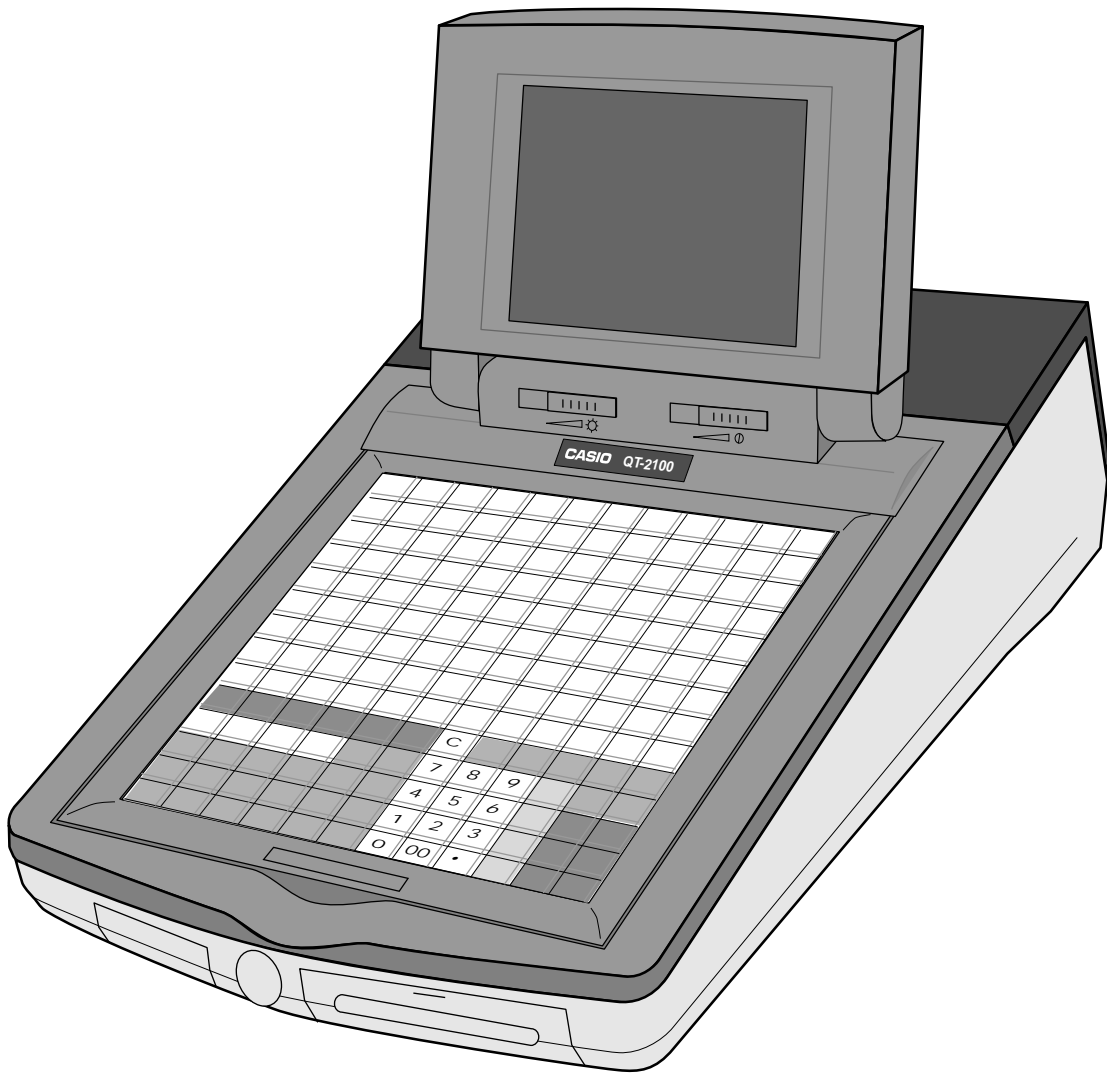# QT-2100

Versatile Intelligent Terminal

Installation & Down Recovery Manual

Version 1.0 February 2002

CASIO

Contents

This manual is intended for use as a reference to the QT-2100 system. It provides details to install systems and down recovery. This manual does not describe actual programming, which is covered in the QT-2100 programming manual.

This manual consists of the following chapters:

1. System installation
   This chapter show the procedure of installing QT-2100 systems.
2. System down and recovery
   This chapter explains actions to take and recovery methods when the system goes down.

