

# BlueBoard-RL78/G12/G13/G14\_30pin



Fig. 1



#### **About NGX Technologies**

NGX Technologies is a leader in embedded microcontroller product development. We supply reference designs and evaluation modules to silicon companies. Our customers include industry leaders like NXP and RENESAS. Our core business is in helping our customers realize their embedded products.

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# **1.0 INTRODUCTION**

This document is the User Manual for BB-RL78/G12/G13/G14\_30pin; a cost effective evaluation platform for RENESAS's RL78/G12/G13/G14\_30pin MCUs. This document reflects its contents which include system setup, debugging, and software components. This document provides detailed information on the overall design and usage of the board from a systems perspective.

Before proceeding further please refer the quick start guide for BB-RL78/G12/G13/G14\_30pin features and hardware verification.

For BB-RL78/G12/G13/G14\_30pin quick start guide: Click here.



# 2.0 BLUEBOARD-RL78/G12/G13/G14\_30pin Development Tool Setup

#### 2.1 IDE and debugger

The following sections will explain the setup for CUBESUITE+ and E1 EMULATOR as the IDE and debugger respectively.

Other tool options that could be considered are:

> E1 Emulator and High Performance Embedded Workshop

#### 2.2 Installation & Configuration of CUBESUITE+ software

The Installation of CubeSuite+ software is explained below:

*Note: We have used CubeSuite+ version V1.02.00 while creating the User manual for this evaluation kit. Please ensure that you are using CubeSuite+ version V1.02.00 or above.* 

Step 1: Open the CubeSuite+ setup



Fig. 2



#### Step 2: Click on Run



Fig. 3

Step 3: Click on Begin CubeSuite+ Setup

🐌 the Renesas Electronics microcontroller development tools installer - Readme First
Japanese TubeSuite+
Readme first
Thank you for purchasing CubeSuite+. The following document provides information about CubeSuite+ development tool components. This includes summaries and operating precautions. Please read this document before using CubeSuite+. Read me first Readme (PDF) will not be installed. Please save it to your PC. Adobe® Reader® is required to view this file. Please visit Adobe Systems Incorporated's web site for more information.
Installation
Click the button below to start CubeSuite+ setup application. Begin CubeSuite+ Setup  • Microsoft .NET Framework 3.5 SP1 and Microsoft Visual C++ 2008 SP1 runtime libraries are required to run CubeSuite+. If these are not installed, these are installed by the CubeSuite+ setup.

Fig. 4



#### Step 4: Click on Next



Fig. 5

Step 5: Accept the end user license agreement and click Next



Fig. 6



# Step 6: Click Next

Installer - step 3/8 [Development Tools Selection]	X
Please specify the development tools to install.  Tools for RL78 and 78K microcontrollers  Tools for RL78 microcontrollers	
<ul> <li>Tools for V850 microcontrollers</li> <li>Emulator USB drivers</li> </ul>	Drive: C: Free space: 25,893,318KB
Details >	Required space: 765,490KB
Install location	
C:\Program Files\Renesas Electronics\	Browse
CubeSuite+ <back< td=""><td>Next &gt; Cancel</td></back<>	Next > Cancel

Fig. 7

Step 7: Click Next

🔞 Installer - step 5/8 [License Registratio	on]	×
CubeSi	uite+	
License Key Registration By clicking the button to the right, you can r You can also register a license key after ins	register the product license key. tallation.	License Manager
🔞 CubeSuite+	< Back	Next > Cancel

Fig. 8



#### Step 8: Click Next

٢	Installer - step 6/8 [Installation Settings Confirmation]	×
	Setup is now ready to install CubeSuite+ on your computer. If the newer version is already installed , the older version may not be installed.	
	- Tools for RL78 and 78K microcontrollers - Tools for RX microcontrollers - Tools for V850 microcontrollers - Emulator USB drivers Install location	A
	C:\Program Files\Renesas Electronics\	
		T
	Click [Next] button to start installation.	
	CubeSuite+ <back (next="">)</back>	Cancel

Fig. 9

Step 9: Wait to complete the installation of all the required drivers

🔞 Installer - step 7/8 [Installation Exec	ution]			X
Install Status:				
CubeSuite+ V1.02.00:Installing				
				=
			Abort Installations	
			1	
🕲 CubeSuite+		< Back	Next >	Cancel

