Drawings

Fig. 1

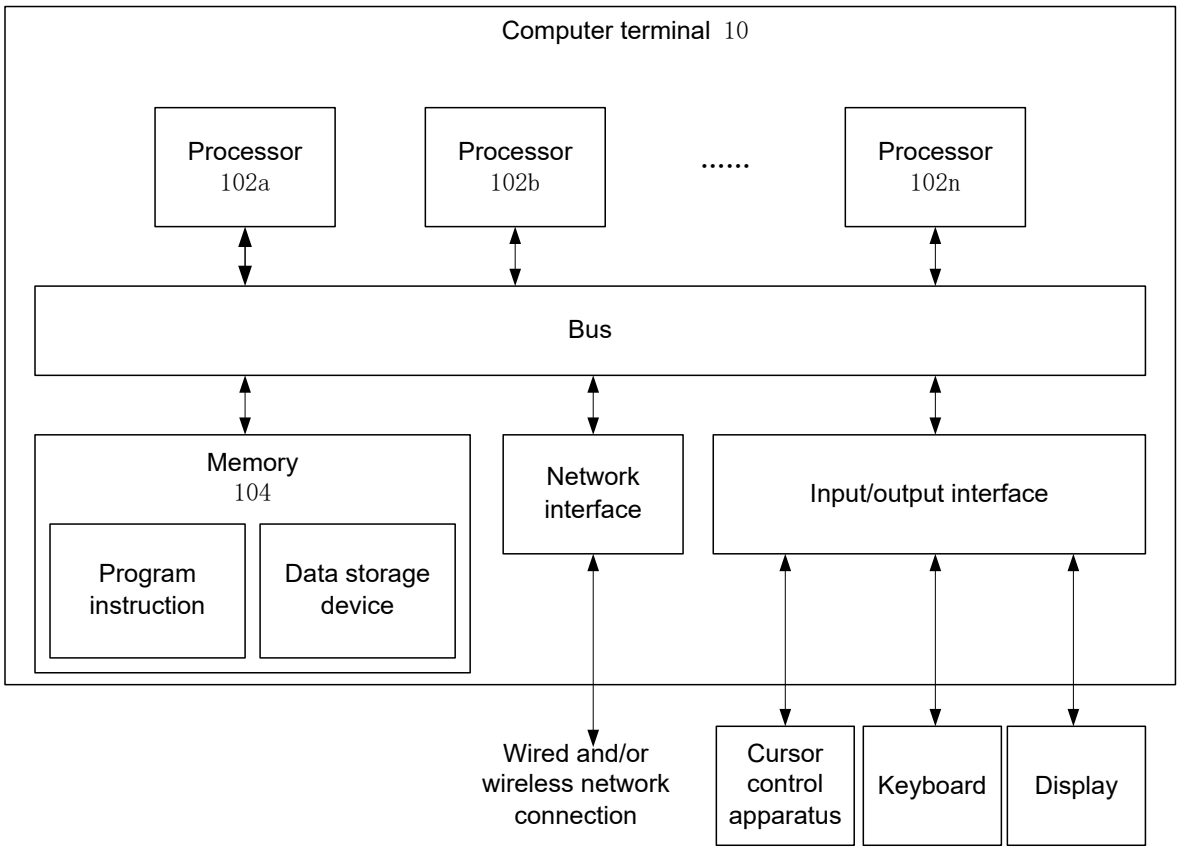


Fig. 2

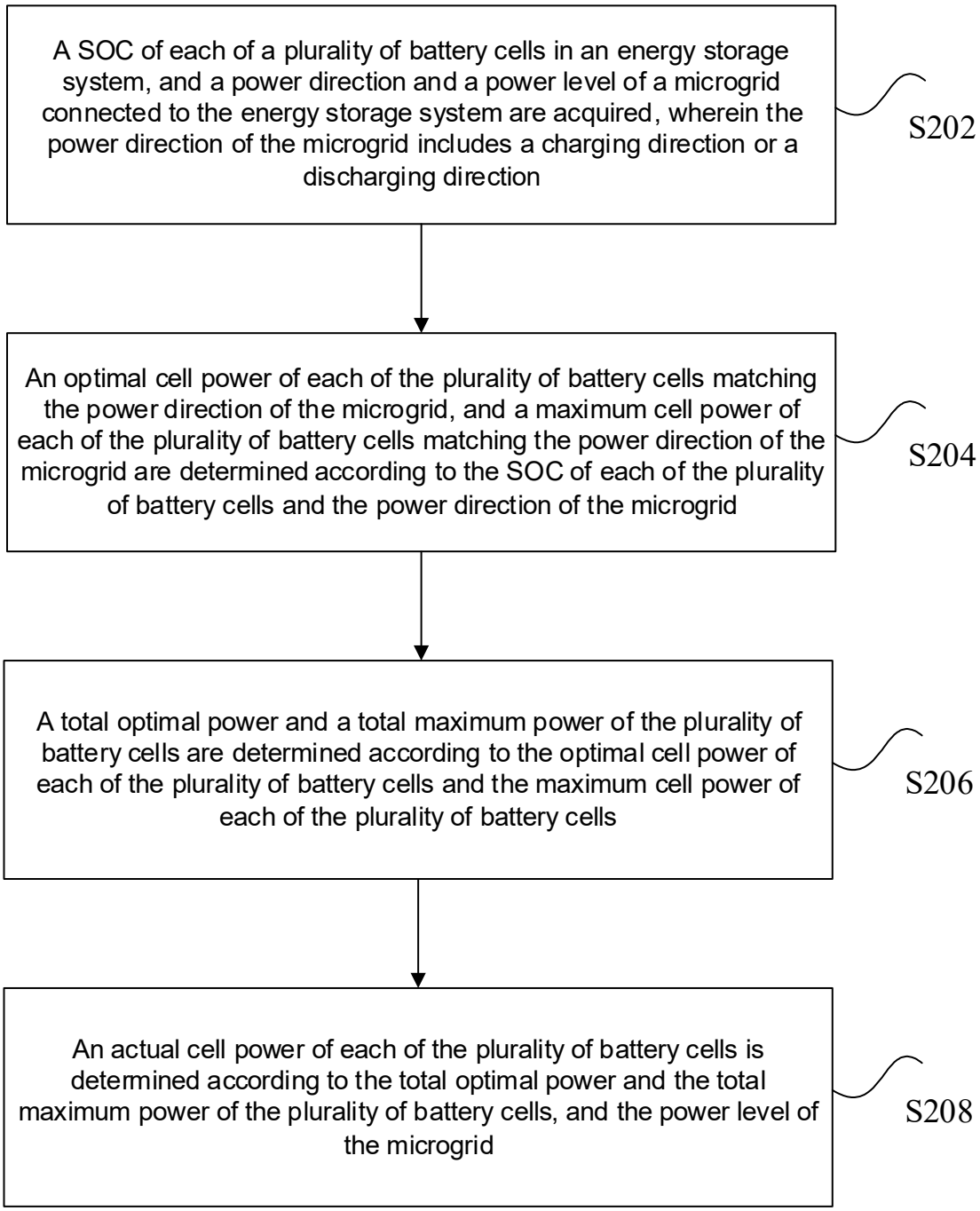

A SOC of each of a plurality of battery cells in an energy storage system, and a power direction and a power level of a microgrid connected to the energy storage system are acquired, wherein the power direction of the microgrid includes a charging direction or a discharging direction
S202
An optimal cell power of each of the plurality of battery cells matching the power direction of the microgrid, and a maximum cell power of each of the plurality of battery cells matching the power direction of the microgrid are determined according to the SOC of each of the plurality of battery cells and the power direction of the microgrid