Note: Casio reserves the right to change equipment and specifications without obligation and notification. The terms used in this manual may be different from those used in other manuals of Casio's products.

Printing history

Manual version	Software version	
Version 1.0: February, 2002	First Edition: February, 2002	Version 1.0

Revised points

Contents

1. System installation

In this chapter shows how to install QT-2100 systems and peripherals.

1-1.   How to load IPL (Initial Program Loading)

Normally, IPL is not necessary since QT-2100 has efficient program options to meet your circumstances.
In some cases, you need to change the application program to meet your requirements, the IPL is necessary to download the application program to QT-2100.

To load IPL, there are three methods:
1) From PC to QT-2100 terminal via RS-232C
2) From one QT-2100 terminal (master) to QT-2100 terminals (satellite) via inline
3) From CF card to QT-2100 terminal

1-1-1.   From PC to QT-2100 terminal via RS-232C
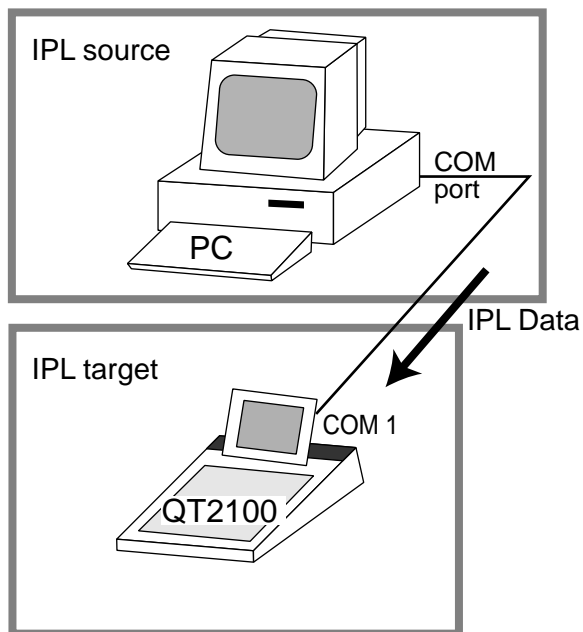
1. Set up the system (refer to the left figure).

2. Initialize the target QT-2100 to receive the IPL data (refer to the Machine initialization section of the Manager operation chapter of QT-2100 Reference manual page 95).

3. Run the loading program of PC.

4. After IPL completion, continue to the initialize operation.

1-1-2. From one QT-2100 to QT-2100 terminals via inline
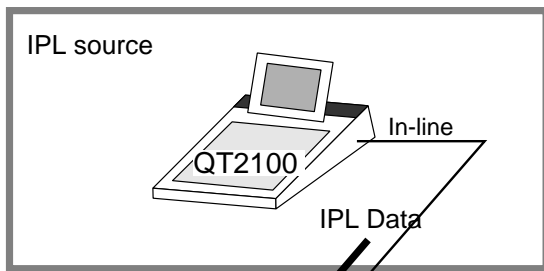
1. Set up the system (refer to the left figure).
2. Initialize the target QT-2100 to receive the IPL data (refer to the Machine initialization section of the Manager operation chapter of QT-2100 Reference manual page 95.)
3. Execute IPL data sending operation (refer to the Auto-program operation section of the Manager operation chapter of QT-2100 Reference manual page 125.)
4. After IPL completion, continue to the initialize operation.
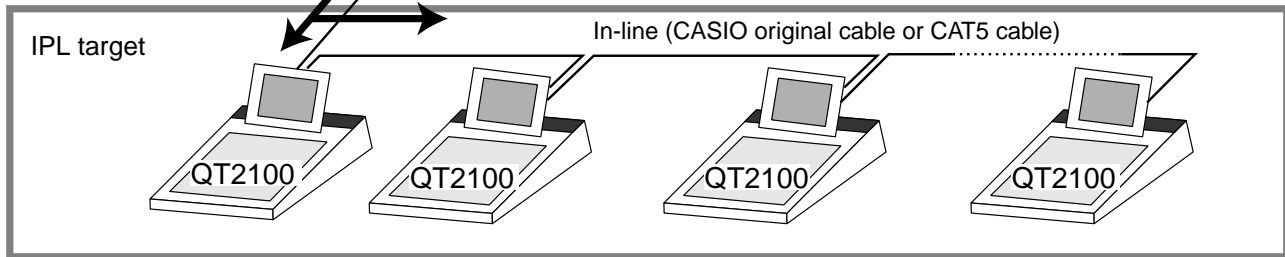
1-1-3. From CF card to QT-2100 terminal

1. Insert the CF card to the CF card slot of the target terminal.
2. Initialize the target QT-2100 to receive the IPL data (refer to the Machine initialization section of the Manager operation chapter of QT-2100 Reference manual page 95.)
3. Execute IPL data receiving operation (refer to the Machine initialization section of the Manager operation chapter of QT-2100 Reference manual page 125.)
4. After IPL completion, continue to the initialize operation.

