

# Product Spec

Motherboard

**RB-F210RS V1.0**

Prepared by : Ken

Date: 2017/07/10

Approved by: Peter

Date: 2017/07/10

| Revision History |            |               |        |
|------------------|------------|---------------|--------|
| Revision         | Date       | Description   | Author |
| V1.0             | 2016/08/02 | First release | KEN    |
|                  |            |               |        |
|                  |            |               |        |



## Features

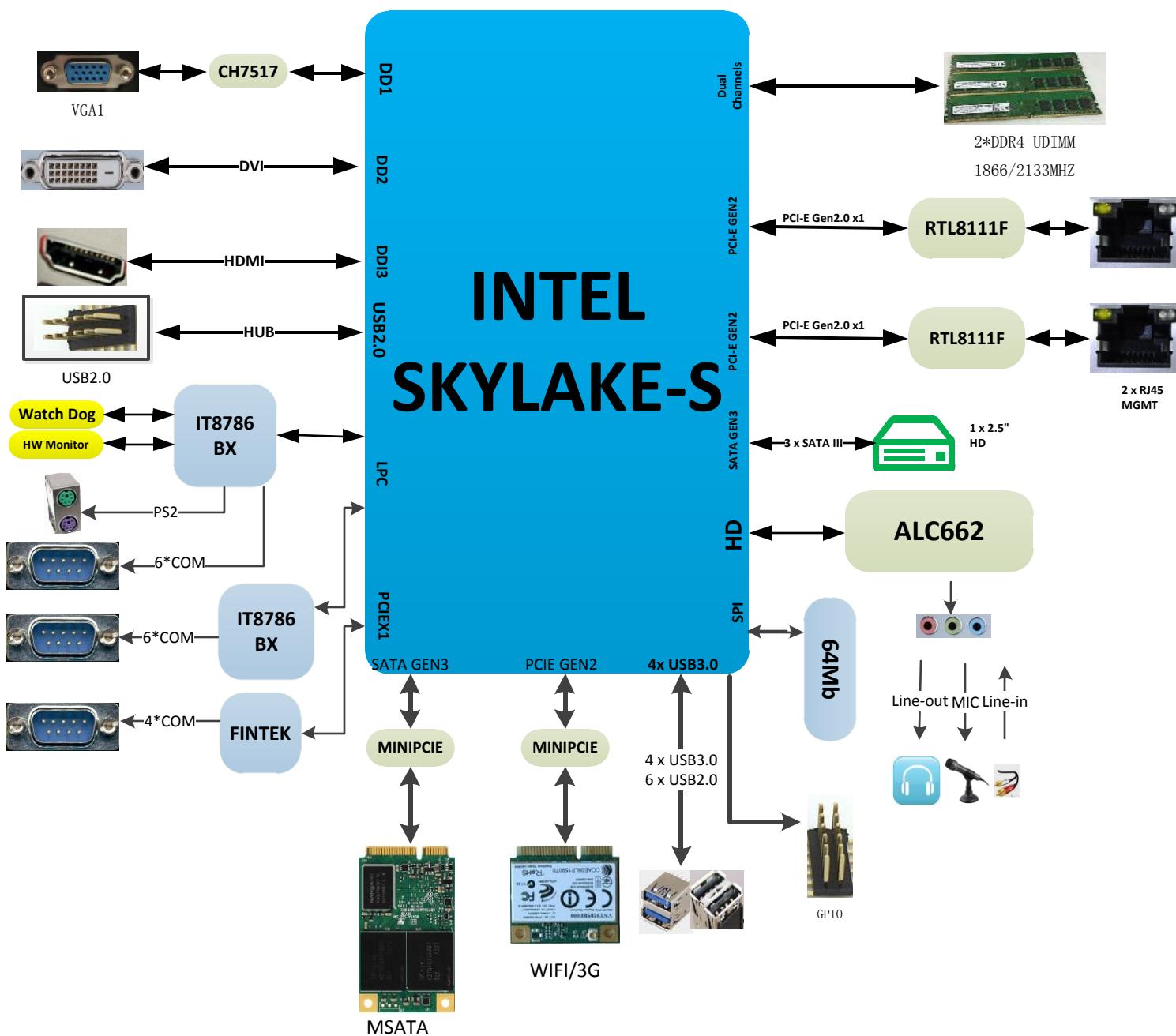
- \*Intel Skylake-s LG1151 Platform,PCH H110, Max TDP 80W
- \*Supports 2 independent Display,
- \*Supports 2 X 10/100/1000M LAN adapter
- \*Support 12 X USB2.0, 4 X USB3.0
- \*Support 16 X COMs, 3 X SATAIII, 1Xmsata,1 X WIFI/4G LTE ,1xPCIEX1,1xPCIEX16
- \*Support HD Audio , 1 X Audio out, 1 X Audio in,1X MIC
- \*2X 288-pin UDIMM up to 16GB, DDR4 1866/2133 MHz

