

| <b>1.0 Reference and Address</b> |   |                              |  |
|----------------------------------|---|------------------------------|--|
| Report Number                    | 181102223SHA-001  | Original Issued: 19-Jun-2019 | Revised: 4-Sep-2020  |
| Standard(s)                      | Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources [UL 1741:2010 Ed.2+R:15Feb2018]<br><br>Power Conversion Equipment [CSA C22.2#107.1:2016 Ed.4] |                              |  |
| Applicant                        | <u>BEIJING EPSOLAR TECHNOLOGY CO., LTD.</u>   | Manufacturer                 | <b>HUIZHOU EPEVER TECHNOLOGY CO., LTD</b>                              |
| Address                          | NO.228, BLOCK A, 2ND FLOOR, BLDG 1, NO 3 STREET, SHANGDI XINXI CHANYE JIDI, HAIDIAN DISTRICT, BEIJING   | Address                      | NO.103, DONGXING RD, CHENJIANG STREET ZHONGKAI HIGH-TECH ZONE, HUIZHOU |
| Country                          | China   | Country                      | China  |
| Contact                          | Hu juanjuan   | Contact                      | Zhou xiangwu   |
| Phone                            | 010-82894896 - 6631   | Phone                        | 13534268706  |
| FAX                              | -   | FAX                          | -  |
| Email                            | hujianjuan@epever.com   | Email                        | zhouxiangwu@epever.com   |

| <b>2.0 Product Description</b> |  |
|--------------------------------|--|
| Product                        | MPPT Solar Charge Controller   |
| Brand name                     | EPEVER   |
| Description                    | <p>The products covered by this report are a permanently-connected, in-door used solar charge controller.</p> <p>No isolated between PV input and battery part.</p> <p>The connection to the temperature sensor, the DC input, battery input/output and load output are terminal block.</p> <p>The charge controller are designed to auto measure the battery system voltage. And dont consider the protection of battery.</p> <p>The installation should be in pollution II environment and accordance with the National Electrical Code, NFPA 70 and and the Canadian Electrical Code.</p>   |
| Models                         | <p>XTRA followed by 1210, 2210, 3210, 3215, 4210, 3415, 4215 or 4415; followed by N- or N1-; followed by XDB1, XDS1 or XDS2.</p> <p>XTRA followed by 1206, 2206; followed by N-; followed by XDB1, XDS1 or XDS2.</p>   |
| Model Similarity               | <p>XTRA****N**** series with power board, display board and communication board (with isolated), Except for XTRA1206N*** and XTRA2206N*** not with isolated for communication. because the Max. voltage is 60V DC.</p> <p>XTRA****N1**** series with power board, and display board.</p> <p>XDB1, XDS1 or XDS2 stand for different display board and screen.</p> <p>All models have same enclosure, heatsink, circuit diagram and PWB layout but with different power devices and ratings.</p> <p>All models have identical mechanical and electrical construction except some parameter of the software architecture in order to control the max output power and rating .</p>  |
| Ratings                        | Refer to section 7 Illustration 2, 2a, 2b - Ratings  |
| Other Ratings                  | NA   |
| Conditions of Acceptability    | <p>The products covered in this Report are incomplete in construction features or limited in performance capabilities and are intended for use and evaluation in other products. Consideration should be given to the following when the component is used in or with another product.</p> <p>(Typical Conditions of Acceptability to be consider for recognized component products follow:)</p> <ol style="list-style-type: none"> <li>1.The product not marked with " DC INPUT NOT ISOLATED FROM BATTERY CIRCUIT". This should be consider in the end product.The protection of battery also should be consider in the end product.</li> <li>2.The functional of Temperature Compensation should be consider in the end product.</li> <li>3.Suitability of grounding means should be performed on this component when installed in the end product.</li> <li>4 The product maybe used as ungrounded system. The ground fault protection should be consider in the end product.</li> <li>5.No isolated between PV input and battery part. The safety protection should be consider at end product for temperature, PV input and battery part</li> </ol> |

### 3.0 Product Photographs

Photo 1 - External view



Photo 2 - External view



### 3.0 Product Photographs

Photo 3 - External view

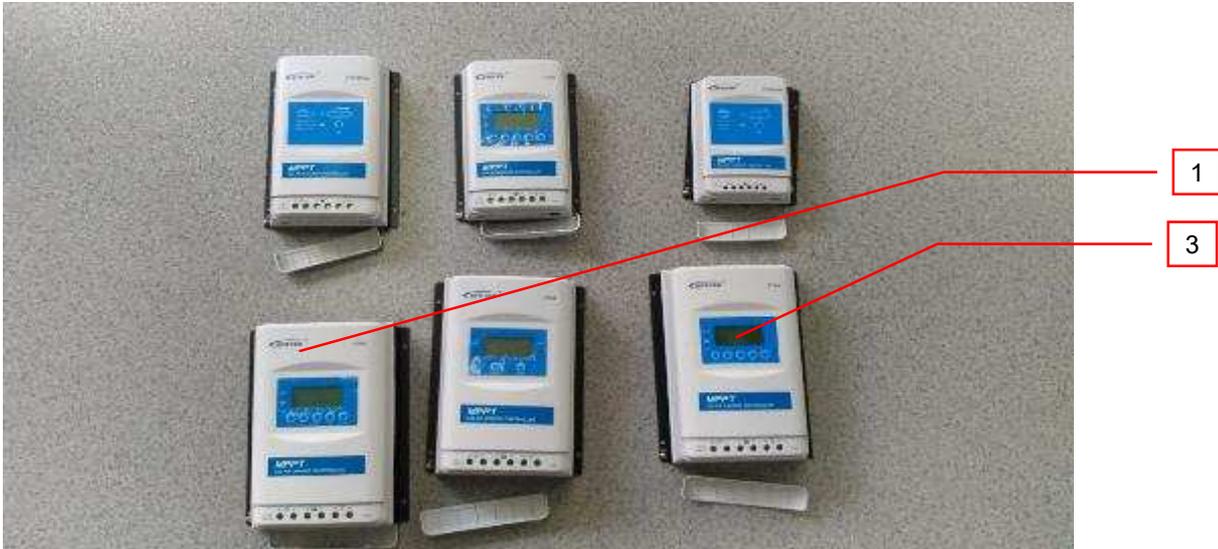
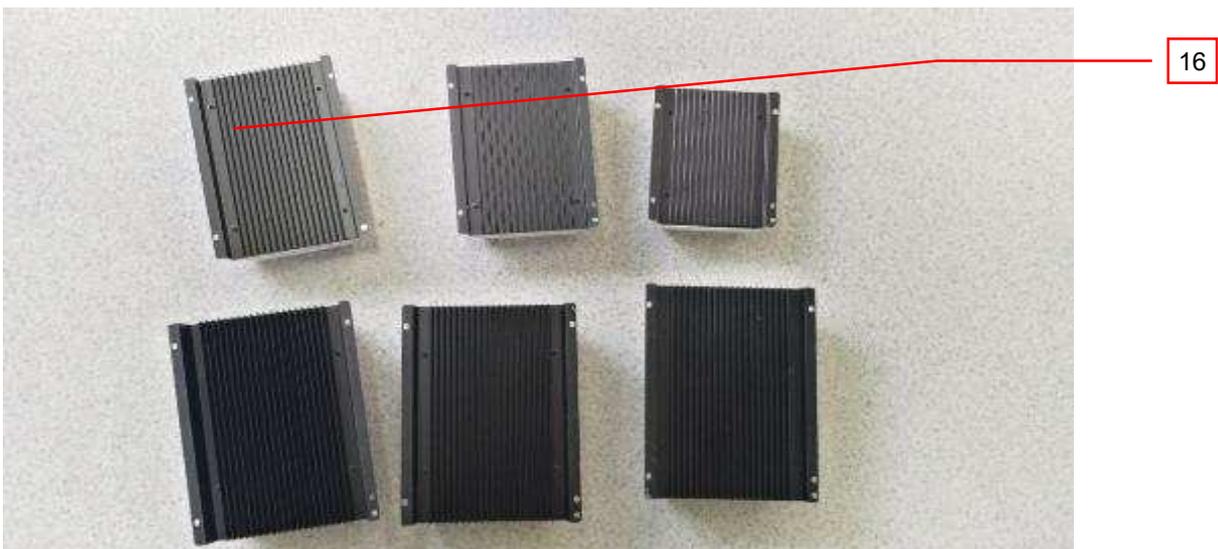
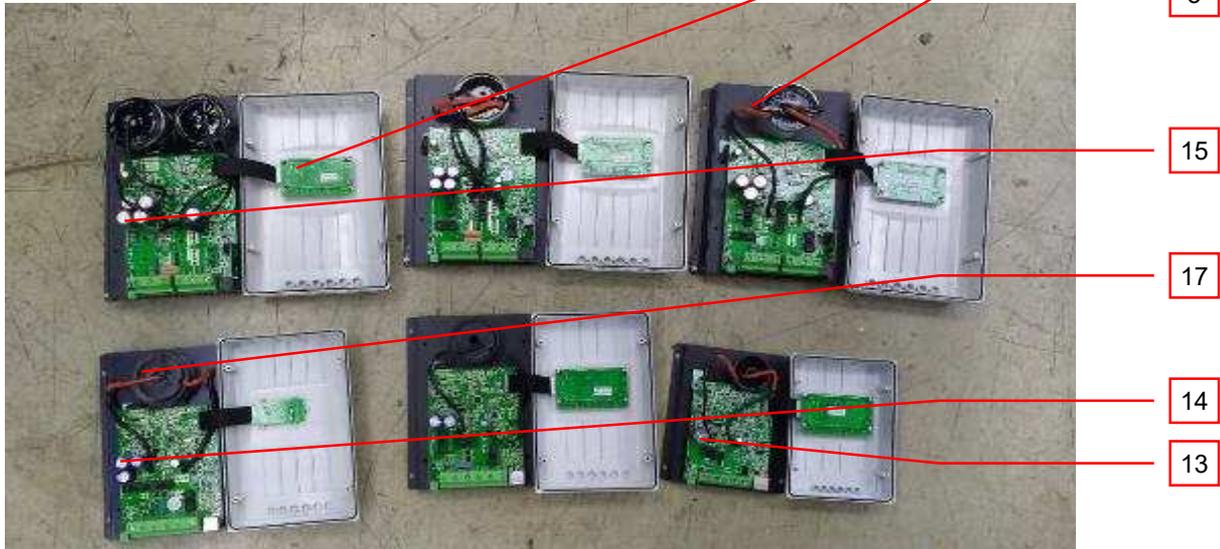