Fig. 10



Step 10: Click Next

logtall Statue:	
Renesas Flash Programmer V1.03.01:Insta Integrated Help V1.02.00:Installing In USB Driver for MINICUBE2 V1.10.01:Insta USB Driver for 78K0 IECUBE V1.10.01:Inst USB Driver for RL78,78K0R IECUBE V1.1 successfully. USB Driver for V850 IECUBE V1.10.01:Ins USB Driver for V850 IECUBE V1.10.01:Ins USB Driver for V850 IECUBE V1.10.01:Ins USB Driver for V850 MINICUBE V1.10.01: USB Driver for Renesas E-Series V1.01.00	alling Installation completed successfully. Installation completed successfully. Installation completed successfully. Installation completed successfully. Installation completed successfully. Installing Installation completed successfully.
The installation was completed. Please cli	
The installation was completed. Please cli	Abort Installations

Fig. 11

Step 11: Click on Finish to complete the installation

🝈 Ins	taller - step 8/8 [Setup Completion]	×
	Setup is complete. Click [Finish] to exit setting.	
	- All installations were completed successfully.	<b>A</b>
	The latest product update information can be checked when the "Launch Update Manager." is checked.	
	 - Installation skipped. (The same version has been installed.) CubeSuite+ V1.02.00	
	☑ Launch Update Manager.	
C	CubeSuite+	Cancel

Fig. 12



#### 2.3 Configuration of E1 Emulator

Connecting the E1 Emulator to the target board is as shown in the below image



Fig.13

The configuration flow of E1 Emulator is explained below:

Step 1: Open the CubeSuite+ Workspace then right click on the Debug Tool option, click on Using Debug Tool, select RL78 E1(Serial) as shown in below image.

RL78G13_Blinky - CubeSuite+ - [Project Tree	
File Edit View Project Build Debug Tool	Window Help
🏽 🍓 Start   🚚 🍟 💥 🐚 🛍 🔊 (~	🏦 🌲 – 📜 🖬 🖬 📜 🖬 🗣 🔲 🔘 🕪 🛱
- 💎 🖓 🔛 🧐 🍕	
Project Tree 🛛 📮 🗙	🛀 Code Generator 🛐 r_main.c 📓 r_it_user.c 🔰 🔻 🔺 🗙
2 🐼 🙎	11   12   → 🧿 🖍   Columns -
RL78G13 Blinky (Project)	64 */
R5F1006E (Microcontroller)	65 void main(void)
😥 📲 Code Generator (Design Tool)	66 🖂
CA78K0R (Build Tool)	67 - /* Start user code. Do not ed
RL78 E1(Using Debug Tool	RL78 IECUBE C();
E- 🗊 File 🕋 Property	RL78 E1(Serial)
Startup	RL78 E20(Serial)
	RL78 EZ Emulator
r_systeminit.c	78KOR Simulator
	Output
🛀 r_wdt.c	[101]
r_wdt_user.c	Ξ
r_cg_macrodriver.h	
r_cg_userdefine.h 👻	
	All Messages
F7 Op F2 Re F3 Fin F4 Re F5 Go	F& Buil F? Buil F& Ign F9 Set FW Ste F?? Ste F?? Jum

Fig.14



Step 2: Right click on Debug Tool option, click on property and set the property value as shown in below image



Fig.15

Note: Target Board can be powered through Emulator or External DC power supply. When you powered the board through Emulator make sure that the External power supply is not connected.



# 3.0 BLUEBOARD-RL78/G12/G13/G14\_30pin Programming

#### 3.1 Programming options

BLUEBOARD-RL78/G12/G13/G14\_30pin can be programmed using the

- Emulator (E1 Emulator) with CubeSuite+
- > E1 Emulator with Renesas Flash Programmer

Programming using Renesas Flash Programmer with E1 Emulator Please refer <u>Renesas Flash Programmer user manual</u>

#### 3.2 Programming the board using E1 Emulator

*Note: To programming the board using E1 Emulator, configure the E1 Emulator as shown in the section* <u>2.3</u>.

Step 1: Build the workspace as shown in below image



Fig. 16

Step 2: After configuring the Emulator (E1 Emulator) connect the Debug tool (E1 Emulator) to the workspace as shown in below image.