S204
A total optimal power and a total maximum power of the plurality of battery cells are determined according to the optimal cell power of each of the plurality of battery cells and the maximum cell power of each of the plurality of battery cells
S206
An actual cell power of each of the plurality of battery cells is determined according to the total optimal power and the total maximum power of the plurality of battery cells, and the power level of the microgrid
S208

Fig. 3

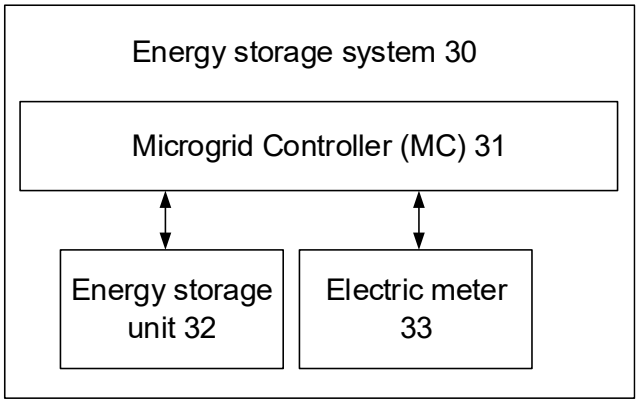

Energy storage system 30
Microgrid Controller (MC) 31
Energy storage unit 32
Electric meter 33