Photo 4 - External view

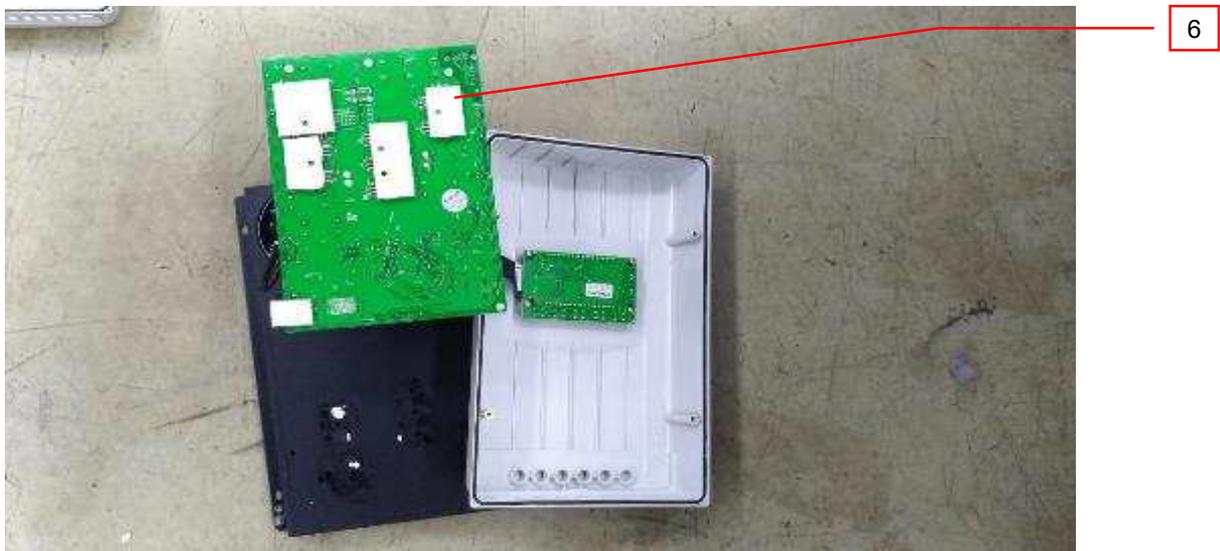


**3.0 Product Photographs**

**Photo 5-** Internal view

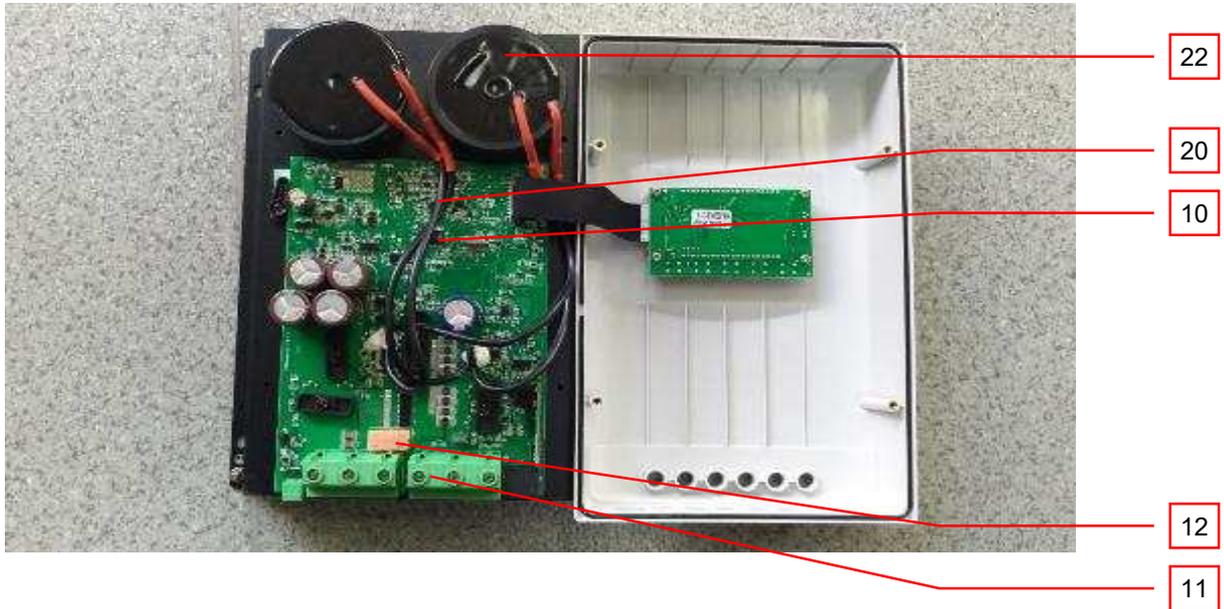


**Photo 6-** Internal view

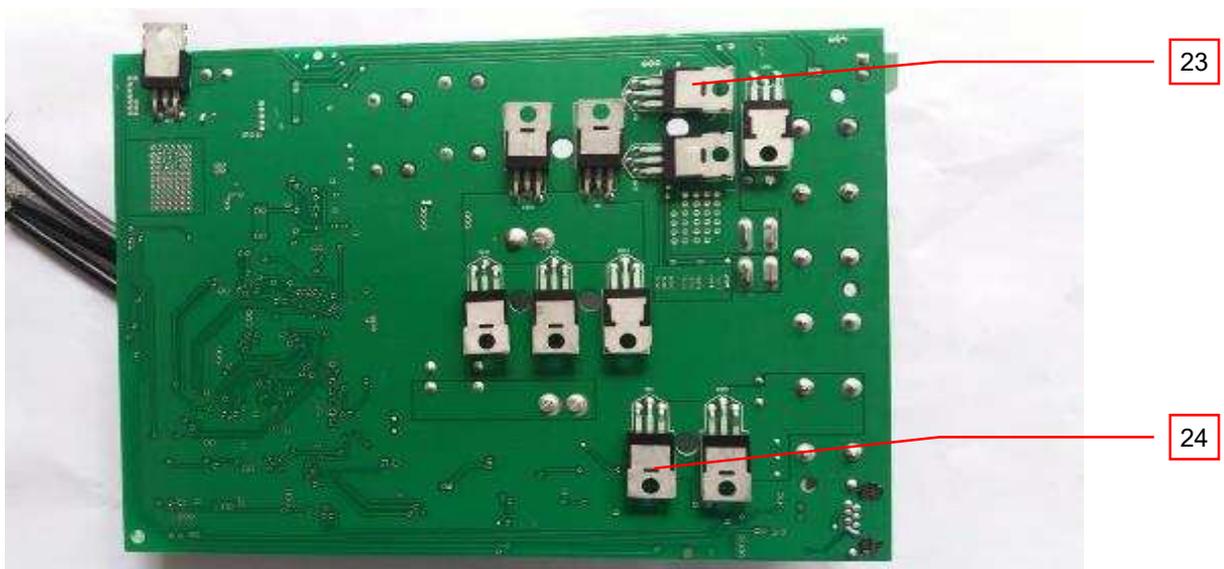


**3.0 Product Photographs**

**Photo 7-** Internal view

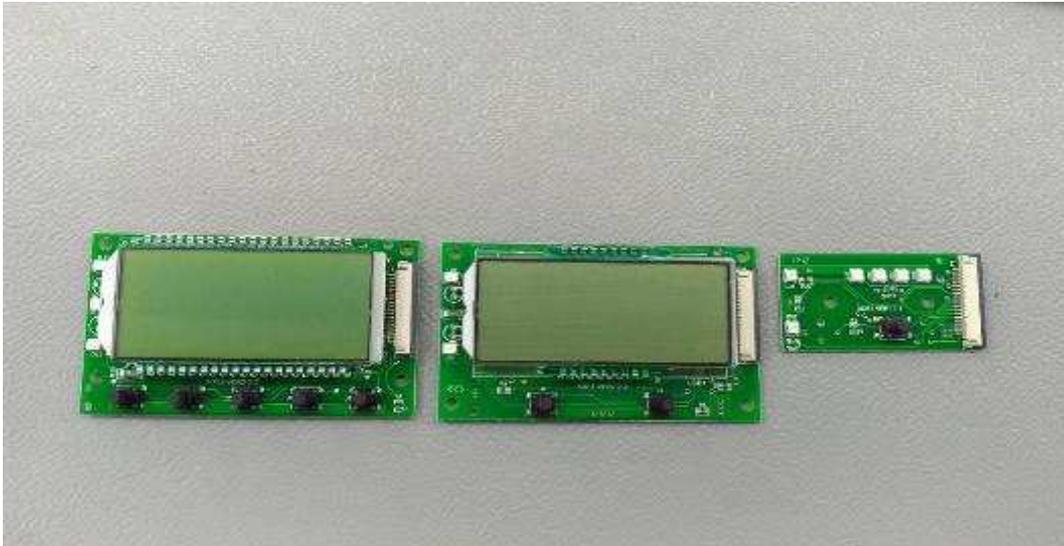


**Photo 8-** Internal view

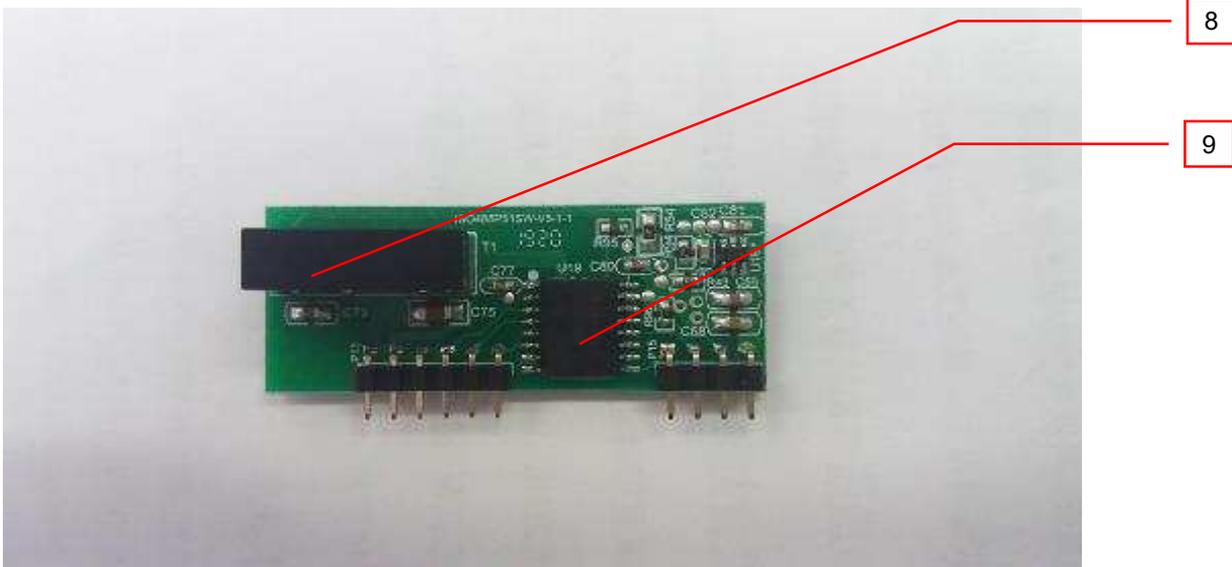


**3.0 Product Photographs**

**Photo 9-** Internal view

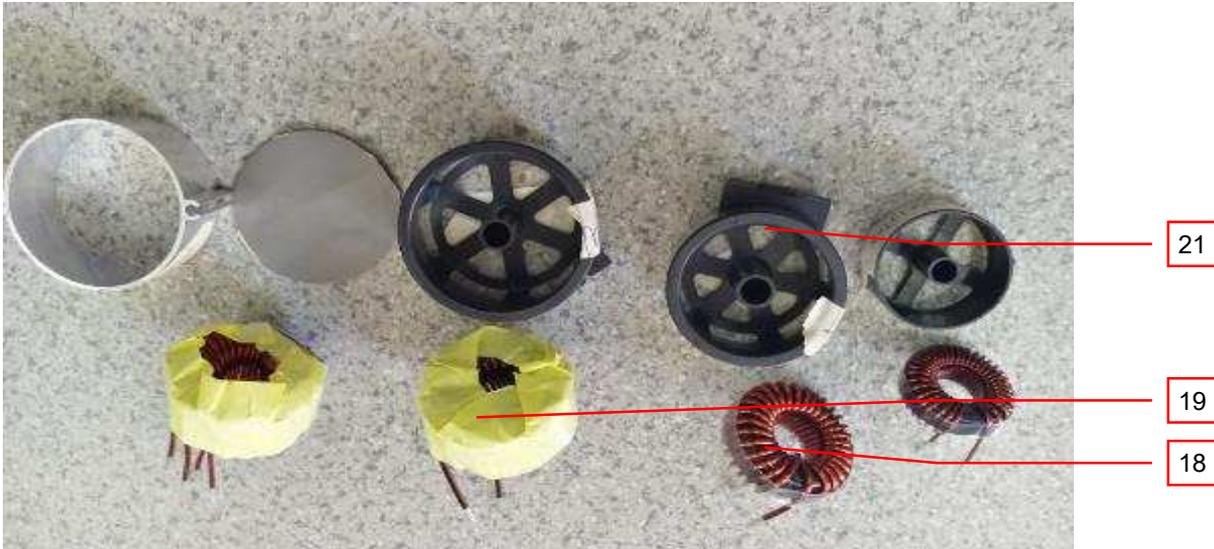


**Photo 10-** Internal view

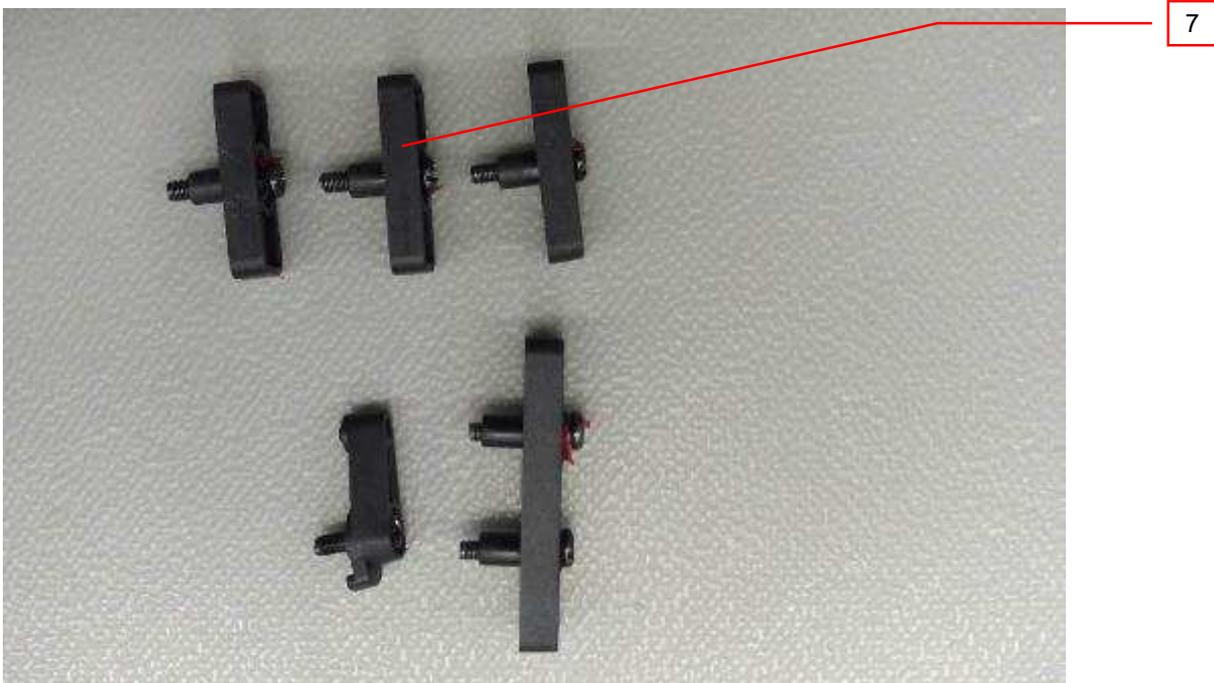


### 3.0 Product Photographs

**Photo 11-** Internal view



**Photo 12-** Internal view



| 4.0 Critical Components |                       |  |  |                            |   |                                    |
|-------------------------|-----------------------|--|--|----------------------------|---|------------------------------------|
| Photo #                 | Item no. <sup>1</sup> | Name   | Manufacturer/ trademark <sup>2</sup>                               | Type / model <sup>2</sup>  | Technical data and securement means   | Mark(s) of conformity <sup>3</sup> |
| 3                       | 1                     | Plastic Enclosure                                    | CHI MEI CORPORATION (UL E56070)                                    | PA-765A(+)                 | ABS, thickness:2.0mm. V-1, 85°C   | cURus                              |
| 3                       | 2                     | Adhesive-Type Label (not shown)                      | ZHONGSHAN FUZHOU (UL MH30090)                                      | TL-TA25, TL-SM25           | indoor use,60°C, ABS surface,UL 969   | cURus                              |
| 3                       | 3                     | Cover of LCD creen                                   | Shenzhen Sanli Spectroscopic Optoelectronics Technology Co., Ltd.. | TSE399-B                   | thickness:0.25mm.   | NR                                 |
| 5                       | 4                     | ALL PCB  | Various  | Various                    | V-0, 130°C. 1.6mm min,CTI: 0, totally covered with coating. Fully comply with UL 796. | cURus<br>cETLus                    |
| 5                       | 5                     | heat shrink tube                                     | Various  | Various                    | 150V ,125°C, VW-1   | cURus<br>cETLus                    |
| 6                       | 6                     | insulation sheet Under MOSfet                        | SHENZHEN GOLDLINK TONGDA ELECTRONICS CO LTD (UL E490055)           | XK-P20                     | V-0, 105°C , 0.25mm   | cURus                              |
| 12                      | 7                     | MOSFET pressure material                             | CHANG CHUN CHEMICAL (ZHANGZHOU) CO LTD (UL E304813)                | 56*                        | PBT , V-0,  | cURus                              |
| 10                      | 8                     | DC/DC Converter                                      | MORNSUN (UL E235235)   | F0505S-1WR3                | 3K Viso DC, -40°C~+105°C  | cURus                              |
| 10                      | 9                     | Nonoptical Isolating Devices For Communication board | TEXAS INSTRUMENTS (UL E181974)                                     | ISO 3082                   | Single protection non-optical isolators at 4000 Vdc/2500 Vac isolation voltage ,85°C  | cURus                              |
|                         |                       |  | TEXAS INSTRUMENTS INCORPORATED (UL E181974)                        | ISO1410B                   | -40°C ~ 125°C, 5000VDC  | cURus                              |
|                         |                       |  | Shanghai Chipanalog Microelectronics Co. Ltd. (UL E511335)         | CA-IS3082W                 | -40°C ~ 125°C, 5000VDC  | cURus                              |
| 7                       | 10                    | CPU  | STM  | STM32F030C8 T6             | 64KB,48pin -40~85°C   | NR                                 |
| 7                       | 11                    | DC terminal  | Degson (UL E228872)  | DG136HT-15.24-03P-14-102AH | 300Vmin , -40°C~+105°C, 15.24mm   | cURus                              |
|                         |                       |  | Degson (UL E228872)  | DG950-9.5-06P-14-00AH      | 300Vmin, -40°C~+105°C, 9.5mm  | cURus                              |
|                         |                       |  | Degson (UL E228872)  | DG136HT-12.7-06P-14-02AH   | 300Vmin, -40°C~+105°C, 12.7mm   | cURus                              |

| 4.0 Critical Components |                       |                        |   |                           |  |                                    |
|-------------------------|-----------------------|------------------------|---|---------------------------|--|------------------------------------|
| Photo #                 | Item no. <sup>1</sup> | Name                   | Manufacturer/ trademark <sup>2</sup>                      | Type / model <sup>2</sup> | Technical data and securement means  | Mark(s) of conformity <sup>3</sup> |
| 7                       | 12                    | DC Fuse                | DONGGUAN HONGDA ELECTRONIC TECHNOLOGY CO LTD (UL E318938) | HDSM series               | 19 x 4.9 x 19.7mm. interrupting1000A. HDSM030,32VDC,30A for model XTRA1206/10N、 3210/15N HDSM035,32VDC,35A for model XTRA2206/10N HDSM040,32VDC,40A for model XTRA4210/15N   | cURus                              |
|                         |                       |                        | WOGÉ PRECISION ELECTRICAL CO LTD (UL E360382)             | AB series                 | Interrupting1000A. 32VDC Min, 30A for model XTRA1206/10N、 3210/15N 32VDC Min, 35A for model XTRA2206/10N 32VDC Min, 40A for model XTRA4210/15N 58VDC Min, 30A for model XTRA3415N. 58VDC Min, 40A for model XTRA4415N. | cURus                              |
|                         |                       |                        | DONGGUAN HONGDA ELECTRONIC TECHNOLOGY CO LTD (UL E318938) | HDMM series               | 19 x 4.9 x 19.7mm. interrupting 1000A. HDMM030,58VDC,30A for model XTRA3415N. HDMM040,58VDC,40A for model XTRA4415N  | cURus                              |
|                         |                       |                        | SHENZHEN VICTORS INDUSTRIAL CO LTD (UL E357828)           | ATV                       | 19.5 x 19 x 4.9mm. interrupting1000A. 60VDC,30A for model XTRA3415N 60VDC,40A for model XTRA4415N  | cURus                              |
| 5                       | 13                    | Electrolytic capacitor | HUNAN AIHUA GROUP CO.,LTD.                                | RJ series                 | 105°C, 390UF 63V for XTRA1206N, E1 270UF 100V for XTRA1210N,E1   | NR                                 |
|                         |                       |                        | NIPPON CHEMI-CON  | KZN series                | 105°C 390UF 63V for XTRA1206N, E1  | NR                                 |
|                         |                       |                        | RUBYCON CORPORATION                                       | ZLH series                | 105°C, 390UF 63V for XTRA1206N ,E1 270UF 100V for XTRA1210N,E1   | NR                                 |

| 4.0 Critical Components |                       |                        |                                      |                           |   |                                    |
|-------------------------|-----------------------|------------------------|--------------------------------------|---------------------------|---|------------------------------------|
| Photo #                 | Item no. <sup>1</sup> | Name                   | Manufacturer/ trademark <sup>2</sup> | Type / model <sup>2</sup> | Technical data and securement means   | Mark(s) of conformity <sup>3</sup> |
| 5                       | 14                    | Electrolytic capacitor | HUNAN AIHUA GROUP CO.,LTD.           | RJ series                 | 105°C,<br>35V, 470uF for XTRA2206/10N E3<br>35V, 470uF for XTRA4210N E3、 E5<br>35V, 820uF for XTRA3210N E3<br>50V, 680uF for XTRA3215N E3 | NR                                 |
|                         |                       |                        | NIPPON CHEMI-CON                     | KZN series                | 105°C,<br>35V, 470uF for XTRA2206/10N E3<br>35V, 470uF for XTRA4210N E3、 E5<br>50V, 680uF for XTRA3215N E3                                | NR                                 |
