

Data in these instructions is for use on the controller and provides brief operation guidelines, for greater details please refer to the standard operation Manual

I、 Controller size:

Module Dimensions	Panel Cutout
W264mm×H198mm×D41.5mm	W220mm×H160mm

II、 Parameter setting method:

1、 Primary key



Scroll Button /Parameter settings enter and exit Button



Used to opening and closing for power generation in manual mode



Generator start button/LED



Shutdown / Reset / LED



AUTO Mode Button / LED



MAN Mode Button / LED



TEST Mode Button / LED


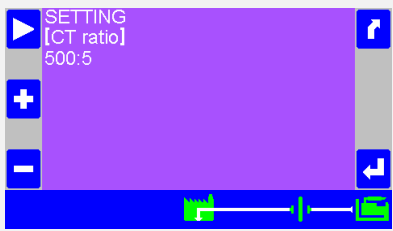



SEMI Mode Button / LED

2、 Setting method:

FOR EXAMPLE: (SETTING CT RATIO AT 500: 5, THEN CT SHOULD BE CONFIGURED AS 500)

Operation	Description
<p>Press and hold  2sec, enter into parameters setting menu, then LCD displays</p>	
<p>Press  once, press  6 times again, then press  once, LCD displays:</p>	
<p>Press  or  prompted enter password, the modify password is: 1111, press  or  button to modify:</p>	

<p>Press “  </p>
<p>Press “</p>

### III、 Parameters Setting:

#### 1、 SYSTEM

NO.	Items	Preset	NO.	Items	Preset
1.1	Language	0	1.13	Voltage type	1
1.2	Password	/	1.14	I4 type	Not used
1.3	Pressure unit	0	1.15	Display brightness	5
1.4	Temperature unit	0	1.16	Saving brightness	1
1.5	Comm. address	1	1.17	Auto scroll time	Not used
1.6	Startup mode	0	1.18	Starting alarm	0
1.7	CT ratio	1000:5	1.19	CB close pulse	Continuous
1.8	PT ratio	1.0:1	1.20	Reset to MAN	0
1.9	Rated voltage	230 V	1.21	Clear event log	/
1.10	Rated current	1000 A	1.22	Default settings	/
1.11	Rated active power	500 kW	1.23	Firmware Update	/
1.12	Rated reactive power	400 Kvar			

#### 2、 GENERATOR

NO.	Items	Preset	NO.	Items	Preset
2.1	GEN V-monitor type	1	2.13	GEN-KW over 1	110%
2.2	GEN-V under 1	90%	2.14	GEN-KW over 2	120%
2.3	GEN-V under 2	85%	2.15	GEN Reverse Power 1	-5%
2.4	GEN-V over 1	115%	2.16	GEN Reverse Power 2	-10%
2.5	GEN-V over 2	120%	2.17	Phase rotation	CW
2.6	GEN-Hz under 1	48.0Hz	2.18	Lagging PF	+0.90
2.7	GEN-Hz under 2	45.0Hz	2.19	Leading PF	-0.90
2.8	GEN-Hz over 1	55.0Hz	2.20	GEN. loading Volt	90%
2.9	GEN-Hz over 2	57.0Hz	2.21	GEN. loading Hz	48.0Hz
2.10	GEN-I over 1	110%	2.22	GEN. on delay	5S
2.11	GEN-I over 2	115%	2.23	Test mode	Unload
2.12	Ground fault	10%			

**3、ENGINE**

NO.	Items	Preset	NO.	Items	Preset
3.1	Engine type	1	3.24	Pre-heat mode	1
3.2	ECU type	4	3.25	Pre-heat time	3 S
3.3	Engine rated speed	1500 RPM	3.26	Safety-on delay	10 S
3.4	MPU input	No	3.27	Cool down mode	Idle
3.5	Fly wheel teeth	120	3.28	Cool down time	300S
3.6	Set pickup now	/	3.29	Stop time	20S
3.7	Pair of poles	2	3.30	EX. Crank permit	No
3.8	Fuel mode	N.C	3.31	Charge failure	8.0 V
3.9	Start delay	10S	3.32	Pickup signal	2
3.10	Crank attempts	3	3.33	Overspeed level1	1600 RPM
3.11	Critical C-attempt	6 times	3.34	Overspeed level2	1710 RPM
3.12	Crank time	5S	3.35	Underspeed level1	1440 RPM
3.13	Crank time add	Not used	3.36	Underspeed level2	1350 RPM
3.14	Crank pause time	15S	3.37	Start failure	6
3.15	Ignition speed	200 RPM	3.38	Stop failure	3
3.16	Ignition start DLY	5S	3.39	Batt. Overvolt	35.0 V
3.17	Gas valve on DLY	5S	3.40	Batt. Undervolt	8.0 V
3.18	Crank cutout RPM	300 RPM	3.41	Maintenance hours	1000
3.19	Crank cutout volt	85%	3.42	Maintenance days	2
3.20	Crank cutout ALT-V	Not used	3.43	ECU Data fail	2
3.21	Crank cutout Oil-P	2.2	3.44	ECU Warning	2
3.22	Crank cutout P-DLY	Not used	3.45	ECU Shutdown	6
3.23	Idle time	Not used	3.46	Water in fuel	2

