

## Product Features

- Dual 7.5kW Pulsed Transmitter combined by 4 HPAs Transmitter
- Frequency from 2.7GHz to 3.1GHz
- Using High-Efficiency GaN Transistor
- BIT & Control by RS-422, LVDS
- WR-284 Waveguide Output
- Forced Air Cooling

## Applications

- Airport Surveillance Radar
- Weather Radar
- Industrial and Scientific
- Instrumentation Amplifier
- Defense Radar



## Description

The RRT27317K5-690 Transmitter, in which state of the art SiC GaN technology is used, is designed for the high-power radar application at the frequency of 2700 ~ 3100 MHz. The transmitter is majorly used in the areas of the airport, weather, maritime, defense, industrial, and scientific applications. This GaN-based Solid State Transmitter replaces industrial magnetrons or other vacuum type tubes which have been currently used in high power applications. The forced air-cooling in each module is used for user convenience, easy and quick maintenance. The redundant architecture was applied PSUs, preventing single-point failures. HPAs in the transmitter sub-system are parallelized for secure operation in the event of an HPA fault condition, also.

## Electrical Specifications @ $V_{ac} = +380V$ , $T_o = 25^{\circ}C$ , 50Ω Input System

| PARAMETER                           | UNIT | MIN.                                      | TYP. | MAX.                             | SYMBOL       |
|-------------------------------------|------|---|------|----------------------------------|--------------|
| Operating Frequency                 | GHz  | 2.7                                       | -    | 3.1                              | $f_o$        |
| Operating Bandwidth                 | MHz  | -   | 400  | -                                | BW           |
| Output Pulse Peak Power             | kW   | 7.5                                       | -    | -                                | $P_o$        |
| Input Pulse Power                   | dBm  | -2  | 0    | 2                                | $P_i$        |
| Gain Variation                      | dB   | -   | -    | 2                                | $\Delta G_p$ |
| Duty Cycle                          | %    | -   | -    | 10                               | DC           |
| Pulse Width                         | us   | 1   | -    | 100                              | PW           |
| Amplitude Pulse Droop               | dB   | -   | -    | 1.0                              | Droop        |
| Spurious                            | dBc  | -60                                       | -    | -                                | Spur         |
| Rise / Fall Time                    | ns   | -   | -    | 100                              | $T_r / T_f$  |
| VSWR                                | -    | -   | -    | 2.0 : 1                          | VSWR         |
| Power Consumption @ 10%             | kW   | -   | 6    | -                                | $P_c$        |
| Operating Voltages                  | VAC  | +208VAC 3P3W or +380VAC 3P4W              |      |                                  |              |
| Control Interface                   | -    | RS422 or LVDS                             |      |                                  |              |
| Protection & Warning Alarm<br>(BIT) | -    | DC Fail Alarm                             |      | In case of exceeding $50 \pm 3V$ |              |
|                                     | -    | Over Pulse Duty Cycle Protection          |      | In case of over 10%              |              |
|                                     | -    | FAN Alarm                                 |      | Failure Alarm                    |              |
|                                     | -    | Driver Amp. Alarm                         |      | Low Input/ output Power Alarm    |              |
|                                     | -    | HPA                                       |      | Low Output Power Alarm           |              |
|                                     | -    | Over Temperature Shutdown for fault units |      | Temperature monitoring.          |              |

### Environmental Specifications

| PARAMETER             | UNIT | VALUE     |
|-----------------------|------|-----------|
| Operating Temperature | °C   | -10 ~ +45 |
| Storage Temperature   | °C   | -30 ~ +60 |
| Humidity              | RH % | 0 ~ 95    |

