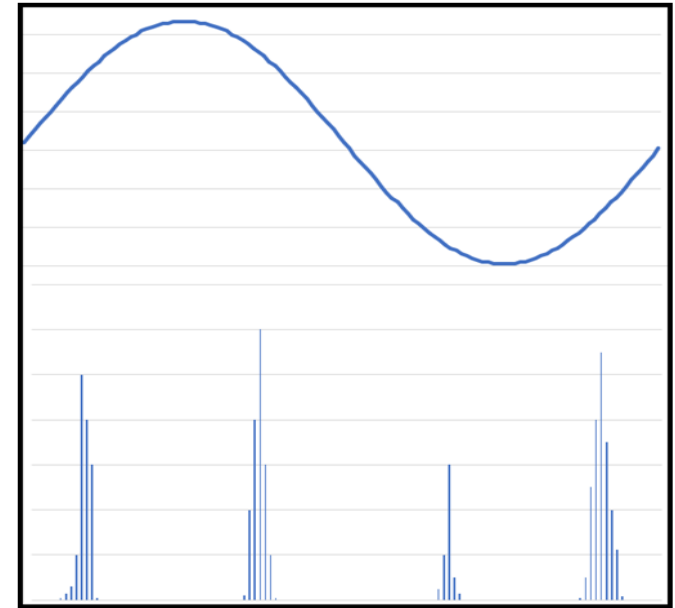
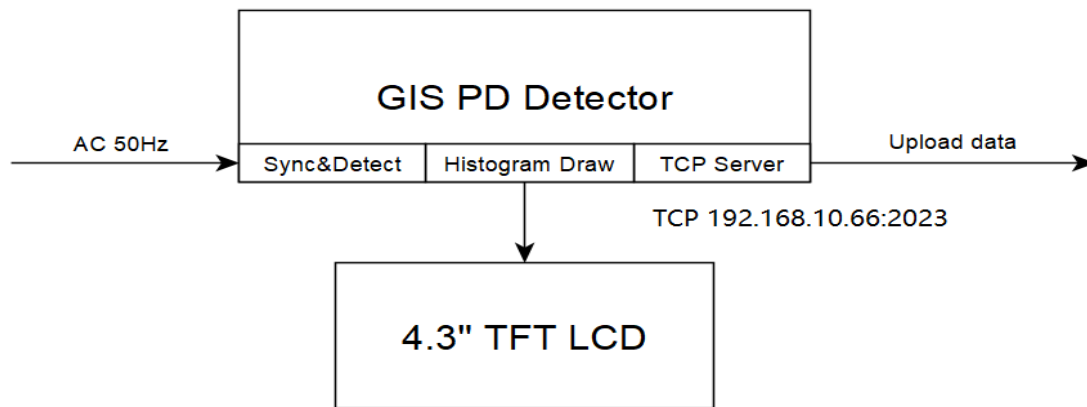


# GIS PD Detector Communication Protocol V0.1

## 1. Basic Topology



## 2. UART over TCP

### UART Packet Structure

Sync Head	Packet Length	AC 50Hz Phase Difference	Accumulated Photons Count	Total Gaps No.	Sub Gap No.	Time Interval	Checksum
2 bytes	2 bytes	2 bytes	2 bytes	2bytes	2 bytes	1 byte	1 byte

Description:

#### Sync Head:

Fixed data, 0x55 0xAA.

#### Packet Length:

The total length in byte units involves “AC 50Hz Phase Difference” + “Photons Count” + “Checksum”. (2 bytes length for future extension.)

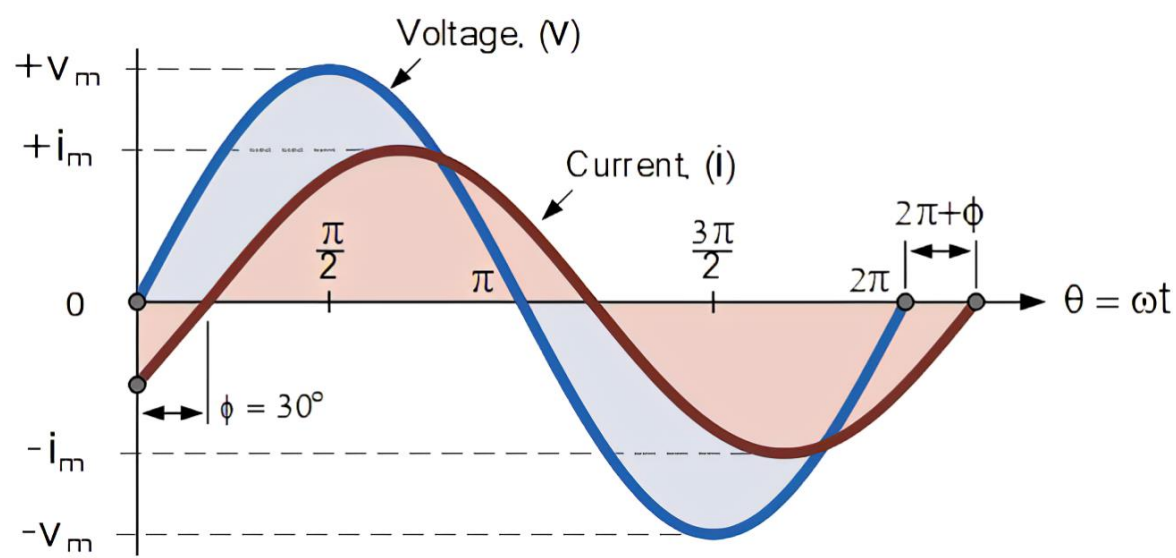
#### AC 50Hz Phase Difference:

The phase difference of one period, see more in the following figure.

For wide gaps, the possible values are 0°, 90°, 180°, 270°, and 360°.

For narrow gaps, the possible values are 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°, and 360°.

The entire 360°C can be divided indefinitely according to our needs.



## AC 50Hz Phase Difference Demonstration

**Accumulated Photons Count:** The photon pulse count accumulated in a fixed time interval.

**Total Gaps No:** Indicate how many gaps one sine wave contains.

**Sub Gap No:** Show sub gap number, range 0 ~ Total Gaps No. -1.

**Time Interval:** How long the accumulated Photons Count takes up, it’s maybe 100uS, 1mS, 10mS, 100mS, 1S, etc.

**Checksum:** The checksum value of “Sync Head” + “Packet Length” + “AC 50Hz Phase Difference” + “Accumulated Photon Count”.