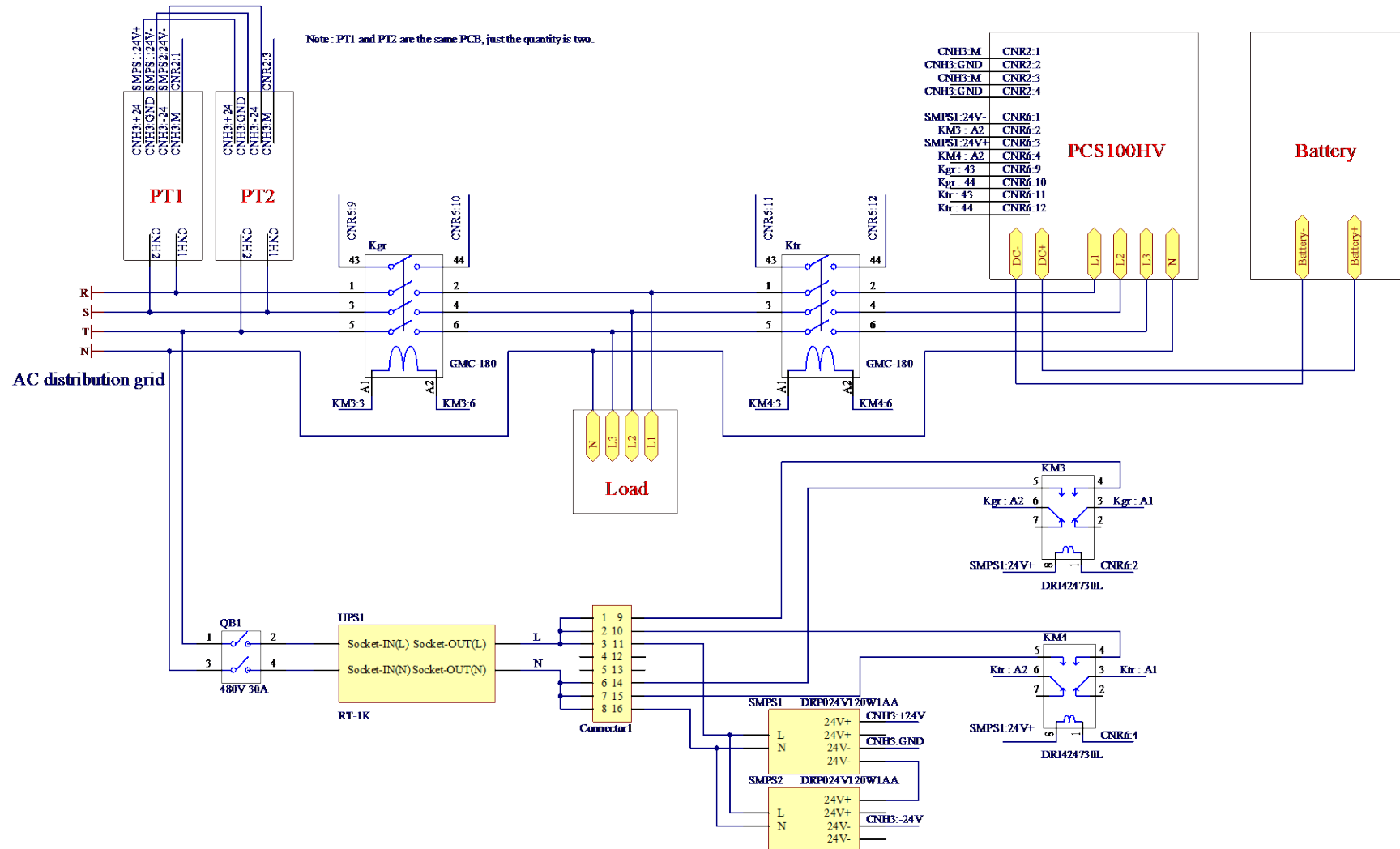


PCS100HV Stand-alone/Grid-interactive Mode Switching Method

Electrical Schematic Diagram:



Note: The PCS N phase must always be connected to the N phase of the grid.

PCS100HV needs to install additional equipment such as voltage sampling, contactors and necessary uninterrupted power supply unit (UPS) in order to realize the switch between stand-alone and grid-interactive mode.

Following devices need to be prepared to build up the Stand-alone/Grid-interactive mode switching system, other devices with the similar specifications

No.	Object	Part No.	Type/ model	Manufacturer/ trademark	Technical data	Quanty	Remark
1	Contactor	Kgr, Ktr	GMC-180	LS	690Vac, 180A, Coil voltage: 100-240Vac	2	One PCS100HV
			GMC-400		690Vac, 300A, Coil voltage: 100-240Vac		Two PCS100HV parallel
			GMC-600		690Vac, 600A, Coil voltage: 100-240Vac		Three PCS100HV parallel
			GMC-800		690Vac, 800A, Coil voltage: 100-240Vac		Four PCS100HV parallel
2	Relay	KM3, KM4	DRI424730L	Weidmuller	250V, 5A, 24V	2	
3	Breaker	QB1	NDB2T-63D30/2	Nader	400/415VAC, 30A, 2P	1	
4	Voltage sensor Board	PT1, PT2	5501900569	Delta	400Vac to 5.5mA	2	
5	UPS	UPS1	RT-1K	Delta	I/P=230Vac, 50Hz, O/P=230Vac, 50Hz, Backup time≥6.5min, 1KVA	1	
6	SMPS	SMPS1, SMPS2	DRP024V120W1AA	Delta	I/P=230Vac,50Hz, O/P=24Vdc, 5A	2	

Wire list as below:

No.	From	To	Cable Size	Cable UL No.
1	Grid:R	Kgr:1	1/0 AWG	UL10070
2	Grid:S	Kgr:3		
3	Grid:T	Kgr:5		
4	Kgr:2	Ktr:1		
5	Kgr:4	Ktr:3		
6	Kgr:6	Ktr:5		
7	Ktr:2	PCS100HV:L1		
8	Ktr:4	PCS100HV:L2		
9	Ktr:6	PCS100HV:L3		
10	PCS100HV:DC+	Battery:Battery+		
11	PCS100HV:DC-	Battery:Battery-		
12	Kgr:2	QB1:1		
13	Kgr:6	QB1:3		
14	QB1:2	UPS1:Socket-IN(L)	Standard three-hole cable (UPS self-contained wire)	
15	QB1:4	UPS1:Socket-IN(N)		
16	UPS1:Socket-OUT(L)	Connector1:3		
17	UPS1:Socket-OUT(N)	Connector1:8		
18	Connector1:9	KM3:4	18 AWG	UL1007
19	Connector1:14	KM3:5		
20	Connector1:10	KM4:4		
21	Connector1:15	KM4:5		
22	KM3:3	Kgr:A1		
23	KM3:6	Kgr:A2		
24	KM4:3	Ktr:A1		
25	KM4:6	Ktr:A2		
26	Connector1:11	SMPS1:L		
27	Connector1:11	SMPS2:L		

28	Connector1:16	SMPS1:N		
29	Connector1:16	SMPS2:N		
30	Grid:R	PT1:CNH1		
31	Grid:S	PT1:CNH2		
32	Grid:S	PT2:CNH1		
33	Grid:T	PT2:CNH2		
34	PT1 CNH3:+24	SMPS1:24V+		
35	PT1 CNH3:GND	SMPS1:24V-		
36	PT1 CNH3:-24	SMPS2:24V-		
37	PT1 CNH3:M3	CNR2:1		
38	PT2 CNH3:+24	SMPS1:24V+		
39	PT2 CNH3:GND	SMPS1:24V-		
40	PT2 CNH3:-24	SMPS2:24V-		
41	PT2 CNH3:M3	CNR2:3		
42	SMPS1:24V-	SMPS2:24V+		
43	CNH3:GND	CNR2:2		
44	CNH3:GND	CNR2:4		
45	Kgr:43	CNR6:9		
46	Kgr:44	CNR6:10		
47	Ktr:43	CNR6:11		
48	Ktr:44	CNR6:12		
49	KM3:1	CNR6:2		
50	KM3:8	SMPS1:24V+		
51	KM4:1	CNR6:4		
52	KM4:8	SMPS1:24V+		

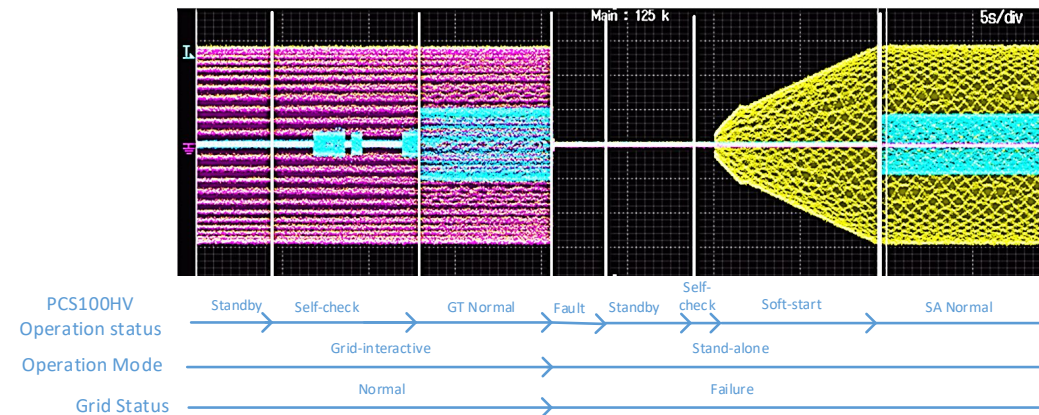
About Mode Switching function:

This part mainly introduces how to switch between stand-alone and grid-interactive mode.

PCS100HV will judge whether the grid is normal based on the voltage signal on the grid side to decide which mode to run in.

1. Grid-interactive → Stand-Alone

If the grid is operating normally, PCS100HV will automatically be set to grid-interactive mode after a delay and send a "CLOSE" command signal to the contactors K_{TR} and K_{Grid} to close them. When the PCS100HV receives the correct status feedback signals from the contactors K_{TR} and K_{Grid} , it will wait for the "Power ON" command from the upstream controller and prepare for grid-interactive operation. You can get more information from the below sequence diagram.



If the PCS100HV detects an abnormality in the power grid, the PCS will automatically set to stand-alone mode after a delay and send an "OPEN" command signal to the contactors K_{TR} and K_{Grid} . When the PCS100HV receives the correct status feedback signals from the contactors K_{TR} and K_{Grid} , PCS100HV will wait for the "Power ON" command from the upstream controller and prepare to run in stand-alone mode, then PCS100HV will send a "CLOSE" command signal to the contactor K_{TR} to provide power to the load, while the contactor K_{grid} still remains in the "OPEN" state.

2. Grid-interactive → Stand-Alone

If the power grid is in a failure condition, the PCS runs in stand-alone mode, and when the power grid returns to normal at a certain moment,

the PCS will automatically stop running and switch to grid-interactive mode. Then PCS100HV will send a "CLOSE" command signal to the contactor K_{grid} to connect to grid again. When the PCS100HV receives the correct status feedback signals from the contactors K_{TR} and K_{Grid} , it will wait for the "Power ON" command from the upstream controller and prepare for grid-interactive operation. You can get more information from the below sequence diagram.

