

# [AN050]



**ADVANCED**  
NETWORK DEVICES

## OnBoard Messages

Version 1.2

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## OVERVIEW

Firmware version 1.6.0002 or newer supports display of onboard messages. This functionality makes it possible to store text messages and pixmap images directly on the device, to easily trigger for immediate display.

The feature of onboard messages benefits any third-party application with the current capability to send messages to an AND device, by allowing it to take advantage of all AND text message and pixmap image options, even if the third-party application interface does not make those options available. General purpose input (accessible on most AND devices) can also trigger onboard messages.

This document describes the message file format, device setup, activation methods, and available options for this capability.

## MESSAGE FILE FORMAT

On-board messages reside in individual XML files on the device. The device can store two types of messages: text messages and pixmap images. Each requires a unique format (shown below). Create the file(s) in a simple text editor application and save each one as filename.xml where *filename* uniquely describes the message or pixmap image. See the **APPENDIX** for a full list of available parameters and their function.

### Scrolling Message Example

```
<IPSpeakerMessage>
  <Message
    text="Scrolling text message in red"
    color="red"
  />
</IPSpeakerMessage>
```

### Pixmap Example

```
<IPSpeakerMessage>
  <Message
    prio="10"
    still_ms="220"
    width="56"
    height="16"
    bpp="4"
    pixmap="[pixmap_data]"
  />
</IPSpeakerMessage>
```

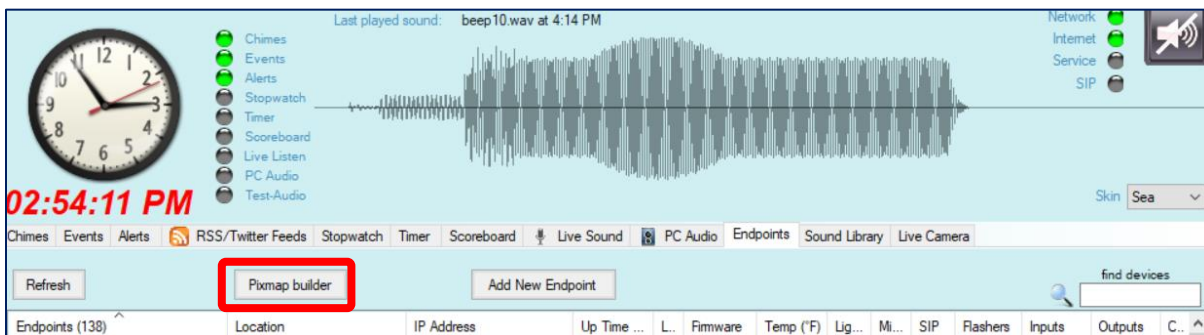
## PIXMAP DATA

To use existing pixmaps:

1. See our Technical Resource Guide [IPClockWise PixelGraphics \(Pixmaps\)](#) for example pixmaps.
2. Click on the pixmap image to download.
3. Open the file to copy the pixmap data, and paste it into the file for the *pixmap* parameter.

To create a custom pixmap, use IPClockWise (see the customer portal for this software application):

1. Open Pixmap Builder from the button on the Endpoints tab.



2. Create the pixmap image as desired, then select the "Copy to Clipboard" button.

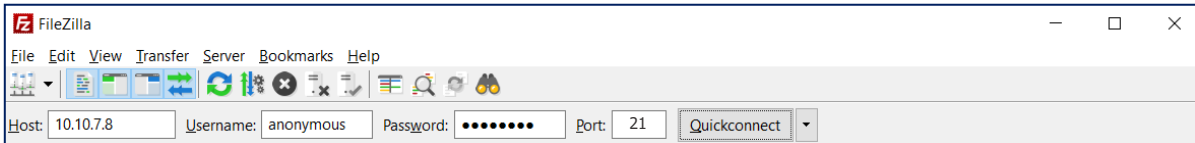


3. Paste the contents of the clipboard into the XML file as the *pixmap* parameter (shown as *[pixmap\_data]* in the example message file in the previous section).

