j1Put - Put Library Functions

v1.2

Features

- Object oriented library
- Common device independent simple output functions

General Description

An object oriented device independent ‘Put’ library. Based on the control object the functions will forward standard formatted character outputs to the attached device. Multiple control objects can be created and the shared library code will work independently with each object. Control objects can be local in scope or global storage areas for shared devices.

Legal & Disclaimers (Fine Print)

When to Use the j1Put Component

You can use the j1Put component any time you want simple standard outputs to a device. It can be used for file output, LCD output, or buffering to memory. The attached device must provide a PutChar() interface to function. You can include it in another component and it will expose the functions with a defined library prefix ($j1LIB_NAME) instead of the $INSTANCE_NAME parameter. The default $j1LIB_NAME is j1Put.

Dependencies

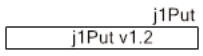
j1Put does not require any other J1Sys components. The optional j1GFX extensions require a j1GFX component and it's driver component if enabled.

Input/Output Connections

As a function library the component has no input/output connections.

Schematic Macro Information

By default, the j1Pub Component Catalog contains a Schematic Macro implementation for the j1Put component. This macro contains an already named j1Put library with the default configuration settings.



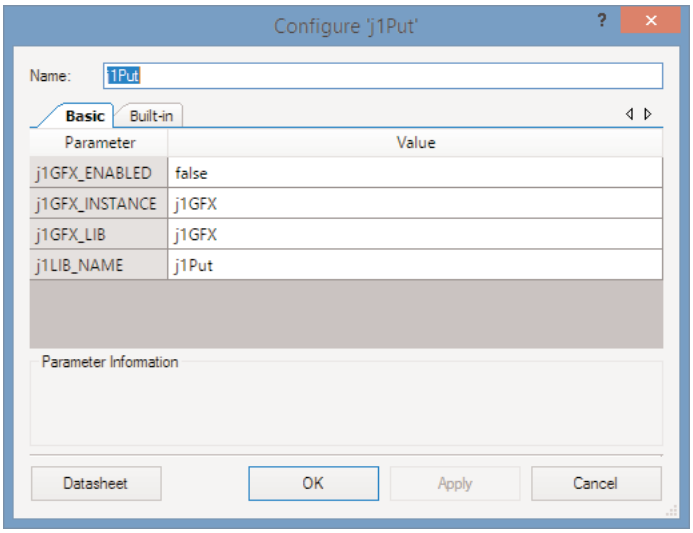
Component Configuration

Drag a j1Put component onto the design. Double click the component symbol to open the Configure dialog.

The following sections describe the j1Put parameters, and how they are configured using the Configure dialog.

Configure Tab

The Configure tab contains basic parameters for the j1Put component. These parameters are the first ones that appear when you open the Configure dialog.



Configuration Parameters

Each configuration parameter is described below.

j1GFX_ENABLED

Description: Boolean enables the inclusion of the optional functions for shortcuts to a j1GFX object.

Values: true or false, default false

j1GFX_INSTANCE

Description: String defining the instance name for the j1GFX library in the project. Usually can be left at default of “j1GFX”. Will need to be changed if j1GFX instantiation is included inside another component.

Default Value: j1GFX

j1GFX_LIB

Description: String defining the library name for the j1GFX library in the project. Usually can be left at the default of “j1GFX” even if j1GFX instantiation is included inside another component.

Default Value: j1GFX

j1LIB_NAME

Description: Libary name for all functions and definitions. All functions and definitions are prefixed by this value. Usually should be left as default.

Default Value: j1Put

Component Defined Datatypes (typedef)

The following defined datatypes are part of the component definitions. They should be instantiated in the application code and passed to/from the API via pointers.

typedef	Description
j1Put_CTRL	Object control structure

Application Programming Interface

Application Programming Interface (API) routines allow you to use the library at runtime. The following table lists and describes the interface to each function. The subsequent sections cover each function in more detail.

By default, PSoC Creator assigns the instance name “j1Put_1” to the first instance of a component in a given design. We have included a macro that will name the instance “j1Put”. You can rename the instance to any unique value that follows the syntactic rules for identifiers. The instance name will not be used as a prefix of every global function name, variable, and constant symbol for the instance as a hardware component would commonly be handled. The $j1LIB_NAME parameter will be used as a prefix of every global function name, variable, and constant symbol for the instance. The default $j1LIB_NAME is “j1Put” and should normally not need to be changed. For readability, the $j1LIB_NAME used in the following table is “j1Put”.

