard laser with trigger
- transmitted symbology type :
  - PDF417, Telepen : data is transmitted in Code 128 format
  - all other symbologies : data can be transmitted in original barcode format or in Code 39 format

transmitted symbology type

- transmits data in original barcode format or in Code 39 format

transmission in original code format (*)

\5E\00\60

transmission in Code 39

\5E\01\60

- original code must not contain characters not supported by Code 39

margin size

- defined in increments of narrow bar width (50 µs)

10 x narrow bar width (*)

\5A\0A\60

compose (x narrow bar width):

\5A\60

- enter a number string and scan End Selection (Appendix C)

logical signal state during transmission

bar = 1, space = 0, margin = 0 (*)

\54\60

bar = 0, space = 1, margin = 1

\55\60

logical signal state outside transmission

quiet zone = 1 (*)

\57\60

quiet zone = 0

\56\60

inter-message delay

- avoids dropping characters if transmitting decoded data too fast for the host system

none (*)

\53\00\60

10 ms

\53\0A\60

30 ms

\53\1E\60

50 ms

\53\32\60

80 ms

\53\01\10\60

100 ms

\53\01\24\60

compose (ms): [range: 1-999 ms]

\53\60

- enter a number string and scan End Selection (Appendix C)

wand emulation

- default values (*) are for analog wand emulation
- transmitted symbology type :
  - PDF417, Telepen : data is transmitted in Code 128 format
  - all other symbologies : data can be transmitted in original barcode format or in Code 39 format

transmitted symbology type

- transmits data in original barcode format or in Code 39 format

transmission in original code format (*)

\5E\00\60

transmission in Code 39

\5E\01\60

- original code must not contain characters not supported by Code 39

margin size

- defined in increments of narrow bar width (50 µs)

10 x narrow bar width (*)

\5A\0A\60

compose (x narrow bar width):

\5A\60

- enter a number string and scan End Selection (Appendix C)

logical signal state during transmission

bar = 0, space = 1, margin = 1 (*)

\55\60

bar = 1, space = 0, margin = 0

\54\60

logical signal state outside transmission

quiet zone = 1 (*)

\57\60

quiet zone = 0

\56\60

pulse duration

- times in ms represent the pulse duration of a narrow bar or space
- speeds in parentheses are for standard UPC/EAN bar codes with 0.33 mm narrow-bar elements
- emulated pulse duration speed = [100 x (r / t)] cm/s, where r = actual narrowest element (mm) and t = setup duration element (ms)

Example

if r = 0.45 mm and t = 0.4 ms, emulated speed = 100 x (0.45 / 0.4) = 112.5 cm/s

0.15 ms (220 cm/s EAN 100%) (*)

\58\0F\60

0.19 ms (175 cm/s EAN 100%)

\58\13\60

0.26 ms (125 cm/s EAN 100%)

\58\1A\60

0.44 ms (75 cm/s EAN 100%)

\58\2C\60

0.66 ms (50 cm/s EAN 100%)

\58\01\02\60

0.88 ms (37.5 cm/s EAN 100%)

\58\01\18\60

1.32 ms (25 cm/s EAN 100%)

\58\02\04\60

2.64 ms (12.5 cm/s EAN 100%)

\58\04\08\60

6.60 ms (5 cm/s EAN 100%)

\58\0A\14\60

compose (x 10 µs):

\58\60

- enter a number string and scan End Selection (Appendix C)

inter-message delay

- avoids dropping characters if transmitting decoded data too fast for the host system

none (*)

\53\00\60

10 ms

\53\0A\60

30 ms

\53\1E\60

50 ms

\53\32\60

80 ms

\53\01\10\60

100 ms

\53\01\24\60

compose (ms): [range: 1-999 ms]

\53\60

- enter a number string and scan End Selection (Appendix C)

IBM 46xx cash registers

inter-message delay

- avoids dropping characters if transmitting decoded data too fast for the host system
- do not send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal IBM product cable connected)

none (*)

\53\00\60

10 ms

\53\0A\60

30 ms

\53\1E\60

50 ms

\53\32\60

80 ms

\53\01\10\60

100 ms

\53\01\24\60

compose (ms): [range: 1-999 ms]

\53\60

- enter a number string and scan End Selection (Appendix C)

OCIA cash registers

inter-character delay

- avoids dropping characters if transmitting decoded data too fast for the host system
- do not use for IBM 46xx cash registers or laser/wand emulation !!!
- do not send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal OCIA product cable connected)

none (*)

\52\00\60

10 ms

\52\0A\60

20 ms

\52\14\60

30 ms

\52\1E\60

40 ms

\52\28\60

50 ms

\52\32\60

compose (ms): [range: 1-999 ms]

\52\60

- enter a number string and scan End Selection (Appendix C)

inter-message delay

- avoids dropping characters if transmitting decoded data too fast for the host system
- do not send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal OCIA product cable connected)

none (*)

\53\00\60

10 ms

\53\0A\60

30 ms

\53\1E\60

50 ms

\53\32\60

80 ms

\53\01\10\60

100 ms

\53\01\24\60

compose (ms): [range: 1-999 ms]

\53\60

- enter a number string and scan End Selection (Appendix C)

5. Symbologies

- symbology = bar code type or family (e.g. Code 39, UPC, EAN)
- activate the symbologies you need and modify the settings for your symbologies if required
- to optimize performance, only activate symbologies you need !!! (deactivate the Code 39 and UPC/EAN default symbologies if you don't need them)

disable all symbologies

\41\4B\60

- deactivates all the symbologies activated
- use the "not active" options to deactivate individual symbologies
- does not reset individual parameter settings for each symbology (when you reactivate a symbology, you recover the parameter settings stored in memory for that symbology when it was disabled - use reset factory defaults to reset all the symbology parameters to their factory default settings)

Codabar

- numerical symbology

not active (*)

\41\53\60

active

\41\52\60

start/stop

not transmitted (*)

\43\4D\60

a, b, c, d

\43\4E\60

A, B, C, D

\43\4F\60

a, b, c, d / t, n, *, e

\43\50\60

DC1, DC2, DC3, DC4

\43\51\60

CLSI library system

- spaces inserted after characters 1, 5, 10 in the 14-character label (used in the USA by libraries using the CLSI system)

  Example: "39990000192148" is transmitted as "3 9990 00019 2148"
- start/stop can be transmitted or not transmitted as required

not active (*)