## DEVICE SETUP

Load XML message file(s) onto the device using FTP as follows:

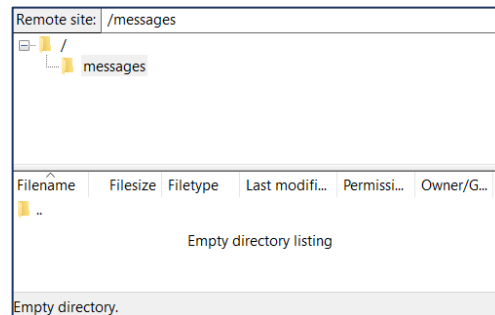
1. Login to the device using an FTP client such as FileZilla with the following credentials:



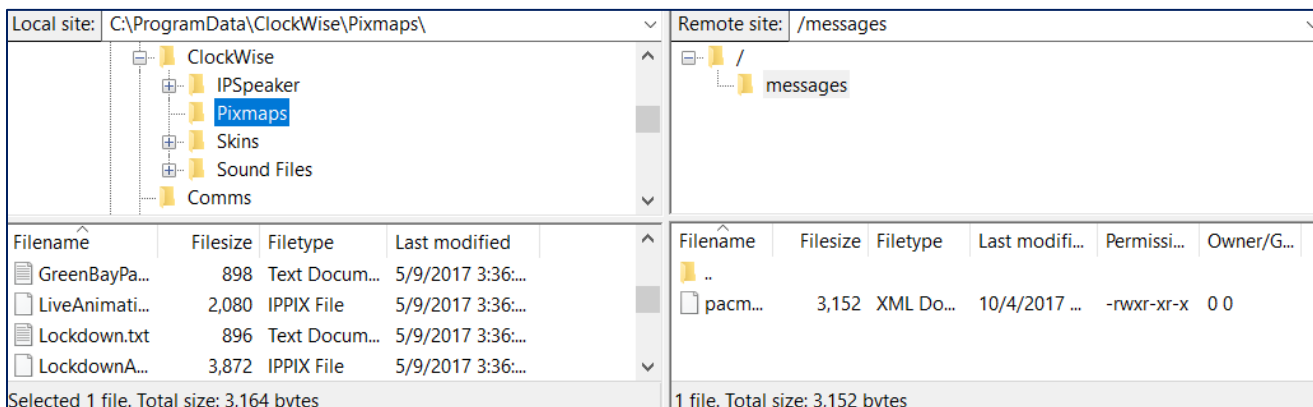
User: anonymous  
 Password: HTTP Control Password (Device Factory Default Password = SideDoor)  
 Host IP address: The IP address of the device  
 Port: 21 (Standard FTP)

2. Right-click over the Remote Site window, and select *Create Directory* to create the following directory on the device (if not already in place):

*/messages*



3. Copy message file(s) to the */messages* subdirectory of the device (in this example pacman.xml).



Note that device limits onboard storage capacity to 8MB.

## ACTIVATION METHODS

### Inline Text Message Markup

You can activate onboard messages with inline text message markup. Trigger the text message or pixmap image to display by including the command `{messagename=filename.xml}` in-line with the text message, where filename.xml is the name of the XML file stored on the device.

See **App Note 49 Inline Text Message Markup** for further details.

For example, you would include the following inline to activate a pixmap stored in `pacman.xml`:

```
{messagename=pacman.xml}
```

## GPIO Inputs

You can activate on-board messages via GPIO input(s). In **Device Settings** → **Peripherals**, set the respective *GPIO x Input Message Trigger File* field to the name of the message file. Click *Save Peripherals Changes* button when done. When the corresponding input activates, the programmed text message or pixmap image will display. Configure GPIO inputs 0 and 1 separately as desired.

