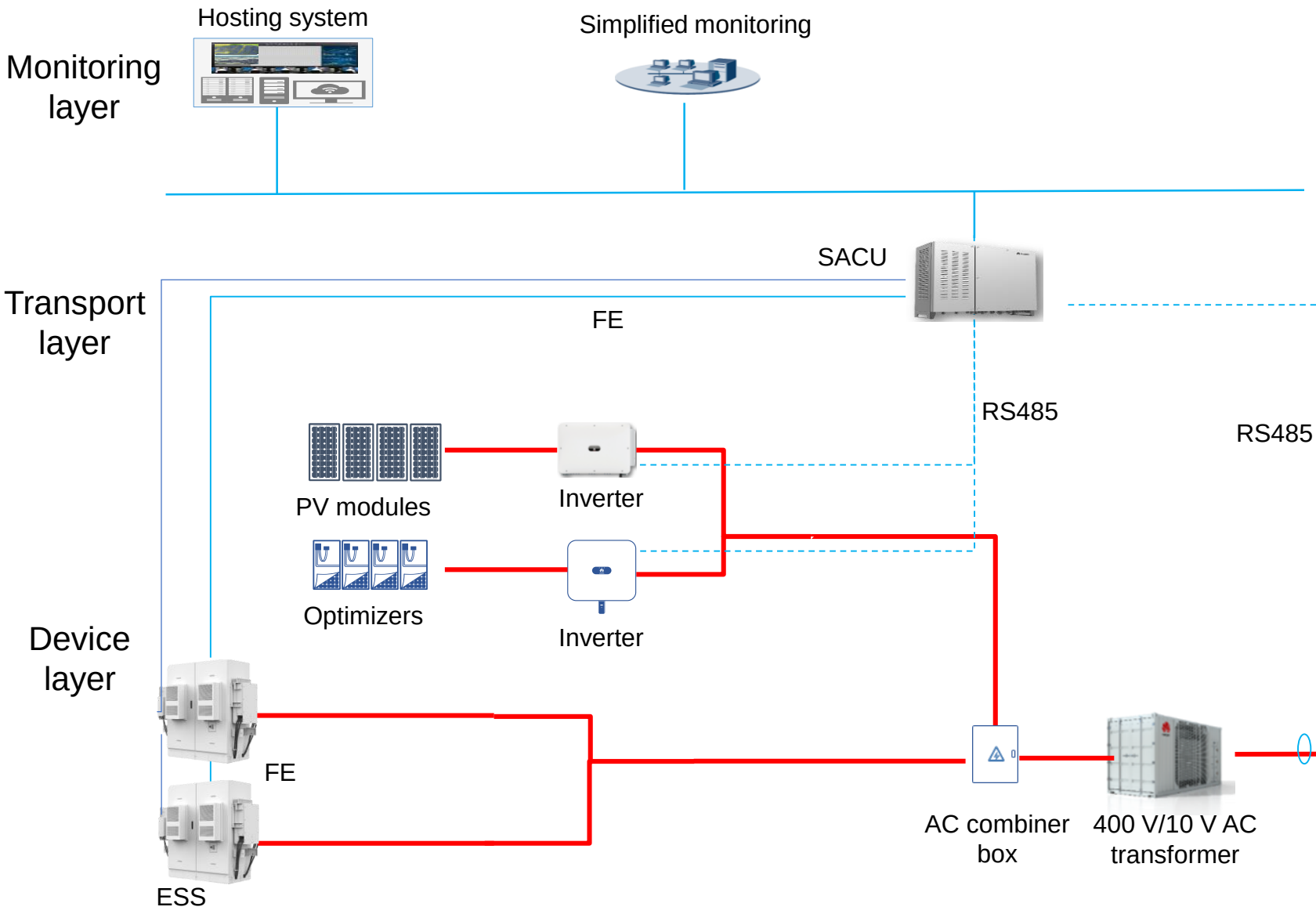
C&I ESS Communication Networking



Component	Model	Optimizer Adaptation	AC MBUS	RS485
Inverter	SUN2000-30–40KTL-M3	Support	Not supported	Support
	SUN2000-60–110KTL-M0	Not supported	Not supported	Support