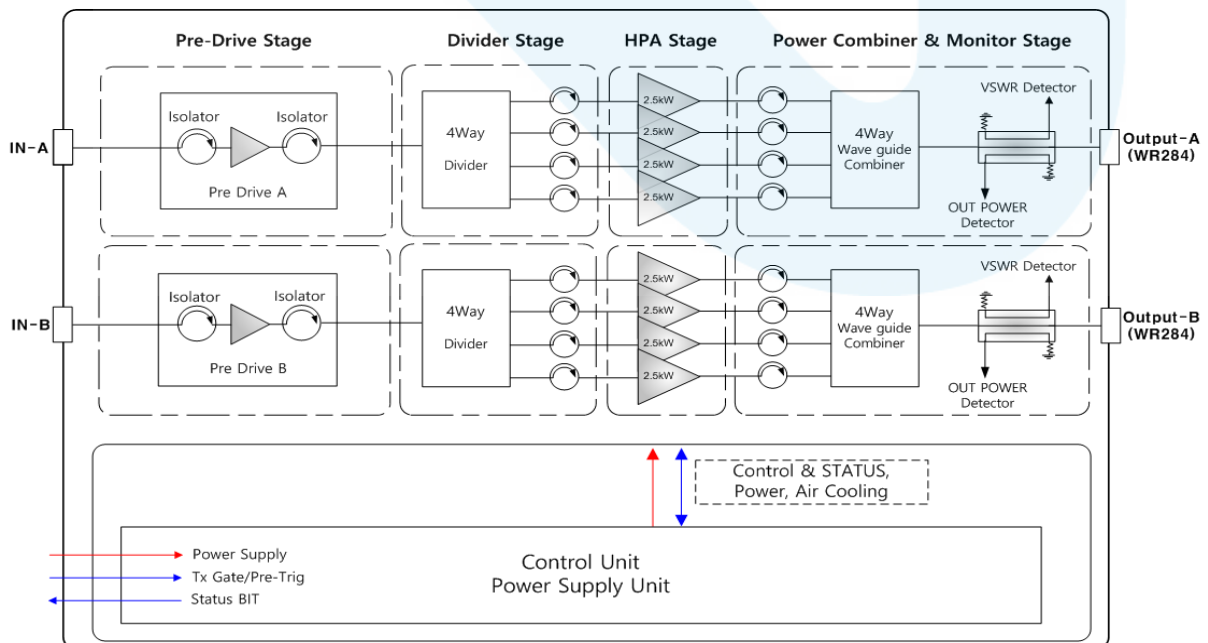
### Power Supply Specifications

| DESCRIPTION        | PERFORMANCE VALUE            |
|--------------------|------------------------------|
| Input AC Voltage   | +208VAC 3P3W or +380VAC 3P4W |
| Input AC Frequency | 47 - 63 Hz                   |

### Mechanical Specifications

| PARAMETER                | UNIT | VALUE                                      |
|--------------------------|------|--|
| Dimensions               | mm   | 806 × 1852 × 1205 (Width × Height × Depth) |
| Weight                   | kg   | 680  |
| RF Input Connector       | -    | N-Type (Female)                            |
| RF Output Connector      | -    | WR-284(Flange, CPR284F)                    |
| Output Monitor Connector | -    | N-Type (Female)                            |
| Cooling                  | -    | Forced Air Cooling by Fans                 |

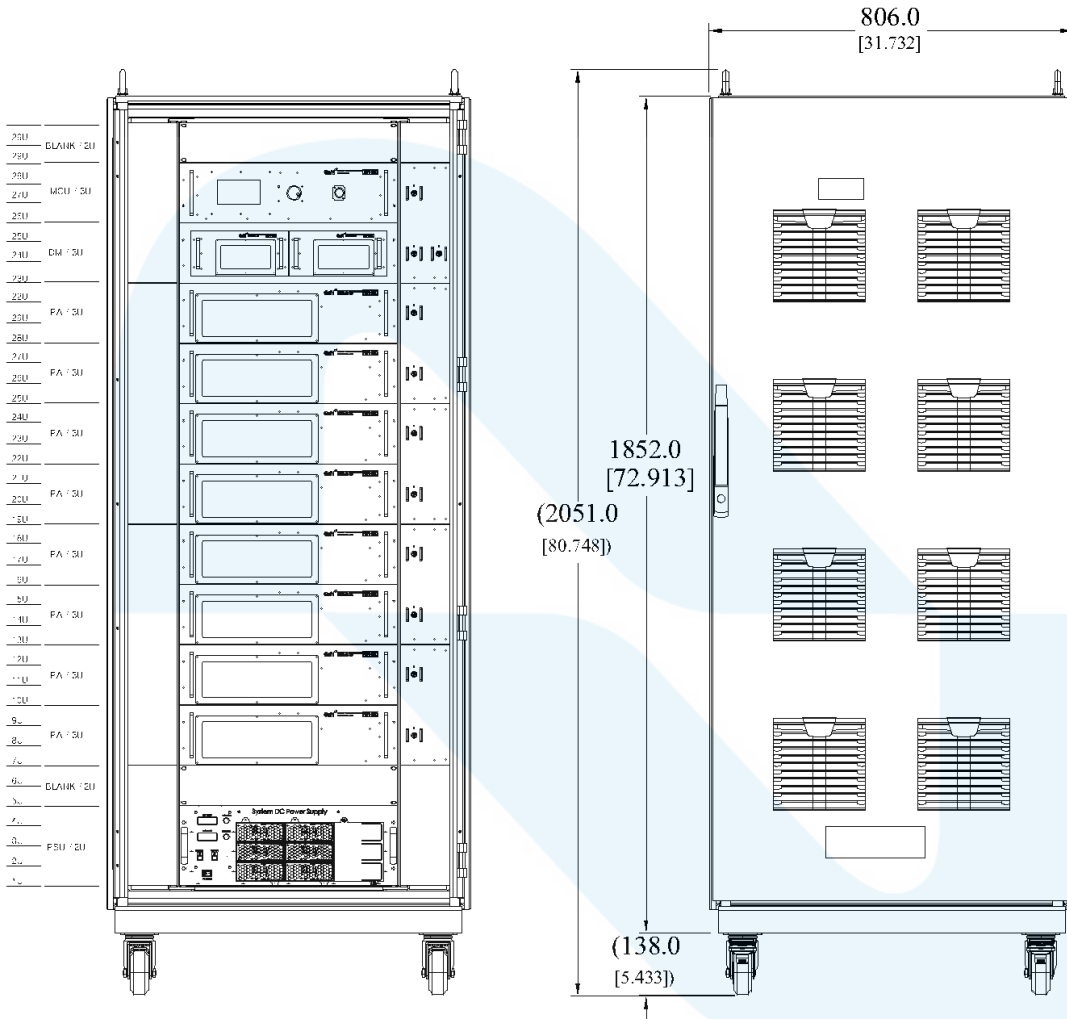
### Block Diagram



Note : Block diagram may be subject to change without notice.

