Device Data Notification
User’s Manual

Overview
Describes the operating environment and system configuration for Device Data Notification.

Sample Program
Describes how to use the sample program and how to configure the system.

Request and Response
Describes the requests and responses in Device Data Notification.
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For Safety

Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below. Read the following carefully before handling the product.

- Provides information that must be observed to avoid damage to your equipment or a malfunction.

- Provides important information and useful tips.

Restriction of Use

When this product is used for applications requiring high reliability/safety such as transportation devices related to aviation, rail, marine, automotive etc.; disaster prevention devices; various safety devices etc; or functional/precision devices etc, you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care etc, please make your own judgment on this product’s suitability after a full evaluation.
About this Manual

Aim of the Manual

This manual presents information that is necessary information for using the TM-Intelligent.
The TM-Intelligent series in this manual is a generic term for the TM-i series.
The TM-i series in this manual is a generic term for the following printers.

- TM-T88V-i
- TM-T70-i
- TM-T20II-i
- TM-T82II-i
- TM-T83II-i

Manual Content

The manual is made up of the following sections:

Chapter 1  Overview
Chapter 2  Sample Program
Chapter 3  Request and Response
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Overview

This chapter provides the overview of Device Data Notification.

Overview of Device Data Notification

Device Data Notification is a function used to post the data input from the input device that is connected to the TM intelligent printer to the designated URL of the Web server. The Web server application performs device control, such as printing and displaying information on the customer display, by including print data in ePOS-Device XML format and device control into the response to a request from the TM intelligent printer.

1: When a data input occurs, for example, when an operator reads a barcode with the barcode reader, the input device sends the input data to the TM intelligent printer.

2: The TM intelligent printer formats the input data received from the input device and sends the data to the Web server application (POST).

3: Triggered by the input data, the Web server application generates device control data in ePOS-Device XML format from database or other system and returns a response to the request from the TM intelligent printer.

4: The TM intelligent printer sends the device control data to the device.

5: The TM intelligent printer sends the result of device control to the Web server.
Operating Environment

How to Access the Web server

<table>
<thead>
<tr>
<th>How to access</th>
<th>TM-i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proxy server</td>
<td>✔</td>
</tr>
<tr>
<td>Proxy authentication</td>
<td>✔</td>
</tr>
<tr>
<td>Digest authentication</td>
<td>✔</td>
</tr>
<tr>
<td>HTTPS communication</td>
<td>✔</td>
</tr>
<tr>
<td>HTTPS communication with server authentication</td>
<td>✔</td>
</tr>
</tbody>
</table>

TM Intelligent Printer

- TM-T88V-i (TM-i firmware Ver.4.1 or later)
- TM-T70-i (TM-i firmware Ver.4.1 or later)
- TM-T20i-i (TM-i firmware Ver.4.1 or later)
- TM-T82II-i (TM-i firmware Ver.4.1 or later)
- TM-T83II-i (TM-i firmware Ver.4.1 or later)

For details about how to check the version of TM-i Firmware, refer to the Technical Reference Guide for each printer.

Input Device

The following devices can be designated as the input device for Device Data Notification:

- Key input device (keyboard, barcode scanner, etc.)
- Serial communication device
- Communication box in the TM intelligent printer
Control Device

The following devices can be designated as the control device for Device Data Notification:

- Main printer of the TM intelligent printer
- TM printer *
- Customer display
- Serial communication device
- Communication box in the TM intelligent printer

*: Available TM printers are different depending on the TM-i Firmware version in the TM intelligent printer. For details, refer to Technical Reference Guide for each printer.

⚠️ The device designated as the input device or control device is locked with exclusive lock by Device Data Notification. Therefore, the designated device cannot be controlled by ePOS-Device SDK or ePOS-Device XML.
Contents In the Package

Manual

- Device Data Notification User's Manual (This Document)
- Technical Reference Guide for each printer
- ePOS-Device XML User's manual

Sample Program

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDN_Sample_Vxx.zip</td>
<td>Sample program for Device Data Notification</td>
</tr>
<tr>
<td>Test_DeviceData.php</td>
<td>Sample program file</td>
</tr>
<tr>
<td>README.txt</td>
<td>Readme file</td>
</tr>
</tbody>
</table>

Download

For customers in North America, go to the following web site:
http://www.epsonexpert.com/ and follow the on-screen instructions.