Fig. 4

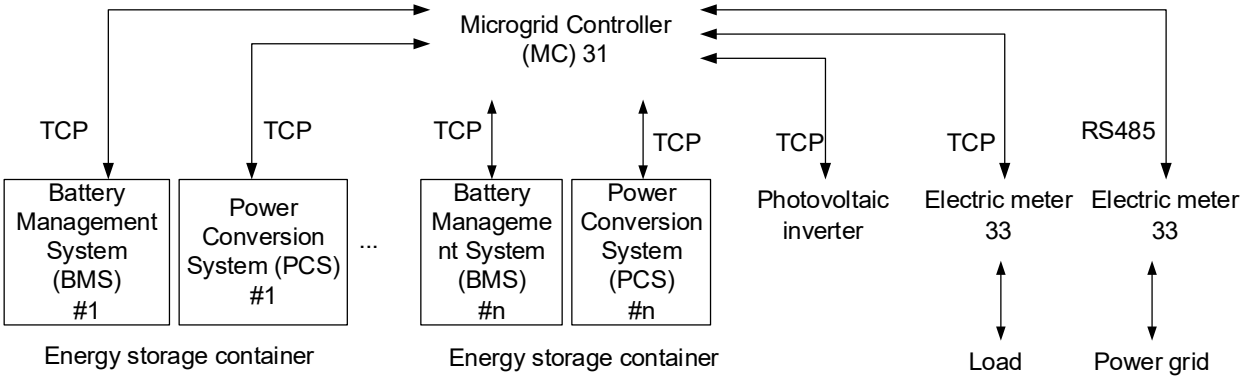

Microgrid Controller (MC) 31
TCP
TCP
TCP
TCP
TCP
TCP
RS485
Battery Management System (BMS) #1
Power Conversion System (PCS) #1
...
Battery Management System (BMS) #n
Power Conversion System (PCS) #n
Photovoltaic inverter
Electric meter 33
Electric meter 33
Energy storage container
Energy storage container
Load
Power grid

