SOM-860-E

Revision History

Hardware Overview

- Mechanical Parameters
    - Working Temperature: 0°C - 70°C
    - Humidity Range: 20% - 90%
    - Dimensions: 60mm x 27mm
    - Stacking Height:1.5mm
    - Input Voltage: 3.3V
- Processor
    - ARM Cortex-A8 32-Bit RISC Processor up to 1GHz
    - NEON™ SIMD Coprocessor
    - SGX530 3D Graphics Engine
    - Up to 24-Bit Data Output, resolution up to 2048 × 2048
- Memories
    - 512MByte DDR3L @ 400MHz
    - 8GB eMMC
- Interfaces
    - One channel GMII interface
    - Parallel LCD interface
    - 16bit GPMC interface
    - Four channel UART interface
    - Two channel CAN interface
    - USB Host
    - USB OTG
    - Eight channel ADC inputs
    - SPI interface
    - I2S interface

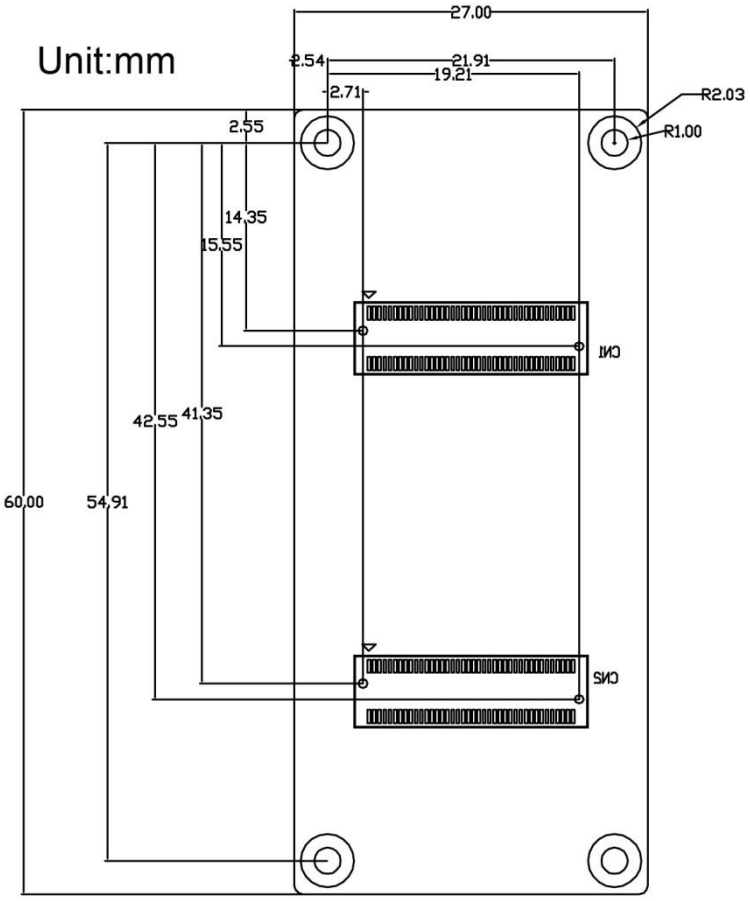
- SDIO interface

- Data Transfer Interfaces
  - Serial Ports
    - UART0, 2 line serial port, TTL Logic
    - UART1, 2 line serial port, TTL Logic
    - UART3, 2 line serial port, TTL Logic
    - UART4, 2 line serial port, TTL Logic
  - USB Ports:
    - 1 x USB2.0 OTG, 480Mbps
    - 1 x USB2.0 HOST, 480Mbps
  - MMC card interface port by GPMC Interface
  - 1 channel GMAC
  - 1 channel I2C interface
  - 1 channel CAN bus