For customers in other countries, go to the following web site:
https://download.epson-biz.com/?service=pos
Sample Program

This chapter describes how to use the sample program for Device Data Notification.

Overview

The sample program that uses PHP can be registered to the Web server and be operated. When a barcode is read with the scanner, the TM intelligent printer sends a request containing barcode data to the sample program in the Web server. The sample program sends response data containing print data in ePOS-Device format and display data. The main printer of the TM intelligent printer prints a coupon and displays a message on the customer display.

Hardware Configuration

The system configuration of the sample program is as shown below.

The figure below also shows IP address examples for the network settings.

- Web Server (192.168.192.10)
- TM Intelligent Printer (TM-T88V-i) (192.168.192.20)
- Customer display (local_display)
- Scanner (local_scanner)
- Web Server
- Router
- TM Intelligent Printer
- Scanner
- Customer display (Use of the customer display is optional.)
### File Configuration

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test_DeviceData.php</td>
<td>The server returns a response containing print data when the printer sends a request.</td>
</tr>
</tbody>
</table>

### Printing Result

#### Coupon

Discount Coupon

Lunch
10% OFF

Expiration Date: 11/11/2014

1111111111111111

[Barcode Image]
Program Flow

The flow from the initial display to the print completion of the sample program is as shown below.

1. Reading a barcode with the scanner
2. Sending the data read with the scanner to the Web server
3. Returning the print data/customer display data to the printer
4. Printing the data and displaying a message on the customer display
5. Sending the print result/customer display result to the Web server
## Environment Settings

The environment setting flow of the sample program is as shown below.

1. **Router Settings**
   - Set information such as SSID, IP address, DHCP and allocated IP address. For details, see the manual for each device.

2. **Web Server Settings**
   1. **Web Server Configuration**
      - Configure IIS and XAMPP in the computer.
   2. **Sample Program Configuration** (p.15)
      - Save the sample program files in the computer.
   3. **Network Settings**
      - Configure the network settings such as IP address to the computer.

3. **TM Printer Network Settings**
   - Configure the network settings such as IP address to the TM printer to be connected.
   - Configure the network settings such as IP address to the printer by using EPSON TMNet WebConfig from a Web browser on the setup computer.
   - For the configuration procedure, refer to the Technical Reference Guide for each TM printer.
4. **TM Intelligent Printer Settings (p.16)**

1. **IP Address Setting**
   Set the IP address.
   For details on how to set, refer to Technical Reference Guide for each printer.

2. **Register the TM Printers**
   Register the TM printer to be used for printing. Not required for the sample program.

3. **Register the Devices (p.16)**
   Register the scanner and customer display.

4. **Device Data Notification Settings (p.17)**
   Configure the Device Data Notification settings.

---

**Sample Program Configuration**

Save the sample program files to the Web server.
Save the files directly under the following folders:

<table>
<thead>
<tr>
<th>Environment</th>
<th>Folder</th>
<th>Saved File</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIS</td>
<td>inetpub\wwwroot</td>
<td>Test_print.php</td>
</tr>
<tr>
<td>XAMPP</td>
<td>xampp\htdocs</td>
<td></td>
</tr>
</tbody>
</table>
TM Intelligent Printer Settings

**Register the Devices**
Register the scanner and customer display using EPSON TMNet WebConfig.

1. Turn off the TM intelligent printer and connect the scanner and customer display. Then, turn on the TM intelligent printer.

2. Start the Web browser on the setup computer and enter as follows:
   http://[IP address of the TM-i]/webconfig/

3. EPSON TMNet WebConfig starts.

4. Register the scanner.
   Select (configuration) - (Web Service Settings) - (Device Admin) - (Device Registration) - (Key Input Device).

5. The “Key Input Device” screen appears. Set the following items and click (Apply).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device ID</td>
<td>Set the device ID. Enter “local_scanner”.</td>
</tr>
<tr>
<td>Device name</td>
<td>Confirm that the connected scanner is selected.</td>
</tr>
<tr>
<td>Control script</td>
<td>Set the control script. Select “Scanner_Generic.js”.</td>
</tr>
</tbody>
</table>

6. The scanner is added to the registered key input devices. Click (Operating test) and check whether the registered scanner operates properly.

7. Register the customer display.
   Select (configuration) - (Web Service Settings) - (Device Admin) - (Device Registration) - (Customer Display).