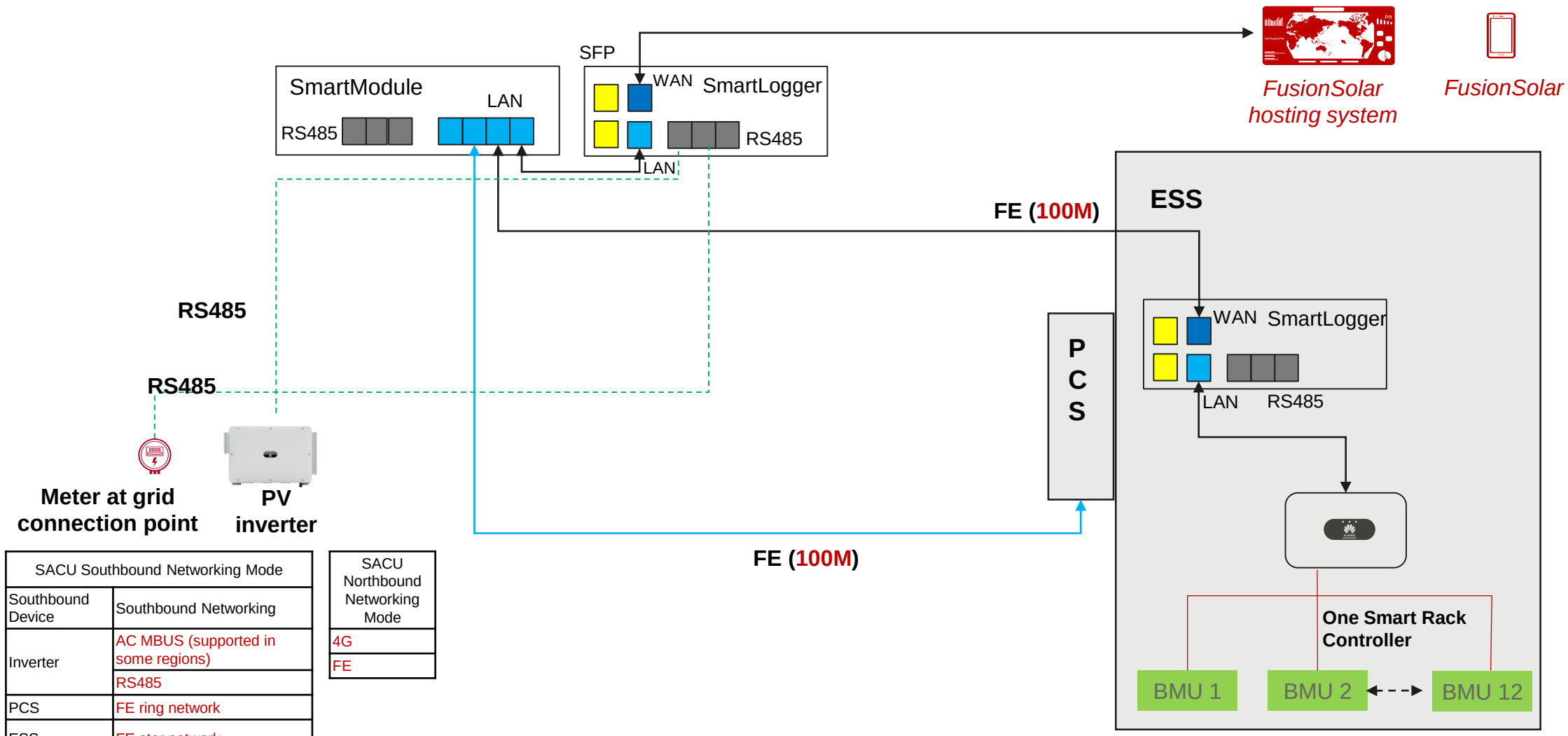
	Model	Fiber Ring Network	FE Star Network
ESS	C&I ESS+Smart Rack Controller	Supported	Supported
	Utility ESS+Smart Rack Controller	Supported	Supported
	PCS	Not supported	Supported

Meter	DTSU666-HW and YDS60-80 RS485 communication

SACU Northbound Networking Mode
4G
FE
Fiber (reserved)

SACU Southbound Networking Mode	
Southbound Device	Southbound Networking
Inverter	RS485
PCS	FE ring network
ESS	Fiber ring network/FE
Meter	RS485