\43\53\60

active (insert spaces)

\43\52\60

check digit (AIM recommendation)

- AIM has a recommended check character for Codabar
- each Codabar data character (including Start/Stop) has a value assigned to it:

  0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 - = 10 $ = 11 : = 12 / = 13 , = 14 + = 15 A = 16 B = 17 C = 18 D = 19
- the values are added and the check is calculated: check = [(next multiple of 16) - (sum of assigned AIM values)]

Example

data characters:	**A 0 1 2 3 4 B**
AIM values = 16 + 0 + 1 + 2 + 3 + 4 + 17:	43
next multiple of 16:	48
check = 48 - 43:	5
final message:	A 0 1 2 3 4 5 B

not used (*)

\46\56\60

checked and transmitted

\46\54\60

checked but not transmitted

\46\55\60

barcode length

= <start> + <barcode data> + [check digit] + <stop>

- minimum length possible = 3 characters
- if the codes in your application have fixed lengths, use the "compose 1 or 2 or 3 fixed lengths" option !!!

compose 1 or 2 or 3 fixed lengths:

\43\54\60

- enter a number string and scan End Selection for each length and scan End Selection twice to finish (Appendix C)
- compose 1 or 2 or 3 fixed lengths provides the best performance and security if the codes in your application have fixed lengths
- minimum length possible = 3 characters

any length

\43\55\00\60

- cancels any fixed length / minimum length settings and accepts any valid length (3 or more characters)

compose minimum length: [range: 3-50]

\43\55\60

- enter a number string and scan End Selection (Appendix C)
- compose a minimum length if the codes in your application do not have 1 or 2 or 3 fixed lengths
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6 (*)

\43\55\06\60

Code 39

- alphanumeric symbology
- letter case not defined - transmitted in upper case
- default format = Standard 43 Characters

active (*)

\41\4C\60

not active

\41\4D\60

format

standard 43 characters (*)

\42\4A\60

full ASCII

\42\4B\60

- extra characters encoded using 1 of 4 control characters ($, %, /, +) combined with a letter:

Code 39	ASCII	Hex	Dec
%U	NUL	00	0
$A	SOH	01	1
$B	STX	02	2
$C	ETX	03	3
$D	EOT	04	4
$E	ENQ	05	5
$F	ACK	06	6
$G	BEL	07	7
$H	BS	08	8
$I	HT	09	9
$J	LF	0A	10
$K	VT	0B	11
$L	FF	0C	12
$M	CR	0D	13
$N	SO	0E	14
$O	SI	0F	15
$P	DLE	10	16
$Q	DC1	11	17
$R	DC2	12	18
$S	DC3	13	19
$T	DC4	14	20
$U	NAK	15	21
$V	SYN	16	22
$W	ETB	17	23
$X	CAN	18	24
$Y	EM	19	25
$Z	SUB	1A	26
%A	ESC	1B	27
%B	FS	1C	28
%C	GS	1D	29
%D	RS	1E	30
%E	US	1F	31
Space	SP	20	32
/A	!	21	33

Code 39	ASCII	Hex	Dec
/B	"	22	34
/C	#	23	35
$	$	24	36
%	%	25	37
/F	&	26	38
/G	'	27	39
/H	(	28	40
/I	)	29	41
/J	*	2A	42
+	+	2B	43
/L	,	2C	44
/M	-	2D	45
/N	.	2E	46
/	/	2F	47
0	0	30	48
1	1	31	49
2	2	32	50
3	3	33	51
4	4	34	52
5	5	35	53
6	6	36	54
7	7	37	55
8	8	38	56
9	9	39	57
/Z	:	3A	58
%F	;	3B	59
%G	<	3C	60
%H	=	3D	61
%I	>	3E	62
%J	?	3F	63
%V	@	40	64
A	A	41	65
B	B	42	66
C	C	43	67

Code 39	ASCII	Hex	Dec
D	D	44	68
E	E	45	69
F	F	46	70
G	G	47	71
H	H	48	72
I	I	49	73
J	J	4A	74
K	K	4B	75
L	L	4C	76
M	M	4D	77
N	N	4E	78
O	O	4F	79
P	P	50	80
Q	Q	51	81
R	R	52	82
S	S	45	83
T	T	54	84
U	U	55	85
V	V	56	86
W	W	57	87
X	X	58	88
Y	Y	59	89
Z	Z	5A	90
%K	[	5B	91
%L	\	5C	92
%M	]	5D	93
%N	^	5E	94
%O	_	5F	95
%W	`	60	96
+A	a	61	97
+B	b	62	98
+C	c	63	99
+D	d	64	100
+E	e	65	101

Code 39	ASCII	Hex	Dec
+F	f	66	102
+G	g	67	103
+H	h	68	104
+I	i	69	105
+J	j	6A	106
+K	k	6B	107
+L	l	6C	108
+M	m	6D	109
+N	n	6E	110
+O	o	6F	111
+P	p	70	112
+Q	q	71	113
+R	r	72	114
+S	s	73	115
+T	t	74	116
+U	u	75	117
+V	v	76	118
+W	w	77	119
+X	x	78	120
+Y	y	79	121
+Z	z	7A	122
%P	{	7B	123
%Q	|	7C	124
%R	}	7D	125
%S	~	7E	126
%T	DEL	7F	127

start/stop

not transmitted (*)

\42\4D\60

transmitted

\42\4C\60

accepted characters

" * " only (*)

\42\4E\02\60

" $ " only

\42\4E\01\60

" $ " and " * " accepted

\42\4E\03\60

check digit

not used (*)

\42\4F\60

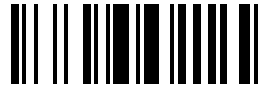
modulo 43

- provides extra validation of data

checked and transmitted

\42\50\60

checked but not transmitted



\42\51\60

French CIP

- French pharmaceutical industry
- only used for codes with 7 characters

checked and transmitted

\42\52\60

checked but not transmitted

\42\53\60

Italian CPI

- Italian pharmaceutical industry
- transmitted as standard Code 39 if checksum not validated

checked and transmitted

\42\54\60

checked but not transmitted

\42\55\60

barcode length

= <start> + <barcode data> + [check digit] + <stop>

- minimum length possible = 3 characters
- use the "compose minimum length" option if you know the minimum length of the codes in your application !!!

any length (*)

\42\5C\00\60

- cancels the last minimum length selection and accepts any valid length (3 or more characters)

compose minimum length: [range: 3-50]