System Installation

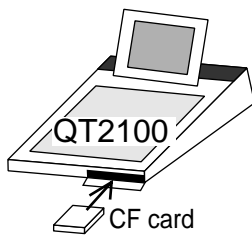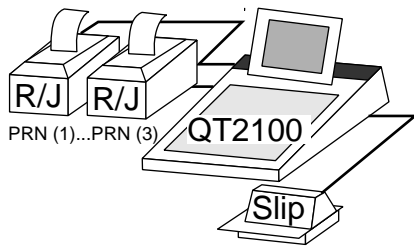## 1-2. How to install QT-2100 system

1-2-1. QT-2100 stand alone system (with printer)

1. Set up the system (refer to the left figure).

2. Initialize the QT-2100 (refer to the Initialization chapter of QT-2100 Programming manual page 8.)

Note 1:
> **If the QT-2100 cannot recognize the printer(s) correctly, check the dip switches on the printer or printer cable and try initialization operation again. Casio printer cable (PRT-CB-8A/-8B) is required for proper recognition of the local printer.**

Note 2:
> **If the Slip printer is connected to COM 4, 5, or 6 port, automatic printer detection during initialization is not made. In this case, program the I/O parameter file manually and flag clear the machine.**

3. Complete the initialize operation.

1-2-2. QT-2100 master/satellite system (with local printer)

1. Set up the system (refer to the figure below).

In-line (CASIO original cable/CAT5 TUP cable)

2. Initialize the master QT-2100 (refer to the Initialization chapter of QT-2100 Programming manual page 8.)

Note 1:
> **1. Do not turn on other QT-2100.**
> **2. If the QT-2100 cannot recognize the local printer(s) correctly, check the dip switches on the printer or printer cable and try initialization operation again. Casio printer cable (PRT-CB-8A/-8B) is required for proper recognition of the local printer.**

Note 2:
> **If the Slip printer is connected to COM 4, 5, or 6 port, automatic printer detection during initialization is not made. In this case, program the I/O parameter file manually and flag clear the machine.**

3. Initialize QT-2100 terminals one by one.

Note:

When you want to copy master program to satellites, complete the master program, and then initialize the satellite and receive the master program during initialization procedure of satellites.

1-2-3. QT-2100 master/satellite system (with remote printer)

1. Set up the system (refer to the figure below).

2. Initialize the master QT-2100 (refer to the Initialization chapter of QT-2100 Programming manual page 8.)

Note 1:

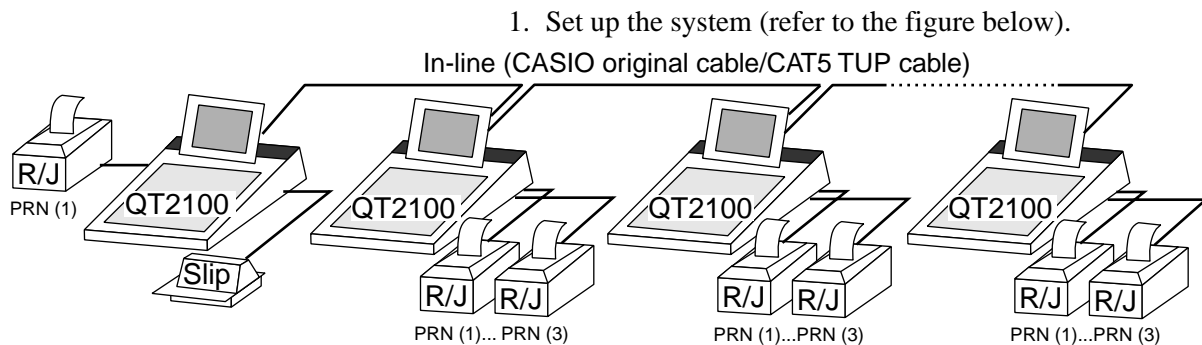**1. Do not turn on other QT-2100.**

2. If the QT-2100 cannot recognize the local printer(s) correctly, check the dip switches on the printer or printer cable and try initialization operation again. Casio printer cable (PRT-CB-8A/-8B) is required for proper recognition of the local printer.

