HOST MODE PROGRAMMING

> DS2100N / DS2400N
DS4800

DATALOGIC

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2KN-4K Family Host Mode Programming

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CONTENTS

1 HOST MODE PROGRAMMING

An alternative method of programming the 2KN family and the DS4800 laser scanners is by sending programming strings.

These strings must be transmitted from the Host system to the device either on the auxiliary RS232 serial interface, the main RS232/RS485 serial interface or the Ethernet System Socket (Serial models with CBX TCP/IP Module or Built-in Ethernet models). This is called Host Mode Programming.

In order to send the programming strings, it is necessary to switch the reader into **Host Mode**.

CAUTION: Genius™ must be disconnected from all reader interfaces before entering in Host Mode.

Serial Interfaces

The programming commands and strings must be sent to the reader at the programmed baud rate of the selected interface (e.g. if the baud rate of the Auxiliary interface is programmed at 9600 bps the command must be sent at 9600 bps).

The selected communication channel must be programmed as follows:

- Data Bits: 8 Bits
- Parity: None
- Stop Bits: 1

Once the programming session has started on one of the interfaces, the others are disabled until programming is over.

Ethernet Interfaces

To send the command strings to the reader over the Ethernet TCP/IP port you must connect to the reader. The default parameters are given below.

Built-in Ethernet Models:

Default IP Address: 192.168.3.100
Subnetmask: 255.255.0.0
TCP Type: Server
Port: 51235

2 PROGRAMMING COMMANDS

2.1 CONNECTION TO DEVICE

	DESCRIPTION	HOST COMMAND	REPLY MESSAGE
1	**Enter Host Mode**	**<ESC> [C**	**<ESC> H <CR><LF>**
	After entering this command, the device responds with the first reply message and then waits for the following command. From now on the device is in the **CONNECTED** state. Normal data flow is inhibited until it comes back to the **IDLE** state.		
2	**Enter Terminal Mode**	**<ESC>] B**	**<ESC> R <CR><LF>**
	After entering this command, the device responds with the second reply message and then waits for the following command in Terminal mode.		
3	**Enter Programming Mode**	**<ESC> c M <B0$_H$> ADDR**	**<ESC> c <CR><LF>**
	ADDR is a character indicating the address of the device in an ID-NET™ Master/Slave reading system layout **ADDR = <30$_H$> + <Device Address>** where: • **Device Address = 0**: Stand Alone device or Master ID-NET™ device • **Device Address = 1 to 31**: Slave ID-NET™ device This means: • **ADDR = <30$_H$>**: Stand Alone device or Master ID-NET™ device • **ADDR = <31$_H$> to <4F$_H$>**: Slave ID-NET™ device After entering this command, the device responds with the third reply message and then waits for one or more programming strings as shown in Chapter 3 and 4.		

2.2 DISCONNECTION FROM DEVICE

	DESCRIPTION	HOST COMMAND	REPLY MESSAGE
1	**Exit Programming Mode**	**<ESC> d M <B0$_H$> ADDR**	**<ESC> d <CR><LF>**
	Where **ADDR** is the address of the device in an ID-NET™ Master/Slave layout. This message must always be transmitted to exit from programming mode.		
2	**Exit Terminal Mode**	**<ESC> I A <space>**	**<ESC> K <CR><LF>**
	This message must always be transmitted to exit from Terminal mode.		
3	**Exit Host Mode**	**<ESC> [A**	**<ESC> X <CR><LF>**
	This message must always be transmitted to end the programming session. From now on device is in **IDLE** state. Communication channel may be used for normal data flow.		

2.3 SELF DISCONNECTION

Specific situations exist where the device is automatically disconnected from the Host and is restored to the **IDLE** state. Once connected, the following message could be sent:

	DESCRIPTION	**HOST REPLY**	**DEVICE MESSAGE**
	Self Disconnection	**-**	**<ESC> [A**
	This message notifies a forced disconnection from the Host. This message must always be managed by the Host program to check when the device has gone back to the **IDLE** state.		

Normally programming sequences do not involve this message except for the occasions listed below:

1. **Inactivity Timeout Expiration**
   After connection, no programming commands or programming strings are sent to the device (approximately 2 minutes as default).

2. **Application Software Restart**
   Particular commands may force a restart of the device like Data Storage commands (refer to the Paragraph 3.5). The Self Disconnection message is sent to notify these cases.

3. **General Error Condition**
   After connection to the device, unexpected errors are notified by means of the Self Disconnection message.

4. **Protocol Error**
   When Host sends wrong messages like unexpected escape sequences.

	DESCRIPTION	**HOST REPLY**	**DEVICE MESSAGE**
	Self Disconnection	**<ESC> X <CR><LF>**	**-**
	Host must confirm the disconnection event sending this reply message. If not sent, after a timeout (about 300 ms as default) device goes back to the **IDLE** state.		

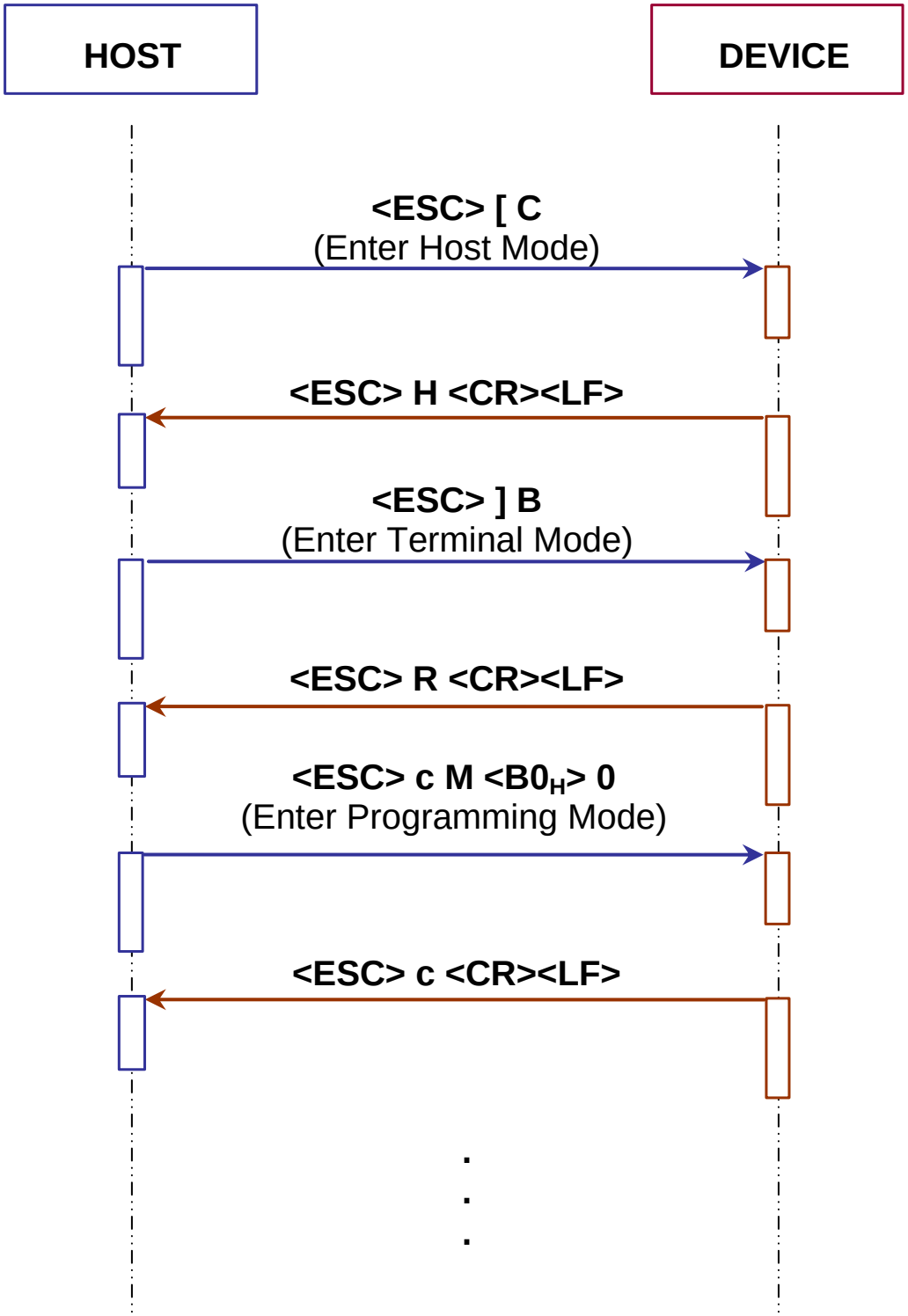

Figure 1 - Connection to Stand Alone Device

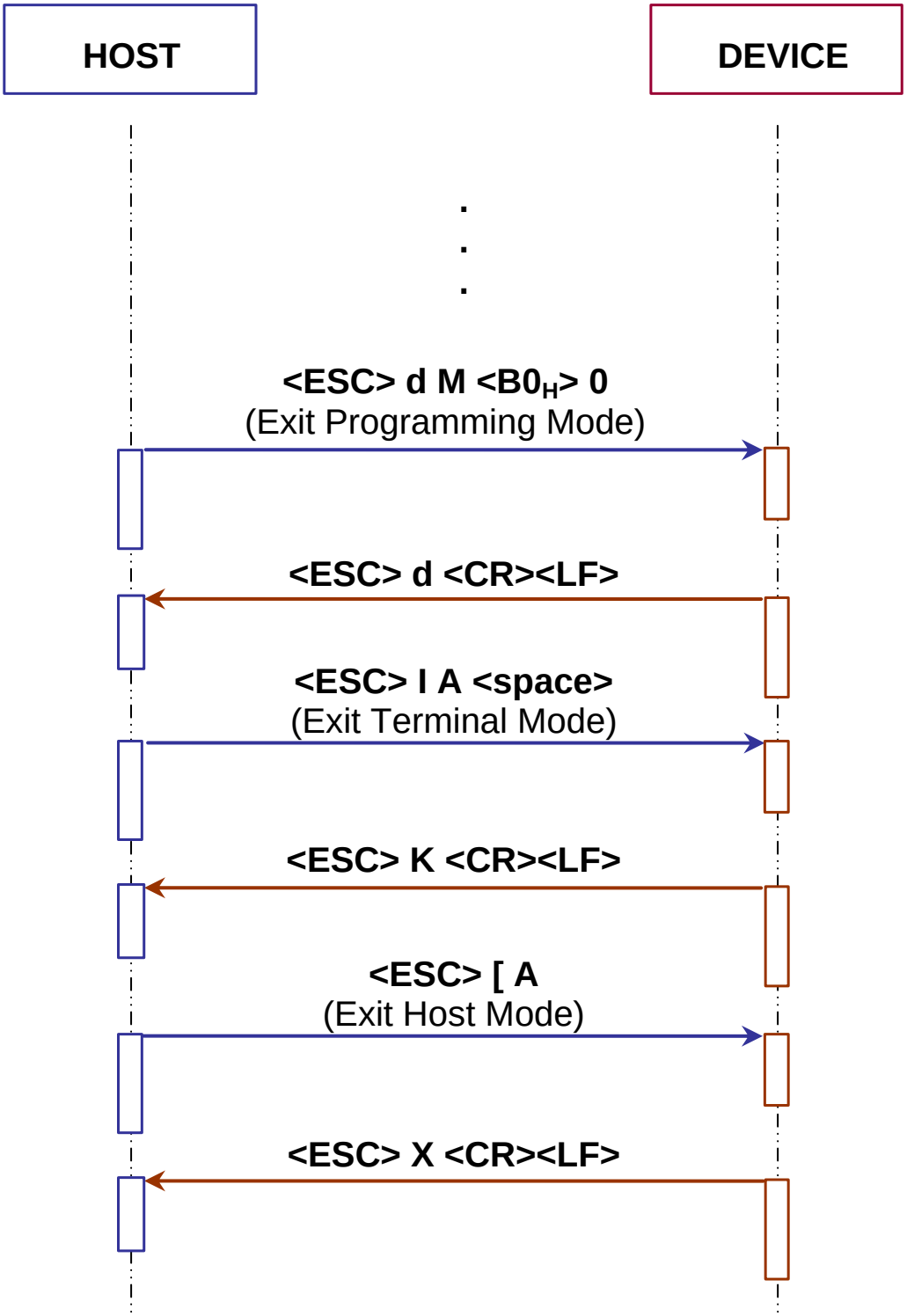

Figure 2 - Disconnection from Stand Alone Device

3 PROGRAMMING STRINGS

3.1 DEFINITIONS

Shortcut (SHC)
The complete parameter path has been replaced by the *short description* (*shortcut* or *shc*). This allows implementation of shorter programming strings. The shortcuts have the following format:

Shortcut [#**Depth**]

Where:

- **Shortcut**: Short Parameter Description (a numeric value)
- [**#Depth**]: Parameter Depth (not necessary if equal to 1)

Depth (Parameter Depth)
Depth of the parameter indicates if it is made up of a vector of values or a single value (e.g. *Code Symbology* parameter has depth > 1 since we have one *Code Symbology* value for each Code slot allowed; *Code Combination* parameter has depth =1).