\42\5C\60

- enter a number string and scan End Selection (Appendix C)
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6

\42\5C\06\60

Code 93

- alphanumeric full ASCII symbology - letter case defined

not active (*)

\41\5F\60

active

\41\5E\60

barcode length

= <barcode data>

- minimum length possible = 1 character
- use the "compose minimum length" option if you know the minimum length of the codes in your application !!!

any length (*)

\45\42\00\60

- cancels the last minimum length selection and accepts any valid length (1 or more characters)

compose minimum length: [range: 1-50]

\45\42\60

- enter a number string and scan End Selection (Appendix C)
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6

\45\42\06\60

Code 128 / EAN 128

- alphanumeric full ASCII symbology - letter case defined
- "EAN 128" = Code 128 with the FNC1 character in the first position
- EAN 128 is auto-discriminating with Code 128 (recognition of the FNC1 start character used)

not active (*)

\41\5B\60

active

\41\5A\60

EAN 128 identifier

- the]C1 AIM identifier for EAN 128 is automatically added by default in front of EAN 128 bar codes

include]C1 identifier (*)

\47\5A\01\60

remove]C1 identifier

\47\5A\00\60

CIP 128 French pharmaceutical codes

- embedded CIP 39 data
- fixed length 14 characters
- Code 128 character set C

not active (*)

\47\5D\00\60

active

\47\5D\01\60

FNC1 separator character (EAN 128 norms)

- default = GS function character (ASCII 29)
- used as separator when multiple identifiers and their fields are concatenated
- Example: useful for keyboard wedge interfaces where the GS character can not be transmitted

compose:

\46\52\60

- enter an ASCII character and scan End Selection (Appendix A)

barcode length

= <barcode data>

- minimum length possible = 1 character
- use the "compose minimum length" option if you know the minimum length of the codes in your application !!!
- Code 128 / EAN 128 does not use the same number of characters to code alphanumerical data and numerical data - if you can not read bar codes in your application, this may be due to an unsuitable minimum length - try entering a shorter length !

any length (*)

\44\55\00\60

- cancels the last minimum length selection and accepts any valid length (1 or more characters)

compose minimum length: [range: 1-50]

\44\55\60

- enter a number string and scan End Selection (Appendix C)
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6

\44\55\06\60

Interleaved 2 of 5

- numerical symbology

not active (*)

\41\4F\60

active

\41\4E\60

check digit

- especially recommended for variable length Interleaved 2 of 5 and if "consecutive same read data validation" (data decoding security parameters) is not activated

not used (*)

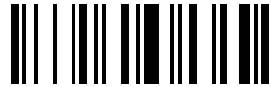
\43\43\60

mod 10

checked and transmitted

\42\5F\60

checked but not transmitted



\43\40\60

French CIP HR

- French pharmaceutical industry
- only used for codes with 7 characters

checked and transmitted

\43\41\60

checked but not transmitted

\43\42\60

barcode length

= <barcode data> + [check digit]

- minimum length possible = 2 characters
- if the codes in your application have fixed lengths, use the "compose 1 or 2 or 3 fixed lengths" option !!!
- Interleaved 2 of 5 always encodes an even number of characters
- for codes with an odd number of characters, you can add a last character printed as 5 narrow bars (not transmitted)

compose 1 or 2 or 3 fixed lengths:

\43\44\60

- enter a number string and scan End Selection for each length and scan End Selection twice to finish (Appendix C)
- compose 1 or 2 or 3 fixed lengths provides the best performance and security if the codes in your application have fixed lengths
- minimum length possible = 2 characters

any length

\43\45\00\60

- cancels any fixed length / minimum length settings and accepts any valid length (2 or more characters)

compose minimum length: [range: 2-50]

\43\45\60

- enter a number string and scan End Selection (Appendix C)
- compose a minimum length if the codes in your application do not have 1 or 2 or 3 fixed lengths
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6 (*)

\43\45\06\60

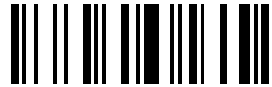
Matrix 2 of 5

- numerical symbology

not active (*)

\42\41\60

active



\42\40\60

barcode length

= <barcode data>

- minimum length possible = 3 characters
- use the "compose minimum length" option if you know the minimum length of the codes in your application !!!

any length

\46\59\00\60

- cancels the last minimum length selection and accepts any valid length (3 or more characters)

compose minimum length: [range: 3-50]

\46\59\60

- enter a number string and scan End Selection (Appendix C)
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6 (*)

\46\59\06\60

MSI Code

- numerical symbology

not active (*)

\41\59\60

active

\41\58\60

check digit

mod 10

checked and transmitted (*)

\44\5A\60

checked but not transmitted

\44\5C\60

double mod 10

checked and transmitted

\44\5B\60

checked but not transmitted

\44\5D\60

barcode length

= <barcode data> + <check digit>

- minimum length possible = 2 characters
- use the "compose minimum length" option if you know the minimum length of the codes in your application !!!

any length

\44\5F\00\60

- cancels the last minimum length selection and accepts any valid length (2 or more characters)

compose minimum length: [range: 2-50]

\44\5F\60

- enter a number string and scan End Selection (Appendix C)
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6 (*)

\44\5F\06\60

PDF417

- two-dimensonal symbology only available with ScanPlus 1800 PDF
- alphanumeric full ASCII symbology - letter case defined

active (*)

\48\4D\60

- only available with ScanPlus 1800 PDF

not active

\48\4E\60

macro PDF

- macro PDF is used when :
  - a long message requires more than one PDF417 label
  - "optional fields" information must be transmitted to the host application

buffered (*)

\48\4F\01\60

- stores a multi-label PDF417 message in the ScanPlus buffer
- transmits the whole message when all the labels have been read
- you can read the labels in any order
- flashing green LED = end of read but message not finished (read the next label)
- good read beep = end of message (message transmitted and no green LED)

- error beeps = you have already read this label (read another label) or the buffer is full (the message is too long, you will have to use the "unbuffered" option)

unbuffered

\48\4F\00\60

- for multi-label PDF417 messages that are too long for the ScanPlus buffer (memory overflow)
- each part of the message (PDF417 label) is transmitted separately (the host application must then assemble the message using the macro PDF control header transmitted with each label)
- good read beep and transmission each time a you read a label

control header

- only present in macro PDF codes
- always transmitted with "unbuffered" option

not transmitted (*)