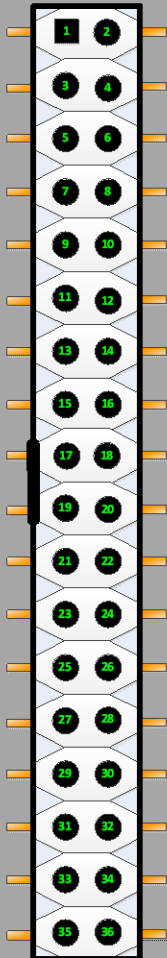
## Application Industry

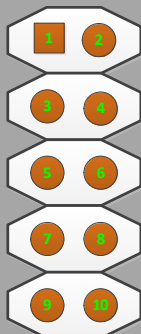
Medical industry.Traffic industry, Advertising Machine,Financial industry,

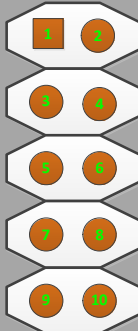
## Specifications

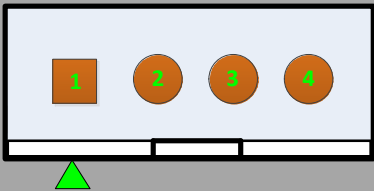
|                    |                    |                                                     |
|--------------------|--------------------|-----------------------------------------------------|
| CPU                | CPU                | Intel Skylake-s LG1151 For Max TDP 80W              |
|                    | Instruction Set    | 64bit                                               |
|                    | Lithography        | 14nm                                                |
| Memory             | Type               | UDIMM DDR4 No ECC 、Supoort 1866/2133 MHz            |
|                    | Channel            | Dual                                                |
|                    | Max Memory Size    | 16GB                                                |
| Graphics           | Graphics           | Intel HD Graphics                                   |
|                    | Displays Supported | 3 Display Port(VGA + DVI + HDMI )                   |
| Audio              | ALC662 HD Audio    | x1 Audio line out,、x1 Audio line in 、x1 MIC         |
| Ethernet           | RTL8111F           | x2 10/100/1000M BASET LAN                           |
| Internal Connector | MSATA              | x1 MINIPCIE                                         |
|                    | SATA               | x1 7PIN SATA                                        |
|                    | WIFI/4G            | x1 Half length MINIPCIE , x1 Standard Sim Socket    |
|                    | PCIE 16X           | x1 PCIE16X                                          |
|                    | PCIE 1X            | x1 PCIE1X                                           |
|                    | COM                | x4 2x20 Header Box                                  |
|                    | USB                | x3 2X5 DuPont Header (support 2*port USB2.0)        |
|                    | PS2                | x1 2x4 DuPont Header                                |
|                    | Power connector    | ATX 24Pin+4Pin standard connector                   |
|                    | GPIO               | x1 2X6 DuPont Header ,8*independent Programing GPIO |
| I/O                | LED                | x1 Power Red LED and HDD Green LED                  |
|                    | VGA                | x1 Standard DB15                                    |
|                    | DVI                | x1 Standard DVI connector                           |
|                    | HDMI               | x1 Standard HDMI connector                          |
|                    | USB                | X10 4*Ports USB3.0 and 6*USB2.0                     |
|                    | RJ45               | x2 RJ45                                             |
|                    | PS2                | x1 mouse and keyboard                               |
|                    | Aduio              | x1 Suport Line out,Line in,mic                      |
| BIOS               | Vender             | AMI                                                 |
|                    | ACPI               | Supported                                           |
| Power              | POWER Brick        | ATX standard power                                  |
| Dimensions         | PCB                | 210*239MM                                           |
| Requirements       | Operation          | -15℃~+50℃, 10%~95% RTH                              |
| Environment        | Storage            | -40℃~+70℃, 10%~95% RTH                              |

