

**Smart Sensor  
ZFX-C**

**Appendix for ZFX-C\_-CD  
Code reading functionality**

**USERS MANUAL**

**OMRON**



# ZFX-C1\_/C2\_-CD

## Additional Functions Instructions

This document describes the additional functions of the ZFX-C1\_/C2\_-CD. Other functions are the same as those for the ZFX-C1\_/C2\_. Also read the User's Manual (Z264) for the ZFX-C1\_/C2\_.

Functions original to the ZFX-C1\_/C2\_-CD are as follows:

- Three measurement items: Barcode, 2D Code, Multi Colors
- Auto functions

## Inspection by Individual Application

### Barcode

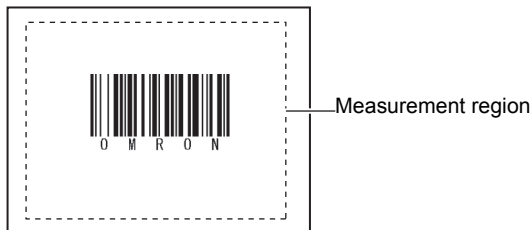
This function reads and verifies barcodes. Read results and verification results can also be output. Measurement items to be executed from this measurement item onwards can also be specified according to the verification results. This allows you to specify a measurement flow matched to the code type. Nine barcode types can be read.

JAN/EAN/UPC, Code39, Codabar(NW-7), ITF(Interleaved 2 of 5), Code 93, Code128/GS1-128, GS1 DataBar\*(Truncated, Stacked, Omni-directional, Stacked Omni-directional, Limited, Expanded, Expanded Stacked), Pharmacode, GS1-128 Composite Code(CC-A,CC-B,CC-C)

\*GS1 DataBar was formerly known as RSS.

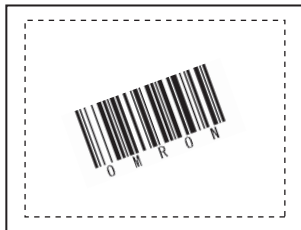
#### Setup

Draw the measurement region, then execute AUTO setting. The barcode type and some of the decode conditions are automatically set.



#### Measurement

One barcode is read in a single measurement region. When the measurement region contains multiple barcodes, the result of the first barcode to be read is output.



#### Important

Reading will end in error if the barcode type is incorrectly set. Set the barcode type before starting reading. When AUTO setting is executed, the captured barcode is read, and the following items can be set:

- Code type p.6
- Direction (for Pharma only) p.6
- Reverse decode (for Pharma only) p.6

## Region settings

This function sets the measurement region.


### ► MENU mode - [Setup] - [Item] - [Region]

Item	Description
Measurement region	Sets the region to be measured.

## Registering the master data for verification

Master data are used for verification. After reading process, the read text string can be verified against the pre-registered master data. 32 sets of master data can be registered as text string. Also, processing to be executed from this measurement item onwards can also be branched according to the verification results when measurement control function is ON.

### ► MENU mode - [Setup] - [Item] - [Master data]

Item	Description
Master data	<p>There are two modes for registering master data, auto setting and manual setting.</p> <p>Auto setting: The actual barcode is used to register the master data. When the [AUTO] button is pressed, the barcode is read and the result is registered as the master data. Text string up to 32 characters long are registered. Control codes also can be registered.</p> <p>Manual setting: Text string up to 32 characters long can be registered as master data via the software keyboard. Check available characters in the ASCII table. 2-byte characters, 1-byte kana characters and control codes cannot be entered.</p> <p>The following characters can be used as wildcards: *: Wildcard for zero or more characters ?: Wildcard for one character</p> <p> ASCII code table p.3</p>
Rename	This is the text string displayed as the verification result on the result display screen.
First meas. Item No.	This is the Start No. of measurement items to be executed, when the measurement control is set to ON and the read text string match the master data.
Last meas. Item No.	This is the End No. of measurement items to be executed, when the measurement control is set to ON and the read text string match the master data.

 Measurement control p.5

### Important

When the manual registration screen is displayed after execution of AUTO setting, unavailable characters in manual registration (control codes, 2-byte characters, 1-byte kana characters, etc.) are displayed as "?".

