



V6180
Fixed Barcode Scanners
User Manual

Introduction

Thank You for Your Purchase

This manual explains the specifications, setup, Installation, features, operation, and system configuration, of the V6180 series barcode scanner.

In order to use the product properly, read this manual carefully.

If you encounter any issue, please describe the detailed step to reproduce it for our investigation.

The contents of this manual may change without notice. Check our website for the most current version.

Safety notices



DO NOT disassemble. Disassembly will void the warranty and could cause damage or personal injury.



This product is intended for use in general electronics equipment (electronic computer, OA equipment, communications equipment, test and measurement equipment, machine tools, industrial robots, AV equipment, home appliances etc.).

Appropriate measures should be taken at use of unit/system related to safety and operation of transportation equipment (aircraft, train, automobile), traffic signal, gas leak detector, and safety devices



Brady products are not designed or intended for the use as a component in life support appliances or as surgical implants nor in any other application where failure of the product could cause personal injury or death. The use of Brady products shall indemnify and hold harmless to Brady and its shareholders against any claims of injury or death associated with unintended authorized use.

Handle with care



- **DATA BACKUP**
This product has a memory backup function. This backup data restoration cannot be guaranteed if repair, reconstruction, or upgrades are performed on this product.
- DO NOT use this product at temperature or humidity ranges beyond that documented in the product specifications, or in direct sunlight.
- DO NOT expose this product to water, moisture, oil, etc.
- This product may be damaged in environments containing corrosive gas.
- DO NOT use any chemicals when cleaning.

If there are any dust particles on the image sensor, please clean the sensor as follows:

- Wipe lightly with cloth or swab (may be damp with alcohol).
- Wipe off any residual alcohol using a dry cloth.
- This is a high-precision optical device, avoid exposing this product to excessive force such as that sustained by a drop.



Do not install electrical wiring or plugin/unplug of cable when this product is powered on. These may result in an electrical damage to this product.

To minimize the risk of data loss, make sure to backup the hard drive before installing the software. Our company shall not be responsible for any troubles such as data loss or damages.

Locations for operation and storage

Avoid the following locations that could cause an accident or damage to the product.

- Exposed to ambient temperature outside the rating
- Exposed to relative humidity outside the rating
- Exposed to rapid temperature fluctuations (causing condensation)
- Exposed to direct sunlight or near heaters
- Exposed to direct vibration or shock
- In the presence of dust, salt, or iron particles
- In environments where static electricity can build into significant charges
- In the presence of flammable or explosive gases
- In the presence of corrosive gas

Long-term storage

Store away from direct sunlight and direct vibration or shock for long-term storage. Do not store this product at temperature or humidity ranges beyond that documented in the product specifications.

Precautions on Regulation and Standards

FCC Regulations

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area may cause harmful interference in which case the user will be required to correct the interference at his own expense.

In instances where interference is experienced, the following measures are recommended to assist in mitigation:

- Reorient or reposition the equipment relative to the interference.
- Increase the separation distance between the equipment and the interference.
- Connect equipment to a separate power circuit than the interference if applicable.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

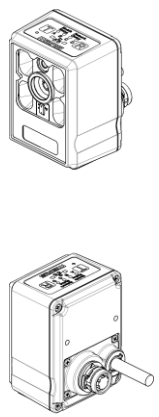
Innovation, Science and Economic Development (ISED)

Canada ICES-003: Information Technology Equipment (including Digital Apparatus)

Canada NMB-003: Équipement de technologie de l'information (incluant les appareils numériques)

CAN ICES-3 (A)/NMB-3(A)

●Power supply method and cable connection direction

	-ST (Straight)	-RA (Right Angle)
V6180P PoE or DC power ※Do not supply power simultaneously ※PoE Power Class 3 ※Type A (Alternative A) ※IEEE 802.3af noncompliant ※Need to PoE switching Hub ※Need to IF cable when using I/O or DC power supply (Option)		

Download information

The user manuals, software, and device drivers are available from:

<https://www.bradyid.com/V6180>

User Manual:	This document
V6180 Quick Start Guide:	Describes basic usage of this product
FixedConfig6180:	Communication & configuration software
Industrial Ethernet Connection Manual:	Describes how to use Industrial Ethernet

NOTE: The terms scanner and reader are used interchangeably in this document.

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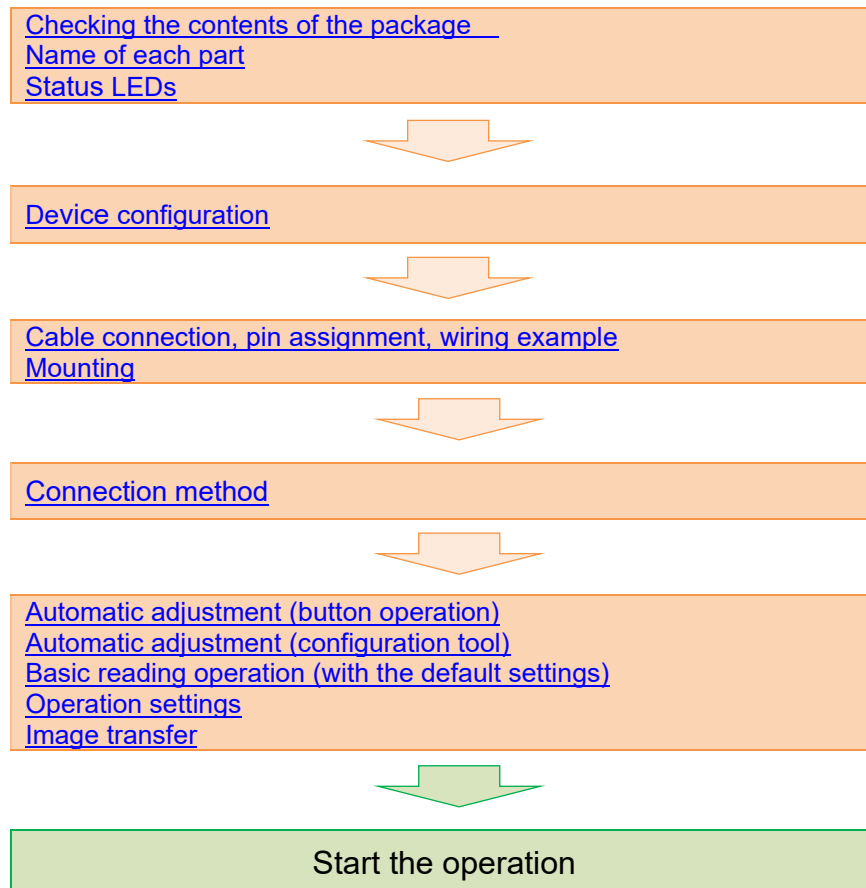
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2 Overview

- (1) V6180 series is a fixed mount (stationary type) barcode scanner capable of reading 1-dimensional (1D) / 2-dimensional (2D) barcodes. This unit incorporates the most innovative digital camera technologies, image processing, and software techniques. This manual may also refer to 1D / 2D barcodes as “symbols.”
- (2) V6180 series is a compact reader that can be mounted in a narrow space. IP67 enclosure allow use in harsh environments.
- (3) V6180 series following features help to read challenging direct marking by laser maker or dot peen.
 - Image Preprocessing:
From raw image, V6180 series can modify it by its image preprocess technique for better reading ratio or reading speed.
 - Table Mode:
Maximum 16 sets of configuration can be used seamlessly. This mode attempts to read by changing the set of configuration one by one until it gets a successful decoding or within the limit of time.
- (4) Cycle Buffer Function (MAXIMG) performs both the decoding and capturing images in parallel. This function eliminates the detailed timing tuning for moving symbols.

3 Flow to start using



3.1 **Checking the contents of the package**

When you open the package, please check the following items are there without scratches/damages.

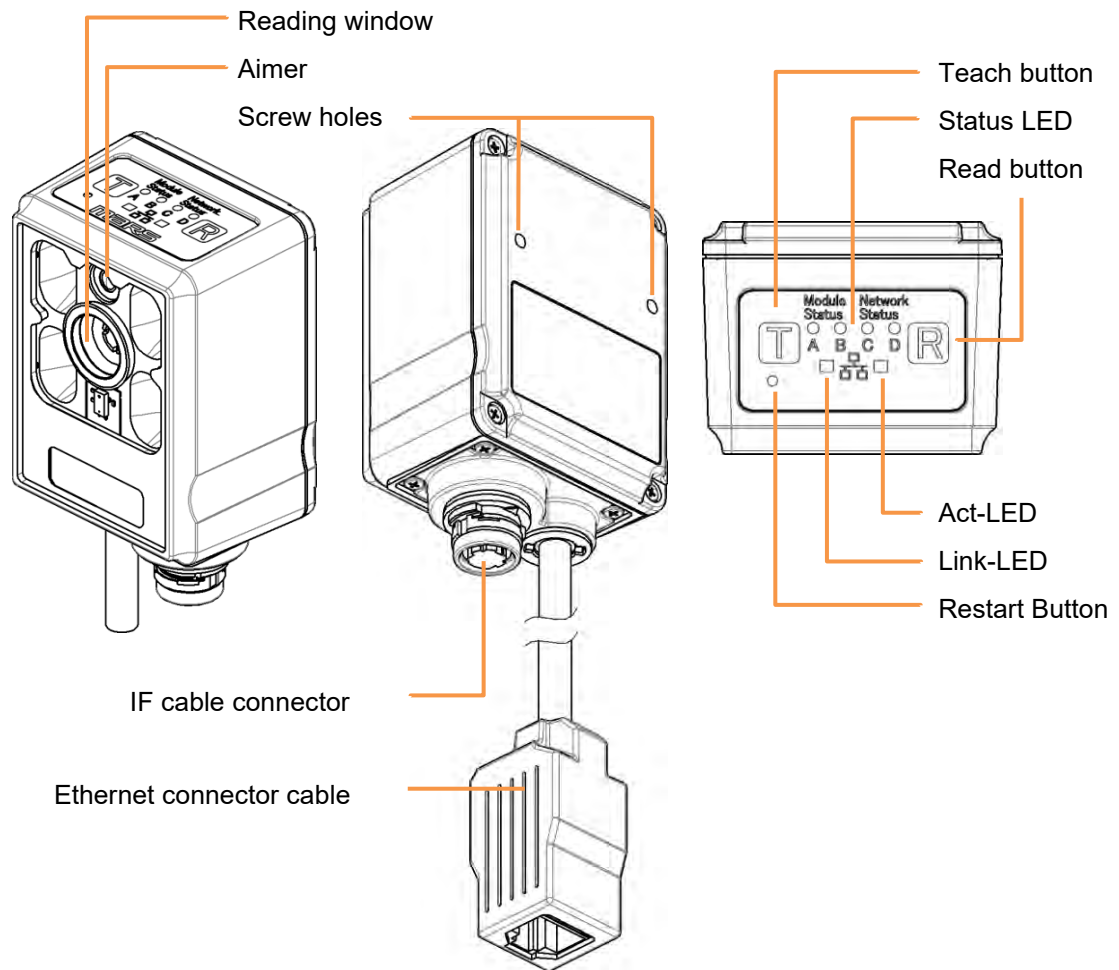
Should you find any shortage, please contact our sales office or contact person near you.

Packaged product name	Image	Quantity
V6180 series		1
V6180 Quick Start Guide		1
Calibration Barcode		1

Optional accessories

Product name	Model number
24V AC Adapter	AKA-24271A1
5V AC Adapter	6A-161WP05-073
PoE Switching Hub, 4 Ports	NETGEAR FS305P
Interface and Power Jack Cable	MFR-CA05-S99-AC

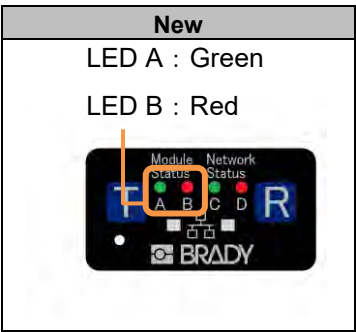
3.2 Name of each part



Name	Description
Reading Window	Symbol reading reference plane
Aimer	Round blue light that indicates the imaging location
Screw Holes	Holes for mounting the housing (M3, depth 4 mm, 2 places)
Teach Button	Button used for reading adjustment and IP address initialization
Read Button	Button used for reading trigger and operation of automatic adjustment function
Restart Button	Button used for restart the scanner
Status LED	Status display by 4 types of LEDs, A, B, C and D
Link / Act -LED	Ethernet connection / data transfer status display
Ethernet Connector Cable	Ethernet communication cable with RJ-45 jack tip
IF Cable Connector	V6180: Used for DC power supply and I / O lines V6180R: Used for DC power supply, RS-232C and I / O lines

3.3 **Status LEDs**

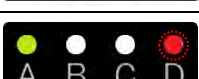
LED pattern shows status of the reader.



•Normal operation

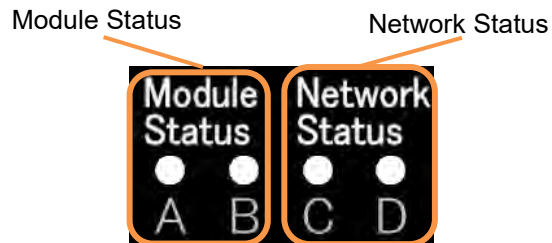
Panel	LED	Color	Name	Function description
	A	Green	Ready	The reader is ready to operate
	B	Red	SYNC	The reader received SYNC signal
	C	Green	GO	Blinks once when the symbol is successfully read
	D	Red	NG	Blinks once when symbol reading fails

●Special status display

Panel	LED	Color	Status	Function description
	B	Red	Blinking	Blinks 3 times when saving the configuration is completed
	B	Red	Blinking	Blinks in automatic detect mode
	B D	Red Red	ON Blinking	When the data arrival confirmation setting is enabled and the read data cannot be sent,
	B C D	Red Green Red	ON ON ON	The Teach button is pressed
	A B	Green Red	ON ON	During automatic adjustment of read parameters LEDs (A, B) and (CD) turn on and off alternately and repeatedly
	C D	Green Red	ON ON	
	D	Red	Blinking	Automatic adjustment failed to find good settings → Blinks 7 times
	B C	Red Green	ON ON	LED (B, C) turn ON when Automatic adjustment finds settings
	D	Red	Blinking	Only 1 settings are found by Automatic adjustment. → Blinks 3 times when saved in
	C	Green	Blinking	Found up to 3 types of settings. Blinks 3 times when saved in tables 1 to 3

- Industrial Ethernet (EtherNet/IP) when enabled

When the industrial Ethernet (EtherNet/IP) is enabled, the LED is in the following state.



Module Status : Indicates barcode scanner status when Industrial Ethernet is enabled.

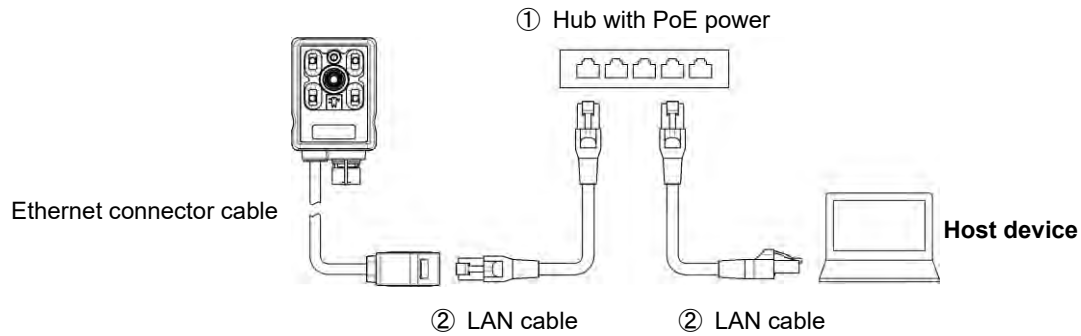
Network Status : Indicates connection status when Industrial Ethernet is enabled.

Panel	LED	Color	Status	Function description
 A B C D	A B C D	Green Red Green Red	ON	When the Industrial Ethernet is enabled, the LEDs are lit or unlit in the order from A to D
 A B C D				
 A B C D				
 A B C D				
 A B C D	A	Green	ON	When ready to connect to PLC
 A B C D	C	Green	Blinking	Not connected to PLC
 A B C D	C	Green	ON	Connected to PLC
 A B C D	D	Red	Blinking	Disconnected from PLC

3.4 Example of Device configuration

An example of the connection configuration of this product is as follows.

Power over Ethernet

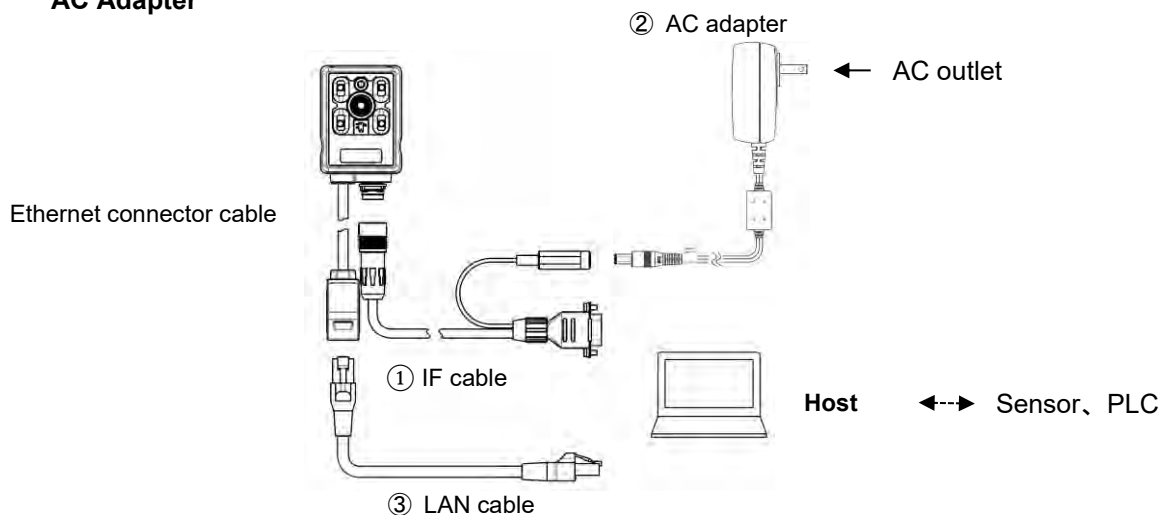


#	Product name	Model
1	PoE Switching Hub, 4 Ports	Only alternative A is supported
2	LAN cable (STP: Shielded type)	Please use a category 5 or higher cable



When connecting devices with PoE power supply, please avoid hot swap which could cause failure to the reader.

AC Adapter



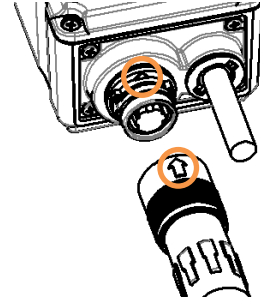
#	Product name	Model
1	Interface & Power Jack Cable	MFR-CA05-S99-AC
2	24V AC Adapter	AKA-24271A1
3	LAN cable (STP: Shielded type)	Please use a category 5 or higher cable

3.5 **Cable connection, pin assignment, wiring example**

The cable connection of this product, the cable pin assignment and wiring example are as follows.

- Cable connection

- 1). When installing the IF cable please align [↑] mark of IF cable and [△] mark of the connector.
- 2). When removing the IF cable, hold around [↑] mark and pull the cable straight out.



● Pin assignment

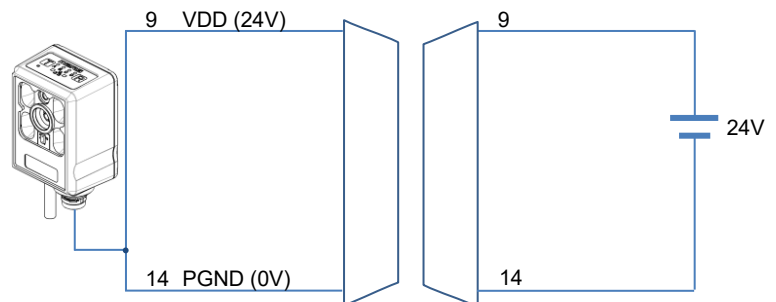
V6180

- Connector type : D-Sub15 pins (High density type), Male
- Screw type : Inch screw (#4-40UNC)

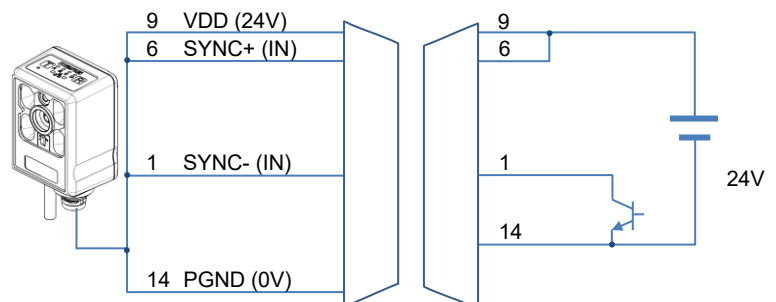
#	Color	Name	Function
1	Pink (Black dots)	SYNC-	SYNC signal to read
2			
3			
4	White (Red dots)	OUT2+	Output (Default: NG)
5	Orange (Red dots)	OUT1+	Output (Default: GO)
6	Pink (Red dots)	SYNC+	SYNC signal to read
7			
8			
9	Gray (Red dots)	VDD	Power supply DC24V
10	White (Black dots) Orange (Black dots)	COM-	Output common
11			
12			
13			
14	Gray (Black dots)	PGND	Power supply GND
15			
Case			Earth

● Wiring example

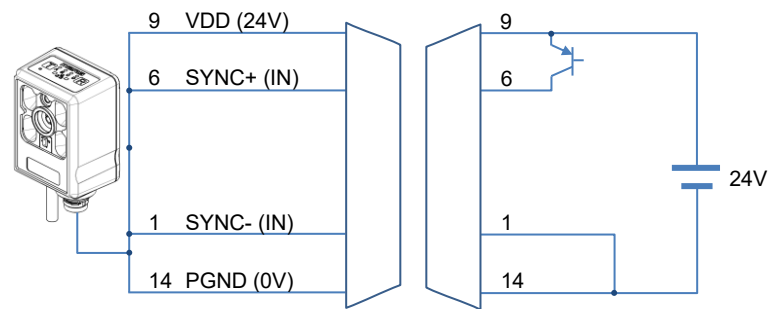
- 1). Powered by DC,
Not use I/O



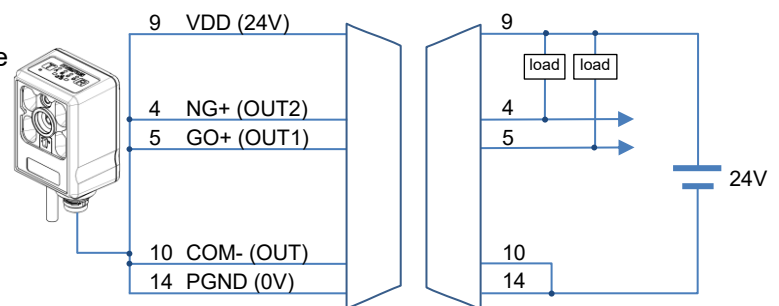
- 2). Powered by DC, NPN
wiring for SYNC input



3). Powered by DC, PNP wiring for SYNC input



4). Powered by DC, and use I/O signals



! Notice

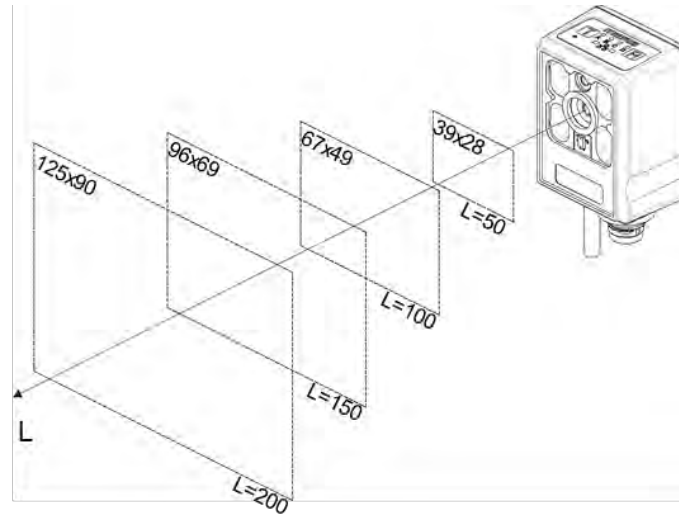
Please make sure that there is no voltage difference between PGND and SGND. Otherwise, it may cause a malfunction

3.6 Mounting the reader

In this section you will find the field of view and depth of field of this reader.

- Field of view

- V6180



Unit: mm

Distance L	50	100	150	200
Horizontal	39	67	96	125
Vertical	28	49	69	90

- Reading range

Unit : mm

Narrow bar width or cell size	Near	Far
Barcode 0.125	60	120
Barcode 0.15	55	130
Barcode 0.19	40	140
Barcode 0.25	30	145
Barcode 0.33	25	175
2D barcode 0.125	65	75
2D barcode 0.167	65	115
2D barcode 0.19	65	125
2D barcode 0.25	60	135
2D barcode 0.33	45	135

Cell size 0.25 mm or bigger is recommended at the use of Symbol Printing Check.

This is a performance when measured with our company's standard barcode.

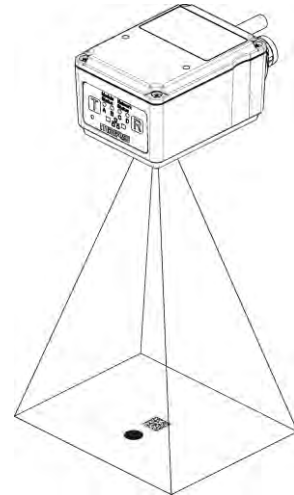
- Mounting position

Use the aimer as a guide to align the barcode position.

The aimer is around 10mm above the center of the field of view.

And then fit the symbol within the height.

Please use FixedConfig6180 configuration software which can take images from the reader, and then you can confirm the position visually.



- Calibration mode

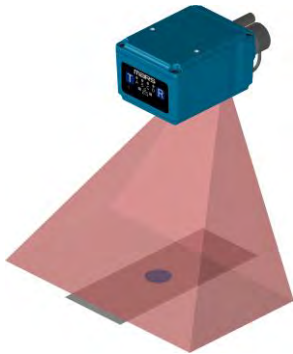
It is a function to indicate whether the distance between this product and the reading target is within the reading range by using the aimer and red illumination. The duration of this mode is 120 seconds.

Please use the enclosed “Calibration seal” to calculate the distance between the reader and the object accurately no matter what material the object is.

Installation mode is started by button operation or configuration tool.

*The installation mode cannot be started by button operation while the reader is connected by the configuration tool.

Please refer below table for the status indicated by the aimer and illumination.

Out of range	Within the range	
Red lighting	Flashing aimer	Aimer ON
		
Too close or too far	Within the range of reading spec	The best distance V6180: 90-110mm V6180P: 200-220mm

The reading range is indicated by the pattern of the status LEDs.

As for the number of repeated blinks, 2 times represent a 2D barcode and 1 time represents a barcode. For details on the reading range, see "[Reading range](#)".

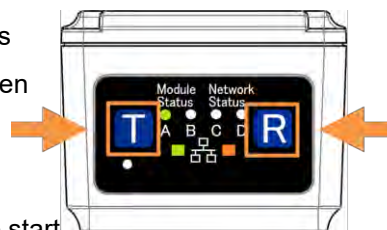
		Blinking point (status LED)		
		BCD	BC	B
				
Number of blinks	2	0.33	0.25	0.167
	1	0.33	0.25	0.15

• Button operation

By holding down both the Read and Teach buttons the calibration mode starts and the LEDs flash when it starts.

* While operating with the configuration tool,

Installation mode by button operation cannot be started.



By button operation, at the start of calibration mode,

It works with a reading range setting of 2D barcode whose cell size is 0.33mm.

Each time you press the Teach button, the pattern display of the reading range switches.

The switching order is as follows.

2D barcode: 0.33mm → 0.25mm → 0.167mm →

Barcode: 0.33mm → 0.25mm → 0.15mm → 2D barcode: 0.33mm

* The reading range setting in the calibration mode is not saved.

At the time of start of calibration mode, the reading range is always for 2D barcode whose cell size is 0.33mm.

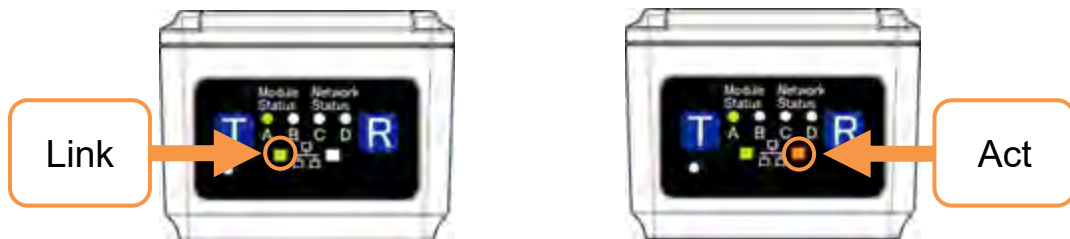
Press and release the Read button or 120 seconds after the start to exit the calibration mode.

3.7 Connection method

3.7.1 Ethernet connection

- LED indication

When the Ethernet connection with the host device is established, the Link-LED turns on (green). The Act-LED turns on (orange) when data communication is performed.



- Ethernet communication preparation

Start the terminal software (communication software) that communicates via Ethernet. This section describes the communication settings using FixedConfig6180.