Example:

Label: Code Symbology
Shortcut: 2#3

Allows selecting the code symbology requested for Code slot 3.

Type (Parameter Type or PT)
Parameter type is essential in order to decide the parameter **VALUE** format used in the programming strings. Types are:

Type 0: Integer (Numeric)
Type 1: Enumeration
Type 2: String
Type 3: Binary String
Type 4: Floating Point

The other definitions change according to the parameter type.

Integer (Type = 0)

Range
Minimum and maximum values allowed for the parameter.

Example: Reading Phase *Timeout* parameter (OPERATING MODES folder).

Shortcut: 79
Type: 0
Label: Timeout (ms)
Range: 40 to 15.000
Default: 100

The sign can be omitted if the parameter value is not negative.

Enumeration (Type = 1)

Item List
List of the values allowed for the parameter.

List of the values allowed for the parameter (i.e. 0 = first entry of the list, 1 = second entry of the list).

Example: *Operating Mode* parameter (OPERATING MODES folder).

Shortcut: 31
Type: 1
Label: Operating Mode Selection
Item List: 0 = On Line
1 = Automatic
3 = Test
4 = Continuous
Default: 0 (Entry 0 → On Line)

String (Type = 2)

Length
Minimum and maximum number of characters allowed for this parameter.

Example: *Device Name* parameter (USER INFORMATION SECTION folder).

Shortcut: 522
Type: 2
Label: Device Name
Length: 0 to 128
Default: Empty string

Binary String (Type = 3)

The value of a Binary String parameter must have the following format:

NumChar<space>[**Char1**][**Char2**] … [**CharK**] … [**CharN**]

Where:

- **NumChar**: Number of Characters (DEC value)
- [**CharK**]: Character K (HEX value)

Length
List of the allowed values of the parameter

Example: *Header String* parameter (DATA FORMAT folder).

Shortcut: 6
Type: 3
Label: Header String
Length: 0 to 128
Default: <STX>

Floating Point (Type = 4)

The Floating Point parameter value has the following format:

XXX.YYY

Range
Minimum and maximum values allowed for the parameter.
The sign can be omitted if the parameter value is not negative.

3.2 HOW TO SEND SINGLE PARAMETER TO THE READER

The '**Set Shortcut**' programming string (based on the short parameter description) must have the following format:

SS<space>**SHC**:**VALUE**<CR><LF>

Where:

- **SS**: 'Set Shortcut' command
- **SHC**: Short Parameter Description (Shortcut)
- **VALUE**: Parameter Value

After entering this command, the device responds with the proper reply message and then waits for one or more programming strings.

If the programming is correct, the device updates the configuration and confirms with the following message:

Y<space>**VALUE**<CR><LF>

Where:

- **VALUE**: Parameter Value

If programming contents are wrong (i.e. a typing error in the file) or due to a transmission error, the device replies with the following message and programming data will not be updated in this case:

N<space>**ERRCODE**<CR><LF>

Where:

- **ERRCODE**: Error Code (signed DEC value)

For information on Error Codes see the "Error Codes Table" in the Appendix.

3.3 HOW TO GET SINGLE PARAMETER FROM THE READER

The '**Get Shortcut**' programming string (based on the short parameter description) must have the following format:

GS<space>**SHC**<CR><LF>

Where:

- **GS**: 'Get Shortcut' command.
- **SHC**: Short Parameter Description (SHC).

After entering this command, the device responds with the proper reply message and then waits for one or more programming strings.

If the programming is correct, the device updates the configuration and confirms with the following message:

Y<space>**VALUE**<CR><LF>

Where:

- **VALUE**: Parameter Value.

If programming contents are wrong (i.e. a typing error in the file) or due to a transmission error, the device replies with the following message:

N<space>**ERRCODE**<CR><LF>

Where:

- **ERRCODE**: Error Code (signed DEC value)

For information on Error Codes see the "Error Codes Table" in the Appendix.

3.4 HOW TO ACCESS INSTALLER PARAMETERS

Set Right Parameter Description

The '**Set Right**' programming string allows the user to access some particular parameters not available as standard user:

SR<space>**L**<space>**PASSWORD**<CR><LF>

Where:

- **SR**: 'Set Right' command
- **L**: Access Level Description
- **PASSWORD**: Password for the Level accessing

After entering this command, the device responds with the proper reply message and then waits for one or more programming strings.

If the programming is correct, the device updates the configuration and confirms with the following message:

Y<space>**L**<CR><LF>

If programming contents are wrong (i.e. a typing error in the file) or due to a transmission error, the device replies with the following message and programming data will not be updated in this case:

N<space>**ERRCODE**<CR><LF>

Where:

- **ERRCODE**: Error Code (signed DEC value)

For information on Error Codes see the "Error Codes Table" in the Appendix.

NOTE: To set the **INSTALLER** level (the only one available outside the Datalogic Company) use:

SR<space>1<space>STHD<CR><LF>

3.5 SAVE AND RESTORE COMMANDS

The '**Data Storage**' programming command must have the following format:

E<space>**MODE**<CR><LF>

Where:

- **E**: Data Storage command.
- **MODE**: Data Storage mode. The possible values are:

  V = Storage in temporary (volatile) memory only.
  P = Storage in temporary and permanent memory.

If the programming is correct, the device updates the configuration and confirms with the following message:

Y<space>**MODE**<CR><LF>

Where:

- **MODE**: Data Storage mode.

CAUTION: Restart of the device is now forced. If no disconnection commands are sent within a minimum timeout of 300 ms, the device will transmit the Self Disconnection message (refer to the Paragraph 2.3).

If programming contents are wrong (i.e. a typing error in the file) or due to a transmission error, the device replies with the following message and programming data will not be updated in this case:

N<space>**ERRCODE**<CR><LF>

Where:

- **ERRCODE**: Error Code (signed DEC value).

For information on Error Codes see the "Error Codes Table" in the Appendix.

The '**Restore Default Configuration**' programming command must have the following format:

SD<space>**DEFNUM**<CR><LF>

Where:

- **SD**: Restore Default configuration command
- **DEFNUM**: Default configuration number. The only possible value is currently:

  0 = Factory Default

After entering this command, the device responds with the proper reply message and then waits for one or more programming strings.

If the programming is correct, the device updates the configuration and confirms with the following message:

Y<space>**DEFNUM**<CR><LF>

Where:

- **DEFNUM**: Default

If programming contents are wrong (i.e. a typing error in the file) or due to a transmission error, the device replies with the following message:

N<space>**ERRCODE**<CR><LF>

Where:

- **ERRCODE**: Error Code (signed DEC value)

For information on Error Codes see the "Error Codes Table" in the Appendix.

CAUTION: This programming command will be applied to all **Configuration** and **Environmental** parameters. Refer to the Genius™ Help On Line of the selected device for further details.

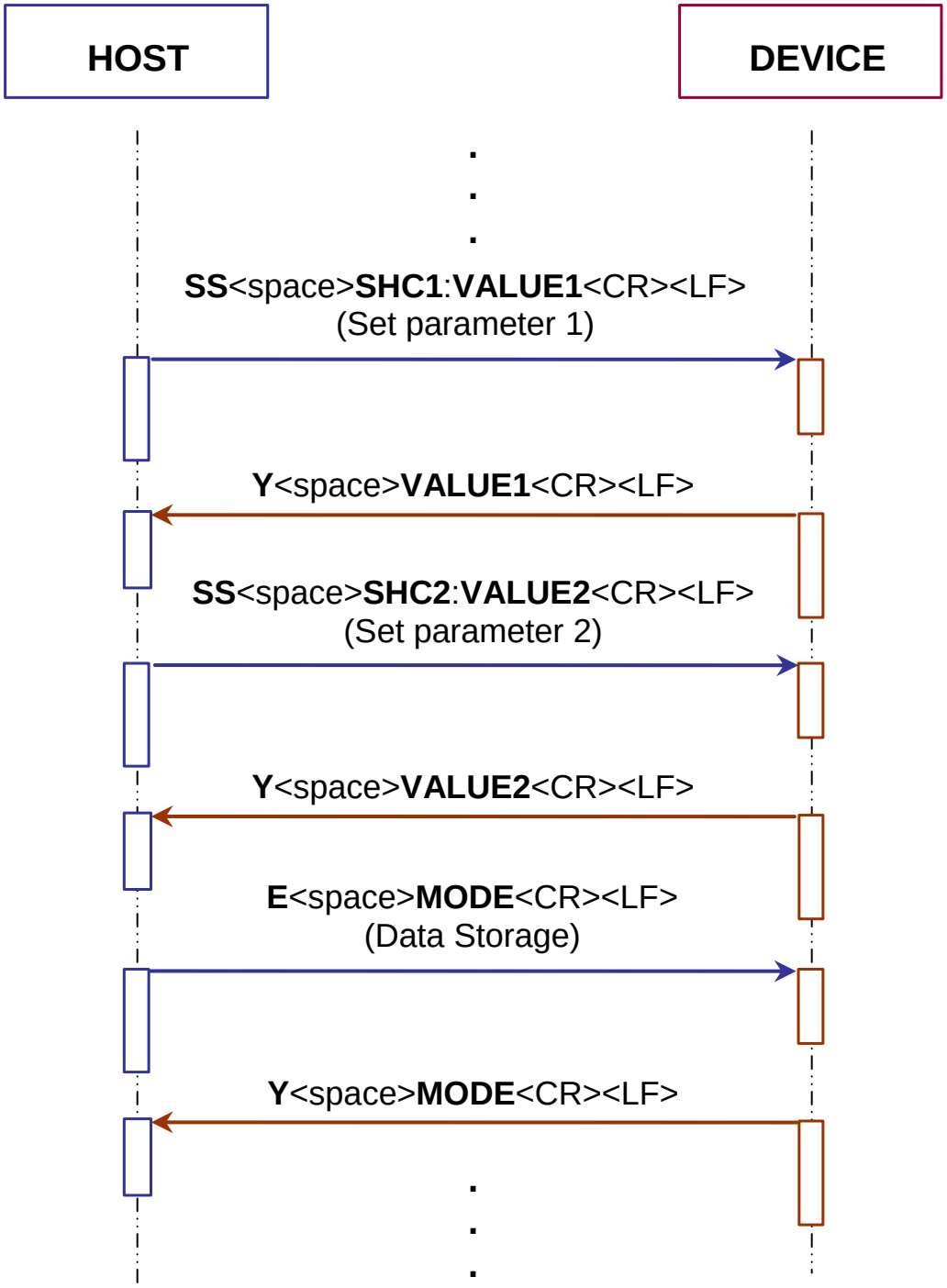

Figure 3 - Two Parameters Programming Session With Data Storage

3.6 EXAMPLES

- 1 -
Set *Minimum Label Length* parameter in CODE LABEL SETTING #2 folder:

Shortcut: 3
Type: 0 (Integer)
Range: 0 to 60
Value: 4

The 'Set Shortcut' programming string is:

SS<space>3#2:4<CR><LF>

After entering the programming string, the reader responds with the message:

Y<space>4<CR><LF>

- 2 -
Set *Operating Mode Selection* parameter in OPERATING MODES folder:

Shortcut: 31
Type: 1 (Enumeration)
Item List: 0 = On Line
1 = Automatic
3 = Test
4 = Continuous
Value: 0 (Entry 0 → On Line)

The 'Set Shortcut' programming string is:

SS<space>31:0<CR><LF>

After entering the programming string, the reader responds with the message:

Y<space>0<CR><LF>

- 3 -
Set *Device Name* parameter in USER INFORMATION SECTION folder:

Shortcut: 522
Type: 2 (String)
Length: 0 to 128
Value: 2KN_FAMILY

The 'Set Shortcut' programming string is:

SS<space>522:2KN_FAMILY<CR><LF>

After entering the programming string the reader responds with the message:

Y<space>2KN_FAMILY<CR><LF>

- 4 -
Set *Header String* parameter in DATA FORMAT folder:

Shortcut: 6
Type: 3 (Binary String)
Length 0 to 128
Default: HEADER (HEX value: 48H 45H 41H 44H 45H 52H)

The 'Set Shortcut' programming string is:

SS<space>6:6<space>484541444552<CR><LF>

After enter the programming string, the reader responds with the message:

Y<space>6<space>484541444552<CR><LF>

- 5 -
Get value of Digital Output 2 *Activation Event* parameter in DIGITAL OUTPUT LINES SETTING folder:

Shortcut: 24
Type: 1 (Enumeration)
Current Value: 2 (Entry 2 → Partial Read)

The 'Get Shortcut' programming string is:

GS<space>24<CR><LF>

After entering the programming string, the reader responds with the message:

Y<space>2<CR><LF>

- 6 -
Get value of *No Read String* parameter in CODE DEFINITION folder:

Shortcut: 9
Type: 3 (Binary String)
Current Value: Empty string

The 'Get Shortcut' programming string is:

GS<space>9<CR><LF>

After entering the programming string, the reader responds with the message:

Y<space>0<CR><LF>

4 PARAMETERS LIST

4.1 CODE DEFINITION

PARAMETER		SHC	PT	VALUE
CODE DEFINITION				
Code Combination		72	1	0 = Single Label 1 = Standard Multi Label 2 = Logical Combination 3 = Code Collection
Logical Combination Rule		191	2	Length: 0 to 64
No Read Message		14	1	0 = Disable No Read Message 1 = Global No Read Message 2 = Local No Read(s) Message
No Read String		9	3	Length: 0 to 128
Multiple Read Message		15	1	0 = Disable 1 = Enable
Multiple Read String		16	3	Length: 1 to 128
Codes Different When Scan Gap Is Greater Than		532	0	Range: 1 to 32765
Codes Different When Code Position Gap Is Greater Than		533	0	Range: 0 to 255
Associate Same Codes When Read By Different Scanners		534	1	0 = Disable 1 = Enable
LED INDICATION				
Partial Read Is Treated As		5037	1	0 = No Read 1 = Good Read
Multiple Read is treated as		5036	1	0 = No Read 1 = Good Read
LOCAL NO READ STRINGS #N (DEPTH: N = 1 to 15)				
Group Label Local No Read String		17 #N	3	Length: 0 to 48
LOCAL MULTIPLE READ STRINGS #N (DEPTH: N = 1 to 15)				
Group Label Local Multiple Read String		327 #N	3	Length: 0 to 48
FAMILY SETTING / CODE 128 - GS1-128 - ISBT 128				
Decoding Safety		5038	0	Range: 1 to 100
Decoding Severity		5039	0	Range: 1 to 5
Ink Spread Equalization		5040	1	0 = Disable 1 = Enable

PARAMETER		SHC	PT	VALUE
ISBT 128 Concatenation		5000	1	0 = Do Not Chain 1 = Optional Chain 2 = Mandatory Chain
Chain 1: Left -		5002	1	0 = None 1 = Donation ID 2 = Blood Group 3 = Expiration Date 4 = Expiration Date-Time 5 = Collection Date 6 = Collection Date-Time 7 = Product Code 8 = Donor ID 9 = Manufacturer ID 10 = Manufacturer Lot 11 = Staff Member 12 = Nat. Product Code 13 = Nat. Special Testing 14 = Nat. Use Bar Code 15 = Nat. CUE Status 16 = Nat. Donor ID
Chain 1: - Right		5003	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 2: Left -		5004	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 2: - Right		5005	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 3: Left -		5006	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 3: - Right		5007	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 4: Left -		5008	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 4: - Right		5009	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 5: Left -		5010	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID

PARAMETER		SHC	PT	VALUE
Chain 5: - Right		5011	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 6: Left -		5012	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 6: - Right		5013	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 7: Left -		5014	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 7: - Right		5015	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 8: Left -		5016	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
Chain 8: - Right		5017	1	0 = None 1 = Donation ID … 16 = Nat. Donor ID
FAMILY SETTING / INTERLEAVED 2 OF 5				
Decoding Safety		5041	0	Range: 1 to 100
Decoding Severity		5042	0	Range: 1 to 5
FAMILY SETTING / CODE 39 - CODE 39 FULL ASCII				
Decoding Safety		5043	0	Range: 1 to 100
Decoding Severity		5044	0	Range: 1 to 5
Inter Character Gap		5045	0	Range: 1 to 12
FAMILY SETTING / EAN-UPC				
Decoding Safety		5053	0	Range: 1 to 100
Decoding Severity		5054	0	Range: 1 to 5
Ink Spread Equalization		5055	1	0 = Disable 1 = Enable
Addon Overflow Start Ratio		5052	0	Range: 1 to 50
Addon Overflow Stop Ratio		5275	0	Range: 1 to 50
Max Distance between EAN/UPC and Addon (in modules)		5198	0	Range: 1 to 256

PARAMETER		SHC	PT	VALUE
FAMILY SETTING / CODABAR–ABC CODABAR				
Decoding Safety		5049	0	Range: 1 to 100
Decoding Severity		5050	0	Range: 1 to 5
Inter Character Gap		5051	0	Range: 1 to 12
ABC Codabar Concatenation		5001	1	0 = Do Not Chain 1 = Optional Chain 2 = Mandatory Chain
FAMILY SETTING / CODE 93				
Decoding Safety		5046	0	Range: 1 to 100
Decoding Severity		5047	0	Range: 1 to 5
Ink Spread Equalization		5048	1	0 = Disable 1 = Enable
FAMILY SETTING / PHARMACODE				
Decoding Safety		5056	0	Range: 1 to 100
Decoding Severity		5057	0	Range: 1 to 5
FAMILY SETTING / PLESSEY				
Decoding Safety		5271	0	Range: 1 to 100
Decoding Severity		5272	0	Range: 1 to 5
FAMILY SETTING / GS1 DATABAR				
Stacked Codes		5631	1	0 = Disable 1 = Enable
CODE LABEL SETTING #N (DEPTH: N = 1 to 10)				
Enable		1 #N	1	0 = Disable 1 = Enable
Code Symbology		2 #N	1	0 = Code 128 1 = Interleaved 2 of 5 2 = Code 39 3 = Code GS1-128 4 = EAN-13 5 = EAN-8 6 = UPC-A 7 = UPC-E 8 = All EAN-UPC 9 = Codabar 10 = Code 93 16 = GS1 Databar 19 = Code 39 Full ASCII 20 = ABC Codabar 22 = ISBT 128 23 = Pharmacode 25 = Plessey 26 = GS1 Databar Limited 27 = GS1 Databar Expanded
EAN AddOn		32 #N	1	0 = No Add On 1 = 2 digits Add On 2 = 5 digits Add On

PARAMETER		SHC	PT	VALUE
Label Length		70 #N	1	0 = Variable 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 … 60 = 60
Minimum Label Length		3 #N	0	Range: 1 to 60
Maximum Label Length		4 #N	0	Range: 1 to 60
Code 128, GS1-128 Label Length		5633 #N	1	0 = Variable 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 … 80 = 80
Code 128, GS1-128 Minimum Label Length		5634 #N	0	Range: 1 to 80
Code 128, GS1-128 Maximum Label Length		5635 #N	0	Range: 1 to 80
GS1 Databar Expanded Label Length		5578 #N	1	0 = Variable 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 … 74 = 74
GS1 Databar Expanded Minimum Label Length		5579 #N	0	Range: 2 to 74
GS1 Databar Expanded Maximum Label Length		5580 #N	0	Range: 2 to 74
Bar Count (only for Code 128, GS1-128)		5641 #N	1	0 = Variable 1 = 25 2 = 31 3 = 37 4 = 43 5 = 49 6 = 55 7 = 61 8 = 67 9 = 73 10 = 79

PARAMETER		SHC	PT	VALUE
				11 = 85 12 = 91 13 = 97 14 = 103 15 = 109 16 = 115 17 = 121 18 = 127 19 = 133 20 = 139 21 = 145 22 = 151 23 = 157 24 = 163 25 = 169 26 = 175 27 = 181 28 = 187 29 = 193 30 = 199 31 = 205 32 = 211 33 = 217 34 = 223 35 = 229 36 = 235 37 = 241 38 = 247 39 = 253 40 = 259 41 = 265 42 = 271 43 = 277 44 = 283 45 = 289 46 = 295 47 = 301 48 = 307 49 = 313 50 = 319 51 = 325 52 = 331 53 = 337 54 = 343 55 = 349 56 = 355 57 = 361 58 = 367 59 = 373 60 = 379 61 = 385 62 = 391 63 = 397

PARAMETER		SHC	PT	VALUE
				64 = 403 65 = 409 66 = 415 67 = 421 68 = 427 69 = 433 70 = 439 71 = 445 72 = 451 73 = 457 74 = 463 75 = 469 76 = 475 77 = 481 78 = 487 79 = 493 80 = 499
Bar Count (only for CODE 93, ISBT 128)		71 #N	1	0 = Variable 1 = 25 2 = 31 3 = 37 4 = 43 5 = 49 6 = 55 7 = 61 8 = 67 9 = 73 10 = 79 11 = 85 12 = 91 13 = 97 14 = 103 15 = 109 16 = 115 17 = 121 18 = 127 19 = 133 20 = 139 21 = 145 22 = 151 23 = 157 24 = 163 25 = 169 26 = 175 27 = 181 28 = 187 29 = 193 30 = 199 31 = 205 32 = 211 33 = 217 34 = 223 35 = 229

PARAMETER		SHC	PT	VALUE
				36 = 235 37 = 241 38 = 247 39 = 253 40 = 259 41 = 265 42 = 271 43 = 277 44 = 283 45 = 289 46 = 295 47 = 301 48 = 307 49 = 313 50 = 319 51 = 325 52 = 331 53 = 337 54 = 343 55 = 349 56 = 355 57 = 361 58 = 367 59 = 373 60 = 379 61 = 385
Bar Count (only for Code 39 Full ASCII)		85 #N	1	0 = Variable 1 = 29 2 = 39 3 = 49 4 = 59 5 = 69 6 = 79 7 = 89 8 = 99 9 = 109 10 = 119 11 = 129 12 = 139 13 = 149 14 = 159 15 = 169 16 = 179 17 = 189 18 = 199 19 = 209 20 = 219 21 = 229 22 = 239 23 = 249 24 = 259 25 = 269 26 = 279

PARAMETER		SHC	PT	VALUE
				27 = 289 28 = 299 29 = 309 30 = 319 31 = 329 32 = 339 33 = 349 34 = 359 35 = 369 36 = 379 37 = 389 38 = 399 39 = 409 40 = 419 41 = 429 42 = 439 43 = 449 44 = 459 45 = 469 46 = 479 47 = 489 48 = 499 49 = 509 50 = 519 51 = 529 52 = 539 53 = 549 54 = 559 55 = 569 56 = 579 57 = 589 58 = 599 59 = 609 60 = 619
Min Code Position Filter		262 #N	0	Range: 0 to 255
Max Code Position Filter		263 #N	0	Range: 0 to 255
Check Digit		5 #N	1	0 = Disable 1 = Enable
Check Digit Type (only for Interleaved 2 of 5)		526 #N	1	0 = Standard 1 = German 2 = DHL 3 = Daimler-Chrysler 4 = Bosch
Check Digit Type (only for Code 39)		527 #N	1	0 = Standard 1 = Mod 7
Check Digit Transmission		524 #N	1	0 = Disable 1 = Enable
Match String Rule		530 #N	1	0 = Match 1 = Do Not Match
Pattern Match String		531 #N	3	Length: 0 to 200