Parameter	Stored value	New Value
GPIO 0 Input Description	Black	<input type="text" value="Black"/>
GPIO 0 Input Inversion	No	<input type="text" value="No"/>
GPIO 0 Detection Time (ms)	0	<input type="text" value="0"/>
GPIO 0 Removal Time (ms)	0	<input type="text" value="0"/>
GPIO 0 Transitions Send SNMP Trap	Yes	<input type="text" value="Yes"/>
Activate GPIO 0 Output During GPIO 0 Input	No	<input type="text" value="No"/>
Activate GPIO 1 Output During GPIO 0 Input	No	<input type="text" value="No"/>
GPIO 0 Input Message Trigger File	fire.xml	<input type="text" value="fire.xml"/>
GPIO 0 Input Audio Trigger File		<input type="text"/>
GPIO 0 Input Audio Trigger Priority	55	<input type="text" value="55"/>
GPIO 0 Input Audio Trigger Volume	3.000	<input type="text" value="3.000"/>
GPIO 0 Input Audio Trigger IP:port		<input type="text"/>
GPIO 1 Input Description	Red	<input type="text" value="Red"/>
GPIO 1 Input Inversion	No	<input type="text" value="No"/>
GPIO 1 Detection Time (ms)	0	<input type="text" value="0"/>
GPIO 1 Removal Time (ms)	0	<input type="text" value="0"/>
GPIO 1 Transitions Send SNMP Trap	Yes	<input type="text" value="Yes"/>
Activate GPIO 0 Output During GPIO 1 Input	No	<input type="text" value="No"/>
Activate GPIO 1 Output During GPIO 1 Input	No	<input type="text" value="No"/>
GPIO 1 Input Message Trigger File	alert.xml	<input type="text" value="alert.xml"/>

If using a configuration file, include the following parameters in the GPIO tag (values included for example purposes):

```
<GPIO
  msgtrig_file_name_gpio0="fire.xml"
  msgtrig_file_name_gpio1="alert.xml"
  ...
/>
```

## APPENDIX

### Parameters for Pixmap Messages Only

Parameter	Default	Description
pixmap	n/a	The hexadecimal data representing the image to display.
bpp	n/a	Set to 4 always to support the multicolor display bitdepth.
width	n/a	The width of the pixmap image in pixels, which must be a multiple of 8. Standard display size = 56 pixels wide IPSIGN-O display size = 80 IPSIGNL-RWB display size = 112
height	n/a	The height of the pixmap image in pixels. All displays are 16 pixels high.

### Parameters for Text Messages Only

Parameter	Default	Description																		
text	n/a	The text message to display, 1024 characters maximum.																		
font	n/a	The message font type (from the following options): <table style="margin-left: 40px; border: none;"> <tr><td> Arial Bold </td><td> arial_bold </td></tr> <tr><td> Arial (Larger size) </td><td> arial_huge </td></tr> <tr><td> Dotum </td><td> dotum </td></tr> <tr><td> Dotum Bold </td><td> dotum_bold </td></tr> <tr><td> Dotum (Larger size) </td><td> dotum_huge </td></tr> <tr><td> Dotum Bold (Larger) </td><td> dotum_bold_huge </td></tr> <tr><td> Small font* </td><td> and_8high </td></tr> <tr><td> Smaller font* </td><td> and_7high </td></tr> <tr><td> Tiny font* </td><td> and_5high </td></tr> </table> <p><i>* These fonts support 2-line mode (clock + text).</i></p>	Arial Bold	arial_bold	Arial (Larger size)	arial_huge	Dotum	dotum	Dotum Bold	dotum_bold	Dotum (Larger size)	dotum_huge	Dotum Bold (Larger)	dotum_bold_huge	Small font*	and_8high	Smaller font*	and_7high	Tiny font*	and_5high
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Small font*	and_8high																			
Smaller font*	and_7high																			
Tiny font*	and_5high																			