8. The “Customer Display” screen appears. Set the following items and click (Apply).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Display</td>
<td>Select (Use).</td>
</tr>
<tr>
<td>Communication settings</td>
<td></td>
</tr>
<tr>
<td>Communication speed (bps)</td>
<td>Set the communication speed. Select the communication speed according to the customer display.</td>
</tr>
<tr>
<td>Data bit</td>
<td>Set the data bit. Select the data bit according to the customer display.</td>
</tr>
<tr>
<td>Parity</td>
<td>Set the parity. Select the parity according to the customer display.</td>
</tr>
<tr>
<td>Brightness setting</td>
<td>Set the brightness. Select the brightness as desired.</td>
</tr>
</tbody>
</table>
9 The customer display is registered. Click (Test display) and check whether the registered customer display operates properly.

- The device ID of the customer display is "local_display".

---

### Device Data Notification Settings

Configure the Device Data Notification settings using EPSON TMNet WebConfig as follows:

1 **EPSON TMNet WebConfig starts.**
   - Select (configuration) - (Web Service Settings) - (Server Access) - (Device Data Notification).

2 The "Device Data Notification" screen appears. Set the following items and click (Apply).

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>settings</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Device Data Notification</strong></td>
<td>Select (Enable).</td>
</tr>
<tr>
<td><strong>ID</strong></td>
<td>Set this item to use HTTP digest authentication or to identify the main printer from the server. Not required for the sample program.</td>
</tr>
<tr>
<td><strong>Password</strong></td>
<td>Set this item to use HTTP digest authentication. Not required for the sample program.</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td>Enter the URL of the Device Data Notification destination (sample program). Enter as follows: http://[IP address of the Web server]/Test_DeviceData.php After entry, check whether the URL is correct. Click (Access Test).</td>
</tr>
<tr>
<td><strong>Server Authentication</strong></td>
<td>Set this item to perform server authentication with the registered certificate during access with https. Not required for the sample program.</td>
</tr>
<tr>
<td><strong>Box ID</strong></td>
<td>Specify the box ID of the communication box to be controlled by the Device Data Notification function. To use the communication box by the Device Data Notification function, set the member ID for sending data to the communication box as &quot;&quot; (null). Not required for the sample program.</td>
</tr>
<tr>
<td><strong>Print Message</strong></td>
<td>To print an error message when POST to the server fails, select (Enable).</td>
</tr>
<tr>
<td><strong>Message Text</strong></td>
<td>Enter the character string to be printed when POST to the server fails.</td>
</tr>
<tr>
<td><strong>Text Attributes</strong></td>
<td>Set the character decoration for message. Select the character decoration to be used. The following decorations are available: Bold / Underline / Double width / Double height / Reverse black and white / Upside down</td>
</tr>
<tr>
<td><strong>Cut</strong></td>
<td>To cut the paper after printing an error message, select (Enable).</td>
</tr>
</tbody>
</table>
Execution of Sample Program

1. Confirm that Device Data Notification is enabled using EPSON TMNet WebConfig.
2. Read a barcode using the scanner connected to the TM intelligent printer.
3. To the request from the TM intelligent printer, print data is returned as a response and a coupon is printed from the printer. A message is displayed on the customer display.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture Device</td>
<td>Select the device to be used. For the sample program, select the following items:</td>
</tr>
<tr>
<td>Device</td>
<td>local_printer</td>
</tr>
<tr>
<td></td>
<td>local_display</td>
</tr>
<tr>
<td></td>
<td>local_scanner</td>
</tr>
</tbody>
</table>
Request and Response

This chapter describes data inputs from the input device, requests from the TM intelligent printer, and responses from the Web server.

Request (Device Use Rights Acquisition Result Notification)

When the TM intelligent printer is turned on, or when the Device Data Notification settings are changed with EPSON TMNet WebConfig, the TM intelligent printer executes <open_device> in ePOS-Device XML to enable the device designated as the input/control device, formats the result in ePOS-Device XML format, and sends a HTTP POST request as shown below.