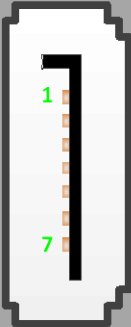


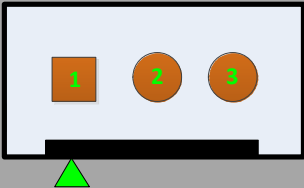
| COM        | COM (1-16)                                                                         |      |      |      |
|------------|------------------------------------------------------------------------------------|------|------|------|
| PIN Define |  |      |      |      |
|            | 1                                                                                  | DCD1 | 2    | RXD1 |
|            | 3                                                                                  | TXD1 | 4    | DTR1 |
|            | 5                                                                                  | GND  | 6    | DSR1 |
|            | 7                                                                                  | RTS1 | 8    | CTS1 |
|            | 9                                                                                  | RI1  | 10   | DCD2 |
|            | 11                                                                                 | RXD2 | 12   | TXD2 |
|            | 13                                                                                 | DTR2 | 14   | GND  |
|            | 15                                                                                 | DSR2 | 16   | RTS2 |
|            | 17                                                                                 | CTS2 | 18   | RI2  |
|            | 19                                                                                 | DCD3 | 20   | RXD3 |
|            | 21                                                                                 | TXD3 | 22   | DTR3 |
|            | 23                                                                                 | GND  | 24   | DSR3 |
|            | 25                                                                                 | RTS3 | 26   | CTS3 |
|            | 27                                                                                 | RI3  | 28   | DCD2 |
|            | 29                                                                                 | RXD4 | 30   | TXD2 |
| 31         | DTR4                                                                               | 32   | GND  |      |
| 33         | DSR4                                                                               | 34   | RTS2 |      |
| 35         | CTS4                                                                               | 36   | RI2  |      |
| Type       | 2x20 Header Box, PH=2.54mm                                                         |      |      |      |

| USB        | USB Pin Define                                                                      |        |                                                                                                                                                                                                                                                                                                        |        |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |
|------------|-------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---|------|---|------|---|--------|---|--------|---|--------|---|--------|---|-----|---|-----|---|----|----|-----|
| PIN Define |  |        | <table><tr><td>1</td><td>+V5S</td><td>2</td><td>+V5S</td></tr><tr><td>3</td><td>Data0-</td><td>4</td><td>Data1-</td></tr><tr><td>5</td><td>Data0+</td><td>6</td><td>Data1+</td></tr><tr><td>7</td><td>GND</td><td>8</td><td>GND</td></tr><tr><td>9</td><td>NC</td><td>10</td><td>GND</td></tr></table> |        | 1 | +V5S | 2 | +V5S | 3 | Data0- | 4 | Data1- | 5 | Data0+ | 6 | Data1+ | 7 | GND | 8 | GND | 9 | NC | 10 | GND |
|            | 1                                                                                   | +V5S   | 2                                                                                                                                                                                                                                                                                                      | +V5S   |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |
|            | 3                                                                                   | Data0- | 4                                                                                                                                                                                                                                                                                                      | Data1- |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |
|            | 5                                                                                   | Data0+ | 6                                                                                                                                                                                                                                                                                                      | Data1+ |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |
|            | 7                                                                                   | GND    | 8                                                                                                                                                                                                                                                                                                      | GND    |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |
| 9          | NC                                                                                  | 10     | GND                                                                                                                                                                                                                                                                                                    |        |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |
| Type       | 2x6 DuPont Header, PH=2.54mm                                                        |        |                                                                                                                                                                                                                                                                                                        |        |   |      |   |      |   |        |   |        |   |        |   |        |   |     |   |     |   |    |    |     |