PV+ESS Network Diagram 1.1 — FE Ring Network (1 ESS) ★ Recommended

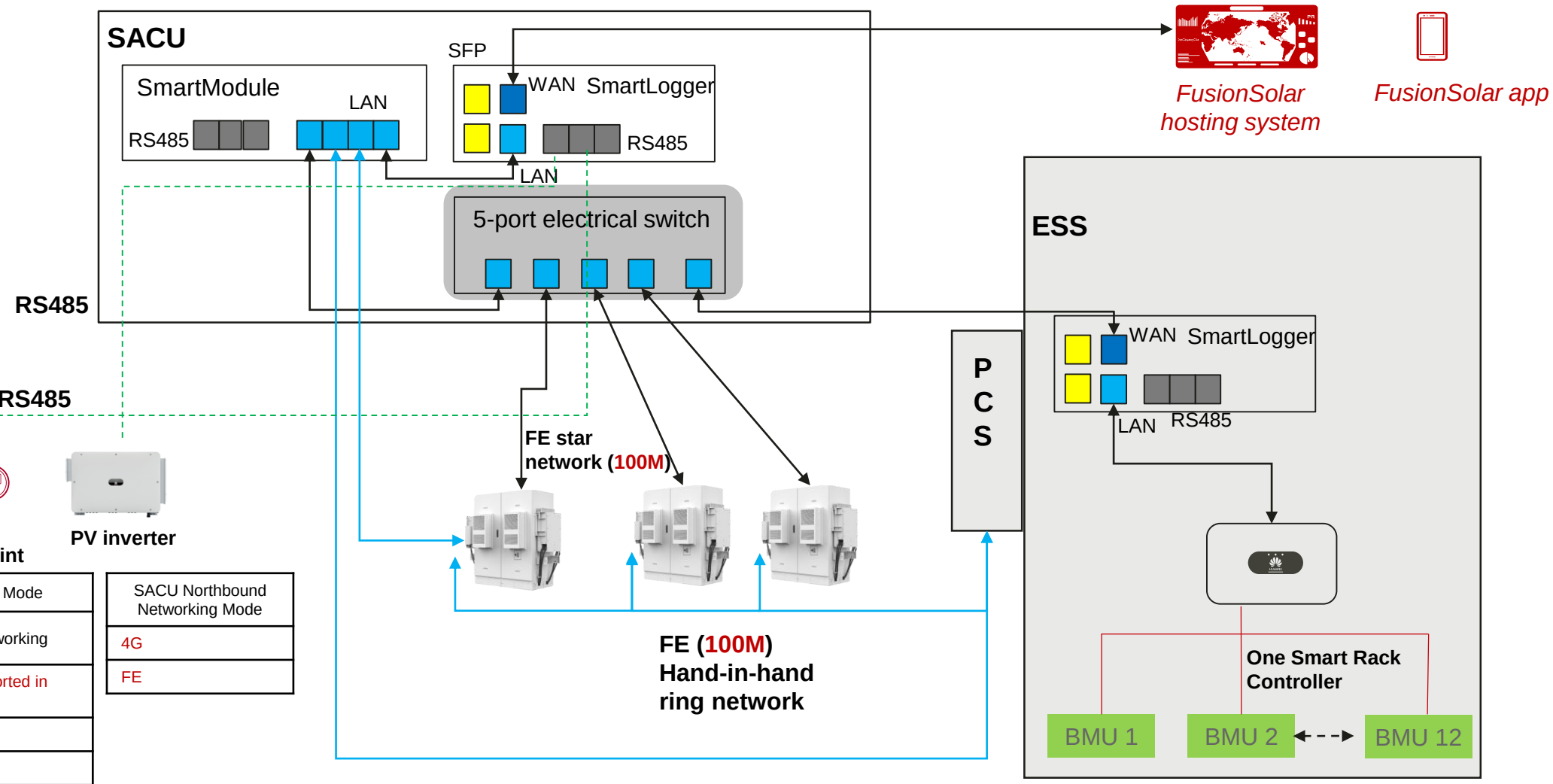


SACU Southbound Networking Mode	
Southbound Device	Southbound Networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	FE star network
Meter	RS485

SACU Northbound Networking Mode
4G
FE

- SmartLogger model: 02312SCU-004. The customer can install a 5-port electrical switch.
- Maximum communication distance: ● RS485: 1000 m ● ETH: 100 m ● MBUS (multi-core cable): 1000 m; MBUS (single-core cable): 400 m
- Connect the FE port on the ESS PCS to the LAN port 2 or 3 on the SmartModule.

PV+ESS Network Diagram 2.1 — FE Ring Network (2–4 ESSs) ★ Recommended



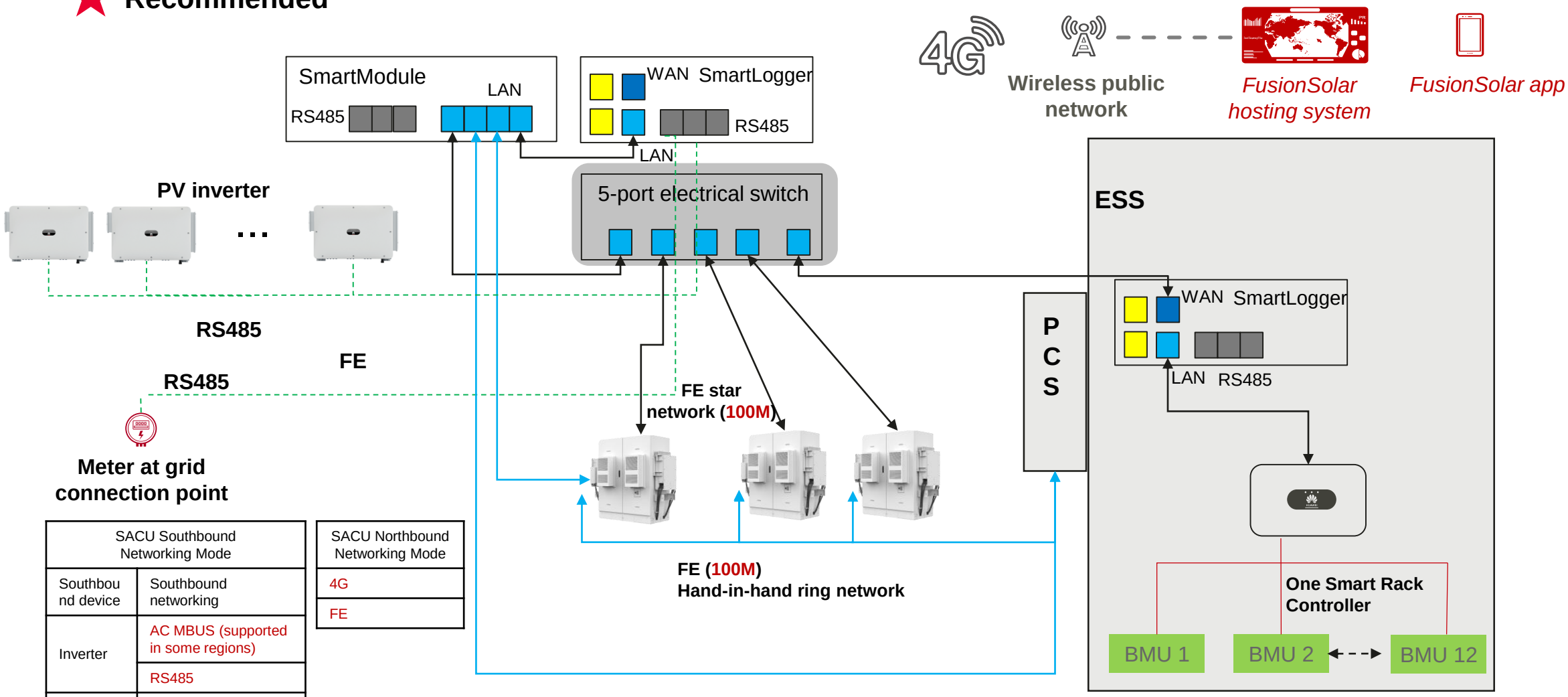
SACU Southbound Networking Mode	
Southbound Device	Southbound Networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	FE star network
Meter	RS485

SACU Northbound Networking Mode
4G
FE

- Communication cabinet model: SmartACU2000D-D-D-00. The customer can install a 5-port electrical switch.
- Maximum communication distance: ● RS485: 1000 m ● ETH: 100 m ● MBUS (multi-core cable): 1000 m; MBUS (single-core cable): 400 m
- Connect the FE port on the ESS PCS to the LAN port 2 or 3 on the SmartModule.