**Note** ASCII code table


The following table shows the ASCII codes that can be used for manual registration of master data and also for registering characters of Limits.

		Upper 4 bits					
		2	3	4	5	6	7
Lower 4 bits	0	SP	0	@	P	`	p
	1	!	1	A	Q	a	q
	2	”	2	B	R	b	r
	3	#	3	C	S	c	s
	4	\$	4	D	T	d	t
	5	%	5	E	U	e	u
	6	&	6	F	V	f	v
	7	'	7	G	W	g	w
	8	(	8	H	X	h	x
	9	)	9	I	Y	i	y
	A	*	:	J	Z	j	z
	B	+	;	K	[	k	{
	C	,	<	L	¥	l	!
	D	-	=	M	]	m	}
	E	.	>	N	^	n	~
	F	/	?	O	_	o	

**Threshold**

This function sets the judgment conditions.

**► MENU mode - [Setup] - [Item] - [Limits]**

Item	Description
Num. of characters	Sets the range of number of characters to be judged as OK. Range: 0 to 1024
Characters	The read text string is judged as OK when it is the same as the characters in this menu. Up to 32 characters can be set. Check available characters in the ASCII table. 2-byte characters, 1-byte kana characters and control codes cannot be entered. The following characters can be used as wildcards: *: Wildcard for zero or more characters ?: Wildcard for one character   ASCII code table p.3

## Image adjustment (if necessary)

The following items can be changed and set to the image of the measurement target.


### ► MENU mode - [Setup] - [Item] - [Img Adj]

Item	Description
Select Camera	For details, refer to Chapter 3 "Image Adjustment" of the ZFX User's Manual.
Color filter	
Filtering	
BGS level	

## Operation mode details (if necessary)

Set items below as required.

### ► MENU mode - [Setup] - [Item] - [Detail] - [Function condition]

Setup Item	Setting Value	Description
Verification func.	OFF (default value)	When set to ON, verification with the master data is executed.
	ON	
Verified master data	All master data (default value)	Selects the model to be used for verification.
	Master data 0 to 31	
Partial verification	OFF (default value)	The number of digits in the read results to be verified with the master data can be limited. When [Partial verification] is set to ON, set the first and last compared digit positions. Up to 32 characters can be set as the number of digits. Example: First compared digit 2, last compared digit 6
	ON	
Compared digit	1 to 1024 (default value first digit:1 last digit:1)	<div style="border: 1px solid black; display: inline-block; padding: 2px;">O M R O N 2 0 0 8</div> ↑          ↑ 2nd digit 6th digit The text string used for verification becomes "MRON2".
Output characters	OFF (default value)	Sets whether or not to output the read results on the serial interface.
	ON	
Error string	Max. 20 digits (default value: NG)	Sets the text string to be output when a read error occurs.   ASCII code table p.3
Partial output	OFF (default value)	Sets whether or not to specify a range in the read data to output from when [Output characters] is set to ON.
	ON	
Output digit	1 to 1024 (default value first digit:1 last digit:1)	Sets the first and last digit positions to output. If the read text string contains non-targeted digits, the error string is output.
Measurement control	OFF	Sets whether or not to control the next measurement item to be executed based on the verification results.
	ON (default value)	

**Note**    **Output function of the read results**

- The output order  
The read results can be output on the serial interface. When the calculation results are output at the same time, the calculation results are output first, followed by the read results (text string).
- Code conversion  
The following character codes need to be converted for output. The texts after conversion are output.

Character code	Before conversion	After conversion
Comma	&h2c	&h8540
Tab	&h09	&h8541
Space	&h20	&h8542
CR	&h0D	&h8543
LF	&h0A	&h8544

Example: Output of read results together with two expressions

Read result: ABC  
[Expression] - [Data0]: 123  
[Expression] - [Data1]: 456

The output order is as follows:  
123,456 (delimiter)  
ABC (delimiter)

**Note**    **Measurement control function**

This function enables control of the next measurement item to be executed based on the verification results with the master data. The overall judgment result does not reflect the measurement items that are not executed.

Example: Measurement of product A and product B are branched according to the verification results.