*FixedConfig6180 can be downloaded from our website.



To perform Ethernet communication with the factory default, you need to change the network settings of host device.

V6180P Communication setting (factory default)

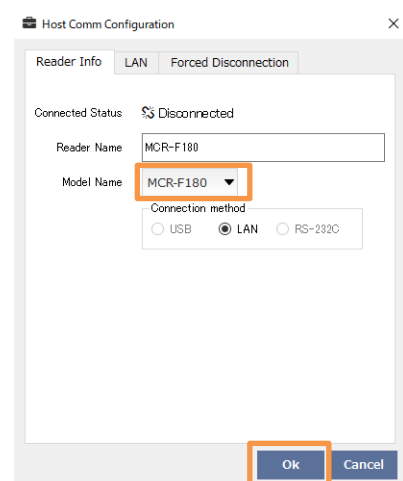
Item	Value (at the time of shipment)
IP address	192.168.209.10
subnet mask	/24 → (same as 255.255.255.0)
Port number (for sending read results)	27110
Port number (for image data transmission)	27110
default gateway	192.168.209.254

- Ethernet communication

When FixedConfig6180 is started for the first time, the "Host Communication Settings" screen is displayed.

From the "Model name" column in "Reader information", select "V6180" and click "OK" button.

If the communication connection is successful, "Connected" message is displayed.



3.7.2 RS-232C connection

*RS-232C connection can be used only RS-232C model.

- Ethernet communication preparation

Start the terminal software (communication software) that communicates via Ethernet.

This section describes the communication settings using FixedConfig6180.

*FixedConfig6180 can be downloaded from our website.

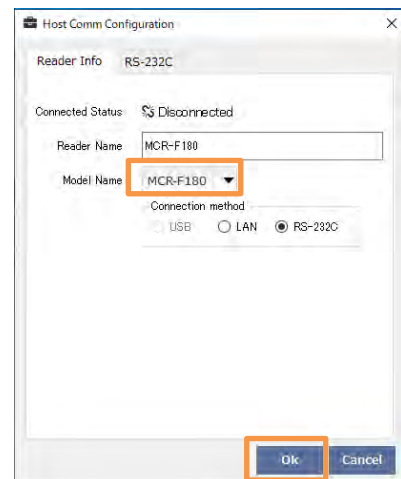
Item	Value (default)
Baud rate	9600bps
Data length	8bit
Parity	None
Stop bit	1bit
Flow control	None

- Ethernet communication

When FixedConfig6180 is started for the first time, the “Host Communication Settings” screen is displayed.

From the “Model name” column in “Reader Information”, select “V6180” RS-232C” and click “OK” button.

If the communication connection is successful, "Connected" message is displayed.



3.8 Automatic adjustment of read parameters (button operation)

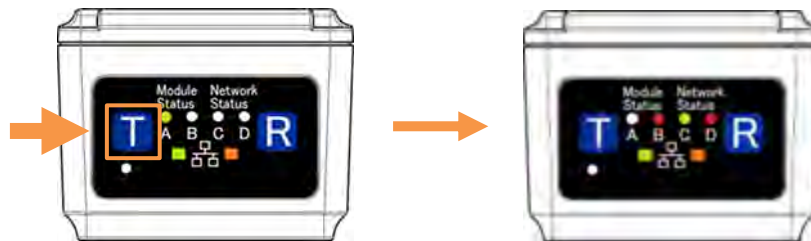
*If you are using the configuration tool, please refer to 2.9 " Automatic adjustment of read parameters (configuration tool)".

Use the Read button and Teach button to start the adjustment and save the settings.

- Start adjustment

In the standby state, press and hold the Teach button to start the adjustment.

The status LED (A) turns off and (B, C, D) turns on until the adjustment starts.

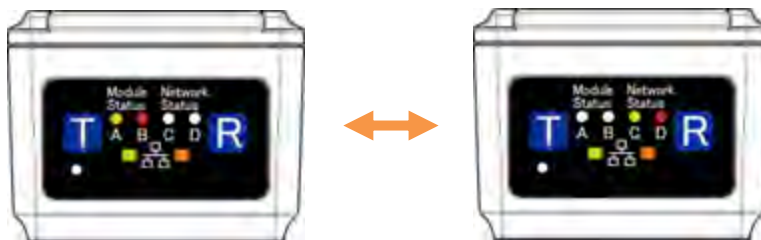


- Automatic Adjustment

The illumination turns on when the adjustment is started.

Release the Teach button when the illumination turns on.

During the adjustment, the status LEDs (A, B) and (CD) turn on and off alternately.



- Adjustment result

If a good setting is found, the status LEDs (B, C) will turn on.

*If there is no operation for 40 seconds, it will return to the standby state without saving the result.

If no good setting is found, the status LED (A) turns on and the status LED (D) flashes seven times. After that, it returns to the standby state.



- Save the found settings

When the status LED (B, C) turn on, press the Read button to save the settings in the configuration table.

For more information about the configuration table, please refer to “Table mode”.

*If there is no operation for 40 seconds, it will return to the standby state without saving the result.

The settings to be saved will change by the difference of duration to press & hold the Read button.

More than 3 seconds. → Table 1 stores the best settings found in the automatic adjustment.

When the save is completed, the status LED (A) turns on and the status LED (D) blinks three times.



1 to 3 seconds, it saves up to 3 types of settings in tables 1 to 3 in order of readability.

When the save is completed, the status LED (A) turns on and the status LED (C) blinks three times.

*Even if it is less than 3 seconds, there may be two or less setting values to be saved.

*To use multiple configuration tables in a single trigger, you need to set the operation mode to do so.

For more information for changing the operating mode, please refer to “Operation Mode”

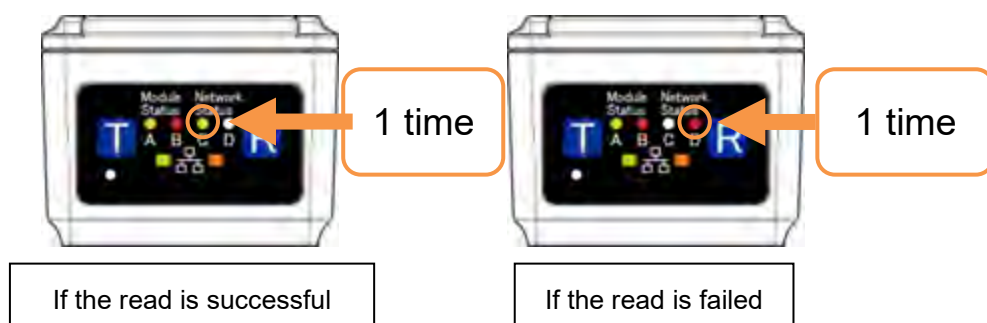


- Check the reading

When the Read button is pressed in the standby state, the status LED (B) turns on and the read operation is performed.

If the reading is successful, the status LED (C) blinks once, and then the LED (B) turns off.

If reading fails, the status LED (D) blinks once, and then the LED (B) turns off.



3.9 Automatic adjustment of read parameters (configuration tool)

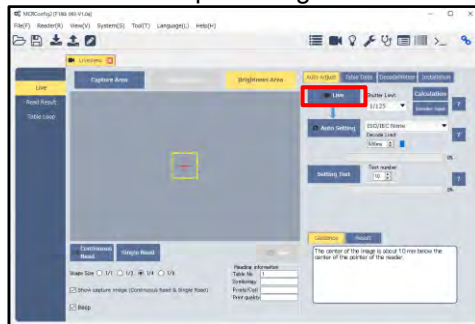
*When using button operation to start Automatic adjustment, please refer to 2.8. "Automatic adjustment of read parameters (button operation)"

***Auto Tuning with the tool can be used only with Ethernet communication.**
It cannot be used for RS-232C communication.

Use the setting tool FixedConfig6180 to start adjustment and save the settings.

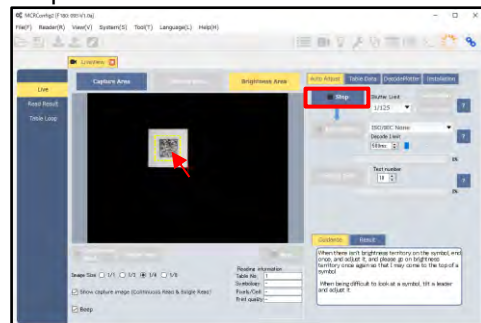
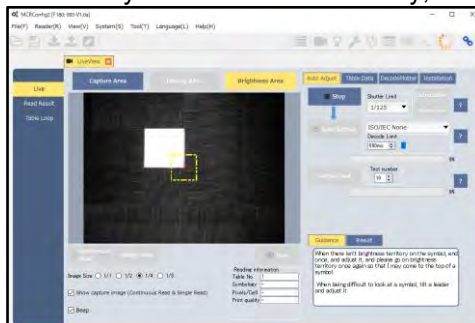
- Live (adjustment of brightness first)

Click "Live" to acquire images continuously.



Move the yellow frame in the image area onto the symbol you want to read.

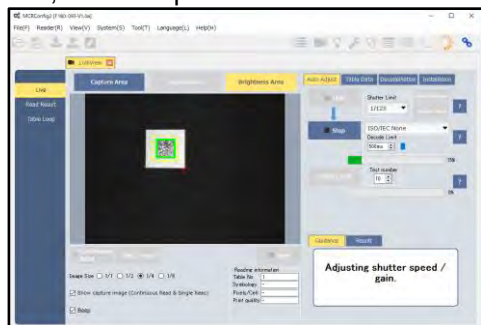
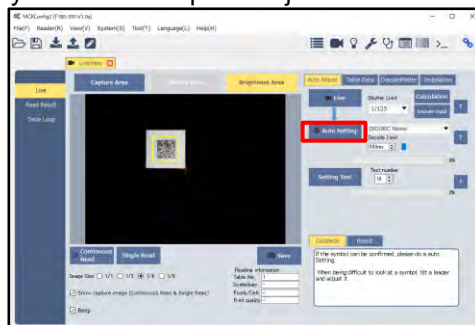
When the symbol can be seen easily, click "Stop".



- Adjustment of settings

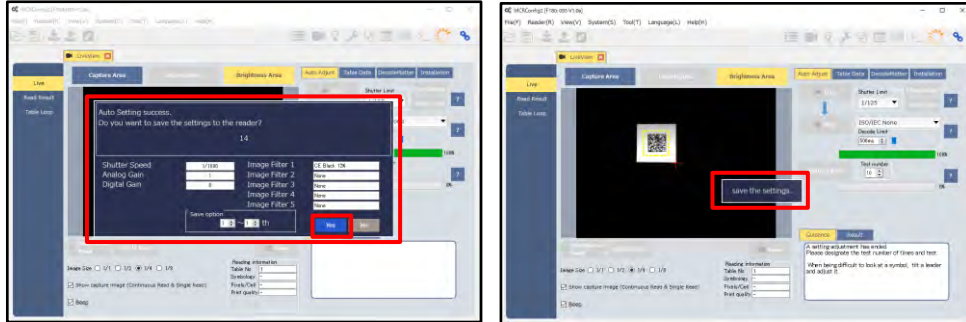
Click "Adjust settings" to start reading and adjusting settings automatically.

If you want to stop the adjustment in the middle, click "Stop".



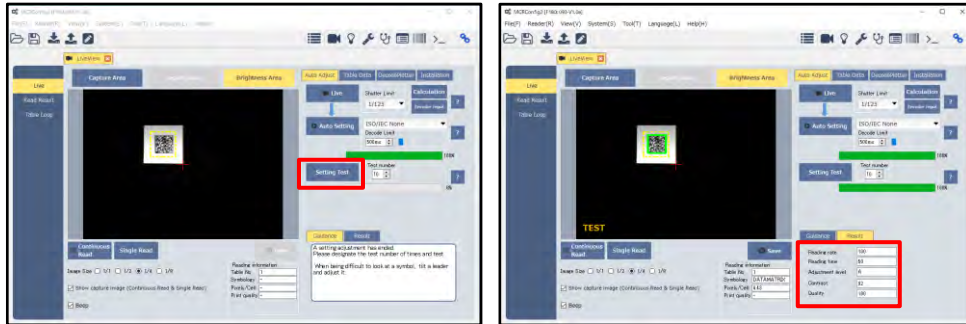
If it finds any good settings, the pop-up screen comes up and ask if you want to save the settings to the reader. Click "Yes" to save. Click "No" if you do not want to save.

When the settings are saved, "The settings have been sent to the reader." is displayed.



- Check the performance of the settings

Click "Setting Test" to check the reading performance with the found settings.



3.10 Basic reading operation flow (default setting)

1). Sync input (the following three ways are available)

- Serial command
- Read button of the operation panel
- Digital input (SYNC input) *Need the optional IF cable

When the sync input is turned ON, the reading operation is performed.

2). Result of reading operation

i. When the symbol is read

- Send the read data.
- Digital signal (GO) turns on, Status LED-C (GO) turns on in green.

ii. If the symbol cannot be read

- Send the error code.
- Digital signal (NG) turns on, Status LED -D (NG) turns on in red.

3.11 Operation setting

Send serial commands from the communication port to make various settings.

For some settings, you can also use the configuration 2D barcode.

For RS-232C model, select the communication port (RS-232C, LAN).

The communication port selection for the following purposes can be set by the "COMFROM" command.

- Receiving serial commands such as reading trigger (SYNC input)
- Transmitting decoded result

† RS-232C interface is selected as default.

Command	Description
COMFROM=0	RS-232C (*)
COMFROM=1	LAN
COMFROM=2	Both RS-232C and LAN

*: Default setting

3.12 Image data transfer

By using the FixedConfig6180, the image data taken by this reader can be transferred from the reader to the host PC through the communication port. It can be taken out during standby state or after every reading.

Estimated transmission time of image data

Condition: Bitmap format (file name * .bmp, 1280 x 960 pixels)

Ethernet communication about 1 second

Configuration command	Image to be transferred
MODE=0	Do not send image data (*)
MODE=1	For debug purpose: Please do not use.
MODE=2	
MODE=3	Transfer the all images (continuous transfer)
MODE=4	Transfer the NG images only (continuous transfer)
MODE=5	Transfer the OK images only (continuous transfer)

*:default setting

4 Operation Mode

V6180 series has four operation modes as follows.

Operation mode	Command	Description
Single Reading Mode	SYNCMODE=0	Single reading for each SYNC input.
Timeout Mode	SYNCMODE=1	After SYNC input, the reader continues reading during the duration time set by the "TOTALLIM" command. The reader sends the error code when it fails in reading within the duration time.
External Trigger Mode	SYNCMODE=2	The barcode scanner continues reading during the SYNC input is ON. The "g" command (start reading command) is not accepted.
Auto-sense Mode	SYNCMODE=3	The reader automatically detects the label, turns on the synchronization input, and performs symbol reading automatically.

The reading operation means that processing from image capture to symbol decoding.

The following diagnostic mode can be used while the reader is in Single Reading Mode.

Diagnostic mode	Command	Description
Normal Mode	TEST=0	For normal use or for returning to Normal Mode.
Test Mode	TEST=1	For measurement of symbol reading rate.
Continuous Reading Mode	continue	Used to adjust the reading position. Exit this mode with the "stop" command.

The diagnostic mode is used for configuring the barcode reader. Do not use this mode in normal operation.

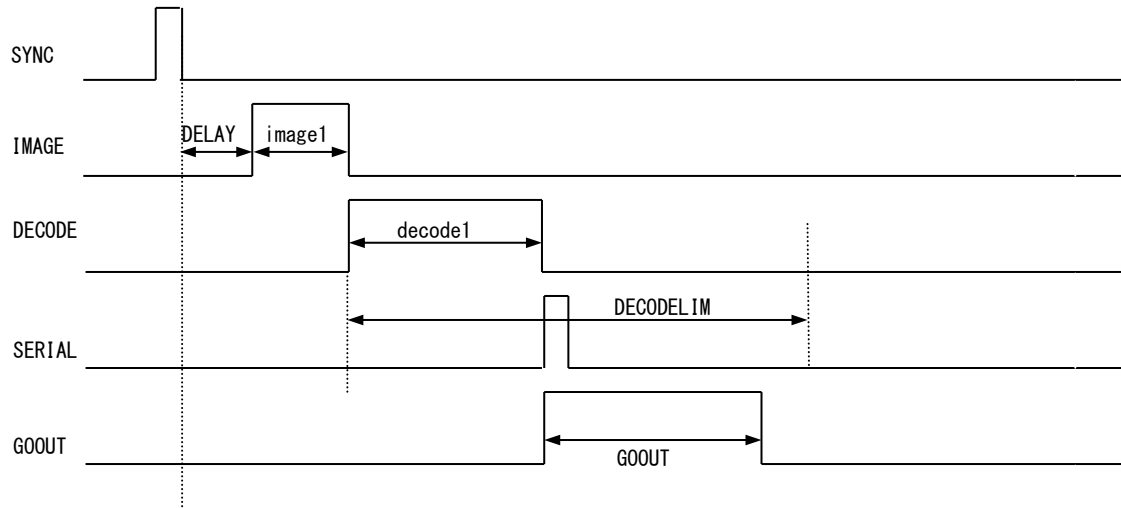
Glossary of terms

DELAY :	The time from SYNC ON to reading.
CHATT :	The time needed for eliminating the chattering.
IMAGE :	The duration for capturing an image.
DECODE :	The duration for decoding.
DECODELIM :	The maximum duration to attempt the decoding.
GOOUT :	The duration of GO signal.
NGOUT :	The duration of NG signal.
SERIAL :	The duration of data output through the serial interface.
MAXIMG :	The maximum number of images in the buffer.
WAITIMG :	The interval of image capture.
Soft trigger :	The SYNC by the serial command input.
Hard trigger :	The SYNC by digital input or the Read button.

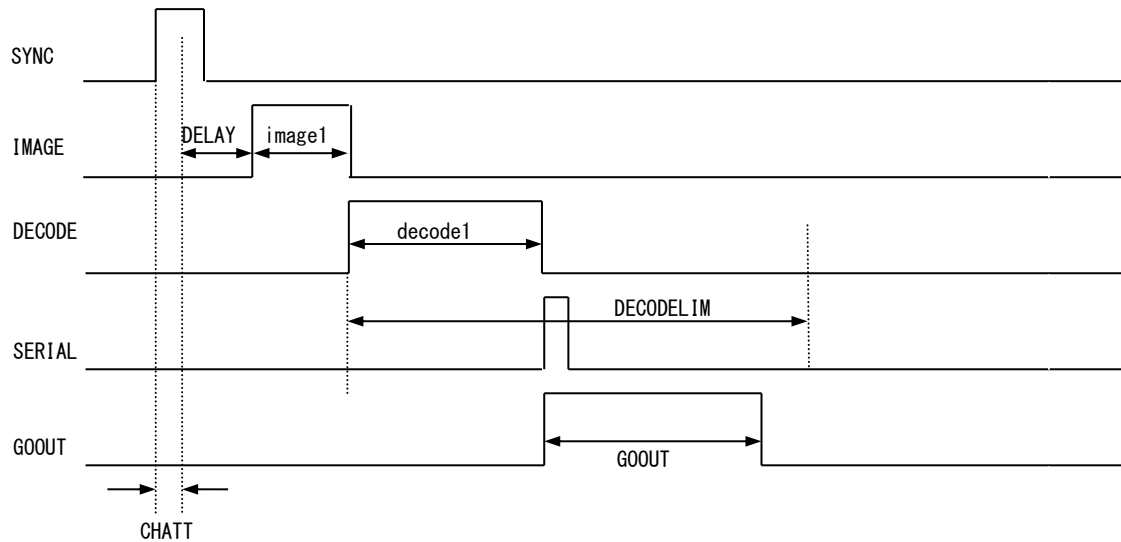
4.1 Single Reading Mode

The barcode reader performs a single read for each SYNC input.

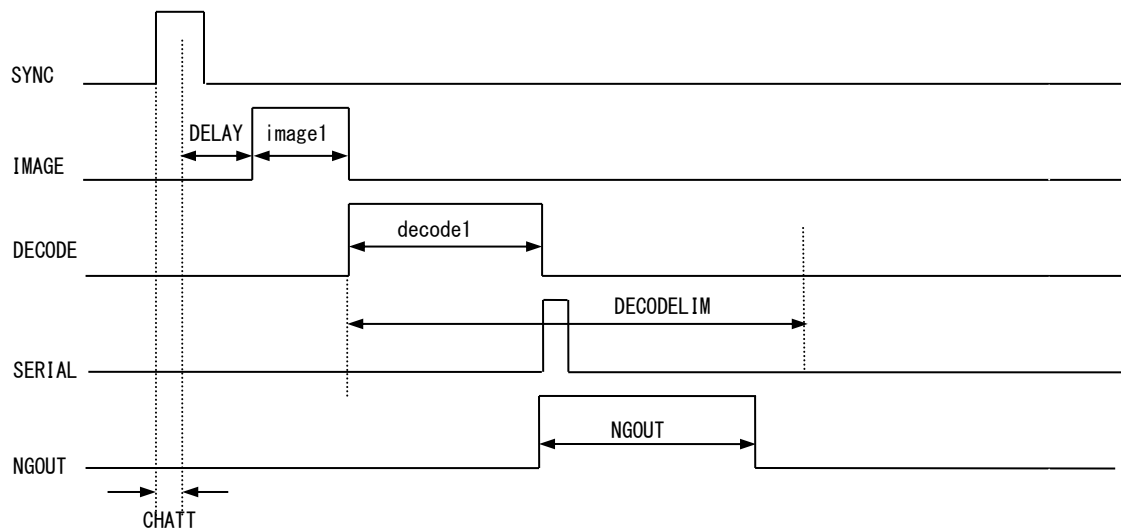
4.1.1 **Soft trigger, Read OK, Data transmission: After decoding**



4.1.2 **Hard trigger, Read OK, Data transmission: After decoding**



4.1.3 Hard trigger, Read NG, Data transmission: After decoding



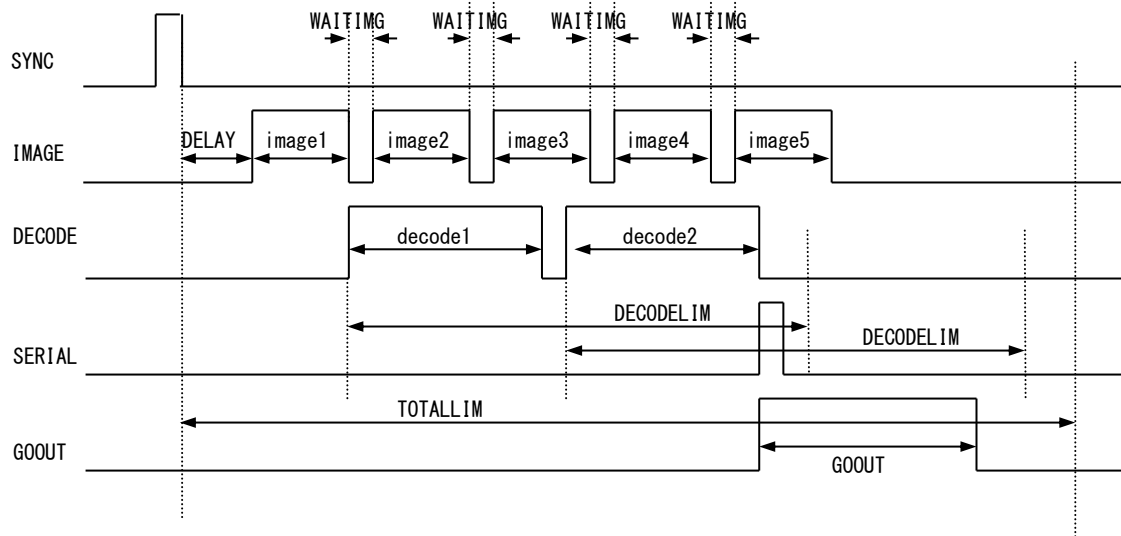
4.2 Timeout Mode

The barcode reader reads the symbol repeatedly during the duration time, set by "TOTALLIM" after the SYNC input, or continues reading until the decoding is successful. If the barcode reader cannot decode successfully in the duration time, it stops reading and sends an error code to the host.

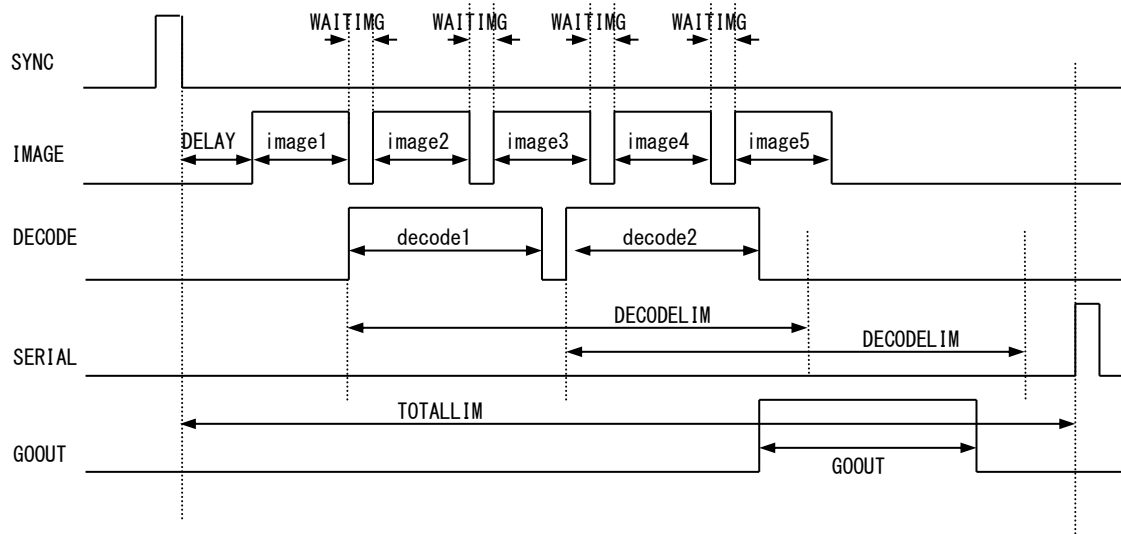
Typically, MAXIMG is set to a number greater than one. The multiple MAXIMG enables the Cycle Buffer Function and the parallel processing of the image capturing and decoding. This can reduce the processing time.

The below timing charts explain the behavior of Cycle Buffer Function.

