

GX-Force I/O Map

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Approval	Review	Preparation
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No.	Date	Version	Revised content	Remarks
Ex.	20XX/XX/XX	RevX.X	Create New	
1	2021/1/20	Rev1.0	Create New	
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RX230/231 I/O map

Pin number	Power supply, clock, system control	I / O port	Timer (MTU, TPU, TMR, RTC, CMT, POE, CAC)	Communication (SClg, SCth, RSPi, Riic, CAN, USB, SSI)	Other	Usage	Operating condition			Remarks
							I/O	PU/PD	Operating condition	
100	A2 64					2.8V				
1	A2 54	VREFH				Pressure sensor adjustment	O	-	Initial value : 1.5V	
2	B1 1		P03		DA0	GND				
3	C2 52	VREFL				Unused	O	OPEN	Unused	
4	C3 2	VCL	PJ3	MTIOC3C	CTS6#RTS6#SS6#	Power supply 0.1uF				
5	C1 12	VBATT				Unused(2.8V)				
6	D4 3	MD			FINED	Flash write	I	PU	Flash write	
7	D3 5	XCIN				Unused	I	PD		
8	D1 4	XCOUT				Unused	O	OPEN		
9	E3 6	RES#				Reset	I	PU	Reset	
10	E1 7	XTAL	P37			Crystal	O		14.7456MHz crystal	
11	E2 8	VSS				GND	-			
12	F1 9	EXTAL	P36			Crystal	I		14.7456MHz crystal	
13	F2 10	VCC				2.8V				
14	F3 11		P35		NMI	USB connection check	I	PU	L when USB connection, H when USB is not connected	Only IN setting is possible
15						Unused	O	OPEN	Unused	
16	E4		P34	MTIOC0A/TMC13/POE2#	SCK6	Unused	O	OPEN	Unused	
17	G1		P33	MTIOC0D/TMR3/POE3# TIOC0D	RXD6/SMIS06/SSCL6	Unused	O	OPEN	Unused	
18	F4		P32	MTIOC0C/TM03/TIOC0C/ RTICOUT/RTIC2C	TXD6/SMOSI6/SSDA6/ USB0_VBUSEN	Unused	O	OPEN	Unused	
19	G2 13		P31	MTIOC4D/TMC12/RTIC1C	CTS1#RTS1#SS1# SSISCK0	MR sensor	I	PU	L when magnet is detected	Power on with L
20	G3 14		P30	MTIOC4B/TMR3/POE8# RTIC0C	RXD1/SMIS01/SSCL1/ AUDIO_MCLK	IRQ0/ CMP0B3	I	PU	231-Rx.E1-Tx	
21	G4 15		P27	MTIOC2B/TMC13	SCK1/ SSIW50	CVREFB3	O	PU	Reset RL78 with L	
22	H1 16		P26	MTIOC2A/TM01	TXD1/SMOSI1/SSDA1/ SSIRXD0	CMPB3	O	PU	231-Tx.E1-Rx	
23	H2		P25	MTIOC4C/MTCLKB/ TIOCA4	USB0_VBUSEN	ADTRG0#	O	OPEN	Unused	
24	J1		P24	MTIOC4A/MTCLKA/ TMR11/TIOCB4	USB0_VBUSEN	Unused	O	OPEN	Unused	
25	K1		P23	MTIOC3D/MTCLKD/ TIOC03	CTS0#RTS0#SS0# SSISCK0	Unused	O	OPEN	Unused	
26	K2		P22	MTIOC3B/MTCLKC/ TMO0/ TIOCC3	SCK0/ USB0_OVRCURB/	Unused	O	OPEN	Unused	
27	J2		P21	MTIOC1B/TMC10/TIOCA3	RXD0/SMIS00/SSCL0/ USB0_EXICEN/SSIW50	Unused	O	OPEN	Unused	
28	K3		P20	MTIOC1A/TMR10/TIOC03	TXD0/SMOSI0/SSDA0/ USB0_ID/SSIRXD0	Unused	O	OPEN	Unused	
29	J3 17		P17	MTIOC3A/MTIOC3B/ TMO1/POE8#TIOC0B/ TCLKD	SCK1/MISOA/SDA/ SSITXD0	IRQ7/ CMP0B2	I	PU	EEPROM / SF data	
30	H3 18		P16	MTIOC3C/MTIOC3D/ TMO2/TIOC01/TCLKC/ RTICOUT	TXD1/SMOSI1/SSDA1/ MOSIA/SCL/ USB0_VBUS/ USB0_VBUSEN/ USB0_OVRCURB	IRQ6/ ADTRG0#	O	PU	EEPROM / SF data	
