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RENESAS

Preliminary Application Note

V850E/IF3, V850E/IG3

32-bit Single-Chip Microcontrollers

Sample Programs for Serial Communication (I^2C)

V850E/IF3:
- μPD70F3451
- μPD70F3452

V850E/IG3:
- μPD70F3453
- μPD70F3454

Document No. U18726EJ1V0AN00 (1st edition)
Date Published September 2007 N

[MEMO]

NOTES FOR CMOS DEVICES

① VOLTAGE APPLICATION WAVEFORM AT INPUT PIN

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (MAX) and V_{IH} (MIN) due to noise, etc., the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (MAX) and V_{IH} (MIN).

② HANDLING OF UNUSED INPUT PINS

Unconnected CMOS device inputs can be cause of malfunction. If an input pin is unconnected, it is possible that an internal input level may be generated due to noise, etc., causing malfunction. CMOS devices behave differently than Bipolar or NMOS devices. Input levels of CMOS devices must be fixed high or low by using pull-up or pull-down circuitry. Each unused pin should be connected to V_{DD} or GND via a resistor if there is a possibility that it will be an output pin. All handling related to unused pins must be judged separately for each device and according to related specifications governing the device.

③ PRECAUTION AGAINST ESD

A strong electric field, when exposed to a MOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop generation of static electricity as much as possible, and quickly dissipate it when it has occurred. Environmental control must be adequate. When it is dry, a humidifier should be used. It is recommended to avoid using insulators that easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors should be grounded. The operator should be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions need to be taken for PW boards with mounted semiconductor devices.

④ STATUS BEFORE INITIALIZATION

Power-on does not necessarily define the initial status of a MOS device. Immediately after the power source is turned ON, devices with reset functions have not yet been initialized. Hence, power-on does not guarantee output pin levels, I/O settings or contents of registers. A device is not initialized until the reset signal is received. A reset operation must be executed immediately after power-on for devices with reset functions.

⑤ POWER ON/OFF SEQUENCE

In the case of a device that uses different power supplies for the internal operation and external interface, as a rule, switch on the external power supply after switching on the internal power supply. When switching the power supply off, as a rule, switch off the external power supply and then the internal power supply. Use of the reverse power on/off sequences may result in the application of an overvoltage to the internal elements of the device, causing malfunction and degradation of internal elements due to the passage of an abnormal current.

The correct power on/off sequence must be judged separately for each device and according to related specifications governing the device.

⑥ INPUT OF SIGNAL DURING POWER OFF STATE

Do not input signals or an I/O pull-up power supply while the device is not powered. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements.

Input of signals during the power off state must be judged separately for each device and according to related specifications governing the device.

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M5 02. 11-1

INTRODUCTION

Cautions 1. This Application Note explains a case where the V850E/IG3 is used as a representative microcontroller. Use this Application Note for your reference when using the V850E/IF3.

2. Download the program used in this manual from the page of Programming Examples (http://www.necel.com/micro/en/designsupports/sampleprogram/index.html) in the NEC Electronics Website (http://www.necel.com/).

3. This sample program is provided for reference purposes only and operations are therefore not subject to guarantee by NEC Electronics Corporation. When using sample programs, customers are advised to sufficiently evaluate this product based on their systems, before use.

4. When using sample programs, reference the following startup routine and link directive file and adjust them if necessary.

- **Startup routine: ig3_start.s**
- **Link directive file: ig3_link.dir**

Target Readers

This Application Note is intended for users who understand the functions of the V850E/IF3 (μPD70F3451, 70F3452), and V850E/IG3 (μPD70F3453, 70F3454), and who design application systems that use these microcontrollers.

Purpose

This manual is intended to give users an understanding of the basic functions of the V850E/IF3 and V850E/IG3, using the application programs.

How to Use This Manual

It is assumed that the reader of this Application Note has general knowledge in the fields of electrical engineering, logic circuits, and microcontrollers.

For details of hardware functions (especially register functions, setting methods, etc.) and electrical specifications

→ See the **V850E/IF3, V850E/IG3 Hardware User's Manual**.

For details of instruction functions

→ See the **V850E1 Architecture User's Manual**.

Conventions

Data significance:	Higher digits on the left and lower digits on the right
Active low representation:	$\overline{xxx}$ (overscore over pin or signal name)
Memory map address:	Higher addresses on the top and lower addresses on the bottom
Note:	Footnote for item marked with **Note** in the text
Caution:	Information requiring particular attention
Remark:	Supplementary information
Numeric representation:	Binary ... xxxx or xxxxB
	Decimal ... xxxx
	Hexadecimal ... xxxxH
Prefix indicating the power of 2 (address space, memory capacity):	K (kilo): $2^{10} = 1,024$
	M (mega): $2^{20} = 1,024^2$
	G (giga): $2^{30} = 1,024^3$

The function lists are structured as follows.

Theme

[Function name]	Name of sample function
[Argument(s)]	Type and overview of argument(s)
[Return value]	Content of return value
[Processing content]	Processing content of sample function
[call function(s)]	Name and function of call function(s)
[Variable(s)]	Type, name, and overview of variable(s) used in sample function
[File name]	Name of corresponding sample program file
[Caution(s)]	Caution(s) upon function usage

Interrupt function

[Function name]	Name of interrupt function
[Servicing content]	Servicing content of interrupt function
[Interrupt source(s)]	Name of interrupt and conditions for occurrence
[call function(s)]	None
[Variable(s)]	Name of variable, function
[File name]	Name of corresponding sample program file
[Caution(s)]	None

Related Documents

The related documents indicated in this publication may include preliminary versions. However, preliminary versions are not marked as such.

Documents related to V850E/IF3 and V850E/IG3

Document Name	Document No.
V850E1 Architecture User's Manual	U14559E
V850E/IF3, V850E/IG3 Hardware User's Manual	U18279E
V850E/IF3, V850E/IG3 Sample Programs for Serial Communication (UARTA) Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Serial Communication (UARTB) Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Serial Communication (CSIB) Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Serial Communication (I^2C) Application Note	This manual
V850E/IF3, V850E/IG3 Sample Programs for DMA Function Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Timer M Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Watchdog Timer Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Timer AA Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Timer AB Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Timer T Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Port Function Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Clock Generator Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Standby Function Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Interrupt Function Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for A/D Converters 0 and 1 Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for A/D Converter 2 Application Note	To be prepared
V850E/IF3, V850E/IG3 Sample Programs for Low-Voltage Detector (LVI) Function Application Note	To be prepared
V850E/IF3, V850E/IG3 6-Phase PWM Output Control by Timer AB, Timer Q Option, Timer AA, A/D Converters 0 and 1 Application Note	U18717E

CONTENTS

CHAPTER 1 SOFTWARE

This software is configured with the following files.

File Name	Function	File Type
IG3_I2c.h	Definition file of function and constant	Header file (Constant definition)
IG3_I2c.c	I^2C bus control processing file	Header file (Interface processing)
IG3_App.h	Setting file for sample program	Header file (Sample for user)
IG3_App.c	Sample program processing file	Source file (Sample for user)

Add the above-listed four files to the assemble source file and link directive code. Add the header files to the same directory as the source files, or to the directory through which the search path passes.

CHAPTER 2 I²C BUS CONTROL UNIT

This chapter describes the I²C bus control unit.

