Application Note

DAC

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1. Preface

This application note describes sample software DAC using 8bit digital analog converter (DAC).
This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
BSP	Board Support Package
CG	Clock Control and Operation Mode
DAC	Digital to Analog Converter
UART	Universal Asynchronous Receiver Transmitter

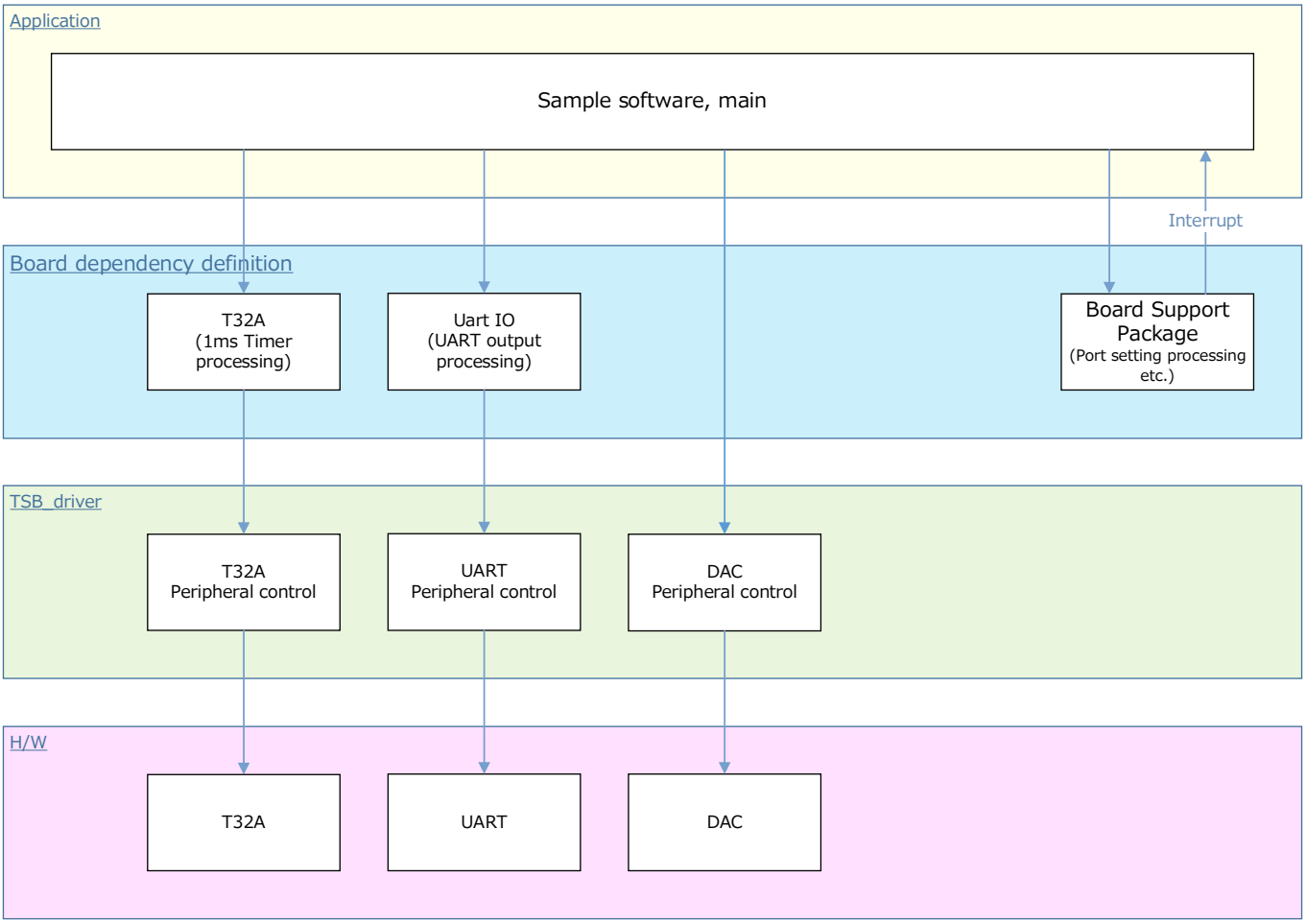
3. Reference Document

Document	Notes
Data sheet	Refer to the data sheet of MCU to be used.
Reference manual	Refer to the reference manual of each IP to be used.
Application note MCU User Guide	Refer to the MCU user guide to be used.

4. Target Sample Program

Sample Program	Outline
DAC	Sample program for DAC function

5. Configuration Diagram



6. Sample Program: DAC

This is a sample software that outputs an analog voltage corresponding to the conversion value entered into the microcontroller via terminal software.