Function	Description
j1Put_Start()	Initializes the control to be used with the functions.
j1Put_Char()	Output a character using control linked device.
j1Put_StringOpt()	Output a character string using control linked device. Optionally add a pre-space and/or post-space.
j1Put_StringField()	Output a character string truncated or padded to a fixed field size. Optionally add a pre-space and/or post-space.
j1Put_Field()	Output a fixed size character field. Optionally add a pre-space and/or post-space.
j1Put_Hex8()	Output a uint8 value as two hexadecimal characters. Optionally add a hexadecimal (0x) prefix. Optionally use lower case a-. Optionally add a pre-space and/or post-space.
j1Put_Hex16()	Output a uint16 value as four hexadecimal characters. Same options as j1Put_Hex8() above.
j1Put_Hex32()	Output a uint32 value as eight hexadecimal characters. Same options as j1Put_Hex8() above.
j1Put_HexDump()	Output a formatted ‘dump’ line with address, hex byte values and ascii. Options for 16bit or 32bit address, 16byte or 8byte rows, ascii output.
j1Put_FillRegion()	Optional shortcut for j1Put objects that are linked to a j1GFX device. Fills the region in the attached j1GFX device with an RGB color.
j1Put_SetFontFgBg()	Optional shortcut for j1Put objects that are linked to a j1GFX device. Sets the current font, foreground RGB, and background RGB for text output.
j1Put_SetTextRowCol()	Optional shortcut for j1Put objects that are linked to a j1GFX device. Sets the XY address for the next character based on character row/col.
j1Put_SetTextXY()	Optional shortcut for j1Put objects that are linked to a j1GFX device. Sets the XY address for the next character.

Option Flags

Several of the functions include an ‘options’ parameter. The ‘options’ parameter is a uint16 value representing 16 bit flags. Each option has a different bit mask and can be or’d together to assemble a composite value.

Option	Value	Description
j1Put_HEX_PREFIX	0x0001	Add 0x prefix before value.
j1Put_HEX_LOWER	0x0002	Output lower case a-f vs default of A-F.
j1Put_HEXDUMPA32	0x0010	Output 32 bit address for dump vs default of 16 bit.
j1Put_HEXDUMP16	0x0020	Output 16 byte values vs default of 8 byte values.
j1Put_HEXDUMPASC	0x0040	Add optional ASCII dump at end of dump line.
j1Put_PRESPC	0x1000	Output a space before value output.
j1Put_PSTSPC	0x2000	Output a space after value output.

API Details

void j1Put_Start(j1Put_CTRL *pC, void *Put_Char, void *deviceCtrl)

Description: Initializes the control to be used with the functions. This function must be called to initialize the object control before using any other function.

Parameters:

j1Put_Ctrl	*pc	Pointer to the object control structure
void	*Put_Char	Pointer to the device Put_Char function
void	*deviceCtrl	Pointer to the device control structure

Return Value: None

void j1Put_Char(j1Put_CTRL *pC, char c)

Description: Output a character using control linked device.

Parameters:

j1Put_CTRL	*pc	Pointer to the object control structure
char	c	Character to ‘put’

Return Value: None

void j1Put_String(j1Put_CTRL *pC, char *string)

Description: Output a character using control linked device.

Parameters:

j1Put_CTRL	*pc	Pointer to the object control structure
char	*string	Pointer to zero terminated string to ‘put’

Return Value: None

void j1Put_StringOpt(j1Put_CTRL *pC, char *string, uint16 options)

Description: Output a character string using control linked device. Optionally add a pre-space and/or a post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	char	*string	Pointer to zero terminated string to ‘put’
	uint16	options	16 bit option flags (j1Put_PRESPC, j1Put_PSTSPC)

Return Value: None

void j1Put_StringField(j1Put_CTRL *pC, char *string, uint16 length, uint16 options)

Description: Output a character string truncated or padded to a fixed field size using control linked device. Optionally add a pre-space and/or a post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	char	*string	Pointer to zero terminated string to ‘put’
	uint16	length	Field output size
	uint16	options	16 bit option flags (j1Put_PRESPC, j1Put_PSTSPC)

Return Value: None

void j1Put_Field(j1Put_CTRL *pC, char *field, uint16 length, uint16 options)