2.1 Definition Files (in IG3_I2c.h File)

Definition files include interface function definition and constant definition used in function. The following shows the setting contents and explains of each type of definition.

2.1.1 extern function/variable definitions

Table 2-1. List of extern Functions

(a) In Master Operation

Function Name	Processing Overview	Argument	Return Value
I2cInit	Initialize processing	None	None
I2cStopCondition	Stop condition transmission processing	None	None
I2cStartCondition	Start condition transmission processing	None	Provided
I2cReStartCondition	Restart condition transmission processing	None	None
I2cPutAddress	8-bit data transmission (address transmission) processing	Provided	Provided
I2cPutData	8-bit data transmission (data transmission) processing	Provided	Provided
I2cGetDataAckSet	8-bit data reception & $\overline{\text{ACK}}$ transmission processing	None	Provided
I2cGetDataNackSet	8-bit data reception & NACK transmission processing	None	Provided
I2cDisable	Operation stop processing	None	None
I2cEnable	Operation enable processing	None	None

(b) In Slave Operation

Function Name	Processing Overview	Argument	Return Value
I2cInit	Initialize processing	None	None
I2cSetSlaveAddr	Local address setting	Provided	None
I2cGetDataSlave	Slave data reception	None	Provided
I2cSetDataSlave	Slave data transmission	Provided	None
ChkInfoI2cAct	Communication mode status report check	None	Provided
ChkInfoI2cReady	Ready status report check	None	Provided
ChkInfoI2cDir	Transmission direction status report check	None	Provided

2.1.2 Constant definitions

Constants defined in the IG3_I2c.h file have the values shown below.

(1) Master/slave selection

Table 2-2. Master/Slave Selection

Symbol	Value	Content	Remark
__I2C_MASTER__	–	Selects in master mode	Choose only one.
__I2C_SLAVE__	–	Selects in slave mode	

(2) I²C bus transfer clock setting

The transfer clock during I²C bus control uses the constant definitions for the registers in the IG3_I2c.c file. The following table shows the contents of constant settings.

Table 2-3. I²C Bus Transfer Clock Setting

CI2C_IICX	CI2C_IICCL	CI2C_IICOCKS	Selection Clock	Digital Filter	Transfer Clock (f_{XX}/m)	Settable Internal System Clock Frequency (f_{XX}) Range	Operating Mode
0b00000000	0b00000000	0b00010010	f_{XX}/8 (IICOCKS = 12H)	Off	f_{XX}/352	32.00 MHz to 33.52 MHz	Normal mode SMC0 bit = 0
0b00000000	0b00000000	0b00010011	f_{XX}/10 (IICOCKS = 13H)	Off	f_{XX}/440	32.00 MHz to 41.90 MHz	
0b00000000	0b00000001	0b00010000	f_{XX}/4 (IICOCKS = 10H)	Off	f_{XX}/344	32.00 MHz to 33.52 MHz	
0b00000000	0b00000001	0b00010001	f_{XX}/6 (IICOCKS = 11H)	Off	f_{XX}/516	32.00 MHz to 50.28 MHz	
0b00000000	0b00000001	0b00010010	f_{XX}/8 (IICOCKS = 12H)	Off	f_{XX}/688	33.52 MHz to 64.00 MHz	
0b00000000	0b00000001	0b00010011	f_{XX}/10 (IICOCKS = 13H)	Off	f_{XX}/860	41.90 MHz to 64.00 MHz	
0b00000000	0b00001000	0b00010000	f_{XX}/4 (IICOCKS = 10H)	Off	f_{XX}/96	32.00 MHz to 33.52 MHz	High speed mode SMC0 bit = 1
0b00000000	0b00001000	0b00010001	f_{XX}/6 (IICOCKS = 11H)	Off	f_{XX}/144	32.00 MHz to 50.28 MHz	
0b00000000	0b00001000	0b00010010	f_{XX}/8 (IICOCKS = 12H)	Off	f_{XX}/192	32.00 MHz to 64.00 MHz	
0b00000000	0b00001000	0b00010011	f_{XX}/10 (IICOCKS = 13H)	Off	f_{XX}/240	40.00 MHz to 64.00 MHz	
0b00000001	0b00001000	0b00010010	f_{XX}/8 (IICOCKS = 12H)	Off	f_{XX}/96	32.00 MHz to 33.52 MHz	
0b00000001	0b00001000	0b00010011	f_{XX}/10 (IICOCKS = 13H)	Off	f_{XX}/120	40.00 MHz to 41.90 MHz	

[Explanation]

Registers are set using two constants, CI2C_IICX and CI2C_IICCL. The set value of IIC function expansion register 0 (IICX0) is used as CI2C_IICX, and the set value of IIC clock selection register 0 (IICL0) is used as CI2C_IICCL.

- Operation mode can be selected by setting bit 3 (0: normal mode, 1: high speed mode) of CI2C_IICCL.
- Operation control of the digital filter can be enabled by setting bit 2 (0: digital filter off, 1: digital filter on) of CI2C_IICCL. Digital filter can only be used in high-speed mode.
- Bits 3 and 0 of CI2C_IICCL can set the transfer clock, in combination with bit 0 of CI2C_IICX.

2.2 Interface Functions and Internal Function (in IG3_I2c.c File)

Interface functions and internal function process I²C bus control.

2.2.1 List of interface functions

Table 2-4. List of Interface Function

Function Name	Processing Overview	Argument	Return Value
I2cInit	Initialize processing	None	None
I2cStopCondition	Stop condition transmission processing	None	None
I2cStartCondition	Start condition transmission processing	None	Provided
I2cReStartCondition	Restart condition transmission processing	None	None
I2cPutAddress	8-bit data transmission (address transmission) processing	Provided	Provided
I2cPutData	8-bit data transmission (data transmission) processing	Provided	Provided
I2cGetDataAckSet	8-bit data reception & $\overline{\text{ACK}}$ transmission processing	None	Provided
I2cGetDataNackSet	8-bit data reception & NACK transmission processing	None	Provided
I2cDisable	Operation stop processing	None	None
I2cEnable	Operation enable processing	None	None
I2cSetSlaveAddr	Local address setting	Provided	None
I2cGetDataSlave	Slave data reception	None	Provided
I2cSetDataSlave	Slave data transmission	Provided	None
ChkInfoI2cAct	Communication mode status report check	None	Provided
ChkInfoI2cReady	Ready status report check	None	Provided
ChkInfoI2cDir	Communication direction status report check	None	Provided

2.2.2 List of internal functions

Table 2-5. Internal Function

Function Name	Processing Overview	Argument	Return Value
Int_IIC0	Interrupt in I²C bus master/slave operation (INTIIC)	None	None