The format of request message is URL-encoded form data (application/x-www-form-urlencoded). Set the sending destination according to "Device Data Notification" (p. 17).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>The ID set with WebConfig (p. 17)</td>
</tr>
<tr>
<td>Data</td>
<td>ePOS-Device XML format</td>
</tr>
</tbody>
</table>

HTTP Response (Device Control)

TM intelligent printer sends one HTTP request (Device Use Rights Acquisition Result Notification) to the Web server for each device. Therefore, when multiple devices are set as the target device for Device Data Notification, multiple HTTP requests (Device Use Rights Acquisition Result Notification) are sent to the Web server.
The Web server application creates response data as shown below to a HTTP request (Device Use Rights Acquisition Result Notification) and returns it to the TM intelligent printer. This data contains device control data.

The format of response message is ePOS-Device XML (text/xml).

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: xxx

<device_data>
  <device_id>local_keyboard</device_id>
  <data>
    <type>setprefix</type>

  </data>
</device_data>
```

* For the `<device_data>` tag, be sure to end the message with "\0".

When no device control is required, refer to "Response to Disable Device Control" (p.24).
When data is input from the input device, the TM intelligent printer formats the input data received from the input device in ePOS-Device XML format and sends a HTTP POST request as shown below to the Web server. The format of request message is URL-encoded form data (application/x-www-form-urlencoded). Set the sending destination according to “Device Data Notification” (p. 17).

### Parameter | Value
--- | ---
ID | The ID set with WebConfig (p. 17)
Data | ePOS-Device XML format

**Header**

```
POST /Test_DeviceData.php HTTP/1.1
Host: 192.168.192.10
Content-Type: application/x-www-form-urlencoded
Content-Length: xxx
```

```
ID=&Data=<device_data><sequence>0</sequence>
<device_id>local_scanner</device_id><data><input>XXXXXX</input>
<type>ondata</type></data><data_id>X</data_id></device_data>
```
Response (Input Data from Input Device)

The Web server application creates response data as shown below to an HTTP request (Input Data) and returns it to the TM intelligent printer. This data contains device control data. The format of response message is ePOS-Device XML (text/xml).

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: xxx

<device_data>
  <device_id>local_keyboard</device_id>
  <data>
    <type>print</type>
    <Timeout>10000</Timeout>
    <printdata>
      <epos-print xmlns="http://www.epson-pos.com/schemas/2011/03/epos-print">...
    </printdata>
  </data>
</device_data>\0

<device_data>
  <device_id>local_display</device_id>
  <data>
    <type>display</type>
    <Timeout>10000</Timeout>
    <displaydata>
      <epos-print xmlns="http://www.epson-pos.com/schemas/2011/03/epos-print">...
    </displaydata>
  </data>
</device_data>\0
```

* For the `<device_data>` tag, be sure to end the message with "\0".

When no device control is required, refer to "Response to Disable Device Control" (p.24).
Chapter 3 Request and Response

Request (Device Control Execution Result)

The TM intelligent printer executes device control according to the device control data (ePOS-Device XML) received from the Web server, formats the result in ePOS-Device XML format, and sends an HTTP POST request as shown below.

The format of request message is URL-encoded form data (application/x-www-form-urlencoded). Set the sending destination according to "Device Data Notification" (p. 17).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>The ID set with WebConfig (p. 17)</td>
</tr>
<tr>
<td>Data</td>
<td>ePOS-Device XML format</td>
</tr>
</tbody>
</table>

```
POST /Test_DeviceData.php HTTP/1.1
Host: 192.168.192.10
Content-Type: application/x-www-form-urlencoded
Content-Length: xxx

ID=&Data=<device_data><sequence>0</sequence>
<device_id>local_scanner</device_id><data><resultdata>
<response success="true" code="" status="251658262" battery="0" xmlns="http://www.epson-pos.com/schemas/2011/03/epos-print"/>
</resultdata>
</type>onxmlresult</type></data><data_id>5</data_id></device_data>
```

When the TM intelligent printer receives multiple device control data items from the Web server, the TM intelligent printer executes each device control result separately. The device control execution result is sent as one HTTP request (Device Control Execution Result) to the Web server for each device control.
Response (Device Control Execution Result)

The Web server application creates response data to a HTTP request (Device Control Execution Result) and returns it to the TM intelligent printer. For the responses, refer to "Response to Disable Device Control" (p.24).

Response to Disable Device Control

When no device control is required, notifies that there is no device control data by returning the response as shown below to a HTTP request from the TM intelligent printer. Refer to Test_DeviceData.php in the sample program.

HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: 0