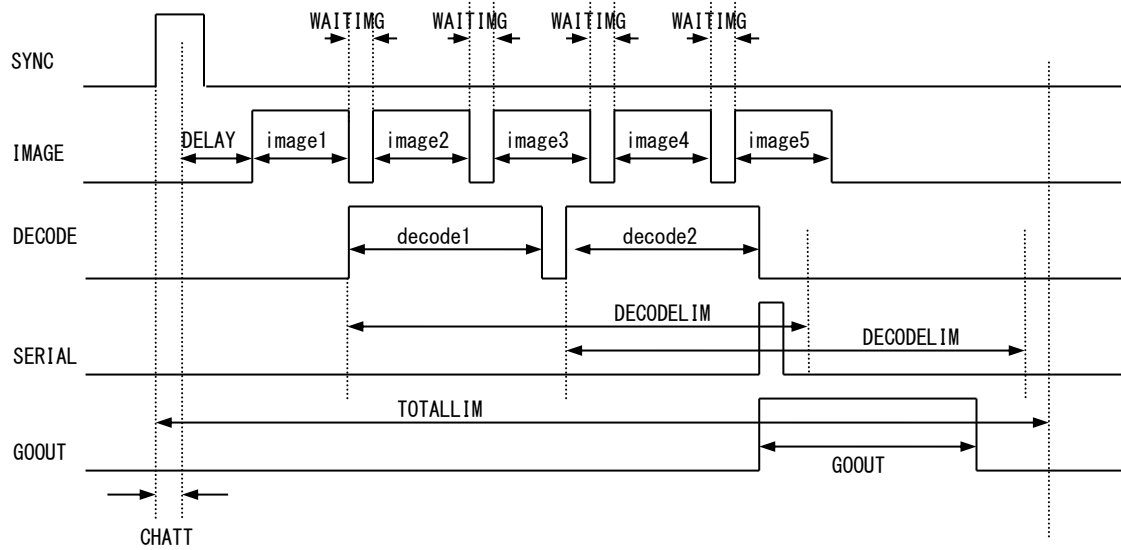
4.2.1 Soft trigger, Read OK, Data transmission: After decoding



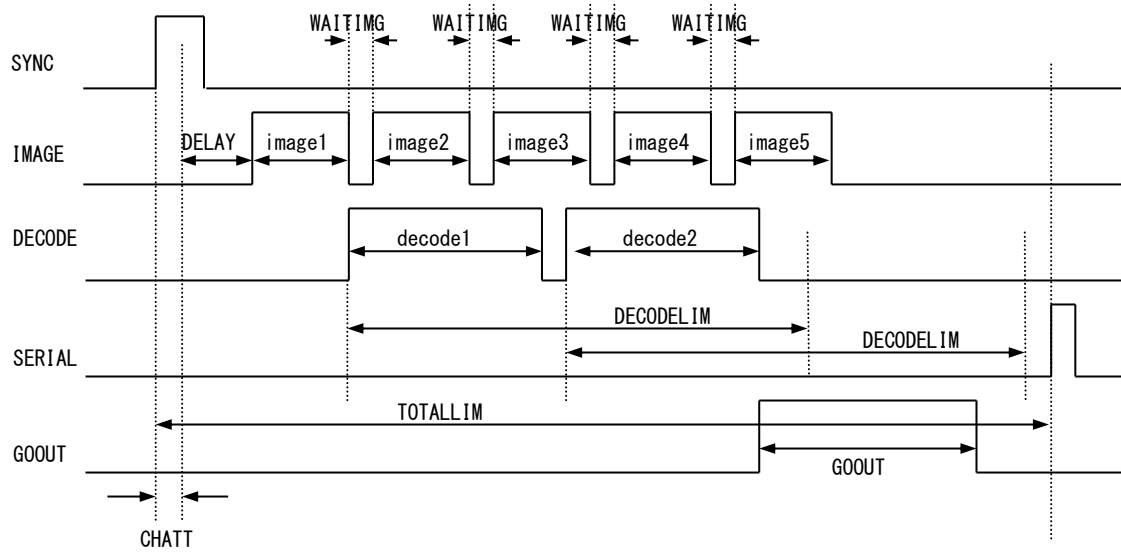
4.2.2 Soft trigger, Read OK, Data transmission: After SYNC OFF



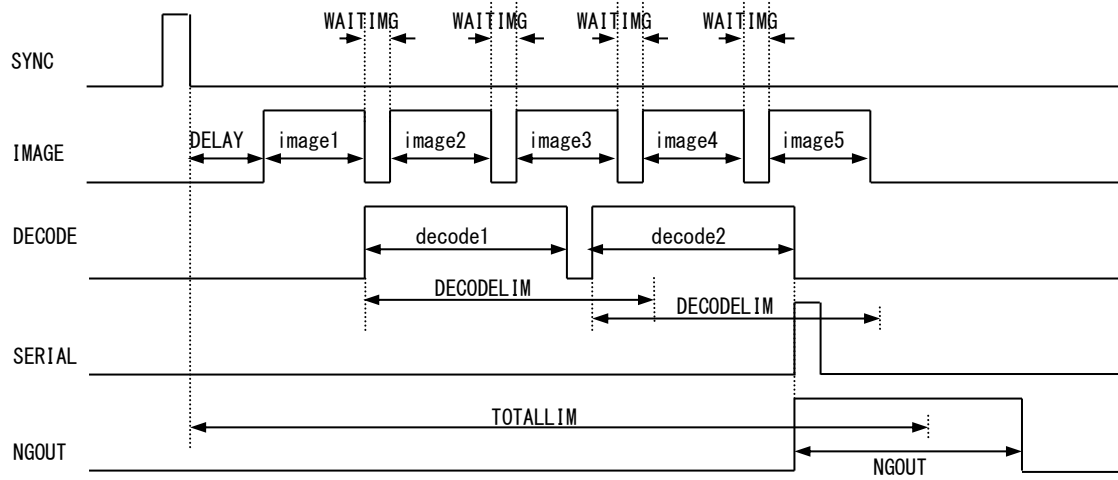
4.2.3 Hard trigger, Read OK, Data transmission: After decoding



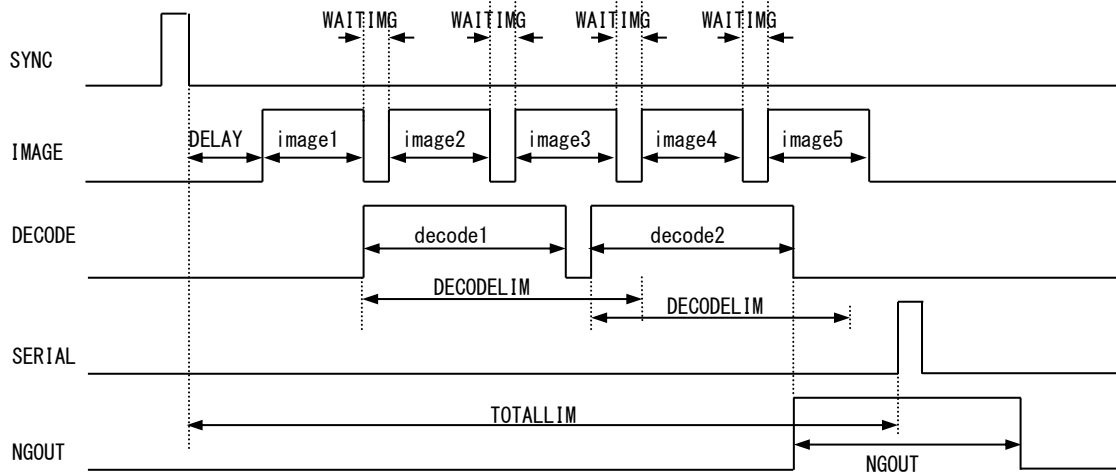
4.2.4 Hard trigger, Read OK, Data transmission: After SYNC OFF



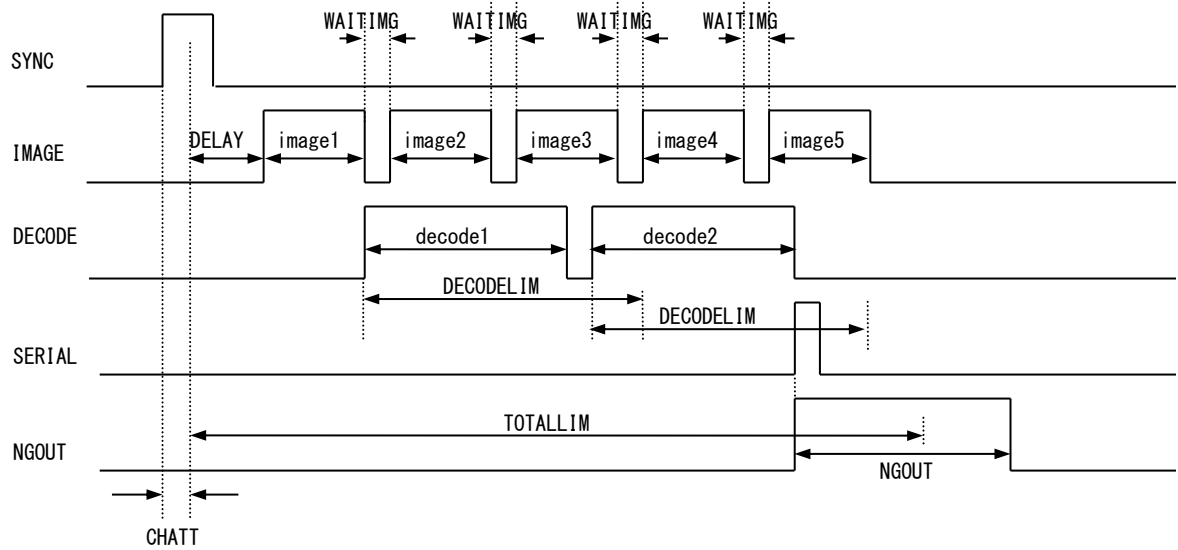
4.2.5 Soft trigger, Read NG, Data transmission: After decoding



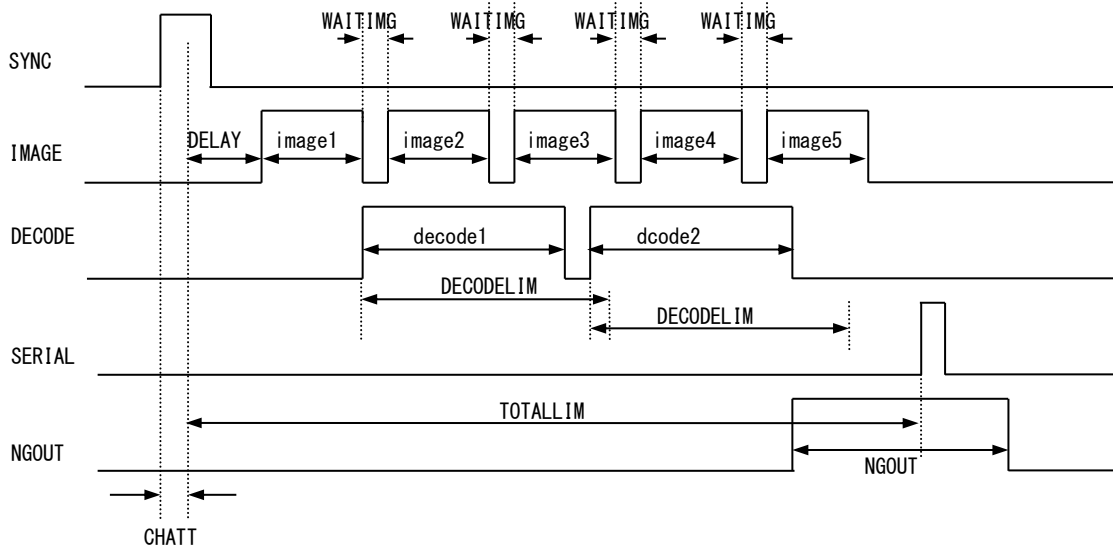
4.2.6 Soft trigger, Read NG, Data transmission: After SYNC OFF



4.2.7 Hard trigger, Read NG, Data transmission: After decoding



4.2.8 Hard trigger, Read NG, Data transmission: SYNC OFF

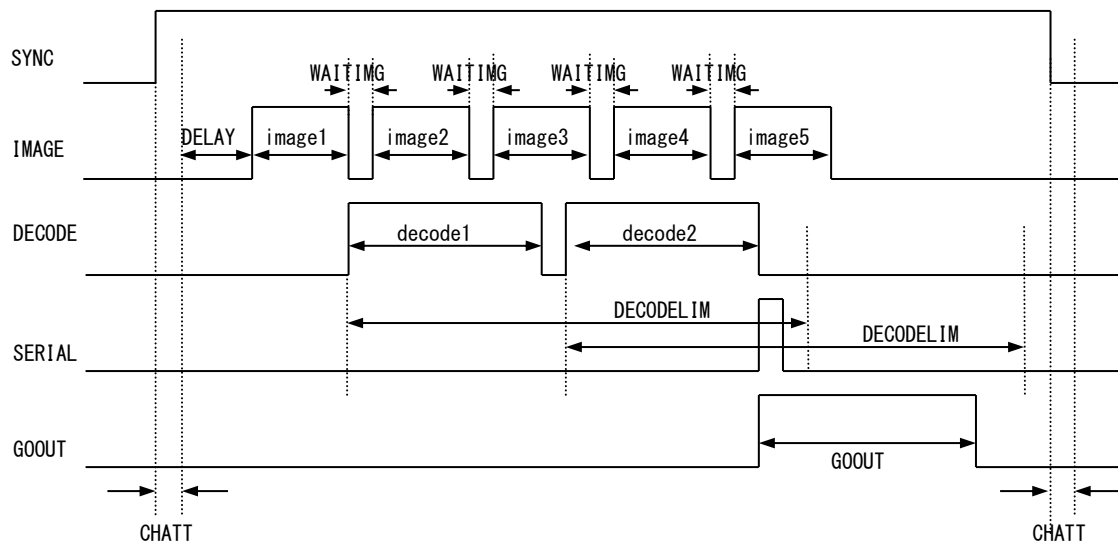


4.3 External Trigger Mode

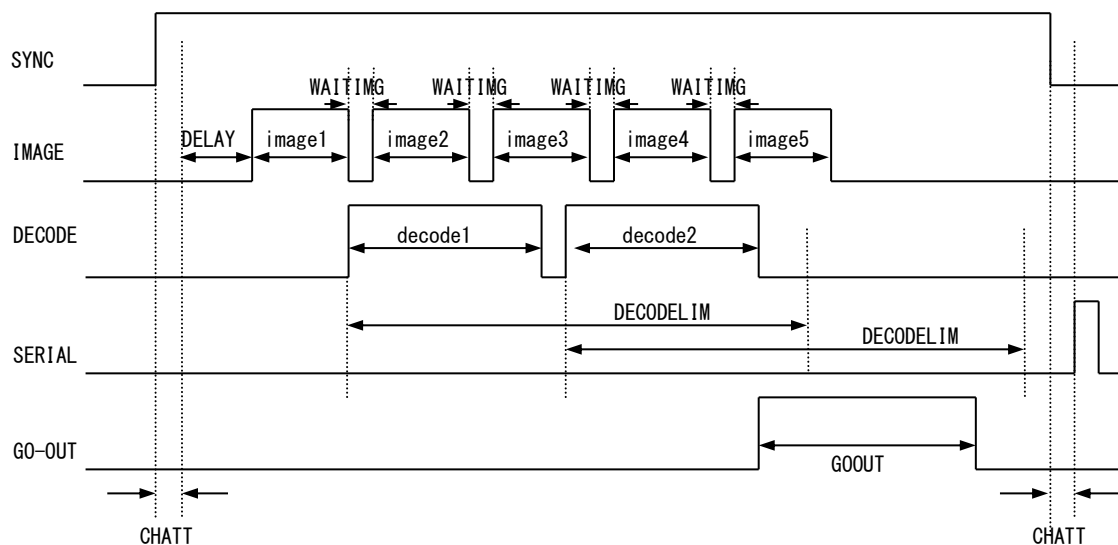
The barcode reader reads the symbol repeatedly during the SYNC input is active. Typically, MAXIMG is set to a number greater than one. The multiple MAXIMG enables the Cycle Buffer Function and the parallel processing of the image capturing and decoding. This can reduce the processing time.

The below timing charts explain the behavior of Cycle Buffer Function.

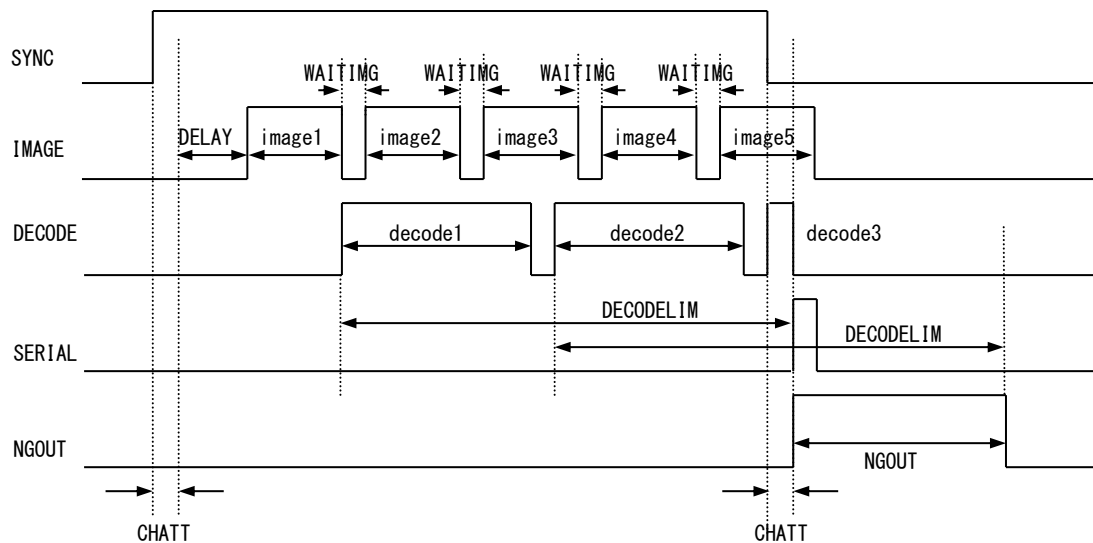
4.3.1 Hard trigger, Read OK, Data transmission: After decoding



4.3.2 Hard trigger, Read OK, Data transmission: After SYNC OFF



4.3.3 Hard trigger, Read NG, Data transmission: After decoding or SYNC OFF



4.4 Continuous Reading Mode

In Continuous Reading Mode, the barcode reader reads repeatedly. It is useful for camera tunings.

To put the scanner in this mode, send the serial command "continue" to the barcode scanner, and then send the serial command "g" to start reading.

To exit this mode, send the serial command "stop" to the barcode scanner.

It cannot be used in Auto-sense Mode

4.5 Test Mode

In Test Mode, the barcode scanner can measure the reading ratio. It is for checking the reading condition and stability.

To set the barcode scanner in this mode and start, send the serial command "TEST=1" and "g" to the barcode scanner.

To exit this mode, send the serial command "TEST=0" to the barcode scanner.

Once this mode is started, the barcode scanner will output an asterisk "*" to the host for each 10% of the total number of reading (in the default setting, it is set to 10). The barcode scanner will stop the Test Mode after output an asterisk 10 times.

It cannot be used in Auto-sense Mode.

(Example output)

*** TEST MODE ***

1 2 3 4 5 6 7 8 9 10

* * * * *

NG 1: OK 99/SYNC 100

NG 1.00%: OK 99.00%

(Output format)

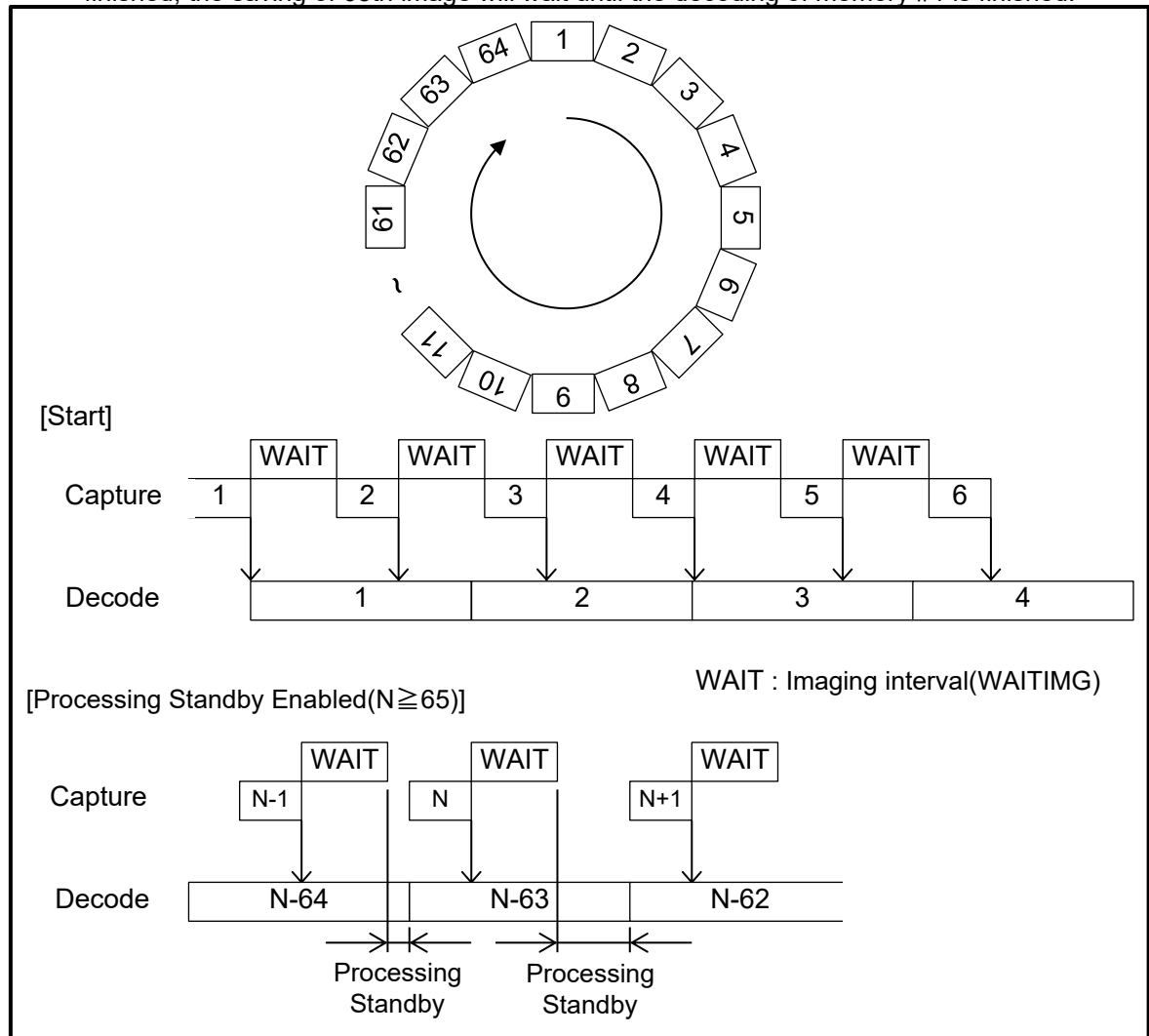
NGaaaa: OKbbbb/SYNCcccc[CR]

NGddd.dd%: Okeee.ee%[CR]

aaaa	: NG Count	(0 - 1000, maximum number is 1000)
bbbb	: OK Count	(0 - 1000, maximum number is 1000)
cccc	: SYNC Input	(NOT displayed more than 1000)
ddd.dd	: NG Rate	(0.00-100.00, Displayed to the second decimal place)
eee.ee	: OK Rate	(0.00-100.00, Displayed to the second decimal place)

4.6 Cycle Buffer Function

Cycle Buffer Function is for moving object, especially for the case it is difficult to catch the object within the field of view. In SYNCMODE=1 (Timeout Mode) or SYNCMODE=2 (External Trigger Mode), the Cycle Buffer Function is enabled when the MAXIMG number is greater than 1 (max. 64). If the Cycle Buffer Function is enabled, the barcode scanner captures multiple images after receiving the SYNC signal and then saves the images to the buffer memory (up to 64 images). The barcode scanner starts decoding from memory #1, if it is not successful, the barcode scanner will decode the image saved in memory #2. When the buffer memory reaches to #64, the next image will be saved into buffer memory location #1 if the barcode scanner has finished decoding that image. If the barcode scanner has not finished, the saving of 65th image will wait until the decoding of memory #1 is finished.



4.7 Concept of Cycle Buffer

This function focuses to avoid No Read by missing the object from the sight of V6180 series. Decoding process can be postponed and the reader focuses to obtain images which include the moving object. Please try to configure to finish the capture and decode within the time the reader saves the images whose number is set by MAXIMG. The maximum value of MAXIMG is 64. Otherwise, the imaging interval will vary depending on the reading processing time after the number of imaging.

The less capture resolution (number of pixels), the less capture time and it results to shorten the imaging interval.

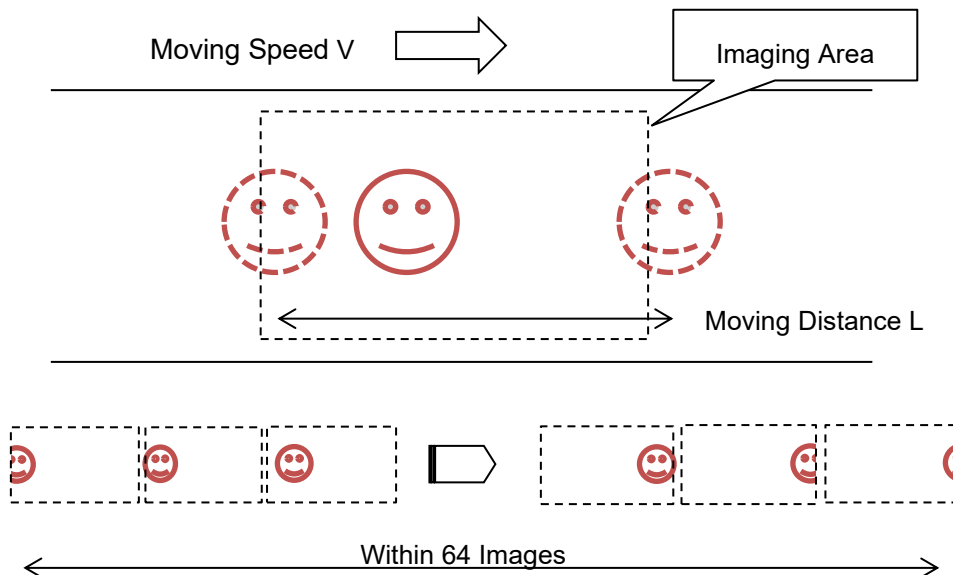
[Configuration Example]

The relation of Shutter Time (SHUTT), Capture Time (CAPIMG), Capture Interval (WAITIMG) and Total Imaging Cycle (CAPCYC) are as follows.

$$\text{CAPCYC} = \text{SHUTT} + \text{CAPIMG} + \text{WAITIMG}$$

Moving Time $T = L / V$ should be less than $(64 \times \text{CAPCYC})$

when the moving object's speed is V and the object's moving distance is L .



MAXIMG=64、SHUTT=1/1000s=1ms、CAPIMG=24ms、WAITIMG=10ms

Imaging Cycle is CAPCYC = SHUTT + CAPIMG + WAITIMG = 1ms + 24ms + 10ms = 35ms

(1) Moving speed V when the imaging range is $L=100\text{mm}$ is:

$$L/V < 64 \times \text{CAPCYC}$$

$$\Rightarrow V > L/(64 \times \text{CAPCYC}) = 100\text{mm}/(64 \times 35\text{ms}) = 0.045\text{m/s} = 2.68(\text{m/min.}) \therefore V > 2.68\text{m/min.}$$

(2) Imaging range L when the moving speed is $V = 30\text{m/min.} (= 500\text{mm/s} = 0.5\text{mm/ms})$ is:

$$L/V < 64(\text{CAPCYC})$$

$$\Rightarrow L < 64 \times \text{CAPCYC} \times V = 64 \times 35\text{ms} \times 0.5\text{mm/ms} = 1120\text{mm} \therefore L < 1120\text{mm}$$

5 Read setting

5.1 Automatic parameter tuning (Auto Tuning)

With this function, the barcode scanner can be configured automatically. This function is available by the communication from the host device as well as an easy button operation on the barcode scanner.

For the detail of the button operation, please refer to 5.1.3 “Auto Tuning by button operation”.

5.1.1 How to operate Auto Tuning function

- Execute the Auto Tuning by FixedConfig6180 or serial command.
 - Place and fix the symbol within the reading distance range.
 - Follow the steps below.

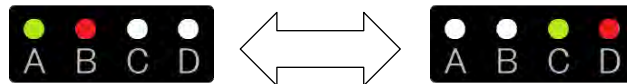
1. Start Auto Tuning by FixedConfig6180 or serial command.

The status LEDs : A | ON B, C, D | OFF



2. Wait until Auto Tuning is completed.

The status LEDs: A, B and C, D | Flashes alternately



3. The result of Auto Tuning

- Success The status LEDs: B,C | ON A, D | OFF



- Failure The status LEDs: A | ON D | Blinks 7 times at short intervals

B, C | OFF



4. Save the settings when Auto Tuning is successful.

(1) Save one type of settings in specified table:

The status LEDs: A | ON D | Blinks 3 times B, C | OFF



(2) Save up to 3 types of settings in Table #1 to #3:

The status LEDs : A | ON C | Blinks 3 times B, D | OFF



Note: If there is no operation for 40 seconds, it will return to the standby state without saving the result.



CAUTION

DO NOT turn off power during Auto Tuning operation.

DO NOT send serial commands during Auto Tuning operation.

5.1.2 Commands for Auto Tuning

In Auto Tuning, you can configure the Auto Tuning operation, reference of tuning result, selection of storing method and setting of tuning condition.

- Start Auto Tuning

*setup

This command is to start this function.

- Force-quit Auto Tuning

*cancel

This function takes relatively long time. The barcode scanner will force-quit by this command.

- Check the reader state

*?state

This command is to check the state of the reader.

State	Response
Reading standby	STANDBY[CR]
Auto Tuning in progress	RECEIVED[CR]
Auto Tuning success: waiting for save settings	SAVEWAIT[CR]
Auto Tuning failure	ABORTED[CR]
Read in progress	(No reply)

- Save the result of Auto Tuning

This command is to save the results. When the reader receives this command within about 40 seconds after the completion of the tuning process, the results are saved in Table. If no command is received, the reader will discard the results and return to reading standby state.

*save ...This command is used for saving results of Auto Tuning to the table

mode. Save the results into Table 1 to 3.

*save2 ...Save to table 1

*save2=a...Save to specified table

a: Save location number (1-16)

*save3=a,b...Save to specified table

a: Start position (1 to 16)

b: Number of entries (1 to 3)

- Refer to the saved result

?ddmtbl

This command is to refer to the saved result of Auto Tuning.

Example output of ?ddmtbl

```
***** STATUS *****
last table number=0(read only)
NEXTDDMTBL=1 (1-16)
DDMTBLNG=1 (0:OFF 1:ON)
ENABLEDDMTBL=1 (1-16)
EDITDDMTBL=1 (1-16)
TBLTX=0 (0:OFF 1:ON)
+++++ table 0 +++++
DDMTblname=name
DDMcapmode=0, 0, 1280, 960
DDMflash=100, 100, 0
DDMshutt=2
DDMagain=1
DDMdgain=1
DDMblack=1
DDMdpmoption=0
DDMdecodeim=500
DDMlight=3
DDMmirror=2
DDMpreproc=0, 0, 0, 0, 0
+++++ table 1 +++++
DDMTblname=name
DDMcapmode=0, 0, 1280, 960
DDMflash=100, 100, 0
DDMshutt=2
DDMagain=1
DDMdgain=1
DDMblack=1
DDMdpmoption=0
DDMdecodeim=500
DDMlight=3
DDMmirror=2
DDMpreproc=0, 0, 0, 0, 0
+++++ table 1 +++++
(Skip)
+++++ table 16 +++++
DDMTblname=name
DDMcapmode=0, 0, 1280, 960
DDMflash=100, 100, 0
DDMshutt=2
DDMagain=1
DDMdgain=1
DDMblack=1
DDMdpmoption=0
DDMdecodeim=500
DDMlight=3
DDMmirror=2
DDMpreproc=0, 0, 0, 0, 0
***** END *****
V6180 : 093-V1.0a
```

5.1.3 Auto Tuning by button operation

- Execute Auto Tuning by button operation of the reader.
 - Place and fix the symbol within the reading distance range.
Follow the steps below.