| 5                       | 15                    | Electrolytic capacitor | HUNAN AIHUA GROUP CO.,LTD.           | RS series                 | 105°C, E3<br>560UF 100V for XTRA34/4415N<br>1000UF 50V for XTRA4215N E3   | NR                                 |
|                         |                       |                        | HUNAN AIHUA GROUP CO.,LTD.           | RJ series                 | 105°C, E3<br>1000UF 50V for XTRA4215N   | NR                                 |
|                         |                       |                        | RUBYCON CORPORATION                  | YXJ series                | 105°C, E3<br>1000UF 63V for XTRA4215N   | NR                                 |
|                         |                       |                        | RUBYCON CORPORATION                  | KZN series                | 105°C, E3<br>1000UF 63V for XTRA4215N   | NR                                 |
| 4                       | 16                    | Heat-sink              | BEIJING EPSOLAR                      | XTRA1206N-LSRQ1-V1.10     | 172*143*9.5mm<br>made of aluminum 6063.   | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA1210N-LSRQ1-V1.20     | 172*143*9.5mm<br>made of aluminum 6063.   | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA2206N-LSRQ1-V1.10     | 214*158*13mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA2210N-LSRQ1-V1.20     | 214*158*13mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA3210N-LSRQ1-V1.20     | 227*165*18.5mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA3215N-LSRQ1-V1.00     | 227*165*18.5mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA3415N-LSRQ1-V1.10     | 252*187*27.2mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA4210N-LSRQ1-V1.10     | 252*185*19.3mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA4215N-LSRQ1-V1.00     | 252*187*27.2mm<br>made of aluminum 6063.  | NR                                 |
|                         |                       |                        | BEIJING EPSOLAR                      | XTRA4415N-LSRQ1-V1.20     | 252*189*34.7mm<br>made of aluminum 6063.  | NR                                 |

| 4.0 Critical Components |                       |                              |  |   |                                     |                                    |
|-------------------------|-----------------------|------------------------------|--|---|-------------------------------------|------------------------------------|
| Photo #                 | Item no. <sup>1</sup> | Name                         | Manufacturer/ trademark <sup>2</sup>                       | Type / model <sup>2</sup>                 | Technical data and securement means | Mark(s) of conformity <sup>3</sup> |
| 5                       | 17                    | DC inductor                  | BEIJING EPSOLAR  | KS130-125A&A125-330-147UH                 | 147UH, 130°C for XTRA1206/10N       | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KS157-125A&A125-399-141UH                 | 141UH, 130°C for XTRA2206/10N       | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KA184-125A&A125-467-162uH-V1.3            | 162UH, 130°C for XTRA3210N          | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KA184-125A&A125-467-162uH V1.1            | 162UH, 130°C for XTRA3215N          | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KA200-125A&A125-508X2-M2X2-24T-175uH V1.2 | 175UH, 130°C for XTRA3415N          | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KA184-125A&A125-467-148uH-V1.1            | 148UH, 130°C for XTRA4210N          | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KA184-125A&A125-467-162uH V1.1            | 162UH, 130°C for XTRA4215N          | NR                                 |
|                         |                       |                              | BEIJING EPSOLAR  | KS184-125A/A125-467/M2.4-35T-344uH-V1.4   | 344UH, 130°C for XTRA4415N          | NR                                 |
| 11                      | 18                    | Magnet Wire for Inductor     | PACIFIC ELECTRIC WIRE&CABLE(SHENZHEN)CO LTD (UL E201757)   | PEWN/U                                    | MW 24-C, 155°C                      | cURus                              |
| 11                      | 19                    | Insulation tape for Inductor | SHENZHEN XINHUAHUI ADHESIVE TECHNOLOGY CO LTD (UL E328315) | HMT803                                    | 130°C., 0.055mm 4000V UL94V-0       | cURus                              |
| 7                       | 20                    | wire of inductor             | SHENZHEN SEDATO CABLE CO.,LTD. (UL E483319)                | 1015                                      | 600V 105°C, 10-14AWG                | cURus                              |

| 4.0 Critical Components |                       |                                 |  |                           |  |                                    |
|-------------------------|-----------------------|---------------------------------|--|---------------------------|--|------------------------------------|
| Photo #                 | Item no. <sup>1</sup> | Name                            | Manufacturer/ trademark <sup>2</sup>                 | Type / model <sup>2</sup> | Technical data and securement means  | Mark(s) of conformity <sup>3</sup> |
| 11                      | 21                    | Plastic material fixed inductor | CHANG CHUN CHEMICAL (ZHANGZHOU) CO LTD (UL E304813)  | 56*                       | PBT , V-0,   | cURus                              |
| 7                       | 22                    | SILICONE RUBBER                 | SHANGHAI FUMING SEALING MATERIAL CO LTD (UL E350185) | FM-500                    | V-0, 135°C, FUR for AC and DC inductor   | cURus                              |
| 8                       | 23                    | MOSFET module for PV circuit    | ST   | NMOS series               | Tj Max 175°C<br>70V,110A, for XTRA12/2206N Q5,Q7<br>100V,110A, for XTRA22/3210N Q5,Q7<br>100V,110A, XTRA4210N Q5, Q7, Q14, Q20                             | NR                                 |
|                         |                       |                                 | IR   | IRFseries                 | Tj Max 175°C<br>100V,97A min, for XTRA1210N Q5,Q7<br>150V,104A , for XTRA32/3415N、 42/4415N Q5, Q7, Q14, Q20   | NR                                 |
|                         |                       |                                 | Infineon   | IPPseries                 | Tj Max 175°C<br>100V,100A ,for XTRA22/3210N Q5,Q7<br>100V,100A , for XTRA4210N Q5, Q7, Q14, Q20<br>150V,100A , for XTRA32/3415N、 42/4415N Q5, Q7, Q14, Q20 | NR                                 |

| 4.0 Critical Components   |                       |                                |                                      |                           |  |                                    |
|---|-----------------------|--------------------------------|--------------------------------------|---------------------------|--|------------------------------------|
| Photo #   | Item no. <sup>1</sup> | Name                           | Manufacturer/ trademark <sup>2</sup> | Type / model <sup>2</sup> | Technical data and securement means  | Mark(s) of conformity <sup>3</sup> |
| 8   | 24                    | MOSFET module for load circuit | ALPHA&OMEGA                          | AOB1608L (AOS)            | Tj Max 175°C , 60V, 140A for XTRA1206/10N Q6   | NR                                 |
|   |                       |                                | ALPHA&OMEGA                          | AOT1608L(AOS )            | Tj Max 175°C , 60V, 110A for XTRA3215N, XTRA4210/15N Q6,Q18  | NR                                 |
|   |                       |                                | IR                                   | IRFseries                 | Tj Max 175°C , 60V,140A for XTRA1206/10N ,Q6 55VMin,110A Min. , for XTRA2206/10N、 3210N 100V,120A Min, for XTRA3415N XTRA4415N | NR                                 |
| NOTES:<br>1) Not all item numbers are indicated (called out) in the photos, as their location is obvious.<br>2) "Various" means any type, from any manufacturer that complies with the "Technical data and securement means" and meets the "Mark(s) of conformity" can be used.<br>3) Indicates specific marks to be verified, which assures the agreed level of surveillance for the component. "NR" - indicates Unlisted and only visual examination is necessary. "See 5.0" indicates Unlisted components or assemblies to be evaluated periodically refer to section 5.0 for details. |                       |                                |                                      |                           |  |                                    |