\48\50\00\60

transmitted

\48\50\01\60

optional fields

- transmit additional information if present in the label
- one or more fields possible in the same label

file name

not transmitted (*)

\48\51\00\60

transmitted

\48\51\01\60

segment count

not transmitted (*)

\48\52\00\60

transmitted

\48\52\01\60

time stamp

not transmitted (*)

\48\53\00\60

transmitted

\48\53\01\60

sender

not transmitted (*)

\48\54\00\60

transmitted

\48\54\01\60

addressee

not transmitted (*)

\48\57\00\60

transmitted

\48\57\01\60

file size

not transmitted (*)

\48\58\00\60

transmitted

\48\58\01\60

checksum

not transmitted (*)

\48\59\00\60

transmitted

\48\59\01\60

Plessey Code

- numerical symbology

not active (*)

\41\5D\60

active

\41\5C\60

check digit

not transmitted (*)

\44\57\60

transmitted

\44\56\60

barcode length

= <start> + <barcode data> + <2-character check digit> + <stop>

- minimum length possible = 5 characters maximum length possible = 25 characters
- use the "compose minimum length" option if you know the minimum length of the codes in your application !!!

any length (*)

\44\59\00\60

- cancels the last minimum length selection and accepts any valid length (from 5 to 25 characters)

compose minimum length: [range: 5-25]

\44\59\60

- enter a number string and scan End Selection (Appendix C)
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6

\44\59\06\60

Standard 2 of 5

- numerical symbology
- default format = Identicon (6 start/stop bars)
- also referred to as "Straight 2 of 5" and "Industrial 2 of 5"

not active (*)

\41\51\60

active

\41\50\60

format

Identicon (6 start/stop bars) (*)

\43\47\60

Computer Identics (4 start/stop bars)

\43\46\60

check digit mod 10

not used (*)

\43\4A\60

checked and transmitted

\43\48\60

checked but not transmitted

\43\49\60

barcode length

= <barcode data> + [check digit]

- minimum length possible = 3 characters
- if the codes in your application have fixed lengths, use the "compose 1 or 2 or 3 fixed lengths" option !!!

compose 1 or 2 or 3 fixed lengths:

\43\4B\60

- enter a number string and scan End Selection for each length and scan End Selection twice to finish (Appendix C)
- compose 1 or 2 or 3 fixed lengths provides the best performance and security if the codes in your application have fixed lengths
- minimum length possible = 3 characters

any length

\43\4C\00\60

- cancels any fixed length / minimum length settings and accepts any valid length (3 or more characters)

compose minimum length: [range: 3-50]

\43\4C\60

- enter a number string and scan End Selection (Appendix C)
- compose a minimum length if the codes in your application do not have 1 or 2 or 3 fixed lengths
- to optimize decoding performance and increase security, select the same length as the minimum length in your application (do not select a shorter length !!)

minimum length = 6 (*)

\43\4C\06\60

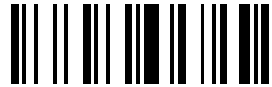
Telepen

- alphanumeric full ASCII symbology - letter case defined
- default format = ASCII

not active (*)

\42\43\60

active



\42\42\60

format

ASCII (*)

\47\4C\60

numeric

\47\4B\60

UPC / EAN

- numerical symbology
- deactivate EAN-13 for unregular UPC-E with number system equal to 1 (usually the first printed character)

active (*)

\41\56\60

- activates the UPC/EAN families currently selected (deactivated families are not reactivated, use "reactivate all" to select all UPC/EAN)

not active

\41\57\60

UPC-A deactivated

\43\5D\60

UPC-E deactivated

\43\5E\60

EAN-8 deactivated

\43\5F\60

EAN-13 deactivated

\44\40\60

reactivate all (UPC-A, UPC-E, EAN-8, EAN-13) (*)

\43\5C\60

- reactivates all deactivated UPC/EAN families

add-on digits

not required but transmitted if read (*)

\44\43\60

required and transmitted

\44\42\60

add-on 2

not active (*)

\44\41\60

active

\46\44\60

add-on 5

not active (*)

\46\46\60

active

\46\45\60

check digit

<leading character> <number system> <data> <check digit>

UPC-A

transmitted (*)

\44\46\60

not transmitted

\44\47\60

UPC-E

transmitted (*)

\44\4A\60

not transmitted

\44\4B\60

EAN-8

transmitted (*)

\46\49\60

not transmitted

\46\4A\60

EAN-13

transmitted (*)

\46\47\60

not transmitted

\46\48\60

UPC number system

<leading character> <number system> <data> <check digit>

UPC-A

- regular UPC-A has a transmitted number system equal to 0
- to transmit the additional leading character (country code), select the "UPC-A transmitted as EAN-13" option

transmitted (*)

\44\44\60

not transmitted

\44\45\60

UPC-E

- deactivate EAN-13 for unregular UPC-E with number system equal to 1 (usually the first printed character)

transmitted (*)

\44\48\60

not transmitted

\44\49\60

re-encoding UPC-A, UPC-E, EAN-8

<leading character> <number system> <data> <check digit>

- converts decoded data to other code formats
- transmission only takes into account the parameters available for the target bar code format
- regular UPC-A has a transmitted number system equal to 0
- to transmit the additional leading character (country code), select the "UPC-A transmitted as EAN-13" option

UPC-A transmitted as EAN-13 (*)

\44\4F\60

UPC-A transmitted as UPC-A

\44\4E\60

UPC-E transmitted as UPC-E (*)

\44\4C\60

UPC-E transmitted as UPC-A

\44\4D\60

EAN-8 transmitted as EAN 8 (*)

\44\50\60

EAN-8 transmitted as EAN-13

\44\51\60

6. Operating settings

- settings that affect the way your product operates (trigger settings, flashing mode, data decoding security settings, beep characteristics)

trigger activation

- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.
- for laser and ccd trigger models

standard mode	with aiming beam	energy saver mode
ccd	ccd	ccd
laser	---	laser

- "trigger not active" = default for ccd trigger models
- "standard mode - active while trigger pressed, standby after good read" = default for laser models
- activating trigger options deactivates autostand mode and flashing mode
- IMPORTANT : your ScanPlus will stop working if you :
  - use trigger commands with non-trigger models
  - activate energy saver mode without the special energy saver cable
  - connect a non-energy saver cable to a ScanPlus with energy saver activated
- if this happens :
  1. disconnect the ScanPlus
  2. keep the trigger pressed (if applicable) and connect the ScanPlus over a "reset factory defaults" configuration code (read from setup sheet, Getting Started Guide or Installation Manual)

trigger not active (*)