31	H4 19		P15	MTIOC0B/MTCLKB/ TMC12/TIOC02/TCLKB	RXD1/SMIS01/SSCL1/ CRXD0	IRQ5/CMPB2	I	PU	L by pressing SW2 (AIR)	
32	K4 20		P14	MTIOC3A/MTCLKA/ TMR12/TIOC05/TCLKA	CTS1#RTS1#SS1# CTXD0/ USB0_OVRCURA	IRQ4/ CVREFB2	I	PU	L by pressing SW1 (POW)	
33	J4		P13	MTIOC0B/TM03/TIOCA5	SDA	IRQ3	O	OPEN	With check PAD#1.0	
34	F5		P12	TMC11	SCL	IRQ2	O	OPEN	With check PAD#1.0	
35	J6 21	VCC_USB (Note1)				Unused	-	OPEN	Unused	
36	K5 22				USB0_DM (Note1)	Unused	-	OPEN	Unused	
37	K6 23				USB0_DP (Note1)	Unused	-	OPEN	Unused	
38	J5 24	VSS_USB				Unused	-	OPEN	Unused	
39	H5 25		P55	MTIOC4D/TM03	CRXD0	WP of EEPROM	O	PD	Write protect with L	
40	H6 26		P54	MTIOC4B/TMC11	CTXD0	LED4	O	PD	H to turn on the flashlight	
41	G5	BCLK	P53			LED3	O	PD	Right LED lights at H	
42	G6		P52			LED2	O	PD	Middle LED lights at H	
43	K7		P51			LED1	O	PD	Left LED lights at H	
44	J7		P50			RES of Serial Flash	O	PU	S_FLASH reset at L	
45	H7 27	UB	PC7	MTIOC3A/MTCLKB/TMO2	TXD8/SMOSI8/SSDA8/ MISOA	CACREF	O	PU	Boot mode with L boot	
46	H8 28		PC6	MTIOC3C/MTCLKA/TMC12	RXD8/SMIS08/SSCL8 MOSIA		O	PD	Vibration motor drive with H	
47	K8 29		PC5	MTIOC3B/MTCLKD/TMR12	SCK8/RSPCKA	SCK for SPI	O	PU	EEPROM / SF clock	
48	J8 30		PC4	MTIOC3D/MTCLKC/ TMC11/POE0#	SCK5/CTS5#RTS5# SS8#SSLA0	CSD for SPI	O	PU	Enable EEPROM with L	
49	K9 31		PC3	MTIOC4B/MTCLKB	TXD5/SMOSI5/SSDA5/ IRTXD5	Tx to USB	O	-	Tx to USB	
50	K10 32		PC2	MTIOC4B/MTCLKA	RXD5/SMIS05/SSCL5/ IRTXD5	Rx from USB	O	-	Rx from USB	
51	J10 (33)		PC1	MTIOC3A/MTCLKD	SCK5/SSLA2	Usage prohibited	O	OPEN	With check PAD#1.0	
52	J9 (34)		PC0	MTIOC3C/TCLKC	CTS5#RTS5#SS5# SS1A1	Usage prohibited	O	OPEN	With check PAD#1.0	
53	H10 33		PB7	MTIOC3B/TIOC05	TXD9/SMOSI9/SSDA9	For RL78 : 231-Tx. RL-	O	PU	231-Tx. RL-Rx	
54	H9 34		PB6	MTIOC3D/TIOCA5	RXD9/SMIS09/SSCL9	For RL78 : 231-Rx. RL-	I	PD	231-Rx. RL-Tx	
55	G7 35		PB5	MTIOC2A/MTIOC1B/ TMR11/POE1#TIOC04	SCK9/USB0_VBUS	Buzzer pulse	O	PD	Buzzer pulse	Pulse output
56	G8		PB4	TIOC44	CTS9#RTS9#SS9#	Unused(BZ L/H)	O	PD	Unused(BZ Hi at H)	
57	F6 36		PB3	MTIOC0A/MTIOC4A/ TMO0/POE3#TIOC03/ TCLKD	SCK6	TOOL0 of RL78	O	PU	TOOL0 of RL78	
58	F7		PB2	TIOC03/TCLKC	CTS6#RTS6#SS6#	Unused	O	OPEN	Unused	
59	G9 37		PB1	MTIOC0C/MTIOC4C/ TMC10/TIOC03	TXD6/SMOSI6/SSDA6	SDA for IIC (LCD,RTC)	I/O	PU	SDA of LCD/RTC	
60	G10 38	VCC				2.8V	-			
61	F8 39		PB0	MTIC5W/TIOCA3	RXD6/SMIS06/SSCL6/ RSPCKA	SCL for IIC (LCD,RTC)	O	PU	SCL of LCD/RTC	
62	F10 40	VSS				GND	-			
63	F9		PA7	TIOC02	MISOA	Pump upper stage power supply	O	PD	ON at H, always ON when energized	
64	E7 41		PA6	MTIC5V/MTCLKB/TMC13/	CTS5#RTS5#SS5# MOSIA/SSIW50	LCD backlight	O	PD	Backlight on with H	