Measurement Item0 : Barcode	}	Measurement Item for Product A
Measurement Item1 : Pattern Search		
Measurement Item2 : Area		
Measurement Item3 : Area	}	Measurement Item for Product B
Measurement Item4 : Pattern Search		
Measurement Item5 : Area		
Measurement Item6 : Area		

Setting master data 0

- Register the barcode of product A.
- First meas. Item No.: 1
- Last meas. Item No.: 3

Setting master data 1

- Register the barcode of product B.
- First meas. Item No.: 4
- Last meas. Item No.: 6



Registering master data, First meas. Item No., Last meas. Item No. p.2

**Decode condition detailed settings**

Be Sure to set the detailed conditions for the barcode type. Set other items as required. By AUTO setting, Code type, Direction(Pharma) are set automatically.

► **MENU mode - [Setup] - [Item] - [Detail]- [Decode condition]**

Setup Item	Setting Value	Description
Code type	JAN/EAN/UPC (default value)	Selects the type of barcode to be read.
	Code39	
	Codebar(NW-7)	
	ITF	
	Code 93	
	Code128, GS1-128	
	GS1 DataBar	
	Pharmacode	
Timeout	1 to 9999 ms (default value: 9999)	Sets the timeout time in read processing. A read error occurs if measurement does not end after the preset timeout time is exceeded.
Check digit	OFF	Selects whether or not to insert a check digit. This item is enabled only when the following barcode types are selected: Codebar, Code39, ITF (Interleaved 2 of 5). When the other codes are selected, this item is set to ON.
	ON (default value)	
Composite component	OFF (default value)	Sets whether or not to support composite codes. This item is enabled only when the following barcode types are selected: Code128/GS1-128, GS1-DataBar
	ON	
Direction (Pharma)	Horizontal mode (default value)	Selects the reading direction. This item is enabled only when Pharmacode is selected as the barcode type.
	Vertical mode	
Reverse (Pharma)	OFF (default value)	Sets whether or not to use the reverse mode. This item is enabled only when Pharmacode is selected as the barcode type.
	ON	

## Possible output results

The following values can be output when expressions are set.

Item	Description
Judgment result (JG)	The judgment result is output. (0: OK, -1: NG, -2: not measured)
Index (IN)	Outputs the verification results (master model No.). (-2: verification results OFF or read error, -1: verification results NG, 0 to 31: model No.)
Num. of characters (N)	Outputs the read number of characters. (0 to 1024)
Characters	Outputs the read text string. Only codes that can be registered manually and 2-byte characters can be displayed as text string in the result display screen. Other character codes (including control codes) that are read are displayed as spaces. The read string is displayed up to 32 characters. When more than 32 characters are read, "...." is displayed at the end of the string.



## 2D Codes

This function reads and verifies 2D codes. Read results and verification results can also be output. Measurement items to be executed from this measurement item onwards can also be specified according to the verification results. This allows you to specify a measurement flow matched to the code type. Eight 2D Code types can be read.

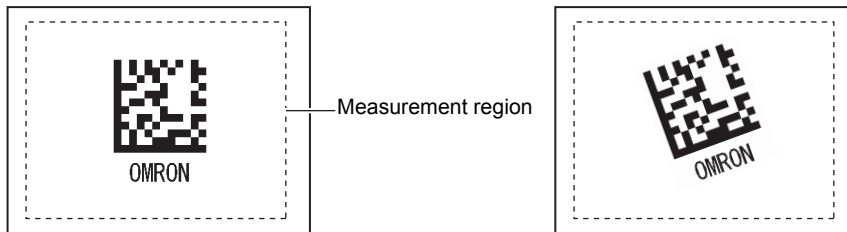
Data Matrix(EC200), QR Code, MicroQR Code, PDF417, MicroPDF417, Maxi Code, AZtec Code, Codablock

### Setup

Draw the measurement region, then execute AUTO setting. The code type and some of the decode conditions are automatically set.

### Measurement

One 2D barcode is read in a single measurement region. When the measurement region contains multiple 2D codes, the result of the first 2D code to be read is output.



### Important

Reading will end in error if the 2D Code type is incorrectly set. Set the code type before starting reading. When AUTO setting is executed, the captured 2D barcode is read, and the following items can be set:

- Code type p.11
- Mirror p.11
- Code color (for Data Matrix and PDF417 only) p.11
- Shape (for Data Matrix only) p.11

## Region settings

This function sets the measurement region.