PV+ESS Network Diagram 2.2 — FE Ring Network (2–4 ESSs) Using SmartLoggers and SmartModules Instead of SACUs

★ **Recommended**



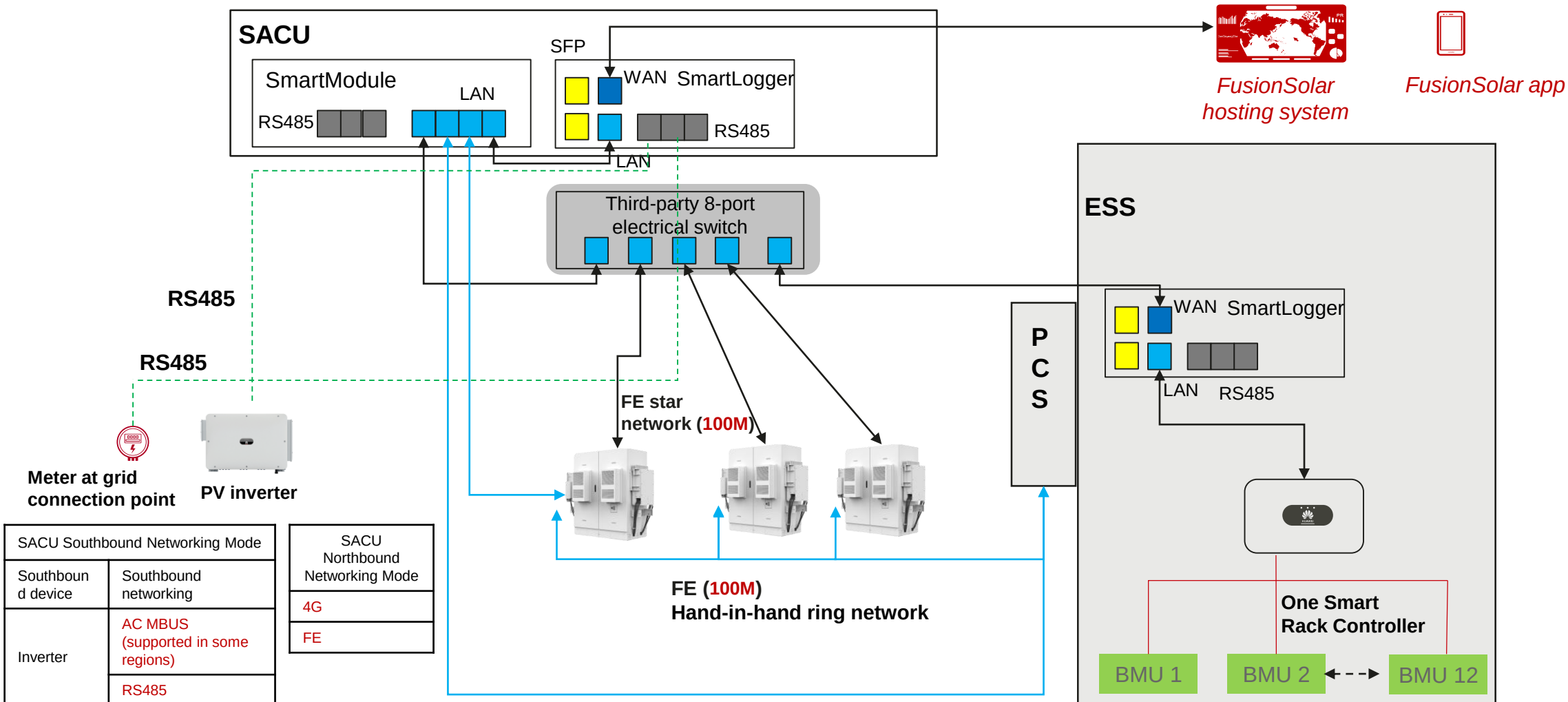
SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	FE star network
Meter	RS485

SACU Northbound Networking Mode
4G
FE

- SmartLogger model: 02312SCU-004. The customer can install a 5-port electrical switch (BOM number: 50101072).
- Maximum communication distance: ● RS485: 1000 m ● ETH: 100 m ● MBUS (multi-core cable): 1000 m; MBUS (single-core cable): 400 m
- Connect the FE port on the ESS PCS to the LAN port 2 or 3 on the SmartModule.