2.3 Functions

2.3.1 Functions common to master/slave operations

[Function name]	I2cInit
[Argument]	None
[Return value]	None
[Processing content]	Initialize processing of I²C bus: Processed as follows. <1> Stops I²C operation. <2> Sets transfer clock. <3> Disables communication reservation. <4> Stop condition transmission processing
[call function]	void I2cStopCondition(void)
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cStopCondition
[Argument]	None
[Return value]	None
[Processing content]	Transmits stop condition.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cStartCondition
[Argument]	None
[Return value]	Transmission success (0)/busy status (1)
[Processing content]	Start condition transmission processing of I²C bus: Processed as follows. <1> Checks busy status. <2> Transmits start condition. If busy status is detected during check of <1>, busy status is reported without start condition being transmitted.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cReStartCondition
[Argument]	None
[Return value]	None
[Processing content]	Transmits restart condition.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cPutAddress
[Argument]	8-bit address value
[Return value]	NACK reception (0)/$\overline{\text{ACK}}$ reception (1)/no restart condition detection (2)
[Processing content]	8-bit data transmission (address transmission) processing: Processed as follows. <1> Checks start condition detection. <2> Calls 8-bit data transmission processing (I2cPutData) in I²C bus If busy status is detected during check of <1>, and busy status is reported without data being transmitted.
[call function]	I2cPutData
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cPutData
[Argument]	8-bit data value
[Return value]	NACK reception (0)/$\overline{\text{ACK}}$ reception (1)
[Processing content]	8-bit data transmission (data transmission) processing: Processed as follows. <1> Transmits data. <2> Waits for transmission completion. <3> Detects $\overline{\text{ACK}}$. After data transmission, returns status of $\overline{\text{ACK}}$.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cGetDataAckSet
[Argument]	None
[Return value]	Reception data existing (0)/no reception data (1)
[Processing content]	8-bit data reception & $\overline{\text{ACK}}$ transmission processing: Processed as follows. <1> Checks if reception data exists. <2> Releases wait and sets $\overline{\text{ACK}}$ transmission. <3> Waits for reception completion. <4> Sets reception data. If no reception data exists in <1>, processing thereafter is not performed and “no reception data” is returned. If reception data exists in <1>, processing is performed to the end and reception data is returned.
[call function]	None
[Variable]	None
[File name]	Corresponding sample program file name
[Caution]	None

[Function name]	I2cGetDataNackSet
[Argument]	None
[Return value]	Reception data existing (0)/no reception data (1)
[Processing content]	8-bit data reception & NACK transmission processing: Processed as follows. <1> Checks if reception data exists. <2> Releases wait and sets NACK transmission. <3> Waits for reception completion. <4> Sets reception data. If no reception data exists in <1>, processing thereafter is not performed and “no reception data” is returned. If reception data exists in <1>, processing is performed to the end and reception data is returned.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cDisable
[Argument]	None
[Return value]	None
[Processing content]	Operation stop processing
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cEnable
[Argument]	None
[Return value]	None
[Processing content]	Operation enable processing
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

Interrupt function

[Function name]	Int_IIC0
[Servicing content]	Interrupt during master/slave operation <1> During master operation: Interrupt servicing during data transmission <2> During slave operation: Interrupt servicing during slave operation Changes the flag of communication status.
[Interrupt sources]	INTIIC When IIC serial transfer complete
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

2.3.2 Functions in slave operation

[Function name]	I2cSetSlaveAddr
[Argument]	Local address
[Return value]	None
[Processing content]	Sets local address. Sets local address to slave address register 0.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	I2cGetDataSlave
[Argument]	None
[Return value]	Reception data
[Processing content]	Receives slave data.
[call function]	None
[Variable]	register unsigned char data
[File name]	IG3_I2c.c
[Caution]	Data reception processing on slave side

[Function name]	I2cSetDataSlave
[Argument]	Transmission data
[Return value]	None
[Processing content]	Transmits slave data.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	Data transmission processing on slave side

[Function name]	ChkInfoI2cAct
[Argument]	None
[Return value]	Communication in progress (1)
[Processing content]	Checks communication status report. Returns the status of the communication mode.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	ChkInfoI2cReady
[Argument]	None
[Return value]	Communication enable (1)
[Processing content]	Checks ready status report. Returns the status of whether communication is enabled.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

[Function name]	ChkInfoI2cDir
[Argument]	None
[Return value]	Transmission (1)/reception (1)
[Processing content]	Checks transmission direction status report. Returns the status of communication direction.
[call function]	None
[Variable]	None
[File name]	IG3_I2c.c
[Caution]	None

2.4 Flowchart

Figure 2-1. I²C Bus Control Block (1/7)

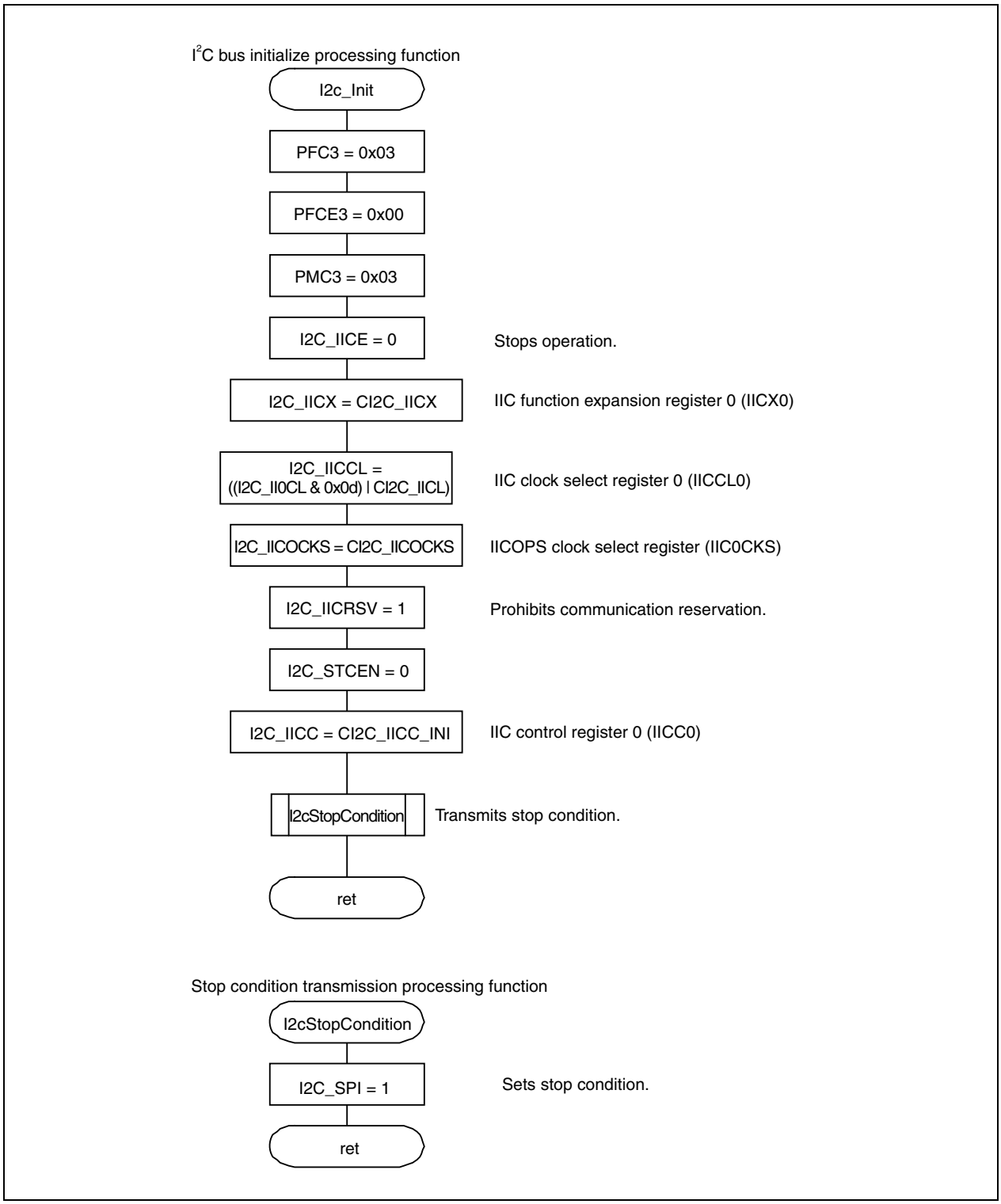


Figure 2-1. I²C Bus Control Block (2/7)