### ► MENU mode - [Setup] - [Item] - [Region]


Item	Description
Measurement region	Sets the region to be measured.

## Registering the master data for verification

Master data are used for verification. After reading process, the read text string can be verified against the pre-registered master data. 32 sets of master data can be registered as text string. Also, processing to be executed from this measurement item onwards can also be branched according to the verification results when measurement control function is ON.

### ► MENU mode - [Setup] - [Item] - [Master data]

Item	Description
Masterdata	<p>There are two modes for registering master data, auto setting and manual setting.</p> <p>Auto setting: The actual code is used to register the master data. When the [AUTO] button is pressed, the code is read and the result is registered as the master data. Text string up to 32 characters long are registered. Control codes also can be registered.</p> <p>Manual setting: Text string up to 32 characters long can be registered as master data via the software keyboard. 2-byte characters, 1-byte kana characters and control codes cannot be entered. Check available characters in the ASCII table.</p> <p>The following characters can be used as wildcards: *: Wildcard for zero or more characters ?: Wildcard for one character</p> <p> ASCII code table p.3</p>
Rename	This is the text string displayed as the verification result on the result display screen.
First meas. Item No.	This is the Start No. of measurement items to be executed, when the measurement control is set to ON and the read text string match the master data.
Last meas. Item No.	This is the End No. of measurement items to be executed, when the measurement control is set to ON and the read text string match the master data.

 Measurement control p.5


#### Important

When the manual registration screen is displayed after execution of AUTO setting, unavailable characters in manual registration (control codes, 2-byte characters, 1-byte kana characters, etc.) are displayed as "?".

## Threshold

This function sets the judgment conditions.

### ► MENU mode - [Setup] - [Item] - [Limits]

Item	Description
Num. of characters	Sets the range of number of characters to be judged as OK. Range: 0 to 1024
Characters	The read text string is judged as OK when it is the same as the characters in this menu. Up to 32 characters can be set. Check available characters in the ASCII table. 2-byte characters, 1-byte kana characters and control codes cannot be entered. The following characters can be used as wildcards: *: Wildcard for zero or more characters ?: Wildcard for one character   ASCII code table p.3

## Image adjustment (if necessary)

The following items can be changed and set to the image of the measurement target.


### ► MENU mode - [Setup] - [Item] - [Img Adj]


Item	Description
Select Camera	For details, refer to Chapter 3 "Image Adjustment" of the ZFX User's Manual.
Color filter	
Filtering	
BGS level	

## Operation mode details (if necessary)

Set items below as required.

### ► MENU mode - [Setup] - [Item] - [Detail] - [Function condition]

Setup Item	Setting Value	Description
Verification func.	OFF (default value)	When set to ON, verification with the master data is executed.
	ON	
Verified master data	All master data (default value)	Selects the model to be used for verification.
	Master data 0 to 31	
Partial verification	OFF (default value)	The number of digits in the read results to be verified with the master data can be limited. When [Partial verification] is set to ON, set the first and last compared digit positions. Up to 32 characters can be set as the number of digits. Example: First compared digit 2, last compared digit 6
	ON	
Compared digit	1 to 1024 (default value first digit:1 last digit:1)	<div style="border: 1px solid black; display: inline-block; padding: 2px;">O M R O N 2 0 0 8</div> ↑                    ↑ 2nd digit    6th digit The text string used for verification becomes "MRON2".
Output characters	OFF (default value)	Sets whether or not to output the read results on the serial interface.
	ON	
Error string	Max. 20 digits (default value: NG)	 ASCII code table p.3
Partial output	OFF (default value)	Sets whether or not to specify a range in the read data to output from when [Output characters] is set to ON.
	ON	
Output digit	1 to 1024 (default value first digit:1 last digit:1)	Sets the first and last digit positions to output. If the read text string contains non-targeted digits, the error string is output.
Measurement control	OFF (default value)	Sets whether or not to control the next measurement item to be executed based on the verification results.
	ON	

-  • Output function of the read results p.5
- Measurement control function p.5

## Decode condition detailed settings

Be Sure to set the detailed conditions for the code type. Set other items as required. By AUTO setting, Code type, Mirror, Code color, Shape (Data Matrix) are set automatically.