PV+ESS Network Diagram 3.1 — FE Ring Network (5–7 ESSs)

Recommended



SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	FE star network
Meter	RS485

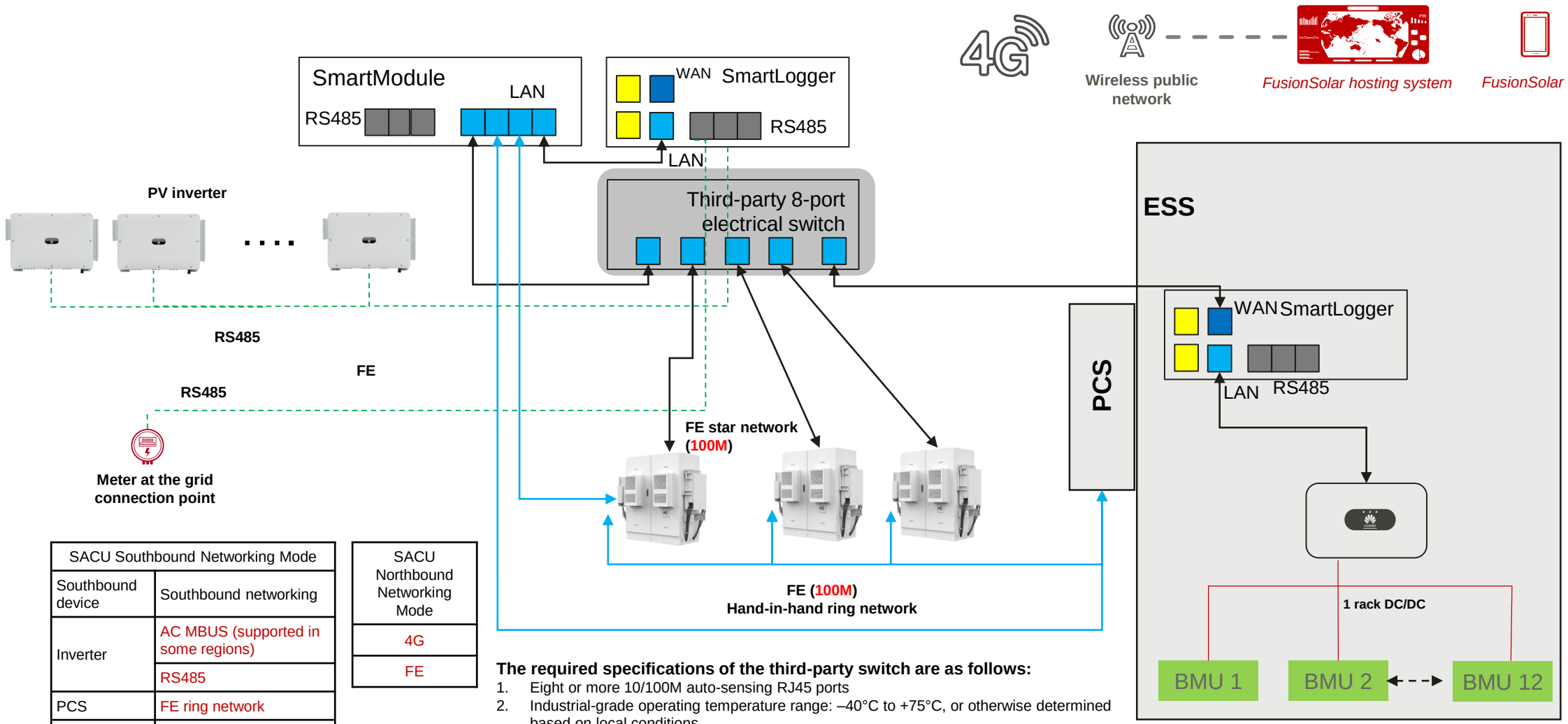
SACU Northbound Networking Mode
4G
FE

The required specifications of the third-party switch are as follows:

1. Eight or more 10/100M auto-sensing RJ45 ports
2. Industrial-grade operating temperature range: –40°C to +75°C, or otherwise determined based on local conditions
3. Dual power ports with a wide voltage input range: 9–60 V DC
4. Support for guide rail mounting and wall mounting; IP30 or higher level of protection
5. Support for Rapid Spanning Tree Protocol (RSTP) if PCS ring network is required

PVESS Network Diagram 3.2—FE Ring Network (5–7 ESSs), Using SmartLoggers and SmartModules Instead of SACUs