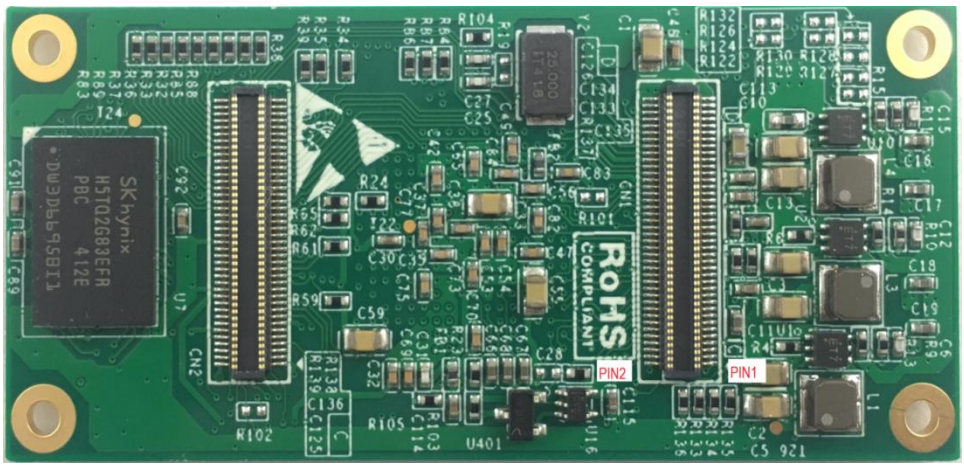
Application

- HMI
- Medical appliances
- Industrial automation
- Weighing Scales
- Smart Toll Systems
- Educational Consoles

Mechanical Dimension



Pin Definition



CN1					
Number	**Signal**	**Power Logic**	**Input/Output**	**CPU Ball**	**Pull Down/Up on Board**
1	GND				
2	VDDS_RTC		RTC Power In	D7	
3	CLK_OUT1	3.3V	In/Out	A15	
4	CLK_OUT2	3.3V	In/Out	D14	
5	MMC1_DAT0[1]	3.3V	In/Out	U7	
6	MMC1_DAT1[2]	3.3V	In/Out	V7	
7	MMC1_DAT2[3]	3.3V	In/Out	R8	
8	GLOBLE_RESETN	3.3V	In/Out	A10	100K Pull-Down
9	MMC1_DAT3[4]	3.3V	In/Out	T8	
10	AM335X_PWRON_RESETN	3.3V	In	B15	100K Pull-Up 3.3V
11	GND				
12	GND				
13	AM355X_PRU_UART0_CTS	3.3V	In/Out	A17	
14	AM355X_PRU_UART0_RX	3.3V	In/Out	B16	
15	AM355X_PRU_UART0_RTS	3.3V	In/Out	B17	
16	AM355X_PRU_UART0_TX	3.3V	In/Out	A16	
17	AM355X_UART0_RX	3.3V	In/Out	E15	
18	AM355X_UART3_RX	3.3V	In/Out	C15	
19	AM355X_UART0_TX	3.3V	In/Out	E16	
20	AM355X_UART3_TX	3.3V	In/Out	C18	
21	AM355X_CAN0_RX	3.3V	In/Out	D17	
22	AM355X_I2C0_SDA	3.3V	In/Out	C17	
23	AM355X_CAN0_TX	3.3V	In/Out	D18	
24	AM355X_I2C0_SCL	3.3V	In/Out	C16	
25	AM355X_UART4_RX	3.3V	In/Out	E18	
26	AM355X_UART1_RX	3.3V	In/Out	D16	
27	AM355X_UART4_TX	3.3V	In/Out	E17	
28	AM355X_UART1_TX	3.3V	In/Out	D15	
29	GND				
30	GND				
31	MII1_COL	3.3V	In/Out	H16	
32	AM355X_USB0_DRV	3.3V	In/Out	F16	

CN1					
Number	**Signal**	**Power Logic**	**Input/Output**	**CPU Ball**	**Pull Down/Up on Board**
	VBUS				
33	MII1_TX_CLK	3.3V	In/Out	K18	
34	AM355X_USB1_DRVVBUS	3.3V	In/Out	F15	
35	MII1_TX_EN	3.3V	In/Out	J16	
36	MII1_REF_CLK	3.3V	In/Out	H18	
37	MII1_TXD3	3.3V	In/Out	J18	
38	MII1_CRS	3.3V	In/Out	H17	
39	MII1_TXD2	3.3V	In/Out	K15	
40	MII1_RX_ER	3.3V	In/Out	J15	
41	MII1_TXD1	3.3V	In/Out	K16	
42	MII1_RX_DV	3.3V	In/Out	J17	
43	MII1_TXD0	3.3V	In/Out	K17	
44	MII1_RX_CLK	3.3V	In/Out	L18	
45	MII_MDIO	3.3V	In/Out	M17	
46	MII1_RXD3	3.3V	In/Out	L17	
47	MII_MDC	3.3V	In/Out	M18	
48	MII1_RXD2	3.3V	In/Out	L16	
49	GND				
50	MII1_RXD1	3.3V	In/Out	L15	
51	AM355X_USB0_DM	3.3V	In/Out	N18	
52	MII1_RXD0	3.3V	In/Out	M16	
53	AM355X_USB0_DP	3.3V	In/Out	N17	
54	MMC1_CMD[5]	3.3V	In/Out	V9	
55	GND				
56	USB0_VBUS	5V	USB Power In	P15	
57	AM355X_USB1_DM	3.3V	In/Out	R18	
58	AM355X_USB1_ID	3.3V	In	P17	
59	AM355X_USB1_DP	3.3V	In/Out	R17	
60	AM355X_USB0_ID	3.3V	In	P16	
61	GND				
62	USB1_VBUS	5V	USB Power In	T18	
63	GPMC_A0	3.3V	In/Out	R13	
64	GPMC_A7	3.3V	In/Out	T15	
65	GPMC_A5	3.3V	In/Out	V15	
66	GPMC_A11	3.3V	In/Out	V17	
67	GPMC_A4	3.3V	In/Out	R14	
68	GPMC_A10	3.3V	In/Out	T16	
69	GPMC_A3	3.3V	In/Out	T14	

