

## ◆ Product Description

MPAC-180400-50E is an 18-40GHz high accuracy programmable phase & amplitude controller. It can change phase and amplitude of RF signal with minimum step 1° and 0.1dB, dynamic range 360° and 50dB. The absolute accuracy is  $\pm 2.5^\circ$  and  $\pm 0.2\text{dB}$  Max. from ideal setup of any phase and amplitude combination at any frequency.

The product size is 227x114x50mm with 100-240 VAC. It can be controlled through USB and Ethernet with user-friendly GUI. The unit provides DLL for users to program.

The applications include 5G signal simulator, massive MIMO channel simulation, 5G Antenna OTA test, accurate beamforming producing and algorithm research, phase array antenna test, complicated signals environment producing etc.

Besides 18-40GHz system, there are different models can cover 0.5-2GHz, 1.7-6GHz, 6-18GHz and 24~40GHz respectively.

## ◆ Key Features

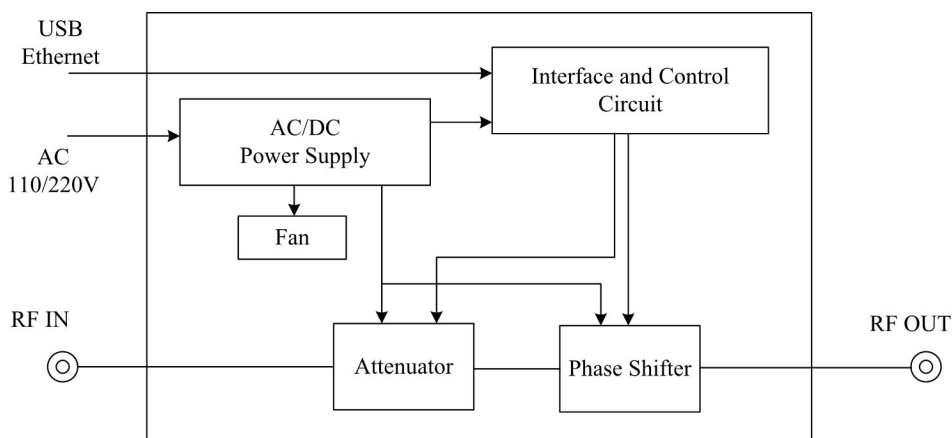
- Wide frequency range, one unit covers 18 to 40GHz
- Fine resolution, phase 1° and amplitude 0.1dB
- Super high absolute accuracy, phase  $\pm 2.5^\circ$  Max,  $\pm 1^\circ$  Typ., amplitude  $\pm 0.2\text{dB}$  Max.,  $\pm 0.1\text{dB}$  Typ.
- Low insertion loss: 27dB Max.
- USB/Ethernet control, Easy to install and use
- User friendly Graphical User Interface for any Windows® 32 or 64 bit computer

## ◆ Specifications

| Electrical Specifications at 23±3°C         |                   |               |         |                     |                     |
|---------------------------------------------|-------------------|---------------|---------|---------------------|---------------------|
| Parameter                                   | Frequency Range   | Conditions    | Min.    | Typ.                | Max.                |
| Attenuation Range <sup>1</sup>              | 18-40 GHz         | 0.1 dB Step   | 0 dB    |                     | 50 dB               |
| Attenuation Step                            |                   |               | 0.1 dB  |                     |                     |
| Attenuation Accuracy                        |                   | @ 0-50 dB Att |         | $\pm 0.2\text{ dB}$ | $\pm 0.4\text{ dB}$ |
| Phase Shift Range                           |                   | 1° Step       | 0°      |                     | 360°                |
| Phase Shift Step                            |                   | 0-360°        | 1°      |                     |                     |
| Phase Accuracy                              |                   |               |         | $\pm 1^\circ$       | $\pm 2.5^\circ$     |
| Insertion Loss                              |                   | @ 0 dB Att    |         |                     | 27 dB               |
| VSWR                                        |                   |               |         |                     | 2.5:1               |
| Input Power of Input / Output Port          |                   |               |         |                     | 20/10 dBm           |
| Survival Input Power of Input / Output Port |                   |               |         |                     | 30/23 dBm           |
| Supply Voltage                              |                   |               | 100 VAC |                     | 240 VAC             |
| Control Mode                                | USB / Ethernet    |               |         |                     |                     |
| RF In / Out Connector                       | 2.92mm-F          |               |         |                     |                     |
| Size                                        | 227 x 114 x 50 mm |               |         |                     |                     |
| Operating Temperature                       | 0°C to 50°C       |               |         |                     |                     |
| Storage Temperature                         | -20°C to 70°C     |               |         |                     |                     |