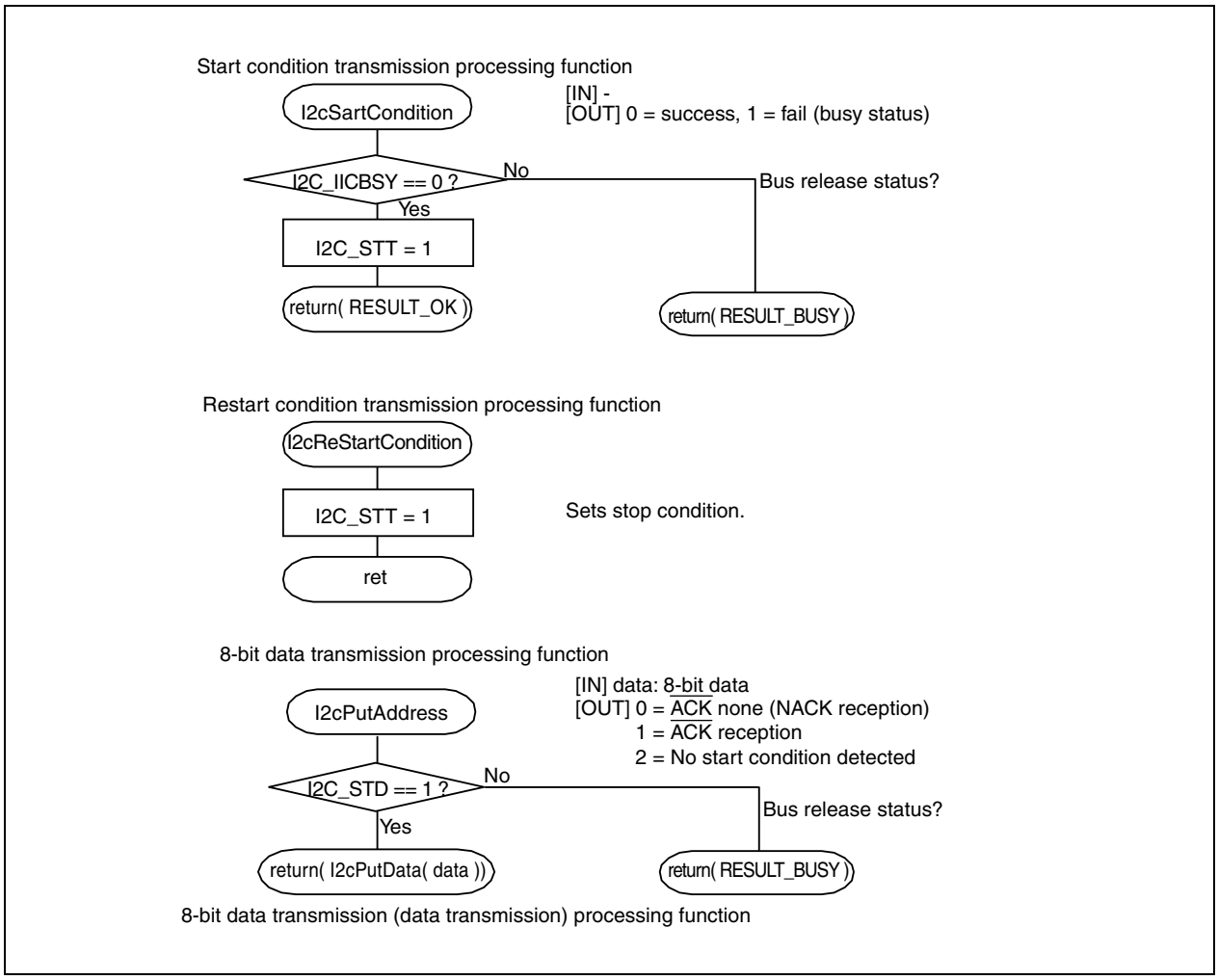


Figure 2-1. I²C Bus Control Block (3/7)

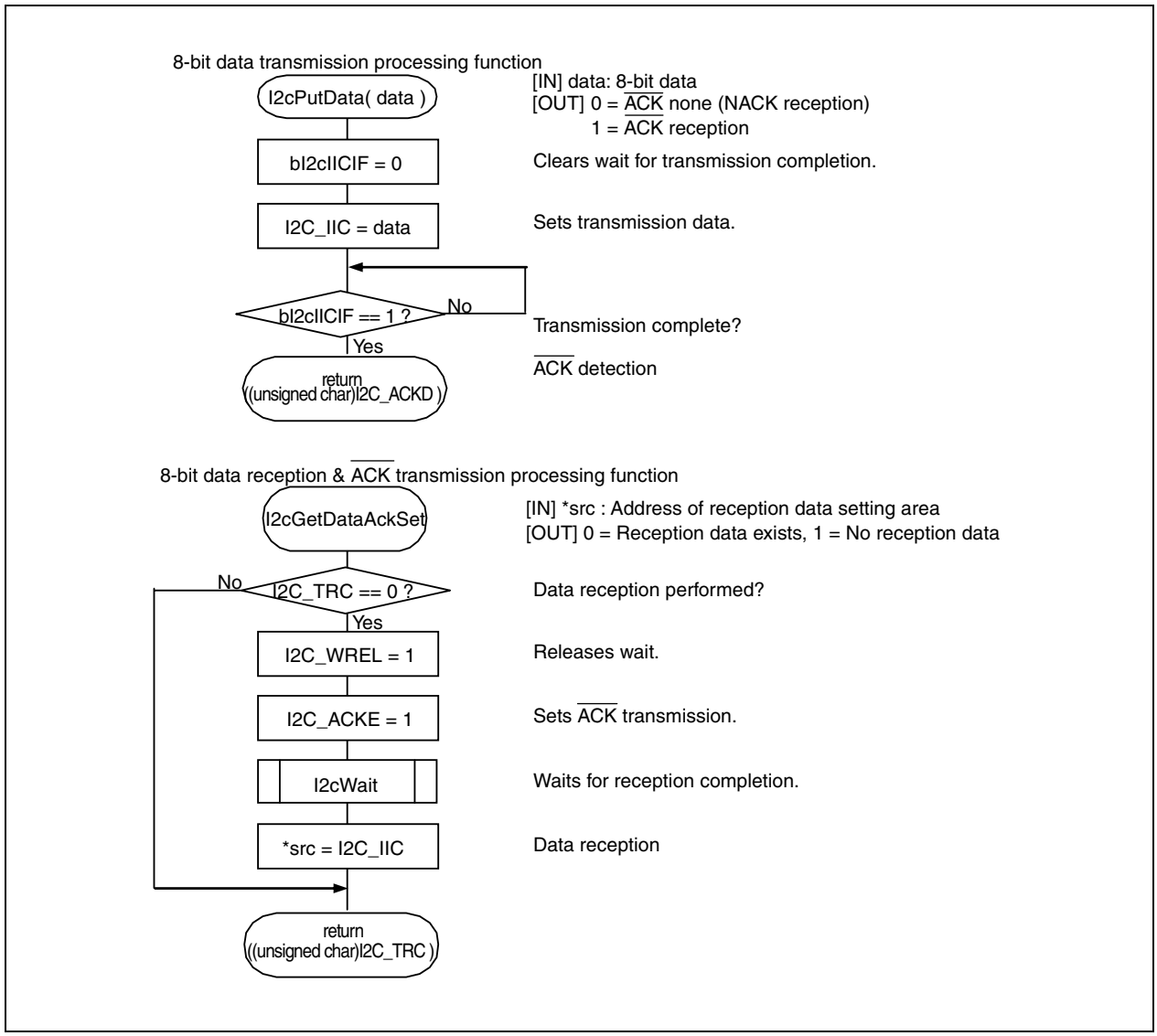
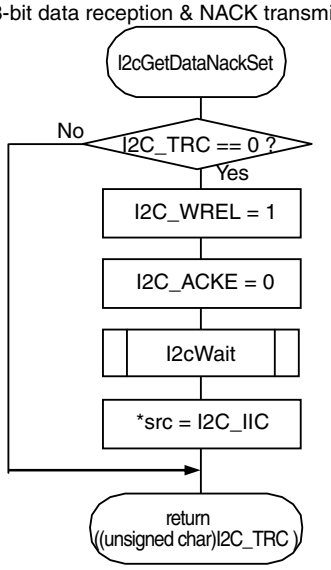