PARAMETER		SHC	PT	VALUE
Match Direction Rule		529 #N	1	0 = Disable 1 = Forward 2 = Reverse
Code Label Local No Read String		18 #N	3	Length: 0 to 48
Code Label Local Multiple Read String		328 #N	3	Length: 0 to 48
Start Character Transmission (only for Codabar)		382 #N	1	0 = Disabled 2 = Lower Case 3 = Upper Case
Stop Character Transmission (only for Codabar)		383 #N	1	0 = Disabled 2 = Lower Case 3 = Upper Case

4.2 OPERATING MODES

PARAMETER		SHC	PT	VALUE
OPERATING MODES				
Operating Mode Selection		31	1	0 = On Line 1 = Automatic 3 = Test 4 = Continuous
On Line Options		73	1	0 = On Line 1 input 1 = On Line 2 input 2 = Serial On Line
Extended Phase		5115	1	0 = Disable 1 = Enable
Test Mode Data Transmission		500	1	0 = All Selected Channels + ID-NET (MULTIDATA) 1 = Aux 2 = Disable 3 = Main 4 = Main&Aux
Serial Start String		86	3	Length: 1 to 32
Start Input Number		74	0	Range: 1 to 2
Start Input Active Level		75	1	0 = Active Closed 1 = Active Open
Serial Stop String		87	3	Length: 1 to 32
Stop Input Number		76	0	Range: 1 to 2
Stop Input Active Level		77	1	0 = Active Closed 1 = Active Open
Stop Phase Edge		5120	1	0 = Trailing 1 = Leading
Reading Phase Timeout		78	1	0 = Disable 1 = Enable
Timeout (ms)		79	0	Range: 40 to 15000
Timeout Counting From		5119	1	0 = Start 1 = Stop
Stop Priority		80	1	0 = Input / SerialStop 1 = Always Timeout

PARAMETER		SHC	PT	VALUE
Automatic Threshold (number of scans)		501	0	Range: 10 to 32765
Start Input from FieldBus		5313	1	0 = Disable 1 = Enable
Continuous Threshold (number of scans)		5185	0	Range: 10 to 32765
Code Filter Depth		502	0	Range: 0 to 50
ACK/NAK Protocol		5114	1	0 = Disable 1 = Enable
Quality Counters		5116	1	0 = Disable 1 = Enable
VERIFIER				
Enable		5121	1	0 = Disable 1 = Enable
Verifier Code		5126	3	Length: 1 to 60
Store Input		5124	1	1 = 1 2 = 2
Active Level		5127	1	0 = Active Closed 1 = Active Open
Right Code Tx		5560	1	0 = Disable 1 = Enable
Wrong Code Tx		5123	1	0 = Disable 1 = Enable
Wrong String Tx		5122	1	0 = Disable 1 = Enable
Wrong String		5128	3	Length: 1 to 128

4.3 READING SYSTEM LAYOUT

PARAMETER		SHC	PT	VALUE
READING SYSTEM LAYOUT				
Network Baud Rate (bps)		5144	1	1 = 19200 2 = 38400 3 = 57600 4 = 125Kb 5 = 250Kb 6 = 500Kb 7 = 1Mb
Local Device Alternative Network Setting		196	1	0 = Alone or ID-NET 1 = Master RS232 (Type A) 3 = Slave RS232 (Type A)
Number of Slaves (Type A)		34	0	Range: 1 to 9
Automatic Scanner Replacement		5683	1	0 = Disable 1 = Enable

4.4 DEVICE NETWORK SETTING

PARAMETER		SHC	PT	VALUE
SCANNER CLUSTER				
Cluster Description		197	2	Length: 0 to 32
Topology Role		193	1	0 = Master (Synchronized) 1 = Master (Multidata) 2 = Slave (Synchronized) 3 = Other 12 = Slave (Multidata)
Slave Address		35	1	1 = Slave 1 2 = Slave 2 3 = Slave 3 4 = Slave 4 … 28 = Slave 28 29 = Slave 29 30 = Slave 30 31 = Slave 31
DEVICE IDENTIFICATION #N (DEPTH: N = 1 to 31)				
Device Enable		198 #N	1	0 = Disable 1 = Enable
Device Cluster		199 #N	2	Length: 0 to 32
Device Type		5353 #N	2	-
Low level Address		701 #N	2	Length: 0 to 64

4.5 READING PARAMETERS

PARAMETER		SHC	PT	VALUE
READING PARAMETERS				
Scan Speed (DS2100N-x2x0 models)		5020	1	1 = Off 2 = 500 (Default) 3 = 800
Scan Speed (DS2100N-x2x4 models)		5021	1	1 = Off 3 = 800 4 = 1000
Scan Speed (DS2400N-x2x0 models)		5022	1	1 = Off 2 = 600 3 = 800 4 = 1000
Scan Speed (DS4800 models)		5252	1	0 = Off 60 = 600 70 = 700 80 = 800 (Default) 90 = 900
Energy Saving		5129	1	0 = Disable

PARAMETER		SHC	PT	VALUE
				1 = Enable
Serial Motor ON String		5133	3	Length: 0 to 32
Serial Motor OFF String		5132	3	Length: 0 to 32
Code Resolution		5024	1	0 = Standard 1 = High 2 = Toggle
Reading Conditions (DS2100N and DS2400N models)		5023	1	0 = Standard 1 = Difficult 2 = Toggle (Standard/Difficult) 3 = Dark Background 4 = Toggle (Standard/Dark Background) 5 = Toggle (Difficult/Dark Background) 6 = Toggle All (Standard/Difficult/ Dark Background)
Reading Conditions (DS4800 models)		5250	1	0 = Standard (Default) 1 = Cartons 2 = Low Contrast 3 = High Skew Angles
Beam Shutter		8	1	0 = Disable 1 = Triggered 2 = Enable
Overflow Start Ratio		286	0	Range: 1 to 50
Overflow Stop Ratio		604	0	Range: 1 to 50
Required Quiet Zones		5131	1	0 = Both 1 = One
Overflow Ratio		5130	0	Range: 3 to 32
Reading Mode		285	1	0 = Reconstruction 1 = Linear
Vials Rack Reading		5636	1	0 = Disable 1 = Enable
Deflection Mirror		5602	1	0 = Not Mounted 1 = Mounted
FOCUS (DS4800)				
Locked Position (cm/in)		5203	1	0 = Unlocked 25 = 25/9.84 26 = 26/10.24 27 = 27/10.63 28 = 28/11.02 29 = 29/11.42 30 = 30/11.81 31 = 31/12.20 32 = 32/12.60 33 = 33/12.99 34 = 34/13.39 35 = 35/13.78

PARAMETER		SHC	PT	VALUE
				36 = 36/14.17 37 = 37/14.57 38 = 38/14.96 39 = 39/15.35 40 = 40/15.75 41 = 41/16.14 42 = 42/16.54 43 = 43/16.93 44 = 44/17.32 45 = 45/17.72 46 = 46/18.11 47 = 47/18.50 48 = 48/18.90 49 = 49/19.29 50 = 50/19.69 51 = 51/20.08 52 = 52/20.47 53 = 53/20.87 54 = 54/21.26 55 = 55/21.65 56 = 56/22.05 57 = 57/22.44 58 = 58/22.83 59 = 59/23.23 60 = 60/23.62 61 = 61/24.02 62 = 62/24.41 63 = 63/24.80 64 = 64/25.20 65 = 65/25.59 66 = 66/25.98 67 = 67/26.38 68 = 68/26.77 69 = 69/27.17 70 = 70/27.56
OSCILLATING MIRROR (DS2100N AND DS2400N)				
OM2000 (Old Oscillating Mirror)				
Oscillating Mode		5026	1	1 = Sleep 2 = Continuous
OM2000N (New Oscillating Mirror)				
Oscillating Mode		254	1	1 = Fixed 2 = Continuous
Amplitude (degrees)		5027	1	10 = 10 15 = 15 20 = 20 25 = 25 30 = 30 35 = 35 40 = 40
Frequency (Hz)		258	1	5 = 0.5 10 = 1 15 = 1.5

PARAMETER		SHC	PT	VALUE
				20 = 2 25 = 2.5 30 = 3 35 = 3.5 40 = 4
Triggered		5028	1	0 = Disable 1 = Enable
Second Zone Trigger		5029	1	0 = Phase 1 = Input 1 2 = Input 2
Second Zone Trigger Level		5031	1	0 = Active Closed 1 = Active Open
Second Zone Oscillating Mode		5032	1	1 = Fixed 2 = Continuous
Second Zone Amplitude (degrees)		5033	1	10 = 10 15 = 15 20 = 20 25 = 25 30 = 30 35 = 35 40 = 40
Second Zone Frequency (Hz)		5034	1	5 = 0.5 10 = 1 15 = 1.5 20 = 2 25 = 2.5 30 = 3 35 = 3.5 40 = 4
OSCILLATING MIRROR (DS4800)				
Oscillating Mode		5360	1	1 = Fixed 2 = Continuous
Angle (Degrees)		5361	1	0 = -5 1 = -4.5 2 = -4 3 = -3.5 4 = -3 5 = -2.5 6 = -2 7 = -1.5 8 = -1 9 = -0.5 10 = 0 11 = 0.5 12 = 1 13 = 1.5 14 = 2 15 = 2.5 16 = 3 17 = 3.5 18 = 4 19 = 4.5

PARAMETER		SHC	PT	VALUE
				20 = 5 21 = 5.5 22 = 6 23 = 6.5 24 = 7 25 = 7.5 26 = 8 27 = 8.5 28 = 9 29 = 9.5 30 = 10 31 = 10.5 32 = 11 33 = 11.5 34 = 12 35 = 12.5 36 = 13 36 = 13.5 38 = 14 39 = 14.5 40 = 15 41 = 15.5 42 = 16 43 =16.5 44 = 17 45 = 17.5 46 = 18 47 =18.5 48 = 19 49 = 19.5 50 = 20 51 = 20.5 52 = 21 53 = 21.5 54 = 22 55 = 22.5 56 = 23 57 = 23.5 58 = 24 59 = 24.5 60 = 25 61 = 25.5 62 = 26 63 = 26.5 64 = 27 65 = 27.5 66 = 28 67 = 28.5 68 = 29 69 = 29.5 70 = 30 71 = 30.5 72 = 31

PARAMETER		SHC	PT	VALUE
				73 = 31.5 74 = 32 75 = 32.5 76 = 33 77 = 33.5 78 = 34 79 = 34.5 80 = 35
Min Angle (Degrees)		5362	1	0 = -5 1 = -4.5 2 = -4 3 = -3.5 … 80 = 35
Max Angle (Degrees)		5363	1	0 = -5 1 = -4.5 2 = -4 3 = -3.5 … 80 = 35
Frequency (Hz)		5364	1	1 = 0.1 2 = 0.2 5 = 0.5 7 = 0.7 10 = 1 15 = 1.5 20 = 2 25 = 2.5 30 = 3 35 = 3.5 40 = 4 45 =4.5 50 = 5 55 = 5.5 60 = 6 65 = 6.5 70 = 7 75 = 7.5 80 = 8 85 = 8.5 90 = 9 95 =9.5 100 = 10
Triggered		5365	1	0 = Disable 1 = Enable
Second Zone Trigger		5366	1	0 = Phase 1 = Input 1 2 = Input 2
Second Zone Trigger Level		5367	1	0 = Active Closed 1 = Active Open
Second Zone Oscillating Mode		5368	1	1 = Fixed 2 = Continuous