\45\5D\00\60

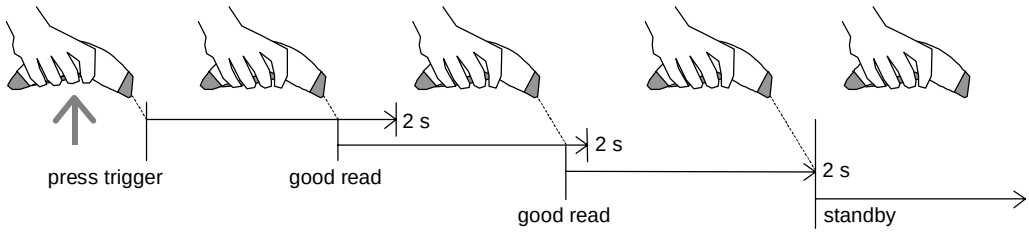
- (*) default setting for ccd trigger models
- laser beam always on if "trigger not active" for laser models
- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.

trigger operating scenarios

- select a trigger operating scenario to activate the trigger
- the same three operating scenarios are available for all ScanPlus trigger modes (standard, standard with aiming beam, energy saver):
  - active for read duration (2 s), repeat read duration after good read
  - active for read duration (2 s), standby after good read
  - active while trigger pressed, standby after good read
- the ScanPlus does not flash in standby when the trigger is activated

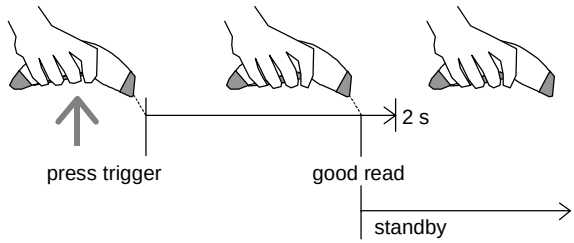
active for read duration (2 s)—repeat read duration after good read

- read a number of bar codes after a single press of the trigger



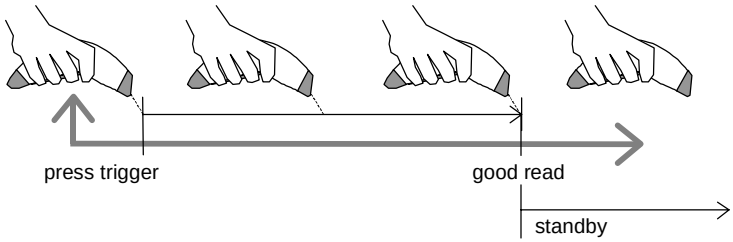
active for read duration (2 s)—standby after good read

- avoids double reading—when bar codes are close together for example



active while trigger pressed—standby after good read

- selective reading of single bar codes



standard mode

- for laser and ccd trigger models
- reading light and read function switched off during standby, full energy is restored when the next reading situation occurs
- best mode for standard applications where energy consumption not critical :
  - fast wake-up time
  - keyboard-host communication ensured after ScanPlus time-out (necessary for wedge applications for example)
  - no current peaks during reading
- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.

active for read duration (2 s), repeat read duration after good read

\46\5D\45\5D\02\46\4C\60

active for read duration (2 s), standby after good read

\46\5D\45\5D\02\46\4D\60

active while trigger pressed, standby after good read (*)

\46\5D\46\5A\03\3F\46\4D\60

- (*) default setting for laser models

standard mode with aiming beam

- for ccd trigger models only
- same as standard mode but with aiming beam during standby

active for read duration (2 s), repeat read duration after good read

\46\5C\45\5D\02\46\4C\60

active for read duration (2 s), standby after good read

\46\5C\45\5D\02\46\4D\60

active while trigger pressed, standby after good read

\46\5C\46\5A\03\3F\46\4D\60

energy saver mode

- for laser and ccd trigger models
- requires special energy saver cable !
- current consumption drops to zero during standby, full energy is restored when the next reading situation occurs
- for energy-critical applications using laptop computers for example (use standard mode when possible)
- deactivates power-up beeps / power-up LED (they cannot be activated)
- IMPORTANT : your ScanPlus will stop working if you :
  - use trigger commands with non-trigger models
  - activate energy saver mode without the special energy saver cable
  - connect a non-energy saver cable to a ScanPlus with energy saver activated
- if this happens :
  1. disconnect the ScanPlus
  2. keep the trigger pressed (if applicable) and connect the ScanPlus over a "reset factory defaults" configuration code (read from setup sheet, Getting Started Guide or Installation

Manual)

- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.

active for read duration (2 s), repeat read duration after good read

\46\5B\45\5D\02\46\4C\60

active for read duration (2 s), standby after good read

\46\5B\45\5D\02\46\4D\60

active while trigger pressed, standby after good read

\46\5B\46\5A\03\3F\46\4D\60

trigger read duration

- same value for all trigger modes
- select a trigger mode before you compose a custom read duration (selecting a trigger mode resets default read duration value of 2 s)
- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.

2 seconds (*)

\45\5D\02\60

compose (sec): [range: 2-65 sec]

\45\5D\60

- enter a number string and scan End Selection (Appendix C)

flashing mode

- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.
- for laser and ccd models
- activating flashing mode deactivates trigger options and autostand mode
- LED economizer flash during standby (changes to continuous beam when a bar code is presented)

flash after 10 minutes (*)

\47\42\47\4F\47\51\0A\60

- (*) default setting for ccd models ("no flash" is the default setting for laser models)

no flash (*)

\47\43\47\51\00\60

- (*) default setting for laser models ("flash after 10 minutes" is the default setting for ccd models)

compose time-out before flash (min): [range: 1-60 min]