★ **Recommended solution**



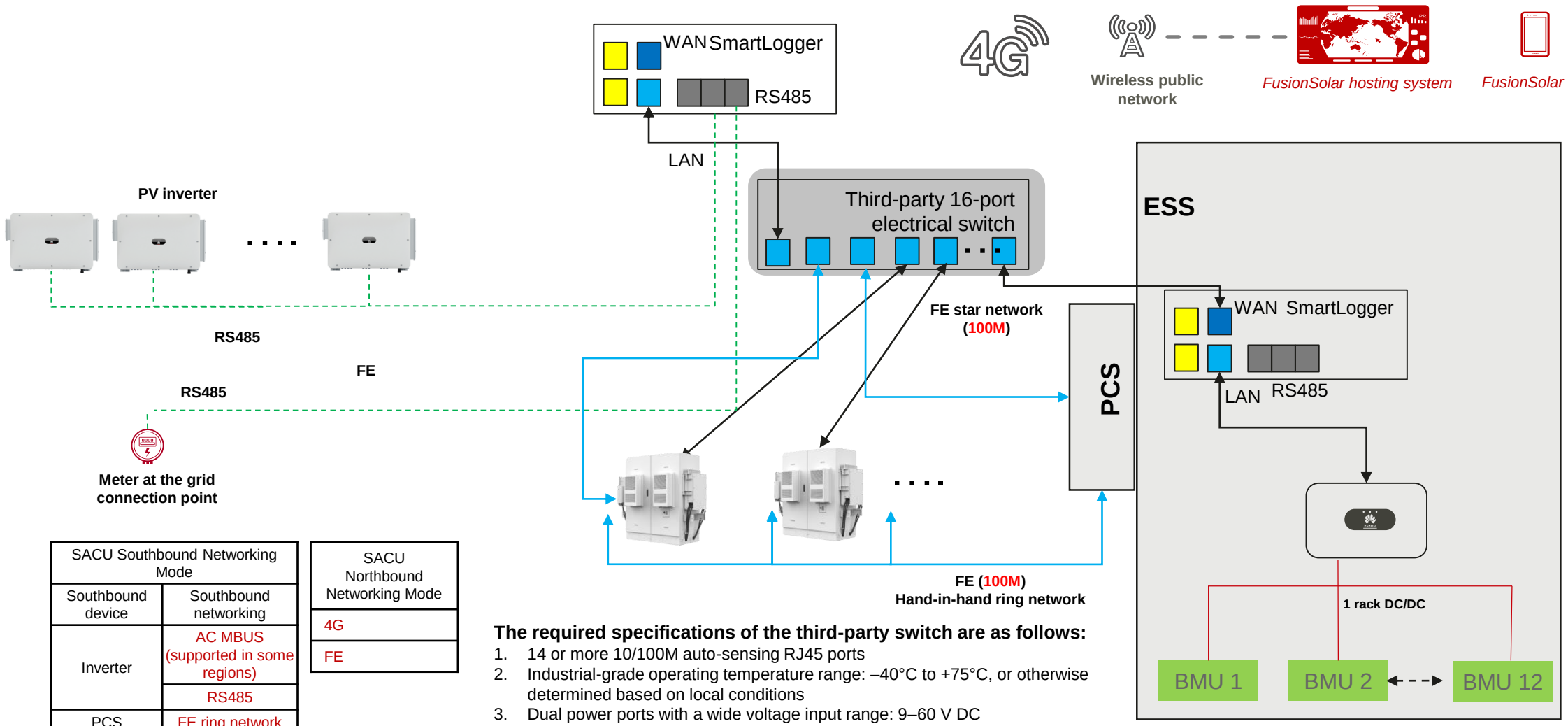
SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	FE star network
Electricity meter	RS485

SACU Northbound Networking Mode
4G
FE

The required specifications of the third-party switch are as follows:

1. Eight or more 10/100M auto-sensing RJ45 ports
2. Industrial-grade operating temperature range: –40°C to +75°C, or otherwise determined based on local conditions
3. Dual power ports with a wide voltage input range: 9–60 V DC
4. Support for guide rail mounting and wall mounting; IP30 or higher level of protection
5. Support for Rapid Spanning Tree Protocol (RSTP) if PCS ring network is required

PVESS Network Diagram 4.1—FE Ring Network (8–15 ESSs), Using SmartLoggers and Third-party Switches Instead of SACUs



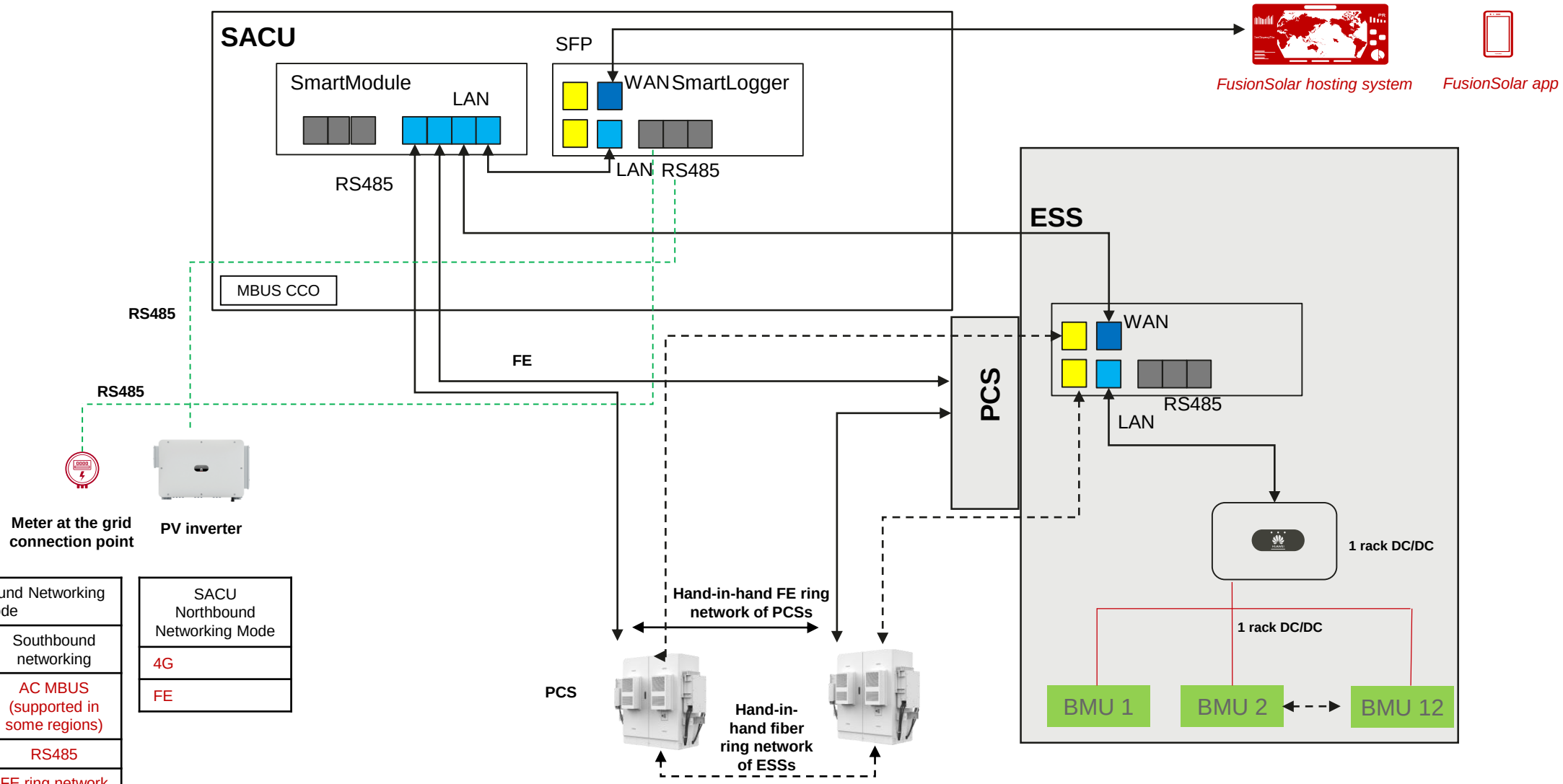
SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	FE star network
Electricity meter	RS485