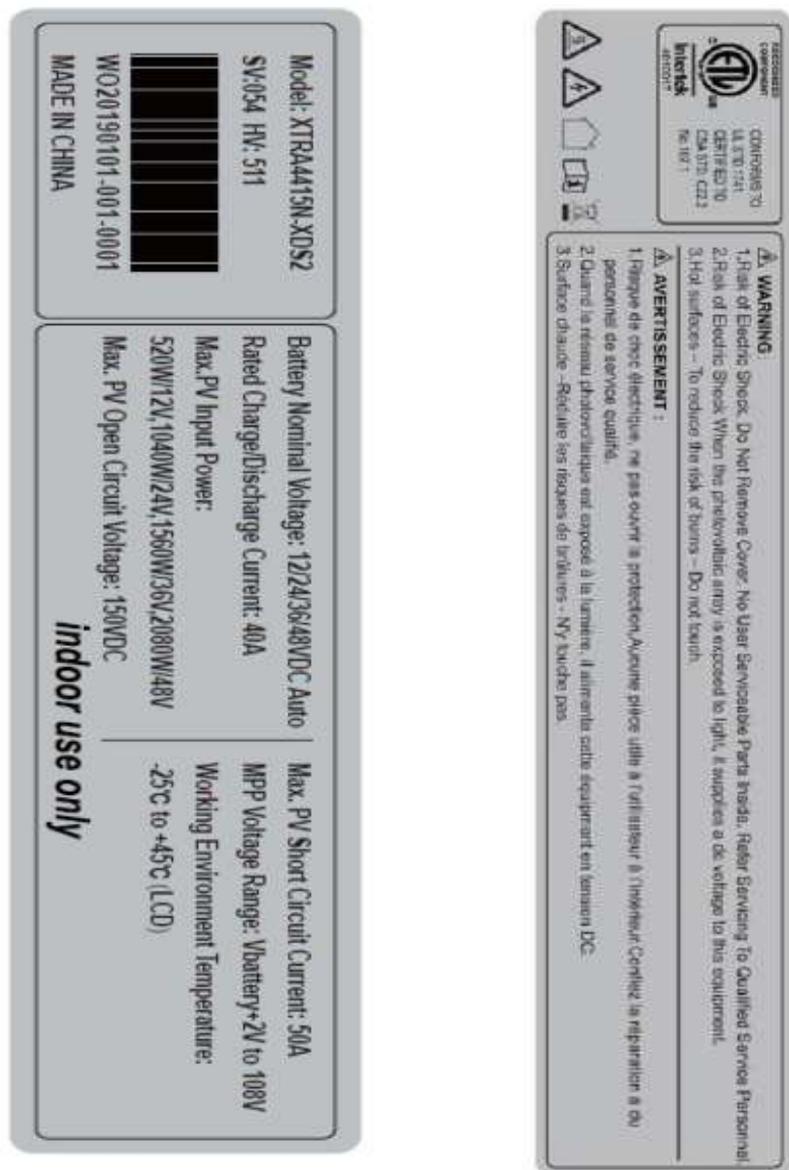
## **5.0 Critical Unlisted CEC Components**

No Unlisted CEC components are used in this report.

| <b>6.0 Critical Features</b>   |
|--|
| <p><u>Recognized Component</u> - A component part, which has been previously evaluated by an accredited certification body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.</p>  |
| <p><u>Listed Component</u> - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.</p>  |
| <p><u>Unlisted Component</u> - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.</p>   |
| <p><u>Critical Features/Components</u> - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.</p>  |
| <p><u>Construction Details</u> - For specific construction details, reference should be made to the photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.</p>  |
| <p>1. <u>Spacing</u> - between uninsulated live parts and the walls of the metal enclosure is <u>6.4</u> mm through air and <u>6.4</u> mm over surfaces<br/><u>Spacing</u> - between a) uninsulated live parts of opposite polarity; b) uninsulated live parts and low voltage isolated circuits, uninsulated grounded parts other than the enclosure- <u>3.2</u> mm minimum spacing are maintained through air and <u>6.4</u> mm minimum spacing at field wiring terminals.</p> |
| <p>2. <u>Mechanical Assembly</u> - Components such as switches, fuseholders, connectors, wiring terminals and display lamps are mounted and prevented from shifting or rotating by the use of lockwashers, starwashers, or other mounting format that prevents turning of the component.</p>   |
| <p>3. <u>Corrosion Protection</u> - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.</p>  |
| <p>4. <u>Accessibility of Live Parts</u> - All uninsulated live parts in primary circuitry are housed within a metal enclosure constructed with no openings other than those specifically described in Sections 4 and 5.</p>   |
| <p>5. <u>Grounding</u> - All exposed dead-metal parts and all dead-metal parts within the enclosure that are exposed are connected to the the equipment grounding terminal.</p>  |
| <p>6. <u>Schematics</u> - Refer to Illustration No.3 to No.3c. for schematics requiring verification during Field Representative Inspection Audits.</p>  |
| <p>7. <u>PCB layout</u> - Refer to Illustration No.4 to No. 4g for PCB layout requiring verification during Field Representative Inspection Audits.</p>  |
| <p>8. <u>Markings</u> - The product is marked on a labeling system as described in item No. 2 of Section 4.0 or by molding into polymeric enclosure as follows: applicant's name, brand name, model number, date of manufacturer, electrical ratings. Refer to Illustration No.1 for details.</p>  |
| <p>9 <u>Cautionary Markings</u> - refer to Illustration 1 for details.</p>   |
| <p>10 <u>Installation, Operating and Safety Instructions</u> - Instructions for installation and use of this product are provided by the manufacturer. Refer to Illustration No.5 to No.5a for details.</p>  |

**7.0 Illustrations**

**Illustration 1 - Markings and Cautionary Markings**



Note:

1. The heights of the letters of the words "WARNING", "CAUTION", "AVERTISSEMENT" and "ATTENTION" in cautionary markings are not less than 3.2mm, the heights of the remaining letters in cautionary markings are not less than 1.6mm.
2. The other models (refer to 2.0 and illustration 2) have the same labels except the model number and ratings.
3. In the serial Number four to seven bit, 19= years ,01= month

**7.0 Illustrations**

**Illustration 2- rating**

| <b>Specification table</b>         |   |   |   |   |
|------------------------------------|---|---|---|---|
| <b>Model</b>                       | XTRA1206N- XDB1<br>XTRA1206N- XDS1<br>XTRA1206N- XDS2             | XTRA1210N- XDB1<br>XTRA1210N- XDS1<br>XTRA1210N- XDS2<br>XTRA1210N1- XDB1<br>XTRA1210N1- XDS1<br>XTRA1210N1- XDS2 | XTRA2206N- XDB1<br>XTRA2206N- XDS1<br>XTRA2206N- XDS2 | XTRA2210N- XDB1<br>XTRA2210N- XDS1<br>XTRA2210N- XDS2<br>XTRA2210N1- XDB1<br>XTRA2210N1- XDS1<br>XTRA2210N1- XDS2 |
| <b>PV Input</b>                    |   |   |   |   |
| Vmax PV                            | 60 VDC  | 100 VDC   | 60 VDC  | 100 VDC   |
| Max. I sc PV                       | 12.5A   | 12.5A   | 25A   | 25A   |
| Max. PV Input Power                | 130W(12V)<br>260W(24V)  | 130W(12V)<br>260W(24V)  | 260W(12V)<br>520W(24V)                                | 260W(12V)<br>520W(24V)  |
| MPP Voltage range                  | V battery+2V to 36V   | V battery+2V to 72V   | V battery+2V to 36V                                   | V battery+2V to 72V   |
| <b>Battery and load port</b>       |   |   |   |   |
| Battery Nominal Voltage            | 12V/ 24VDC auto   | 12V/ 24VDC auto   | 12V/ 24VDC auto                                       | 12V/ 24VDC auto   |
| Rated charge and discharge current | 10A   | 10A   | 20A   | 20A   |
| Max. output overcurrent protection | 20A   | 20A   | 40A   | 40A   |
| <b>others</b>                      |   |   |   |   |
| LxWxH (mm)                         | 175×143×48mm  | 175×143×48mm  | 217×158×56.5mm  | 217×158×56.5mm  |
| Weight (kg)                        | 0.57kg  | 0.57kg  | 0.96kg  | 0.96kg  |
| Version                            | SV:054+HV:411   |   |   |   |
| Temperature(°C)                    | -25°C to +50°C (with LCD screen), -30°C to +50°C(with LED screen) |   |   |   |
| Protective class                   | Indoor use only   |   |   |   |
| Pollution degree                   | PD 2  |   |   |   |
| Overvoltage                        | OVC II (PV)   |   |   |   |

**7.0 Illustrations**

**Illustration 2a- rating**

| <b>Specification table</b>         |   |   |
|------------------------------------|---|---|
| <b>Model</b>                       | XTRA3210N- XDB1<br>XTRA3210N- XDS1<br>XTRA3210N- XDS2<br>XTRA3210N1- XDB1<br>XTRA3210N1- XDS1<br>XTRA3210N1- XDS2 | XTRA4210N- XDB1<br>XTRA4210N- XDS1<br>XTRA4210N- XDS2<br>XTRA4210N1- XDB1<br>XTRA4210N1- XDS1<br>XTRA4210N1- XDS2 |
| <b>PV Input</b>                    |   |   |
| Vmax PV                            | 100 VDC   | 100 VDC   |
| Max. I sc PV                       | 37.5A   | 50 A  |
| Max. PV Input Power                | 390W(12V)<br>780W(24V)  | 520W(12V)<br>1040W(24V)   |
| MPP Voltage range                  | V battery+2V to 72V   | V battery+2V to 72V   |
| <b>Battery and load port</b>       |   |   |
| Battery Nominal Voltage            | 12V/ 24VDC auto   | 12V/ 24VDC auto   |
| Rated charge and discharge current | 30A   | 40A   |
| Max. output overcurrent protection | 60A   | 80A   |
| <b>others</b>                      |   |   |
| LxWxH (mm)                         | 230×165×63mm  | 255×185×67.8mm  |
| Weight (kg)                        | 1.31kg  | 1.70kg  |
| Version                            | SV:054+HV:411   |   |
| Temperature(°C)                    | -25°C to +50°C (with LCD screen), -30°C to +50°C(with LED screen)   |   |
| Protective class                   | Indoor use only   |   |
| Pollution degree                   | PD 2  |   |
| Overvoltage                        | OVC II (PV)   |   |

## 7.0 Illustrations

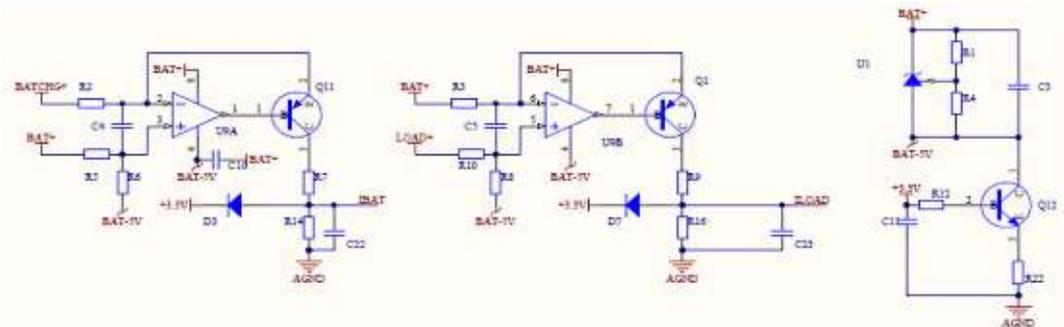
### Illustration 2b- rating

| Specification table                |   |   |   |   |
|------------------------------------|---|---|---|---|
| <b>Model</b>                       | XTRA3215N- XDB1<br>XTRA3215N- XDS1<br>XTRA3215N- XDS2<br>XTRA3215N1- XDB1<br>XTRA3215N1- XDS1<br>XTRA3215N1- XDS2 | XTRA4215N- XDB1<br>XTRA4215N- XDS1<br>XTRA4215N- XDS2<br>XTRA4215N1- XDB1<br>XTRA4215N1- XDS1<br>XTRA4215N1- XDS2 | XTRA3415N- XDB1<br>XTRA3415N- XDS1<br>XTRA3415N- XDS2<br>XTRA3415N1- XDB1<br>XTRA3415N1- XDS1<br>XTRA3415N1- XDS2 | XTRA4415N- XDB1<br>XTRA4415N- XDS1<br>XTRA4415N- XDS2<br>XTRA4415N1- XDB1<br>XTRA4415N1- XDS1<br>XTRA4415N1- XDS2 |
| <b>PV Input</b>                    |   |   |   |   |
| Vmax PV                            | 150 VDC   | 150 VDC   | 150 VDC   | 150 VDC   |
| Max. I sc PV                       | 37.5A   | 50 A  | 37.5A   | 50 A  |
| Max. PV Input Power                | 390W(12V)<br>780W(24V)  | 520W(12V)<br>1040W(24V)   | 390W(12V)<br>780W(24V)<br>1170W(36V)<br>1560W(48V)  | 520W(12V)<br>1040W(24V)<br>1560W(36V)<br>2080W(48V)   |
| MPP Voltage range                  | V battery+2V to 108V  |
| <b>Battery and load port</b>       |   |   |   |   |
| Battery Nominal Voltage            | 12V/ 24VDC auto   | 12V/ 24VDC auto   | 12/ 24/36/48VDC auto  | 12/ 24/36/48VDC auto  |
| Rated charge and discharge current | 30A   | 40A   | 30A   | 40A   |
| Max. output overcurrent protection | 60A   | 80A   | 60A   | 80A   |
| <b>others</b>                      |   |   |   |   |
| LxWxH (mm)                         | 255×185×67.8mm  | 255×187×75.7mm  | 255×187×75.7mm  | 255×189×83.2mm  |
| Weight (kg)                        | 1.70kg  | 2.07kg  | 2.07kg  | 2.47kg  |
| Version                            | SV:054+HV:511   |   |   |   |
| Temperature(°C)                    | -25°C to +45°C (with LCD screen), -30°C to +45°C(with LED screen)   |   |   |   |
| Protective class                   | Indoor use only   |   |   |   |
| Pollution degree                   | PD 2  |   |   |   |
| Overvoltage                        | OVC II (PV)   |   |   |   |