### ► MENU mode - [Setup] - [Item] - [Detail]- [Decode condition]

Setup Item	Setting Value	Description
Code type	Data Matrix (EC200)	Selects the type of 2D Code to be read.
	QR Code	
	MicroQR Code	
	PDF417	
	MicroPDF417	
	Maxi Code	
	AZtec Code	
	Codablock	
Timeout	1 to 9999 ms (default value: 9999)	Sets the timeout time in read processing. A read error occurs if measurement does not end after the preset timeout time is exceeded.
Mirror	Normal (default value)	Sets normal or reverse as the image orientation.
	Reverse	
Code color	Black	Specifies the code color. This item is enabled only when the following barcode types are selected: Data Matrix, PDF417
	White	
	Black & White (default value)	
Shape (Data Matrix)	Square (default value)	Specifies the code shape. This item is enabled only when the following barcode types are selected: Data Matrix
	Square & Rectangle	

## Possible output results

The following values can be output when expressions are set.

Item	Description
Judgment result (JG)	The judgment result is output. (0: OK, -1: NG, -2: not measured)
Index (IN)	Outputs the verification results (master model No.). (-2: verification results OFF or read error, -1: verification results NG, 0 to 31: model No.)
Num. of characters (N)	Outputs the read number of characters. (0 to 1024)
Characters	Outputs the read text string. Only codes that can be registered manually and 2-byte characters can be displayed as text string in the result display screen. Other character codes (including control codes) that are read are displayed as spaces. The read string is displayed up to 32 characters. When more than 32 characters are read, "..." is displayed at the end of the string.

# Size Inspection

## Multi Colors

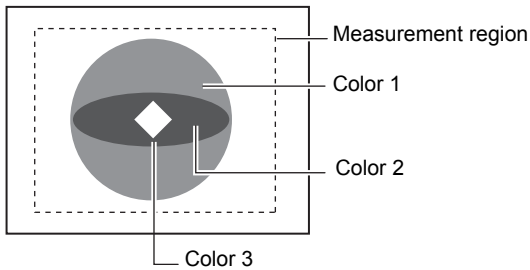
This function measures the areas of up to four colors simultaneously, which enables to measure the difference of color pattern. Each of the area values and differences with reference values can be output.

### Important

This function cannot be used when a monochrome camera is connected.

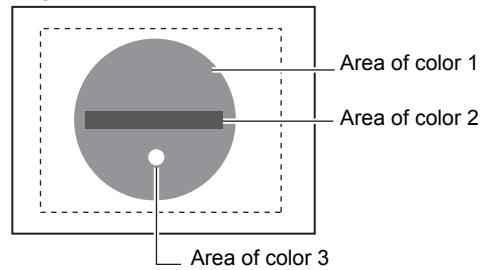
#### Setup

Measurement region and up to four reference colors can be registered.



#### Measurement

The area of each color is measured, and if even one of the area values is judged as NG, the overall judgment result is NG.



## Image adjustment

This function picks up the color to be measured.

### ► MENU mode - [Setup] - [Item] - [Img Adj]

Item	Description
Select Camera	For details, refer to Chapter 3 "Image Adjustment" of the ZFX User's Manual.
Color pickup	

## Region settings

This function sets the measurement region.

### ► MENU mode - [Setup] - [Item] - [Region]

Item	Description
Measurement region	Sets the region to be measured.
Reference registration	When the measurement region is set, measurement is executed on the display image, and the result of execution is registered as the reference value. To re-register only reference values, you can use this function to re-register only reference values based on the image currently on screen.

## Threshold

This function sets the judgment conditions.

### ► MENU mode - [Setup] - [Item] - [Limits]

Setup Item	Description
Area 1 to 4	Sets the range of the area to be judged as OK. Range: 0 to 9999999.999 (When calibration is OFF, the range becomes 0 to 307200.)

## Detailed settings (if necessary)

Adjust the detailed conditions, if necessary.