CN1					
Number	**Signal**	**Power Logic**	**Input/Output**	**CPU Ball**	**Pull Down/Up on Board**
70	GPMC_A9	3.3V	In/Out	U16	
71	GPMC_A2	3.3V	In/Out	U14	
72	GPMC_A8	3.3V	In/Out	V16	
73	GPMC_A6	3.3V	In/Out	U15	
74	GPMC_A1	3.3V	In/Out	V14	
75	GND				
76	GND				
77	VDD_3V3		Board Power In		
78	VDD_3V3		Board Power In		
79	VDD_3V3		Board Power In		
80	VDD_3V3		Board Power In		

Note:

1 Function out from GPMC_AD0, ball U7

2 Function out from GPMC_AD1, ball V7

3 Function out from GPMC_AD2, ball R8

4 Function out from GPMC_AD3, ball T8

5 Function out from GPMC_CSN2, ball V9

CN2					
Number	**Signal**	**Power Logic**	**Input/Output**	**CPU Ball**	**Pull Down/Up on Board**
1	GND				
2	GND				
3	MCASP0_AHCLKX	3.3V	In/Out	A14	
4	MCASP0_ACLKX	3.3V	In/Out	A13	
5	MCASP0_FSX	3.3V	In/Out	B13	
6	MCASP0_AXR0	3.3V	In/Out	D12	
7	MCASP0_AHCLKR	3.3V	In/Out	C12	
8	MMC1_CLK[6]	3.3V	In/Out	U9	
9	MCASP0_FSR	3.3V	In/Out	C13	
10	MCASP0_AXR1	3.3V	In/Out	D13	
11	GND				
12	GND				
13	VDDA_ADC		ADC Power In	D8	
14	AM355X_ADC0	VDDA_ADC	Analog In	B6	
15	AM355X_ADC1	VDDA_ADC	Analog In	C7	
16	AM355X_ADC2	VDDA_ADC	Analog In	B7	
17	AM355X_ADC3	VDDA_ADC	Analog In	A7	
18	AM355X_ADC4	VDDA_ADC	Analog In	C8	

CN2					
Number	**Signal**	**Power Logic**	**Input/Output**	**CPU Ball**	**Pull Down/Up on Board**
19	AM355X_ADC5	VDDA_ADC	Analog In	B8	
20	AM355X_ADC6	VDDA_ADC	Analog In	A8	
21	AM355X_ADC7	VDDA_ADC	Analog In	C9	
22	GND_ADC				
23	GND				
24	GND				
25	LCD_DATA1	3.3V	In/Out	R2	100k pull down
26	LCD_DATA12	3.3V	In/Out	V2	100k pull down
27	LCD_DATA0	3.3V	In/Out	R1	100k pull down
28	LCD_DATA10	3.3V	In/Out	U3	100k pull down
29	LCD_DATA5	3.3V	In/Out	T2	100k pull up
30	LCD_DATA13	3.3V	In/Out	V3	100k pull down
31	LCD_DATA4	3.3V	In/Out	T1	100k pull up
32	LCD_DATA11	3.3V	In/Out	U4	100k pull down
33	LCD_DATA6	3.3V	In/Out	T3	100k pull down
34	LCD_DATA14	3.3V	In/Out	V4	100k pull down
35	LCD_DATA8	3.3V	In/Out	U1	100k pull down
36	LCD_VSYNC	3.3V	In/Out	U5	
37	GND				
38	GND				
39	LCD_DATA9	3.3V	In/Out	U2	100k pull up
40	LCD_PCLK	3.3V	In/Out	V5	
41	LCD_DATA15	3.3V	In/Out	T5	100k pull up
42	GPMC_AD11	3.3V	In/Out	U12	
43	LCD_DATA3	3.3V	In/Out	R4	100k pull up
44	GPMC_AD15	3.3V	In/Out	U13	
45	LCD_DATA2	3.3V	In/Out	R3	100k pull down
46	GPMC_AD14	3.3V	In/Out	V13	
47	LCD_DATA7	3.3V	In/Out	T4	100k pull down
48	GPMC_WAIT0	3.3V	In/Out	T17	
49	LCD_HSYNC	3.3V	In/Out	R5	
50	GPMC_BEN1	3.3V	In/Out	U18	
51	GND				
52	GND				
53	LCD_EN	3.3V	In/Out	R6	
54	GPMC_WPN	3.3V	In/Out	U17	
55	GPMC_AD13	3.3V	In/Out	R12	
56	GPMC_CSN3	3.3V	In/Out	T13	
57	GPMC_AD9	3.3V	In/Out	T10	