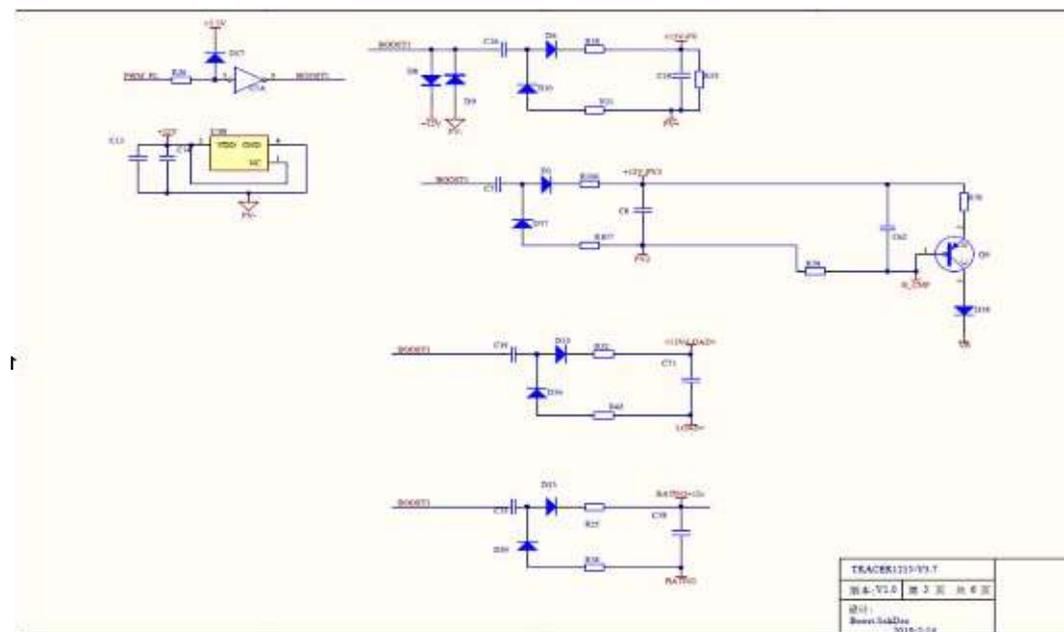
**7.0 Illustrations**

**Illustration 3 - Schematics**

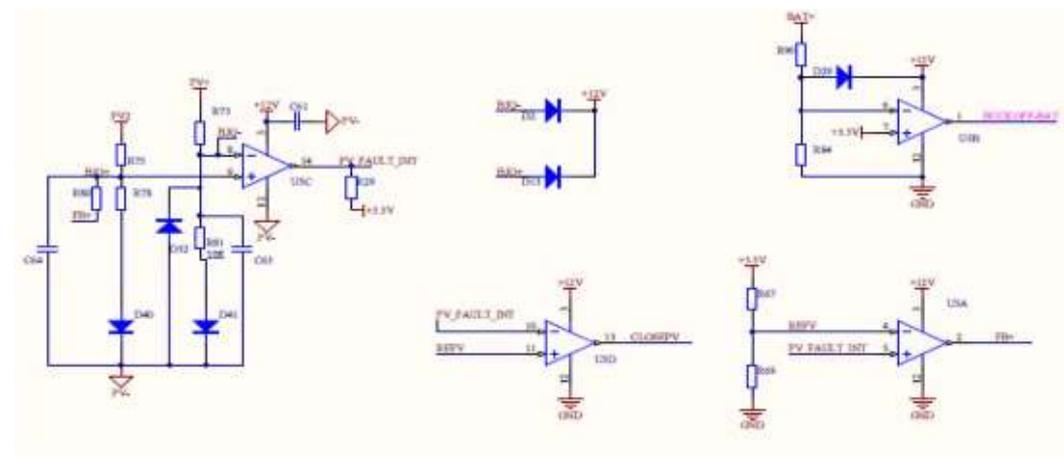
AnalogSignal



Boost



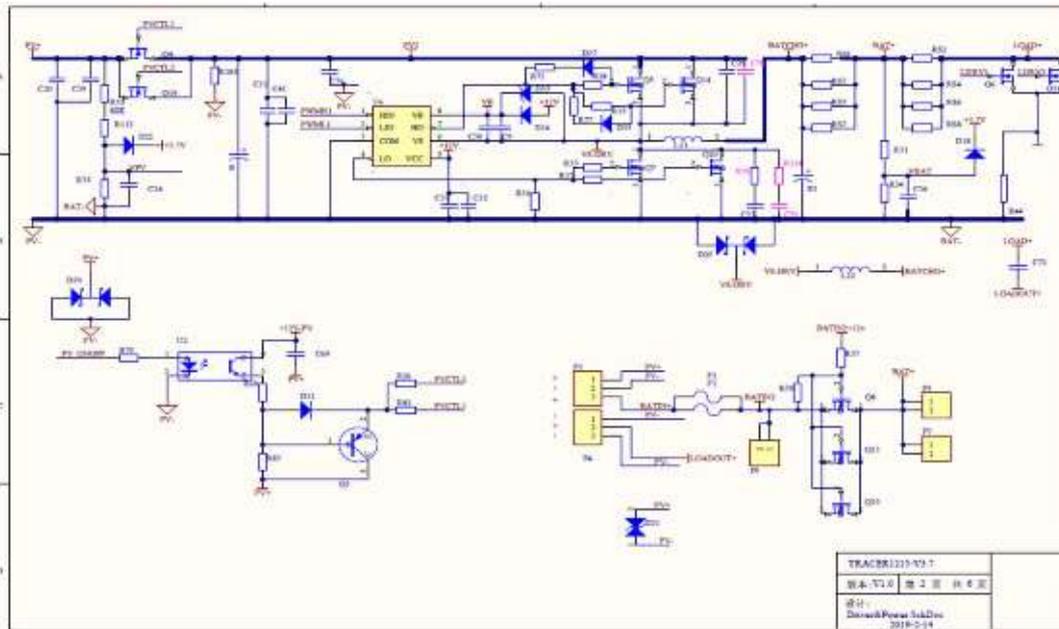
PVDRV&PROTECT



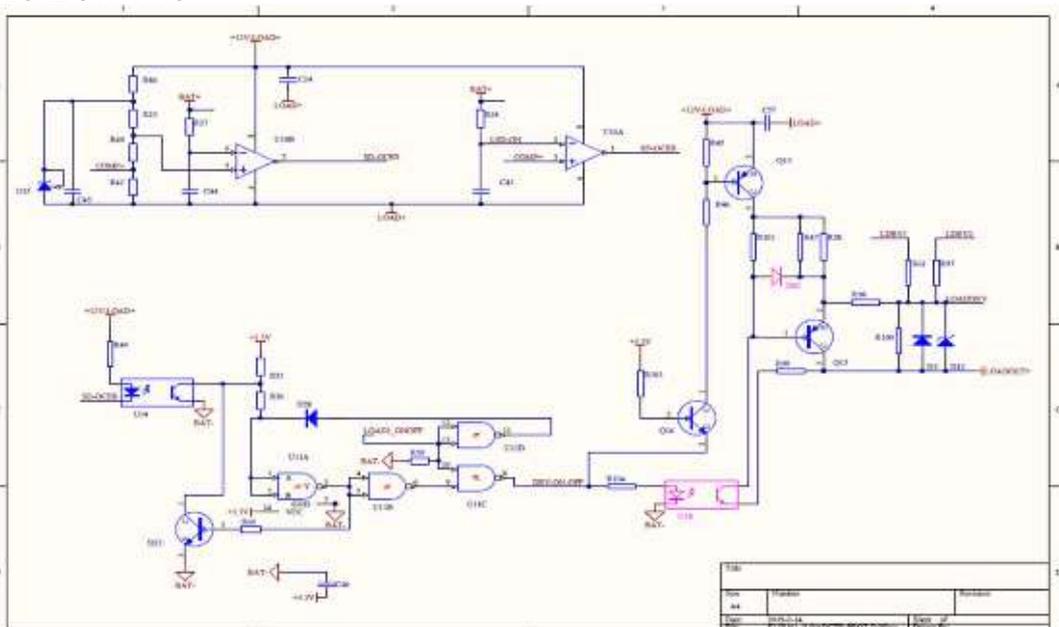
**7.0 Illustrations**

**Illustration 3a - Schematics**

Driver&Power



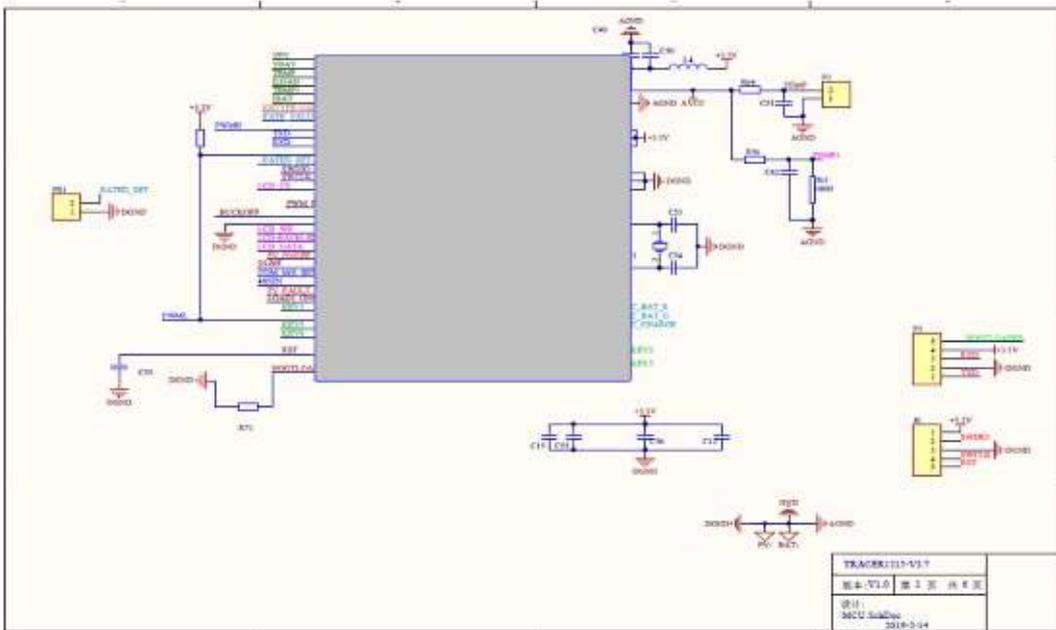
LOADCTR-PROT



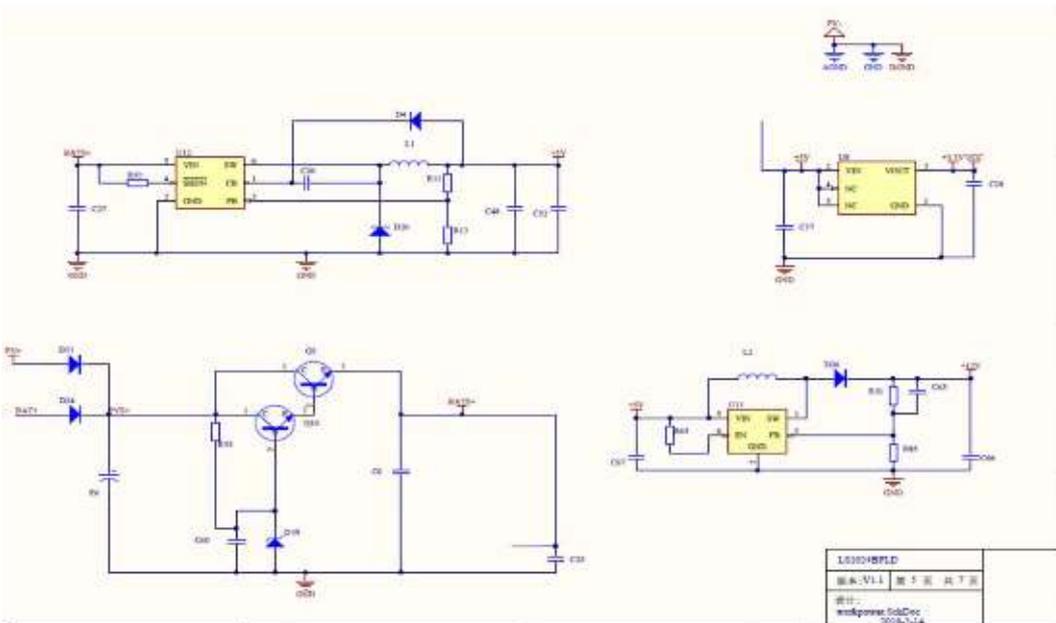
**7.0 Illustrations**

**Illustration 3b - Schematics**

MCU



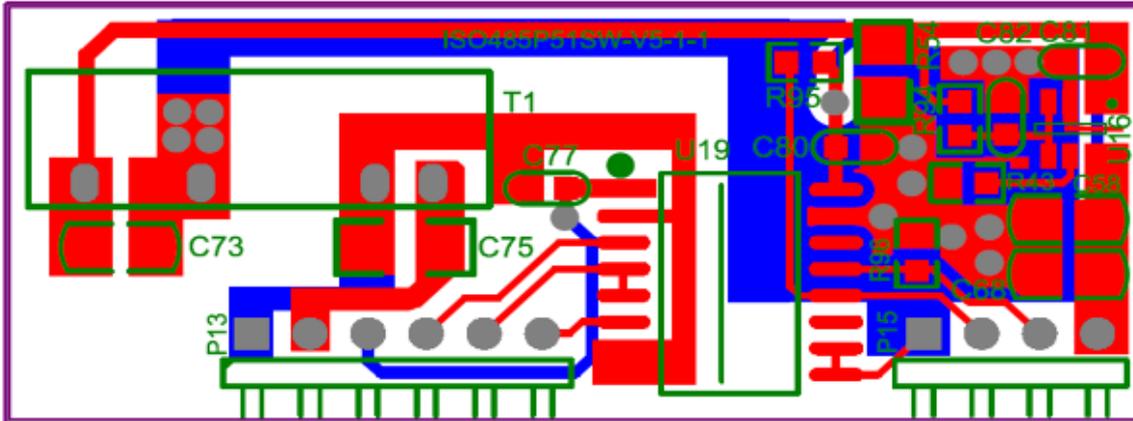
workpower





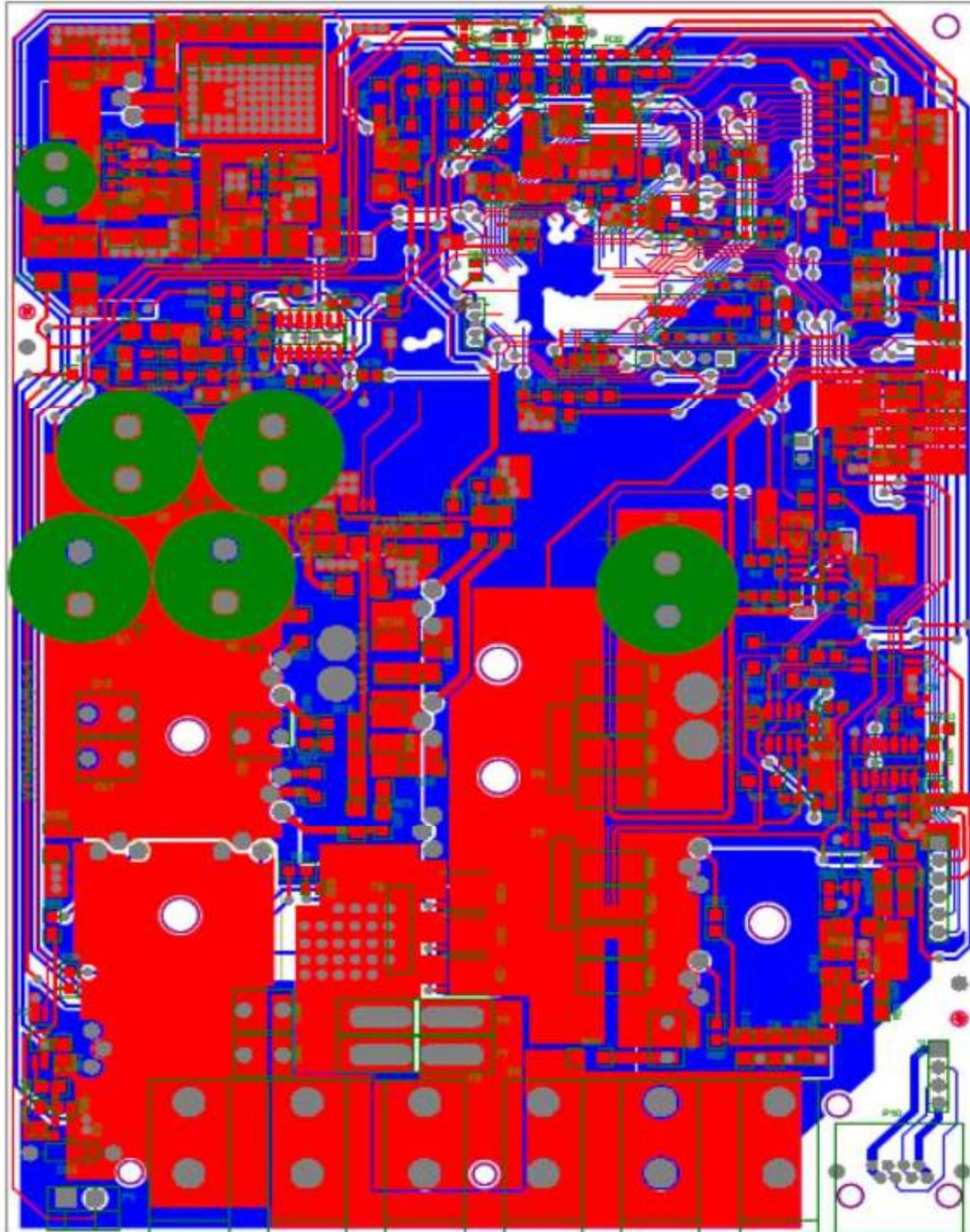
7.0 Illustrations

Illustration 4 - PCB  
ISO485P51SW-V5-1-1



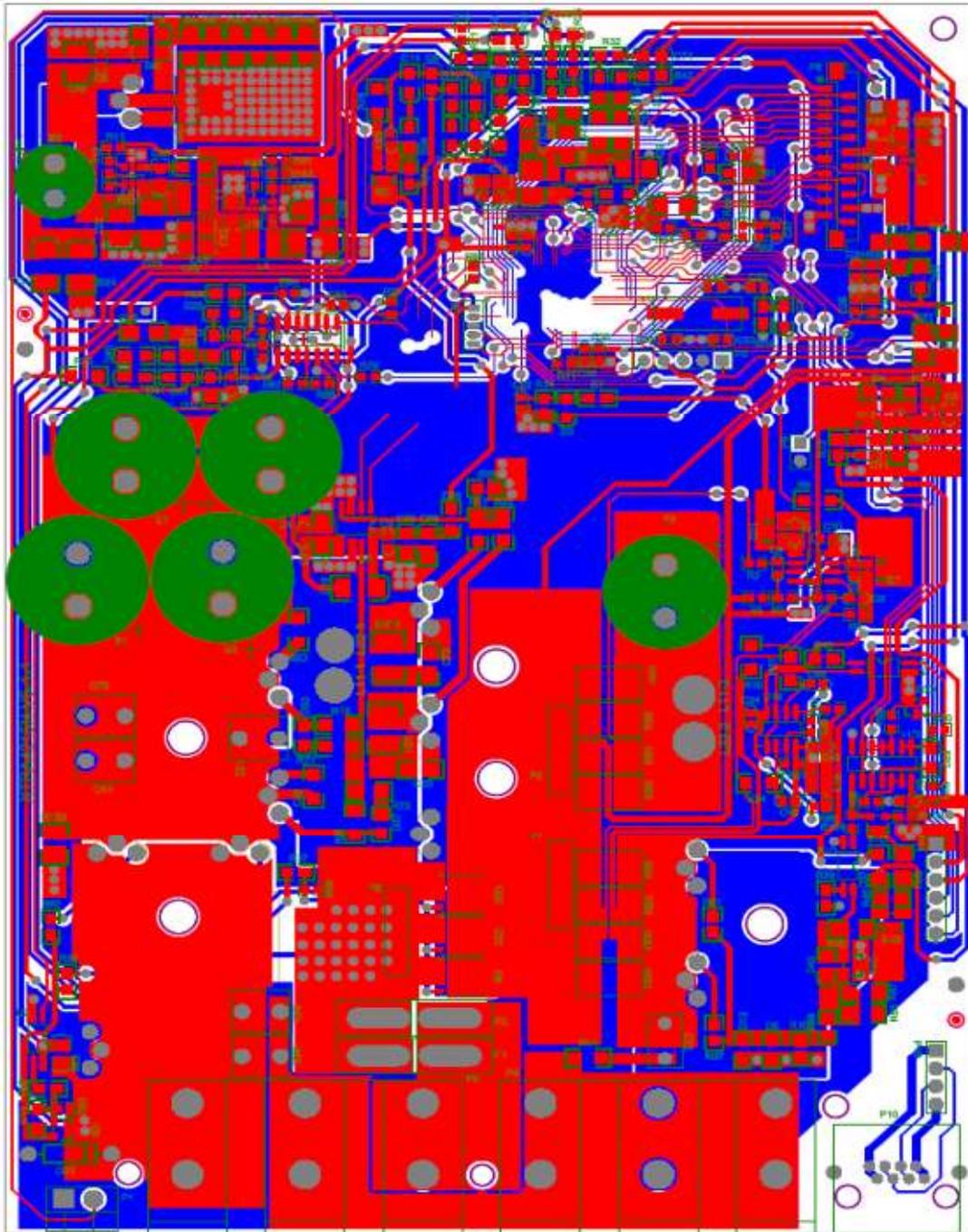
**7.0 Illustrations**

**Illustration 4a - PCB**  
XTRA4415\*\*\*\* series



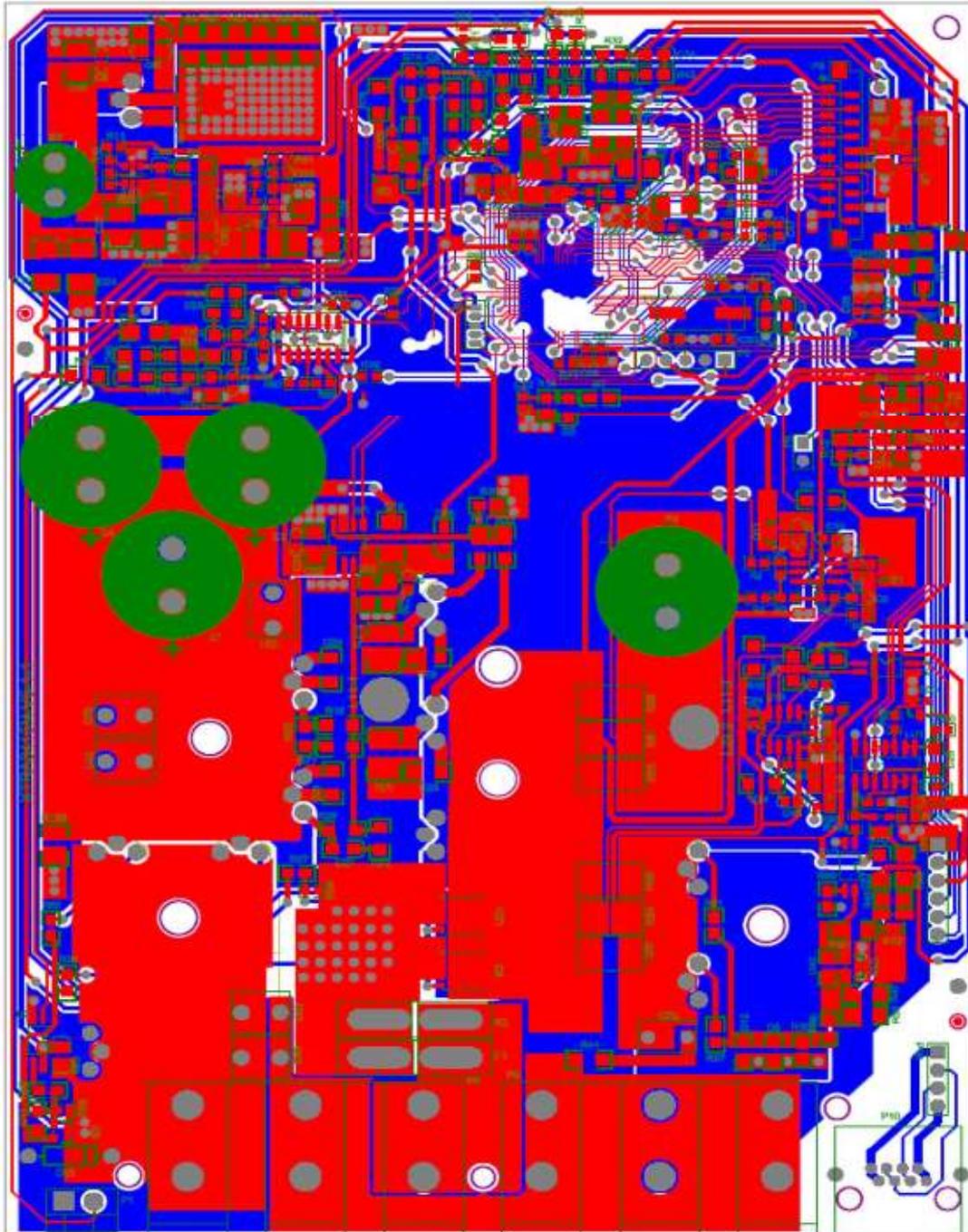
7.0 Illustrations

Illustration 4b - PCB  
XTRA4215\*\*\*\* series



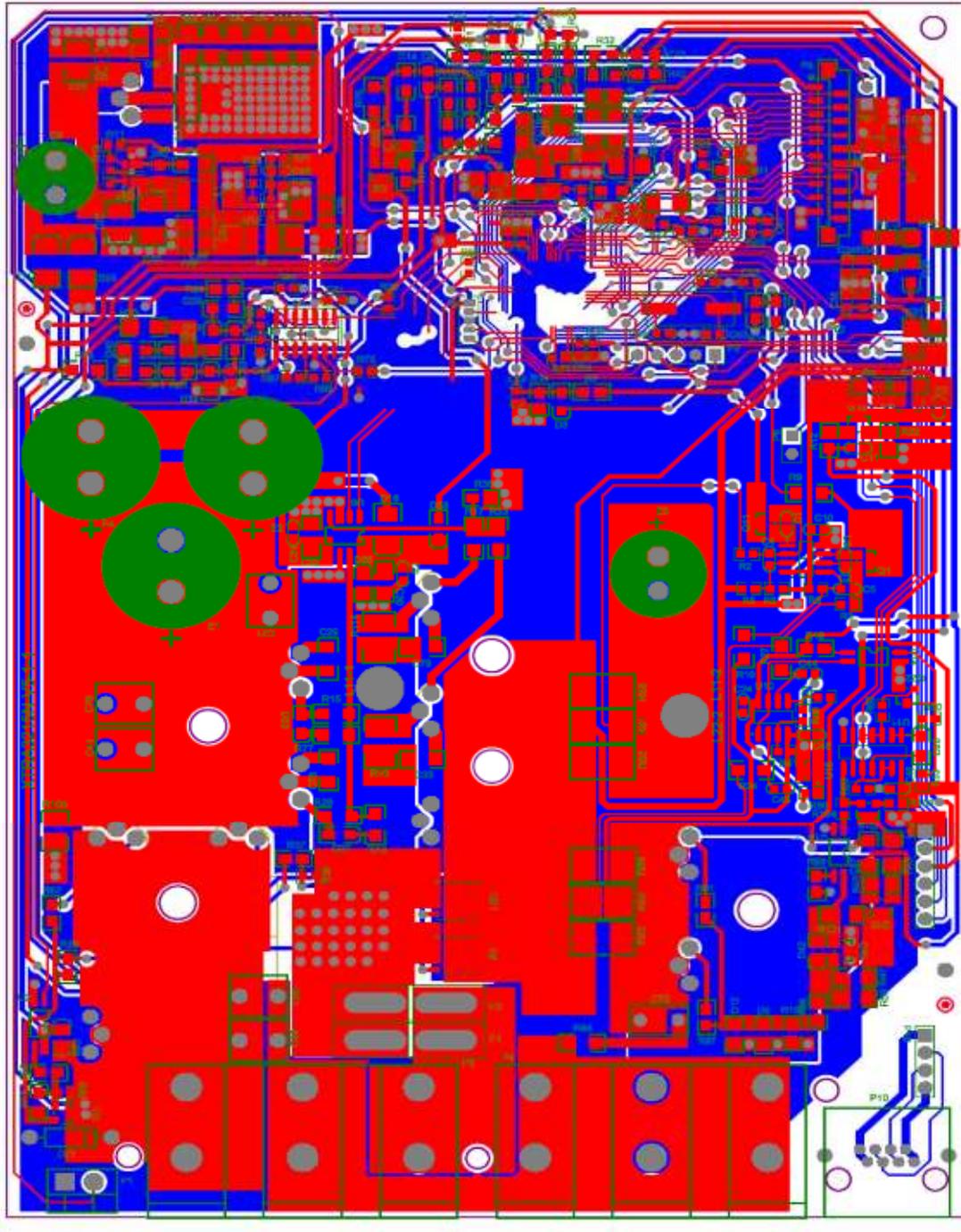
## 7.0 Illustrations

**Illustration 4c - PCB**  
XTRA3415\*\*\*\* series



**7.0 Illustrations**

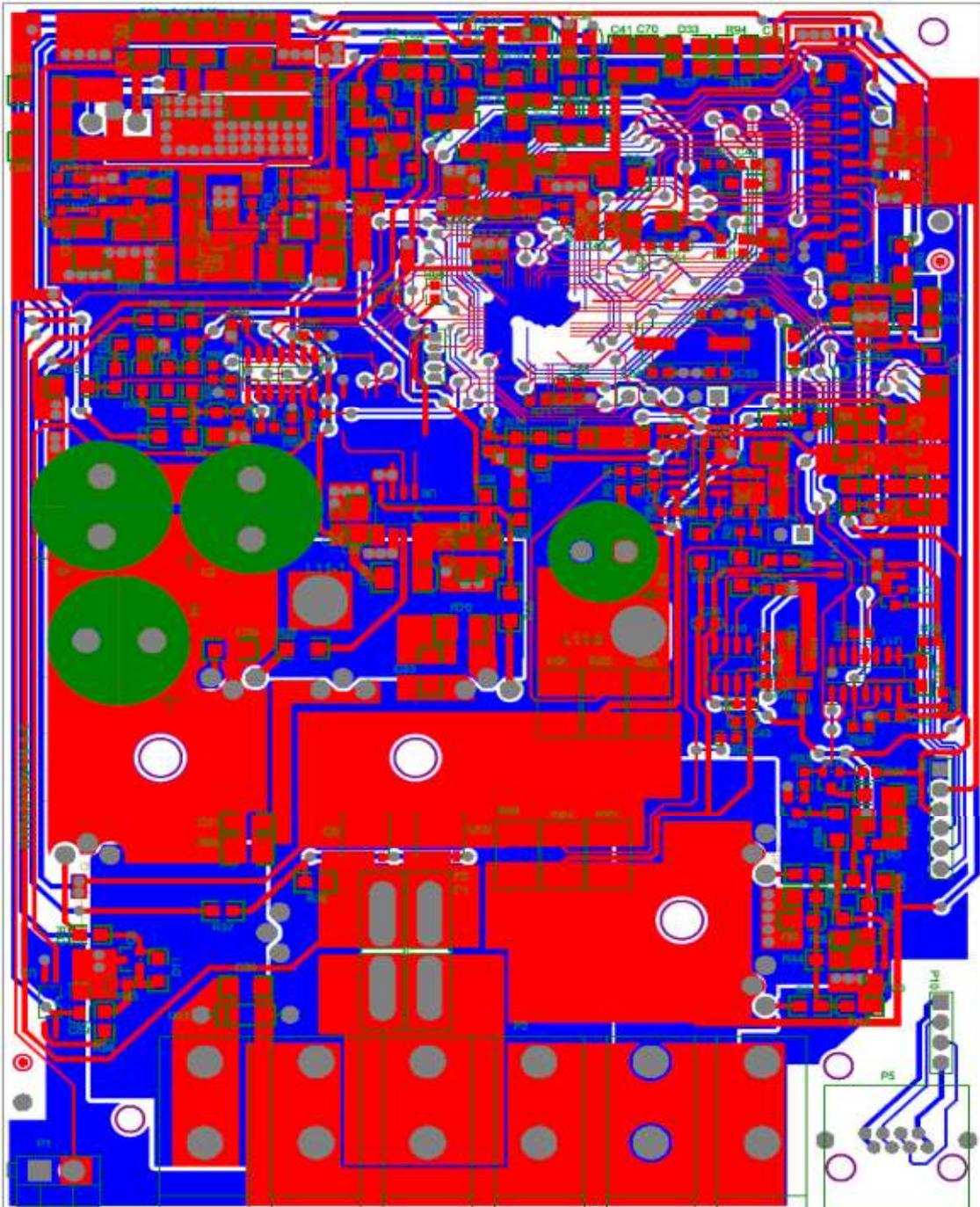
**Illustration 4d- PCB**  
XTRA3215\*\*\*\* series



**7.0 Illustrations**

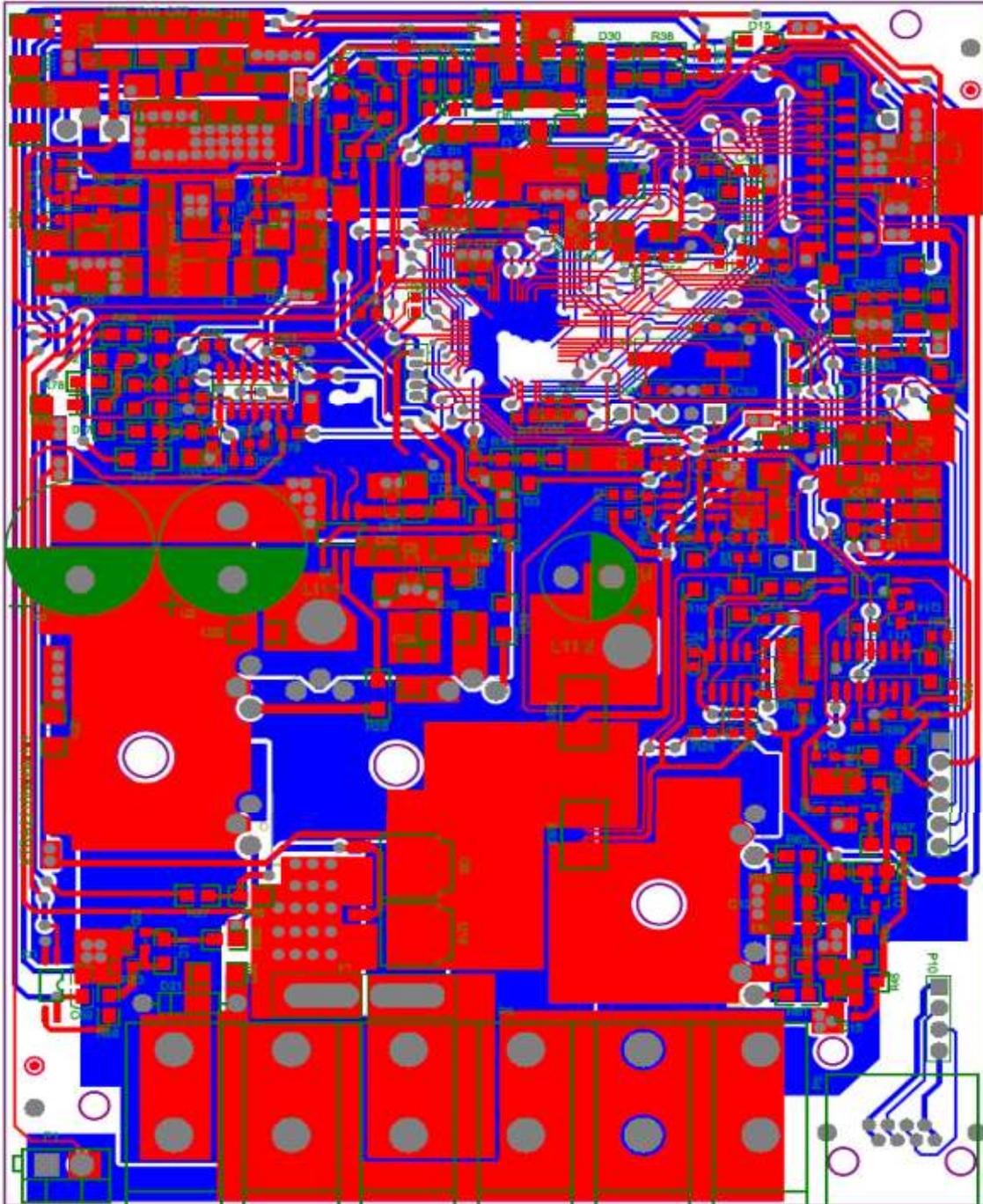
**Illustration 4e - PCB**

XTRA3210\*\*\*\* series



## 7.0 Illustrations

**Illustration 4f** - PCB  
XTRA2210\*\*\*\* series





**7.0 Illustrations**

**Illustration 5 - manual**



**XTRA N Series**

—MPPT Solar Charge Controller

**User Manual**



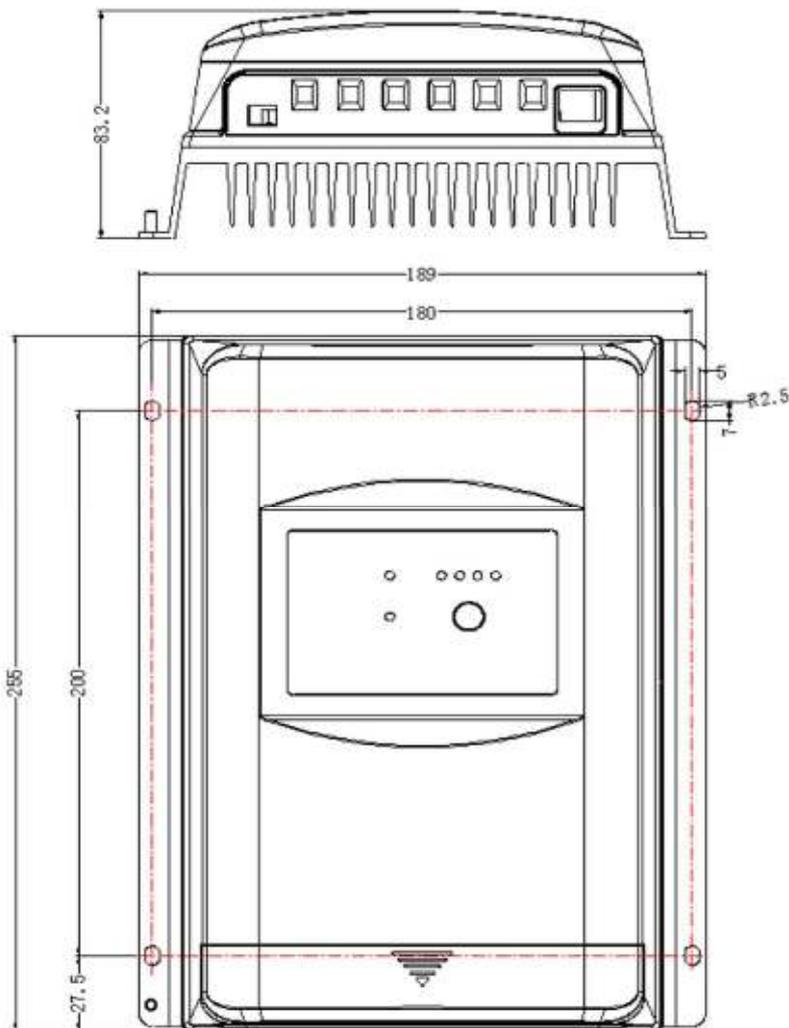
**Models:**

XTRA1206N/XTRA2206N  
XTRA1210N/XTRA2210N  
XTRA3210N/XTRA4210N  
XTRA3215N/XTRA4215N  
XTRA3415N/XTRA4415N

**7.0 Illustrations**

**Illustration 5a - manual**

**XTRA4415N (Unit: mm)**



**Any changes without prior notice!**

**Version number: 1.5**

| <b>8.0 Test Summary</b>   |                                    |                           |                               |