Figure 2-1. I²C Bus Control Block (4/7)

8-bit data reception & NACK transmission processing function



[IN] *src: Address of reception data setting area
[OUT] 0 = Reception data exists, 1 = No reception data

Data reception performed?

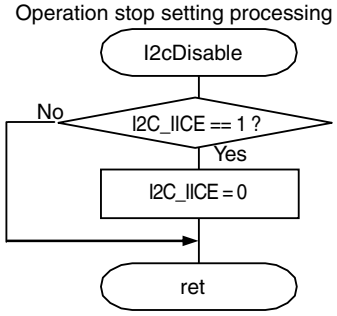
Releases wait.

Sets $\overline{\text{ACK}}$ transmission.

Waits for reception completion.

Data reception

Operation stop setting processing function



Operation enable setting processing function

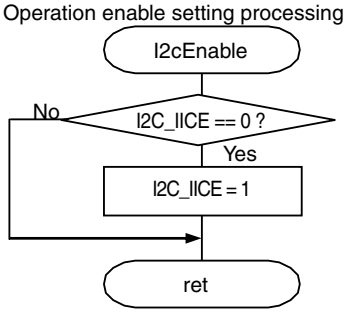


Figure 2-1. I²C Bus Control Block (5/7)

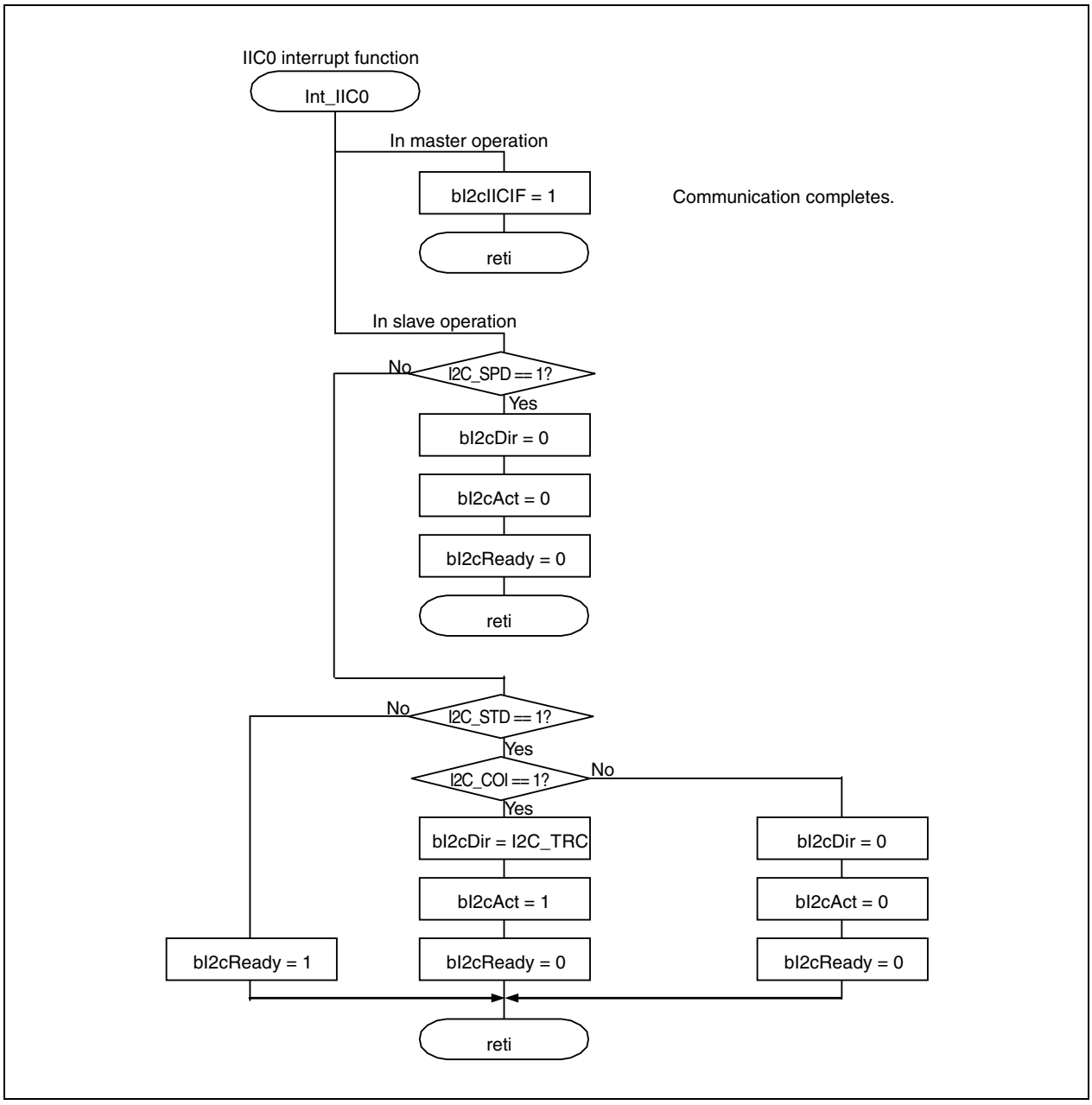


Figure 2-1. I²C Bus Control Block (6/7)

