

SP1 optimizer and SP1 gateway location installation manual



 **zigbee**



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SolarPilot Energy GmbH

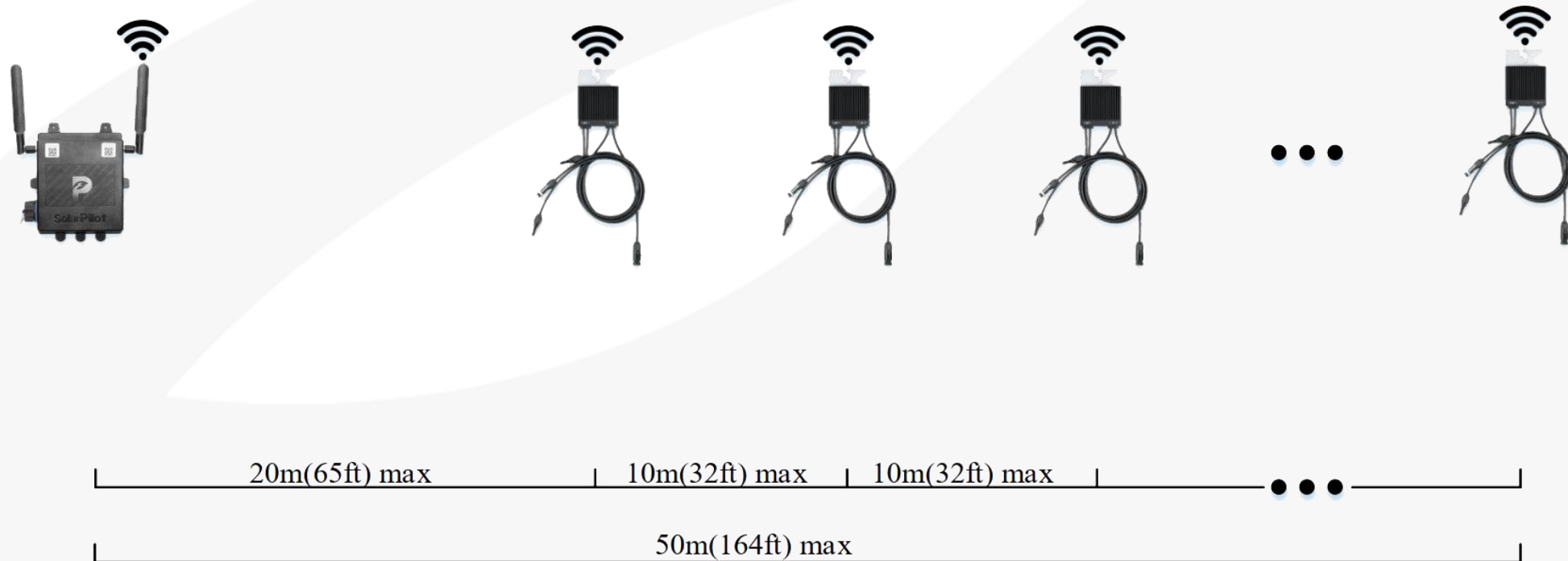
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Distance Requirements between Gateway and PV optimizer

The SP1 gateway and the SP1 PV optimizer use the Zigbee protocol for data communication and support mesh topology (MESH). The PV optimizers will select the optimal path to connect to the SP1 gateway based on factors such as signal strength, and have the advantages of self-organization and self-healing.

To ensure reliable communication of Zigbee, the location relationship between devices should be reasonably planned:

In the absence of obstructions, the maximum distance between the SP1 gateway and the nearest PV optimizer should not exceed 20m(65ft), the maximum distance to the farthest PV optimizer should not exceed 50m(164ft), and the maximum distance between PV optimizers should not exceed 10m(32ft), as shown below.



Recommended Layout of Gateway and PV optimizer

No gap between PV arrays

The optimal installation layout(Fig.1)

1. Each PV panel is fitted with PV optimizer.
2. One SP1 gateway can carry up to 50 SP1 optimizers
3. The gateway is placed at the center of the PV array, and the PV array radius does not exceed 50m (164ft).