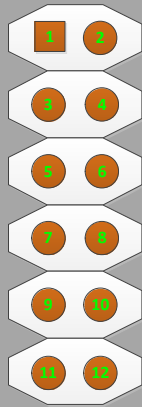
| Fpanel     | Power on and LED header                                                                                                                                                                                                                                                                         |     |          |     |         |     |       |     |         |  |  |    |     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------|-----|---------|-----|-------|-----|---------|--|--|----|-----|
| PIN Define | <div></div> <table><tr><td>1-3</td><td>Power On</td><td>2-4</td><td>HDD_LED</td></tr><tr><td>5-7</td><td>Reset</td><td>6-8</td><td>PWR_LED</td></tr><tr><td></td><td></td><td>10</td><td>GND</td></tr></table> | 1-3 | Power On | 2-4 | HDD_LED | 5-7 | Reset | 6-8 | PWR_LED |  |  | 10 | GND |
| 1-3        | Power On                                                                                                                                                                                                                                                                                        | 2-4 | HDD_LED  |     |         |     |       |     |         |  |  |    |     |
| 5-7        | Reset                                                                                                                                                                                                                                                                                           | 6-8 | PWR_LED  |     |         |     |       |     |         |  |  |    |     |
|            |                                                                                                                                                                                                                                                                                                 | 10  | GND      |     |         |     |       |     |         |  |  |    |     |
| Type       | 2x6 DuPont Header, PH=2.54mm                                                                                                                                                                                                                                                                    |     |          |     |         |     |       |     |         |  |  |    |     |

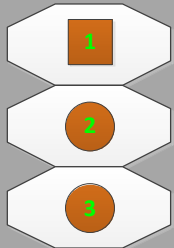
| SATAPWR1   | SATA POWER                                                                                                                                                                                                                                            |   |       |   |     |   |     |   |      |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------|---|-----|---|-----|---|------|
| PIN Define |  <table border="1"> <tr> <td>1</td><td>+V12S</td></tr> <tr> <td>2</td><td>GND</td></tr> <tr> <td>3</td><td>GND</td></tr> <tr> <td>4</td><td>+V5S</td></tr> </table> | 1 | +V12S | 2 | GND | 3 | GND | 4 | +V5S |
| 1          | +V12S                                                                                                                                                                                                                                                 |   |       |   |     |   |     |   |      |
| 2          | GND                                                                                                                                                                                                                                                   |   |       |   |     |   |     |   |      |
| 3          | GND                                                                                                                                                                                                                                                   |   |       |   |     |   |     |   |      |
| 4          | +V5S                                                                                                                                                                                                                                                  |   |       |   |     |   |     |   |      |
| Type       | 1X4 DuPont Header, PH=2.54mm                                                                                                                                                                                                                          |   |       |   |     |   |     |   |      |

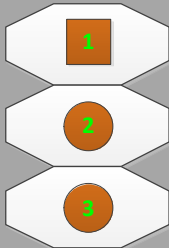
| SATA       | SATA1                                                                                                                                                                                                                                                                                                                                                  |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|---|-----|
| PIN Define |  <table border="1"> <tr> <td>1</td><td>GND</td></tr> <tr> <td>2</td><td>TX+</td></tr> <tr> <td>3</td><td>TX-</td></tr> <tr> <td>4</td><td>GND</td></tr> <tr> <td>5</td><td>RX-</td></tr> <tr> <td>6</td><td>RX+</td></tr> <tr> <td>7</td><td>GND</td></tr> </table> | 1 | GND | 2 | TX+ | 3 | TX- | 4 | GND | 5 | RX- | 6 | RX+ | 7 | GND |
| 1          | GND                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 2          | TX+                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 3          | TX-                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 4          | GND                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 5          | RX-                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 6          | RX+                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| 7          | GND                                                                                                                                                                                                                                                                                                                                                    |   |     |   |     |   |     |   |     |   |     |   |     |   |     |
| Type       | 7PIN Standard SATA                                                                                                                                                                                                                                                                                                                                     |   |     |   |     |   |     |   |     |   |     |   |     |   |     |

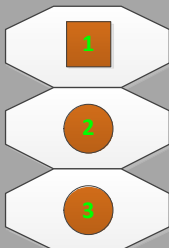
| SYS_FAN    | System Fan Power and sense                                                                                                                                                                                               |   |     |   |       |   |         |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|---|-------|---|---------|
| PIN Define |  <table border="1"> <tr> <td>1</td><td>GND</td></tr> <tr> <td>2</td><td>+V12S</td></tr> <tr> <td>3</td><td>FAN_TAC</td></tr> </table> | 1 | GND | 2 | +V12S | 3 | FAN_TAC |
| 1          | GND                                                                                                                                                                                                                      |   |     |   |       |   |         |
| 2          | +V12S                                                                                                                                                                                                                    |   |     |   |       |   |         |
| 3          | FAN_TAC                                                                                                                                                                                                                  |   |     |   |       |   |         |
| Type       | 1X3 DuPont Header, PH=2.54mm                                                                                                                                                                                             |   |     |   |       |   |         |