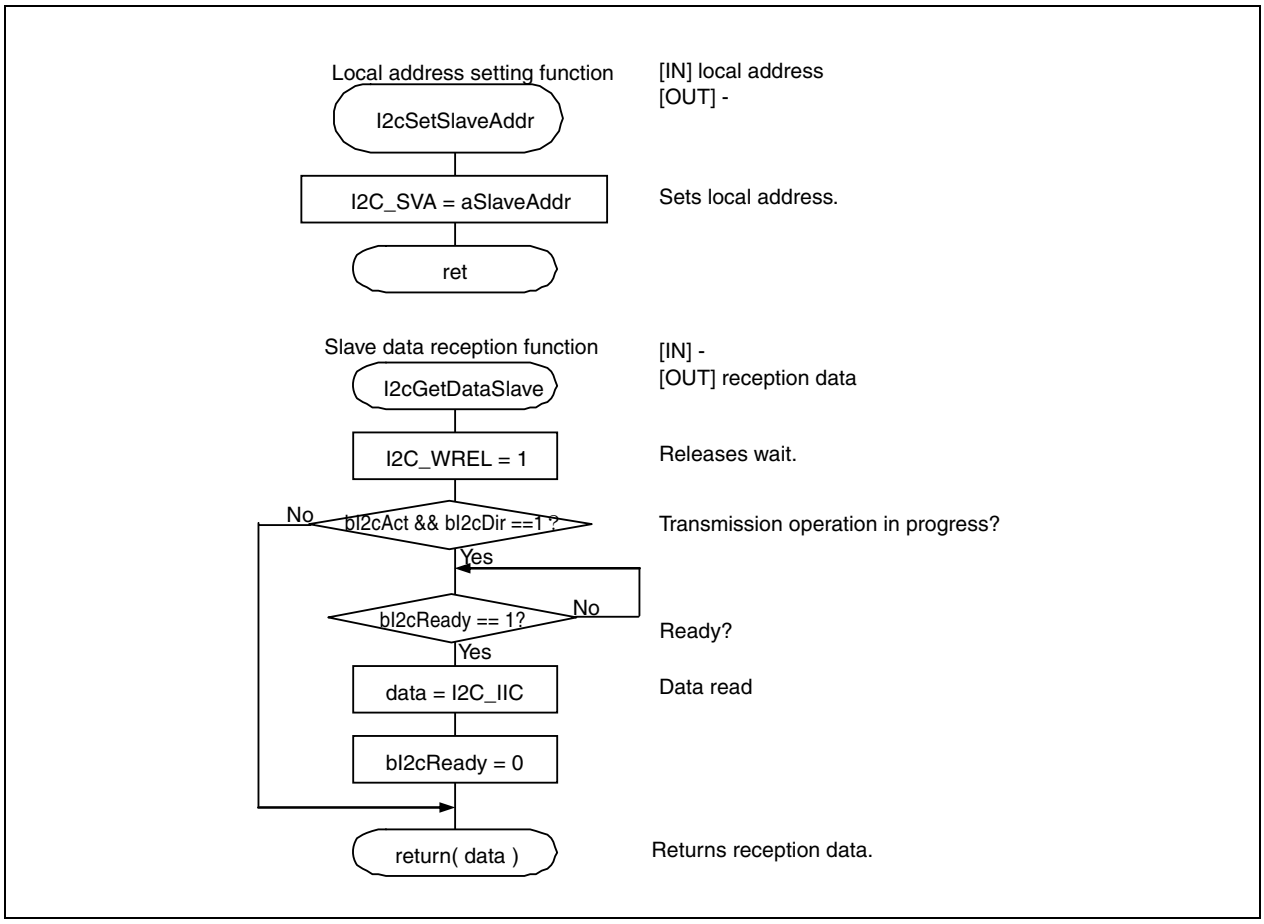
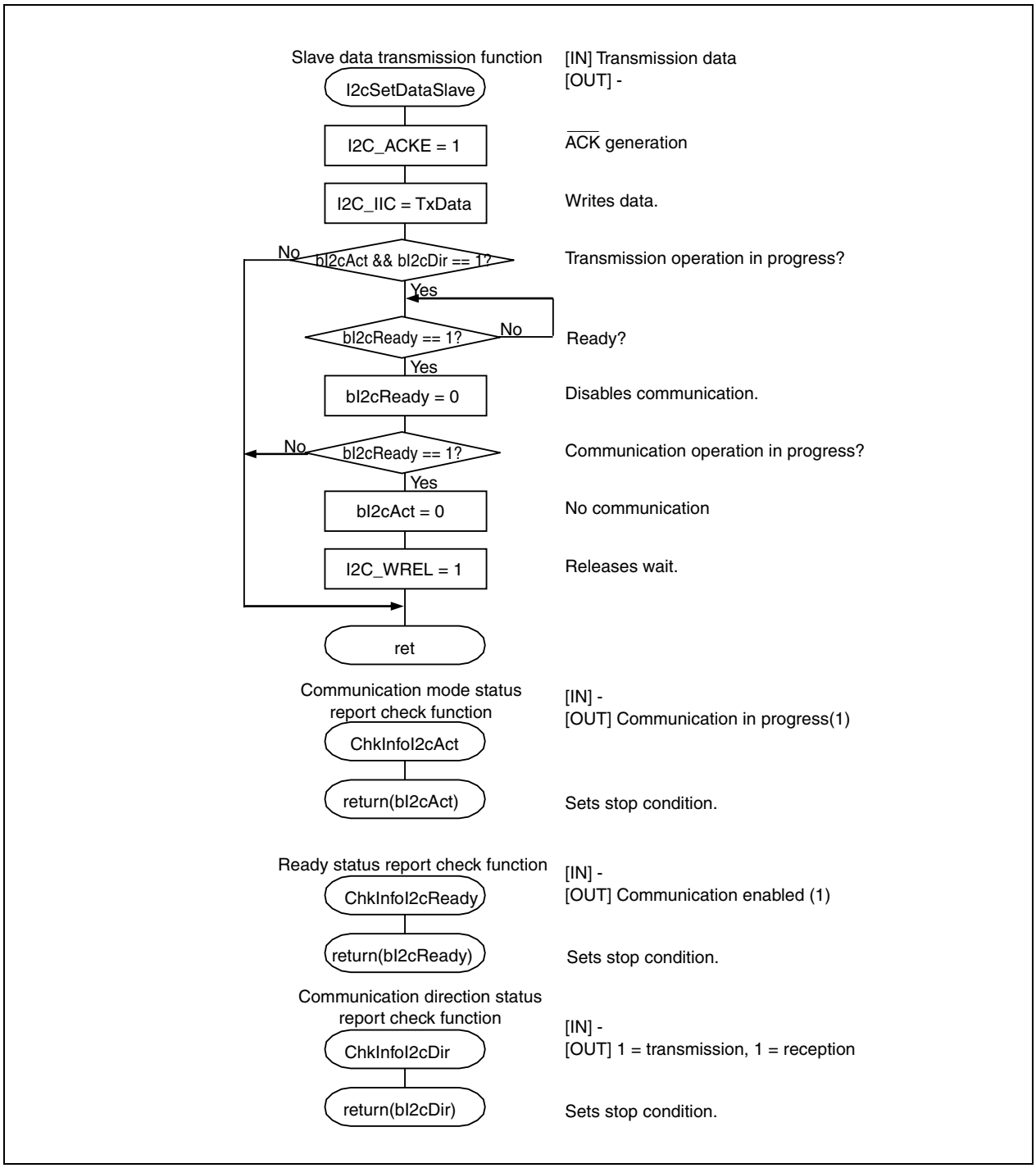


Figure 2-1. I²C Bus Control Block (7/7)



CHAPTER 3 APPLICATION BLOCK

This chapter explains the application block.