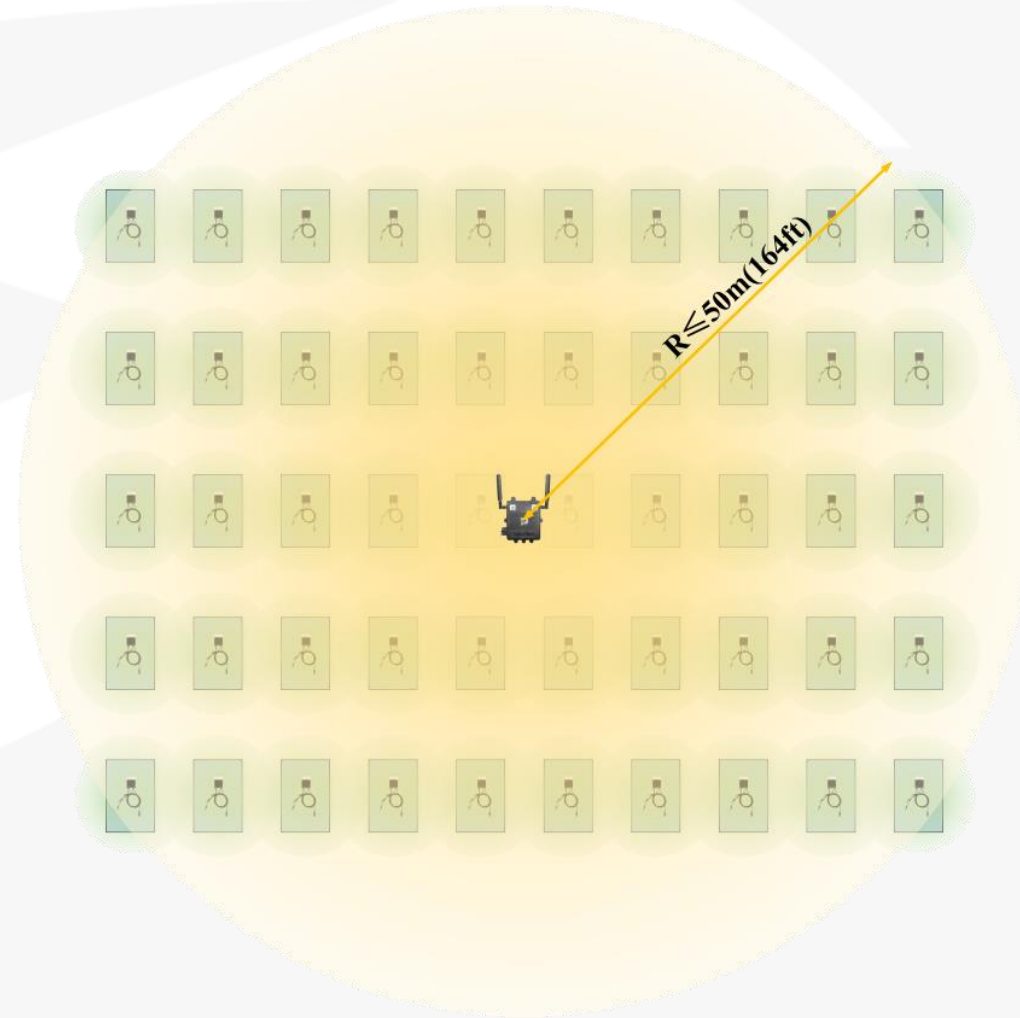


Fig.1

Recommended Layout of Gateway and PV optimizer

No gap between PV arrays

If the on-site environment does not support the optimal installation layout, the installation location of the SP1 gateway and the SP1 PV optimizer should follow the following general principles, as shown in Fig.2