Note 2:

If the Slip printer is connected to COM 4, 5, or 6 port, automatic printer detection during initialization is not made. In this case, program the I/O parameter file manually and flag clear the machine.

3. Initialize QT-2100 terminals one by one.

Note:

When you want to copy master program to satellites, complete the master program first, and then initialize the satellites and receive the master program at the end of initialization procedure of satellites.

4. Declare remote printer by programming the printer connection table to all terminals in the system (refer to the Programming printer connection section in the Program 3 chapter of the Programming manual page 70.)

System Installation

1-2-4.   Printer DIP switch configuration

UP-350

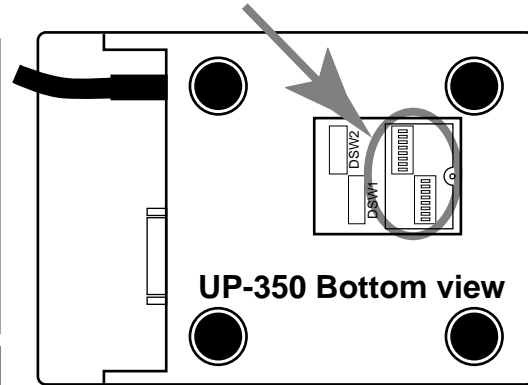| SW No.		Function	ON	OFF
1	1	Data reception error	Ignored	Prints "?"
	2	Receive buffer capacity	45 bytes	4k bytes
	3	Handshaking	XON/XOFF	DTR/DSR
	4	Data word length	7 bits	8 bits
	5	Parity check	Yes	No
	6	Parity selection	Even	Odd
	7	Transmision speed	See transmission speed setting	
	8			

SW No.		Function	ON	OFF
2	1	Busy condition	Buffer full	Buffer full or Offline
	2	Reserved		Fixed
	3	Print density	See density setting	
	4			
	5	Reserved		Fixed
	6	Reserved		Fixed
	7	I/F 6 pin reset signal	Enabled	Disabled
	8	I/F 25 pin reset signal	Enabled	Disabled

UP-350 Bottom view

Transmission speed setting

	bps	SW No. 7	SW No. 8
	2400	ON	ON
	4800	OFF	ON
	9600	ON	OFF
	19200	OFF	OFF

Density setting

	SW No. 3	SW No. 4
Light	ON	ON
↑	OFF	OFF
↓	ON	OFF
Dark	OFF	ON

SA-3015

SW No.		Function	ON	OFF
1	1	Data word length	7 bit	8 bit
	2	Parity check	Yes	No
	3	Parity type	Even	Odd
	4	Data tranfer rate	See data transfer rate setting	
	5			
	6	Connection of customer display	Connected	Not connected
	7	Data reception error	Ignored	Print "?"
	8	Hand shake	XON/XOFF	DTR/DSR
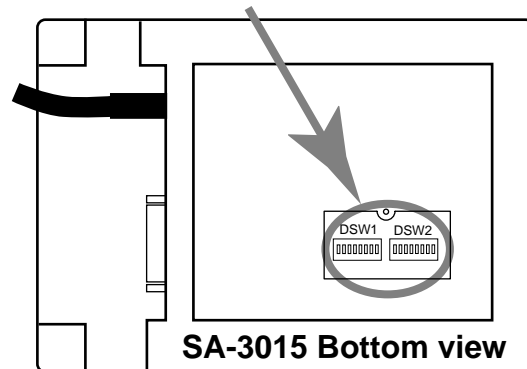
SW No.		Function	ON	OFF
2	1	Automatic CR	Always Yes	Always No
	2	Reception buffer size	32 bytes	2048 bytes
	3	Font selection	9 x 9	7 x 9
	4	Carriage speed	Low	High
	5	Busy condition	Buffer full	Buffer full or Offline
	6	Internal use	Fixed	
	7	I/F 6 pin reset signal	Enabled	Disabled
	8	I/F 25 pin reset signal	Enabled	Disabled