\47\42\47\4F\47\51\60

- enter a number string and scan End Selection (Appendix C)

autostand mode

- LASER SAFETY: the ScanPlus 1800 ST is a Class 2 Laser product - CAUTION - LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM.
- for laser and ccd trigger models used for automatic "hands-free" scanning with raised stand 0-360029-00 for example (they can still be picked up and used manually !)
- automatic autostand operation :
  - laser trigger models : half-speed laser economizer beam during automatic standby
  - ccd trigger models : LED economizer flash during automatic standby
  - all models change to continuous beam when a bar code is presented and are active for the specified activation cycle duration (default = 10 sec)
  - each good read within the activation cycle duration starts a new activation cycle
  - if there is no good read before the end of the activation cycle duration, the ScanPlus 1800 returns to automatic standby
  - after 1 hour of inactivity (no reads), the ScanPlus 1800 goes into full automatic standby (no reading light or read function, green LED blinks slowly): press the trigger to return to normal automatic autostand operation
- manual autostand operation :
  - pressing the trigger one time puts the ScanPlus 1800 into manual standby for the specified activation cycle duration (default = 10 sec)
  - during manual standby, the reading light and read function are switched off
  - pressing the trigger before the end of the activation cycle duration activates the read function (active while trigger pressed, standby after good read)
  - releasing the trigger starts a new manual standby cycle
  - if the trigger is not pressed again before the end of the activation cycle duration, the ScanPlus 1800 returns to automatic autostand operation
  - a rapid double-click on the trigger returns the ScanPlus 1800 immediately to automatic autostand operation (does not wait until the end of the activation cycle duration)

active for activation cycle duration (10 s), repeat activation cycle after good read

\4C\40\01\47\50\46\4D\47\51\0A\60

- activating autostand mode deactivates other trigger options and flashing mode

compose activation cycle duration (sec): [range: 1-63 sec]

\4C\40\01\47\50\46\4D\47\51\60

- enter a number string and scan End Selection (Appendix C)

data decoding security

- ensures correct transmission of data for difficult reading conditions and varying levels of barcode quality (poorly printed labels, variable lengths and no check digit, "fragile" symbologies)
- increasing the security level reduces the reading speed !!!

predefined security levels

- predefined security level settings can be modified individually
- use medium and high security levels for poor-quality bar codes or critical applications
- increasing the security level reduces the reading speed !!!

normal (*)

\45\4E\00\60

- single read before transmission
- 300 ms between identical consecutive codes
- no timeout between different consecutive codes

medium

\45\4E\01\60

- 2 consecutive same reads before transmission
- 300 ms between identical consecutive codes
- 10 ms between different consecutive codes

high

\45\4E\02\60

- 4 consecutive same reads before transmission
- 350 ms between identical consecutive codes
- 30 ms between different consecutive codes

consecutive same read data validation

- data is only transmitted after repeated reads give the same result

single read before transmission (*)

\45\4B\01\60

compose number of same reads: [range: 0-10]

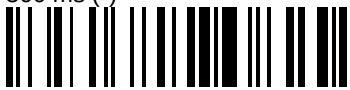
\45\4B\60

- enter a number string and scan End Selection (Appendix C)

timeout between identical consecutive codes

- prevents reading the same bar code more than once

300 ms (*)



\45\4C\04\2C\60

compose (ms):

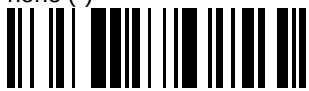
\45\4C\60

- enter a number string and scan End Selection (Appendix C)

timeout between different consecutive codes

- prevents unwanted reading of other bar codes on the same label

none (*)



\45\4D\0A\60

compose (ms):

\45\4D\60

- enter a number string and scan End Selection (Appendix C)

beeps / green indicator LED

volume

high (*)

\4B\47\01\60

low

\4B\47\00\60

medium

\4B\47\02\60

note (tone frequency)

high (2093.04 Hz) (*)

\4B\46\07\1E\60

low (1318.52 Hz)

\4B\46\0B\36\60

medium (1760 Hz)

\4B\46\08\38\60

compose frequency (Hz): [range: 100-4000 Hz]

\4B\46\60

- enter a number string and scan End Selection (Appendix C)

power-up beeps / power-up LED

- 2 beeps = successful power-up
- 3 long beeps = EEPROM integrity error (contact your Intermec representative !)

on (*)

\45\5B\60

off

\45\5A\60

good read beeps

number

- "normal" bar codes: 1 beep (default) = good read
- configuration codes: 2 beeps = good read, 6 beeps = setup error, 3 long beeps = EEPROM integrity error (contact your Intermec representative !)

1 (*)

\45\4A\00\60

2

\45\4A\01\60

none

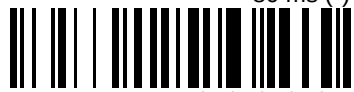
\45\49\00\60

duration

60 ms

\45\49\3C\60

80 ms (*)

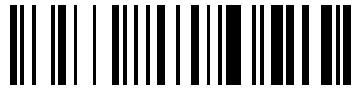


\45\49\01\10\60

200 ms

\45\49\04\2C\60

300 ms



\45\49\03\08\60

compose (ms): [range: 0-999 ms]

\45\49\60

- enter a number string and scan End Selection (Appendix C)

timing

- IBM and OCIA cash registers : do not send this parameter online to the ScanPlus 1800 through RS-232 cable 0-364032-00 !!! (send it to the setup sheet and read the configuration code with your normal IBM / OCIA product cable connected)

before transmission (*)

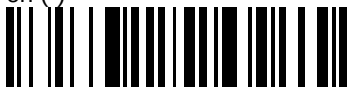
\45\52\60

after transmission

\45\51\60

good read LED

on (*)



\45\4F\01\10\60

off

\45\4F\00\60

PDF417 codes

- only available with the ScanPlus 1800 PDF
- if you remove the ScanPlus from the PDF417 code for more than 10 seconds before you finish reading (before you hear a success beep), the data you have read so far will be lost and you will have to start again

crackle

- irregular crackle = reading new PDF417 data
- the more intensive the crackle, the better the reading performance
- regular tick during rescan or pause = data has already been read
- regular continuous crackle = error-correction processing at end of read (especially with high security-level codes, poor quality codes)
- single clear success beep = good read

on (*)

\48\4A\01\60

off

\48\4A\00\60

LED flicker

- green LED flicker = reading new PDF417 data
- the more intensive the flicker, the better the reading performance

on (*)

\48\4B\01\60

off

\48\4B\00\60

7. Configuration modes and utilities

configuration enable (*)