Description: Output a character field of a fixed field size using control linked device. Optionally add a pre-space and/or a post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	char	*field	Pointer to character array to ‘put’
	uint16	length	Field output size
	uint16	options	16 bit option flags (j1Put_PRESPC, j1Put_PSTSPC)

Return Value: None

void j1Put_Hex8(j1Put_CTRL *pC, uint8 hex, uint16 options)

Description: Output a uint8 value as two hexadecimal characters. Optionally add a hexadecimal (0x) prefix. Optionally use lower case a-f. Optionally add a pre-space and/or post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	uint8	hex	value to ‘put’
	uint16	length	Field output size
	uint16	options	16 bit option flags (j1Put_PRESPC, j1Put_PSTSPC, j1Put_HEX_PREFIX, j1Put_HEX_LOWER)

Return Value: None

void j1Put_Hex16(j1Put_CTRL *pC, uint16 hex, uint16 options)

Description: Output a uint16 value as four hexadecimal characters. Optionally add a hexadecimal (0x) prefix. Optionally use lower case a-f. Optionally add a pre-space and/or post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	uint16	hex	value to 'put'
	uint16	length	Field output size
	uint16	options	16 bit option flags (j1Put_PRESPC, j1Put_PSTSPC, j1Put_HEX_PREFIX, j1Put_HEX_LOWER)

Return Value: None

void j1Put_Hex32(j1Put_CTRL *pC, uint32 hex, uint16 options)

Description: Output a uint32 value as eight hexadecimal characters. Optionally add a hexadecimal (0x) prefix. Optionally use lower case a-f. Optionally add a pre-space and/or post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	uint32	hex	value to 'put'
	uint16	length	Field output size
	uint16	options	16 bit option flags (j1Put_PRESPC, j1Put_PSTSPC, j1Put_HEX_PREFIX, j1Put_HEX_LOWER)

Return Value: None

void j1Put_HexDump(j1Put_CTRL *pC, uint32 addrHex, uint8 *bfr, uint8 lo, uint8 hi, uint16 options)

Description: Output a uint32 value as eight hexadecimal characters. Optionally add a hexadecimal (0x) prefix. Optionally use lower case a-f. Optionally add a pre-space and/or post-space.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	uint32	addrHex	address value to 'put'
	uint8	*bfr	Pointer to array of hex values
	uint8	lo	Offset (0-15) into bfr for start
	uint8	hi	Offset (0-15) into bfr for end
	uint16	options	16 bit option flags (j1Put_HEX_LOWER, j1Put_HEXDUMPA32, j1Put_HEXDUMP16, j1Put_HEXDUMPASC)

Return Value: None

void j1Put_FillRegion(j1Put_CTRL *pC, uint32 rgb)

Description: Optional shortcut for j1Put objects that are linked to a j1GFX device. Fills the region in the attached j1GFX device with an RGB color.

Parameters:			
	j1Put_CTRL	*pc	Pointer to the object control structure
	uint32	rgb	24 bit RGB value

Return Value: None

void j1Put_SetFontFgBg(j1Put_CTRL *pC, j1GFX_FONT font, uint8 scale, uint32 fg, uint32 bg)

Description: Optional shortcut for j1Put objects that are linked to a j1GFX device. Sets the current font, foreground RGB, and background RGB for text output.

Parameters:

j1Put_CTRL	*pc	Pointer to the object control structure
j1GFX_FONT	font	j1GFX font ID
uint8	scale	font scale
uint32	fg	24 bit RGB value for text foreground
uint32	bg	24 bit RGB value for text background

Return Value: None

void j1Put_SetTextRowCol(j1Put_CTRL *pC, uint8 row, uint8 col)

Description: Optional shortcut for j1Put objects that are linked to a j1GFX device. Sets the XY address for the next character based on character row/col.

Parameters:

j1Put_CTRL	*pc	Pointer to the object control structure
uint8	row	row (0-x) address
uint8	col	col (0-x) address

Return Value: None

void j1Put_SetTextXY(j1Put_CTRL *pC, uint16 x, uint16 y)

Description: Optional shortcut for j1Put objects that are linked to a j1GFX device. Sets the XY address for the next character based on character row/col.

Parameters:

j1Put_CTRL	*pc	Pointer to the object control structure
uint16	x	X (0-x) address
uint16	y	Y (0-x) address

Return Value: None