SA-3015 Bottom view

Data tranfer rate setting

	bps	SW No. 4	SW No. 5
	1200	ON	ON
	2400	OFF	ON
	4800	ON	OFF
	9600	OFF	OFF

UP-250

SW No.		Function	ON	OFF
1	1	Data reception error	Ignored	Prints "?"
	2	Receive buffer capacity	40 bytes	1k byte
	3	Handshaking	XON/XOFF	DTR/DSR
	4	Data word length	7 bits	8 bits
	5	Parity check	Yes	No
	6	Parity selection	Even	Odd
	7	Baud rate	4800 bps	9600 bps
	8	Busy condition	Buffer full	Buffer full or Offline

SW No.		Function	ON	OFF
2	1	No. of digits (7x9 font / 9x9 font)	42 / 35 digits	40 / 33 digits
	2	Internal use		
	3	#6 pin reset signal	Enabled	Disabled
	4	#25 pin reset signal	Enabled	Disabled

Dip switch is located at the bottom of the printer.

2. System down and recovery

In the QT-2100 system, the check tracking system has their master and backup master and remote printer printing system has their master printer and backup master printer. If both masters (or corresponding printers) go down, the check tracking system, and remote printer printing system cannot continue any processing. Therefore, the system must be designed such that even if the master goes down, their processing remains unaffected. The QT-2100 system whose master and backup master, respectively, have files for above systems simultaneously updates their counter/totalizer/work area during operations. If the master goes down, control is automatically transferred (only the remote printer printing system)/ the control is manually transferred (check tracking system) to the backup master, preventing their operation from being interrupted.

Nevertheless, system reliability should be improved so as to minimize the possibility of system failure. Poor system reliability disables the system to work efficiently. System reliability could be improved by the following method.

1) Use reliable system components.
2) Design reliable circuitry.
3) Make sure that trouble with the system can be remedied easily.
4) Provide complete backup to minimize damage caused by trouble.

Item 1) and 2) are concerned with hardware design. Needless to say, they were given the utmost consideration in designing the QT-2100 system. Item 3) is related to software design. As an effective solution to these problems, the QT-2100 offers a diagnostic routine and backup functions.

This section describes the measures provided by the system to prevent trouble, the system function performed when the system goes down, and the method of system recovery.

Down Recovery

2-1.   Measures to prevent trouble

The QT-2100 system hardware boasts exceptional reliability. However, no machine can be completely free from trouble. When a given system can predict a possible trouble or permits a failing point to spotted easily, the time required for repair can be cut and consequently, the overall system reliability can be improved.

The QT-2100 system offers a self-diagnostic program for servicemen to enable individual devices to be checked at the terminal level. For a detailed description of this program, see the QT-2100 Service manual.

If a system error occurred during an actual operation, error informations output to the terminal display.

Trouble with the terminal CPU can be fatal to the system. In this case, it is impossible even to obtain an error log. As long as the number of retries is within a predetermined limit, the processing being performed is not interrupted. By the time the processing is interrupted, error information is logged, so that the serviceman can repair or replace defective parts before the system goes down.

To summarize,

1) Terminal-level hardware check:
   Self-diagnostic program.

2) Error information, etc. during in-/online data transmission:
   The error is displayed on the master terminal display and logged in the error log file.

3) Abnormal completion of processing due to error:
   An error message is output to the terminal display.

Needless to say, a backup master is indispensable, since trouble with the master can lead to system down. In the QT-2100 system, both the master and backup master have the check tracking system, the files are updated simultaneously (main-mirror system). Thus, even if either master goes down, the index and detail data remain intact.

2-2. Master terminal failure

The master has important files, such as check tracking files. If the master terminal goes down, the following undesirable condition results:

1) The check tracking processing (open check, close check. etc.) being performed cannot be continued. (In case of Check Tracking master goes down.)
2) The receipt cannot be printed out to remote printers. (In case of Remote printer master goes down.)

If the master terminal failed, therefore, the user should call the serviceman as soon as possible.