Fig. 5

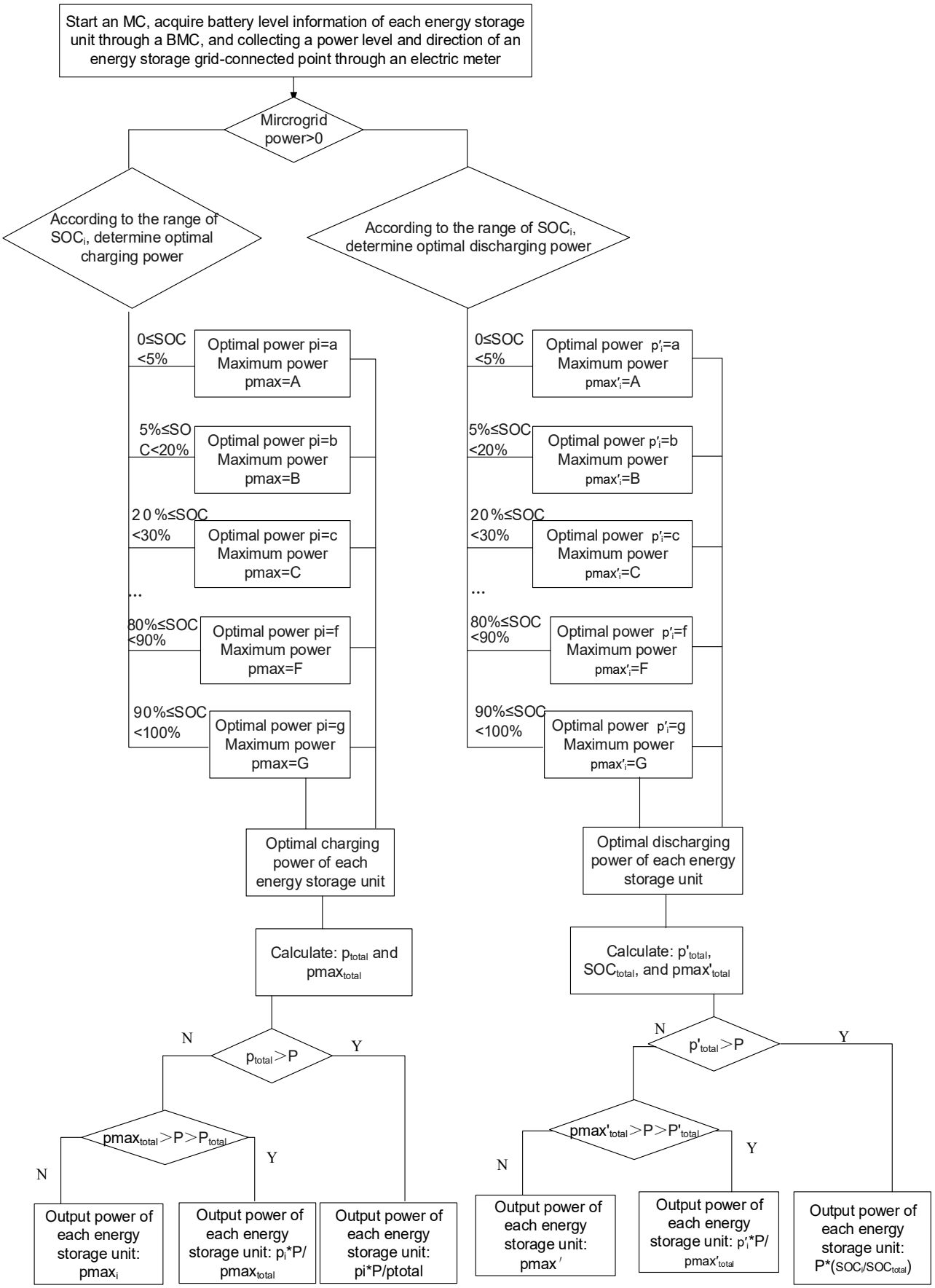
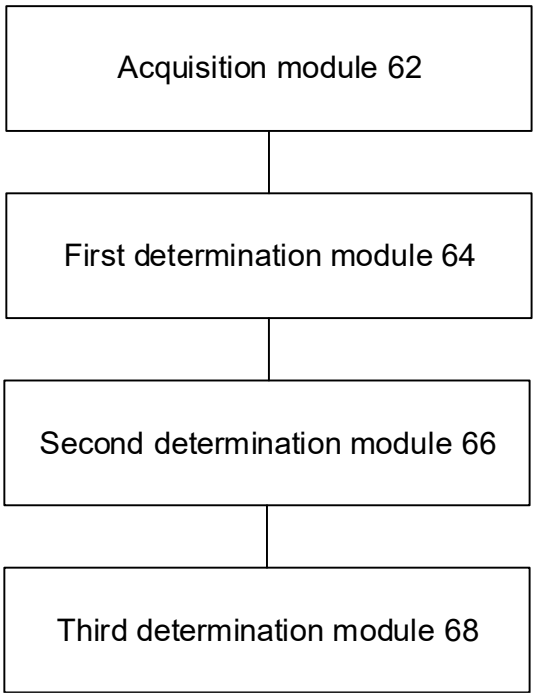

Start an MC, acquire battery level information of each energy storage unit through a BMC, and collecting a power level and direction of an energy storage grid-connected point through an electric meter
Mircrogrid power>0
According to the range of SOCi, determine optimal charging power
According to the range of SOCi, determine optimal discharging power
0≤SOC<5%
Optimal power pi=a Maximum power pmax=A
5%≤SOC<20%
Optimal power pi=b Maximum power pmax=B
20%≤SOC<30%
Optimal power pi=c Maximum power pmax=C
...
80%≤SOC<90%
Optimal power pi=f Maximum power pmax=F
90%≤SOC<100%
Optimal power pi=g Maximum power pmax=G
0≤SOC<5%
Optimal power p'i=a Maximum power pmax'i=A
5%≤SOC<20%
Optimal power p'i=b Maximum power pmax'i=B
20%≤SOC<30%
Optimal power p'i=c Maximum power pmax'i=C
...
80%≤SOC<90%
Optimal power p'i=f Maximum power pmax'i=F
90%≤SOC<100%
Optimal power p'i=g Maximum power pmax'i=G
Optimal charging power of each energy storage unit
Optimal discharging power of each energy storage unit
Calculate: ptotal and pmaxtotal
Calculate: p'total, SOCtotal, and pmax'total
ptotal>P
p'total>P
pmaxtotal>P>Ptotal
pmax'total>P>P'total
N
Y
Output power of each energy storage unit: pmaxi
Output power of each energy storage unit: pi*P/pmaxtotal
Output power of each energy storage unit: pi*P/ptotal
Output power of each energy storage unit: pmax'
Output power of each energy storage unit: p'i*P/pmax'total
Output power of each energy storage unit: P*(SOCi/SOCtotal)

Fig. 6


Acquisition module 62
First determination module 64
Second determination module 66
Third determination module 68