3.1 Definition File (in IG3_App.h File)

Interface function definitions and constant definitions used in functions are available. The following shows the setting contents and explanations of each type of definition.

3.1.1 extern function definitions

Table 3-1. extern Functions

Function Name	Processing Overview	Argument	Return Value
AppInit	Initialize processing	None	None
AppMain	Sample application main processing	None	None

3.1.2 Constant definitions

Constants defined in the IG3_App.h file have the values shown below. Select the appropriate value corresponding to the specifications.

(1) Master/slave operation constant selection

Table 3-2. Master/Slave Operation Selection Constant

Symbol	Value	Content	Remark
__USED_MASTER__	–	Master operation	Choose only one.
__USED_SLAVE__	–	Slave operation	

(2) Local address definition when slave operation selected

Table 3-3. Local Address Definition When Slave Operation Selected

Symbol	Value	Content
CIN_SLAVE_ADDR	02H to FEH	Local address

(3) Slave ID

Table 3-4. Slave ID

Symbol	Value	Content
COUT_SLAVE_ADDR	02H to FEH	Slave address

3.2 Functions (in IG3_App.c File)

Select each type of constant definition of the IG3_App.h file when using a function.

3.2.1 List of functions

Table 3-5. List of Functions

Function Name	Processing Overview	Argument	Return Value
DataWrite	Data write request (specifies 1 byte)	Provided	Provided
DataRead	Data read request (specifies 1 byte)	Provided	Provided
AppInit	Initialize processing	None	None
AppMain	Sample application main processing	None	None

3.3 Functions

[Function name]	DataWrite
[Argument]	Data to be written
[Return value]	Write failure (0)/write success (1)
[Processing content]	Data write request processing of master: Processed as follows. <1> Executes enabling of I^2C operation/clock output. <2> Sets start condition. When setting fails, sets stop condition and ends. <3> Transmits slave address. When setting fails, or NACK is received, sets stop condition and ends. <4> Executes data write. <5> Sets stop condition.
[call function]	I2cEnable, I2cStopCondition
[Variable]	None
[File name]	IG3_App.c
[Caution]	None

[Function name]	DataRead
[Argument]	Address of buffer for storing read data.
[Return value]	Read failure(0)/read success (1)
[Processing content]	Data read request processing of master: Processed as follows. <1> Executes enabling of I^2C operation/clock output. <2> Sets start condition. When setting fails, sets stop condition and ends. <3> Transmits slave address. When NACK is received, sets stop condition and ends. <4> Executes data read. When no data is received, sets stop condition and ends. <5> Sets stop condition.
[call function]	I2cEnable, I2cStopCondition
[Variable]	None
[File name]	IG3_App.c
[Caution]	None

[Function name]	AppInit
[Argument]	None
[Return value]	None
[Processing content]	Initialize processing of sample application: Processed as follows. <1> I^2C initialization <2> During slave operation, sets local address, and enables I^2C interrupts. During master operation, initializes transmission and data, and initializes counter.
[call function]	I2cInit
[Variable]	None
[File name]	IG3_App.c
[Caution]	None

[Function name]	AppMain
[Argument]	None
[Return value]	None
[Processing content]	Main processing in application block (transmission/reception operation management): Processes as follows. [In slave operation] When write is specified, receives the values from the master, when read is specified, this function updates and transmits the values of 0 to 50. [In master operation] Updates the values of 0 to 49 and transmits them every set time. Receives and saves the transmitted value from the slave.
[call function]	None
[Variable]	None
[File name]	IG3_App.c
[Caution]	None

3.4 Flowchart

Figure 3-1. Application Block (1/3)

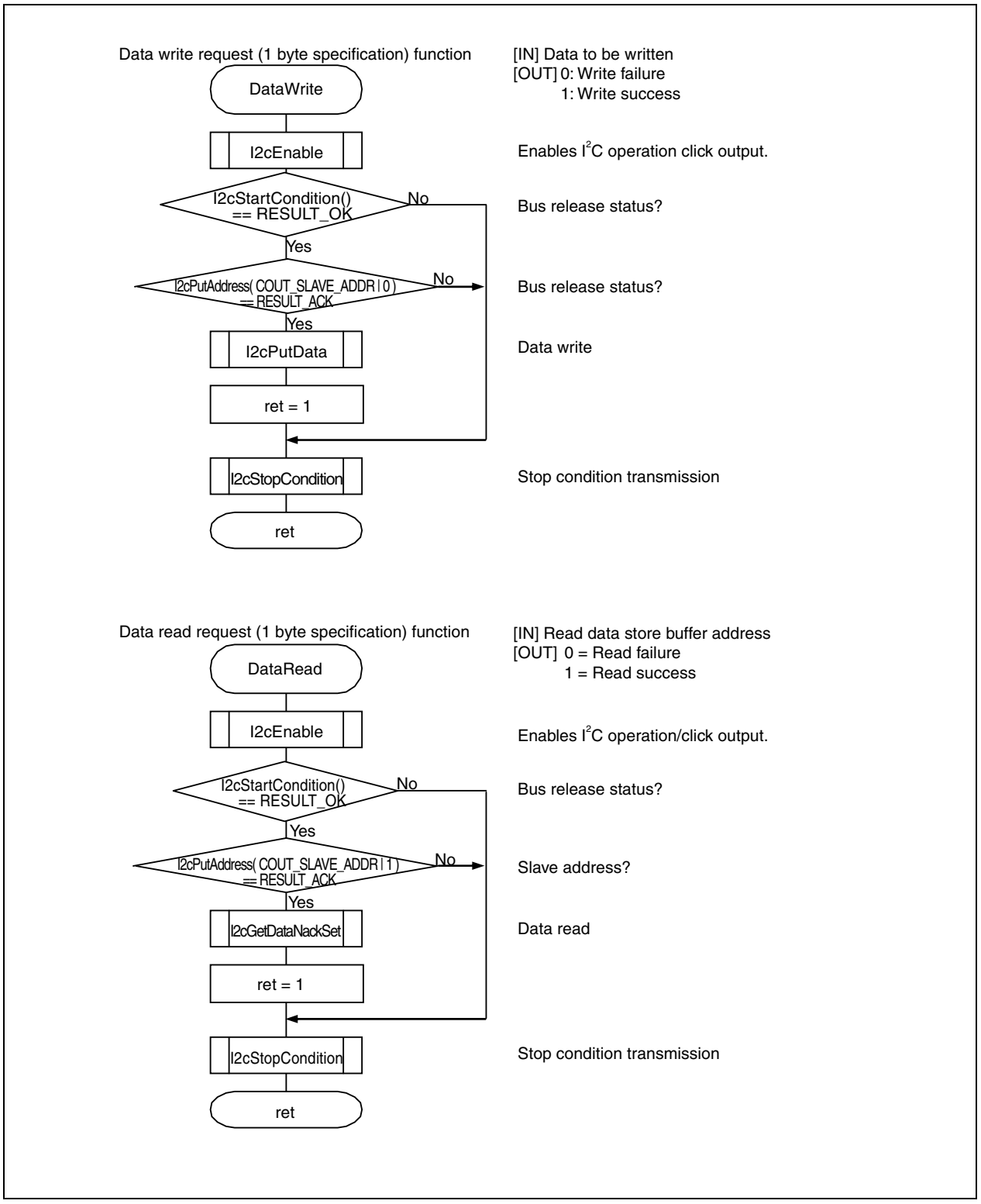


Figure 3-1. Application Block (2/3)