PARAMETER		SHC	PT	VALUE
Second Zone Angle (Degrees)		5369	1	0 = -5 1 = -4.5 2 = -4 3 = -3.5 … 80 = 35
Second Zone Min Angle (Degrees)		5380	1	0 = -5 1 = -4.5 2 = -4 3 = -3.5 … 80 = 35
Second Zone Max Angle (Degrees)		5381	1	0 = -5 1 = -4.5 2 = -4 3 = -3.5 … 80 = 35
Second Zone Frequency (Hz)		5382	1	1 = 0.1 2 = 0.2 5 = 0.5 7 = 0.7 … 100 = 10
RECONSTRUCTION PARAMETERS				
Stacked Codes Enhancement		504	1	0 = Disable 1 = Enable

4.6 DATA COMMUNICATION SETTING

PARAMETER		SHC	PT	VALUE
DATA COMMUNICATION SETTING				
Host Application Protocol Type		84	1	0 = Standard 1 = Crisplant
DATA FORMAT				
Header TX Start		505	1	0 = With Data 1 = After Reading Phase On
Termination after No Read Message		506	1	0 = Disable 1 = Enable
Message TX selection (On Line Operating Mode)		507	1	0 = On Decoding 1 = After Reading Phase Off 2 = Delayed TX Line
Message TX Selection (Automatic Operating Mode)		543	1	0 = On Decoding 1 = After Reading Phase Off
Physical Encoder		5554	1	0 = Active Closed 1 = Active Open

PARAMETER		SHC	PT	VALUE
Conveyor speed (mm/sec)		5555	0	Range: 1 to 10000
Encoder Reference Signal		5557	1	1 = Input 1 2 = Input 2
Encoder Step (hundredths of mm)		5556	0	Range: 1 to 10000
Distance (mm)		5558	0	Range: 100 to 20000
Format Type		330	1	0 = Standard 1 = Advanced
Master Max Tx Delay After Phase Off (ms)		5178	1	50 = 50 60 = 60 70 = 70 80 = 80 90 = 90 100 = 100 110 = 110 120 = 120 130 = 130 140 = 140 150 = 150 160 = 160 170 = 170 180 = 180 190 = 190 200 = 200 250 = 250 300 = 300 500 = 500
Stand Alone Max TX Delay After Phase Off (ms)		5177	1	0 = Disabled 50 = 50 60 = 60 70 = 70 80 = 80 90 = 90 100 = 100 110 = 110 120 = 120 130 = 130 140 = 140 150 = 150 160 = 160 170 = 170 180 = 180 190 = 190 200 = 200 250 = 250 300 = 300 500 = 500

PARAMETER		SHC	PT	VALUE
Code Identifier		399	1	0 = Disabled 1 = Standard AIM ID 2 = Custom
DATA FORMAT / CUSTOM CODE IDENTIFIER STRINGS				
Code 128 Identifier String		400	3	Length: 1 to 32
Code IL 2/5 Identifier String		401	3	Length: 1 to 32
Code 39 Standard Identifier String		402	3	Length: 1 to 32
Code GS1-128 Identifier String		403	3	Length: 1 to 32
Code EAN 13 Identifier String		404	3	Length: 1 to 32
Code EAN 8 Identifier String		405	3	Length: 1 to 32
Code UPCA Identifier String		406	3	Length: 1 to 32
Code UPCE Identifier String		407	3	Length: 1 to 32
Code Codabar Identifier String		409	3	Length: 1 to 32
Code 93 Identifier String		410	3	Length: 1 to 32
Code EAN 13 Addon 2 Identifier String		419	3	Length: 1 to 32
Code EAN 8 Addon 2 Identifier String		420	3	Length: 1 to 32
Code UPC A Addon 2 Identifier String		421	3	Length: 1 to 32
Code UPC E Addon 2 Identifier String		422	3	Length: 1 to 32
Code EAN 13 Addon 5 Identifier String		423	3	Length: 1 to 32
Code EAN 8 Addon 5 Identifier String		424	3	Length: 1 to 32
Code UPC A Addon 5 Identifier String		425	3	Length: 1 to 32
Code UPC E Addon 5 Identifier String		426	3	Length: 1 to 32
Code 39 Full ASCII Identifier String		427	3	Length: 1 to 32

PARAMETER		SHC	PT	VALUE
Code ISBT 128 Identifier String		428	3	Length: 1 to 32
ABC Codabar Identifier String		429	3	Length: 1 to 32
Pharmacode Identifier String		431	3	Length: 1 to 32
Plessey Identifier String		432	3	Length: 1 to 32
GS1 DataBar Identifier String		441	3	Length: 1 to 32
GS1 DataBar Limited Identifier String		444	3	Length: 1 to 32
GS1 DataBar Exp. Identifier String		445	3	Length: 1 to 32
DATA FORMAT / STANDARD PARAMETERS				
Header String		6	3	Length: 0 to 128
Code Position Tx		547	1	0 = Disable 1 = Enable
Code Direction Identifier Enable		508	1	0 = Disable 1 = Enable
Forward Direction String		509	3	Length: 0 to 32
Reverse Direction String		528	3	Length: 0 to 32
Unknown Direction String		550	3	Length: 0 to 32
Motor OFF Message		548	1	0 = Disable 1 = Enable
Motor OFF String		549	3	Length: 0 to 128
Termination String		7	3	Length: 0 to 128
Data packet Separators		82	3	Length: 0 to 128
Info Field Separators		83	3	Length: 0 to 128
Code Field Separators		5249	3	Length: 0 to 128
Code Field Length Setting		45	1	1 = Fixed Length 0 = Variable Length
Code Field Length		46	0	Range: 0 to 60
Data Justification		47	1	0 = Left 1 = Right
Fill Character		48	3	Length: 1
DATA FORMAT / MULTIDATA				
Address TX		544	1	0 = Disable 1 = Enable
Header		545	3	Length: 0 to 32
Separator		546	3	Length: 0 to 32

PARAMETER		SHC	PT	VALUE
CRISPLANT PARAMETERS				
Crisplant Manufacturer ID		61	2	Length: 1
Heartbeat Message		67	1	0 = Disable 1 = Enable
Heartbeat Message Timing (ms)		68	0	Range: 40 to 60000
Type of Crisplant Protocol		69	1	0 = CSC 1 = CMC
Reading Mask Tx		5314	1	0 = Disable 1 = Enable
Code Type Tx		5315	1	0 = Disable 1 = Enable
MAIN SERIAL PORT				
Data TX		510	1	0 = Disable 1 = Enable
Heartbeat		5069	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned
MAIN SERIAL PORT / HEARTBEAT				
Timeout (s)		5079	0	Range: 1 to 3600
Heartbeat Header String		5075	3	Length: 0 to 128
Heartbeat Fields Separator String		5076	3	Length: 0 to 128
Counter Module (Maximum Counter Value)		5071	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5073	0	Length: 2 to 10000
Counter Starting Value		5072	0	Length: 0 to 9999
Counter Direction		5070	1	0 = Up 1 = Down
System Diagnostics		5077	1	0 = Disable 1 = Enable
Network Diagnostics		5074	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5078	3	Length: 0 to 128
MAIN SERIAL PORT / LINE PARAMETERS				
Main Port Communication mode		33	1	0 = Standard 1 = MUX 32 Slave 2 = Siemens 3964 3 = Siemens RK512

PARAMETER		SHC	PT	VALUE
Main Port Electrical Interface		10	1	0 = RS232 1 = RS485 Full Duplex
MUX 32 protocol address		58	0	Range: 0 to 31
Handshake (RS232)		57	1	0 = None 1 = Hardware (RTS/CTS) 2 = Software (Xon/Xoff)
Handshake (RS485)		60	1	0 = None 1 = Software (Xon/Xoff)
Baud Rate (Mux32 Slave)		49	1	8 = 1200 1 = 2400 2 = 4800 3 = 9600 4 = 19200 5 = 38400 6 = 57600 7 = 115200
Baud Rate (NOT Mux32 Slave)		59	1	1 = 2400 2 = 4800 3 = 9600 4 = 19200 5 = 38400 6 = 57600
Parity		50	1	0 = None 1 = Odd 2 = Even
Data Bits		51	1	0 = 7 1 = 8
Stop Bits		52	1	0 = 1 1 = 2
Checksum (Siemens 3964)		535	1	0 = Disable 1 = Enable
Priority (Siemens 3964)		536	1	0 = Low 1 = High
Header n. 5 (Siemens 3964)		540	3	Length: 1
Header n. 6 (Siemens 3964)		541	3	Length: 1
Header n. 9 (Siemens 3964)		542	3	Length: 1
Header n. 10 (Siemens 3964)		539	3	Length: 1
Filler Character (Siemens 3964)		537	3	Length: 1
Filler Position (Siemens 3964)		538	1	0 = Before Data 1 = After Data
AUXILIARY SERIAL PORT				
Search For Backup Memory at Device Startup		5247	1	0 = Disable 1 = Enable

PARAMETER		SHC	PT	VALUE
Data TX		511	1	0 = Disable 1 = Enable
Heartbeat		5068	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned
Pass Through		512	1	0 = Disable 1 = Enable
AUXILIARY SERIAL PORT / HEARTBEAT				
Timeout (s)		5067	0	Range: 1 to 3600
Heartbeat Header String		5063	3	Length: 0 to 128
Heartbeat Fields Separator String		5064	3	Length: 0 to 128
Counter Module (Maximum Counter Value)		5059	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5061	0	Length: 2 to 10000
Counter Starting Value		5060	0	Length: 0 to 9999
Counter Direction		5058	1	0 = Up 1 = Down
System Diagnostics		5065	1	0 = Disable 1 = Enable
Network Diagnostics		5062	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5066	3	Length: 0 to 128
AUXILIARY SERIAL PORT / PASS THROUGH OPTIONS				
String Max Length		513	0	Range: 4 to 4096
Termination string		514	3	Length: 1 to 32
Pass Through on ID-NET		5248	1	0 = Disable 1 = Enable
AUXILIARY SERIAL PORT / LINE PARAMETERS				
Baud Rate		53	1	8 = 1200 1 = 2400 2 = 4800 3 = 9600 4 = 19200 5 = 38400 6 = 57600 7 = 115200
Parity		54	1	0 = None 1 = Odd 2 = Even
Data Bits		55	1	0 = 7 1 = 8

PARAMETER		SHC	PT	VALUE
Stop Bits		56	1	0 = 1 1 = 2
CBX GATEWAY				
Type		5303	1	0 = None 1 = Profibus 2 = DeviceNet 3 = Ethernet/IP (Ethernet/IP - TCP/IP) 4 = CC-Link 5 = CANopen 6 = Profinet (Profinet IO – TCP/IP) 8 = Modbus TCP (Modbus TCP - TCP/IP) 9 = Ethernet TCP/IP 10 = EtherCAT
CBX GATEWAY / LINE PARAMETERS				
MAC Address	(READ-ONLY)	92	2	-
Program Name	(READ-ONLY)	5406	2	-
IP Addressing		95	1	0 = Static Assignment 1 = DHCP 2 = Remote Assignment
IP Address		96	2	Max Length: 16
IP Netmask		97	2	Max Length: 16
IP Gateway		98	2	Max Length: 16
IP Address	(BM2x0 Module)	5551	2	Max Length: 16
IP Netmask	(BM2x0 Module)	5552	2	Max Length: 16
IP Gateway	(BM2x0 Module)	5553	2	Max Length: 16
Station Name	(BM7x0 Module)	5425	2	Max Length: 240
CBX GATEWAY / FIELDBUS				
Status		5412	1	0 = Disable 1 = Enable
Data Tx		5287	1	0 = Disable 1 = Enable
Heartbeat		5288	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned
CBX GATEWAY / FIELDBUS / HEARTBEAT				
Timeout (s)		5297	0	Range: 1 to 3600
Heartbeat Header String		5294	3	Length: 1 to 128
Heartbeat Fields Separator		5295	3	Length: 1 to 128