CN2					
Number	**Signal**	**Power Logic**	**Input/Output**	**CPU Ball**	**Pull Down/Up on Board**
58	GPMC_CSN2	3.3V	In/Out	V9	
59	GPMC_AD10	3.3V	In/Out	T11	
60	GPMC_CLK	3.3V	In/Out	V12	
61	GPMC_AD8	3.3V	In/Out	U10	
62	GPMC_AD6	3.3V	In/Out	R9	
63	GPMC_AD12	3.3V	In/Out	T12	
64	GND				
65	GND				
66	GPMC_CSN1	3.3V	In/Out	U9	
67	GPMC_ADVN_ALE	3.3V	In/Out	R7	
68	GPMC_AD5	3.3V	In/Out	V8	
69	GPMC_BEN0_CLE	3.3V	In/Out	T6	
70	GPMC_AD4	3.3V	In/Out	U8	
71	GPMC_OEN_REN	3.3V	In/Out	T7	
72	GPMC_AD1	3.3V	In/Out	V7	
73	GPMC_AD2	3.3V	In/Out	R8	
74	GPMC_AD0	3.3V	In/Out	U7	
75	GPMC_AD3	3.3V	In/Out	T8	
76	GPMC_CSN0	3.3V	In/Out	V6	
77	GPMC_AD7	3.3V	In/Out	T9	
78	GPMC_WEN	3.3V	In/Out	U6	
79	GND				
80	GND				