|---|------------------------------------|---------------------------|-------------------------------|
| Evaluation Period   | 2018-12-24 to 2019-04-29           |                           | Project No. 18110223SHA       |
| Sample Rec. Date  | 24-Dec-2018                        | Condition Prototype       | Sample ID. 2018-12-24-001~006 |
| Test Location   | Intertek Testing Services Shanghai |                           |                               |
| Test Procedure  | Testing Lab                        |                           |                               |
| Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria. |                                    |                           |                               |
| The following tests were performed:   |                                    |                           |                               |
| Test Description  | UL 1741:2010 Ed.2+R:15Feb2018      | CSA C22.2#107.1:2016 Ed.4 |                               |
| Maximum-Voltage Measurements  | 42                                 | --                        | --                            |
| Temperature   | 43                                 | 6.3                       | --                            |
| Dielectric Voltage-Withstand Test   | 44                                 | 6.5                       |                               |
| Output Power Characteristics - Output Rating  | 45.2                               | 6.2.3                     | --                            |
| Output Power Characteristics - DC Input Range &Rating   | 45.3                               | 6.2.3                     | --                            |
| Abnormal Tests - Output Overload Test   | 47.2                               | 6.7                       | --                            |
| Abnormal Tests - Short Circuit Test   | 47.3                               | 13.4.2                    | --                            |
| Abnormal Tests - DC Input Miswiring Test  | 47.4                               | 13.4.3                    | --                            |
| Abnormal Tests - Component Short and Open Circuit   | 47.6                               | 14.3.7                    | --                            |
| Grounding Impedance Tests   | 48                                 | 4.23                      | --                            |
| Static Load   | 59                                 | --                        | --                            |
| Normal Operations   | 72                                 | 15.3.2                    | --                            |
| Connection Sequence   | 75                                 | --                        | --                            |
| Input and output faults   | 76.2                               | 15.3.5                    | --                            |
| Charge controller miswiring   | 76.3                               | 15.3.6                    | --                            |
| Low-voltage disconnectDisconnect  | 76.4                               | 15.3.4                    |                               |
| Resistance to impact  | --                                 | 6.12                      | --                            |
| Securement of components  | --                                 | 6.16                      | --                            |