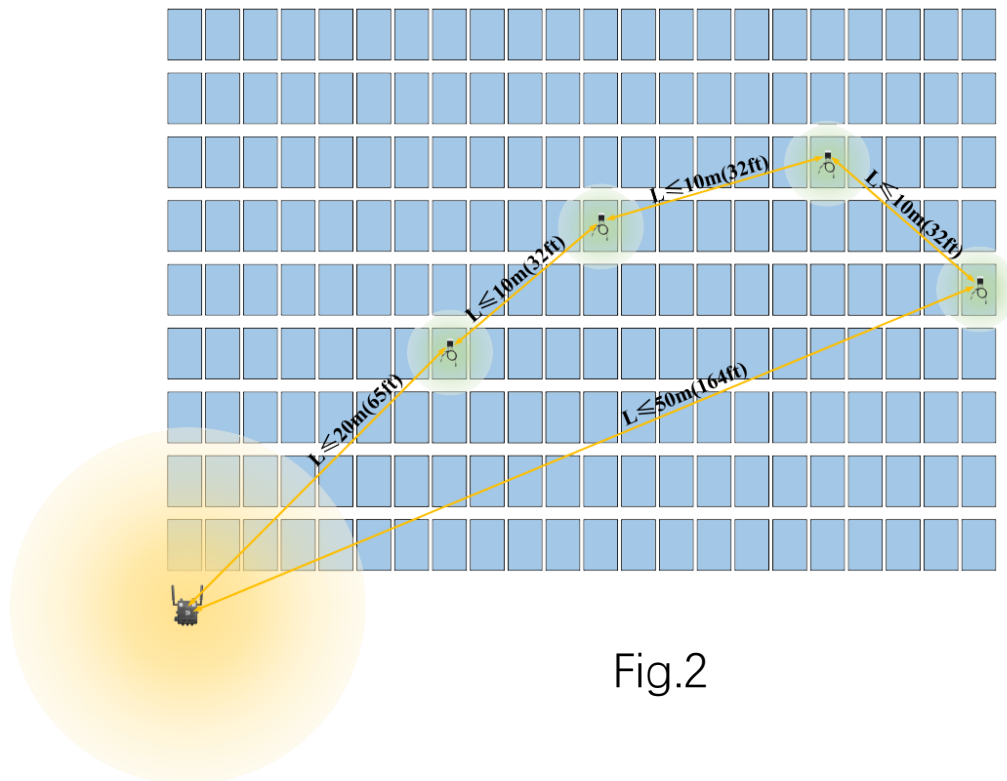


Fig.2

1. One SP1 gateway can carry up to 50 SP1 optimizers.
2. The maximum distance between the SP1 gateway and the nearest PV optimizer should not exceed 20m (65ft)
3. The maximum distance to the farthest PV optimizer should not exceed 50m(164ft)
4. The maximum distance between PV optimizers should not exceed 10m (32ft)

Recommended Layout of Gateway and PV optimizer

Gap between PV arrays

If the gap between PV array A and PV array B is greater than 10m(32ft), the transmission quality of the wireless signal will be affected, it is recommended that PV array A and PV array B use different gateways for communication.