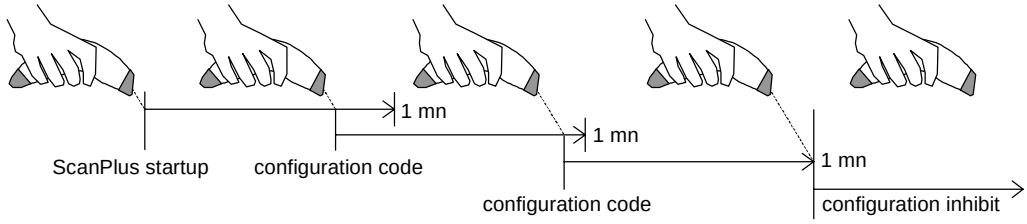
\46\50\60

- configuration possible all the time

configuration inhibit after 1 mn

\46\51\60

- protects the product against unwanted configuration
- configuration only possible before end of 1 minute timeout (cycle repeated until no config code read within 1 minute)



transparent configuration mode

\46\41\03\60

- allows you to use your barcode reader to set up other products (setup commands are transmitted to the other product but do not affect your reader)
- remains active until you switch off the product

get version info (EPROM software / CPU / Smart cable software)

\46\43\60

- version beeps / display on terminal screen :
- EPROM software version = < N . N N > [L]
- CPU version = < N . N >
- Smart cable version (if applicable) = < N L N N > "SC" [L] (the first "L" character is represented by green LED flashes)
- beeps only for EPROM software version and Smart cable software (if applicable), no beeps for CPU version !

Examples

- **EPROM standard software version :**
- screen display : *1800 SR 1.00 CPU 1.0*
- EPROM version beeps :

beeps	**< 2 long >**	**< 1 long >**	**< 1 long >**
interpretation:	N + 1	N + 1	N + 1
EPROM version:	1.	0	0

- **EPROM special software version ("B" for example) :**
- screen display : *1800 SR 1.02B CPU 1.0*
- EPROM version beeps :

beeps:	**< 2 long >**	**< 1 long >**	**< 3 long >**	**< 2 short >**
interpretation:	N + 1	N + 1	N + 1	L
EPROM version:	1.	0	2	B

- **Smart cable standard software version (if applicable) :**
- screen display : *1800 SR 1.02B CPU 1.0 1A03SC_*
- EPROM software version beeps as above, then series of low beeps / flashes for Smart cable standard software version :

low beeps / flashes :	**< 2 long >**	**< 1 flash >**	**< 1 long >**	**< 4 short >**
interpretation:	N + 1	L	N + 1	N + 1
cable s/w version:	1	A	0	3

- **Smart cable special software version ("B" for example) :**
- screen display : *1800 SR 1.02B CPU 1.0 1A03SCB*
- EPROM / Smart cable beeps / flashes as above + extra short beeps at the end to indicate special version (2 beeps for "B")

flash memory upgrade with RS-232 cable 0-364032-00

\41\4A\0F\31\60

- necessary for online upgrade of the ScanPlus flash memory with RS-232 cable 0-364032-00 !
- do not send this command directly from EasySet to the ScanPlus - you must read this command as a configuration code (send to the setup sheet and print out) !!!
- see section 1 "Using EasySet" for details on how to connect up for flash memory upgrade with RS-232 cable 0-364032-00

display data string mode

\46\4E\60

- displays data string and checksum values on a terminal screen when you read configuration bar codes (the EasySet "View - Data String" command shows the data string but does not show the checksum)
- you will need the checksum if you want to send commands directly from the host terminal to the ScanPlus 1800 in "slave mode" (see "predefined terminal selections - RS-232 - special RS-232 configurations" in section 3, "Terminal / cash register used in your application")
- hexadecimal values separated by backslashes or other characters (depending on your terminal emulation setup)
- remains active until you switch off the product

temporary configuration mode

- test new setup without losing current setup

active

\46\41\00\60

- subsequent configuration actions are applied temporarily but will only be permanently saved if "update current configuration" is selected

restore current configuration

\46\41\01\60

- ignores any temporary configuration actions and quits temporary configuration mode

update current configuration

\46\41\02\60

- permanently saves any temporary configuration actions and quits temporary configuration mode

A. ASCII character codes

NUL (00h)

\3E\00\60

SOH (01h)

\3E\01\60

STX (02h)

\3E\02\60

ETX (03h)

\3E\03\60

EOT (04h)

\3E\04\60

ENQ (05h)

\3E\05\60

ACK (06h)

\3E\06\60

BEL (07h)

\3E\07\60

end selection

\64\60

BS (08h)

\3E\08\60

HT or TAB (09h)

\3E\09\60

LF (0Ah)

\3E\0A\60

VT (0Bh)

\3E\0B\60

FF (0Ch)

\3E\0C\60

CR (0Dh)

\3E\0D\60

SO (0Eh)

\3E\0E\60

SI (0Fh)

\3E\0F\60

end selection

\64\60

DLE (10h)

\3E\10\60

DC1 (11h)

\3E\11\60

DC2 (12h)

\3E\12\60

DC3 (13h)

\3E\13\60

DC4 (14h)

\3E\14\60

NAK (15h)

\3E\15\60

SYN (16h)

\3E\16\60

ETB (17h)

\3E\17\60

end selection

\64\60

CAN (18h)

\3E\18\60

EM (19h)

\3E\19\60

SUB (1Ah)

\3E\1A\60

ESC (1Bh)

\3E\1B\60

FS (1Ch)

\3E\1C\60

GS (1Dh)

\3E\1D\60

RS (1Eh)

\3E\1E\60

US (1Fh)

\3E\1F\60

end selection

\64\60

SP (20h)

\00\60

! (21h)

\01\60

" (22h)

\02\60

(23h)

\03\60

$ (24h)

\04\04\60

% (25h)

\05\60

& (26h)

\06\60

' (27h)

\07\60

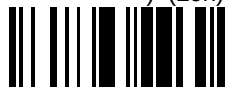
end selection

\64\60

((28h)

\08\60

) (29h)

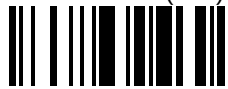


\09\60

* (2Ah)

\0A\60

+ (2Bh)

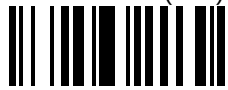


\0B\60

, (2Ch)

\0C\60

- (2Dh)



\0D\60

. (2Eh)

\0E\60

/ (2Fh)

\0F\0F\60

end selection

\64\60

0 (30h)

\10\60

1 (31h)

\11\60

2 (32h)

\12\60

3 (33h)

\13\60

4 (34h)

\14\60

5 (35h)

\15\60

6 (36h)

\16\60

7 (37h)

\17\60

end selection

\64\60

8 (38h)