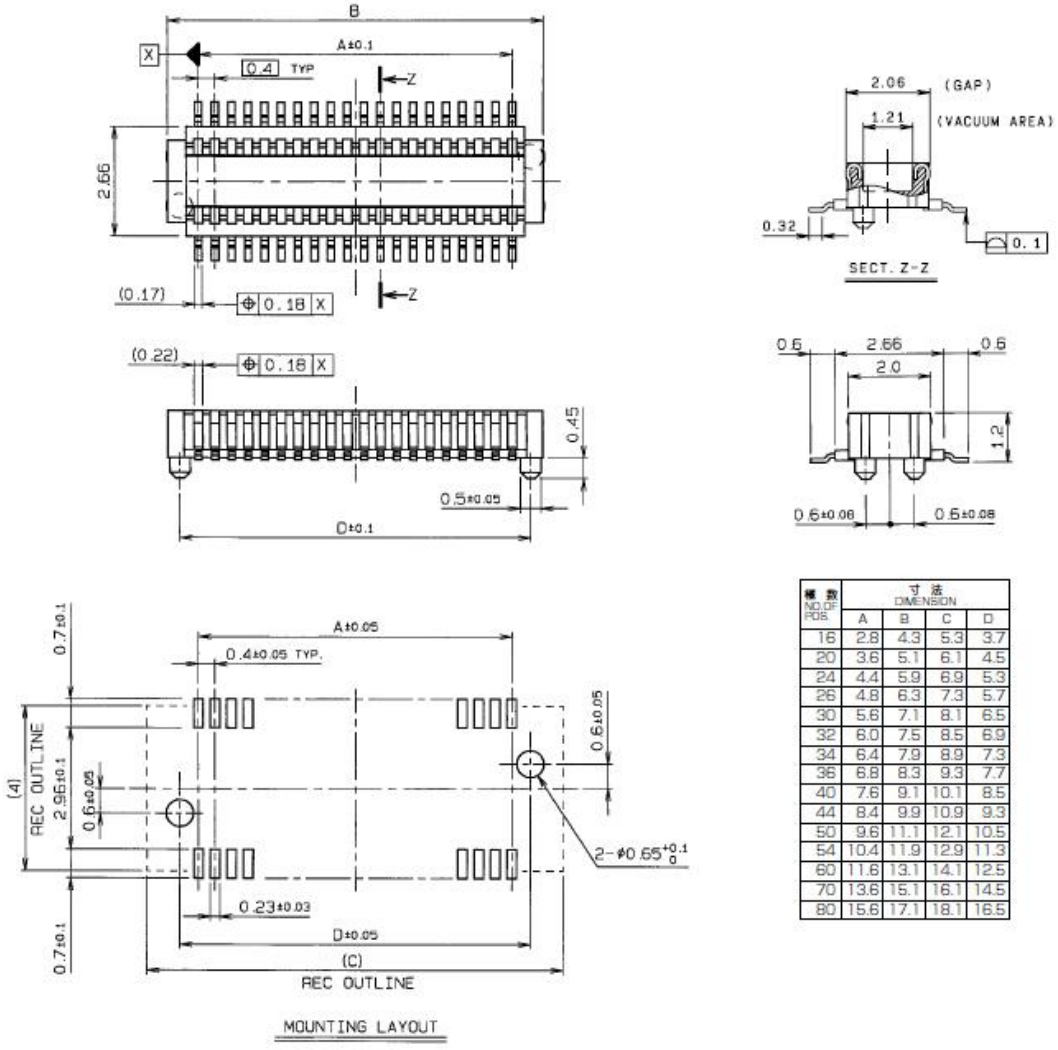
Note

6 Function out from GPMC_CSN1, ball U9

Connector

The BTB connector mount on core board is 14 5602 080 001 829H+ supply by Kyocera. The detail of the connector is:

0.4mm Pitch
SERIES
5602
プラグ ST SMT 金具無し
Plug Vertical SMT Without metal tab



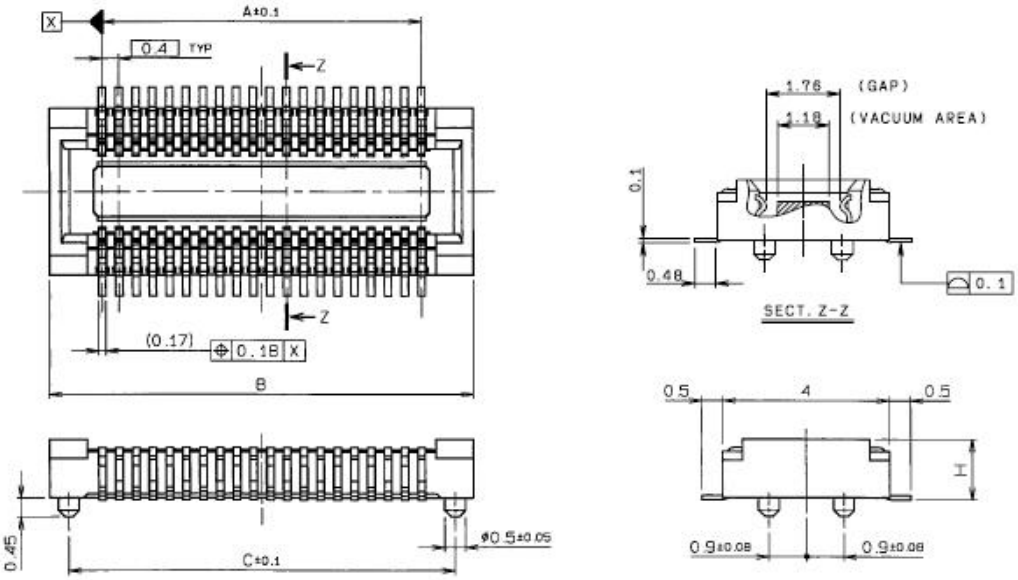
極数 NO.OF POS.	寸法 DIMENSION			
	A	B	C	D
16	2.8	4.3	5.3	3.7
20	3.6	5.1	6.1	4.5
24	4.4	5.9	6.9	5.3
26	4.8	6.3	7.3	5.7
30	5.6	7.1	8.1	6.5
32	6.0	7.5	8.5	6.9
34	6.4	7.9	8.9	7.3
36	6.8	8.3	9.3	7.7
40	7.6	9.1	10.1	8.5
44	8.4	9.9	10.9	9.3
50	9.6	11.1	12.1	10.5
54	10.4	11.9	12.9	11.3
60	11.6	13.1	14.1	12.5
70	13.6	15.1	16.1	14.5
80	15.6	17.1	18.1	16.5