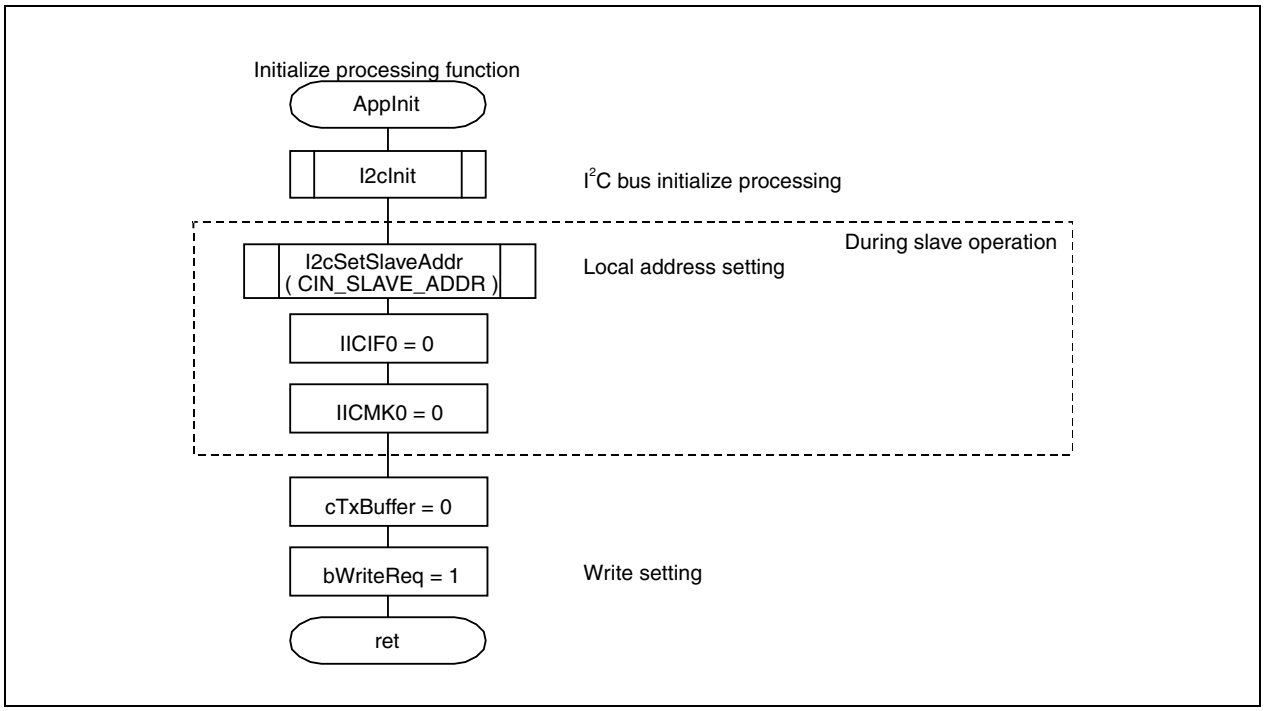
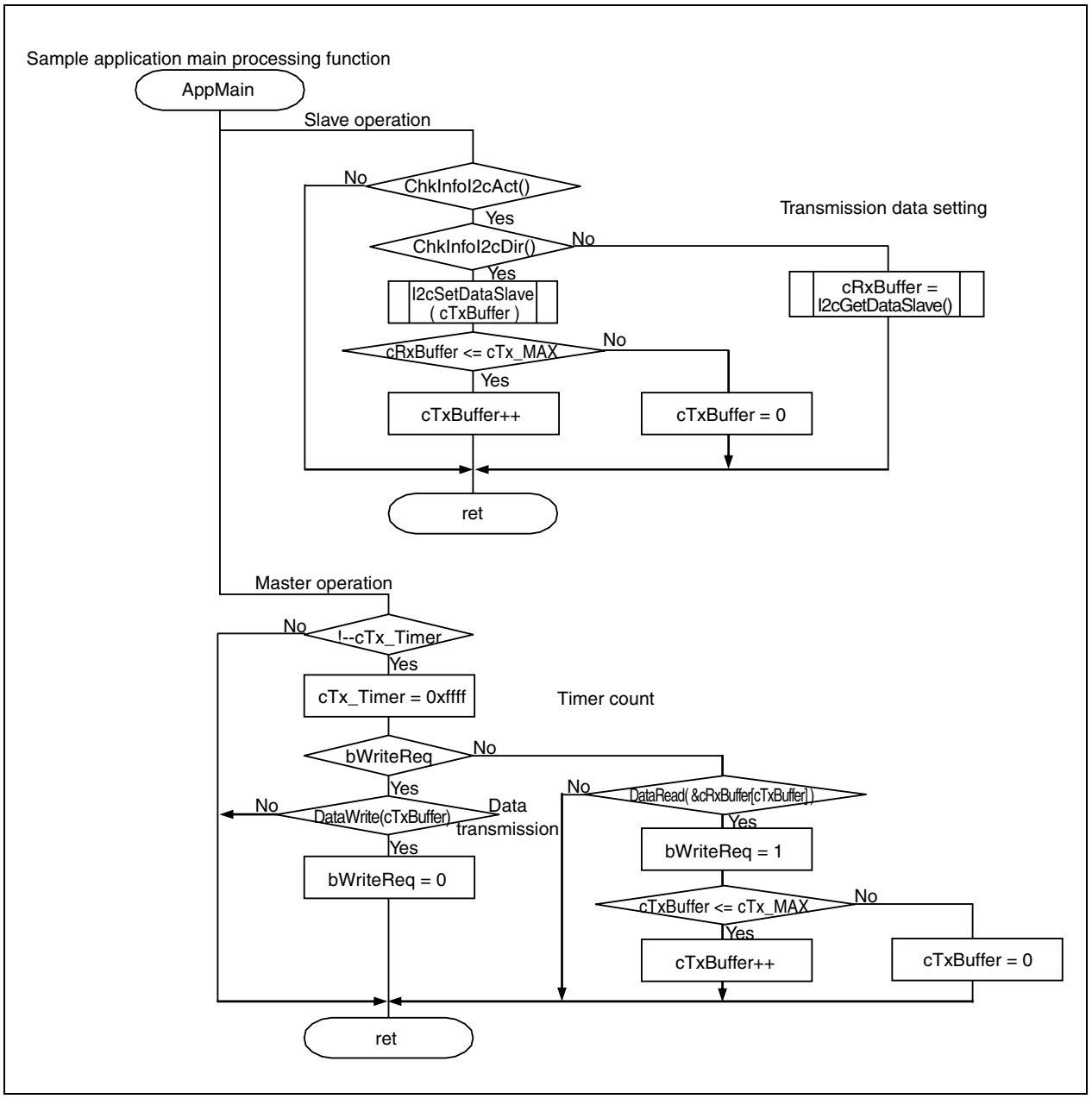


Figure 3-1. Application Block (3/3)



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