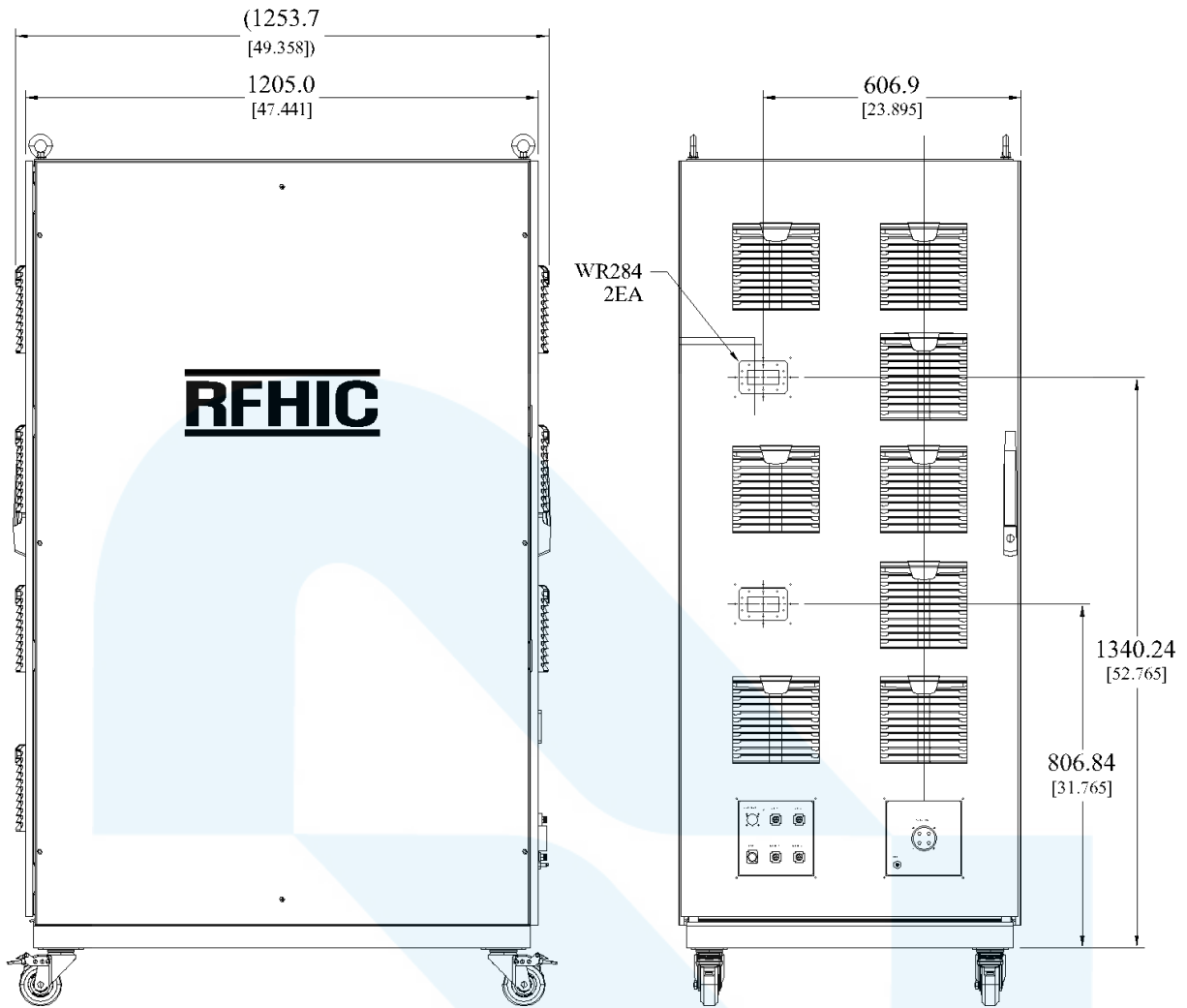
## Mechanical Drawing

unit: mm  
[inch]



# S-BAND 7.5kW Transmitter

# RRT27317K5-690



### Note

Dimensions and Connectors may be subject to change without notice.  
D-sub connectors, rf cables, and power cables are not included in this picture.

**Revision History**

| Part Number    | Release Date                | Version | Description                  | Data Sheet Status |
|----------------|-----------------------------|---------|------------------------------|-------------------|
| RRT27317K5-690 | 15 <sup>th</sup> Sept. 2020 | 0.1     | Initial Release of Datasheet | Preliminary       |
| RRT27317K5-690 | 17 <sup>th</sup> Jan. 2024  | 0.2     | Dimension size revised       |                   |
|                |                             |         |                              |                   |
|                |                             |         |                              |                   |



**Certification**

This product is manufactured by a company that is certified for the AS9100D quality management system.

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