color	n/a	<p>The foreground message color (for dual-color displays). Specify a text string, or use a 4-bit hexadecimal number from the list below, such as <code>{color=green}</code> or <code>{color=c}</code>.</p> <table border="1"> <thead> <tr> <th>Hexadecimal</th> <th>Color</th> <th>Green Level</th> <th>Red Level</th> </tr> </thead> <tbody> <tr><td>0</td><td>Black</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>Cranberry</td><td>0</td><td>1</td></tr> <tr><td>2</td><td>Cherry</td><td>0</td><td>2</td></tr> <tr><td>3</td><td>Red</td><td>0</td><td>3</td></tr> <tr><td>4</td><td>Hunter</td><td>1</td><td>0</td></tr> <tr><td>5</td><td>Sienna</td><td>1</td><td>1</td></tr> <tr><td>6</td><td>Terracotta</td><td>1</td><td>2</td></tr> <tr><td>7</td><td>Vermillion</td><td>1</td><td>3</td></tr> <tr><td>8</td><td>Olive</td><td>2</td><td>0</td></tr> <tr><td>9</td><td>Tan</td><td>2</td><td>1</td></tr> <tr><td>a</td><td>Ochre</td><td>2</td><td>2</td></tr> <tr><td>b</td><td>Pumpkin</td><td>2</td><td>3</td></tr> <tr><td>c</td><td>Green</td><td>3</td><td>0</td></tr> <tr><td>d</td><td>Yellow</td><td>3</td><td>1</td></tr> <tr><td>e</td><td>Gold</td><td>3</td><td>2</td></tr> <tr><td>f</td><td>Orange</td><td>3</td><td>3</td></tr> </tbody> </table>	Hexadecimal	Color	Green Level	Red Level	0	Black	0	0	1	Cranberry	0	1	2	Cherry	0	2	3	Red	0	3	4	Hunter	1	0	5	Sienna	1	1	6	Terracotta	1	2	7	Vermillion	1	3	8	Olive	2	0	9	Tan	2	1	a	Ochre	2	2	b	Pumpkin	2	3	c	Green	3	0	d	Yellow	3	1	e	Gold	3	2	f	Orange	3	3
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bgcolor	black	The background message color (for dual-color displays). Specify a text string or the 4-bit hexadecimal number from the color chart, such as <code>{color=red}</code> or <code>{color=3}</code> .																																																																				
shadloc	(no shadow)	<p>A one- to four-character string that specifies the location of the text shadow, in relation to the foreground character. Typical values (not case-sensitive):</p> <ul style="list-style-type: none"> <li>U up</li> <li>UR up and to the right</li> <li>R right</li> <li>DR down and to the right</li> <li>D down</li> <li>DL down and to the left</li> <li>L left</li> <li>UL up and to the left</li> <li>O or UDLR fully outline the complete perimeter of the character</li> </ul> <p>Note: Specify both <i>shadcolor</i> and <i>shadloc</i>, or no shadow will appear.</p>																																																																				
flash_fg	bgcolor	The color of the foreground text during the flashing period. If no value specified, it will match the <i>bgcolor</i> value.																																																																				

flash_shad	<i>bgcolor</i>	The color of the shadow during the flashing period. If no value specified, it will match the <i>bgcolor</i> value.
Splitting	<i>0 (off)</i>	<p>Option to split the message on the display based on the values follows:</p> <p>0: text scrolls normally</p> <p>Other values display the text in pieces, statically on the screen. The scroll parameter should be un-specified or set to still. Valid non-zero values are:</p> <p>1: displays a single line of text at once                  2: displays two lines of text at once                  3: displays three lines of text at once                  32: displays two lines of text at once, with the top one smaller                  23: displays two lines of text at once, with the bottom smaller                  20: displays two lines of text at once, both using a small font.</p> <p>For a valid non-zero value, the message will split based on where you place the " " characters in the message as separators, or automatically, depending on the value of the <i>autosplit</i> parameter.</p>
autosplit	<i>0 (off)</i>	Option to split the text message automatically. With this parameter disabled (0), the text splits with the " " character. With this parameter enabled (1), the text splits automatically, such that as many words as possible may display at a time. This setting applies to the still, up, and down scrolling modes.