2-2-1. Check tracking master terminal failure

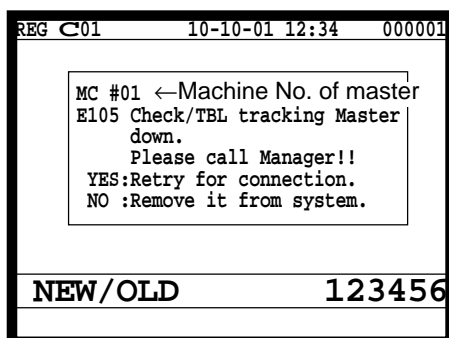### 2-2-1-1. Detection of check tracking master terminal failure

With the QT-2100 system, the satellite terminal assumes that the master terminal is down when it could not obtain any response to its inquiry. The master terminal is assumed to have gone down in the following cases:

1) The power cable is disconnected from the outlet.
2) Trouble with the inline between the master and the satellite terminal.
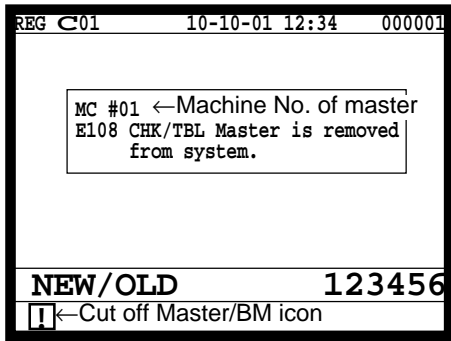3) Trouble with the master terminal hardware.

Note that the master terminal is not really down in the first two cases.

When a satellite detects the master terminal down, the satellite displays the "try again?" message. If the operator of the satellite disapproves this proposal, the satellite turn on the "Master down" flag and broadcast all of the terminals (including backup master) connected inline. After broadcasting this flag, all of the terminals do not access any check tracking data to the master.

Operation when detecting master down

```
REG C01        10-10-01 12:34      000001

     ┌─────────────────────────────────┐
     │ MC #01 ←Machine No. of master   │
     │ E105 Check/TBL tracking Master  │
     │      down.                      │
     │      Please call Manager!!      │
     │ YES:Retry for connection.       │
     │ NO :Remove it from system.      │
     └─────────────────────────────────┘


  NEW/OLD              123456

```

1. When the terminal detects master down, the message appears on the screen.

```
REG C01        10-10-01 12:34      000001

       ┌──────────────────────────────┐
       │ MC #01  ←Machine No. of master │
       │ E108 CHK/TBL Master is removed │
       │       from system.            │
       └──────────────────────────────┘




  NEW/OLD                     123456
  I ←Cut off Master/BM icon
```

2. Selecting "YES" retries communication with the master. Selecting "NO" turns on the master's down flag and broadcast it to all of the terminals. Then the "Cut off Master/BM icon" is lit.

Note:

Do not press "No" key unless attempting "Retry" operation. Press " Yes" key to retry to send data to master terminal when the error message is shown on the display.

```
REG C01        10-10-01 12:34      000001


       ┌──────────────────────────────┐
       │ E107 Both Master&Backup master │
       │      down. CHK/TBL tracking or │
       │      Clerk interrupt is not    │
       │      available.               │
       └──────────────────────────────┘




```
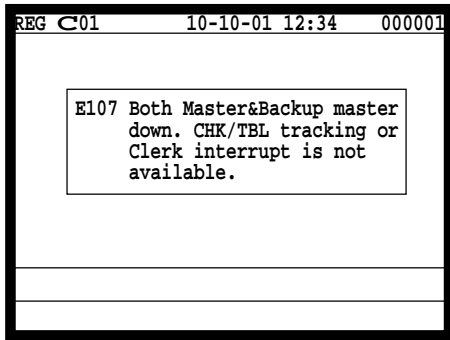
3. When there is no backup master, this message will appear on the display.

2-2-1-2. Master failure during check tracking operation
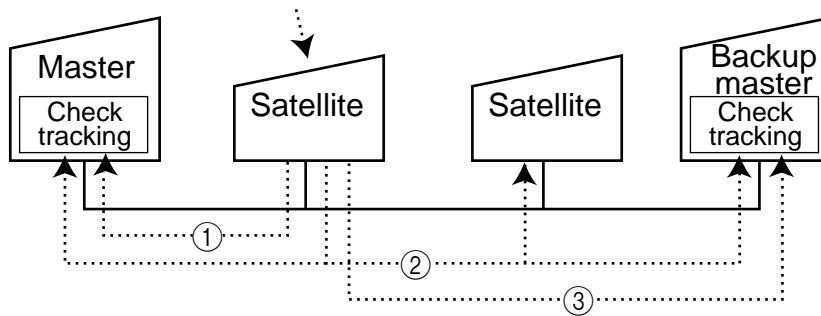
① The satellite makes an inquiry about check tracking data, but it cannot obtain any response from the master.