| <b>8.1 Signatures</b>  |                          |              |                          |
|--|--------------------------|--------------|--------------------------|
| A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the standards indicated in Section 1.0. |                          |              |                          |
| Completed by:  | William Liu              | Reviewed by: | Sleif Sui                |
| Title:   | Engineer                 | Title:       | Reviewer                 |
| Signature:   | <i>Signature on file</i> | Signature:   | <i>Signature on file</i> |

**9.0 Correlation Page For Multiple Listings**

The following products, which are identical to those identified in this report except for model number and Listee name, are authorized to bear the ETL label under provisions of the Intertek Multiple Listing Program.

|              |   |
|--------------|---|
| BASIC LISTEE | BEIJING EPSOLAR TECHNOLOGY CO., LTD.  |
| Address      | NO.228, BLOCK A, 2ND FLOOR, BLDG 1, NO 3 STREET, SHANGDI XINXI CHANYE JIDI, HAIDIAN DISTRICT, BEIJING |
| Country      | China   |
| Product      | MPPT Solar Charge Controller  |

|   |                     |                          |                     |  |  |
|---|---------------------|--------------------------|---------------------|--|--|
| MULTIPLE LISTEE 1   | None                |                          |                     |  |  |
| Address   |                     |                          |                     |  |  |
| Country   |                     |                          |                     |  |  |
| Brand Name  |                     |                          |                     |  |  |
| ASSOCIATED MANUFACTURER   |                     |                          |                     |  |  |
| Address   |                     |                          |                     |  |  |
| Country   |                     |                          |                     |  |  |
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| MULTIPLE LISTEE 1 MODELS  | BASIC LISTEE MODELS |                          |                     |  |  |
|   |                     |                          |                     |  |  |

|   |                     |                          |                     |  |  |
|---|---------------------|--------------------------|---------------------|--|--|
| MULTIPLE LISTEE 2   | None                |                          |                     |  |  |
| Address   |                     |                          |                     |  |  |
| Country   |                     |                          |                     |  |  |
| Brand Name  |                     |                          |                     |  |  |
| ASSOCIATED MANUFACTURER   |                     |                          |                     |  |  |
| Address   |                     |                          |                     |  |  |
| Country   |                     |                          |                     |  |  |
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| MULTIPLE LISTEE 2 MODELS  | BASIC LISTEE MODELS |                          |                     |  |  |
|   |                     |                          |                     |  |  |

|   |                     |                          |                     |  |  |
|---|---------------------|--------------------------|---------------------|--|--|
| MULTIPLE LISTEE 3   | None                |                          |                     |  |  |
| Address   |                     |                          |                     |  |  |
| Country   |                     |                          |                     |  |  |
| Brand Name  |                     |                          |                     |  |  |
| ASSOCIATED MANUFACTURER   |                     |                          |                     |  |  |
| Address   |                     |                          |                     |  |  |
| Country   |                     |                          |                     |  |  |
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| MULTIPLE LISTEE 3 MODELS  | BASIC LISTEE MODELS |                          |                     |  |  |
|   |                     |                          |                     |  |  |

## 10.0 General Information

The Applicant and Manufacturer have agreed to produce, test and label ETL Listed products in accordance with the requirements of this Report. The Manufacturer has also agreed to notify Intertek and to request authorization prior to using alternate parts, components or materials.

### COMPONENTS

Components used shall be those itemized in this Intertek report covering the product, including any amendments and/or revisions.

### LISTING MARK

The ETL Listing mark applied to the products shall either be separable in form, such as labels purchased from Intertek, or on a product nameplate or other media only as specifically authorized by Intertek. Use of the mark is subject to the control of Intertek.

The mark must include the following four items:

- 1) applicable country identifiers "US" and/or "C" or "US", "C" and "EU"
- 2) the word "Listed" or "Classified" or "Recognized Component" (whichever is appropriate)
- 3) a control number issue by Intertek
- 4) a product descriptor that identifies the standards used for certification. Example:

**For US standards**, the words, "Conforms to" shall appear with the standard number along with the word, "Standard" or "Std." Example: "Conforms to ANSI/UL Std. XX."

**For Canadian standards**, the words "Certified to CAN/CSA Standard CXX No. XX." shall be used, or abbreviated, "Cert. to CAN/CSA Std. CXX No. XX."

Can be used together when both standards are used.

**Note: A facsimile must be submitted to Intertek, Attn: Follow-up Services for approval prior to use.**

The facsimile need not have a control number. A control number will be issued **after signed Certification Agreements** have been received by the Follow-up Services office, approval of the facsimile of your proposed Listing Mark, satisfactory completion of the Listing Report, and scheduling of a factory assessment in your facility.

### MANUFACTURING AND PRODUCTION TESTS

Manufacturing and Production Tests shall be performed as required in this Report.

### FOLLOW-UP SERVICE

Periodic unannounced audits of the manufacturing facility (and any locations authorized to apply the mark) shall be scheduled by Intertek. An audit report shall be issued after each visit. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the ETL mark with the requirements of this Report and the Certification Agreement.
3. Manufacturing changes.
4. Performance of specified Manufacturing and Production Tests.

In the event that the Intertek representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the ETL Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

### **10.1 Evaluation of Unlisted Components**

Because Unlisted Components are uncontrolled, and they do not fall under a third party follow up program, Intertek may require these components to be tested and/or evaluated at least once annually, more often for certain components, as part of the independent certification process. The Unlisted Components in Section 5.0 require testing and/or evaluation as indicated.

**Note to Intertek Follow Up Inspector: The Component Evaluation Center, CEC, will notify you in writing when these components must be selected and sent to the CEC for re-evaluation**

Ship the samples to:  
Intertek Testing Services Shanghai Limited  
ETL Component Evaluation Center  
Building No. 86, 1198 Qinzhou Road (North)  
Shanghai 200233, China  
Attn: Ms. Angela Han

Sample Disposition: Due to the destructive nature of the testing, all samples will be discarded at the conclusion of testing unless, the manufacturer specifically requests the return of the samples. The request for return must accompany the initial component shipment.

**11.0 Manufacturing and Production Tests**

The manufacturer agrees to conduct the following Manufacturing and Production Tests as specified:

**Required Tests**

Dielectric Voltage Withstand Test

**11.1 Dielectric Voltage Withstand Test**

Method

One hundred percent of production of the products covered by this Report shall be subjected to a routine production line dielectric withstand test.

The test shall be conducted on products, which are fully assembled. Prior to applying the test potential, all switches, contactors, relays, etc., should be closed so that all primary circuits are energized by the test potential. If all primary circuits cannot be tested at one time, then separate applications of the test potential shall be made.

The test voltage specified below shall be applied between primary circuits and accessible dead-metal parts. The test voltage may be gradually increased to the specified value but must be maintained at the specified value for one second or one minute as required.

Test Equipment

The test equipment shall incorporate a transformer with an essentially sinusoidal output, a means to indicate the applied test potential, and an audible and/or visual indicator of dielectric breakdown.

The test equipment shall incorporate a voltmeter in the output circuit to indicate directly the applied test potential if the rated output of the test equipment is less than 500VA.

If the rated output of the test equipment is 500VA or more, the applied test potential may be indicated by either:

- 1 - a voltmeter in the primary circuit;
- 2 - a selector switch marked to indicate the test potential; or
- 3 - a marking in a readily visible location to indicate the test potential for test equipment having a single test potential output.

In cases 2 and 3, the test equipment shall include a lamp or other visual means to indicate that the test potential is present at the test equipment output. All test equipment shall be maintained in current calibration.

**Products Requiring Dielectric Voltage Withstand Test:**

| <b>Product</b>  | <b>Test Voltage</b> | <b>Test Time</b> |
|---|---------------------|------------------|
| All products covered by this Report.  | 1300Vac             | 60 s             |
| Between PV& battery part to communication part ( only for isolated product) or<br>PV& battery part to enclosure | or<br>1714Vdc       | 60 s             |

| 12.0 Revision Summary  |                                   |         |      |   |
|--|-----------------------------------|---------|------|---|
| The following changes are in compliance with the declaration of Section 8.1: |                                   |         |      |   |
| Date/<br>Proj # Site ID  | Project Handler/<br>Reviewer      | Section | Item | Description of Change   |
| 21-Oct-2019  | William Liu                       | 1       | -    | Correction the standard " UL 1741 " from " Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources [UL 1741:2010 Ed.2(Supplement SA)+R:15Feb2018] " to " Inverters, Converters, Controllers And Interconnection System Equipment For Use With Distributed Energy Resources [UL 1741:2010 Ed.2+R:15Feb2018] ".<br>No evaluation to the standards needed. |
| 190901670SHA   | Sleif Sui                         | 1       | -    | Change the address of the Applicant from " NO.228,BLOCK A,2ND FLOOR,BLDG 1,NO 3 STREET, SHANGDIXINXI CHANYEJIDI, HAIDIAN, BEIJING" to " NO.228, BLOCK A, 2ND FLOOR, BLDG 1, NO 3 STREET, SHANGDI XINXI CHANYE JIDI, HAIDIAN DISTRICT, BEIJING ".<br>No evaluation to the standards needed.  |
|  |                                   | 1       | -    | Change the name of the Manufacturer from " BEIJING EPSOLAR TECHNOLOGY CO., LTD. SHENZHEN BRANCH " to " HUIZHOU EPEVER TECHNOLOGY CO., LTD. ".<br>No evaluation to the standards needed.   |
|  |                                   | 1       | -    | Change the address of the Manufacturer from " BLDG. A3, NO.18, FOURTH INDUSTRIAL PARK, ZHULONGTIAN ROAD, SHUITIAN COMMUNITY, SHIYAN STREET, BAOAN DISTRICT, SHENZHEN, GUANGDONG PROVINCE " to " NO.103, DONGXING RD, CHENJIANG STREET ZHONGKAI HIGH-TECH ZONE, HUIZHOU ".<br>No evaluation to the standards needed.   |
|  |                                   | 1       | -    | Change the contact, phone, email of the Manufacturer from " Kuang Ping, 13798324580, kuangping@epever.com " to " Zhou xiangwu, 13534268706, zhouxiangwu@epever.com ".<br>No evaluation to the standards needed.   |
|  |                                   |         |      |   |
| 4-Sep-2020   | William Liu<br><i>William Liu</i> | 4       | 9    | Add a new model ISO1410B of Nonoptical Isolating Devices For Communication board, manufactured by TEXAS INSTRUMENTS INCORPORATED.<br>No evaluation to the standards needed.   |
| 200801963SHA   | Sleif Sui<br><i>Sleif Sui</i>     | 4       | 9    | Add a new model CA-IS3082W of Nonoptical Isolating Devices For Communication board, manufactured by Shanghai Chipanalog Microelectronics Co. Ltd.<br>No evaluation to the standards needed.   |

| <b>12.0 Revision Summary</b>   |                              |         |      |   |
|--|------------------------------|---------|------|---|
| The following changes are in compliance with the declaration of Section 8.1: |                              |         |      |   |
| Date/<br>Proj # Site ID  | Project Handler/<br>Reviewer | Section | Item | Description of Change   |
|  |                              | 4       | 12   | Update the fuse model from "AB19" to "AB series" and the technical data and securement means from " 19.0 x 18.8 x 5.1mm. interrupting1000A.<br>32VDC, 30A for model XTRA1206/10N、 3210/15N<br>32VDC, 35A for model XTRA2206/10N<br>32VDC, 40A for model XTRA4210/15N "<br>to " Interrupting1000A.<br>32VDC Min, 30A for model XTRA1206/10N、 3210/15N<br>32VDC Min, 35A for model XTRA2206/10N<br>32VDC Min, 40A for model XTRA4210/15N<br>58VDC Min, 30A for model XTRA3415N.<br>58VDC Min, 40A for model XTRA4415N "<br>No evaluation to the standards needed. |
|  |                              | 6       | 8    | Change the markings from " manufacturer's name " to " applicant's name."<br>No evaluation to the standards needed.  |
|  |                              | 6       | 10   | Delete " When products saled on Canada market, French user manual shall be provided. "<br>No evaluation to the standards needed.  |
|  |                              |         |      |   |
|  |                              |         |      |   |