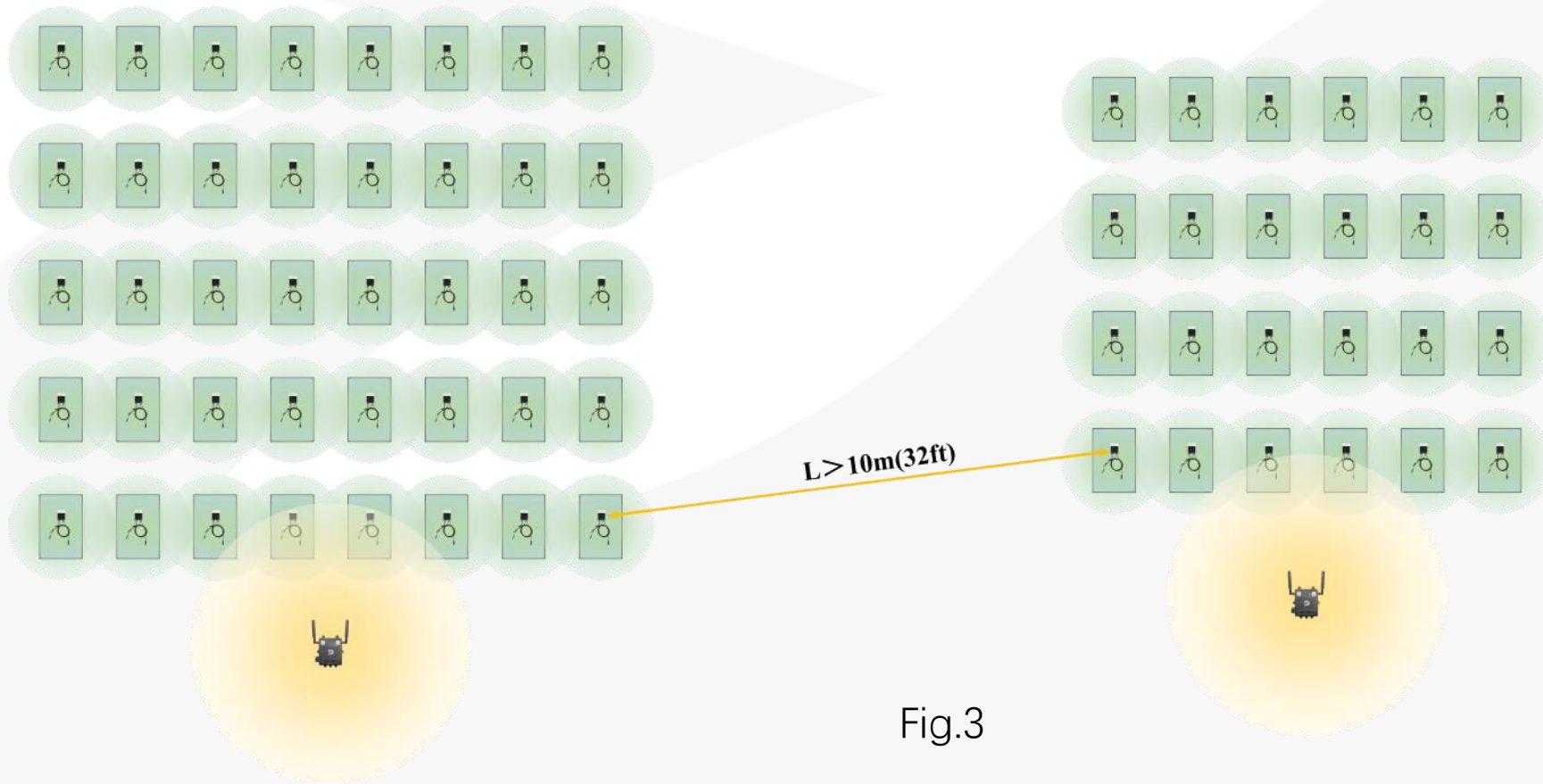


Fig.3

Recommended Layout of Gateway and PV optimizer

Obstructions between PV arrays

If there are obstructions such as solid walls, floor-to-ceiling windows, fully enclosed metal guardrails, etc. between PV arrays A and B, which will affect the transmission quality of wireless signals, it is recommended that PV arrays A and B use different gateways for communication.