1. Start Auto Tuning by holding down the Teach-button.

The status LEDs: A | OFF B, C, D | ON



2. Wait until Auto Tuning is completed.

The status LEDs: A, B and C, D | Flashes alternately



3. The result of Auto Tuning

- Success The status LEDs: B, C | ON A, D | OFF



- Failure The status LEDs: A | ON D | Blinks 7 times at short intervals



B, C | OFF



4. Save the settings when Auto Tuning is successful.

(1) Save one type of settings in specified table:

Press Read button for 3 seconds or more

The status LEDs : A | ON B, C, D | OFF



Save successful

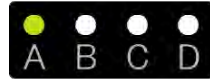
The status LEDs: A | ON D | Blinks 3 times B, C | OFF



(2) Save up to 3 types of settings in Table #1 to #3:

Press Read button for 1 second or more and less than 3 seconds

The status LEDs: A | ON B, C, D | OFF



The status LEDs: A | ON C | Blinks 3 times B, D | OFF



Note: If there is no operation for 40 seconds, it will return to the standby state without saving the result.



DO NOT turn off power during Auto Tuning operation.
DO NOT send serial commands during Auto Tuning operation.

5.2 **Table Mode [AGC=T]**

V6180 series works in Table Mode, which has up to 16 combinations of camera settings (hereinafter, referred to as “tables”) and uses each table in a sequence of the reading.

Switch to the table mode with the command “AGC=T”.

It cannot be used together with Auto Gain Control Mode.

The number of tables to be used is set by the command below.

ENABLEDDMTBL=a (a: 1 to 16)

e.g.1) Use 3 tables (a=3)

Table #1, #2 and #3 are enabled and Table #4 to #16 will not be used. If the barcode scanner successfully decodes a symbol with Table #1, Table #1 will be used in the next reading.

If the barcode scanner failed to decode a symbol with Table #1, the settings will switch to Table #2, and if it fails again, switch to Table #3.

If the barcode scanner failed to decode with Table #3, the settings will switch back to Table #1.

e.g.2) Use 1 table (a=1)

Only Table #1 is enabled. Table #2 to #16 will not be used. As the result, Table #1 is always used every reading.

Set the number of tables according to the reading target and the operating environment.

The following shows the structure of the Table. Each table has 12 types of parameters:

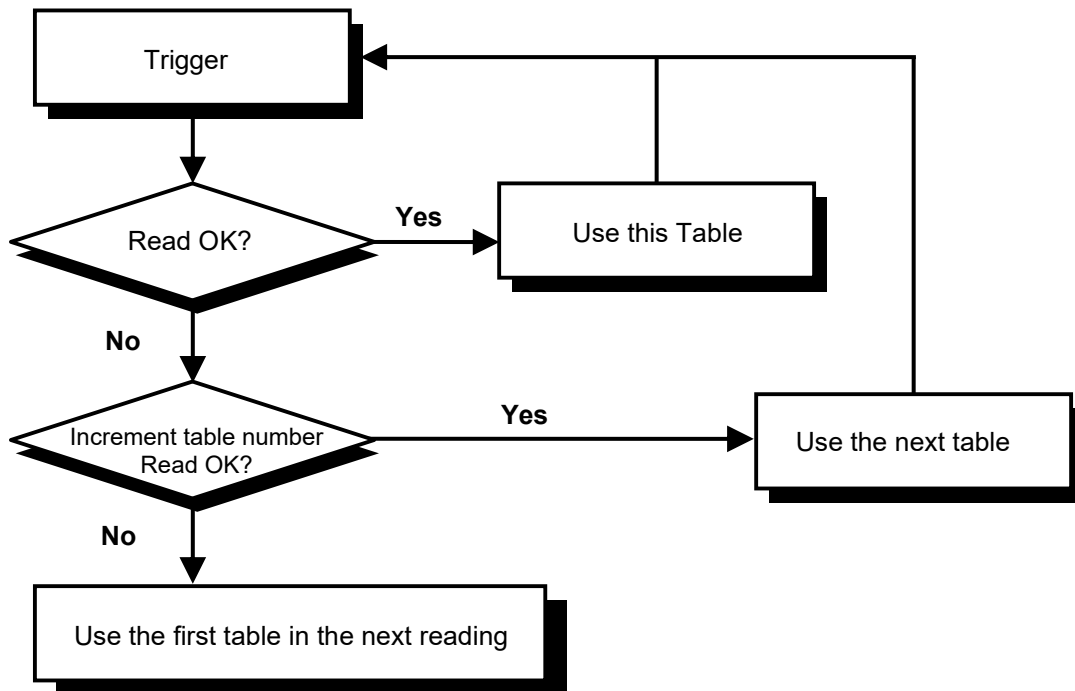
①	Reading Area	[DDMcapmode]
②	Illumination Control (ON/OFF)	[DDMlight]
③	Illumination brightness	[DDMflash]
④	Shutter Speed	[DDMshutt]
⑤	Analog Gain	[DDMagain]
⑥	Digital Gain	[DDMdgain]
⑦	Black Level Illumination	[DDMblack]
⑧	Image Preprocessing	[DDMpreproc]
⑨	Mirrored Image	[DDMmirror]
⑩	Decode Time Limit	[DDMdecodelim]
⑪	DPM Option	[DDMdpmoption]
⑫	Table Name	[DDMtblname]

When the reading is successful, the barcode scanner uses the table settings for the next reading.

When the reading is unsuccessful, the barcode scanner attempts to read using the next table settings.

The flow chart of Table mode is shown below.

< Flow chart of Table Mode >



5.2.1 Edit table

Edit tables with serial commands.

- (1) Set the target Table #.

Send the serial command below to assign the table number to be edited.

EDITDDMTBL=a (a: 1 to 16)

- (2) Configure the parameters.

Refer to 5.3 "Setting parameters for Table Mode" for detailed information.

- (3) Edit another table

Repeat the step 1 & 2.

- (4) Check the target Table

You can check the target table status using the following command.

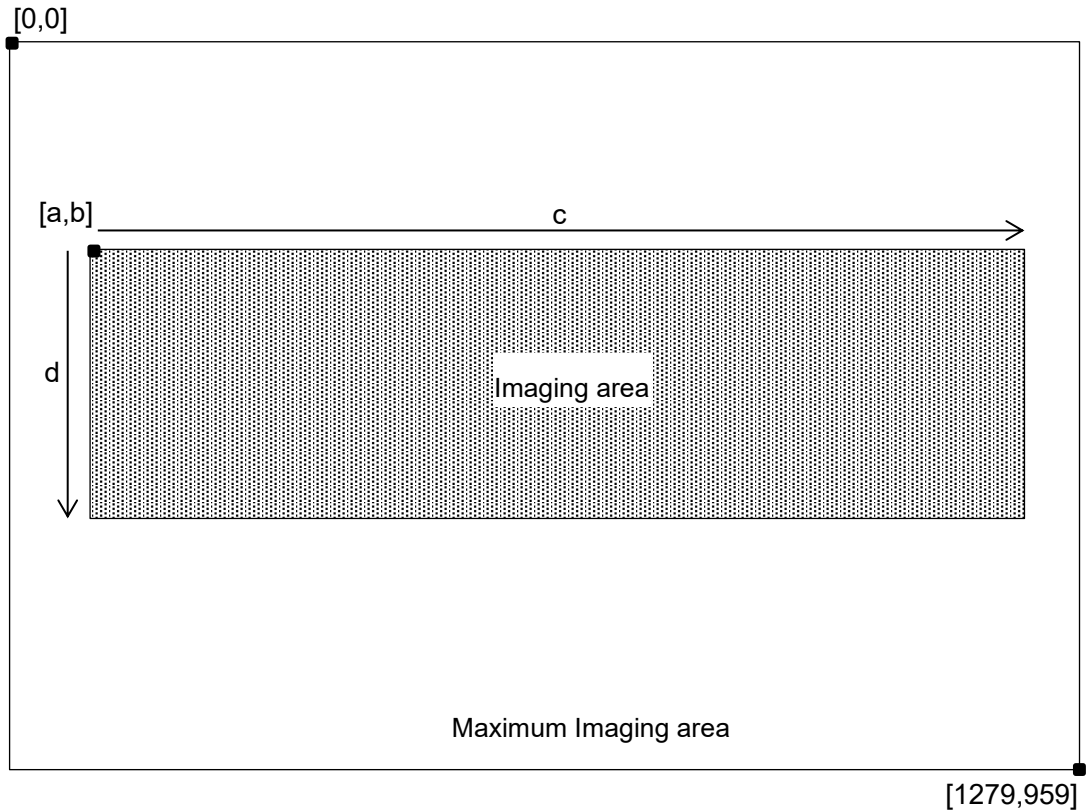
?ddmtbl

5.3 Setting parameters for Table Mode

5.3.1 **Reading area [DDMcapmode]**

This command specifies the reading area from an captured image.

The parameters are original coordinate and value of width (x) & height (y).



DDMcapmode=a,b,c,d

a : Coordinate origin X(0~1270)

b : Coordinate origin Y(0~950)

c : Width(10~1280 : Even number only)

d : Height(10~960)

- Specify the full screen

DDMcapmode=0,0,1280,960

- Specify the 50 % of the center

DDMcapmode=320,240,640,480

† Configuring the reading area too narrow may deviate the symbol from the reading area and may cause a read error. Make sure that the size of the reading area fits the symbol.

5.3.2 Illumination control (ON/OFF) [DDMlight]

This command specifies the behavior of internal illumination.

DDMlight=a

- 0 : OFF
- 3 : ON when capturing an image
- 10 : Always ON
- 11 : ON during reading (SYMCMODE=1 or 2 only)

5.3.3 Illumination brightness [DDMflash]

This command specifies the brightness of each illumination.

DDMflash=a, b, c

a(White Illumination A), b(White Illumination B), c(Red Illumination), Common

0 : OFF

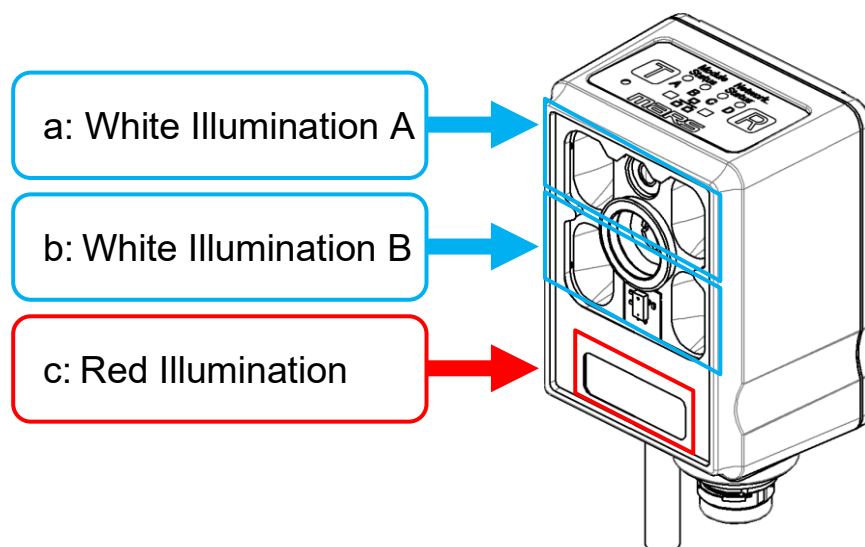
1(dark)~ 100(bright) : ON

To set to ON, set in the range of 1 to 100.

If "b" is omitted, the value of "a" will be set.

e.g.) ○: Settable ×: Not settable

DDMflash=100,100,0	○ : White Illumination A, B ON(brightness 100) Red Illumination OFF
DDMflash=100	○ : White Illumination A, B ON(brightness 100) Red Illumination OFF
DDMflash=0,0,100	○ : White Illumination A, B OFF Red Illumination ON (brightness 100)
DDMflash=100,100,10	○ : White Illumination A, B ON (brightness 100) Red Illumination ON (brightness 10)
DDMflash=100,100,50	× : White Illumination A, B ON (brightness 100) Red Illumination ON (brightness 50)



5.3.4 Shutter speed [DDMshutt]

This command specifies the shutter speed of the reader. A slower shutter speed makes the image brighter but may introduce motion blur into the image.

DDMshutt=a

0: 1/60	1: 1/125	
2: 1/250	3: 1/500	
4: 1/1000	5: 1/2000	
6: 1/4000	7: 1/6000	
8: 1/8000	9: 1/10000	(Unit: seconds)

5.3.5 Analog gain [DDMagain]

This command specifies the analog gain of the camera.
A larger gain makes the image brighter.

DDMagain=a (a: 1 to 4, 1: Lowest gain, 4: Highest gain)

5.3.6 Digital gain [DDMdgain]

This command specifies the digital gain of the camera.
A larger gain makes the image brighter.

DDMdgain=a (a: 1 to 15, 1: Lowest gain, 15: Highest gain)

5.3.7 Black level adjustment [DDMblack]

This command is used to improve the contrast of an image taken by the reader.
It may be suitable for lower contrast images.

DDMblack=a

0 : OFF

1 : ON (Automatic adjustment)

5.3.8 Image preprocessing [DDMpreproc]

If the image quality is low, by using an appropriate image filter may improve the reading ratio.

5.3.9 Mirror image [DDMmirror]

This command enable / disable mirrored image symbol.

DDMmirror=a

0: Read only normal type (not mirrored)

1: Read only mirrored type

2: Read both of normal type and mirrored type

5.3.10 Decode time limit [DDMdecodelim]

This command specifies the decode time limit.

DDMdecodelim = a (a: 50 to 10000, Unit: ms)

5.3.11 DPM option [DDMdpmoption]

This command specifies improvement options for DPM decoding.

DDMdpmoption=a

0: Disable improvement options for DPM decoding

1: Enable improvement option for DPM (black dot peen in white background)

2: Enable improvement option for DPM (white dot peen in black background)

3: Enable improvement option for DPM (laser etching)

5.3.12 Table name [DDMtblname]

This command specifies a name of the current table number. This command is just for a memo. It does not affect any performances of the reader.

DDMtblname=a (a: Up to 16 one-byte characters)

5.4 **Brightness of standby lighting(Always ON)**

When the lighting output is set to the built-in lighting (always ON), set the brightness of the standby lighting.

FLASH2=a,b,c

a(White Illumination A), b(White Illumination B),c(Red Illumination), Common

0 : OFF

1(dark)~ 100(bright) : ON

Default : a=25,b=25,c=0

For the setting range, refer to 5.3.3 "Illumination brightness [DDMflash]".

6 **Auto-sense Mode**

In Auto-sense mode, the reader automatically detects and reads the symbol. It detects the change in ambient brightness and the movement of the subject, etc., and performs scanning automatically. This function is useful for reading documents with symbols printed on them in front of the reader.



- The Auto-sense mode works with the brightness of normal room lighting, but may not be suitable for reading under extremely bright and dark environments such as outdoors, or under flickering lighting.
- In Auto-sense mode, other operation modes do not work.
*: Refer to 4 “Operation Mode”.
- In Auto-sense mode, the operation of the Teach button and the Read button are invalid.

6.1 **How to use**

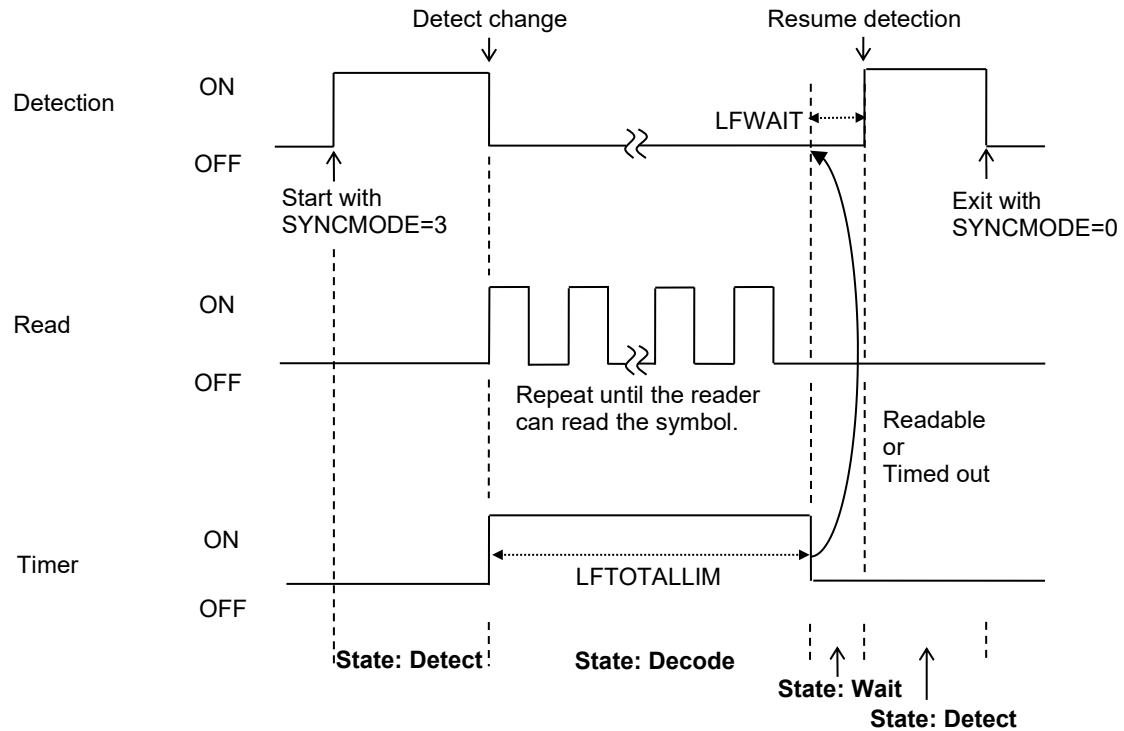
- Start Auto-sense Mode
 - Send the serial command “SYNCMODE=3” to the reader.
 - Enable the Auto-sense Mode by reading the setting code. Refer to the 2D barcode menu.

However, it cannot start in the following cases.

- When set to Continuous Reading Mode
 - When set to Test Mode
 - When running the Auto Tuning function
- Exit Auto-sense Mode
 - Send the serial command “SYNCMODE=0” to the reader.
 - Disable the Auto-sense Mode by reading the setting code. Refer to the 2D barcode menu.

6.2 Timing chart

While in Auto-sense Mode, the reader transitions in three states: detect, decode and wait.



6.3 Setting parameters for Auto-sense Mode

6.3.1 Aimer, Illumination [LFILLUM]

This command specifies the aimer and illumination during detection

LFILLUM=a (a: 0 to 2)

0: Aimer OFF, Illumination OFF

1: Aimer ON, Illumination ON

2: Aimer OFF, Illumination ON

6.3.2 Detection sensitivity [LFSENS]

This command specifies the detection sensitivity. If the sensitivity is too good, lower the value; if not good, increase the value.

LFSENS=a (a: 0 to 4, 0: High sensitivity, 4: Low sensitivity)

6.3.3 Reading timeout [LFTOTALLIM]

After detection, the reading operation is performed until the symbol reading succeeds or the timeout occurs. Set this time.

LFTOTALLIM=a (a: 0 to 10, Unit: seconds)

6.3.4 Wait time for resuming detection [LFWAIT]

The reader waits for a fixed time and resumes processing after a successful symbol read or read timeout. Set this wait time.

LFWAIT=a (a: 0 to 10, Unit: seconds)

6.3.5 Continuous reading of the same symbol [VERIFY]

In Continuous Reading Mode or Auto-sense Mode, this command specifies whether to permit continuous reading of the same symbol.

VERIFY=a (a: 0: Permission, 1: Prohibition)

6.3.6 Wait time for continuous reading of the same symbol [VWAIT]

This command specifies the prohibited time when VERIFY=1.

VWAIT=a (a: 1 to 20, Unit: x 500ms)

6.3.7 Sensor settings [LFTYPE]

Set the sensor used for detection in Auto-sense mode.

LFTYPE=a(a:0-1、 0:Camera、 1: Sensor)

6.3.8 Status of Auto-sense mode [?LF]

?LF

(Example output)

***** STATUS *****

LFILLUM=1 (0:off 1:aimer 2:flash)

LFSENS=2 (0-4)

LFTOTALLIM=3 (1-10[sec])

LFWAIT=1 (0-10[sec])

VERIFY=0 (0:off 1:on)

VWAIT=3 (1-20 x500[ms])

LFTYPE=0 (0:Camera 1:TOF)

***** END *****

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7 Advanced Features

7.1 Preset Mode

In Preset Mode, V6180 series reads only the symbols whose data match the preset data. This function has two modes, their registration methods and data collation methods of preset data are different.

PREM=0[CR](*): Preset Mode 0 (Preset Mode is disabled)

PREM=1[CR]: Preset Mode 1 (Preset data is the first decoded one after power-up)

PREM=2[CR]: Preset Mode 2 (Preset data is registered in advance)

*: Default

To disable Preset Mode, send the command "PREM=0".

7.1.1 Preset Mode 1

In this mode, the preset data is the first decoded data after power up. Data comparison is only successful when the barcode matches completely. The preset data must be set as every time the barcode scanner is powered on because the data is not saved to internal flash memory.

Setup procedure of Preset Mode 1:

1. Send the following commands

PREM=1[CR]

WSETS[CR]: Save the settings to internal flash memory.

2. Power-on reset
3. Read the symbol that contains the data to be used as the preset data.

7.1.2 Preset Mode 2

In this mode, the preset data is configured by the serial command. Data comparison is completed by both complete and partial matching. It is possible to save the preset data to internal flash memory.

Send the following command to set this mode:

```
PREM=2[CR]
SET=PREDaabcd[CR]: Set the preset data (data is "abcd")
SET=PRENa[CR]:      Set the number of digits (a: 0 to 100)
WSETS[CR]:          Save the settings to internal flash memory
```

e.g.1) Example 1: Only "12345" is valid

```
12345:      match
1234:       mismatch
123456:     mismatch
012345:     mismatch
```

```
PREM=2[CR]
SET=PRE12345[CR]
SET=PREN5[CR]
WSETS[CR]
```

e.g.2) Example 2: Valid when first 4 digits are "ABCD".

```
ABCD:      match
ABCD333:   match
ABCD777777: match
ABC:       mismatch
DABC333:   mismatch
ABC777777: mismatch
```

```
PREM=2[CR]
SET=PREDABCD[CR]
SET=PREN0[CR]
WSETS[CR]
```

e.g.3) Example 3: Valid when the length is 10 digits and the data from 3rd-digits to 6th-digits are "ALFA".

```
00ALFA1234:      match
AAALFAAAAA:      match
00ALFA12345:      mismatch
0ALFA12345:       mismatch
```

```
PREM=2[CR]
SET=PRED??ALFA????[CR]
SET=PREN10[CR]
WSETS[CR]
```

7.1.3 Output the status of Preset Mode

?pre[CR] : Output the preset status

(Example output)

PREM=0 (0: non 1: power on 2: saved)

PRESET LENGTH: 13

DATA(HEX):

34 39 3F 3F 3F 3F 3F 3F 3F

3F 3F 3F

DATA(ASCII):

49???????????

(Output format)

PREM=a (0: non 1: power on 2: saved)[CR]

PRESET LENGTH: b[CR]

DATA(HEX): [CR]

XX XX XX XX XX XX XX XX XX XX[CR]

XX XX XX XX XX XX XX XX XX XX[CR]

XX XX XX XX [CR]

DATA(ASCII): [CR]

xxxxxxxxxxxxxxxxxxxxxxxx

a : Preset Mode

b : The digit of the length of the preset data

XX XX ... : Preset data character (in hex)

xxxxxx... : Preset data character (in ASCII/JIS)

If the preset data include control code, it is transferred to " *" .

7.2 **Output Additional Information**

7.2.1 **Warning Information to avoid Read NG**

Add warning information that can monitor the reading condition.

Output format: (CcccEeeeDddd)

ccc: Contrast information

eee: Unused error correction rate

ddd: Decodability margin

e.g.1) Read OK

Data Output: (C082E100D091)A123456A

The barcode scanner outputs the contrast value of a symbol including quiet zone.

The decoder determines a rectangular area for the symbol and calculates the contrast value from its brightness level. If there are multiple symbols, the calculated value is for the first decoded symbol.

e.g.2) Read NG

Data Output: (C000E000D000)BR

"000" is added in case of Read NG.

7.2.2 **Symbology Type Information**

Add symbology type information (data carrier identifiers) to the head of decoded symbol and output is in serial. Symbology type is not added at read NG.

Symbology Type	Example of Data Carrier Identifiers
Data Matrix	Jd1
QR Code	JQ1
PDF417	JL0
Aztec Code	Jz0
Code39	JA0
Code128	JC0
GS1-128	JC1
Codabar	JF0
Code93	JG0
ITF(Interleaved 2 of 5)	Jl0
EAN/JAN 13 digits	JE0
EAN/JAN 8 digits	JE4
UPC	JE0
GS1 DataBar	Je0
Composite	Je1

7.2.3 Decoding Time

Add decoding time to the symbol data.

7.2.4 Total Reading Time Information

Add the number of images captured after trigger input and total time from trigger input to the serial data output. Total reading time is not added at read NG.

Output format: (aa, bbbbbbms)

aa: Number of images, bbbbbb: Total time [ms]

7.2.5 Contrast Information

Add the Contrast Information of the last decoded image.

- Read OK

Calculate the contrast value of a symbol including a quiet zone. The decoder determines a rectangular area for the symbol and calculates the contrast value from its brightness level.

If there are multiple symbols, the calculated value is for the first decoded symbol.

- Read NG

Calculate the contrast value for the whole image.

Output format: (aaa, bbb, ccc) 13 bytes

aaa : Maximum value of reflectance (000 to 255)

bbb : Minimum value of reflectance (000 to 255)

ccc : Contrast [%] = $100 \times (aaa - bbb) / 255$ (000 to 100)

7.2.6 Quality Information

The percentage of the Unused Error Correction codeword of the 2D barcode is added to the decoded data.

For example, if the decoder does not use any error correction, this value would be 100.

The barcode scanner outputs the quality information individually if there are multiple symbols. Quality Information is not added at Reading Error.

Output format: (QT: ddd) 8 bytes

ddd: Quality (000 to 100)

7.2.7 Symbol Coordinates

The positional data of the symbol in the image is output along with the decoded data.

There are two types of output information; barycentric coordinates and rectangular coordinates.

(1) Barycentric coordinates

The origin (+0000, +0000) is the left-top edge of a field of view.

(Example output)

10000000099070(+0122,+0024)

(Output format)

Header + Data + (abbbb,acccc) + Terminator

a : + or -

bbbb: X coordinate of a symbol's barycenter (9999 to +9999)

cccc: Y coordinate of a symbol's barycenter (-9999 to +9999)

(2) Rectangular coordinates

The origin (+0000, +0000) is the left-top edge of a field of view.

(Example output)

10000000099070(+0269,+0011)(+0455,+0086)(+0386,+0270)(+0198,+0199)

(Output format)

Header + Data + (A1) + (A2) + (A3) + (A4) + Terminator

A1 – A4 : (abbbb,acccc)

a : + or -

bbbb: X coordinates of four corners of a symbol (-9999 to +9999)

cccc: Y coordinates of four corners of a symbol (-9999 to +9999)

(3) Barycentric / Rectangular coordinates

Outputs coordinates of both barycenter and four corners of a symbol.

(Example output)

```
10000000099070(+0007,+0103)(+0269,+0011)(+0455,+0086)(+0386,+0270)(  
+0198,+0199)
```

(Output format)

Header + Data +(B) + (A1) + (A2) + (A3) + (A4) + Terminator

(B): Barycentric coordinate

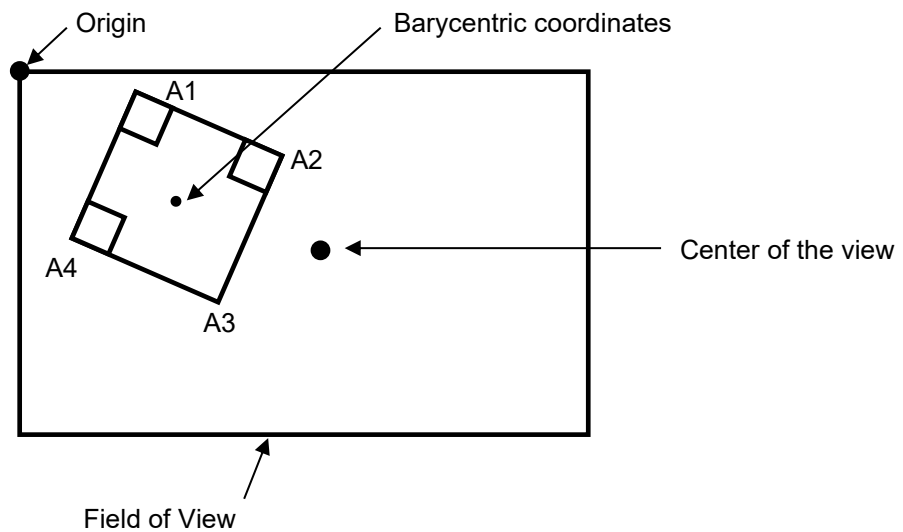
(A1)(A2)(A3)(A4): Rectangular coordinates

B, A1-A4: (abbbb,acccc)

a: + or -

bbbb: X coordinate of barycenter and X coordinate of four corners of a symbol
(-9999 to +9999)

cccc: Y coordinate of barycenter and Y coordinate of four corners of a symbol
(-9999 to +9999)



7.2.8 **Table Number**

Adds setting table number used in the last decoding.

(Example output)

10000000099070(TBL:3)

(Output format)

Header + Data + (TBL:a) + Terminator

a: Table number

7.2.9 **Reader Name**

Adds the individual name of the barcode scanner.