6.1. Outlines of Operation

Convert the data entered into the microcontroller via terminal software (16-bit hexadecimal, 8-bit) and apply the setting.
An analog voltage corresponding to the converted value is output to BSP_DAC_1.
If the input data exceeds Data Max, not matches the specified format, or is outside the valid range, an error is outputted.

6.2. Function to Use

The functions to use are as follows:
For the Port assignment of each Channel, refer to the MCU user guide.

IP	Channel	Objective
DAC	BSP_DAC_1	Output the analog voltage
UART	BSP_UART_1	Terminal soft communication

6.3. Interrupt to Use

Interrupt	Outlines
INTUART0RX	UART reception interrupt
INTUART0TX	UART transmission interrupt
INTUART0ERR	UART error interrupt

6.4. Configuration

Configuration setting.

Configuration	Soft Definition Name	Current Value (Defaults)	Description
Data Max	UART_IO_RECEIVE_MAX_LOCAL	5	Writable Character Count (Unit: Characters)
Data range	CFG_DATA_RANGE	0xFF	The numeric upper limit. Numeric range: 0 (0x00) to 255 (0xFF)

6.5. Example of Terminal Emulator Output

6.5.1. Normal

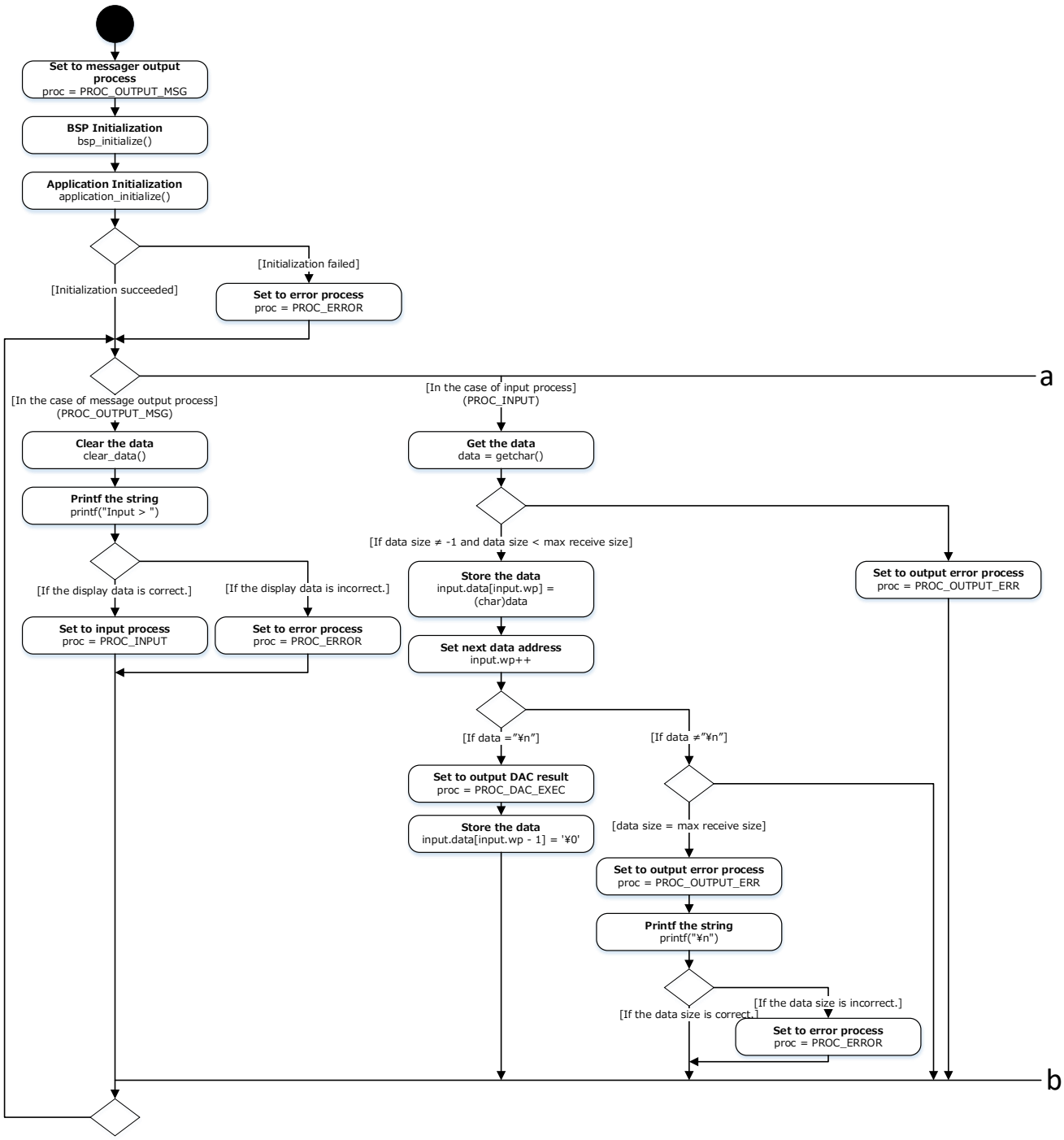
```
Input > 128
Input > 0xC0
```

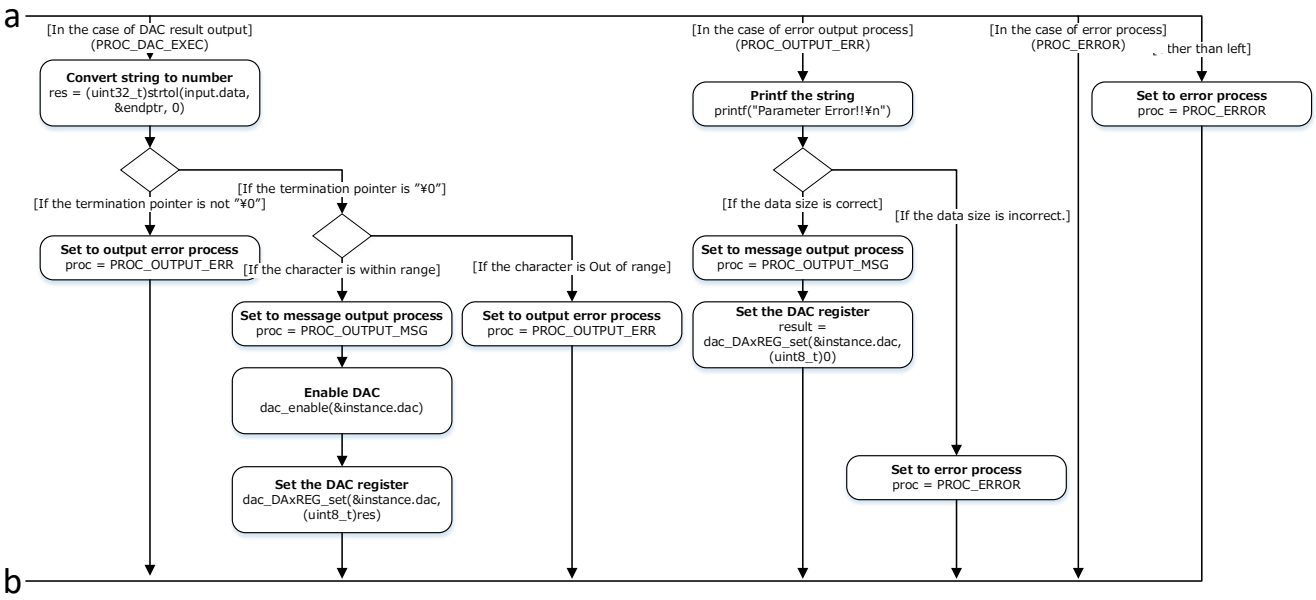
6.5.2. Error

```
Input > 0x000
Parameter Error!!
```