🕼 RL78G13_Blinky - CubeSuite+ - [r_main.c]							
File Edit View Project Build Debug Tool Window Help							
🕴 🚳 Start   🚚 🍟 🕌 🐚	D.	Downlo	ad				¢ או וווי וווי ע
	5	Build &	Downlo	ad		F6	
Project Tree		Connect	to Deb	ug Tool	>		
2 0 2	D)	Upload.					
RL78G13 Blinky (Projec	J.	Disconn	ect fron	n Debug T	ool	Shift+F6	
R5F1006E (Microcontr		Stop				Shift+F5	^ _
Code Generator (Desi		Go				F5	r code. Do not ed
RL78 E1(Serial) (Debug		Ignore B	Ignore Break and Go F8				
	SΞ	Step In				F11	
⊡]) File S <sup>S</sup> Startup	CI.	Step Ov	er	F10			
Code Generator	Č_	Return (	Dut			Shift+F11	
🛀 r_main.c	κŋ	CPU Res	et			Ctrl+F5	
r_systeminit.c	142	Restart					code. Do not ealt
r_cgc_user.c			77	- /*			
r_wdt.c			79	년/* 50 <u>戶/* En</u>	art u <u>d use</u>	ser coae <u>r cod</u> e. I	o not edit comment.
r_wdt_user.c	ver h						•
	e.h	-	Output				<b>д X</b>
All Messages							
F? Op F2 Re F3 Fin F4 R	e	F <del>S</del> Go	F& Buil	<b>F7</b> Buil.	F8 Ig	n <b>F9</b> Set.	. FNI Ste F77 Ste FN2 Jum
Performs the connection t 63 Line 22 Column Insert Western European (Windows) 👬 DISCONNECT							

Fig. 17

Step 3: After success of the connection, click on Download to download the code into target board as shown in the below image. To run the code press F5.

🕼 RL78G13_Blinky - CubeSuite+ - [r_main.c]								
File Edit View Project Build Debug Tool Window Help								
🚳 Start	J 📜	ሪ 🖻 🚾	Downloa	ad				א 🕒 🔳 🗩 אין
- 💎 💎 🗖	) 😵 🧖	<b>5</b>	Build &	Downlo	ad		F6	
Project Tree			Connect	to Deb	ug Tool			∡r port cl 🗸 🖡 🕨
ê 🕜 🙎		D)	Upload					
	G13 Blinky (I	Projec 👬	Disconn	ect fron	n Debug Te	ool Sh	ift+F6	
📠 R	5F1006E (Micr	ocontr 🔳	Stop			Sh	ift+F5	^
	ode Generator	(Desig	Go				F5	r code. Do not ed
R	L78 E1(Serial)	Debuc D	Ianore B	reak an	d Go		F8	
	rogram Analyz	zer (Ar 🕞	Sten In				F11	
📄 👘 🔂 🦉	le	2	Step Ou				E10	
S	Startup	اللي اللي اللي اللي اللي اللي اللي اللي	Step Ove	=1			FIU	
<u> </u>	Code Gener	ator 🖼	Return C	)ut		Shif	t+F11	
	r_main.c	ninit c	CPU Res	et		C	trl+F5	code. Do not edit
		14	Restart					-
		ser.c		77				For adding Do not
				79	년/* 50 년/* En	art user d user o	code. Do	o not edit comment.
		ser.c		1 4 .				<u>۲</u>
	<u>h</u> r_cg_ma	crodriver.h		Output	:			<b>д х</b>
	r_cg_use	ruerine.h						_
Fr Op., F2 F	Ke	r f Re	ra Go	ra Bui	Fr Buil.	-   <b>* #</b> Ign	Fa Set	rite Ste Fri Ste Fri Jum
Downloads th	Downloads the program t 63 Line 22 Column Insert Western European (Windows) 👬 DISCONNECT							

Fig. 18



### 4.0 BLUEBOARD-RL78/G12/G13/G14\_30pin Software Development

#### 4.1 Executing the sample projects

The sample projects are provided with the available kit.

Steps to execute the sample projects:

- 1. Open the project folder.
- 2. Then open the file project\_name.mtpj eg RL78G13\_Blinky.mtpj.



Fig. 19



3. This launches the IDE

RL78G13_Blinky - CubeSuite+ - [r_main.c]	
File Edit View Project Build Debug Tool	Window Help
🏽 🚳 Start   🚚 🍟 🔏 🖻 🖺 🔊 (*	## #_ #_ #  @ @ #_ #  @ >> !!! #
S 🖓 🖓 🖉 🧐	
Project Tree 4 X	📝 r_cg_userdefine.h 🛃 Code Generator Preview 🛛 🔻 🖡 🗙
ĝ Ø 🙎	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
RL78G13 Blinky (Project)         RSF1006E (Microcontroller)         Code Generator (Design Tool)         CA7880R (Build Tool)         RL78 E1 (Serial) (Debug Tool)         Program Analyzer (Analyze Tool)         File         Startup         Code Generator         r_main.c         r_systeminit.c         r_cg_macrodriver.h         r_cg_ccgc.h	65       void main(void)         66       -{         67       -/* Start user code. Do not edit         68       -         69       R_IT_Start();         70       -         71       while (1U)         72       -         73       ;         74       ->         75       -/* End user code. Do not edit cc         74       ->         75       -/* End user code. Do not edit cc         74       ->         75       -/* End user code. Do not edit cc         74       ->         75       -/* End user code. Do not edit cc         74       ->         75       -/* End user code. Do not edit cc         74       ->
< m >	All Messages 🗸 🗸
F7 Op F2 Ren F3 Fin F4 Rep F5 Go	FB Buil F7 Buil FB Ign F9 Set/ F10 Ste F77 Ste F12 Jump
57 Line 16	Column Insert Western European (Windows)

Fig. 20

4. To build and download the code using E1 emulator, follow the steps in section 3.2

#### 4.2 Creating sample blinky project in CuibeSuite+

Follow the below steps, for creating blinky project:

Step 1: Open the CubeSuite+ IDE.

O CubeSuite+ - [Start]	
File Edit View Project Build De	ebug Tool Window Help
🕄 🕅 Start 🛛 🥥 🍟 🛣 🖿	฿๒๙๙฿฿฿
ା ବ ବ ଜ ବ ବ	
Project Tree 7 X	🐼 Start 🗸 🗸
2 🕜 🙎	Learn About CubeSuite+
	GO We recommend reading the tutorial to find out what can be done in CubeSuite+. The tutorial contains the information on how to effectively use CubeSuite+.
	Create New Project  A new project can be created. A new project can also be created by reusing the file configuration registered to an existing project.
Drop here to open the project	Output # ¥
and' webb.	(EOF)
F7 Open_ F2 Rena_ F3 Find_ F4	Repl. F5 Go F6 Build. F7 Build. F8 Ignor. F9 SetD. F10 Step. F77 Step. F12 Jump.
	TISCONNECT

Fig. 21

Step 2: Click on to the Project tab – Create New project.

O CubeSuite+ -	[Sta	t]	
File Edit View	Pro	ect Build Debug Tool Window Help	
🕴 🙉 Start   🛃		Create New Project	
69929		Open Project	
Project Tree		Favorite Projects	• - x
2 🕜 🙎		Add	• ite+
	76	Set Project as Active Project	nend reading the tutorial to find out what can be
	R	Close Project	contains the information on how to effectively
		Save Project Ctrl+Shift+S	
	RB(C)	Save Project As	
		Remove from Project Shift+Del	ect can be created. ect can also be created by reusing the file
	ñ	Save Project and Development Tools as Package	The state of the s
Drop here to o file(*	(pern (mtpj)	Output	<b>4 х</b>
		(EOF)	
F7 Open F2 Rei	na	F3 Find   F4 Repl   F5 Go   F6 Build   F7 Build.	
The dialog box wh	nich n	akes a new project opens.	

Fig. 22

Step 3: Select the controller and fill all the fields then click on Create to create new project.

Create Project			×
Microcontroller:	RL78		•
Using microcontroller:			
(Search microcontroller)		Update	
R5F1007D(24pin) R5F1017D(24pin) R5F1008D(25pin) R5F1008D(25pin) R5F1008D(30pin) R5F101AD(30pin) R5F101BD(32pin)		Product Name:R5F100AD Internal ROM size[KBytes]:48 Internal RAM size[Bytes]:3072	
Kind of project:	Application(CA78K	:0R)	
Project name:	RL78_Blinky		
Place:	C:\Users\NGX12\D	lesktop	Browse
	Make the project	t folder	
C:\Users\NGX12\Desktop\RL7	8_Blinky\RL78_Blink	ky.mtpj	
Pass the file composition of	an existing project t	to the new project	
Project to be passed:	(Input project file to	be diverted.)	Browse
		Cancel	Help

Fig. 23

Note: For BlueBoard-RL78/G12 board select R5F102AA (30pin) controller, for BlueBoard-RL78/G14 select R5F104AE (30pin) controller.