PARAMETER		SHC	PT	VALUE
Counter Module		5290	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5292	0	Range: 2 to 10000
Counter Starting Value		5291	0	Range: 0 to 9999
Counter Direction		5289	1	0 = Up 1 = Down
System Diagnostics		5296	1	0 = Disable 1 = Enable
Network Diagnostics		5293	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5304	3	Length: 1 to 128
CBX GATEWAY / FIELDBUS / BUS COMMUNICATION				
Baud Rate (CC-LINK)		5426	1	0 = 156 Kbps 1 = 625 Kbps 2 = 2.5 Mbps 3 = 5 Mbps 4 = 10 Mbps
Version		5413	0	Range: 1 to 2
Master Input Area Size (Profibus)		270	0	Range: 8 to 144
Master Input Area Size (DeviceNet)		5278	0	Range: 8 to 144
Master Input Area Size (Ethernet/IP)		5282	0	Range: 8 to 144
Master Input Area Size (CC-LINK)		5355	0	Range: 2 to 126
Master Input Area Size (CANOpen)		5322	0	Range: 8 to 144
Master Input Area Size (Profinet)		5325	0	Range: 8 to 56
Master Input Area Size (Modbus)		5372	0	Range: 8 to 144
Master Input Area Size (Modbus TCP)		5373	0	Range: 8 to 144
Master Output Area Size (Profibus)		271	0	Range: 8 to 144
Master Output Area Size (DeviceNet)		5280	0	Range: 8 to 144
Master Output Area Size (Ethernet/IP)		5283	0	Range: 8 to 144
Master Output Area Size (CC-LINK)		5356	0	Range: 2 to 128
Master Output Area Size (CANOpen)		5321	0	Range: 8 to 144

PARAMETER		SHC	PT	VALUE
Master Output Area Size (Profinet)		5326	0	Range: 8 to 56
Master Output Area Size (Modbus)		5374	0	Range: 8 to 144
Master Output Area Size (Modbus TCP)		5375	0	Range: 8 to 144
Node Address (Profibus)		268	0	Range: 0 to 126
Node address (MAC ID) (DeviceNet)		5279	0	Range: 0 to 63
Node address (CC-LINK)		5319	0	Range: 1 to 64
Node address (CANOpen)		5323	0	Range: 1 to 127
Node address (Modbus)		5427	0	Range: 1 to 127
Data Flow Control		269	1	0 = Disable 2 = DAD Driver
Data Consistency		290	1	0 = Disable 1 = Enable
Process Active Timeout ms	(BM12x0 Module)	5421	0	Range: 0 to 65535
Connection Timeout sec	(BM12x0 Module)	5423	0	Range: 0 to 65535
CBX GATEWAY / FIELDBUS / DIGITAL I/O CONDITIONING / DIGITAL INPUT LINES				
Input 1 Echo		5298	1	0 = Disable 1 = Enable
Input 2 Echo		5299	1	0 = Disable 1 = Enable
Phase Echo		5300	1	0 = Disable 1 = Enable
CBX GATEWAY / FIELDBUS / DIGITAL I/O CONDITIONING / DIGITAL OUTPUT LINES				
Output 1	Serial Models	5301	1	0 = Disable 1 = Enable
Output 2	Serial Models	5302	1	0 = Disable 1 = Enable
Output 1	Built-in Ethernet Models	5816	1	0 = Disable 1 = Enable
Output 2	Built-in Ethernet Models	5817	1	0 = Disable 1 = Enable
CBX GATEWAY / TCP/IP SERVICES / USERSOCKET#1				
Status		134	1	0 = Disable 1 = Enable
Data Tx		5251	1	0 = Disable 1 = Enable

PARAMETER		SHC	PT	VALUE
Heartbeat		5260	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned
Type		135	1	0 = Server 1 = Client
Server Address		136	2	Max Length: 256
Protocol		137	1	0 = TCP 1 = UDP
Port		138	0	Range: 0 to 64538
Use As WebSentinel Client		5254	1	0 = Disable 1 = Enable
Partial Read is treated as		5328	1	0 = No Read 1 = Good Read 3 = Partial Read"
Master Diagnostic Check Period (secs)		5259	0	Range: 3 to 10
CBX GATEWAY / TCP/IP SERVICES / USERSOCKET#1 / HEARTBEAT				
Timeout (s)		5261	0	Range: 0 to 3600
Heartbeat Header String		5262	3	Length: 1 to 128
Heartbeat Fields Separator		5263	3	Length: 1 to 128
Counter Module		5264	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5265	0	Range: 2 to 10000
Counter Starting Value		5266	0	Range: 0 to 9999
Counter Direction		5267	1	0 = Up 1 = Down
System Diagnostics		5268	1	0 = Disable 1 = Enable
Network Diagnostics		5269	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5270	3	Length: 1 to 128
CBX GATEWAY / TCP/IP SERVICES / USERSOCKET#2				
Status		5329	1	0 = Disable 1 = Enable
Data Tx		5330	1	0 = Disable 1 = Enable
Heartbeat		5331	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned

PARAMETER		SHC	PT	VALUE
Type		5342	1	0 = Server 1 = Client
Server Address		5343	2	Max Length: 256
Protocol		5344	1	0 = TCP 1 = UDP
Port		5345	0	Range: 0 to 64538
CBX GATEWAY / TCP/IP SERVICES / USERSOCKET#2 / HEARTBEAT				
Timeout (s)		5332	0	Range: 0 to 3600
Heartbeat Header String		5333	3	Length: 1 to 128
Heartbeat Fields Separator		5334	3	Length: 1 to 128
Counter Module		5335	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5336	0	Range: 2 to 10000
Counter Starting Value		5337	0	Range: 0 to 9999
Counter Direction		5338	1	0 = Up 1 = Down
System Diagnostics		5339	1	0 = Disable 1 = Enable
Network Diagnostics		5340	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5341	3	Length: 1 to 128
CBX GATEWAY / TCP/IP SERVICES / MODBUS TCP				
Status		5628	1	0 = Disable 1 = Enable
Data Tx		5627	1	0 = Disable 1 = Enable
Type		5624	1	0=Server 1=Client
Server Address		126	2	Max Length: 256
Start Register Number		5629	0	Range: 0 to 256
Number Of Registers (valid when Type = Client)		5630	0	Range: 1 to 256
Number Of Registers (valid when Type = Server)		5620	0	Range: 1 to 256

PARAMETER		SHC	PT	VALUE
BUILT-IN ETHERNET / LINE PARAMETERS				
Status		5724	1	0 = Disable 1 = Enable
Sw_release	(READ-ONLY)	5725	2	-
MAC Address	(READ-ONLY)	5726	2	-
Baud Rate	(READ-ONLY)	5728	1	-
IP Addressing		5729	1	0 = Static Assignment 1 = DHCP
IP Address		5730	2	Max Length: 16
IP Netmask		5731	2	Max Length: 16
IP Gateway		5732	2	Max Length: 16
IP_dns1		5733	2	Max Length: 16
IP_dns2		5734	2	Max Length: 16
BUILT-IN ETHERNET / TCP/IP SERVICES / USERSOCKET#1				
Status		5751	1	0 = Disable 1 = Enable
Data Tx		5752	1	0 = Disable 1 = Enable
Heartbeat		5753	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned
Type		5764	1	0 = Server 1 = Client
Server Address		5765	2	Max Length: 256
Protocol		5766	1	0 = TCP 1 = UDP
Port		5767	0	Range: 0 to 64538
Use As WebSentinel Client		5768	1	0 = Disable 1 = Enable
Partial Read is treated as		5769	1	0 = No Read 1 = Good Read 3 = Partial Read"
Master Diagnostic Check Period (secs)		5773	0	Range: 3 to 10
BUILT-IN ETHERNET / TCP/IP SERVICES / USERSOCKET#1 / HEARTBEAT				
Timeout (s)		5754	0	Range: 0 to 3600
Heartbeat Header String		5755	3	Length: 1 to 128
Heartbeat Fields Separator		5756	3	Length: 1 to 128
Counter Module		5757	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5758	0	Range: 2 to 10000

PARAMETER		SHC	PT	VALUE
Counter Starting Value		5759	0	Range: 0 to 9999
Counter Direction		5760	1	0 = Up 1 = Down
System Diagnostics		5761	1	0 = Disable 1 = Enable
Network Diagnostics		5762	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5763	3	Length: 1 to 128
BUILT-IN ETHERNET / TCP/IP SERVICES / USERSOCKET#2				
Status		5774	1	0 = Disable 1 = Enable
Data Tx		5775	1	0 = Disable 1 = Enable
Heartbeat		5776	1	0 = Disable 1 = Enable Unconditioned 2 = Enable Conditioned
Type		5787	1	0 = Server 1 = Client
Server Address		5788	2	Max Length: 256
Protocol		5789	1	0 = TCP 1 = UDP
Port		5790	0	Range: 0 to 64538
BUILT-IN ETHERNET / TCP/IP SERVICES / USERSOCKET#2 / HEARTBEAT				
Timeout (s)		5777	0	Range: 0 to 3600
Heartbeat Header String		5778	3	Length: 1 to 128
Heartbeat Fields Separator		5779	3	Length: 1 to 128
Counter Module		5780	1	0 = Disable 1 = 10 2 = 100 3 = 1000 4 = 10000 5 = Custom
Custom Counter Module		5781	0	Range: 2 to 10000
Counter Starting Value		5782	0	Range: 0 to 9999
Counter Direction		5783	1	0 = Up 1 = Down
System Diagnostics		5784	1	0 = Disable 1 = Enable
Network Diagnostics		5785	1	0 = Disable 1 = Enable
Heartbeat Terminator String		5786	3	Length: 1 to 128

PARAMETER		SHC	PT	VALUE
BUILT-IN ETHERNET / TCP/IP SERVICES / MODBUS TCP CLIENT				
Status		5741	1	0 = Disable 1 = Enable
Data Tx		5742	1	0 = Disable 1 = Enable
Server Address		5743	2	Max Length: 256
Start Register Number		5744	0	Range: 0 to 256
Number Of Registers		5745	0	Range: 1 to 256
BUILT-IN ETHERNET / TCP/IP SERVICES / ETHERNET/IP				
Status		5735	1	0 = Disable 1 = Enable
BUILT-IN ETHERNET / DIGITAL I/O CONDITIONING / DIGITAL INPUT LINES				
Input#1 Echo	Ethernet/IP = Enable	5736	1	0 = Disable 1 = Enable
Input#2 Echo	Ethernet/IP = Enable	5737	1	0 = Disable 1 = Enable
Phase Echo	Ethernet/IP = Enable	5738	1	0 = Disable 1 = Enable
BUILT-IN ETHERNET / DIGITAL I/O CONDITIONING / DIGITAL OUTPUT LINES				
Output#1	Ethernet/IP = Enable	5739	1	0 = Disable 1 = Enable
Output#2	Ethernet/IP = Enable	5740	1	0 = Disable 1 = Enable

4.7 DIGITAL I/O SETTING

PARAMETER		SHC	PT	VALUE
BUILT-IN DIGITAL INPUT LINES				
Input 1 Active Level Overridden by Operating Mode		229	1	0 = Active Closed 1 = Active Open
Input 2 active level Overridden By Operating Mode		230	1	0 = Active Closed 1 = Active Open
Debounce Filter (ms)		5035	0	Range: 5 to 1000
BUILT-IN DIGITAL OUTPUT LINES / OUTPUT 1 (Serial Models)				
Use		5316	1	1 = Local 2 = External Fieldbus
Line State		19	1	0 = Normally Open 1 = Normally Closed
Activation Event		20	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Alternative Activation Event		515	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Deactivation Event		21	1	0 = None 7 = Timeout 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold
Alternative Deactivation Event		516	1	0 = None 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold

PARAMETER		SHC	PT	VALUE
Deactivation Timeout (ms)		22	0	Range: 40 to 15000
Activate On Any Diagnostics Error		551	1	0 = Disable 1 = Enable
Deactivate When All Diagnostic Errors Recovered		552	1	0 = Disable 1 = Enable
Event Counter		553	0	Range: 1 to 70000
Event Counter Mode		554	1	0 = Consecutive 1 = Not Consecutive
Quality Counter Threshold		5273	0	Range: 1 to 100
BUILT-IN DIGITAL OUTPUT LINES / OUTPUT 2 (Serial Models)				
Use		5317	1	1 = Local 2 = External Fieldbus
Line State		23	1	0 = Normally Open 1 = Normally Closed
Activation Event		24	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Alternative Activation Event		517	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Deactivation Event		25	1	0 = None 7 = Timeout 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold
Alternative Deactivation Event		518	1	0 = None 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold

PARAMETER		SHC	PT	VALUE
Deactivation Timeout (ms)		26	0	Range: 40 to 15000
Activate On Any Diagnostics Error		555	1	0 = Disable 1 = Enable
Deactivate When All Diagnostic Errors Recovered		556	1	0 = Disable 1 = Enable
Event Counter		557	0	Range: 1 to 70000
Event Counter Mode		558	1	0 = Consecutive 1 = Not Consecutive
Quality Counter Threshold		5274	0	Range: 1 to 100
BUILT-IN DIGITAL OUTPUT LINES / OUTPUT 1 (Built-in Ethernet Models)				
Use		5792	1	1 = Local 2 = External Fieldbus
Output Type		5823	1	1 = NPN 2 = PNP
Line State	Output Type = NPN	5793	1	0 = Normally Open 1 = Normally Closed
Line State	Output Type = PNP	5825	1	0 = Normally Open 1 = Normally Closed
Activation Event		5794	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Alternative Activation Event		5795	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Deactivation Event		5796	1	0 = None 7 = Timeout 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold

PARAMETER		SHC	PT	VALUE
Alternative Deactivation Event		5797	1	0 = None 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold
Deactivation Timeout (ms)		5800	0	Range: 40 to 15000
Activate On Any Diagnostics Error		5798	1	0 = Disable 1 = Enable
Deactivate When All Diagnostic Errors Recovered		5799	1	0 = Disable 1 = Enable
Event Counter		5801	0	Range: 1 to 70000
Event Counter Mode		5802	1	0 = Consecutive 1 = Not Consecutive
Quality Counter Threshold		5803	0	Range: 1 to 100
BUILT-IN DIGITAL OUTPUT LINES / OUTPUT 2 (Built-in Ethernet Models)				
Use		5804	1	1 = Local 2 = External Fieldbus
Output Type		5824	1	1 = NPN 2 = PNP
Line State	Output Type = NPN	5805	1	0 = Normally Open 1 = Normally Closed
Line State	Output Type = PNP	5826	1	0 = Normally Open 1 = Normally Closed
Activation Event		5806	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold
Alternative Activation Event		5807	1	0 = None 1 = Complete Read 2 = Partial Read 3 = No Read 5 = Phase On 6 = Phase Off 8 = Multiple Read 9 = Right 10 = Wrong 11 = Ready 12 = Quality Counter < Threshold

PARAMETER		SHC	PT	VALUE
Deactivation Event		5808	1	0 = None 7 = Timeout 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold
Alternative Deactivation Event		5809	1	0 = None 5 = Phase On 6 = Phase Off 8 = Quality Counter >= Threshold
Deactivation Timeout (ms)		5812	0	Range: 40 to 15000
Activate On Any Diagnostics Error		5810	1	0 = Disable 1 = Enable
Deactivate When All Diagnostic Errors Recovered		5811	1	0 = Disable 1 = Enable
Event Counter		5813	0	Range: 1 to 70000
Event Counter Mode		5814	1	0 = Consecutive 1 = Not Consecutive
Quality Counter Threshold		5815	0	Range: 1 to 100

4.8 SYSTEM INFORMATION SECTION

PARAMETER		SHC	PT	VALUE
DEVICE INFORMATION				
Detected Model (READ ONLY)		5169	2	Max Length: 32
Serial Number (READ ONLY)		5172	2	Max Length: 32
Package Name (READ ONLY)		5166	2	Max Length: 128
Device Program Name (READ ONLY)		5150	2	Max Length: 32

See paragraph 3.4 on how to access all the above mentioned parameters

4.9 LEDS AND KEYPAD

PARAMETER		SHC	PT	VALUE
LEDS AND KEYPAD				
Key Functionality		5111	1	1 = Unlocked 0 = Partially Locked 2 = Locked

PARAMETER		SHC	PT	VALUE
Test Mode Data TX		5112	1	0 = Disable 1 = Main, 2 = Aux, 3 = Main & Aux 4 = All Channels
Test Mode Exit Menu Timeout		5184	1	0 = Disable 5 = 5 sec 10 = 10 sec 30 = 30 sec 60 = 1 min 120 = 2 min 300 = 5 min 600 = 10 min
Auto Learn Exit Menu Timeout		5182	1	0 = Disable 5 = 5 sec 10 = 10 sec 30 = 30 sec 60 = 1 min 120 = 2 min 300 = 5 min 600 = 10 min
Reset LED Reading Result Timeout		5183	1	0 = Disable 5 = 5 sec 10 = 10 sec 30 = 30 sec 60 = 1 min 120 = 2 min 300 = 5 min 600 = 10 min

4.10 DISPLAY (DS4800 MODELS)

PARAMETER		SHC	PT	VALUE
DISPLAY				
Display Language		5199	1	0 = English (United States) 1 = French (France) 2 = German (Germany) 3 = Italian (Italy) 4 = Japanese (Japan)
Network Status Monitor		5200	1	0 = Disable 1 = Enable
Toggle Network Status Monitor With Last Data Read		5603	1	0 = Disable 1 = Enable
Contrast (Local Device)		5201	0	Range: 5 to 45

4.11 DIAGNOSTICS

PARAMETER		SHC	PT	VALUE
DIAGNOSTICS				
Enable		5100	1	0 = Disable 1 = Enable
Conveyor Info		5097	1	0 = Not Available 1 = Available
Conveyor Info Provider		5098	1	1 = Input 1 2 = Input 2
Refresh Time		5110	1	1 = 1 sec 2 = 2 sec 5 = 5 sec 10 = 10 sec 30 = 30 sec 60 = 1 min
Slave Diagnostics		37	1	0 = Disable 1 = Enable
Local Network Failure		5105	1	0 = Disable 1 = Enable
Led Indication on Network Slave Failure		5179	1	0 = Disable 1 = Enable
Start/Stop Input Failure		5103	1	0 = Disable 1 = Enable
No Phase Timeout		5107	1	0 = Disable 1 = 1 sec 2 = 5 sec 3 = 10 sec 4 = 20 sec 5 = 1 min 6 = 5 min 7 = 10 min 8 = 20 min
Presence Sensor Stuck Timeout		5109	1	0 = Disable 1 = 1 sec 2 = 2 sec 5 = 5 sec 10 = 10 sec 30 = 30 sec 60 = 1 min
Motor Failure		5106	1	0 = Disable 1 = Enable
Laser Failure		5104	1	0 = Disable 1 = Enable
Oscillating Mirror Failure		5108	1	0 = Disable 1 = Enable
Oscillating Mirror Data Consistency Error		5414	1	0 = Disable 1 = Enable
Focus Displacement		5206	1	0 = Disable 1 = Enable

PARAMETER		SHC	PT	VALUE
DIGITIZER: Motor Failure		5207	1	0 = Disable 1 = Enable
DIGITIZER: Motor Life End		5208	1	0 = Disable 1 = Enable
DIGITIZER: Laser Failure		5209	1	0 = Disable 1 = Enable
DIGITIZER: Laser Life End		5210	1	0 = Disable 1 = Enable
DIGITIZER: Data Consistency Error		5211	1	0 = Disable 1 = Enable
DIGITIZER: Data Write Error		5212	1	0 = Disable 1 = Enable
DIGITIZER: Communication Error		5213	1	0 = Disable 1 = Enable
DIGITIZER: Reset		5214	1	0 = Disable 1 = Enable
OSCILLATING MIRROR: Motor Failure		5215	1	0 = Disable 1 = Enable
OSCILLATING MIRROR: Motor Life End		5216	1	0 = Disable 1 = Enable
OSCILLATING MIRROR: Data Consistency Error		5217	1	0 = Disable 1 = Enable
OSCILLATING MIRROR: Data Write Error		5218	1	0 = Disable 1 = Enable
OSCILLATING MIRROR: Communication Error		5219	1	0 = Disable 1 = Enable
OSCILLATING MIRROR: Reset		5220	1	0 = Disable 1 = Enable
Reading Conditions Controller: Communication Error		5221	1	0 = Disable 1 = Enable
Focus Controller: Communication Error		5222	1	0 = Disable 1 = Enable
Temperature Controller: Communication Error		5642	1	0 = Disable 1 = Enable
Temperature Sensor: Communication Error		5223	1	0 = Disable 1 = Enable
Laser Temperature Sensor: Communication Error		5536	1	0 = Disable 1 = Enable
Temperature Sensors Mismatch Error		5543	1	0 = Disable 1 = Enable
Low Temperature Alarm		5538	1	0 = Disable 1 = Enable
High Temperature Warning		5539	1	0 = Disable 1 = Enable

PARAMETER		SHC	PT	VALUE
Low Power Supply Alarm		5540	1	0 = Disable 1 = Enable
Power Controller: Communication Error		5658	1	0 = Disable 1 = Enable
Long Warm-up Alarm		5541	1	0 = Disable 1 = Enable
Heater Failure		5542	1	0 = Disable 1 = Enable
FieldBus Failure		5305	1	0 = Disable 1 = Enable
FieldBus Mismatch		5306	1	0 = Disable 1 = Enable
FieldBus Configuration Error		5400	1	0 = Disable 1 = Enable
FieldBus DHCP Problem		5401	1	0 = Disable 1 = Enable
Wrong CBX BM100 Rotary Switch Selection		5307	1	0 = Disable 1 = Enable
CBX BM100 Communication Failure		5308	1	0 = Disable 1 = Enable
ACTIONS				
TX Mode		5096	1	0 = On Timeout 1 = With Code"
TX Refresh		5092	1	1 = 1 sec 2 = 2 sec 5 = 5 sec 10 = 10 sec 20 = 20 sec 30 = 30 sec 60 = 1 min 300 = 5 min
Message Position		5095	1	0 = Append to Code 1 = Replace Code 2 = Insert before the Code
Aux		5093	1	0 = Disable 1 = Enable
Main		5094	1	0 = Disable 1 = Enable
Fieldbus		5358	1	0 = Disable 1 = Enable
UserSocket#1	Serial Models with CBX TCP/IP Modules	5354	1	0 = Disable 1 = Enable
UserSocket#2	Serial Models with CBX TCP/IP Modules	5357	1	0 = Disable 1 = Enable
Modbus TCP	Serial Models with CBX BM2x0 Modules	5601	1	0 = Disable 1 = Enable
UserSocket#1	Built-in Ethernet Models	5818	1	0 = Disable 1 = Enable

PARAMETER		SHC	PT	VALUE
UserSocket#2	Built-in Ethernet Models	5819	1	0 = Disable 1 = Enable
Modbus TCP Client	Built-in Ethernet Models	5820	1	0 = Disable 1 = Enable
Ethernet/IP	Built-in Ethernet Models	5821	1	0 = Disable 1 = Enable
FORMAT				
Header String		5101	3	Length: 1 to 128
Terminator String		5102	3	Length: 1 to 128
No Failure String		5604	3	Length: 0 to 32
Node Identification		5253	3	Length: 1 to 128
Diagnostic Message Format		5080	1	0 = Internal Numeric Messages 1 = User Defined Messages
FORMAT / USER DEFINED MESSAGES				
Motor Failure		5083	3	Length: 1 to 128
Laser Failure		5081	3	Length: 1 to 128
Oscillating Mirror Failure		5085	3	Length: 1 to 128
Oscillating Mirror Data Consistency Error		5415	3	Length: 1 to 128
Start/Stop Input Failure		5091	3	Length: 1 to 128
No Phase Warning		5087	3	Length: 1 to 128
Presence Sensor Stuck		5086	3	Length: 1 to 128
Local Net Failure		5082	3	Length: 1 to 128
Focus Displacement		5225	3	Length: 1 to 128
DIGITIZER: Motor Failure		5226	3	Length: 1 to 128
DIGITIZER: Motor Life End		5227	3	Length: 1 to 128
DIGITIZER: Laser Fail		5228	3	Length: 1 to 128
DIGITIZER: Laser Life End		5229	3	Length: 1 to 128
DIGITIZER: Data Consistency Error		5230	3	Length: 1 to 128
DIGITIZER: Data Write Error		5231	3	Length: 1 to 128
DIGITIZER: Communication Error		5232	3	Length: 1 to 128
DIGITIZER: Reset		5233	3	Length: 1 to 128
OSCILLATING MIRROR: Motor Failure		5234	3	Length: 1 to 128