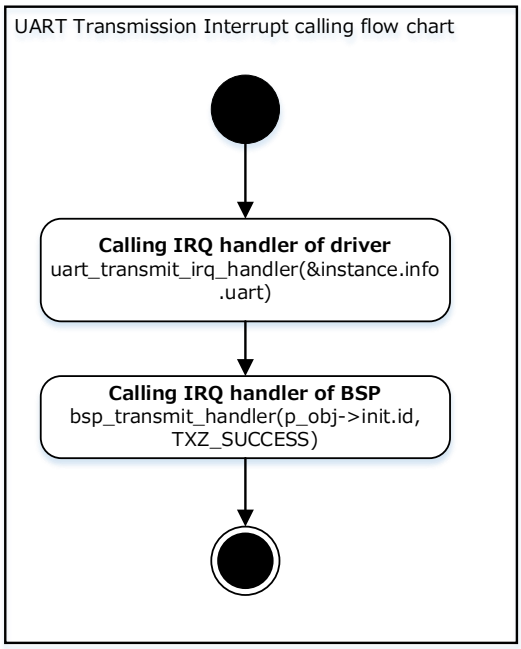
7. Activity diagram

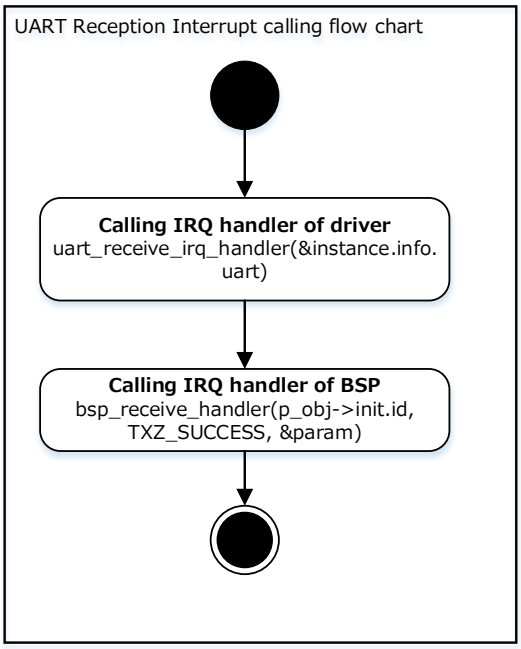
7.1. main

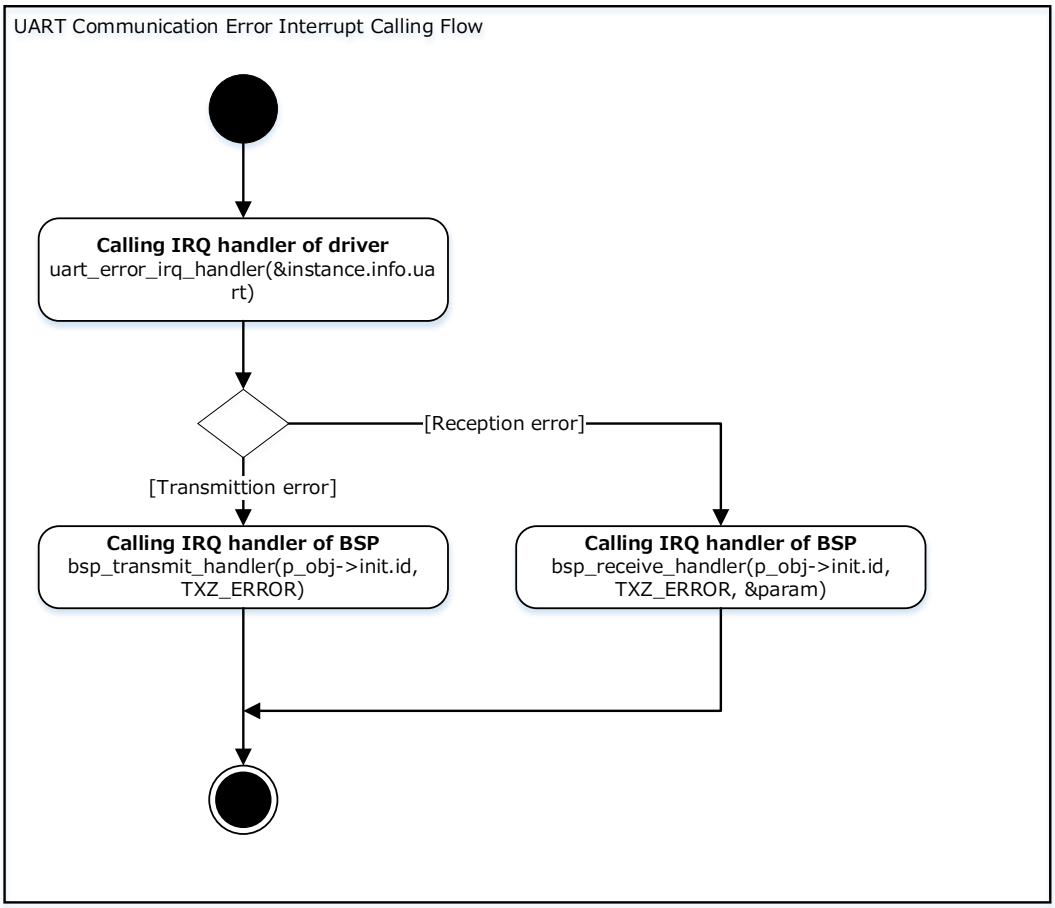



a
[In the case of DAC result output]
(PROC_DAC_EXEC)
Convert string to number
res = (uint32_t)strtol(input.data,
&endptr, 0)
[If the termination pointer is not "¥0"]
Set to output error process
proc = PROC_OUTPUT_ERR
[If the termination pointer is "¥0"]
[If the character is within range]
Set to message output process
proc = PROC_OUTPUT_MSG
Enable DAC
dac_enable(&instance.dac)
Set the DAC register
dac_DAxREG_set(&instance.dac,
(uint8_t)res)
[If the character is Out of range]
Set to output error process
proc = PROC_OUTPUT_ERR
[In the case of error output process]
(PROC_OUTPUT_ERR)
Printf the string
printf("Parameter Error!!¥n")
[If the data size is correct]
Set to message output process
proc = PROC_OUTPUT_MSG
Set the DAC register
result =
dac_DAxREG_set(&instance.dac,
(uint8_t)0)
[If the data size is incorrect.]
Set to error process
proc = PROC_ERROR
[In the case of error process]
(PROC_ERROR)
ther than left]
Set to error process
proc = PROC_ERROR
b

7.2. Interrupt







8. Revision History

Revision	Date	Description
1.0	2025-10-30	First release

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