(Example output)

(My Reader)10000000099070

(Output format)

Header + (a) + Data + Terminator

a: Reader Name

7.3 **Save Image**

Maximum 64 captured images can be stored. The number of cycle buffer memory means the number of storable images.

MAXIMG=a[CR] a=1 to 64 Specify number of cycle buffer memory.

MAXIMG=1[CR] (*)

*: Default

7.3.1 **Transmit processed image**

This command specifies image type for the transfer. (Only for latest image)

IMGSEL=0[CR] Captured image (Raw image)

IMGSEL=1[CR] (*) Decoded image (Preprocessed image) (*)

*: Default

7.3.2 **Overwrite setting of cycle buffer memory**

When the number of saved images exceeds the number of cycle buffer memories, you can select whether to overwrite the cycle buffer memory to continue imaging or to stop imaging without overwriting.

CAPLIM=0[CR] (*) Overwrites from the oldest image in the cycle buffer memory.

CAPLIM=1[CR] Interrupt the imaging.

*: Default

7.3.3 **Preparation for transmitting the saved image**

Using FixedConfig6180 software allows the download of the saved image that has been completed the preparation of transmission to the host.

IMGFRAME=0,0 (*) Preparation for the last saved image

*: Default

Any number of the buffer can be set. The setting after each SYNC command is necessary because it is set to the default by a SYNC command.

IMGFRAME=0,a[CR] a=0 to 64

a=0 : Preparation for the image saved in last decoded(*)

a=1-64 : Preparation for the image saved in buffer No. (a)

*: Default

IMGFRAME=1,a[CR] a=0 to 16

a=0 : Preparation for the image saved in last decoded(*)

a=1-16 : Preparation for the image saved in table No. (a)

*: Default

7.3.4 Output the settings of saving images

?IMG[CR] Output the status

(Example output)

***** STATUS *****

IMODE=a

PX=b

PY=c

WX=d

WY=e

IMGSEL=f (0:captured image 1:decoded image)

MAXIMG=g (1-64)

WAITIMG=h (0-1000[ms])

CAPLIM=i (0:OFF 1:ON)

ROTATE=j (0:disable 1:enable)

GOUTSIZE=k (0:1280x960 1:640x480 2:320x240 3:160x120)

IMGFRAME=0,l (0:fixed value, 1-64:frame-no.)

***** END *****

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a : Trimming

b,c,d,e : Trimming position (Left, Top, Width, Height)

f : Image type (Captured image, Decoded image)

g : Number of cycle buffer memory

h : Capturing time interval in the cycle buffer function
(Unit: ms)

i : Overwrite/not overwrite the cycle buffer memory when the number
of captured image exceeds the number of cycle buffer memory

j : Image rotation (0 degree/180 degrees)

k : Image size for continuous image transfer

l : Cycle buffer memory number

7.4 Save NG Image

Up to 10 decoded images can be saved when reading is NG.

The NG Image is cleared when the power is turned off.

7.4.1 Set image type

This command specifies image type for the transfer.

IMGSEL=0[CR] Captured image (Raw image)

IMGSEL=1[CR] (*) Decoded image (Preprocessed image) (*)

*: Default

7.4.2 NG Image storage order

Select the storage order when the number of NG Images exceeds 10.

IMGFULL=0[CR] Save the latest 10 NG Images

NG Image buffer No.									
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
11	12								

← storage
order

IMGFULL=1[CR] (*) Save the 1st to 9th NG Image and the latest NG Image (*)

NG Image buffer No.									
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
									11
									12

← storage
order

*: Default

7.4.3 Checking the number of stored NG Images

Outputs the number of saved NG Images (status).

?NGFRAME[CR] checking command

(Example output)

STS Mark for starting output

NGNUM:6 Number of NG Images (6 NG Images can be extracted)

END Mark of output completion

7.4.4 Preparation for transmitting the NG Image

Using FixedConfig6180 software allows the download of the NG Image that has been completed the preparation of transmission to the host.

NGFRAME=a[CR] a=0 to 10

a=0 : Do not transfer NG Images (last decoded image) (*)

a=1-10 : Prepare to transfer the NG Image No. (a) (the oldest image is No.1)

*: Default

7.5 Simultaneous reading of multiple labels

Multiple (up to 10) labels can be read simultaneously at reader.

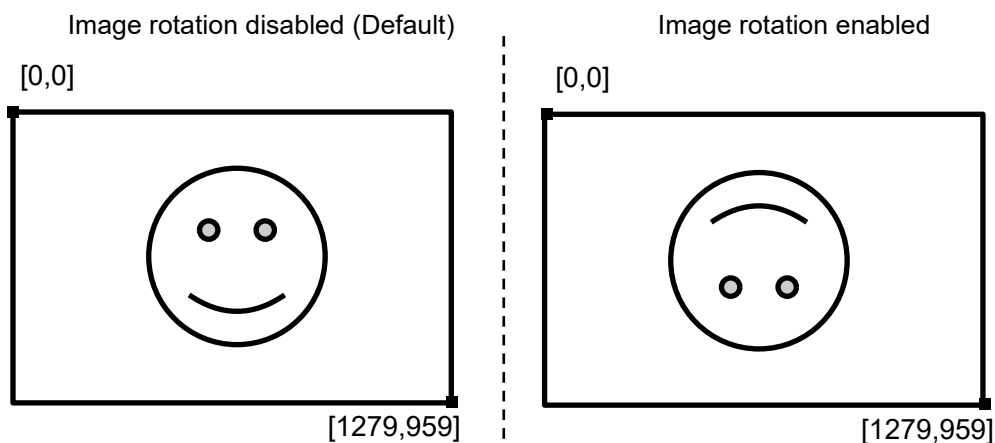
The order of reading data output can be configured like the following.

1. By completion of reading process
2. By preset number of digits
3. By preset matching characters
4. By preset symbologies

† Setting more symbols in an image than the number of preset symbols causes output failure.

7.6 Image Rotation

Rotates an image 180 degrees before a capture. The rotated image is used in all the process (decoding, saving data, etc.).



7.7 **Register of SYNC ON/OFF command**

The SYNC ON/OFF command of the barcode scanner can be registered with any 8 alphanumeric characters (available characters are 0x20 to 0x7E in 9.21 Table of Character Code). If an entered arbitrary character string is the same as an existing serial command, the command is not registered.

- SYNC ON command setting

SONCMD=a[CR] (a: Up to 8 alphanumeric characters)

The character string a is registered as SYNC ON command.

e.g.)

SONCMD=FIND[CR] Register "FIND" as SYNC ON command.

SONCMD=[CR] (*) Default value is not registered.

*: Default

- SYNC OFF command setting

SOFFCMD=a[CR] (a: Up to 8 alphanumeric characters)

The character string a is registered as SYNC OFF command.

e.g.)

SOFFCMD=END[CR] Register "END" as SYNC OFF command.

SOFFNCMD=[CR] (*) Default value is not registered.

*: Default

Note: SYNC OFF command can only be used in Timeout Mode.

7.8 Functions for saving and loading the setup

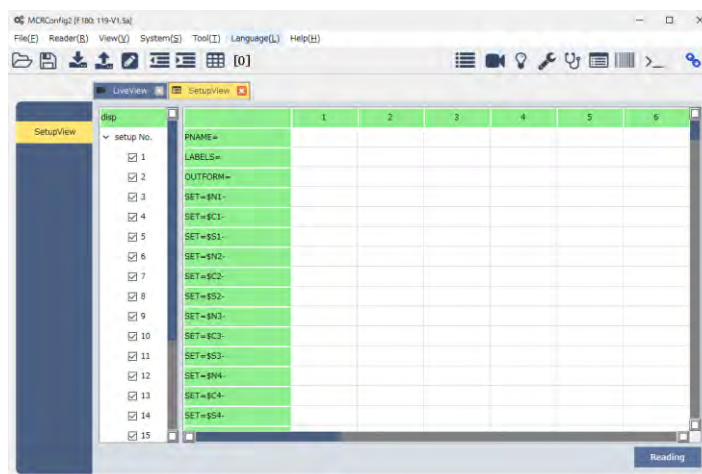
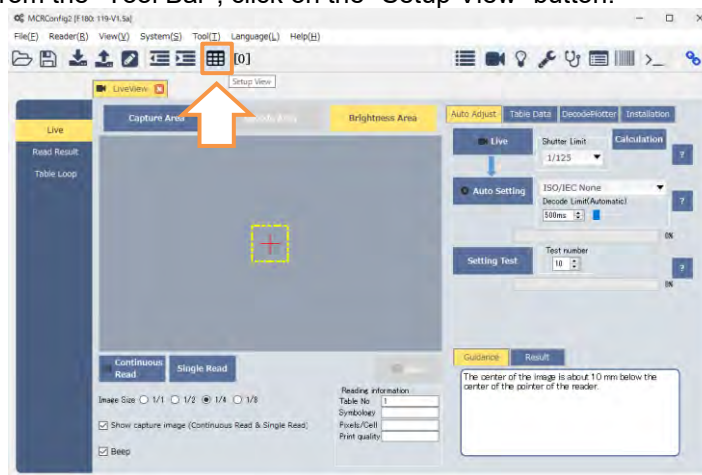
Save Setup (up to 20) in advance when switching the setting parameters according to the target to be scanned or the operating environment. The configuration parameters that can be stored in Setup are for decoding symbols, not for communication. You can switch between decoding settings for symbols by loading the appropriate Setup for your usage. See "6.8.2 Configuration Parameters for Setup" for applicable settings.

7.8.1 Save and load setup (configuration tool)

Use the setting tool FixedConfig6180 to save and load the setup.

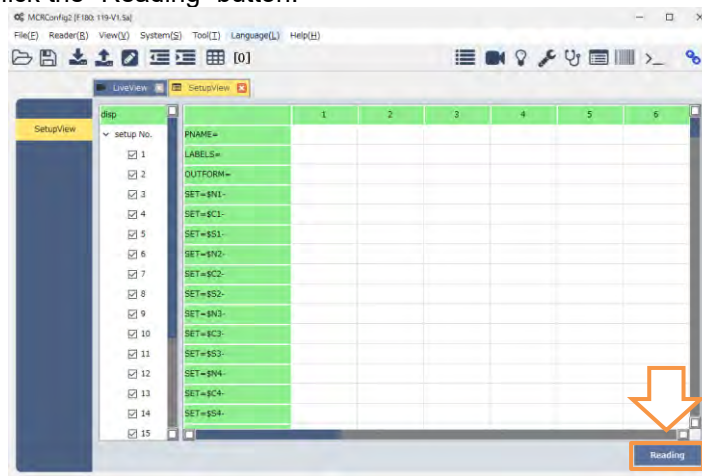
●Displaying the Setup View

1. From the "Tool Bar", click on the "Setup View" button.



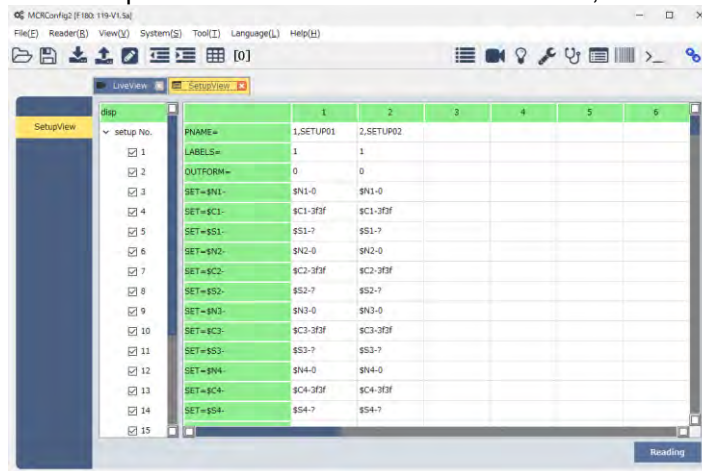
● Display saved setup

1. Click the "Reading" button.



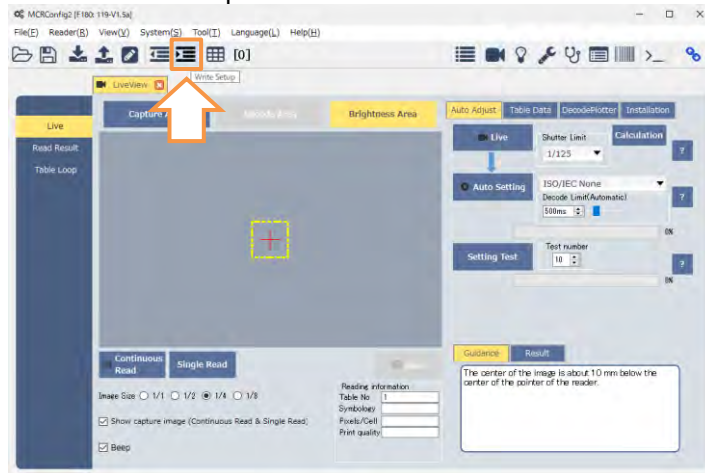
Display the setup parameter stored in the barcode scanner.

If the setup does not exist in the barcode scanner, the settings will not be displayed.



● Save the barcode scanner settings as a setup

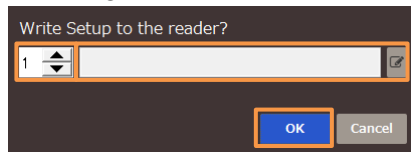
1. Click the "Write Setup" button.



2. Enter the setup number and name of the destination to save.

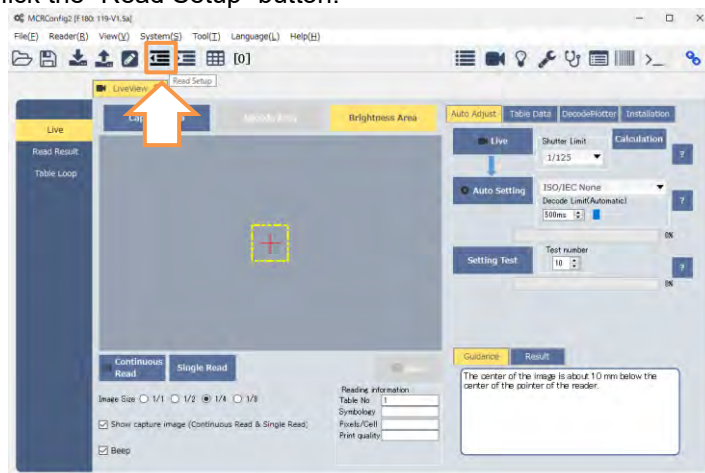
Entering a name is optional.

Click the "OK" button.



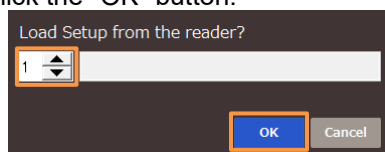
● Load a setup

1. Click the "Read Setup" button.



2. Enter the setup number to be read.

Click the "OK" button.



7.8.2 Configuration Parameters for Setup

The following configuration parameters are available for setup.

Term	Command	Description
Symbologies	GS1GS=	Convert characters which indicate the data delimiter of GS1 related symbols (FNC1)
Common	GS1AI=	Set the output method of GS1 AI
Symbologies	LABELS=	Number of labels
Multi-Labels	OUTFORM=	Setting of Output in the order
	SET=\$Na-b	Set label number and verification digit number
	SET=\$Ca-bbcc	Set label number and verification character
	SET=\$Sa-b	Set label number and verification symbologies
Symbologies	SET=AM	Set Disable/Enable Code39
Code39	C39SS=	Start / Stop code output setting of Code39
	DIGIT=A	Set minimum and maximum digit numbers of Code39
	EDIT=A	Set data output range of Code39
	SYMHEAD=A	Set header character of Code39
	SYMFOOT=A	Set footer character of Code39
Symbologies	SET=CM	Set Disable/Enable Code128
Code128	DIGIT=C	Set minimum and maximum digit numbers of Code128
	EDIT=C	Set data output range of Code128
	SYMHEAD=C	Set header character of Code128
	SYMFOOT=C	Set footer character of Code128
Symbologies	SET=FM	Set Disable/Enable Codabar
Codabar	CODASS=	Start / Stop code output setting of Codabar
	CODACS=	Start / Stop code output setting of Codabar
	CODACHK=	Checksum algorithm setting of Codabar
	DIGIT=F	Set minimum and maximum digit numbers of Codabar
	EDIT=F	Set data output range of Codabar
	SYMHEAD=F	Set header character of Codabar
	SYMFOOT=F	Set footer character of Codabar

Term	Command	Description
Symbologies ITF	SET=IM	Set Disable/Enable ITF
	DIGIT=I	Set minimum and maximum digit numbers of ITF
	EDIT=I	Set data output range of ITF
	SYMHEAD=I	Set header character of ITF
	SYMFOOT=I	Set footer character of ITF
Symbologies Code93	SET=GM	Set Disable/Enable Code93
	DIGIT=G	Set minimum and maximum digit numbers of Code93
	EDIT=G	Set data output range of Code93
	SYMHEAD=G	Set header character of Code93
	SYMFOOT=G	Set footer character of Code93
Symbologies UPC/EAN/JAN	SET=EM	Set Disable/Enable UPC/EAN/JAN
	JE13SUM=	Checksum output setting of EAN/JAN (standard 13 digits)
	JE8SUM=	Checksum output setting of EAN/JAN (standard 8 digits)
	UASUM=	Checksum output setting of UPC-A
	UESUM=	UESUM=a Checksum output setting of UPC-E
	UPCANS=	Number system output setting of UPC-A
	UPCENS=	Number system output setting of UPC-E
	UPCE=	Checksum output setting of UPC-E
	UPCTX=	Output format setting of UPC-A
	DIGIT=E	Set minimum and maximum digit numbers of UPC/EAN/JAN
	EDIT=E	Set data output range of UPC/EAN/JAN
	SYMHEAD=E	Set header character of UPC/EAN/JAN
	SYMFOOT=E	Set footer character of UPC/EAN/JAN
Symbologies GS1 Databar	SET=eM-RSS	Set Disable/Enable GS1 Databar
	DIGIT=e -RSS	Set minimum and maximum digit numbers of GS1 Databar
	EDIT=e -RSS	Set data output range of GS1 Databar
	SYMHEAD=e -RSS	Set header character of GS1 Databar
	SYMFOOT=e -RSS	Set footer character of GS1 Databar

Term	Command	Description
Symbologies	SET=dM	Set Disable/Enable DataMatrix
DataMatrix	DIGIT=d	Set minimum and maximum digit numbers of DataMatrix
	EDIT=d	Set data output range of DataMatrix
	SYMHEAD=d	Set header character of DataMatrix
	SYMFOOT=d	Set footer character of DataMatrix
Symbologies	SET=QM	Set Disable/Enable QR Code
QR Code	DIGIT=Q	Set minimum and maximum digit numbers of QR Code
	EDIT=Q	Set data output range of QR Code
	SYMHEAD=Q	Set header character of QR Code
	SYMFOOT=Q	Set footer character of QR Code
Symbologies	SET=eM-CC	Set Disable/Enable Composite
Composite Code	DIGIT=e -CC	Set minimum and maximum digit numbers of Composite
	EDIT=e -CC	Set data output range of Composite
	SYMHEAD=e -CC	Set header character of Composite
	SYMFOOT=e -CC	Set footer character of Composite
Symbologies	SET=LM	Set Disable/Enable PDF417
PDF417	DIGIT=L	Set minimum and maximum digit numbers of PDF417
	EDIT=L	Set data output range of PDF417
	SYMHEAD=L	Set header character of PDF417
	SYMFOOT=L	Set footer character of PDF417
Symbologies	SET=zM	Set Disable/Enable Aztec Code
Aztec Code	DIGIT=z	Set minimum and maximum digit numbers of Aztec Code
	EDIT=z	Set data output range of Aztec Code
	SYMHEAD=z	Set header character of Aztec Code
	SYMFOOT=z	Set footer character of Aztec Code

Term	Command	Description
Reading	BR=	No read message
	SONCMD=	Register the SYNC ON command
	SOFFCMD=	Register the SYNC OFF command
Operation Mode	SYNCMODE	Set Operation Mode
	VOUT=	Output timing
	TOTALLIM=	Decode timeout
Continuous Reading Mode	continue/stop	Continuous Reading Mode Enable/Disable
	contintvl=	Set a time interval of reading
Additional Information	CHKBCR=	Warning Information
	SYMBOLTX=	Symbology Information
	DTTX=	Decoding time
	TTTX=	Total time of decoding
	AGCTX=	Swing Value
	TBLTX=	Table Number
	MYNAME=	Individual name
	NAMETX=	Individual name to output data
	CONTTX=	Contrast Information
	CSX=	X-coordinate point of calculation (Origin)
	CSY=	Y-coordinate point of calculation (Origin)
	CWX=	X-coordinate point of calculation (Width)
	CWY=	Y-coordinate point of calculation (Width)
	QTTX=	Quality Information
	MRTX=	Mirrored Image Information
	XYTX=	Symbol Position Information
	PNTX=	Last read Setup Number
Delay Time	DELAY=	Delay time between SYNC input and start capturing
Cycle Buffer Function	MAXIMG=	Number of captured images
	WAITIMG=	Capture interval of time when MAXIMG is greater than 1
	CAPLIM=	After the number of captures exceeds the MAXIMG
Image rotation	ROTATE=	Enable/disable image rotating (180a) at capturing images
Camera Control Mode	AGC=	Use the camera setting

Term	Command	Description
Table Mode	ENABLEDDMTBL=	Specify Number of Tables
	DDMTBLNG=	Specify the operation of Table Mode
	DDMcapmode=	Specify capturing area of the table
	DDMlight=	Set ON/OFF of illumination output
	DDMflash=	Set the brightness of internal illumination source
	DDMshutt=	Set the shutter speed of the table
	DDMagain=	Set the Analog gain of the table
	DDMdgain=	Set the Digital gain of the table
	DDMblack=	Setting for improving the contrast of a captured image
	DDMpreproc=	Set the type of preprocessing
	DDMmirror=	Set the mirrored image of the table
	DDMdecodelim=	Setting of decoding time limit
	DDMtblname=	This command specifies a name of the current table number
	DDMdpmoption=	DPM option
Multiple Area Decode	DDMdecodenum=	Number of Decode Areas
	DDMdecmode=	Decode Area
	DDMdeclimarea=	Decode Time Limit
	DDMdecodesym=	Symbol Type
Preset	PREM=	Set the Preset Mode
	SET=PREN	Set the number of digits for comparing
	SET=PRED	Set the preset data
Auto sense	LFILLUM=	Set aimer and illumination in detection state
	LFSENS=	Set detection sensitivity
	LFTOTALLIM=	Set read timeout time in Auto-sense Mode
	LFWAIT=	Set the wait time for the next detection
	VERIFY=	Set whether to permit continuous reading of the same symbol
	VWAIT=	Set the prohibited time when VERIFY=1
	LFTYPE=	Sensor settings
NG Image storage order	IMGFULL=	Set the storage order the NG Image

7.8.3 Serial Commands Related to Setup

The setup-related commands are as follows

PSAVE=a[CR] a= 1 - 20
Saves the current barcode scanner settings to flash ROM as setup a.

PLOAD=a[CR] a= 1 - 20
Reflects the settings of setup a to the barcode scanner.
If setup a does not exist, the settings are not changed.

PERASE[CR] Erase all setup form flash ROM.

PERASE=a[CR] a= 1 - 20
Erase setup a form flash ROM.

PNAME=a,b[CR] a= 1 - 20, b= alphanumeric 32 bytes
Set a name for setup a.

WSETP[CR] Saves the setup name to flash ROM.

PNTX=a[CR] a= 0 (*) - 1 (0:Disable addition, 1:Enable addition)
Addition of setup number
(Commands for the Models without RS-232C)

PNTX=a,(b)[CR] a= 0 (*) - 1 : Addition of setup number for RS-232C
 b= 0 (*) - 1 : Addition of setup number for LAN
Omit (,b): Set RS-232C and LAN in the same way (=a)
(Commands for RS-232C model)

“(*)” indicates the default setting

After the power is turned on, the number of the setup that has been read is added to the read data.

If the setup has not been read, "--" is added to the data.

(Example output) 12345(SETUP:01)

?plist[CR] Outputs the setup name.

```
?p l i s t
PNAME=1, SETUP1
PNAME=2, SETUP2
----- (omission) -----
PNAME=20,
```

7.8.4 Industrial Ethernet

The following operations can be performed using Industrial Ethernet (EtherNet/IP).

- Write symbol reading results directly into the PLC's internal memory.
- Control the operation of the product from PLC.

For the details, download "Industrial Ethernet Connection Manual".

If you want to use the Industrial Ethernet function with a reader of a supported version or earlier, please contact our customer support

<https://www.bradyid.com/V6180>

7.9 **Multiple Area Decode**

Multiple areas are decoded in one capture.

Up to 10 areas can be set.

By using this function, the decoding time can be shortened, and the output order of the read data can be specified.

7.9.1 **Number of Decode Areas [DDMdecodenum]**

Set the number of "Decode Area".

This function is invalid when number of decode areas is 0.

If the number of decode areas is 1 or more, this function is enabled, and the set number of decoding is performed.

DDMdecodenum=a[CR] a=0 to 10

0 : Disable Multiple Area Decode function (*)

1 to 10: Enable Multiple Area Decode function, number of decode areas

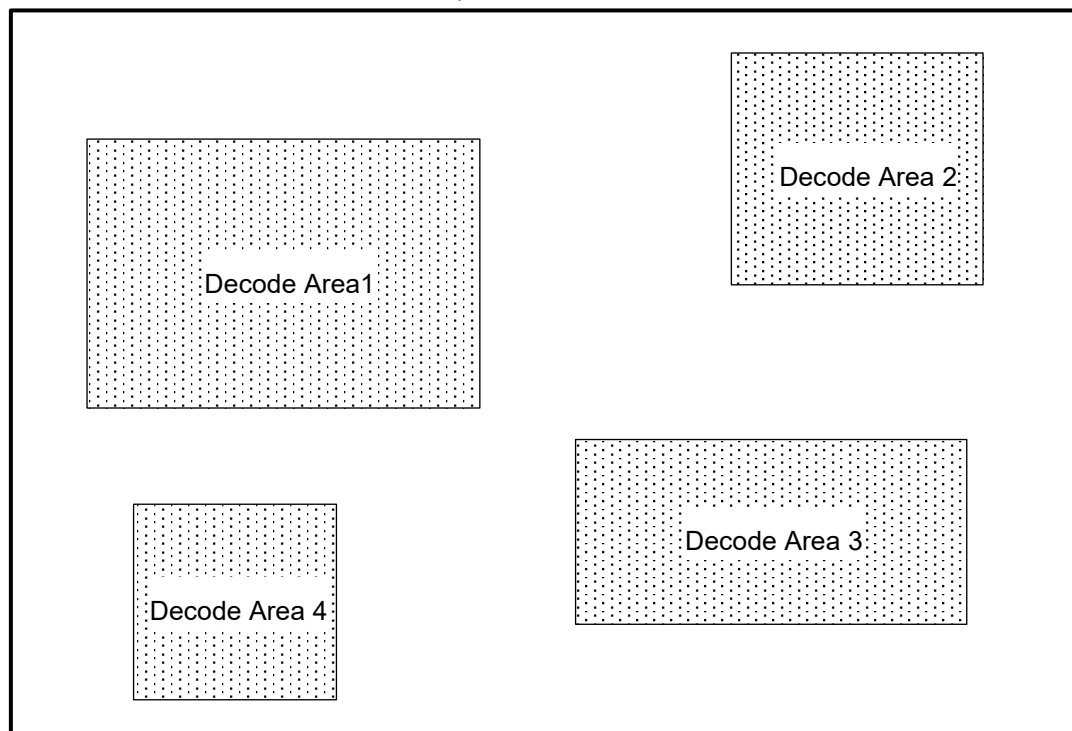
*: Default

The read data is output in the order of the decoding area numbers.

(Example output)

Decode Area1, Decode Area2, Decode Area3, Decode Area4

Capture Area



7.9.2 Decode Area [DDMdecmode]

This function is used for specifying a decode area.

The decode area is specified depending on the X origin, y-coordinate, width and height.