**4、Analog INPUT**

NO.	Items	Preset	NO.	Items	Preset
4.1	P-sensor type	4	4.31	Cooler1 off level	70°C
4.2	Oil-P low level1	1.4Bar	4.32	AUX sensor2 use	2
4.3	Oil-P low level2	1.1Bar	4.33	AUX sensor2 type	15
4.4	T-sensor type	3	4.34	AUX2 low P level1	1.4Bar
4.5	High temp. level1	92°C	4.35	AUX2 low P level2	1.1Bar
4.6	High temp. level2	100°C	4.36	AUX2 high P level1	7.0Bar
4.7	Heater on level	50°C	4.37	AUX2 high P level2	8.0Bar
4.8	Heater off level	60°C	4.38	AUX2 low T level1	60°C
4.9	Cooler on level	80°C	4.39	AUX2 low T level2	50°C
4.10	Cooler off level	70°C	4.40	AUX2 high T level1	90°C
4.11	Fuel sensor type	3	4.41	AUX2 high T level2	100°C
4.12	Low fuel level1	20%	4.42	Heater2 on level	50°C
4.13	Low fuel level 2	10%	4.43	Heater2 off level	60°C
4.14	High fuel level1	90%	4.44	Cooler2 on level	80°C
4.15	High fuel level2	100%	4.45	Cooler2 off level	70°C
4.16	Fuel pump ON	20%	4.46	AUX sensor3 use	2
4.17	Fuel pump OFF	70%	4.47	AUX sensor3 type	15
4.18	AUX sensor1 use	1	4.48	AUX3 low P level1	1.4Bar
4.19	AUX sensor1 type	4	4.49	AUX3 low P level2	1.1Bar
4.20	AUX1 low P level1	1.4Bar	4.50	AUX3 high P level1	7.0Bar
4.21	AUX1 low P level2	1.1Bar	4.51	AUX3 high P level2	8.0Bar
4.22	AUX1 high P level1	7.0Bar	4.52	AUX3 low T level1	60°C
4.23	AUX1 high P level2	8.0Bar	4.53	AUX3 low T level2	50°C
4.24	AUX1 low T level1	60°C	4.54	AUX3 high T level1	90°C
4.25	AUX1 low T level2	50°C	4.55	AUX3 high T level2	100°C
4.26	AUX1 high T level1	90°C	4.56	Heater3 on level	50°C
4.27	AUX1 high T level2	100°C	4.57	Heater3 off level	60°C
4.28	Heater1 on level	50°C	4.58	Cooler3 on level	80°C
4.29	Heater1 off level	60°C	4.59	Cooler3 off level	70°C
4.30	Cooler1 on level	80°C			

**5、 Discrete IN/OUT**

NO.	Items	Preset	NO.	Items	Preset
5.1	D-Input 1 config	6	5.13	Relay 1 Config	2
5.2	D-Input 2 config	2	5.14	Relay 2 Config	1
5.3	D-Input 3 config	3	5.15	Relay 3 Config	Not used
5.4	D-Input 4 config	4	5.16	Relay 4 Config	Not used
5.5	D-Input 5 config	1	5.17	Relay 5 Config	Not used
5.6	D-Input 6 config	1	5.18	Relay 6 Config	Not used
5.7	D-Input 7 config	1	5.19	Relay 7 Config	Not used
5.8	D-Input 8 config	1	5.20	Relay 8 Config	Not used
5.9	D-Input 9 config	1	5.21	Relay 9 Config	Not used
5.10	D-Input 10 config	1	5.22	Relay 10 Config	Not used
5.11	D-Input 11 config	1	5.23	Relay 11 Config	Not used
5.12	D-Input 12 config	1	5.24	Relay 12 Config	Not used