65	E9		PA5	TIOC01	RSPCKA	Combustible power ON	O	PD	Turn on the combustible source power with H	
66	E8 42		PA4	MTIC5U/MTCLKA/TMR10/ TIOCA1	TXD5/SMOSI5/SSDA5/ SS1A0/SSITXD0/RTXD5	Pump L/H switching	O	PD	Pump HI with H	
67	E10 43		PA3	MTIOC0D/MTCLKD/ TIOC0D/TCLKB	RXD5/SMIS05/SSCL5/ SSIRXD0/IRRXD5	Pump ON/OFF	O	PD	Pump ON with H	
68	E6		PA2		RXD5/SMIS05/SSCL5/ SS1A3/IRRXD5	OX connection	O	PU	ON with L	
69	D9 44		PA1	MTIOC0B/MTCLKC/ TIOC0B	SCK5/SSLA2/SSISCK0	Unused(RESET of BLE)	O	PU	Unused(Reset BLE with L)	Unused(BLE)
70	D10 45		PA0	MTIOC4A/TIOCA0	SSLA1	CS1 for SPI	O	PU	S_FLASH enabled with L	
71	D8		PE7			IRQ7/AN023	O	OPEN	Unused	
72	D7		PE6			IRQ6/AN022	O	OPEN	Unused	
73	C9 46		PE5	MTIOC4C/MTIOC2B		IRQ5/AN021/ CMP0B0	O	PD	RL78 power OFF at H	
74	C10 47		PE4	MTIOC4D/MTIOC1A		AN020/ CMPA2/ CLKOUT	O	OPEN	Unused	
75	B10 48		PE3	MTIOC4B/POE#	CTS12#RTS12#SS12# AUDIO_MCLK	Unused(CTS of BLE) (Connect to BLE RTS)	I	PU	Unused(231-CTS, BLE-RTS)	Unused(BLE)
76	A10 49		PE2	MTIOC4A	RXD12/RXD12/ SMIS012/SSCL12	Unused(For BLE : 231-Rx.BLE-Tx)	I	PU	Unused(231-Rx. BLE-Tx)	Unused(BLE)
77	A9 50		PE1	MTIOC4C	TXD12/TXD12/SIOX12/ SMOSI12/SSDA12	Unused(For BLE : 231-Tx.BLE-Rx)	O	PU	Unused(231-Tx. BLE-Rx)	Unused(BLE)
78	A8 51		PE0		SCK12	Unused(RTS of BLE) (Connect to BLE CTS)	O	PU	Unused(231-RTS, BLE-CTS)	Unused(BLE)
79	B9		PD7	MTIC5U/POE0#		IRQ7/AN031	O	OPEN	Unused	
80	B8		PD6	MTIC5V/POE1#		IRQ6/AN030	O	OPEN	Unused	
81	C8		PD5	MTIC5W/POE2#		IRQ5/AN029	O	OPEN	Unused	
82	A7		PD4	POE3#		IRQ4/AN028	O	OPEN	Unused	
83	B7		PD3	POE8#		IRQ3/AN027	O	OPEN	Unused	
84	C7		PD2	MTIOC4D		IRQ2/AN026	O	OPEN	A/D, PS_DAC output	Symbol : PZF
85	B6		PD1	MTIOC4B		IRQ1/AN025	O	OPEN	A/D, 1.0V	Symbol : HCV
86	A6		PD0			Reference power supply 2.2V	O	OPEN	A/D, 2.2V	Symbol : ECV3
87	C6		P47		AN007	Reference power supply 1.2V	O	OPEN	A/D, 1.2V	Symbol : ECV2
88	D6 53		P46		AN006	Reference power supply 0.6V	O	OPEN	A/D, 0.6V	Symbol : ECV1
89	D5		P45		AN005	Power-supply voltage	O	OPEN	A/D, 2.8V ×1/2	Symbol : MV
90	B5 55		P44		AN004	Power-supply voltage	O	OPEN	A/D, 2.8V ×1/2	Symbol : SV
91	A5 56		P43		AN003	O2:LOW side	I	PD	A/D, Output after 7 times	Symbol : OXL
92	C5 57		P42		AN002	O2:Hi side	I	PD	A/D, Output after 3000	Symbol : OXH
93	E5 58		P41		AN001	Pressure sensor	I	PD	A/D	Symbol : PS
94	A4 59	VREFL0				GND	-			
95	B4 60		P40		AN000	Li / backup battery	I	PD	A/D	Symbol : BAT
96	C4 61	VREFH0				2.8V	-			
97	B3 62	AVCC0				2.8V	-			
98	A3		P07		ADTRG0#	Unused	O	OPEN	Unused	
99	B2 64	AVSS0				GND	-			
100	A1 63		P05		DA1	Hold power ON	O	PD	Hold power ON with H	