DDMdecmode=a,b,c,d,e[CR]

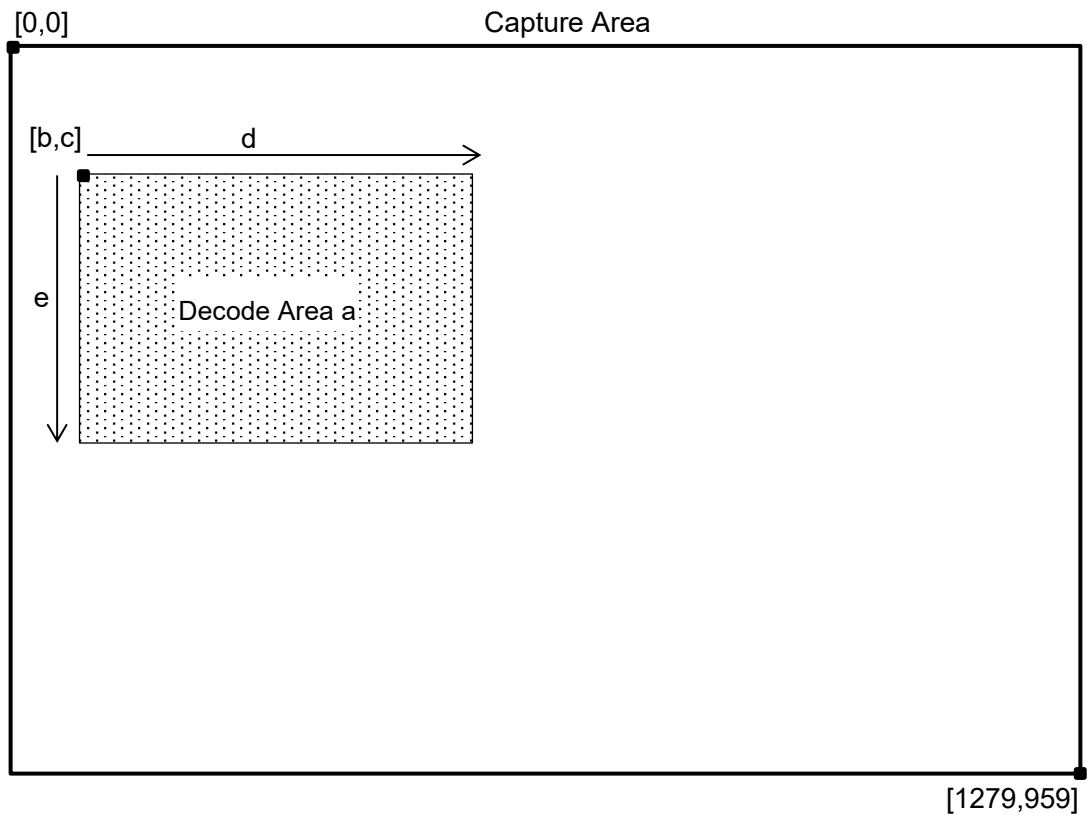
a: Number of Decode Area (1 to 10)

b: Coordinate origin X (0 to 1276)

c: Coordinate origin Y (0 to 956)

d: Width (4 to 1280)

e: Height (4 to 960)



7.9.3 Decode Time Limit [DDMdeclimarea]

This function is used for specifying a decode time limit of each decode area.

DDMdeclimarea=a,b[CR]

a: Number of Decode Area (1 to 10)

b: Decode Time Limit (50 to 10000[ms])

7.9.4 Symbol **【DDMdecodesym】**

This function is used for specifying a target symbol of each decode area.

Decoding is not possible if the symbology setting is invalid.

DDMdecodesym=a,b[CR]

a: Number of Decode Area (1 to 10)

b: Number of Symbol (0 to 10)

Number	Symbol Type
0	Data Matrix
1	QR Code
2	Code39
3	Code128
4	Codabar
5	Code93
6	ITF
7	UPC/EAN/JAN
8	GS1 Databar
9	PDF417
10	Aztec Code

7.9.5 Output the status of Multiple Area Decode **【?ddmarea】**

Output the status of Multiple Area Decode function.

?ddmarea[CR]

(Example output)

```
?ddmarea

***** STATUS *****
DDMdecodenum=0

+++ DecodeSetting 1 +++
DDMdecmode=0, 0, 1280, 960
DDMdeclimarea=500
DDMdecodesym=0

------(skip)-----
+++ DecodeSetting 10 +++
DDMdecmode=0, 0, 1280, 960
DDMdeclimarea=500
DDMdecodesym=0

***** END *****
V6180 : 093-V1.0a
```

7.9.6 Functions disabled when Multiple Area Decode is enabled

When Multiple Area Decode is enabled, the following functions are disabled.

- (1) Number of labels (LABELS=)
- (2) Output order (OUTFORM=)
- (3) Decode Time Limit of the table (DDMdecodelim=)

7.10 **Symbol Printing Check**

This function judges a printing quality of a two-dimensional symbol captured by barcode scanner using in-line. It verifies the print quality and output the result by using evaluation parameters of ISO/IEC 15415 or ISO/IEC TR 29158.

Printing quality of symbols flowing on manufacturing line is maintained at a certain level by being checked in-line. By checking the printing quality soon after marking, detailed time-dependent change of a marking system can be seen based on the evaluation parameter.



- † Notice that this function is for a simple check that outputs the evaluation result in the same format with standard evaluation parameter. It cannot be used as a proper two-dimensional symbol verifier.

- † Verification results of this function may be affected by the change of imaging conditions of the barcode scanner. To prevent a variance of evaluation result, use this function under the same imaging condition (especially following conditions) as much as possible.
 - Reading distance
 - Illumination condition (Light ON/OFF configuration of internal/external illumination, illumination brightness)
 - Shutter speed
 - Analog gain
 - Digital gain
 - Inclination of the symbol surface against barcode scanner (tilt, skew, pitch)
 - Amount of light around barcode scanner

- † Processing time becomes longer than regular symbol reading when this function is active. Turn off when this function is not necessary.

7.10.1 Supported Symbologies

2D barcode

Data Matrix (ECC200)

QR Code

7.10.2 Symbol Printing check Items to be output

Evaluation items to be used for overall determination is selectable.

The evaluation values are output on a scale of 5 levels (0 to 4) by each evaluation item.

2D barcode (Select an evaluation item from ISO and ISOTR.)

No.	Evaluation Items
0	Overall Quality (Lowest value of selected evaluation item)
1	Contrast (ISO) / Cell Contrast (ISOTR)
2	Modulation (ISO) / Cell Modulation (ISOTR)
3	Fixed Pattern Defection
4	Decode
5	Non-uniformity of Axis
6	Non-uniformity of Grid
7	Unused Error Correction

"Overall Quality"(OVR) means a value of each element's lowest grade.

In the default setting, the Overall Quality is determined by the evaluation of the 7 items numbered 1 to 7 in the table.

You can also select the evaluation items to be targeted for the Overall Quality.

Below are examples of Overall Quality output for all evaluation items and when fixed pattern damage is not included.

Evaluation item	Grade value for each evaluation item							OVR
	1	2	3	4	5	6	7	
All	4	3	2	4	4	4	4	2
Other than Fixed Pattern Defection	4	3	-	4	4	4	4	3

7.10.3 Digital Output of Determination in Symbol Printing Check

When Print Check Output is enabled, the determination can be output digitally in check result. Configure a threshold to determine whether the overall judgment is OK (GOOUT) or NG (NGOUT).

If a threshold is configured 2:

Outputs OK when an overall quality is 2,3, or 4

Outputs NG when an overall quality is 0 or 1

If a threshold is configured 0, the determination is output in a determination of regular symbol reading without a determination in check result.

8 LAN (TCP server) connection

8.1 Preparation

Configure the network setting to use the LAN interface.

8.2 Configure IP address

8.2.1 Configure through LAN interface

Set the IP address of the PC from 192.168.209.1 to 192.168.209.255 excluding the initial IP address of this product (192.168.209.10).

Connect the reader to a PC through a LAN cable.

Start a terminal software such as FixedConfig6180 on a host computer.

* For the operation method of the setting tool, refer to the instruction manual.

Operate entering various commands from the terminal software.

IPADR: Configures an IP address and subnet mask in command.

```
IPADR=192.168.209.10/24
```

* The subnet mask can be omitted if you do not want to change the subnet mask.

IPPORT: Set the port number for TCP server (reading result transmission).

IPPORT2: Set the port number for TCP server (image data transmission).

(Another port also can be specified.)

```
IPPORT=27110  
IPPORT2=27110
```

Configure the default gateway address by the command below.

```
GWADR =192.168.209.254
```

*Set the same network as IP address.

Confirm the LAN settings by the command below.

```
?LAN
```

Save the settings to internal flash memory by the command below.

```
WSETS
```

* "Write OK" is sent when the settings are saved Write OK.

Turn off power and restart the reader.

8.2.2 Configure through the RS-232C interface

For RS-232C model, configure IP address via the RS-232C interface.

Connect the barcode scanner to a PC through an RS-232C cable.

Start a terminal software such as FixedConfig6180.

Specify the IP address/port number of the V6180 as the target device.

The subsequent operation is the same as the setting from the LAN interface.

† If the IP address of this product is in a different network, reconfigure the IP address of the PC.

8.3 Default Settings

IP address	: 192.168.209.10
Subnet mask	: /24(same as 255.255.255.0)
Port number (reading result transmission)	: 27110
Port number (image data transmission)	: 27110
Default gateway address	: 192.168.209.254

e.g.) Settings example

```
IPADR=192.168.0.101/24
IPPORT=60000
GWADR=192.168.0.1
?LAN

***** STATUS *****
IP address      (IPADR) : 192.168.209.10  [>> 192.168.0.101]
Sub net mask    (/n)    : 255.255.255.0   [>> 255.255.255.000]
Default gateway (GWADR) : 192.168.209.254 [>> 192.168.0.1]
Barcode port    (IPPORT) : 27110         [>> 60000]
Image port      (IPPORT2) : 27110        [>> 27110]
Send Barcode IP (IPBAR)   : 0.0.0.0:27120
Send Image IP   (IPIMG)   : 0.0.0.0:27130
connection-retry(RTIME)  : 0
session-timeout (STOUT)  : 0
MAC address      : 00:16:fc:0c:ff:f5
***** END *****
V6180: 093-V1.0a
```

Setup value is displayed enclosed in “[>>“ and ”]”.

The dump screen of the computer and the barcode scanner is displayed as described in the box above. The contents of the communication are set as follows:

[Current operating status]

IP address	: 192.168.209.10
Subnet mask	: /24
Default gateway	: 192.168.209.254
Port number (reading result transmission)	: 27110
Port number (image data transmission)	: 27110

[Setting (Effective at next activation)]

IP address	: 192.168.0.101
Subnet mask	: /24
Default gateway	: 192.168.0.1
Port number (reading result transmission)	: 60000
Port number (image data transmission)	: 27110

† To enable the setting, save to flash memory in WSETS command and power off to reset.

8.4 Check for LAN settings

8.4.1 Through LAN interface

Communication state can be checked by UDP (User Datagram Protocol), if the network address is already known.

Set IP address of the host into the same network as the reader.

Connect V6180 series to the PC for configuration with a LAN cable.

Specify the broadcast / port number as a UDP communication destination.

- † The port number is 49460 fixed.
- † If multiple V6180 series are connected in the same network, respective devices will respond.

Confirm the settings by the command below.

`?who`

The following parameters are output in a line:

- Local IP address (IP address of V6180 series)
- Local port number (Port number of TCP server of V6180 series)
- Subnet mask
- Default gateway
- MAC address (Lower 3 bytes)
- MAC address (Upper 3 bytes)

8.4.2 Through RS-232C interface

For RS-232C model, you can check the LAN configuration via RS-232C interface.

LAN setting can be confirmed through RS-232C interface anytime.

?Confirm the LAN settings by the command below.

?LAN

The following parameters are sent to the host:

- IP address
- Subnet mask
- Default gateway
- Port number of TCP server (reading result transmission)
- Port number of TCP server (image data transmission)
- Destination of TCP client (reading result transmission)
- Destination of TCP client (image data transmission)
- Connection request interval (TCP client)
- Detection timer (TCP client)

8.5 Connect to LAN

Auto-negotiation function which can automatically configure both communication speed (100Mbps, 10Mbps) and communication mode (Full Duplex, Half Duplex) is mounted on the cable. Therefore, configure the LAN setting (communication speed and communication mode) of your computer to auto-setting at a one-to-one communication through a crossover cable.

8.6 **Manage Communication Status**

The V6180 series supports 4 types of communication method:

- TCP server communication (all commands)
- TCP client communication (reading result transmission)
- TCP client communication (image data transmission)
- UDP communication (for administration)

[TCP server communication]

The reader works as a TCP server whose port number can be set to any value.

Two ports are available: one for reading result transmission and one for image data transmission. The maximum number of connections to the port is up to three.

The maximum number of connections to the port for image data transmission is 1.

The reader will disconnect in the following situations:

- Receive close request from the client
- Detect transmission error

In the following cases, the reader cannot detect disconnect state:

- A UTP cable was removed before the client sent close request.
- The client aborted the system without sending close request.

† To recover the connection, send the command “discon” through UDP communication for forced termination, and then retry the connection.
e.g.)

(Command) → discon 27110

[TCP client communication for reading result transmission]

The reader also works as a TCP client whose access point (IP address: port number) can be set. Configure the connection timing by the command RTIME (Connection request interval).

- Connect every time when you send data
- Connect automatically every time the reader is powered on

Once a connection is established, the reader will disconnect in the following cases.

- The duration time passes (always-on connection is also possible)
- The reader receives a disconnect request from the server/client
- The V6180 series detects a send error

You can disconnect at any time with discon (forced disconnection) command.

e.g.)

(Command) → discon IPBAR

[TCP client communication for image data transmission]

The reader also works as a TCP client whose access point (IP address: port number) can be set. Configure the connection timing by the command RTIME (Connection request interval).

- Connect every time when you send data
- Connect automatically every time the reader is powered on

Once a connection is established, the reader will disconnect in the following cases.

- The duration time passes (always-on connection is also available)
- The reader receives a disconnect request from the server/client
- The V6180 series detects a send error

You can disconnect at any time with discon (forced disconnection) command.

e.g.)

(Command) → discon IPIMG

[UDP communication]

The barcode scanner also works as an UDP server with a fixed port number (49460).

The connectionless UDP communication can communicate with multiple PCs.

When you send data in a broadcast from the superior PC, all devices on the LAN will respond. With broadcast, you can:

- Get a list of V6180 series that is running normally on the LAN.
- Get terminal information of unknown IP address and port number.

You can shut down TCP server communication using UDP communication.

8.7 **Serial command for LAN settings**

?LAN

Get a list of settings for LAN connection.

IPADR=<IP address in dotted notation>/<Bit number of subnet mask>

Set IP address and subnet mask of the reader.

† If you do not change the subnet mask, the mask bit number can be omitted.

GWADR=<IP address in dotted notation>

Set default gateway address of the reader.

† Set the same network with the IP address.

IPPORT=<Port number (reading result transmission)>

Set the port number for TCP server (reading result transmission).

IPPORT2=<Port number (image data transmission)>

Set the port number for TCP server (image data transmission)).

IPBAR=xxx.xxx.xxx.xxx: nnnn

Destination IP address of reading results: set the port number.

Sends reading results from the TCP server when the destination IP address is 0.0.0.0.

Sends reading results from the TCP client when the destination IP address is other than 0.0.0.0.

xxx.xxx.xxx.xxx Destination IP address

nnnn Destination port number (1 to 63335)

IPIMG=xxx.xxx.xxx.xxx: nnnn

Destination IP address of image data: Configure the port number.

Sends reading results from the TCP server when the destination IP address is 0.0.0.0.

Sends reading results from the TCP client when the destination IP address is other than 0.0.0.0.

xxx.xxx.xxx.xxx Destination IP address

nnnn Destination port number (1 to 63335)

RTIME=<Connection request interval>

Set the interval time that the TCP client communication attempts to reconnect to 0 to 100 seconds.

When the interval time is 0, the barcode scanner connects every time when you send data.

When the interval time is other than 0, the barcode scanner connects automatically (at the same time the reader is powered on).

This configuration change is enabled at the next connection.

STOUT=<Duration time>

Set the interval time that the barcode scanner requests a disconnection from 0 to 100 seconds after the loss of data to transmit and receive from the TCP client.

When the interval time is other than 0, the barcode scanner does not send the disconnection request. (Always-on connection).

TCPCS=a (a=0; Disable a=1; Enable)

Set the function of data arrival confirmation. If enabled, the reader will wait to send the next data until receiving "Ack", which is associated with the previous data, from the host.

?who

Get the following status:.

Local IP address (IP address of the reader)

Local port number (TCP server port number of the reader)

Subnet mask

Default gateway

MAC address (Lower 3 bytes)

MAC address (Upper 3 bytes)

?netstat

Outputs following information in a line. The number of output rows depends on the setting of the local port number for reading result transmission and image data transmission, and the number of simultaneous connections.

- Local IP address (IP address of the reader)
- Local Port number (TCP server port number of the reader)
- Remote IP address (IP address of the connected PC)
- Remote Port number (Port number of the connected PC)
- TCP server socket status

?netstat IPBAR

Outputs information about the destination of reading result in a line.

- Local IP address (IP address of the imager)
- Local Port number (TCP client port number of the imager)
- Remote IP address (IP address to send reading results)
- Remote Port number (Port number to send reading results)
- Status of TCP client communication to send reading results

?netstat IPIMG

Outputs information about the destination of reading result in a line.

- Local IP address (IP address of the imager)
- Local Port number (TCP client port number of the imager)
- Remote IP address (IP address to send image data)
- Remote Port number (Port number to send image data)
- Status of TCP client communication to send image data

?version

Outputs following information in a line.

- Local IP address (IP address of the reader)
- Local Port number (TCP server port number of the reader)
- System version
- Model name

discon<TCP Port number>

Shut down TCP connection of the specified port number.

* <TCP port number> should be set in decimal.

e.g.) discon 27110

8.8 **Initialize LAN address**

If you do not know the LAN address of the barcode scanner, please follow the procedure below to make it the factory IP address.

Operate the Teach button on the operation panel, initialize the LAN address, and start up.

- While holding down the Teach button, start the barcode scanner.
- When status LED A is ON, release the Teach button.
- † The LAN address saved in the barcode scanner is not changed.

Therefore, when the barcode scanner is started next time, it starts up with the saved LAN address.

For RS-232C model, send the LAN address initialization command via RS-232C.

- Send a command SET=LAN.
- Send a command WSETS.
- Restart the barcode scanner.

Default settings

IP address	: 192.168.209.10
Subnet mask	: /24 (same as 255.255.255.0)
Port number of TCP server	: 27110 (only for sending read data)
	: 27110 (only for image data transmission)
Default Gateway	: 192.168.209.254

9 Transfer images to an FTP server

V6180 series can transfer the image data and decoded data to an FTP server after sending decoded data to the host PC. If the FTP server has no space for saving the data, the transferring is discarded.

9.1 Transfer images

- In the case of SYNCMODE=0

The barcode scanner transfers the image used in the decoding.

- In the case of SYNCMODE=1, 2, 3

The barcode scanner transfers the image used in the last decoding.

- Data format

8bit, Grayscale, Btmap

- Image size

Full size, 1/2 size, 1/4 size, or 1/8 size can be selected.

- File name

Set the file name by the serial command "FTPCNAMEFORM".

If the FTP server does not support long file name, specify to short file name (Limited to at most eight characters, followed optionally by a file name extension consisting of a period and at most three further characters).

The total numbers of times of OK/NG reading are equal to those indicated by the serial command "?total". These are reset to 0 by the serial command "clrtotal".

(1) long file name (standard)

In the case of read OK: YYYYMMDD-hhmm_okimgnnnnnnnn.bmp

In the case of read NG: YYYYMMDD-hhmm_ngimgnnnnnnnn.bmp

YYYYMMDD-hhmm: Year (4 digits) Month (2 digits) Day (2 digits) –
Hour (2 digits) Minute (2 digits)

nnnnnnnn: 0000001 to 9999999

(represents the total number of times of OK/NG reading.)

The date and time are set by DATE command.

The timestamp of a file name is that at the time of transferring.

(2) short file name (8.3 filename)

In the case of read OK: *onnnnnnnn.bmp*

In the case of read NG: *nnnnnnnnn.bmp*

nnnnnnnn: 0000001 to 9999999

(represents the total number of times of OK/NG reading.)

9.2 Transfer decoded data

- Data format

In the case of transferring only decoded data: text format

<decoded data><CR><LF>

e.g.)

abcdefg

BR

0123456789

In the case of transferring decoded data and images: CVS format

<decoded data><separator><image file name><CR><LF>

e.g.)

abcdefg,20180907-1850_okimg0000001.bmp

BR, 20180907-1851_ngimg0000001.bmp

0123456789,20180907-1852_okimg0000002.bmp

The separator can be changed arbitrarily.

The text "BR", which is the default value of NG decoding, can be changed by the serial command "BR".

- File name

The file name can be specified with any characters except for some special characters; "\", "/" and so on.

- Data append mode

In this mode, the transferring data is appended to the original file. The default mode is this mode. If the FTP server does not support the mode, the transferring data is overwritten to the original file.

9.3 Serial commands

"(*)" indicates the default setting.

- **FTPCMODE:** Timing of transfer

This command specifies the timing of transferring the decoded data.

FTPCMODE=0 (*) Not transfer

FTPCMODE=1 Transfer both OK and NG

FTPCMODE=2 Transfer when the result is NG

FTPCMODE=3 Transfer when the result is OK

- **FTPCHOST:** Destination hostname or IP address

This command specifies the hostname or IP address of the destination FTP server.

FTPCHOST=192.168.209.1 (*)

- **FTPCUSER:** Username for login

This command specifies a username for login. The maximum number of characters is 31.

FTPCUSER=ftpuser (*)

- **FTPCPASS:** Password for login

This command specifies a password for login. The maximum number of characters is 31.

FTPCPASS=password (*)

- **FTPCTYPE:** Connection mode

This command specifies the connection mode.

FTPCTYPE=0 (*) Passive mode

FTPCTYPE=1 Active mode

- **FTPCHOSTDIR:** Destination directory of the FTP server

This command specifies the destination directory of the FTP server. The maximum number of characters is 255. The maximum number of hierarchy levels is 10.

FTPCHOSTDIR=/mts/ (*)

- **FTPCTXTNAME:** File name of decoded data
 This command specifies the file name of decoded data. The maximum number of characters is 31.
 FTPCTXTNAME=data.csv (*)

- **FTPCTXTMODE:** Writing mode of decoded data
 This command specifies the writing mode of decoded data.
 FTPCTXTMODE=0 Append mode (*)
 FTPCTXTMODE=1 Overwrite mode

- **FTPCTXTSEPA:** Data separator of the decoded data file
 This command specifies the separator or decoded data file. The input value is the Hex format (01 to FF).
 FTPCTXTSEPA=2C (*)

- **FTPCTYPE:** Type of transferring files
 This command specifies the type of transferring files.
 FTPCTYPE=1 Transfer the image data (*)
 FTPCTYPE=2 Transfer the decoded data
 FTPCTYPE=3 Transfer both the image data and decoded data

- **FTPNAMEFORM:** File name of image data
 This command specifies the file name of the image data.
 FTPNAMEFORM=0 Long file name (standard) (*)
 FTPNAMEFORM=1 Short file name (8.3 filename)

- **FTPCCLOSE:** Close FTP client connection
 This command closes the FTP client connection. No argument is necessary.
 FTPCCLOSE

- ?ftpc/?FTPC: Show FTP status

This command shows settings of FTP client function.

No argument is necessary.

The following is an example of the status.

```
***** STATUS *****  
  
FTPSTATUS:logged-in  
FTPCMODE=1 (0:disabled 1:ok/ng 2:ng 3:ok)  
FTPCHOST=192.168.209.101 (ftp server ip address)  
FTPUSER=ftpuser (login user-id)  
FTPCPASS=password (login password)  
FTPCTYPE=0 (0:passive 1:active)  
FTPCHOSTDIR=/mts/ (working directory)  
FTPCTYPE=2 (1:image 2:text 3:both)  
FTPCTXTNAME=data.csv (text file name)  
FTPCTXTMODE=0 (0:append 1:over-write)  
FTPCTXTSEPA=2C (text data separator)  
FTPCLOSE (disconnect)  
***** END *****
```

9.4 Date settings

The date and time of the operating system can be set or shown by the serial commands.

- **DATE:** Set the date and time

This command specifies the date and time of the operating system in V6180 series. Each parameter is 2 digits.

DATE=YY/MM/DD/hh/mm

YY: Year (The last two digits of the calendar year)

MM: Month

DD: Day

hh: Hour

mm: Minute

e.g.)

DATE=18/09/07/19/34 -> September 7th, 2018, 7:34 PM

The date and time are reset to [January 1st, 2018, 0:00 AM] by rebooting or shutdown the system. The settable date and time are the following.

[January 1st, 2000, 0:00 AM] to [January 19th, 2038, 3:14 AM]



WARNING

When the date and time are past January 19th, 2038, 3:14 AM, the operating system will not work correctly.

- **?date/?DATE:** Show the date and time

This command shows the date and time of the operating system in V6180 series. No argument is necessary. The following is an example.

?date

Date & Time : 2018-09-07 20:00

9.5 Image settings

Image types and image sizes can be set by the serial commands.

Hereinafter, "(*)" shows the default setting.

- **IMGSEL: Set image types**

This command specifies image type for the transfer.

IMGSEL=0 Captured image (Raw image)

IMGSEL=1 (*) Decoded image (Preprocessed image)

- **GOUTSIZE: Size of image**

This command specifies sizes of transferring images.

GOUTSIZE=0 (*) Full size (1280 x 960)

GOUTSIZE=1 Half size (640 x 480)

GOUTSIZE=2 1/4 size (320 x 240)

GOUTSIZE=3 1/8 size (160 x 120)

10 Serial Command

- Serial command format
Serial command + [CR] Default (Backward compatible)
[Header] + Serial command + [Terminator]
- To add header and terminator characters to a serial command, send the command "CMDFORM=1".
The header and terminator characters are the same with the ones to add to read data. This is a compatible operation without the terminator.
- To return the input format of the configuration commands to compatible (configuration command + [CR]), send the command "CMDFORM=0".

10.1 Communication settings

Term	Command	Description (*)=Default
Baud rate	BAUD=aaaa	Baud rate of RS-232C (*2) aaaa=1200; 1200bps, aaaa=2400; 2400bps, aaaa=4800; 4800bps, aaaa=9600; 9600bps (*), aaaa=19200; 19200bps, aaaa=38400; 38400bps, aaaa=57600; 57600bps, aaaa=115200; 115200bps
Frame	FRAME=a	Frame of RS-232C (*2) a=0; 7 bits, Odd, Stop bit 1 a=1; 7 bits, Odd, Stop bit 2 a=2; 7 bits, Even, Stop bit 1 a=3; 7 bits, Even, Stop bit 2 a=4; 8 bits, None, Stop bit 1 (*) a=5; 8 bits, None, Stop bit 2 a=6; 8 bits, Odd, Stop bit 1 a=7; 8 bits, Odd, Stop bit 2 a=8; 8 bits, Even, Stop bit 1 a=9; 8 bits, Even, Stop bit 2
Header	HEAD=a	Header character a=0; None (*) a=1; [SX] a=2; [EC]
Terminator	TERM=a	Terminator character a=0; None a=1; [EX] a=2; [EX][CR] a=3; [CR][LF] (*) a=4; [CR] a=5; [CR][TAB] a=6; [TAB][CR]
Command Format	CMDFORM=0 CMDFORM=1	Command+[CR] or Command+[CR][LF] (*) [Header]+Command+[Terminator]
Separator	SEPA=a	Character code a=0; None a=1; & a=2; , (Comma) (*) a=3; [FS] (1C hex) a=4; [GS] (1D hex) a=5; [SP] (20 hex)
Prefix	PREFIX=a =a,\bb	Prefix character a=0; Disable (*) a=1; Enable bb; Prefix character(Hexadecimal code (*1) bb=00(*) [NUL] When omitting "bb", configured identifier will not be changed.
Suffix	SUFFIX=a =a,\bb	Suffix character a=0; Disable (*) a=1; Enable bb; Suffix character(Hexadecimal code (*1) bb=00(*) [NUL] When omitting "bb", configured identifier will not be changed.
RS/CS control	RSCS=0 RSCS=1	Disable RTS/CTS flow control (*) (*2) Enable RTS/CTS flow control
TCP arrival Confirmation	TCPCS=0 TCPCS=1	Disable data arrival confirmation (*) Enable data arrival confirmation
COM Port (Sync command, Data output)	COMFROM=0 COMFROM=1 COMFROM=2	RS-232C only (*) (*2) LAN only RS-232C and LAN
Control Code	LABELTX=0 LABELTX=1	Pass through (*) Change Control code to ASCII code within [hex].
Timeout period	TXWAIT=a	Timeout period for decoded data a=1000 to 30000 [ms]; 10[ms] step Default: 1000[ms]
Command response	CMDRES=a	Command response ON/OFF setting a=0: response OFF a=1: response ON (*)

(*1) Refer to "[Table of Character Code](#)"

(*2) Commands for RS-232C model

10.2 Symbolologies settings

Term	Command	Description (*)=Default
Common	SET=#M0	Disable all symbolologies
	SET=#M1	Enable all symbolologies
	SYMHEAD =#a =#a,\bb	Header character for all symbolologies a=0; Disable (*), a=1; Enable bb; Identifying character (Hexadecimal code (*1)) When omitting "bb", configured identifier will not be changed.
	SYMFOOT =#a =#a,\bb	Footer character for all symbolologies a=0; Disable (*), a=1; Enable bb; Identifying character (Hexadecimal code (*1)) When omitting "bb", configured identifier will not be changed.
	GS1GS =a =a,\bb	Convert characters which indicate the data delimiter of GS1 related symbols(FNC1) a=0; Not convert, a=1; convert (*), bb; Delimiter after conversion (Hexadecimal code (*1)) bb=1D (*) [GS] When omitting "bb", configured identifier will not be changed.
	GS1AI=a	Set the output method of GS1 AI (AI: application identifier) a=0; Output GS1 AI as is (*) a=1; Output GS1 AI enclosed in brackets
Multi-Labels	LABELS=a	Number of labels a=1 to 10; a=1(*)
	OUTFORM=0 OUTFORM=1 OUTFORM=2 OUTFORM=3	Output in the order of decoding (*) Output in the order of the specified digit-number Output in the order of the specified characters Output in the order of the specified symbolologies
	SET=\$Na-b	Set label number and verification digit number a=1 to 10; Label number b=0 to 9999; Digit number b=0 (*) Note: Digit number is 0 means digit number is no specified
	SET=\$Ca-bbcc	Set label number and verification character a=1 to 10; Label number bb; 1st character in Hexadecimal bb=3F(*) char '?' cc; 2nd character in Hexadecimal cc=3F(*) char '?' (Hexadecimal code (*1)) Note: "3F" means no character is specified
	SET=\$Sa-b	Set label number and verification symbolologies a=1 to 10; Label number b; Symbol identifier(As follows) b=?(*) A : Code39 C : Code128 F : Codabar I : ITF G : Code93 E : JAN/EAN/UPC R : GS1 Databar c : Composite Code d : DataMatrix Q : QR Code L : PDF417 z : Aztec Code Note: "?" means no symbol identifier is specified

(*1) Refer to "[Table of Character Code](#)"

Term	Command	Description (*)=Default
Code39	SET=AM0	Disable Code39
	SET=AM1	Enable Code39, checksum disable (*)
	SET=AM2	Enable Code39, checksum enable and output
	SET=AM3	Enable Code39, checksum enable and not output
	SET=AM4	Enable Code39, checksum disable, Full ASCII mode
	SET=AM5	Enable Code39, checksum enable and output, Full ASCII mode
	SET=AM6	Enable Code39, checksum enable and not output, Full ASCII mode
	C39SS=a	Start / Stop code output setting of Code39 a=0: disable (*), a=1: enable
	DIGIT=Ab,c	Set minimum (b) and maximum (c) digit numbers of Code39
	EDIT=Ab,c	Output Code39 data within a range of b-digits to c-digits
	SYMHEAD =Aa =Aa,\bb	Set header character of Code39 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=41 (*) character "A" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Aa =Aa,\bb	Set footer character of Code39 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=41 (*) character "A" When omitting "bb", configured identifier will not be changed.
Code128 GS1-128	SET=CM0	Disable Code128/GS1-128
	SET=CM1	Enable Code128/GS1-128 (*)
	DIGIT=Cb,c	Set minimum (b) and maximum (c) digit numbers of Code128/GS1-128
	EDIT=Cb,c	Output Code128/GS1-128 data within a range of b-digits to c-digits
	SYMHEAD =Ca =Ca,\bb	Set header character of Code128/GS1-128 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=43(*) character "C" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Ca =Ca,\bb	Set footer character of Code128/GS1-128 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=43(*) character "C" When omitting "bb", configured identifier will not be changed.