Step 4: To generate the code using code generator, first you need to generate code for clock. To generate Code for clock double click on clock generator option select the requires settings for pin assignment, clock setting, on-chip debug settings then click on Generate code option as shown in below images



Fig. 24



Fig. 25





Fig. 26



Fig. 27



Step 5: Double click on Watchdog Timer; select unused then click on Generate Code as shown in below image.

RL78G13_Timer_Led - CubeSuite+ - [Code Generation]	enerator]
File Edit View Project Build Debug Tool	Window Help
🤅 🎊 Start   🚚 拱 🦆 🔏 🖻 🖉 🕬	MAR 🐥 🙏 📲 🕼 🖓 🖓 🖓 🐂 🔘 🕞 🗠 🕬 🕬
- 💎 🖓 🖉 🧐 🤻	
Project Tree 4 X	Property 🖏 Code Generator 🗹 r_main.c 🛛 r_cg_it_user.c 🛛 🛛 🔻 🔸 💈
ĝ Ø 🙎	🔣 Reflect in Pin 🛛 🕙 Generate Code 🔬 🐲 🖋 🦪 🖓 🔞 🔗 🔲
□	- Watchdog timer operation setting Unused - Operation in HALT/STOP mode setting
 	Enabled     Overflow time setting
A/D Converter	Overflow time 4369.07 (2 <sup>16/fIL</sup> )
Watchdog Timer	Window open period     100       - Interrupt setting
Clock Output/Buzzer Output	
DMA Controller	Output 7 :
F7 Open F2 Rena F3 Find F4 Repla F3	Go F6 Build. F7 Build. F8 Ignor. F9 Set/D. F10 Step. F71 Step In F12 Jump

Fig. 28

Step 6: Generate the code for port and pin which is connected to user LED. On this board, the port is 1 and pin is 6. Double click on port, click on port1, select pin 6 as output and click on generate code as shown in the below image.

RL78G13_Timer_Led - CubeSuite+ - [Code Generator]							
File Edit View Project Build Debug Tool Window Help							
範, Start   退 🔒 🧊 X ங 🛍 🖉 연 🕋 单 🏨 🦉 🧊 🐻 🖓 🖏 👘   🛞 🕞 🗠 💡							
Project Tree 🛛 📮 🗙 🏧 Property 🕮 Code Generator 📓 r. main.c. 📓 r. cg. it. user.c. 🛛 🔻 🗸 🕨 🗙							
2 🕜 🙎		🔣 Reflect in Pin 📲 Generate	e Code) 🏄 🗊	of a 🖓 🖗 🔞	& ⊒ 、*		
<u>RL78G13 Timer Led (Project)</u> <u>RSF100AD (Microcontroller)</u>	^	Port0 Port1 Port2 Port3 Por	t4 Port5 Port6	Port12 Port13 P	ort14		
Clock Generator (Design Tool)			ut 🔲 Pull-up				
Interrupt	=		ut 🔲 Pull-up		E		
A/D Converter			ut 🔲 Pull-up		N-c		
Watchdog Timer			ut 🔲 Pull-up	TTL buffer	N-c		
Clock Output/Buzzer Output			ut 🔲 Pull-up	TTL buffer	N-c		
Voltage Detector			ut 🔲 Pull-up	TTL buffer	N-c		
		© Unused ⊘ In 🧕 0 	ut 🗌 Pull-up	TTL buffer			
🖨 👘 File		< III			Þ		
	-	Dutput			<b>д X</b>		

Fig. 29



Step 7: Generate the code for Interval timer as shown in the below image.

