Perfect — here's a full **wiring diagram recap** for your project setup using:

- ✅ **ESP32 (DOIT DevKit V1)**
- ✅ **Two MAX485 modules** (for 2 inverters: Master & Slave)
- ✅ **Growatt SPF 5000 ES inverters** (connected individually via RS485 ports)
- ✅ **Bluetooth output only** (no WiFi)

🛠️ Complete Wiring Overview

🧠 ESP32 UART & GPIO Roles

ESP32 Pin	Function	MAX485 Module	Notes
GPIO16	UART2 RX (for Master)	R0 (Master)	Connected to inverter 1 TX (A/B)
GPIO17	UART2 TX (for Master)	DI (Master)	
GPIO13	UART1 RX (for Slave)	R0 (Slave)	Connected to inverter 2 TX (A/B)
GPIO14	UART1 TX (for Slave)	DI (Slave)	
GPIO4	DE & RE control (Master)	DE + RE (Master) → tied together	
GPIO5	DE & RE control (Slave)	DE + RE (Slave) → tied together	

ESP32 Pin	Function	MAX485 Module	Notes
3.3V or 5V	Power	VCC (both)	Use 5V if your MAX485 supports it
GND	Ground	GND (both)	MUST be shared with inverter GND

🔌 MAX485 ↔ RS485 (RJ45) Wiring

Each inverter has an RS485 port (RJ45). Typical Growatt RS485 A/B pinout:

RJ45 Pin	Label on Growatt	Connect to MAX485
Pin 4	RS485 A (+)	A terminal
Pin 5	RS485 B (–)	B terminal

⚠ **Always check your inverter's wiring label** near the port. If A/B seem swapped, just flip A/B and test.

🧭 Full Wiring Flow Summary

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```
ESP32          MAX485 (Master)         Growatt Inverter 1
------         ----------------        ---------------------
GPIO16  --->   RO                     (receives from inverter)
GPIO17  <---   DI                     (sends to inverter)
GPIO4   --->   DE + RE
GND     -----  GND                    -----  GND
5V      -----  VCC                    (if 5V logic supported)

           A  ----------------------  RS485 A (RJ45 Pin 4)
           B  ----------------------  RS485 B (RJ45 Pin 5)


ESP32          MAX485 (Slave)          Growatt Inverter 2
------         ----------------        ---------------------
GPIO13  --->   RO
GPIO14  <---   DI
GPIO5   --->   DE + RE
GND     -----  GND                    -----  GND
5V      -----  VCC

           A  ----------------------  RS485 A (RJ45 Pin 4)
           B  ----------------------  RS485 B (RJ45 Pin 5)
```

✅ Additional Notes

- **MAX485 Power:** Use **5V** if available for more stable signaling (3.3V *might* work, but some MAX485 modules need 5V).
- **GND:** Shared ground between ESP32, MAX485, and inverter is **crucial**.
- **Termination Resistor:** For long cable runs, a **120Ω resistor** across A and B at the end of the RS485 line is recommended (typically only on the inverter side).
- **No resistor needed** if cables are short and there's only one master+slave.