\18\60

9 (39h)

\19\60

: (3Ah)

\1A\60

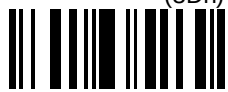
; (3Bh)

\1B\60

< (3Ch)

\1C\60

= (3Dh)



\1D\60

> (3Eh)

\1E\60

? (3Fh)

\1F\60

end selection

\64\60

@ (40h)

\20\20\60

A (41h)

\21\60

B (42h)

\22\60

C (43h)

\23\60

D (44h)

\24\60

E (45h)

\25\60

F (46h)

\26\60

G (47h)

\27\60

end selection

\64\60

H (48h)

\28\60

I (49h)

\29\60

J (4Ah)

\2A\60

K (4Bh)

\2B\60

L (4Ch)

\2C\60

M (4Dh)

\2D\60

N (4Eh)

\2E\60

O (4Fh)

\2F\60

end selection

\64\60

P (50h)

\30\60

Q (51h)

\31\60

R (52h)

\32\60

S (53h)

\33\60

T (54h)

\34\60

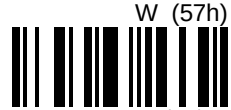
U (55h)

\35\60

V (56h)

\36\60

W (57h)



\37\60

end selection

\64\60

X (58h)

\38\60

Y (59h)

\39\60

Z (5Ah)

\3A\60

[(5Bh)

\3B\60

\ (5Ch)

\3C\60

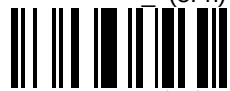
] (5Dh)

\3D\60

^ (5Eh)

\3E\3E\60

_ (5Fh)



\3F\60

end selection

\64\60

` (60h)

this character not available

a (61h)

\20\21\60

b (62h)

\20\22\60

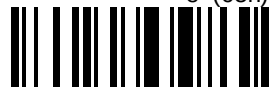
c (63h)

\20\23\60

d (64h)

\20\24\60

e (65h)



\20\25\60

f (66h)

\20\26\60

g (67h)

\20\27\60

end selection

\64\60

h (68h)

\20\28\60

i (69h)

\20\29\60

j (6Ah)

\20\2A\60

k (6Bh)

\20\2B\60

l (6Ch)

\20\2C\60

m (6Dh)

\20\2D\60

n (6Eh)

\20\2E\60

o (6Fh)

\20\2F\60

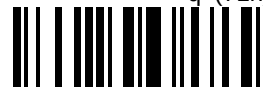
end selection

\64\60

p (70h)

\20\30\60

q (71h)

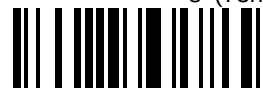


\20\31\60

r (72h)

\20\32\60

s (73h)

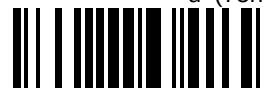


\20\33\60

t (74h)

\20\34\60

u (75h)



\20\35\60

v (76h)

\20\36\60

w (77h)

\20\37\60

end selection

\64\60

x (78h)

\20\38\60

y (79h)

\20\39\60

z (7Ah)

\20\3A\60

{ (7Bh)

\20\3B\60

| (7Ch)

\20\3C\60

} (7Dh)

\20\3D\60

~ (7Eh)

\20\3E\60

DEL (7Fh)

\20\3F\60

end selection

\64\60

B. Additional preamble / postamble characters—Keyboard wedge

PF 1

\04\02\18\60

PF 2

\04\02\19\60

PF 3

\04\02\1A\60

PF 4

\04\02\1B\60

PF 5

\04\02\1C\60

PF 6

\04\02\1D\60

PF 7

\04\02\1E\60

end selection

\64\60

PF 8

\04\02\1F\60

PF 9

\04\02\20\60

PF 10

\04\02\21\60

PF 11

\04\02\22\60

PF 12

\04\02\23\60

PF 13

\04\02\24\60

PF 14

\04\02\25\60

PF 15

\04\02\26\60

end selection

\64\60

PF 16

\04\02\27\60

PF 17

\04\02\28\60

PF 18

\04\02\29\60

PF 19

\04\02\2A\60

PF 20

\04\02\2B\60

PF 21

\04\02\2C\60

PF 22

\04\02\2D\60

PF 23

\04\02\2E\60

end selection

\64\60

PF 24

\04\02\2F\60

DEL

\04\02\00\60

ENTER

\04\02\01\60

RETURN

\04\02\02\60

SEND

\04\02\03\60

FIELD +

\04\02\04\60

FIELD EXIT

\04\02\05\60

HOME

\04\02\06\60

end selection

\64\60

END

\04\02\07\60

TAB = Ctrl i

\04\02\08\60

ALT

\04\02\09\60

BACK TAB

\04\02\0A\60

BACK SPACE

\04\02\0B\60

ARROW RIGHT

\04\02\0C\60

ARROW LEFT

\04\02\0D\60

ARROW UP

\04\02\0E\60

end selection

\64\60

ARROW DOWN

\04\02\0F\60

CLEAR

\04\02\10\60

FIELD -

\04\02\11\60

DUP

\04\02\12\60

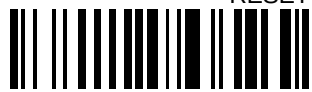
ESC

\04\02\13\60

LINE FEED

\04\02\14\60

RESET



\04\02\15\60

end selection

\64\60

C. Number codes

0

\10\60

1

\11\60

2

\12\60

3

\13\60

4

\14\60

5

\15\60

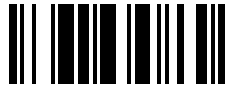
6

\16\60

7

\17\60

end selection



\64\60

8

\18\60

9

\19\60

end selection

\64\60

D. Test codes

Codabar

123456

Code 39

CODE-39

Code 93

CODE-93

Code 128

CODE-128

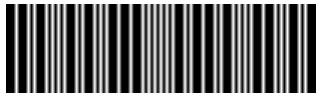
EAN 128

]C1EAN 128

Interleaved 2 of 5

12345678901234

Standard 2 of 5



123456

Matrix 2 of 5

012345

MSI Code

12345666

Plessey Code

80001495050

EAN-8

12345670

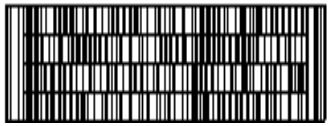
EAN-13

1234567890128

UPC-A

UPC-E

Codablock F



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PDF417

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