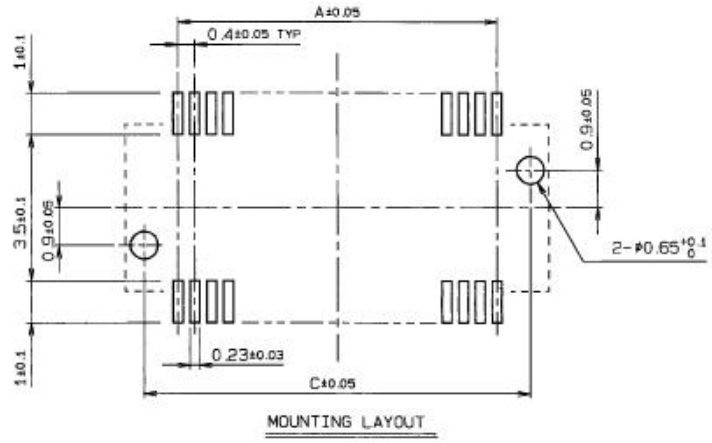
注文コード ORDERING CODE
14 5602 XXX 00X 829 H+
RoHS 対応品
RoHS Compliant Product
0：金具無し・ボス無し Without metal tab or boss
1：金具無し・ボス有り Without metal tab, With boss
極数 Number of positions

注）生産可能極数については営業部にご確認願います。
Note) Feel free to contact our sales department for available numbers of positions.
梱包数量：2000個/リール
PACKING QUANTITY：2000/Reel

The recommend BTB connector will be mounted on carrier board is 24 5602 680 001 829H+ supply by Kyocera, The detail of the connector is:

0.4mm Pitch
SERIES
5602 リセ ST SMT 金具無し
Receptacle Vertical SMT Without metal tab





MOUNTING LAYOUT

極数 NO.OF POS.	寸法 DIMENSION A	B	C
16	2.8	5.3	4.4
20	3.6	6.1	5.2
24	4.4	6.9	6.0
26	4.8	7.3	6.4
30	5.6	8.1	7.2
32	6.0	8.5	7.6
34	6.4	8.9	8.0
36	6.8	9.3	8.4
40	7.6	10.1	9.2
44	8.4	10.9	10.0
50	9.6	12.1	11.2
54	10.4	12.9	12.0
60	11.6	14.1	13.2
64	12.4	14.9	14.0
70	13.6	16.1	15.2
80	15.6	18.1	17.2

嵌合高さ Stacking Height	H
1.5mm	1.45
1.7mm	1.65
2.0mm	1.95
2.8mm	2.75

注文コード ORDERING CODE

24 5602 XXX 0XX 829 H+ — RoHS対応品 RoHS Compliant Product

- 0：金具無し・ボス無し Without metal tab or boss
- 1：金具無し・ボス有り Without metal tab, With boss
- 0：嵌合高さ Stacking Height＝1.5mm
- 1：嵌合高さ Stacking Height＝1.7mm
- 5：嵌合高さ Stacking Height＝2.0mm
- 3：嵌合高さ Stacking Height＝2.8mm
- 極数 Number of positions

注）生産可能極数については営業部にご確認願います。
Note) Feel free to contact our sales department for available numbers of positions.

梱包数量：1000個/リール（嵌合高さ2.8mm）
2000個/リール（嵌合高さ2.8mm以外）
PACKING QUANTITY：1000/Reel (Stacking Height 2.8mm)
2000/Reel (Others)

Software

Items	Notes

OS	Linux	Version 4.1.6
Device Driver	Serial	Serial driver
	Rtc	Hardware clock driver
	Net	2*10M/100M/Gb Ethernets
	Display	Display port (RGB TFT)
	MMC/SD	4-bit SDIO
	eMMC	8GB eMMC
	USB	3 High speed USB ports (2*Host, 1*OTG)
	Audio	Analog (headphone/MIC)
	RS485	1*RS485 port
	CAN	1*CAN Bus port
	Keypad	GPIO keyboard driver
	LED	User leds driver
	Buzzer	1*buzzer