SACU Northbound Networking Mode
4G
FE

The required specifications of the third-party switch are as follows:

1. 14 or more 10/100M auto-sensing RJ45 ports
2. Industrial-grade operating temperature range: –40°C to +75°C, or otherwise determined based on local conditions
3. Dual power ports with a wide voltage input range: 9–60 V DC
4. Support for guide rail mounting and wall mounting; IP30 or higher level of protection
5. **Support for Rapid Spanning Tree Protocol (RSTP) if PCS ring network is required**

PVESS Network Diagram 5.1—Fiber Ring Network (Without 5-Port Switch) (1–15 ESSs)



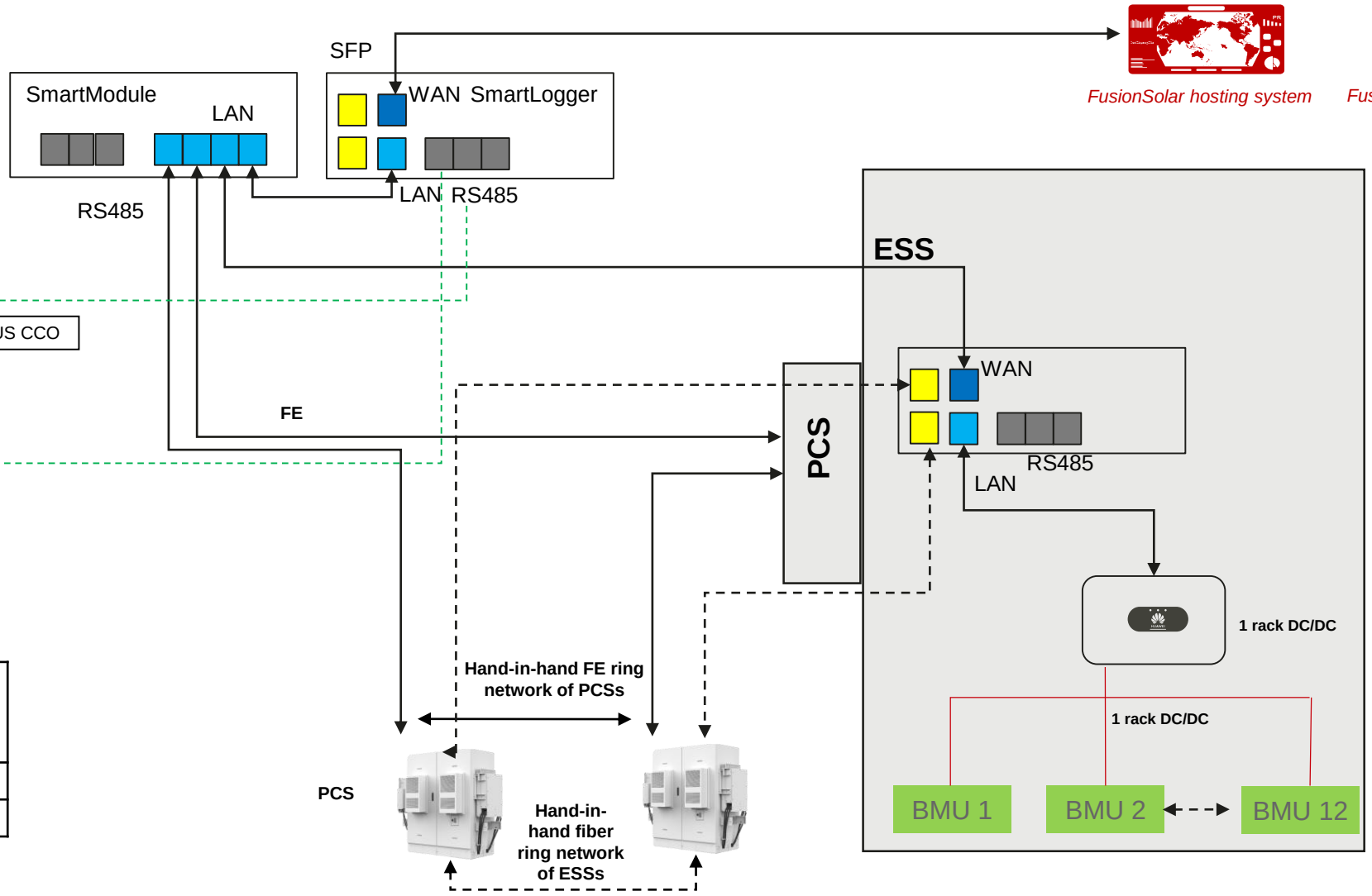
SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	Fiber ring network
Electricity meter	RS485