| CPU_FAN    | CPU FAN Power and Control                                                                                                                                                                                                                                     |  |   |     |   |       |   |         |   |         |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|-----|---|-------|---|---------|---|---------|
| PIN Define | <div><div><div><div>1</div><div>2</div><div>3</div><div>4</div></div><div></div></div><div></div></div> <table><tr><td>1</td><td>GND</td></tr><tr><td>2</td><td>+V12S</td></tr><tr><td>3</td><td>FAN_TAC</td></tr><tr><td>4</td><td>FAN_CTL</td></tr></table> |  | 1 | GND | 2 | +V12S | 3 | FAN_TAC | 4 | FAN_CTL |
| 1          | GND                                                                                                                                                                                                                                                           |  |   |     |   |       |   |         |   |         |
| 2          | +V12S                                                                                                                                                                                                                                                         |  |   |     |   |       |   |         |   |         |
| 3          | FAN_TAC                                                                                                                                                                                                                                                       |  |   |     |   |       |   |         |   |         |
| 4          | FAN_CTL                                                                                                                                                                                                                                                       |  |   |     |   |       |   |         |   |         |
| Type       | 1X4 DuPont Header, PH=2.54mm                                                                                                                                                                                                                                  |  |   |     |   |       |   |         |   |         |

| GPIO       | GPIO Pin Define                                                                    |       |    |       |
|------------|------------------------------------------------------------------------------------|-------|----|-------|
| PIN Define |  |       |    |       |
|            | 1                                                                                  | +V5S  | 2  | +V12S |
|            | 3                                                                                  | GPI01 | 4  | GPI05 |
|            | 5                                                                                  | GPI02 | 6  | GPI06 |
|            | 7                                                                                  | GPI03 | 8  | GPI07 |
|            | 9                                                                                  | GPI04 | 10 | GPI08 |
|            | 11                                                                                 | GND   | 12 | GND   |
| Type       | 2x6 DuPont Header, PH=2.54mm                                                       |       |    |       |

| JCOMS      | Cmos fucktion header                                                                |                                                                                             |     |        |     |            |
|------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----|--------|-----|------------|
| PIN Define |  | <table><tr><td>1-2</td><td>Normal</td></tr><tr><td>2-3</td><td>Clear cmos</td></tr></table> | 1-2 | Normal | 2-3 | Clear cmos |
| 1-2        | Normal                                                                              |                                                                                             |     |        |     |            |
| 2-3        | Clear cmos                                                                          |                                                                                             |     |        |     |            |
| Type       | 1X4 DuPont Header, PH=2.54mm                                                        |                                                                                             |     |        |     |            |
| Memo       | Default Setting: JCMos(1-2)                                                         |                                                                                             |     |        |     |            |

| JME        | ME fucktion header                                                                                                                                                                             |     |             |     |        |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|-----|--------|
| PIN Define |  <table border="1"> <tr> <td>1-2</td><td>Override ME</td></tr> <tr> <td>2-3</td><td>Normal</td></tr> </table> | 1-2 | Override ME | 2-3 | Normal |
| 1-2        | Override ME                                                                                                                                                                                    |     |             |     |        |
| 2-3        | Normal                                                                                                                                                                                         |     |             |     |        |
| Type       | 1X4 DuPont Header, PH=2.54mm                                                                                                                                                                   |     |             |     |        |
| Memo       | Default Setting: JME1(2-3)                                                                                                                                                                     |     |             |     |        |

| AUTOPWR    | Auto Power On                                                                                                                                                                               |     |        |     |         |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------|-----|---------|
| PIN Define |  <table border="1"> <tr> <td>1-2</td><td>Normal</td></tr> <tr> <td>2-3</td><td>AutoPwr</td></tr> </table> | 1-2 | Normal | 2-3 | AutoPwr |
| 1-2        | Normal                                                                                                                                                                                      |     |        |     |         |
| 2-3        | AutoPwr                                                                                                                                                                                     |     |        |     |         |
| Type       | 1X4 DuPont Header, PH=2.54mm                                                                                                                                                                |     |        |     |         |
| Memo       | Default Setting: Jautopwr(1-2)                                                                                                                                                              |     |        |     |         |