RL78/I1E R5F11CBC

32 KB Flash + 4KB Data Flash

8KB RAM

NO.		TERMINAL				
QFN	BGA	NAME		Usage	Connected device	Operating condition
1	B5	P40/TOOL0	I/O	Flash write	Write connector, also connected to the main microcomputer	
2	A4	RESET	I	Reset	Also connect to the main microcomputer	PU
3	B4	P137/SSI00/INTP0	I	Unused		
4	A3	P122/EXCLK/X2	I	Unused		
5	A2	P121/X1	I	Unused		
6	B2	REGC	Pow	Power supply	0.22uF	
7	B1	VSS	Pow	GND		
8	A1	VDD	Pow	2.8V		
9	C3	P10/SO01/TXD1/TI01/TO01/INTP1/TRGIOA	O	EC connection check	EC AMP	ON with H
10	C4	P11/SI01/RXD1/SDA01/TI03/TO03/INTP2/TRGCLKA/TRJIO0	O	Flammable 1(element A...No filter)ON	Flammable sensor driving FET 1	ON with H
11	D4	P12/SCK01/SCL01/TI11/TO11/INTP3/PCLBUZ0/TRGIOB/TRJIO0	O	Flammable 2(element B...With filter)ON	Flammable sensor driving FET 2	ON with H
12	C1	P13/SO00/TXD0/TI00/TO00/INTP4/TOOLTXD/RTC1HZ	O	Communication with main microcomputer	Rx of main microcomputer	
13	C2	P14/SI00/RXD0/SDA00/TI02/TO02/INTP5/TOOLRXD	I	Communication with main microcomputer	Tx of main microcomputer	
14	B3	P15/SCK00/SCL00/TI10/TO10/INTP6/TRGCLKB	O	Unused	With check PADφ1.0	
15	D1	P16/INTP7/ANI9/AMP2P/ANX5	I	Unused	With check PADφ1.0	
16	F1	ANI7/AMP2O	I	Unused	Thermistor connection possible	
17	D2	P41/ANI6/AMP1P/ANX3	I	Built-in AMP, Buffered, 2.2V Generation	Resistor voltage divider 2.2V (AMP+ input)	
18	E2	P42/ANI5/AMP1N/ANX2	I	Built-in AMP, Buffered, 2.2V Generation	FB (AMP-input)	
19	F2	ANI4/AMP1O	O	Built-in AMP, Buffered, 2.2V Generation	2.2V output (AMP output)	
20	D3	ANI3/AMP0P/ANX1	I	Built-in AMP use, differential 7 times	First stage AMP output (AMP+ input)	
21	E3	ANI2/AMP0N/ANX0	I	Built-in AMP use, differential 7 times	FB (AMP-input)	
22	F3	ANI1/AMP0O	O	Built-in AMP use, differential 7 times	10x output (AMP output)	
23	F4	AVDD	Pow	2.8V		
24	E5	REGA	Pow	Power supply	0.22uF	
25	F5	SBIAS	O	AMP reference power supply		1.2V output set
26	F6	AVSS	Pow	GND		
27	D6	PGA0P	I	Flammable sensor output +	1Ω Hi Side	Symbol : HC+
28	C5	PGA0N	I	Flammable sensor output -	1Ω Low Side	Symbol : HC-
29	C6	PGA1P	I	H2S sensor output +	H2S AMP	Symbol : HS+
30	B6	PGA1N	I	H2S sensor output -	0.6V	Symbol : ECV1
31	A6	PGA2P	I	CO sensor output +	CO AMP	Symbol : CO+
32	A5	PGA2N	I	CO sensor output -	0.6V	Symbol : ECV1