### ► MENU mode - [Setup] - [Item] - [Detail]

Setup Item	Setting Value	Description
Fill profile	OFF (default value)	To measure the outer periphery of the measurement target, set this item to [ON].
	ON	When this item is set to [ON], measurement is performed with all of the area between the start point (colors outside of measurement target → measurement target color) and the end point (measurement target color → colors outside of measurement target) inside the measurement region judged to the measurement target color. For details, refer to the "Area" detailed settings in Chapter 3 of the ZFX User's Manual.
Calibration	OFF (default value)	Measurement results are output using the camera's coordinate values.
	ON	Measurement results are output using the coordinate value converted by the calibration function.
Auto THset +/-	0 to 9999999.999	When AUTO setting is executed, the value obtained by incrementing/decrementing this value on the measured value is set as the thresholds.
Area judgment	0 to 9999999.999	Sets the area value to be judged as the effective color. When AUTO setting is executed, only up to four colors having an area within these upper and lower limit values are automatically registered.

## Possible output results

The following values can be output when expressions are set.

Item	Description
Judgment result (JG)	The judgment result is output. (0: OK, -1: NG, -2: not measured)
Area 1 to 4 (AR1 to 4)	The area of the measurement color is output. (0 to 9999999.999)
Ref. area 1 to 4 (SA1 to 4)	The area when the measurement region is set is output. (0 to 9999999.999)
Diff. area 1 to 4 (DA1 to 4)a	The area difference obtained by "measurement value - reference value" is output. (9999999.999 to 9999999.999)

# Auto functions

## AUTO button (RUN mode)

In the RUN mode, all measurement items can be batch-set automatically by pressing the [AUTO] button. AUTO setting content differs with each measurement item. For details, see "AUTO Setting" in Chapter 7 of the ZFX User's Manual.

### ► MENU mode - [System] - [Operation] - [AUTO Button (RUN mode)]

Setup Item	Description
ON	In the RUN mode, when the [AUTO] button is pressed, automatic setting of all measurement items is executed.
OFF	In the RUN mode, the [AUTO] button does not function.

## Save With AUTO Button

This function enables "AUTO setting" to be automatically saved after AUTO execution in RUN mode.

### Important

All settings will be deleted if you turn the power OFF without saving the settings.

### ► MENU mode - [System] - [Operation] - [Save With AUTO Button]

Setup Item	Description
ON	Settings are saved immediately after AUTO Button in RUN mode is executed. Settings are not deleted even if the power is turned OFF. Note, however, that measurement is not possible while an AutoSave is being executed.
OFF	AutoSave is not performed after AUTO Button in RUN mode is executed.



# Parallel Commands

The following commands were added:

Command	Description	Command code			Parameter (binary code)				
		DI7	DI6	DI5	DI4	DI3	DI2	DI1	DI0
AUTO setting	Automatically batch-sets all measurement items.	1	1	1	*	*	*	*	*

**Note**

AUTO setting content differs with each measurement item. For details, see "AUTO Setting" in Chapter 7 of the ZFX User's Manual.

# Serial Commands

According to the addition of measurement items, MEASDATA command and MEASPARA command parameters were added.

## MEASDATA command

### Barcode, 2D Code

Data No.	Parameter	Output Range
0	Judgment result	0 : OK -1 : NG -2 : not measured
1	Index	0 to 31: Master data No. of verification results -2: Verification results OFF or read error -1: Verification results NG
2	Num. of characters	0 to 1024
3	Characters	Text string (0 to 1024 characters) Character codes that cannot be displayed (e.g. control codes) are displayed as spaces.

When text strings are output, the following control codes are converted before they are output.

When setting text strings, use the codes in the "After conversion" column.

Text code	Before conversion	After conversion
Comma	&h2C	&h8540
Tab	&h09	&h8541
Space	&h20	&h8542
CR	&h0D	&h8543
LF	&h0A	&h8544

## Multi Color

Data No.	Parameter	Output Range
0	Judgment result	0 : OK -1 : NG -2 : not measured
1	Individual area1	0 to 9999999.999
2	Individual area2	0 to 9999999.999
3	Individual area3	0 to 9999999.999
4	Individual area4	0 to 9999999.999
5	Individual reference area1	0 to 9999999.999
6	Individual reference area2	0 to 9999999.999
7	Individual reference area3	0 to 9999999.999
8	Individual reference area4	0 to 9999999.999
9	Individual difference area1	-9999999.999 to 9999999.999
10	Individual difference area2	-9999999.999 to 9999999.999
11	Individual difference area3	-9999999.999 to 9999999.999
12	Individual difference area4	-9999999.999 to 9999999.999