SACU Northbound Networking Mode
4G
FE

- A single fiber network supports a maximum of 15 ESSs. Ring networks are supported.
- Communication cabinet model: SmartACU2000D-D-0; Maximum communication distance: ● RS485: 1000 m ● ETH: 100 m ● MBUS (multi-core cable): 1000 m; MBUS (single-core cable): 400 m

PVESS Network Diagram 5.2—Fiber Ring Network (Without 5-Port Switch, Without SACUs) (1–15 ESSs)

★ **Recommended solution**

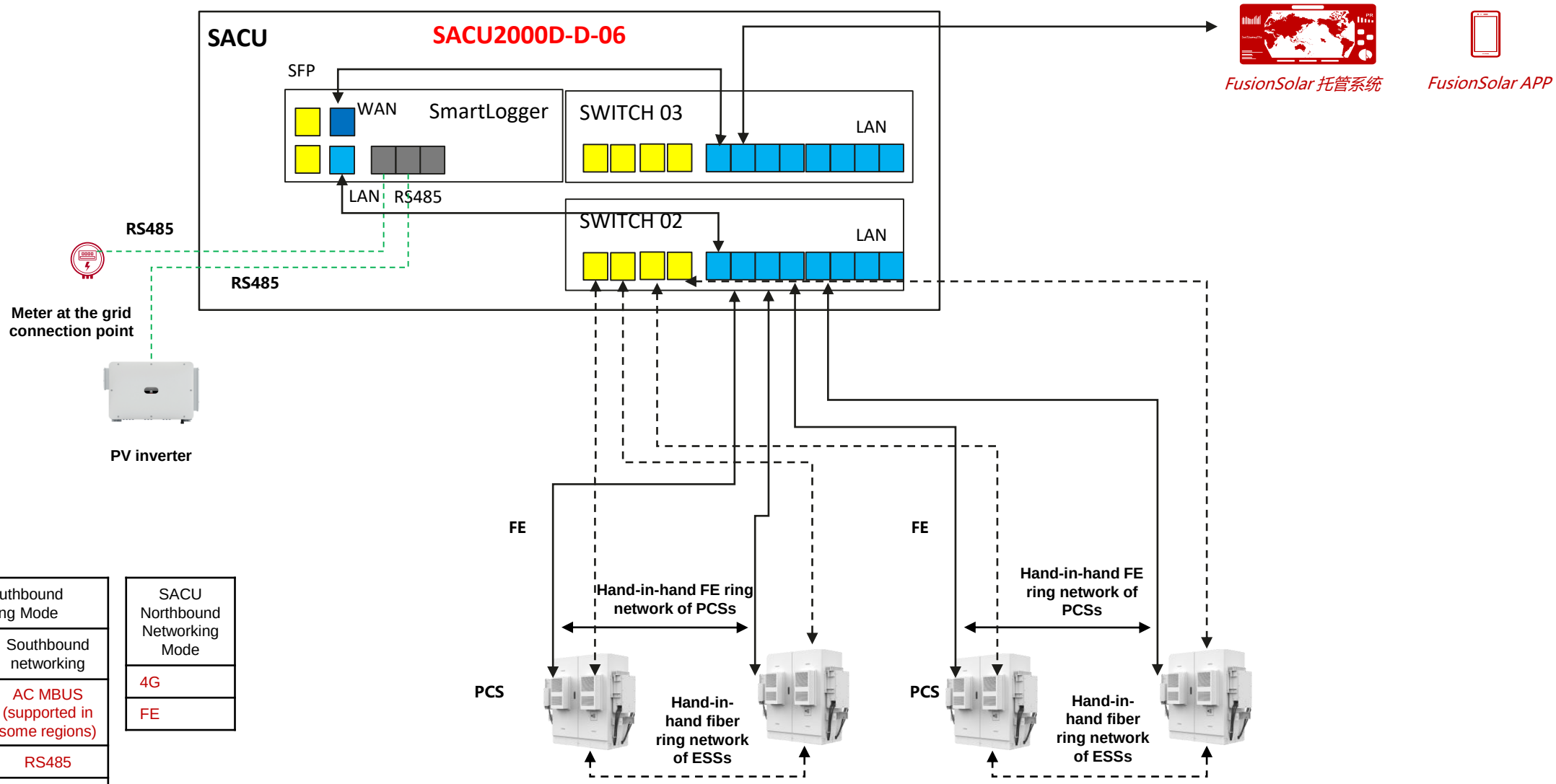


SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	Fiber ring network
Electricity meter	RS485

SACU Northbound Networking Mode
4G
FE

- A single fiber network supports a maximum of 15 ESSs. Ring networks are supported.
- Communication cabinet model: SmartACU2000D-D-0; Maximum communication distance: ● RS485: 1000 m ● ETH: 100 m ● MBUS (multi-core cable): 1000 m; MBUS (single-core cable): 400 m

PVESS Network Diagram 6.1—Fiber Ring Network (16-20 ESSs)



SACU Southbound Networking Mode	
Southbound device	Southbound networking
Inverter	AC MBUS (supported in some regions)
	RS485
PCS	FE ring network
ESS	Fiber ring network
Electricity meter	RS485

SACU Northbound Networking Mode
4G
FE

- ESS CMU combine with Ring networks， A single fiber network supports a maximum of 15 ESSs；PCS combine with FE ring networks，supports a maximum of 15 。
- Maximum communication distance: ● RS485：1000m ● ETH：100m ● MBUS（multi-core cable）：1000m；MBUS（single-core cable）：400m