## Parameters for Both Pixmap and Text Messages

Parameter	Default	Description
still_ms	1000	The time (in milliseconds) to display the pixmap image or static text message.
prio	50	The message priority. If the device already displays a message or pixmap, an incoming message will only display with a higher priority (value less than or equal to the playing message's priority value). For an incoming message with lower priority (value is greater than the displayed message priority), the device will not display it. Range: 1 (highest) to 100 (lowest)
loops	1	The number of times to display the message. Zero means continual.

speed	5	The scroll rate. Range: 1 (slowest) to 10 (fastest).														
shadcolor	<i>(not drawn)</i>	The font shadow color (for dual-color displays). Specify a text string or 4-bit hexadecimal number from the color chart above, such as {color=black} or {color=0} . Specify both <i>shadcolor</i> and <i>shadloc</i> , or no shadow will display.														
flash	0 (off)	The duration (in milliseconds) of each flashing period. Special case: Values of 1-10 will flash the text the specified number of times per second, (e.g., flash=3 will flash the text 3 times per second).														
flash_dc	50	The duty cycle of the flashing text. Range: 0 to 100.														
flash_bg	<i>bgcolor</i>	The color of the background during the flashing period. If no value specified, it will match the <i>bgcolor</i> value.														
maxseconds	$\infty$	The maximum amount of time (in seconds) that the message will display, to the nearest number of loops boundary, rounding up. <i>Maxseconds</i> does not consider any duration specified by the <i>pausesseconds</i> parameter. If unspecified, <i>maxseconds</i> defaults to infinite (the message will repeat the specified number of loops, regardless of total duration).														
pausesseconds	0	The duration (in seconds) to pause before starting the next loop in a multi-loop message. During this time, the device displays the clock time.														
pausefirst	0	Option to insert a pause of <i>pausesseconds</i> seconds before the first loop of a message (1 = enabled).														
scroll	<i>horizontal</i>	Sets the direction of scrolling: left, right, horizontal, up, down, or still. The default setting, horizontal, will scroll the message left or right based on the character set in use. For example, English characters will scroll left (from right to left), whereas Arabic and Hebrew characters will scroll right (from left to right). Note: In the case of a pixmap graphic, the mode defaults to still (no need to specify). <table border="1" data-bbox="555 1465 1485 1751" style="margin-top: 10px;"> <thead> <tr> <th>Scrolling Description</th> <th>Scroll string</th> </tr> </thead> <tbody> <tr> <td>Horizontal, left or right depending on character set</td> <td>horizontal, horiz</td> </tr> <tr> <td>Left, from right to left</td> <td>left</td> </tr> <tr> <td>Right, from left to right</td> <td>right</td> </tr> <tr> <td>Up, from bottom to top</td> <td>up</td> </tr> <tr> <td>Down, from top to bottom</td> <td>down</td> </tr> <tr> <td>Still, no scrolling</td> <td>still</td> </tr> </tbody> </table>	Scrolling Description	Scroll string	Horizontal, left or right depending on character set	horizontal, horiz	Left, from right to left	left	Right, from left to right	right	Up, from bottom to top	up	Down, from top to bottom	down	Still, no scrolling	still
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Down, from top to bottom	down															
Still, no scrolling	still															

setflashers_val	<i>n/a</i>	<p>A three-character field, controlling the state of the left, middle, and right LED's respectively:</p> <ul style="list-style-type: none"> <li>0 or O off</li> <li>S slow blink (200ms on, 800ms off)</li> <li>F fast blink (200ms on, 300ms off)</li> <li>1 or C on</li> <li>x or X indicates not to change the state</li> <li>2, 3, ... 9 a 2-9 second flashing period</li> </ul> <p>The on-time remains 200ms for all cases. Note: Available in firmware release 1.6 and later.</p>
setflashers_brightness	1	<p>The brightness level of the flashers. Range: 0 (off) to 100 (brightest)</p> <p>This parameter can also accept the following text strings:</p> <ul style="list-style-type: none"> <li>"dim" equivalent to 50</li> <li>"full" or "bright" equivalent to 100</li> </ul> <p>Note: Available in firmware release 1.6 or later.</p>