RL78G13_Timer_Led - CubeSuite+ - [Code Ge	nerator]
File Edit View Project Build Debug Tool	Window Help
🏽 🚳 Start   🚚 🔚 🧊 🐰 🐚 🛍 🕬 🤆	▝▏▓﹐ᢤ_Å゜゚゚゚゚! 💀 🕼 🏷 🐂 🔍 🔍 🛸 🔋 🖉
S S S &	
Project Tree 4 X	🌁 Property 🛍 Code Generator 📝 r_main.c 📝 r_cg_it_user.c 📝 r_cg_it.c   🔻 🖛 🖈 🗙
2 0 2	🔣 Reflect in Pin  当 Generate Code 🔬 🗯 🖋 🎜 🖓 🖓 🗐 🐥
	- Interval timer operation setting Oused Used - Interval timer value setting Interval value - Interval value - Interval signal (INTIT) Priority
Voltage Detector	•
CA78K0R (Build Tool)	Output 7 X
۲	All Messages -
F7 Open F2 Rena F3 Find F4 Repla	Go F6 Build F7 Build F8 Ignor F9 Set/D F10 Step F77 Step In F12 Jump t

Fig. 30

Step 8: Write the blinky code in the generated code. For blinky code, refer RL78G13\_Timer\_Led sample program.

RL78G13_Timer_Led - CubeSuite+ - [r_main	ain.c	]		- 10- 1		1.1	1		
File Edit View Project Build Debug Tool Window Help									
🚳 Start   🚚 🔚 🍹 🔏 🗈 🛍 🐇	0	× I a	8 # #		G (G)	- 🖓 🗗	א   🔳 (	▶ ● ₩1	93 <b>-</b>
😔 🖓 🖉 🧐 🤻									
Project Tree 4	×		Property 🎬 C	Code Generat	tor 🗹 r_main	1.c 🗹 r_cg_	it_user.c	r_cg_it.c	<b>₹ 4 ► X</b>
2 🕜 🙎		10	🛐   🔿 /	or icc∣ c	olumns <del>•</del>			_	
RL78G13 Timer Led (Project)         RSF100AD (Microcontroller)         CA78K0R (Build Tool)         R178 E1 (Serial) (Debug Tool)         Program Analyzer (Analyze Tool)         File         Startup         Code Generator         r_systeminit.c         r_cg_macrodriver.h         r_cg_macrodriver.h         r_cg_mort.h         r_cg_cgc.h         r_cg_ot.h         r_cg_cgc.c	E	50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 4 0utt 1 A	<pre>#inclu #inclu Global ****** Global ****** Global ****** * Func * Desc * Argu * Retu * Retu * Void m ****** void m ******</pre>	de "r_cg variabl ******* tuser co ****** tion Nam ription ments rn Value *******	_userdefi es and fu code for de. Do no e: main : This f None : None	unc.h" motions global. t edit c	implement	edit comm generated	tent ge i here functi Functi
F7 Open F2 Rena F3 Find F4 Repla	F.	Go	F& Build	F7 Build	FB Ignor	F9 Set/D	FHD Step	F77 Step In	FH2 Jump t
			55 Line 2	4 Column	Insert We	estern Europ	ean (Windov	vs) 👬 DISC	ONNECT

Fig. 31



Step 9: After writing the code save the code as shown in the below image.



Fig. 32

Step 10: To build and download the code follow the steps in section 3.2.



# 5.0 Schematic & Board Layout

#### 5.1 Schematic

This manual will be periodically updated, but for the latest documentations please check our <u>website</u> for the latest documents. The Board schematic and sample code are available after the product has been registered on our website.

#### 5.2 Board layout



Fig. 33



# **6.0 CHANGE HISTORY**

#### 6.1 Change History

Rev	Changes	Date (dd/mm/yy)	By
1.0	Initial release of the manual	28/05/2012	Veeresh Tumbaragi

## 7.0 REFERENCES

In addition to this document, the following references are included on the NGX BLUEBOARD-RL78/G12/G13/G14\_30pin product and can also be downloaded from <u>www.ngxtechnologies.com</u>:

 NGX BLUEBOARD-RL78/G12/G13/G14\_30pin schematic for the Development board.

Additional references include:

- Information on development tool being used:
  - CubeSuite+, <u>http://sg.renesas.com/products/tools/ide/ide\_cubesuite\_plus/</u>

#### About this document:

#### **Revision History**

Version: V1.0 author: Veeresh Tumbaragi

#### **Company Terms & Conditions**

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