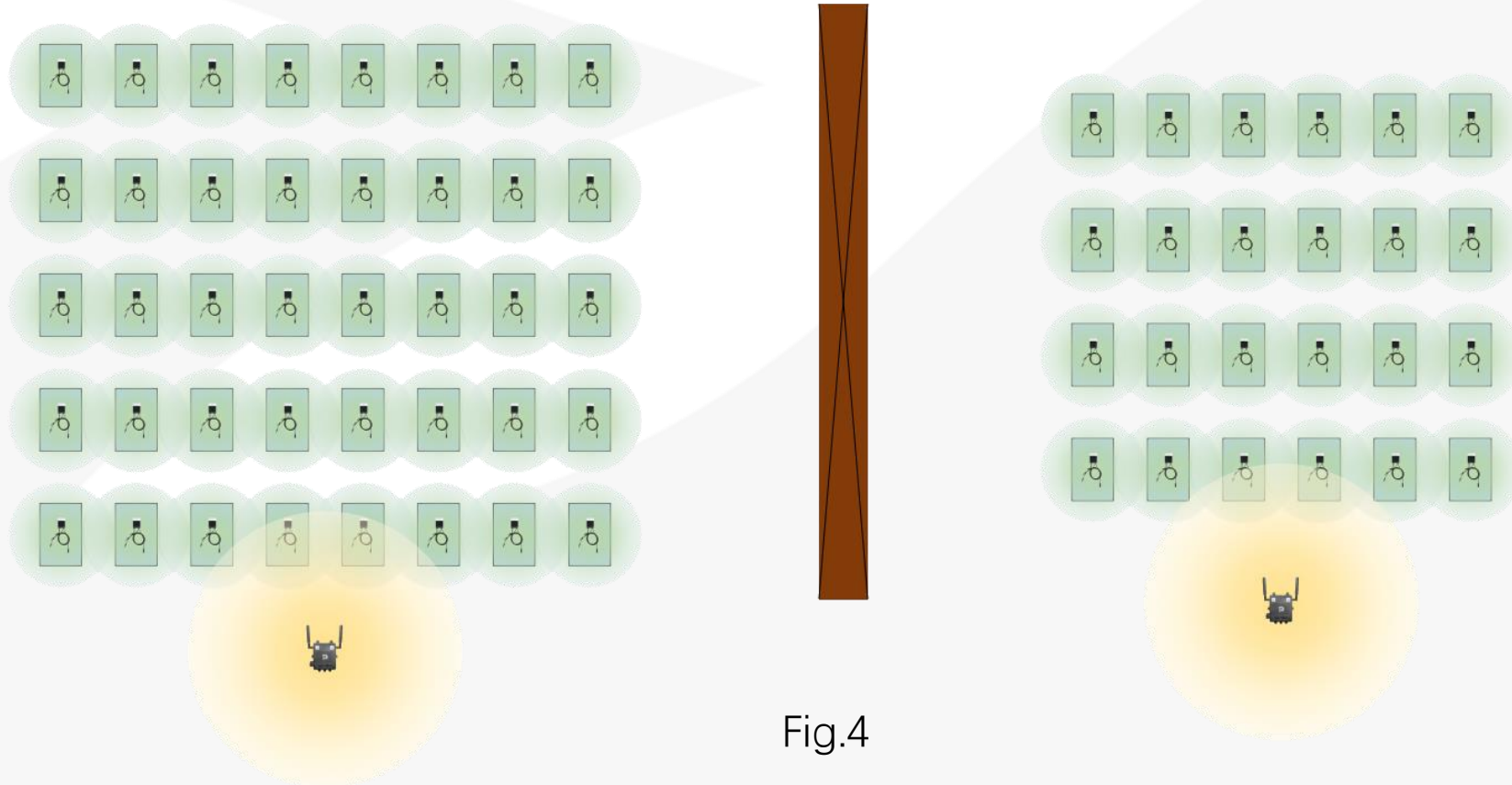


Fig.4

Recommended Layout of Gateway and PV optimizer

Other

If the roof is made of metal such as aluminum alloy and the distance to the PV optimizer does not exceed 0.2m (0.65ft)

- 1.The maximum distance between the SP4 gateway and the nearest PV optimizer should not exceed 10m (32ft)
- 2.The maximum distance to the farthest PV optimizer should not exceed 25m(82ft),
- 3.The maximum distance between PV optimizers should not exceed 5m (16ft).

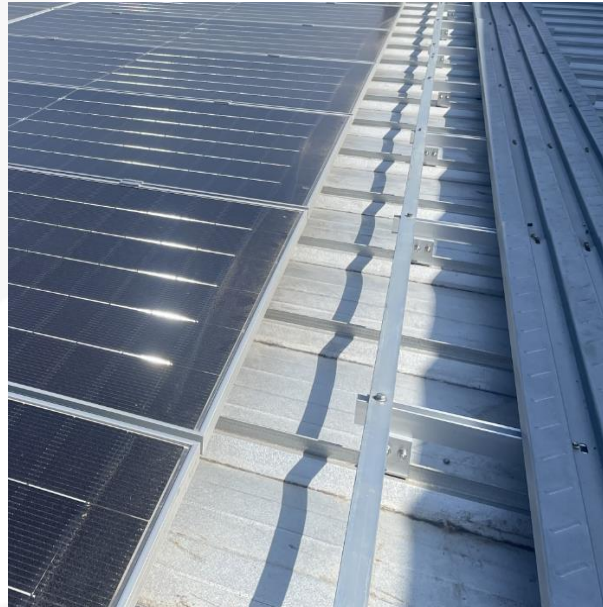


Fig.5



Fig.6