## MEASPARA command

### Barcode

Data No.	Parameter	Range
52	Verification func.	0: OFF, 1: ON
53	Verified master data	0: All master data, 1: Master0, 2: Master1, 3: Master2, ... 32: Master31
54	Partial verification	0: OFF, 1: ON
55	Last compared digit	1 to 1024
56	First compared digit	1 to 1024
57	Output characters	0: OFF, 1: ON
59	Error string	1 to 20 characters
60	Partial output	0: OFF, 1: ON
61	Last output digit	1 to 1024
62	First output digit	1 to 1024
63	Measurement control	0: OFF, 1: ON
64	Code type	0: JAN/EAN/UPC 1: Code39 2: Codabar 3: ITF 4: Code93 5: Code128/GS1-128 6: GS1 DataBar 7: Pharmacode
65	Timeout time (ms)	1 to 9999
66	Check digit	0: OFF, 1: ON
67	Composite component	0: OFF, 1: ON
68	Direction (Pharma)	0: Horizontal mode, 1: Vertical mode
69	Reverse decode (Pharma)	0: OFF, 1: ON
71	Num. of characters upper limit value	1 to 1024
72	Num. of characters lower limit value	1 to 1024
74	Characters threshold	1 to 32 characters
155+N	Master data for master data N	1 to 10 characters (excluding NULL)
187+N	Verified master data for master data N	1 to 32 characters
219+N	First meas. Item No. for master data N	1 to 127 (ZFX-C1_-CD: 1 to 31)
251+N	Last meas. Item No. for master data N	1 to 127 (ZFX-C1_-CD: 1 to 31)

## 2D Codes

Data No.	Parameter	Range
52	Verification func.	0: OFF, 1: ON
53	Verified master data	0: All master data, 1: Master0, 2: Master1, 3: Master2, ... 32: Master31
54	Partial verification	0: OFF, 1: ON
55	Last compared digit	1 to 1024
56	First compared digit	1 to 1024
57	Output characters	0: OFF, 1: ON
59	Error string	1 to 20 characters
60	Partial output	0: OFF, 1: ON
61	Last output digit	1 to 1024
62	First output digit	1 to 1024
63	Measurement control	0: OFF, 1: ON
64	Code type	0: Data Matrix (EC200) 1: QR Code 2: MicroQR Code 3: PDF417 4: MicroPDF417 5: Maxi Code 6: AZtec Code 7: Codablock
65	Timeout time (ms)	1 to 9999
66	Mirror	0: Normal, 1: Reverse
67	Code color	0: Black, 1: White, 2: Black & White
68	Shape (Data Matrix)	0: Square, 1: Square & Rectangle
71	Num. of characters upper limit value	1 to 1024
72	Num. of characters lower limit value	1 to 1024
74	Characters threshold	1 to 32 characters
155+N	Master data for master data N	1 to 10 characters (excluding NULL)
187+N	Verified master data for master data N	1 to 32 characters
219+N	First meas. Item No. for master data N	1 to 127 (ZFX-C1_-CD: 1 to 31)
251+N	Last meas. Item No. for master data N	1 to 127 (ZFX-C1_-CD: 1 to 31)

## Multi Color

Data No.	Parameter	Range
53	Fill profile	0: OFF, 1: ON
54	Calibration	0: OFF, 1: ON
55	Coordinates mode	0: Normal, 1: Pos. correction
56	Auto THset +/-	0.000 to 9999999.999
57	Area judgment (upper limit)	0.000 to 9999999.999
58	Area judgment (lower limit)	0.000 to 9999999.999
71	Individual area1 upper limit value	0.000 to 9999999.999
72	Individual area1 lower limit value	0.000 to 9999999.999
73	Individual area2 upper limit value	0.000 to 9999999.999
74	Individual area2 lower limit value	0.000 to 9999999.999
75	Individual area3 upper limit value	0.000 to 9999999.999
76	Individual area3 lower limit value	0.000 to 9999999.999
77	Individual area4 upper limit value	0.000 to 9999999.999
78	Individual area4 lower limit value	0.000 to 9999999.999

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