(*1) Refer to "[Table of Character Code](#)"

Term	Command	Description (*)=Default
Codabar	SET=FM0	Disable Codabar
	SET=FM1	Enable Codabar, checksum disable (*)
	SET=FM2	Enable Codabar, checksum enable and output
	SET=FM3	Enable Codabar, checksum enable and not output
	CODACS=a	Start / Stop code letter type setting of Codabar a=0: lowercase, a=1: uppercase (*)
	CODASS=a	Start / Stop code output setting of Codabar a=0: disable, a=1: enable (*)
	CODACHK=a	Checksum algorithm setting of Codabar a=0: standard (*), a=1: 7DR
	DIGIT=Fb,c	Set minimum (b) and maximum (c) digit numbers of Codabar
	EDIT=Fb,c	Output Codabar data within a range of b-digits to c-digits
	SYMHEAD =Fa =Fa,\bb	Set header character of Codabar a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=46 (*) character "F" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Fa =Fa,\bb	Set footer character of Codabar a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=46 (*) character "F" When omitting "bb", configured identifier will not be changed.
ITF	SET=IM0	Disable ITF
	SET=IM1	Enable ITF, checksum disable (*)
	SET=IM2	Enable ITF, checksum enable and output
	SET=IM3	Enable ITF, checksum enable and not output
	DIGIT=Ib,c	Set minimum (b) and maximum (c) digit numbers of ITF
	EDIT=Ib,c	Output ITF data within a range of b-digits to c-digits
	SYMHEAD =Ia =Ia,\bb	Set header character of ITF a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=49 (*) character "I" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Ia =Ia,\bb	Set footer character of ITF a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=49(*) character "I" When omitting "bb", configured identifier will not be changed.
Code93	SET=GM0	Disable Code93
	SET=GM1	Enable Code93 (*)
	DIGIT=Gb,c	Set minimum (b) and maximum (c) digit numbers of Code93
	EDIT=Gb,c	Output Code93 data within a range of b-digits to c-digits
	SYMHEAD =Ga =Ga,\bb	Set header character of Code93 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=47(*) character "G" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Ga =Ga,\bb	Set footer character of Code93 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=47(*) character "G" When omitting "bb", configured identifier will not be changed.

(*1) Refer to "[Table of Character Code](#)"

Term	Command	Description (*)=Default
UPC/EAN/JAN	SET=EM0	Disable UPC/EAN/JAN
	SET=EM1	Enable UPC/EAN/JAN (*)
	JE13SUM=a	Checksum output setting of EAN/JAN (standard 13 digits) a=0: enable (*), a=1: disable
	JE8SUM=a	Checksum output setting of EAN/JAN (standard 8 digits) a=0: enable (*), a=1: disable
	UASUM=a	Checksum output setting of UPC-A a=0: enable (*), a=1: disable
	UESUM=a	Checksum output setting of UPC-E a=0: enable (*), a=1: disable
	UPCANS=a	Number system output setting of UPC-A a=0: enable (*), a=1: disable
	UPCENS=a	Number system output setting of UPC-E a=0: enable (*), a=1: disable
	UPCE=a	Output format setting of UPC-E a=0: UPC-A format (*), a=1: UPC-E format
	UPCTX=a	Output format setting of UPC-A a=0: 12digits (*), a=1: 13digits
	DIGIT=Eb,c	Set minimum (b) and maximum (c) digit numbers of UPC/EAN/JAN
	EDIT=Eb,c	Output UPC/EAN/JAN data within a range of b-digits to c-digits
	SYMHEAD =Ea =Ea,\bb	Set header character of UPC/EAN/JAN a=0; Disable (*), a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=45(*) character "E" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Ea =Ea,\bb	Set footer character of UPC/EAN/JAN a=0; Disable (*), a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=45(*) character "E" When omitting "bb", configured identifier will not be changed.
GS1 Databar	SET=eM00-RSS	Disable GS1 Databar (*)
	SET=eM01-RSS	Enable GS1 DataBar (Expanded)
	SET=eM02-RSS	Enable GS1 DataBar (Expanded Stacked)
	SET=eM04-RSS	Enable GS1 DataBar (Limited)
	SET=eM08-RSS	Enable GS1 DataBar (Omnidirectional, Truncated)
	SET=eM10-RSS	Enable GS1 DataBar (Stacked, Stacked Omni directional)
	SET=eM1F-RSS	Enable GS1 DataBar (all types)
	DIGIT=eb,c-RSS	Set minimum (b) and maximum (c) digit numbers of GS1 Databar
	EDIT=eb,c-RSS	Output GS1 Databar data within a range of b-digits to c-digits
	SYMHEAD =ea-RSS =ea,\bb-RSS	Set header character of GS1 Databar a=0; Disable (*), a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=52 (*) character "R" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =ea-RSS =ea,\bb-RSS	Set footer character of GS1 Databar a=0; Disable (*), a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=52 (*) character "R" When omitting "bb", configured identifier will not be changed.

(*1) Refer to "[Table of Character Code](#)"

Term	Command	Description (*)=Default
DataMatrix	SET=dM0	Disable DataMatrix
	SET=dM1	Enable DataMatrix (Square, Normal label)
	SET=dM2	Enable DataMatrix (Square, Black/White inverted label)
	SET=dM3	Enable DataMatrix (Square, Black/White inverted and Normal label)
	SET=dM4	Enable DataMatrix (Square and Rectangle, Normal label)
	SET=dM5	Enable DataMatrix (Square and Rectangle, Black/White inverted label)
	SET=dM6	Enable DataMatrix (Square and Rectangle, Black/White inverted and Normal label)
	SET=dM7	Enable DataMatrix (All types) (*)
	DIGIT=db,c	Set minimum (b) and maximum (c) digit numbers of DataMatrix
	EDIT=db,c	Output DataMatrix data within a range of b-digits to c-digits
	SYMHEAD =da =da,\bb	Set header character of DataMatrix a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=64 (*) character "d" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =la =la,\bb	Set footer character of DataMatrix a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=64 (*) character "d" When omitting "bb", configured identifier will not be changed.
QR Code (Including Micro QR Code)	SET=QM0	Disable QR Code
	SET=QM1	Enable QR Code, (Normal label)
	SET=QM2	Enable QR Code, (Black/White inverted label)
	SET=QM3	Enable QR Code, (All types) (*)
	DIGIT=Qb,c	Set minimum (b) and maximum (c) digit numbers of QR
	EDIT=Qb,c	Output QR data within a range of b-digits to c-digits
	SYMHEAD =Qa =Qa,\bb	Set header character of QR Code a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=51 (*) character "Q" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =Qa =Qa,\bb	Set footer character of QR Code a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=51(*) character "Q" When omitting "bb", configured identifier will not be changed.
Composite Code	SET=eM00-CC	Disable Composite Code
	SET=eM01-CC	Enable EAN/UPC Composite Code
	SET=eM02-CC	Enable GS1 Databar Composite Code
	SET=eM04-CC	Enable GS1-128 Composite Code
	SET=eM07-CC	Enable all types of Composite Code
	DIGIT=eb,c-CC	Set minimum (b) and maximum (c) digit numbers of Composite
	EDIT=eb,c-CC	Output Composite data within a range of b-digits to c-digits
	SYMHEAD =ea-CC =ea,\bb-CC	Set header character of Composite Code a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=63 (*) character "c" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =ea-CC =ea,\bb-CC	Set footer character of Composite Code a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=63 (*) character "c" When omitting "bb", configured identifier will not be changed.

(*1) Refer to "[Table of Character Code](#)"

Term	Command	Description (*)=Default
PDF417	SET=LM0	Disable PDF417
	SET=LM1	Enable PDF417 (*)
	DIGIT=Lb,c	Set minimum (b) and maximum (c) digit numbers of PDF417
	EDIT=Lb,c	Output PDF417 data within a range of b-digits to c-digits
	SYMHEAD =La =La,\bb	Set header character of PDF417 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=64 (*) character "L" When omitting "bb", configured identifier will not be changed.
Aztec Code	SYMFOOT =La =La,\bb	Set footer character of PDF417 a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=64(*) character "L" When omitting "bb", configured identifier will not be changed.
	SET=zM0	Disable Aztec Code
	SET=zM1	Enable Aztec Code, (Normal label)
	SET=zM2	Enable Aztec Code, (Black/White inverted label)
	SET=zM3	Enable Aztec Code, (All types) (*)
	DIGIT=zb,c	Set minimum (b) and maximum (c) digit numbers of Aztec Code
	EDIT=zb,c	Output P Aztec Code data within a range of b-digits to c-digits
	SYMHEAD =za =za,\bb	Set header character of Aztec Code a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=51 (*) character "z" When omitting "bb", configured identifier will not be changed.
	SYMFOOT =za =za,\bb =ea,\bb-CC	Set footer character of Aztec Code a=0; Disable (*) a=1; Enable bb; Delimiter (Hexadecimal code (*1)) bb=51 (*) character "x" When omitting "bb", configured identifier will not be changed.

(*1) Refer to "[Table of Character Code](#)"

10.3 Symbol Reading (Operating mode, adjustment and diagnostic)

Term	Command	Description (*)=Default
Reading	g	Start reading (SYNC ON) † The default setting is valid only RS-232C interface
	BR=a	No read message a=0 None, a=1 "BR"(*), a=2 "ERROR", a=3 "?", a=4 None (Header, Terminator, Additional Information is output) a=5: "NO READ"
	SONCMD=a	Set character string for start reading (8 characters or less) (*) None
	SOFFCMD=a	Register the SYNC OFF command (alphanumeric 8 digits) a=None (*)
Operation Mode	SYNCMODE =a	a=0: Normal Mode (*) a=1: Reading Timeout Mode a=2: External Trigger Mode a=3: Auto-sense Mode
	VOUT=a	Output timing a=0,1 (0: After decoding (*), 1: After SYNC off)
	TOTALIM=a	Decode timeout, a=100 to 30000 [ms],10[ms]step, Default: 3000[ms] (*)

Term	Command	Description (*)=Default
Continuous Reading Mode	continue	Enable Continuous Reading Mode
	stop	Stop Continuous Reading Mode (back to Normal Mode) (*)
	contintvl=a	Set a time interval of reading a=0 to 10000 [Unit: ms] a=1000 (*)
Test Mode	TEST=a	a=0; Normal Mode (*), a=1; Test Mode
	TMN=a	Number of reading times in Test Mode a=10 (*) -1000 (10 steps)
I/O Test	IOTEST=a,b	Turn on I/O output during specified time a=D1; GO port D2; GO port (*1) b=0 OFF(*) (Output OFF in any port) 10 to 10000 Turn on during specified time [ms], -1 Remain ON
Reading Statistics	?total	Check number of times for SYNC, Good Read, No Read from Power-on reset
	clrtotal	Clear the value of number of times
Display Reading Time	?dect	Check decoding time of Good Read, No Read (Minimum, maximum and average)
	clrdect	Clear the value of decoding time
Warning Information	CHKBCR=a	a=0; Disable addition (*) a=1; Enable addition (*1)
	CHKBCR=a(,b)	a=0; Disable addition for RS232C (*) (*2) a=1; Enable addition for RS232C b=0; Disable addition for LAN (*) b=1; Enable addition for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
Symbology Information	SYMBOLTX =a	a=0; Disable addition of SYMBOLTX (*) a=1; Enable addition of SYMBOLTX
Decoding time	DTTX=a	a=0; Disable addition (*) a=1; Enable addition (*1)
	DTTX=a(,b)	a=0; Disable addition of DTTX for RS-232C(*) (*2) a=1; Enable addition of DTTX for RS-232C b=0; Disable addition of DTTX for LAN(*) b=1; Enable addition of DTTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
Total time of decoding	TTTX=a	a=0; Disable addition (*) a=1; Enable addition (*1)
	TTTX=a(,b)	a=0; Disable addition of TTTX for RS-232C(*) (*2) a=1; Enable addition of TTTX for RS-232C b=0; Disable addition of TTTX for LAN(*) b=1; Enable Disable addition of TTTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
Swing Value	AGCTX=a	a=0; Disable addition (*) a=1; Enable addition (*1)
	AGCTX=a(,b)	a=0; Disable addition of AGCTX for RS-232C(*) (*2) a=1; Enable addition of AGCTX for RS-232C b=0; Disable addition of AGCTX for LAN(*) b=1; Enable addition of AGCTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a) Imaging condition: The value of shutter speed, digital gain and analog gain settings
Table Number	TBLTX=a	a=0; Disable addition (*) a=1; Enable addition (*1)
	TBLTX=a(,b)	a=0; Disable addition for RS232C (*) a=1; Enable addition for RS232C (*2) b=0; Disable addition for LAN (*) b=1; Enable addition for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)

(*1) Commands for the Models without RS-232C

(*2) Commands for RS-232C model

Term	Command	Description (*) =Default
Individual name	MYNAME=a	Set individual name (31 characters or less) (*) My Reader
Add individual name to output data	NAMETX=a	a=0; Disable addition (*) a=1; Enable addition (* 1)
	NAMETX=a,(b)	a=0; Disable addition of NAMETX for RS-232C (*) (* 2) a=1; Enable addition of NAMETX for RS-232C b=0; Disable addition of NAMETX for LAN (*) b=1; Enable addition of NAMETX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
Contrast Information	CONTTX=a	a=0; Disable addition (*) a=1; Enable addition (* 1)
	CONTTX=a,(b)	a=0; Disable addition of CONTTX for RS-232C (*) (* 2) a=1; Enable addition of CONTTX for RS-232C b=0; Disable addition of CONTTX for LAN (*) b=1; Enable addition of CONTTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
	CSX=a	X-coordinate point of calculation (Origin) a=0 to 1270 a=0 (*)
	CSY=a	Y-coordinate point of calculation (Origin) a=0 to 950 a=0(*)
	CWX=a	X-coordinate point of calculation (Width) a=10 to 1280 a=1280(*)
	CWY=a	Y-coordinate point of calculation (Width) a=10 to 960 a=960(*)
Quality Information	QTTX=a	a=0; Disable addition (*) a=1; Enable addition (* 1)
	QTTX=a,(b)	a=0; Disable addition of QTTX for RS-232C (*) (* 2) a=1; Enable addition of QTTX for RS-232C b=0; Disable addition of QTTX for LAN (*) b=1; Enable addition of QTTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
Mirrored Image Information	MRTX=a	a=0; Disable addition (*) a=1; Enable addition (* 1)
	MRTX=a,(b)	a=0; Disable addition of MRTX for RS-232C (*) (*2) a=1; Enable addition of MRTX for RS-232C b=0; Disable addition of MRTX for LAN (*) b=1; Enable addition of MRTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a) If it is a mirrored image, add MR-ON If it is not a mirrored image, add MR-OFF
Symbol Position Information	XYTX=a	a=0; Disable output coordinate data (*) (*1) a=1 to 3; Enable output coordinate data
	XYTX=a,(b)	a=0; Disable output coordinate data to RS-232C (*) (*2) a=1 to 3; Enable output coordinate data to RS-232C b=0; Disable output coordinate data to LAN (*) b=1 to 3; Enable output coordinate data to LAN Omit (,b): Set RS-232C and LAN in the same way (=a) 1; Barycentric coordinates 2; Rectangular coordinates 3; Barycentric and Rectangular coordinates
Setup Number Information	PNTX=a	a=0; Disable addition (*) a=1; Enable addition (*1)
	PNTX=a,(b)	a=0; Disable addition of PNTX for RS-232C (*) (*2) a=1; Enable addition of PNTX for RS-232C b=0; Disable addition of PNTX for LAN (*) b=1; Enable addition of PNTX for LAN Omit (,b): Set RS-232C and LAN in the same way (=a)
Delay Time	DELAY=a	Delay time between SYNC input and start capturing a=0 to 30000 [ms], 10ms step a=0 [ms] (*)
Cycle Buffer Function	MAXIMG=a	Number of captured images a=1 to 64 a=1 (*)
	WAITIMG=a	Capture interval of time when MAXIMG is greater than 1 a=10 to 1000 [ms] 1ms steps a=100 [ms] (*)
	CAPLIM=a	Operation setting when the number of captures exceeds the MAXIMG a=0; Continue capture (*) a=1; Stop capture

(*1) Commands for the Models without RS-232C

(*2) Commands for RS-232C model

10.4 Multiple Area Decode

Term	Command	Description (*) =Default
Number of Decode Areas	DDMdecodenum =a	a=0; Disable Multiple Area Decode function (*) a=1 to 10; Enable Multiple Area Decode function, Specify number of decode areas
Decode Area	DDMdecmode= Number, Left, Top, Width, Height	Specify decode area Number 1 to 10 Left 0 to 1276 0 (*) Top 0 to 956 0 (*) Width 4 to 1280 1280 (*) Height 4 to 960 960 (*)
Decode Time Limit	DDMdeclimarea = a,b	Setting of decoding time limit a=1 to 10; Decode area number b= 80 to 10000, unit: [ms], step: 10[ms] (*) 500
Symbol Type	DDMdecodesym = a,b	Setting of symbol type a=1 to 10; Decode area number b=0;DataMatrix (*) b=1;QR Code b=2;Code39 b=3;Code128 b=4;Codabar b=5;Code93 b=6;ITF b=7;UPC/EAN/JAN b=8;GS1 Databar(Contains Composite Code) b=9;PDF417 b=10;Aztec Code
Save Focus Parameter	?ddmarea	Status transmission (Settings for Multiple Area Decode)

10.5 Auto Tuning

Term	Command	Description (*) =Default
Auto Tuning	*setup	Start Auto Tuning
Cancel	*cancel	Cancel the running Auto Tuning
Auto Tuning Status	*?state	Get status the running Auto Tuning STANDBY Standby RECEIVED Auto Tuning running SAVEWAIT(a) Wait Save Command † (None) Reading † (a) is the number of tuning results that can be saved. (a:1 to 3)
Save Tuning Result (3 Types)	*save	Save the tuning result to table 1 to 3
Save Tuning Result (1 Type)	*save2=a	Save the tuning result to the specified table a a=1-16
Save Tuning Result (Specify)	*save3=a,b	Save number of b tuning results from table a a=1-16; b=1-3
Decoding time limit	STPDECLIM=a	Setting of decoding time limit for Auto Tuning a= 50 to 2000, unit: [ms], step: 10[ms] (*) 500

10.6 Camera Control (1)

Term	Command	Description (*) =Default
Image rotation	ROTATE=a	Enable/disable image rotating (180a) at capturing images a=0: Disable rotating (*) a=1: Enable rotating
brightness of internal illumination (always)	FLASH2=a	Set the brightness of internal illumination source(stand-by) b is set to the same value as a, and c is set to 0 if b and c are omitted. a=0(Illumination OFF)、1(Dark) ~ 100(Bright) a=25(*) b=0(Illumination OFF)、1(Dark) ~ 100(Bright) b=25(*) c=0(Illumination OFF)、1(Dark) ~ 100(Bright) c=0(*)

10.7 Camera Control (2) (for Table Mode)

Term	Command	Description (*) =Default
Camera Control Mode	AGC=T	Use the camera setting in Table Mode (*)
Number of Tables	ENABLEDDM TBL=a	a: 1 to 16 a=16 (*) In case of a=3, Table #1, #2, #3 are enabled and Table #4 through #16 are disabled. In case of a=1, Table #1 is enabled. In case of a=1, Table #1 is enabled. The shutter speed, digital gain, and setting of the illumination are fixed to one.
Editing Table number	EDITDDMTBL =a	Edit a table with specified number. a: 1 to 16 a=1 (*) e.g.) To set the DDMcapmode of table #3 to (320,240,640,480), enter the following command. EDITDDMTBL=3 DDMcapmode=320,240,640,480 Subsequently, to set the DDMshutt to 5, enter the following command. DDMshutt=5 To change the table to edit to #4, enter the following command. EDITDDMTBL=4
Copy Table settings	CPDDMTBL =a,b or a,b-c	The settings of Table #a are copied to Table #b. The settings of Table #a are copied from Table #b through Table #c.
Operation of Table Mode	DDMTBLNG=a	Specify the operation of Table Mode a = 0; Start reading from the table number that decoded last. If the decode failed, start reading from the next table number. a = 1; Start reading always from Table #1 (*)
Table number for the next reading	NEXTDDMTBL =a	Setting of the table number for the next reading a: 1 to up to ENABLEDDMTBL

10.8 Camera Control (3) (for Table Mode)

Term	Command	Description (*) =Default
Capturing Area	DDMcapmode= Left, Top, Width, Height	Specify capturing area of the table Left 0-1270 0(*) Top 0-950 0(*) Width 10-1280 1280(*) Height 10-960 960(*)
Illumination Control	DDMlight=a	Set ON/OFF of illumination output of the table a=0: illumination OFF a=3: illumination ON (At imaging)(*) a=10: illumination ON (Always) a=11: illumination ON (During attempting to read: SYNCMODE=for 1 or 2)
Illumination Brightness	DDMflash=a,b,c	Set the brightness of internal illumination source of the table b is set to the same value as a, and c is set to 0 if b and c are omitted. a=0(Illumination OFF), 1(Dark) ~ 100(Bright) a=100(*) b=0(Illumination OFF), 1(Dark) ~ 100(Bright) b=100(*) c=0(Illumination OFF), 1(Dark) ~ 100(Bright) c=0(*)
Shutter Speed	DDMshutt=a	Set the shutter speed of the table a= 0 to 9 a= 0; 1/60 [sec] 1; 1/125 2; 1/250 3; 1/500 4; 1/1000 (*) 5; 1/2000 6; 1/4000 7; 1/6000 8; 1/8000 9; 1/10000
Analog Gain	DDMagain=a	Set the Analog gain of the table a= 1 (Dark) to 4 (Bright) a=1 (*)
Digital Gain	DDMdgain=a	Set the Digital gain of the table a= 1 (Dark) to 15 (Bright) a=1 (*)
Black Level adjustment	DDMblack=a	Setting for improving the contrast of a captured image a=0; OFF a=1; ON (Auto adjustment) (*)
Image Preprocessing	DDMpreproc =a,b,c,d,e	Set the type of preprocessing of the table a,b,c,d,e : Command for Preprocessing (Described later) a,b,c,d,e =0,0,0,0,0 (*) Up to 5 stages of function can be set by CSV
Mirrored image	DDMmirror=a	Set the mirrored image of the table a=0; Read only normal type (not mirrored) (*) a=1; Read only mirrored type a=2; Read normal type and if it fails, try to read it as mirrored type
Decoding time limit	DDMdecodelim =a	Setting of decoding time limit of the table a= 50 to 10000, unit: [ms], step: 10[ms] (*) 500
DPM option	DDMdpmoption =a	Setting of improving the decoding for DPM symbols of the table a=0to3 0: Normal use (not DPM) (*) 1: Dot peen (black on white) 2: Dot peen (white on black) 3: Laser / Chemical etching
Table name	DDMtblname=a	This command specifies a name of the current table number a: Table name (16 characters or less) †If a is empty, it will be named "tblenn". (nn is the number specified in "EDITDDMTBL=")

※ The default value is the same in Table 1 to 16.

10.9 Image Preprocessing

Term	Command	Description (*) =Default
None	0	No Image Preprocessing
Black Erosion	1	Erosion 2x2
	3	Erosion 3x3
	5	Erosion 5x5
	7	Erosion 1x2 (h)
	9	Erosion 2x1 (w)
White Dilation	2	Dilation 2x2
	4	Dilation 3x3
	6	Dilation 5x5
	8	Dilation 1x2 (h)
	10	Dilation 2x1 (w)
Reverse	20	White & Black Reverse
Contrast Enhancement	21	Cont(L12cut) : Truncates the 12% of dark side
	22	Cont(L25cut) : Truncates the 25% of dark side
	23	Cont(H12cut) : Rounds up the 12% of bright side
	24	Cont(H25cut) : Rounds up the 25% of bright side
	25	Cont(LH12cut) : Truncates the 12% of dark side and rounds up the 12% of bright side
	26	Cont(LH25cut) : Truncates the 25% of dark side and rounds up the 25% of bright side
Gamma	27	Gamma(r=2.0) Perform a Gamma Correction (2.0)
Smoothing	40	Low pass 3x3 Smoothing Filter Average value
Median Filter	41	Median filter 3x3 Median value
Downsize	70	Downsize (Quick) Reduction of the whole image (speed priority)
Downsize	71	Downsize (Average) Reduction of the whole image (luminance

10.10 Preset Mode

Term	Command	Description (*) =Default
Preset	?pre	Get the status of Preset Mode settings
	PREM=0	Preset Mode 0: Disable Preset Mode (*)
	PREM=1	Enable Preset Mode 1 Preset data is the first decoded one after power up
	PREM=2	Enable Preset Mode 2 Preset data is registered in advance
	SET=PRENa clrpre SET=PREDa clrpred	Set the number of digits for comparing a=0 to 100 a=0; No count Initialize number of digits (No count) Set the preset data Initialize preset data

10.11 Industrial Ethernet

Term	Command	Description (*) =Default
Industrial Ethernet	IEMODE=a	a=0; Stop Industrial Ethernet (*) a=1; Start(EtherNet/IP)

10.12 Auto sense

Term	Command	Description (*) =Default
Aimer / Illumination	LFILLUM=a	Set aimer and illumination in detection state a=0: Aimer OFF, Illumination OFF a=1: Aimer ON, Illumination OFF (*) a=2: Aimer OFF, Illumination ON
Detection sensitivity	LFSENS=a	Set detection sensitivity a=0: High a=1: Slightly high a=2: Normal (*) a=3: Slightly low a=4: Low
Read timeout time	LFTOTALLIM=a	Set read timeout time in Auto-sense Mode a=1-10 [s] a=3 (*)
Wait time	LFWAIT=a	Set the wait time for the next detection a=1-10 [s] a=1 (*)
Continuous reading of the same symbol	VERIFY=a	Set whether to permit continuous reading of the same symbol. a=0: Permission (*) a=1: Prohibition
Wait time for continuous reading of the	VWAIT=a	Set the prohibited time when VERIFY=1. a=1-20, Unit: x 500[ms] a=3 (*)
Sensor switching	LFTYPE=a	Set the sensor type for Auto-sense Mode. a=0:Camera (*) a=1:Sensor

10.13 Image Output

Term	Command	Description (*) =Default
Output image size	GOUTSIZE=a	Set the output image size at continuous transfer a=0 to 3 0 : 1280x960(*) 1 : 640x480 2 : 320x240 3 : 160x120
Image selection	IMGSEL=a	Select save image/transfer image a=0 to1 0 : Captured image 1 : Decoded image(*)
Trimming	IMODE=a	a=0; Disable (*) a=1; Enable
Trimming position	PX=a PY=a WX=a WY=a	Set the area to trim Trimming start position (X coordinate) aaa=0-1269 aaa=0(*) Trimming start position (Y coordinate) aaa=0-949 aaa=0(*) Trimming width (X direction) aaa=1-1280 aaa=1280(*) Trimming height (Y direction) aa=1-960 aaa=960(*)
Image Transfer preparation	IMGFRAME=a,b	Image settings to be transferred to the host PC a=0: Camera buffer (*) a=1: Table b=0: Last decoded image b=1-64: Specified image number (When the camera buffer is specified) b=1-16: Specified image number (When the table is specified)
NG Image storage order	IMGFULL=a	Selects the storage order when the reading NG exceeds 10 times. a=0: Save the latest 10 NG Images a=1: Save the 1st to 9th NG Image and the latest NG Image (*)

Checking the number of stored NG Images	?NGFRAME	Outputs the number of saved NG Images (status).
NG Image Transfer preparation	NGFRAME=a	NG Image settings to be transferred to the host PC a=0: Do not transfer NG Images (last decoded image) (*) a=1-10: Prepare to transfer the NG Image No. (a) (the oldest image is No.1)

10.14 LAN Settings

Term	Command	Description (*) =Default
LAN Settings	SET=LAN	Set to default for all LAN settings
	?LAN	Get the list of settings for LAN connection
	IPADR= aaa.bbb.ccc. ddd:ee	Set IP address and subnet mask 192.168.209.10/24(*)
	IPPORT= aaaaa	Set Port number (Only for reading result transmission) aaaaa=1-65535, aaaaa=27110(*)
	IPPORT2= aaaaa	Set Port number (Only for image data transmission) aaaaa=1-65535, aaaaa=27110(*)
	GWADR= aaa.bbb.ccc.ddd	Set the default gateway 192.168.209.254(*)
	IPBAR= aaa.bbb.ccc. ddd:ee	IP address of reading result destination: port number 0.0.0.0: 27120(*)
	IPIMG= aaa.bbb.ccc. ddd:ee	IP address of image data destination: port number 0.0.0.0: 27120(*)
	RTIME=a	Connection request interval (sec) aaa=0 to100, aaa=0(*)
	STOUT=a	Session interval time (sec) bbb=0 to100, bbb=0(*)
	?who	Get the status for LAN settings
	?netstat	Get the status for TCP connection
	?netstat IPBAR	Get the status for TCP client connection (reading result destination)
	?netstat IPIMG	Get the status for TCP client connection (image data destination)
	?version	Get the model's name and firmware version
	discon aaaaa	Disconnect the specified TCP connection forcibly aaaaa : TCP server connection (port number: decimal) IPBAR : TCP client connection (reading result destination) IPIMG : TCP client connection (image data destination)

10.15 FTP Settings

Term	Command	Description (*) =Default
FTP settings	FTPCMODE=a	Case of performing transferring a=0 (*) Not transfer a=1 Transfer in the case of both OK and NG a=2 Transfer in the case of only NG a=3 Transfer in the case of only OK
	FTPCHOST =aaa.bbb.ccc.ddd	Destination host name or IP address aaa.bbb.ccc.ddd=192.168.209.1 (*)
	FTPCUSER =aaaaaaa	Username for login ftpuser (*) (up to 31 characters)
	FTPCPASS =aaaaaaa	Password for login password (*) (up to 31 characters)
	FTPCTYPE=a	Connection mode a=0(*) Passive mode a=1 Active mode
	FTPCHOSTDIR =/aaa/	Destination directory of the FTP server /aaaaa=/mts/ (*) (up to 255 characters, including"/") Note: The maximum number of hierarchy levels is 10.
	FTPCTXTNAME =aaaaa	File name of decoded data aaaaaaa=data.csv (*) (up to 31 characters)
	FTPCTXTMODE =a	Writing mode of decoded data a=0 (*) Append mode a=1 Overwrite mode
	FTPCTXTSEPA =aa	Data separator of decoded data file aa=01-FF aa=2C (*) Note: 00 (NULL) cannot be accepted
	FTPCFILETYPE =a	Type of transferring files a=1 (*) Transfer the image data a=2 Transfer the decoded data a=3 Transfer both the image data and decoded data
	FTPCNAMEFORM =a	File name of image data a=0 (*) Long file name (standard) a=1 Short file name (8.3 filename)
	FTPCCLOSE	Close FTP client connection
	?ftpc/?FTPC	Show FTP status
	DATE =YY/MM/DD/hh/ mm	Set the date and time YY: Year (The last two digits of the calendar year) MM: Month DD: Day hh: Hour mm: Minute Note: Each parameter is 2 digits.
	?date/?DATE	Show the date and time

10.16 Setup

Term	Command	Description
Setup	PSAVE=a	Save current settings as SETUP-a in flash memory a=1-20
	PLOAD=a	Load SETUP-a settings saved in flash memory a=1-20
	PERASE	Erase the setting of all SETUPS in the barcode scanner.
	PERASE=a	Erase the setting of setup a in the barcode scanner. a=1-20
	PNAME=a,b	Name the SETUP a=1-20 b=(32 alphanumeric characters or less)
	WSETP	Save the SETUP name
	?plist	Output a list of SETUP names

10.17 Symbol Printing Check

Term	Command	Description (*) =Default
Printing check output	PQTX=a	a=0; Do not output the printing check (*) (*1) a=1; Output the printing check
	PQTX=a,(b)	a=0; Do not output the printing check to RS-232C (*) (*2) a=1; Output the printing check to RS-232C b=0; Do not output the printing check to LAN (*) b=1; Output the printing check to LAN Omit (.b): Set RS-232C and LAN in the same way (=a)
Items of 2D barcodes check output	PQTYPE2D=a	Set the terms of 2D barcodes check output a=1; Output the overall quality for 2D barcodes ISO (*) a=2; Output the overall quality for 2D barcodes ISOTR a=3; Output all the detailed quality for the 2D barcodes ISO a=4; Output all the detailed quality for the 2D barcodes ISOTR
Select an element of comprehensive quality confirmation item for 2D barcodes	PQITEM2D=a, b,c,...	Set the item of comprehensive quality for symbols a,b,c,... 0: Comprehensive judgment (The value of the item of the lowest grade in 1 to 7) (*) 1: Contrast (ISO) / Cell contrast (AIM) 2: Modulation (ISO) / Cell modulation (AIM) 3: Fixed pattern defect 4: Decode 5: Non-uniformity of axis 6: Non-uniformity of grids 7: Unused error correction
Outputs OK (GOOUT) or NG (NGOUT) depending on the checking result	PQOKTH=a	Outputs OK (GOOUT) or NG (NGOUT) depending on the result of Symbol Printing Check. a: 0(*), 1, 2, 3, 4 Threshold value to determine if the comprehensive judgment is OK (GOOUT) or NG (NGOUT). If the value is 0, the judgment is not performed. Setting value is or more a → OK Less than a → NG ↑ This is available only when the setting value of the item PQTX is PTQX = 1, ? or PTQX = ?, 1 Outputs OK (GOOUT) or NG (NGOUT) depending on the result of Symbol Printing Check.

(*1) Commands for the Models without RS-232C

(*2) Commands for RS-232C model

10.18 Configuration Reference

Term	Command	Description (*) =Default
Configuration Reference	?	Status transmission (First page)
	?2 or ??	Status transmission (Second page)
	?3 or ???	Status transmission (Third page)
	?4	Status transmission (Fourth page)
	?5	Status transmission (Fifth page)
	?6	Status transmission (Sixth page)
	?img or ?IMG	Status transmission (Settings for image output and image storage)
	?ddmtbl or ?DDMTBL	Status transmission (Settings for Table mode)
	?lf or ?LF	Status transmission (Settings for Auto-sense mode)
	?pre or ?PRE	Status transmission (Settings for Preset mode)
	?tx or ?TX	Status transmission (Settings for Additional information)
	?CCLMODE or ?cclmode	Status transmission (Settings for Industrial Ethernet)
	?IE or ?ie	

10.19 General Operation

Term	Command	Description (*) =Default
Initialization	SET=DFT	Reset to factory default
Save	WSETS	Save settings to internal flash memory
Aimer	PTR=a	a=0; Aimer OFF, a=1; Aimer ON (*)
Digital I/O	CHATT=a	Debouncing time a=0; None (*) a=1; 10ms a=2; 20ms
	GOOUT=a	a=0; GO output is held until next SYNC input a=100 to 20000; GO output time [Unit: ms] a=300(*)
	NGOUT=a	a=0; NG output is held until next SYNC input a=100 to 20000; NG output time [Unit: ms] a=300(*)
Digital I/O signal assignment	DOUT1=a	Assign the signal to output to DOUT1 a=0; Disable a=1; GO (Good Read) (*) a=2; NG (No read) a=3: Ready a=4: Busy1 a=5: Busy2
	DOUT2=a	Assign the signal to output to DOUT2 (*1) a=0; Disable a=1; GO (Good Read) a=2; NG (No Read) (*) a=3: Ready a=4: Busy1 a=5: Busy2

(*1) Commands for the Models without RS-232C

10.20 Table of Character Codes

		Upper 4bits															
Lower 4bits		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0	NUL	DLE	SP	0	@	P	`	p				ー	タ	ミ		
	1	SOH	DC1	!	1	A	Q	a	q			。	ア	チ	ム		
	2	STX	DC2	”	2	B	R	b	r			「	イ	ツ	メ		
	3	ETX	DC3	#	3	C	S	c	s			」	ウ	テ	モ		
	4	EOT	DC4	\$	4	D	T	d	t			、	エ	ト	ヤ		
	5	ENQ	NAK	%	5	E	U	e	u			・	オ	ナ	ユ		
	6	ACK	SYN	&	6	F	V	f	v			ヲ	カ	ニ	ヨ		
	7	BEL	ETB	'	7	G	W	g	w			ア	キ	ヌ	ラ		
	8	BS	CAN	(	8	H	X	h	x			イ	ク	ネ	リ		
	9	HT	EM	)	9	I	Y	i	y			ウ	ケ	ノ	ル		
	A	LF	SUB	*	:	J	Z	j	z			エ	コ	ハ	レ		
	B	VT	ESC	+	;	K	[	k	{			オ	サ	ヒ	ロ		
	C	FF	FS	,	<	L	¥	l				ヤ	シ	フ	ワ		
	D	CR	GS	-	=	M	]	m	}			ユ	ス	ヘ	ン		
	E	SO	RS	.	>	N	^	n	—			ヨ	セ	ホ	*		
	F	SI	US	/	?	O	_	o	DEL			ッ	ソ	マ	。		

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11 Specifications

11.1 Specifications

V6180P		
Supported Symbols	Barcode	Code39, Code128 / GS1-128(EAN128), Codabar(NW7) ITF(Interleaved Two of Five), UPC / EAN(JAN), GS1 DataBar, Code93
	2D barcode	Data Matrix(ECC200) , CompositeCode QR Code / Micro QR Code, PDF417 / MicroPDF417, AztecCode
Reading Angle		PITCH: $\pm 35^{\circ}$, SKEW: $\pm 35^{\circ}$, TILT: 360°
Minimum resolution		V6180 Barcode: 0.125mm 2D barcode: 0.125 mm V6180A Barcode: 0.150mm 2D barcode: 0.167mm
Receiver	Sensor	1/3 inches CMOS Image Sensor monochrome
	Effective Pixels	1280 (X) $\times$ 960 (Y) (Approx 1.2 million pixels)
Light emitter	illumination Source	High-intensity white LED and red LED
	Aimer source	Blue LED
	Sensor	Infrared laser 940nm
Power rating	Supply voltage	DC24V $\pm$ 10% PoE power supply Type A (Note1)
	Current consumption	PoE Power Class 3
Digital Input		Photo-coupler isolation x1 Input resistance: 2.2 k Ω ON voltage: 10.8 $\sim$ 28 V, OFF voltage: 0 $\sim$ 0.8 V
Digital Output		Photo-coupler isolation x2 Maximum rating DC30V 50mA
Interface		Ethernet(100BASE-TX, 10BASE-Te)
Supported protocols		TCP/IP,UDP,FTP,CC-L IE Field Basic,EtherNet/IP
Cable length		2m (For LAN connection)
Environ mental tolerance	Operating temperature	0 to 40 $^{\circ}$ C
	Operating humidity	35 to 85%R.H. (no condensation)
	Storage temperature	-20 to 60 $^{\circ}$ C
	Storage humidity	35 to 85%R.H. (no condensation)
	Vibration tolerance	10 to 55Hz amplitude 1.5mm (total width) X, Y, Z 1hour for every direction (Note 2)
	Protective structure	IP67
	Peripheral illumination	Less than 10000 lx
External Dimensions		60(H)mm $\times$ 45(W)mm $\times$ 35(D)mm (Contain no connector protrusion)
Weight		Approx.235g

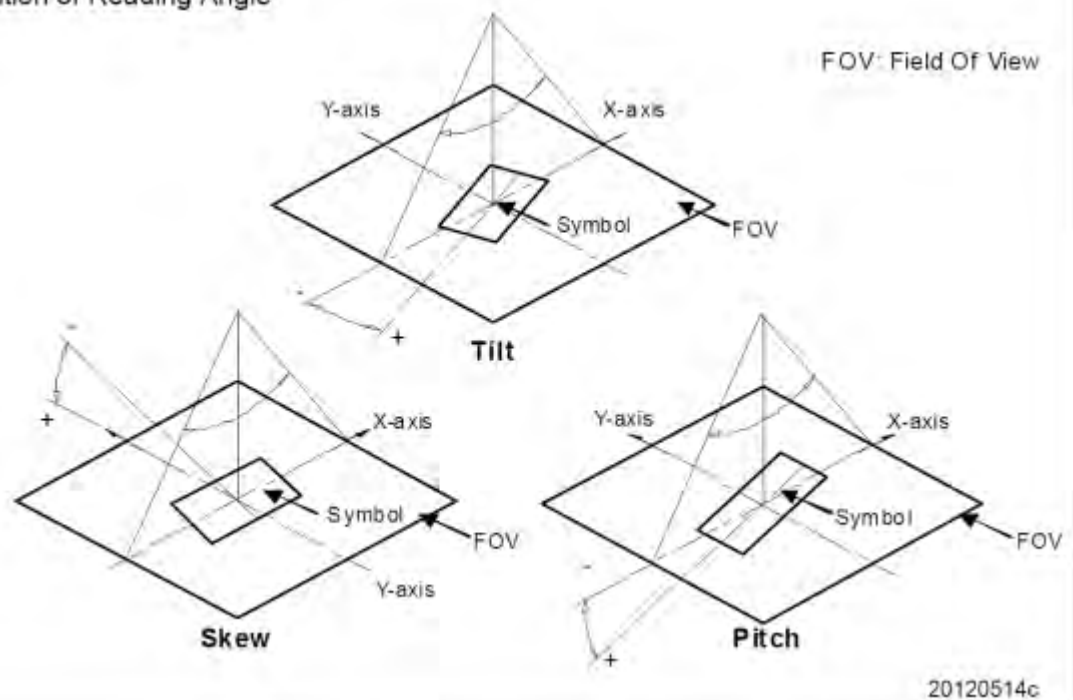
Note1 : IEEE802.3af Not support Type B (Alternative B).

DO NOT supply power simultaneously, either DC power supply or PoE power supply.

Doing so may lead to malfunctions.

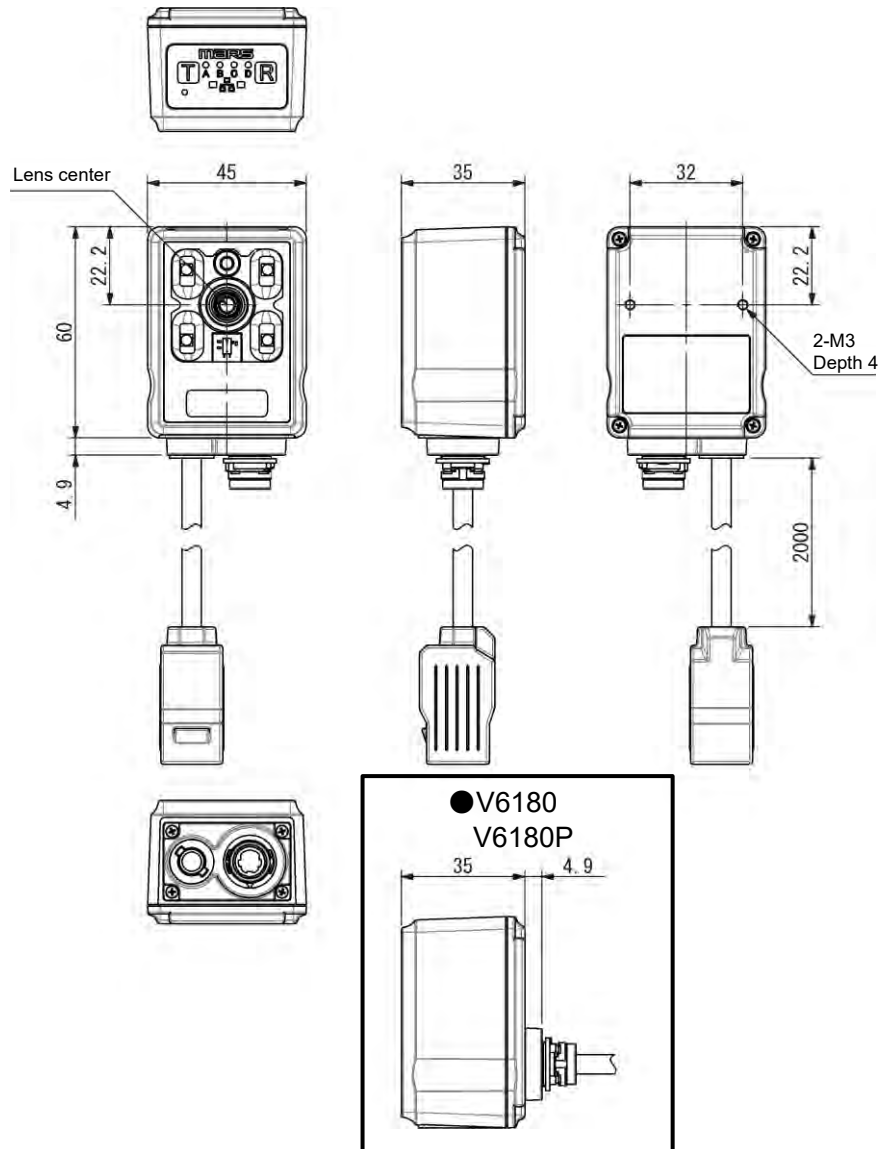
Note2 : Not a guaranteed spec but just a test condition.

Definition of Reading Angle



11.2 Dimensions

●V6180, V6180P



Unit : mm



The maximum tightening torque of the M3 mounting screws is 0.7 N · m.
To avoid damage to the screws or screw holes, DO NOT screw the screws more than the screw depth of the mounting holes.

11.3 Interface

11.3.1 Ethernet interface

LAN Interface (Ethernet) is installed on V6180 series.

- Connector type : RJ-45 (Jack)
- Network Form : 100BASE-TX/10BASE-Te
- Maximum Transmission Speed : 100M/10M bps

Use a category 5 or higher STP(with shield) cable for the LAN cable.

11.3.2 I/O Interface

I/O signals can be controlled by using an IF cable (sold separately).

- Connector type: D-Sub15 pins (High density type), Male
- Screw type : Inch screw (#4-40UNC)



※The cable length is 5m and 10m. Contact our sales staff for details.

Pin assignment

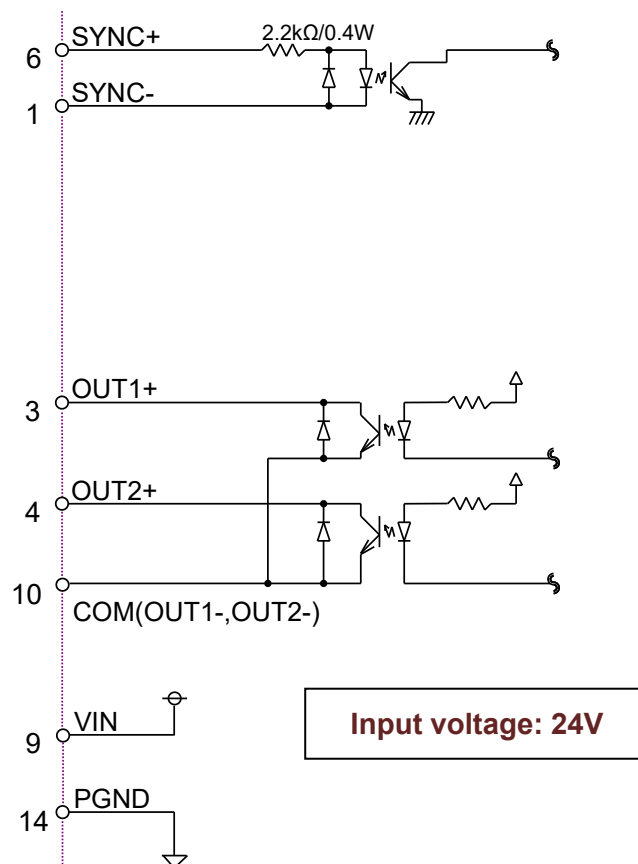
Pin	Color	Name	Function	Direction
1	 Pink (Black dots)	SYNC-	SYNC Input (- Side of Photo coupler)	Input
2				
3				
4	 White (Red dots)	NG+	Digital Output 2 (+ Side of Photo coupler)	Output
5	 Orange (Red dots)	GO+	Digital Output 1 (+ Side of Photo coupler)	Output
6	 Pink (Red dots)	SYNC+	SYNC Input (+ Side of Photo coupler)	Input
7				
8				
9	 Gray (Red dots)	VDD	+24V Power Input	
10	 White (Black dots)  Orange (Black dots)	COM-	Digital Output COM (- Side of Photo coupler)	Output
11				
12				
13				
14	 Gray (Black dots)	PGND	Power Ground	
15				
Case		Shield	Connect the shield to FG	

※Shortest input reception time : SYNC 10ms

Connection table for loose-wires

VDD	Gray (Red dots)	Gray (Red dots)
PGND	Gray (Black dots)	Gray (Black dots)
GO+	Orange (Red dots)	Orange (Red dots)
COM-	Orange (Black dots)	Orange (Black dots)
NG+	White (Red dots)	White (Red dots)
COM-	White (Black dots)	White (Black dots)
SYNC+	Pink (Red dots)	Pink (Red dots)
SYNC-	Pink (Black dots)	Pink (Black dots)
Shield		Shield

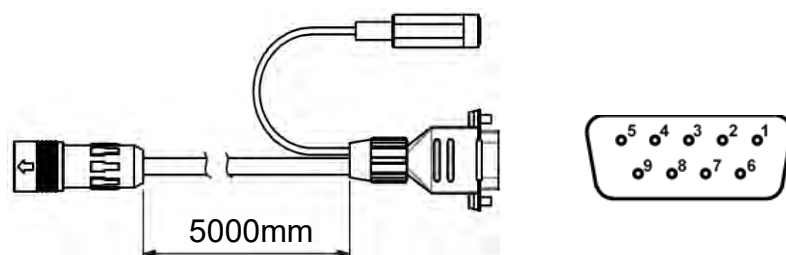
I/O Interface internal circuit



11.3.3 RS-232C + I/O interface

I/O signals and RS-232C can be controlled by using an IF cable (sold separately).

- Connector type: D-Sub 9 pins , Female
- Screw type : Inch screw (#4-40UNC)



*In the case of purchase separately, select an adapter with output DC 24 V $\pm 10\%$ and more than 24W. Please confirm polarity and DC plug type as below.

Polarity :

DC plug type : Inner diameter $\Phi 2.1\text{mm}$

Outer diameter $\Phi 5.5\text{mm}$

Pin assignment

Pin	Color	Name	Function	Direction
1				
2	Gray	TXD	RS-232C Transmit Data	Output
3	Brown	RXD	RS-232C Receive Data	Input
4				
5	Purple	SGND	Signal Ground	
6				
7	Green	CTS	RS-232C Clear To Send	Input
8	Blue	RTS	RS-232C Request To Send	Output
9				
Case		Shield	Connect the shield to FG	
DC jack (Center)	Red	VDD	+24V Power Input	
DC jack (Spring)	Black	PGND	Power Ground	
-	Pink	SYNC+	SYNC Input (+ Side of Photo coupler)	Input
-	Pink (Black dots)	SYNC-	SYNC Input (- Side of Photo coupler)	Input
-	Sky blue	OUT1+	Digital Output 1 (+ Side of Photo coupler)	Output
-	Sky blue (Black dots)	OUT1-	Digital Output 1 (- Side of Photo coupler)	Output

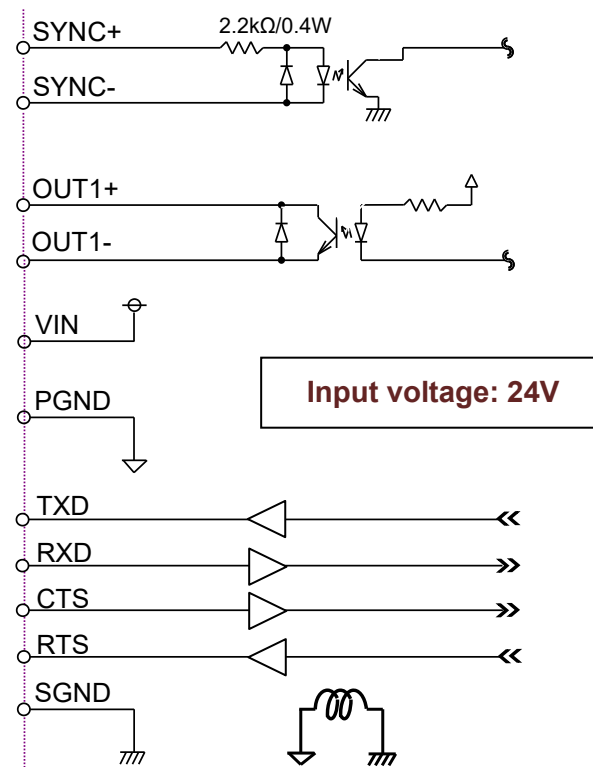
※Shortest input reception time : SYNC 10ms

※There is I/O line inside connector(Dsub 9 pin) of V6180R

Connection table for loose-wires

TXD	Gray	Gray
RXD	Brown	Brown
SGND	Purple	Purple
CTS	Green	Green
RTS	Blue	Blue
VDD	Red	Red
PGND	Black	Black
SYNC+	Pink	Pink
SYNC-	Pink (Black dots)	Pink (Black dots)
OUT1+	Sky blue	Sky blue
OUT1-	Sky blue (Black dots)	Sky blue (Black dots)
Shield		Shield

I/O Interface internal circuit



† Use "SGND" for RS-232C.

Notice

Please make sure that there is no voltage difference between PGND and SGND. Otherwise, it may cause a malfunction

12 Peripheral equipment

12.1 Dedicated accessories for V6180 series

12.1.1 Power Supply Unit

Term	Specification
Supply voltage	24V AC Adapter
Output voltage	PoE Type A Only; 24V DC $\pm 10\%$
Output power	64W

13 Troubleshooting

If any problem occurs during the operation, try following methods to recover.

The host device which is the access point may cause a problem. Refer to the instruction manual of your host device.

13.1 **The reader does not start up or cannot communicate with a PC.**

- Is power supply voltage within the specifications?

Power supply voltage should be DC 24V $\pm$ 10%.

If the DC voltage is not within the specified range, the reader may not work properly and there is a possibility of damaging the reader.

- Is the V6180 series connected with the host device properly?

Make sure the V6180 series is connected with the host device properly.

You can set it to the factory settings by the following methods if you don't know the address you set.

Operate the Teach button to initialize the IP address and start up.

- Start up while holding down the Teach button.
- Release the Teach button when the status LED-A lights up.

†Saved IP address does not change.

Therefore, the next time you turn on the power, it will start up with the saved IP address.

- Is the format of serial command correct?

Serial commands input is effective in stand-by state.

Add a carriage return code [CR] at the end of the serial command.

Push Enter button after inputting the serial command on the terminal software.

Transmit the serial command "WSETS" to save the settings to internal flash memory. If the reader is turned off the power without saving settings, the reader will start up in the previous settings next time.

An interval of 500ms between each command will avoid unwanted error during settings.

- Is the host port settings the same as the reader port settings?

Make sure the connection and the communication settings (e.g. Baud rate, Character format, COM port number for RS232C settings).

The reader port is set by the serial command "COMFROM". If the port is set to RS232C (COMFROM=0), both way LAN data communication between the reader and the host would not work.

13.2 Symbol cannot be decoded

- Are the symbol-code settings correct?

Make sure that the symbologies and the digit number are set up correctly. If the settings differ from the input symbologies, the reader would not decode the image.

- Are the reading distance and the print quality suitable?

To ensure the reading distance from the code to the reading window must be within the specified reading distance.

If the code is damaged or the print quality is low, it may not be decodable even if the reading depth requirements have been met.

- Is the reading window clean?

The quality of captured image is affected by the condition of the reading window. Dust, dirt, etc. on the reading window may alter the reading performance. Clean with a lens cleaner or similar non-abrasive method.

- Is the print quality of the symbol good?

Make sure the quality of the symbol (1D: Module width and Wide/Narrow bar width ratio, 2D: Cell size) meet the standards.

13.3 **Others**

Press the restart button to perform a hardware reset. After the reader is turned off, it will restart.

The cable of V6180 series is shielded cable. Ground the shield when using the cable with loose-wires

Refer to "[I/O Interface](#)" for pin assignment.

If there is anything unclear or if you have any problems that cannot be resolved by the above check, contact our technical support.

<< memorandum >>

<< memorandum >>

Warranty Obligations

Exclusive of the cases with special mentions in quotations, contracts or specifications, Brady warrants this product as follows.

1. Term of Warranty
One year from the date of purchase.
2. Warranty Coverage
Brady shall repair or replace the product at no charge if any defects in the Products are suspected to be due to design or manufacturing error.
This warranty does not cover, and Brady will not be held liable, for any damages incurred by the use of this product.
The above warranty shall not apply to any Product;
 - (1) which has not been used and maintained in accordance with the operating instructions,
 - (2) which has been repaired or altered by anyone other than Brady authorized personnel,
 - (3) which has been subject to unusual physical or electrical stress, misuse, abuse, negligence, natural disasters, fire, pollution etc.,
 - (4) other defects that may arise through no fault of Brady.

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