PARAMETER		SHC	PT	VALUE
OSCILLATING MIRROR: Motor Life End		5235	3	Length: 1 to 128
OSCILLATING MIRROR: Data Consistency Error		5236	3	Length: 1 to 128
OSCILLATING MIRROR: Data Write Error		5237	3	Length: 1 to 128
OSCILLATING MIRROR: Communication Error		5238	3	Length: 1 to 128
OSCILLATING MIRROR: Reset		5239	3	Length: 1 to 128
Reading Conditions Controller: Communication Error		5240	3	Length: 1 to 128
Focus Controller: Communication Error		5241	3	Length: 1 to 128
Temperature Controller: Communication Error		5643	3	Length: 1 to 128
Temperature Sensor: Communication Error		5242	3	Length: 1 to 128
Laser Temperature Sensor: Communication Error		5537	3	Length: 1 to 128
Temperature Sensors Mismatch Error		5544	3	Length: 1 to 128
Low Temperature Alarm		5545	3	Length: 1 to 128
High Temperature Warning		5546	3	Length: 1 to 128
Low Power Supply Alarm		5547	3	Length: 1 to 128
Power Controller: Communication Error		5657	3	Length: 1 to 128
Long Warm-up Alarm		5548	3	Length: 1 to 128
Heater Failure		5549	3	Length: 1 to 128
Slave No Reply		5090	3	Length: 1 to 128
Slave Address Duplication		5088	3	Length: 1 to 128
Slave Net Configuration		5089	3	Length: 1 to 128
FieldBus Failure		5312	3	Length: 1 to 128
FieldBus Mismatch		5311	3	Length: 1 to 128
FieldBus Configuration Error		5410	3	Length: 1 to 128
FieldBus DHCP Problem		5411	3	Length: 1 to 128

PARAMETER		SHC	PT	VALUE
Wrong CBX BM100 Rotary Switch Selection		5310	3	Length: 1 to 128
CBX BM100 Communication Failure		5309	3	Length: 1 to 128

4.12 STATISTICS

PARAMETER	COMPLETE PATH	SHC	PT	VALUE
STATISTICS				
Enable		217	1	0 = Disable 1 = Enable
Separator		5141	3	Length: 0 to 32
Time (hh mm)		5134	1	0 = Disable 1 = Enable
Phase Counter		5140	1	0 = Disable 1 = Enable
Good Read Counter		5135	1	0 = Disable 1 = Enable
Partial Read Counter		5139	1	0 = Disable 1 = Enable
No Read Counter		5138	1	0 = Disable 1 = Enable
Motor OFF Counter		5136	1	0 = Disable 1 = Enable
Multiple Read Counter		5137	1	0 = Disable 1 = Enable

4.13 USER INFORMATION SECTION

PARAMETER	COMPLETE PATH	SHC	PT	VALUE
USER INFORMATION SECTION				
User Name		521	2	Length: 0 to 32
Device Name		522	2	Length: 0 to 128
Line Name		523	2	Length: 0 to 128

A SPECIAL COMMANDS AND TABLES

ID-NET™ SPECIAL COMMANDS

The following special command allows to send strings to a Slave #N through the Master device in an ID-NET™ reading system layout. In order to send this special command, it is not necessary to switch the reader into **Host Mode**.

This special command can be used to send Serial Motor On and Serial Motor Off strings (for Energy Saving purposes) or Serial Start String and Serial Stop String (for Serial On Line operating mode option) to a Slave device in an ID-NET™ reading system layout.

The 2KN Family and the DS4800 '**Send String To Slave Device #N**' special command must have the following format:

<ESC> (<B0$_H$> ADDR STRING) <ESC>

Where:

- **ADDR**: Device Address
- **STRING**: String To Send (Length: 1 to 32)

ADDR is a character indicating the address of the device in an ID-NET™ Master/Slave reading system layout:

ADDR = <30$_H$> + <Device Address> where:

Device Address = 0: Stand Alone device or Master ID-NET™ device
Device Address = 1 to 31: Slave ID-NET™ device
Device Address = 32: ID-NET™ broadcast address

This means:

ADDR = <30$_H$>: Stand Alone device or Master ID-NET™ device
ADDR = <31$_H$> to <4F$_H$>: Slave ID-NET™ device
ADDR = <50$_H$> ID-NET™ broadcast address

CONTROL RULES TABLE

This paragraph provides a list of the most important control rules that can be applied to the 2KN Family and DS4800 parameters.

PARAMETER	CONTROL RULES
CODE DEFINITION	
Code Combination	Must be ≠ *Single Label* and ≠ *Code Collection* if Host Application Protocol Type = *Crisplant*. Must be ≠ *Standard Multi Label* and ≠ *Logical Combination* if Operating Mode Selection = *Continuous*. Must be ≠ *Code Collection* if No Read Message = *Local No Read(s) Message.*
No Read Message	Must be ≠ *Local No Read(s) Message* if Code Combination = *Single Label*. Must be ≠ *Local No Read(s) Message* if Code Combination = *Code Collection*.
Associate Same Codes When Coming From Different Scanners	Not available if Scanner Cluster Topology Role ≠ *Master Synchronized* or ≠ *Master Multidata*.
CODE LABEL SETTINGS #N (DEPTH: n = 1 to 10)	
Minimum Label Length	Value must be ≤ Maximum Label Length
Maximum Label Length	Value must be ≥ Minimum Label Length
Minimum Code Position	Value must be ≤ Maximum Code Position
Maximum Code Position	Value must be ≥ Minimum Code Position
OPERATING MODES	
Operating Mode Selection	Must be ≠ *Automatic* and ≠ *Continuous* if Host Application Protocol Type = *Crisplant*. Must be ≠ *Continuous* if Code Combination ≠ *Single Label*. Must be ≠ *Automatic* and ≠ *Continuous* if Scanner Cluster Topology Role = *Master Synchronized*. Must be ≠ *Automatic* and ≠ *Continuous* if Scanner Cluster Topology Role = *Slave Synchronized*.
On Line Options	Must be ≠ *Serial On Line* if Host Application Protocol Type = *Crisplant*.
Stop Phase Edge (only for On Line 2 Input)	Must be ≠ *Leading* if Extended Phase = *Enable*
ACK/NAK Protocol	Not available if Operating Mode Selection ≠ *On Line*. Not available if Scanner Cluster Topology Role = *Slave Synchronized*.
Quality Counters	Not available if Operating Mode Selection ≠ *On Line and* ≠ *Automatic*. Not available if Scanner Cluster Topology Role = *Slave Synchronized*.

PARAMETER	CONTROL RULES
VERIFIER	
Code Verifier	Not available if Code Combination ≠ *Single Label*. Not available if Operating Mode Selection ≠ *On Line* and ≠ *Automatic and* ≠ *Continuous*.
READING SYSTEM LAYOUT	
Local Device Alternative Network Settings	Must be ≠ *Master RS232 (Type A)* and ≠ *Slave RS232 (Type A)* if Auxiliary Serial Port Data TX = *Enable*. Must be ≠ *Master RS232 (Type A)* and ≠ *Slave RS232 (Type A)* if Auxiliary Serial Port Pass Through = *Enable*.
DATA COMMUNICATION SETTING	
Host Application Protocol Type	Must be ≠ *Crisplant* if Operating Mode Selection ≠ *On Line*. Must be ≠ *Crisplant* if On Line Options = *Serial On Line*. Must be ≠ *Crisplant* if Main Port Communication Mode ≠ *Standard*. Must be ≠ *Crisplant* if Auxiliary Serial Port Pass Through = *Enable*.
MAIN SERIAL PORT	
Main Port Communication Mode	Must be = Standard if Host Application Protocol Type ≠ *Standard*.
AUXILIARY SERIAL PORT	
Data Transmission	Must be = Disable if Local Device Alternative Network Setting = *Master RS232 (Type A)* or = *Slave RS232 (Type A).*
Pass Through	Must be = Disable if Host Application Protocol Type ≠ *Standard*. Must be = Disable if Local Device Alternative Network Setting = *Master RS232 (Type A)* or = *Slave RS232 (Type A).*
DIGITAL OUTPUT LINES SETTING	
Activation Event, Alternative Activation Event, Deactivation Event, Alternative Deactivation Event	Not available if Activate On Any Diagnostics Error = *Enabled*.
STATISTICS	
Enable	Not available if Local Device Alternative Network Setting = *Slave RS232 (Type A)*. Not available if Scanner Cluster Topology Role = *Slave Synchronized*. Not available if Operating Mode Selection ≠ *On Line*.

ERROR CODES TABLE

This paragraph provides a list of the most important error codes.

CODE	INTERPRETATION
COMMAND PARSING	
-3	Parameter does not exist.
-4	Invalid range.
-8	Wrong syntax error.
-9	Wrong shortcut error.
-12	Path not found.
-13	Unknown command.
-14	Too many parameters in the programming string.
-15	No command is present in the programming string.
-16	Wrong number of parameters in the programming string.
-17	Unexpected error.
-19	One or more parameters are not applicable.
PARAMETERS PROGRAMMING	
3	The current Path is not valid.
7	The current Path is a Folder
8	Parameter Type is not correct.
9	Parameter Value is not correct.
12	One or more Control Rules are not satisfied.
13	Access denied.

ASCII TABLE

CHARACTER TO HEX CONVERSION TABLE					
CHAR	**HEX**	**CHAR**	**HEX**	**CHAR**	**HEX**
NUL	**00**	*	**2A**	U	**55**
SOH	**01**	+	**2B**	V	**56**
STX	**02**	,	**2C**	W	**57**
ETX	**03**	-	**2D**	X	**58**
EOT	**04**	.	**2E**	Y	**59**
ENQ	**05**	/	**2F**	Z	**5A**
ACK	**06**	0	**30**	[	**5B**
BEL	**07**	1	**31**	\	**5C**
BS	**08**	2	**32**	]	**5D**
HT	**09**	3	**33**	^	**5E**
LF	**0A**	4	**34**	_	**5F**
VT	**0B**	5	**35**	`	**60**
FF	**0C**	6	**36**	a	**61**
CR	**0D**	7	**37**	b	**62**
SO	**0E**	8	**38**	c	**63**
SI	**0F**	9	**39**	d	**64**
DLE	**10**	:	**3A**	e	**65**
DC1	**11**	;	**3B**	f	**66**
DC2	**12**	<	**3C**	g	**67**
DC3	**13**	=	**3D**	h	**68**
DC4	**14**	>	**3E**	i	**69**
NAK	**15**	?	**3F**	j	**6A**
SYN	**16**	@	**40**	k	**6B**
ETB	**17**	A	**41**	l	**6C**
CAN	**18**	B	**42**	m	**6D**
EM	**19**	C	**43**	n	**6E**
SUB	**1A**	D	**44**	o	**6F**
ESC	**1B**	E	**45**	p	**70**
FS	**1C**	F	**46**	q	**71**
GS	**1D**	G	**47**	r	**72**
RS	**1E**	H	**48**	s	**73**
US	**1F**	I	**49**	t	**74**
SPACE	**20**	J	**4A**	u	**75**
!	**21**	K	**4B**	v	**76**
"	**22**	L	**4C**	w	**77**
#	**23**	M	**4D**	x	**78**
$	**24**	N	**4E**	y	**79**
%	**25**	O	**4F**	z	**7A**
&	**26**	P	**50**	{	**7B**
'	**27**	Q	**51**	|	**7C**
(	**28**	R	**52**	}	**7D**
)	**29**	S	**53**	~	**7E**
		T	**54**	DEL	**7F**

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