Note 1: Attenuation range can be customized up to 120dB Max.

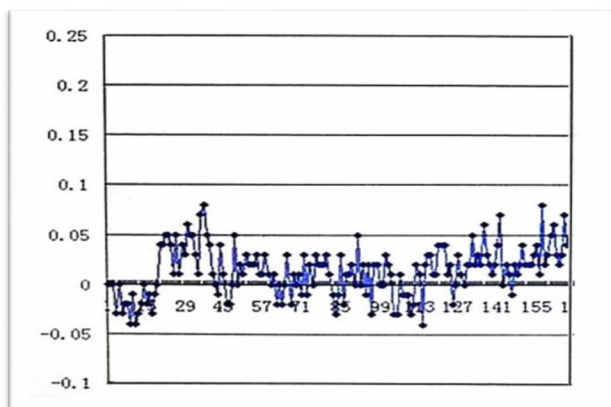
## ◆ Schematic Diagram



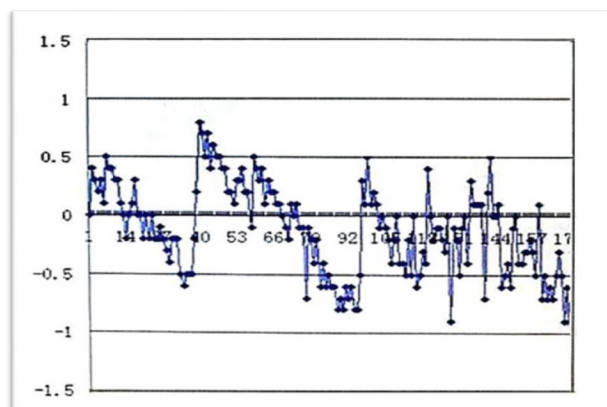
The input and output is reciprocal

## ◆ Typical Tested Curve

### Phase & Amplitude Control Accuracy



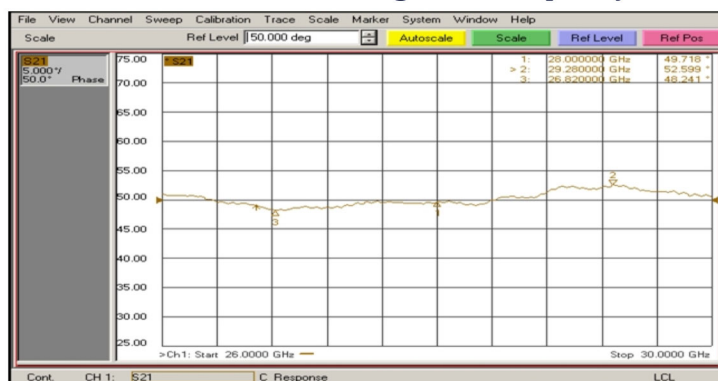
Amplitude accuracy tested data@ 28GHz,  
Any combination of phase & attenuation  
among 0~50dB & 0~360°



Phase accuracy tested data@28GHz,  
Any combination of phase & attenuation  
among 0~50dB & 0~360°

The X-coordinate shows the number of random sampled points within 0~50 dB & 0-360°

### 26~40GHz Phase Change over Frequency



Amplitude & Phase Set: 0dB, 50°

Phase Tested (Max: 52.599° Min: 48.241° Max-Min: 4.358°)