**7、 MAINTENANCE**

NO.	Items	Preset	NO.	Items	Preset
7.1	DATE/ TIME		7.13	2nd Scheduler mode	Unload
7.2	Scheduler period	1	7.14	2nd Start time	HH:MM
7.3	1st Scheduler mode	Unload	7.15	2nd Run duration	60
7.4	1st Start time	HH:MM	7.16	2nd MON active	0
7.5	1st Run duration	60	7.17	2nd TUE active	0
7.6	1st MON active	0	7.18	2nd WED active	0
7.7	1st TUE active	0	7.19	2nd THU active	0
7.8	1st WED active	0	7.20	2nd FRI active	0
7.9	1st THU active	0	7.21	2nd SAT active	0
7.10	1st FRI active	0	7.22	2nd SUN active	0
7.11	1st SAT active	0	7.23	Data log period	Not used
7.12	1st SUN active	0			

**9、 Configure Synchronizer**

NO.	Items	Preset	NO.	Items	Preset
9.1	SYNC mode	Run	9.9	Pos. freq. differential	0.20 Hz
9.2	CB hold time	5.0S	9.10	Neg. freq. differential	-0.10 Hz
9.3	CB close attempts	5	9.11	Phase differential	10.0°
9.4	Reclose delay	30S	9.12	Matching dwell time	0.3S
9.5	Reclose ALM class	1	9.13	CB Closing time	80 mS
9.6	SYNC time	100S	9.14	Dead bus closure	Yes
9.7	SYNC timeout ALM class	2	9.15	Dead bus Max.volt	10%
9.8	Voltage differential	5.0%	9.16	ECU SA	0

**10、 Real load control**

NO.	Items	Preset	NO.	Items	Preset
10.1	Load control mode	Balanced	10.12	Unload time	30S
10.2	Fixed load level	50%	10.13	Speed raise rate	2%/S
10.3	Load control gain	3.0	10.14	Speed lower rate	2%/S
10.4	Proportional gain	2.0	10.15	Real load high limit	100%
10.5	Integral time	5.0S	10.16	Upper Freq. limit	53.0Hz
10.6	Derivative time	0.0 S	10.17	Lower Freq. limit	49.0Hz
10.7	Deadband	0.10Hz	10.18	S-Bias start value	3.0V
10.8	Time pulse minimum	0.5S	10.19	S-Bias output range	3.0V
10.9	Unload trip	2%	10.20	S-Bias control range	5.0%
10.10	Load control droop	0.0%	10.21	auto setup	/
10.11	Load time	30S			

**11、 Reactive load control**

NO.	Items	Preset	NO.	Items	Preset
11.1	Load control mode	Balanced	11.11	Volt droop	0.0 %
11.2	VAR/PF mode	VAR	11.12	Raise rate	2%/S
11.3	Fixed PF level	1.00	11.13	Lower rate	2%/S
11.4	Fixed VAR level	10%	11.14	Reactive load high limit	100%
11.5	Load control gain	3.0	11.15	Upper volt limit	115%
11.6	Proportional gain	2.0	11.16	Lower volt limit	95%
11.7	Integral time	5.0S	11.17	V-Bias start value	0.0V
11.8	Derivative time	0.0 S	11.18	V-Bias output range	3.0V
11.9	Deadband	0.5%	11.19	V-Bias control range	5.0%
11.10	Time pulse minimum	0.5S	11.20	auto setup	/

**12、 Configure Auto sequence**

NO.	Items	Preset	NO.	Items	Preset
12.1	Device number	1	12.9	Remote stop delay	Not used
12.2	Device priority	1	12.10	Max. generator load	78%
12.3	Number of network	1	12.11	Min. generator load	30%
12.4	MUC monitoring	No	12.12	Add on delay	30S
12.5	MUC ALM class	2	12.13	Add on delay at rated load	5S
12.6	Auto sequencing	No	12.14	Add off delay	60S
12.7	Auto sequence delay	5S	12.15	Starting option	FULL
12.8	Minimum running time	Not used			

**13、 Send SMS**

NO.	Items	Preset	NO.	Items	Preset
13.1	Telephone 1 NO.	Not used	13.10	F-pump OFF SMS	0
13.2	Telephone 2 NO.	Not used	13.11	Shutdown alarm SMS	1
13.3	Telephone 3 NO.	Not used	13.12	Warn SMS	1
13.4	Power up SMS	0	13.13	Maintenance SMS	0
13.5	Engine start SMS	0	13.14	Alarms SMS count	3
13.6	Engine stop SMS	0	13.15	Alarms SMS period	5
13.7	Warn reset SMS	0	13.16	Warn SMS count	3
13.8	Alarm reset SMS	0	13.17	Warn SMS period	5
13.9	F-pump ON SMS	0			

**Menu descriptions:****I Voltage input type**

Code	Define Voltage type	Code	Define Voltage type	Code	Define Voltage type
1	"Y" 3P4W	2	"△" 3P4W	3	3P3W
4	2P3W	5	1P2W		