② If "No" key is pressed on the above situation, the satellite turns on its own "Master Down" flag and broadcast this flag all of the terminals. The "Cut off Master/BM icon" of all terminals received this flag are lit.

③ Then the satellite makes an inquiry to the backup master.

Note:

When the backup master goes down, the satellite turns on the "Backup master Down" flag and makes no further inquiry to the backup master.

2-2-2.   Remote printer failure

### 2-2-2-1. Detection of remote printer failure

With the QT-2100 system, the satellite terminal assumes that the master printer is down when it could not obtain any response to its inquiry. The master printer is assumed to have gone down in the following cases:

1) The power cable is disconnected from the outlet (the terminal or the printer).
2) Trouble with the inline between the terminal connected with the master remote printer and the satellite terminal.
3) Trouble with the connection between printer and terminal.
4) Trouble with the terminal hardware connected with the master printer.
5) Trouble with the printer hardware.

Note that the master terminal or the remote printer is not really down in the first three cases.

When a satellite detects the master printer down, the satellite sends the data to the backup printer automatically. (No operation is necessary at the terminal.)

2-2-2-2. Master printer failure during printing on remote printer
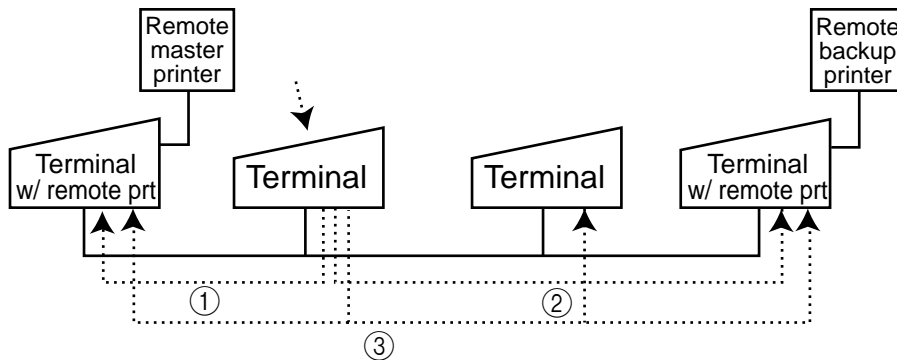
①The terminal requires an inquiry about the printing data, but it cannot obtain any response from the terminal with remote master printer.
②Then the terminal makes an inquiry to the terminal with remote backup printer.
③The terminal broadcasts remote printer down data to all terminals of the system.

Note :

When the remote backup printer or the terminal with remote backup printer goes down, there is an option to retry printing/to display on the screen/to discard data.

2-3. Recovery processing

With the QT-2100 system, the processing being performed can be continued by a backup master even when a master goes down. However, at the end of the daily operations, the master which has been down should be restored so that it can operate normally on the next day.

2-3-1. Master/backup master down detection

1) After daily operations, check the "Cut off Master/BM" icon.
2) If the icon is lit on any terminal, the system has been downed in the day.
3) Turn off/on the master and backup master (not by the <Disp on/off> key but by the power switch bottom side of QT-2100).
4) After this operation, the "System error" icon is lit on the master (or backup master) or both master/backup master.
5) In case of the icon of one terminal is lit, disconnect this terminal from the inline and repair it. If the icon of both terminal are lit, both master have been downed. This case, jump to the next section.
6) Connect the restored master terminal with the inline, initialize it and download the terminal program from the other master.
7) Perform the "System Re-configuration" at the good (not downed) master terminal.

2-3-2. When both master and backup master go down

1) Restore both masters immediately, load the program file to them.
2) Perform the "System Re-configuration" at the master terminal.

2-4. Master failure during X/Z collection/consolidation or terminal data transfer

With the master goes down during X/Z collection/consolidation or transfer of terminal program file, it is necessary to take the following procedure:

1) When the master goes down during Z collection/consolidation, the satellite is not released from locked condition.
2) In this case, press the <ESC> key twice to release the locked condition.
3) After step 2), cut off the downed master from the system connection table and perform Z collection/consolidation from other terminal.
   This command should be issued by the good (not downed) terminal.

2-5. Satellite terminal down

When the satellite terminal goes down during check tracking registration, the check number cannot be used for other terminal.
In this case, performing the "Busy Reset" command in the manager mode releases this flag.

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