**I Sensor type definition**

Code	Temperature sensor Type	Oil sensor type
1	Close for HET switch (low level is active)	Close for LOP (low level is active)
2	Open for HET switch (high level is active)	Open for LOP (high level is active)
3	VDO120℃	VDO 5 bar
4	VDO150℃	VDO 10 bar
5	Datcon	Datcon 7 bar
6	Murphy	Murphy 7 bar
7	Pt100	Note: 7-13 is defined and a custom project, details please refer to the instruction for use.
8	Note: 8-14 is defined and a custom project, details please refer to the instruction for use.	
14	0-5V	
15	0-5V	
16	4-20mA	4-20mA
17	PT100-850	Only in AIN2 / AIN3 Port input
18	K- Galvanic	
19	J- Galvanic	

## I D-input definition

Code	Config output type	Code	Config output type	Code	Config output type	Code	Config output type
0	Not used	8	GEN closed aux.	16	Alarm mute	24	Stop button
1	User configured	9	Low fuel switch	17	Alarm reset	25	Start button
2	Oil pressure	10	Lamp test	18	Reserve	26	Half load
3	Temp. high switch	11	Speed lower	19	Reserve	27	permissive
4	Emergency stop	12	Speed raise	20	Panel lock	28	detection
5	Remote off load	13	Air-flap Closed	21	Activate AUTO mode	29	Voltage lower
6	Remote with load	14	Pre-heat switch	22	Activate MAN mode	30	Voltage raise
7	Reserve	15	Critical mode	23	Activate TEST mode	31	Reserve
						32-41	User configured

## I Relay output definition

Code	Config output type	Code	Config output type	Code	Config output type	Code	Config output type
0	Not used	31	Underspeed level1	62	Loss of pickup	93	AUX2 low level1
1	Crank	32	Underspeed level2	63	Scheduled run	94	AUX2 low level2
2	Fuel	33	Overspeed level1	64	Blinds control	95	AUX2 high level1
3	Gas valve	34	Overspeed level2	65	Cooler control	96	AUX2 high level2
4	Ignition	35	Oil-P low level1	66	Cooler1 control	97	ECU water in fuel
5	Shutdown alarm	36	Oil-P low level2	67	Cooler2 control	98	D-Input 1 alarm
6	Warming	37	High temp. level1	68	Heater control	99	D-Input 2 alarm
7	Idle	38	High temp. level2	69	Heater1 control	100	D-Input 3 alarm
8	Preheat output	39	Fuel low level1	70	Heater2 control	101	D-Input 4 alarm
9	Speed raise	40	Fuel low level2	71	GCB open	102	D-Input 5 alarm
10	Speed lower	41	GEN-V under 1	72	Reserve	103	D-Input 6 alarm
11	Fuel pump control	42	GEN-V under 2	73	Reserve	104	D-Input 7 alarm
12	Genset running	43	GEN-V over 1	74	Reserve	105	D-Input 8 alarm
13	Auto mode	44	GEN-V over 2	75	Reserve	106	D-Input 9 alarm
14	Test mode	45	GEN-Hz under 1	76	Reserve	107	D-Input 10 alarm
15	Man mode	46	GEN-Hz under 2	77	Reserve	108	D-Input 11 alarm
16	Maintenance due	47	GEN-Hz over 1	78	Reserve	109	Reserve
17	Reserve	48	GEN-Hz over 2	79	Reserve	110	Reserve
18	GCB fail to close	49	GEN-I over 1	80	Soft unload	111	Reserve
19	Fail to start	50	GEN-I over 2	81	Off load	112	Voltage raise
20	Fail to stop	51	GEN-KW over 1	82	Cooler3 control	113	Voltage lower
21	Reserve	52	GEN-KW over 2	83	Heater3 control	114	Reserve
22	GEN close/open	53	Idle 1	84	Emergency stop	115	AUX3 low level1
23	Audible alarm	54	Idle 2	85	Reserve	116	AUX3 low level2
24	Cooling down	55	Reserve	86	Reserve	117	AUX3 high level1
25	CAN data fail	56	Reserve	87	Reserve	118	AUX3 high level2
26	ECU warming	57	Reserve	88	D-Input 12 alarm	119	Fuel high level1
27	ECU alarm	58	Reserve	89	AUX1 low level1	120	Fuel high level2
28	Charge failure	59	Reserve	90	AUX1 low level2		
29	Batt over volt	60	Reserve	91	AUX1 high level1		
30	Batt under volt	61	Oil-P sensor open	92	AUX1 high level2		

IV、 Typical Wiring Diagram:

