CR-series SCR Operation Manual (3Ø3W)

Notice of Safety

	Jaioty			(1)	(3)	
	 Please connect lines according to Nationa prevent hazard to human and equipment 					P
	• To prevent electric shock, please make su turned off before replacing the fuse.	ire that power is				
Attention	 Please do not use beyond the rated curren unsteady, please retain sufficient current 			2	50	5
	 Please lock terminal screws tightly to prev from being burned due to the surge or over 					
Danger	 The internal parts of the device are com voltage and high temperature. Do not t prevent hazard if it is electrified. 					
Model Expla	nation CR3-	Α	2		035	5
	Output	Function	Voltage	e spec.	Current spec.	
Specficia	1:1φ 2:3φ2W 1φ2W 3:3φ3W tions	D: Standard A: Full function Current detection V: Full function(deve Voltage detection W: Full function (dev Power detector	loping) (30		035:35A : : 450:450A	P : F Z: Z C: 3 (Bla
Main power	220, 380, 440V±15% 50/60HZ		Optional	information:		
Control power	200~240VAC(fan included) • 90~240V AC/DC(fans no	on-included)	control, t	the controller	el is with full function can be planned as a c	constant c
Rated current	35A,50A,75A,100A,125A,150A,225A,300A,450A				e. Please refer to the p	
Control mode	Phase trigger control or Zero cross control (only 1 φ 1	W type)	suppo	ort ModBus pr	nodel is included the se rotocal in RTU or ASC	II format. I
Control signal Vcmd	0~5V,1~5V (impedance 20K) 0~10V, 1~10V (imped 0~20mA,4~20mA (impedance 2500hm)	ance 100K)			pe is not included RS- range of specification	
Output control range	0.0~100.0%				ol can be planned to p	
Resolution/Linear	0.1% / 1%		Ŭ	•	control mode] with P-t	
E. ADJ control signal	Analog control: 0~5V(impedance 20K) to 0.0~100 on/off control: Hi=3.4V,Lo=2.2V	0.0% •	P-type Using (e(standard): 6sets SCR to	control each phase' +	/- phase \
Serial communication	RS-485 interface, support ModBus protocol ir	RTU or ASCII format	(avera	ge = 0). It's s	racteristics is to contro uitable for inductive (c	or resistiv
Cooling Method	natural air circulation or fan cooling				trollable phase angle o	only have
Ambient temperature/humidity	-10~+50°C/under 90%RH			sets SCR & 3	3sets diodes to control	
Hi-pot test	AC2000V/1min. (between the power, signal te	erminal & heat sinks)). It's suitable	If-wave controlled". It e for micro voltage adj	ustment.

ONCH 琦勝企業有限公司 CONCH ELECTRONIC CO.,LTD

(4)

Control Mode Phase trigger control Zero cross control 3φHalf-wave $(ank): 1 \varphi$ self-setup N) and the control mode is with phase current (or constant voltage . constant er settings ommunication (RS-485) which can Please refer to the communication it's only for display.) se refer to the product specifications ero control. C-type two options. e voltage. This is called "3 φ full-wave utput line current without DC component tive) load. Such as motors, transformers ve 0~150 degrees control range. hase' half-circumference phase voltage This's called " 3φ half-wave controlled". It has a wide phase angle control range (0~120 degree). It's suitable for micro voltage adjustment. Due to line current has DC component, therefore, it's only suitable for resistive load. 5.Current calculation and specifications used (3 φ)I(AMP) = P(watt) ÷ V(voltage) ÷ $\sqrt{3}$ ÷ 0.85 (15% safety reservation) (1 φ)I(AMP) = P(watt) ÷ V(voltage) ÷ $\sqrt{3}$ ÷ 0.85 (15% safety reservation) over $20M\Omega/500V$ (between the power, signal terminal & heat sinks) Pls use the available fuses, the below is model# for Bussmannn & (I^2t)

APPEARANCE

(1)

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Fuse Spec.

Noise susceptibility

Isolation resistor

Housing Material

2KV 5KHZ

ABS (UL94V)

Current	Fuse model# 240V (l²t) /415V (l²t)	Current	Fuse model# 240V (I²t) /415V (I²t)	Current	Fuse model# 240V (I²t) /415V (I²t)	Current	Fuse model# 240V(I²t) /415V(I²t)
35A	50LET(1400)/50FE(380)	100A	125LET(7500)/110EET(4000)	180A	200LMT(20000)/200FM(10500)	380A	/Nidec 660GH400(112000)
50A	63LET(2200)/63FE(480)	125A	160LET(16000)/100FE(1800)2pcs	225A	250LMT(40000)/280FM(10500)	450A	/280FM(30500)2pcs
75A	80LET(3800)/100FE(1800)	150A	180LET(29000)/100FE(1800)2pcs	300A	355LMT(100000)/350FM(60000)		

Input/Output setting Make sure the control signals based on the input type and then adjust by the below table accordingly to avoid control errors. ■ :ON 🗆 :OFF 🛛 :Don't Care

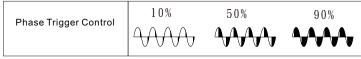
Input signal	S4	S3	S2	S1	Input signal	S4	S3	S2	S1	
0~5V					2~10V				\boxtimes	
1~5V				\boxtimes	0~20mA				\boxtimes	
0~10V					4~20mA					

1φ (CR1)phase/zero cross control settings Note: Change control mode must be rebooted

Output Control	S4	S3	S2	S1
Phase trigger control	\boxtimes	\boxtimes	\boxtimes	
Zero cross trigger control	\boxtimes	\boxtimes	\boxtimes	

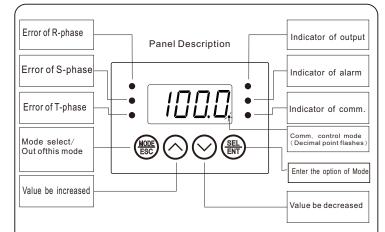
DIP switches SW1I on the main control panel

Phase / zero control output waveform



Zero Cross	10%	50%	90%
Trigger Control			

Parameter setting / operating



Key operation: Press [MODE] key to start the parameter setting, and then [SET] to call out the parameters, using the up / down key to change the parameter value. To press [SET] button for 1 second to write the parameters into the memory. To cancel the change of the parameters, press the [MODE] key to exit before written by pressing the [SET] key. Press and hold the [MODE] key for 3 seconds or don't press any key more than 120 seconds to end the set-up function of parameters to return to the display mode.

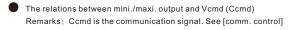
[Step 1]	Parameter, press [MODE] to start	
Display	Description	Default Value
d ,5P	$\begin{array}{c} \text{disp:when select the normal condition, what types of value will be displayed} \\ \hline PErL \rightarrow & I a a a a a a a a a a a a a a a a a a$	PEre
SEUP	stup:1st time to start or standby over 5 minutes, soft start time (See [control signal modulation])	10Sec.
rESP	resp:control_signal(Vcmd,Ccmd)response time (See [control signal modulation]) range:1~60 seconds	2Sec.
[Step 2]	Press the [MODE] key for 3 seconds to start	
Display	Description	Default Valu
HLEd	Hltd: maxi. output limit setting (constant current mode, maxi. output current). range:50~100%	100%
LLEd	LLtd:Vcmd=0 (see Vcut parameter), mini. output limit setting (constant current mode, mini. output current). range:0~50%	0%
RLEr	Altr: alarm output delay time when Abnormal. range:0-20 seconds	1Sec
Eool	CooL: Fan start temperature. range:5~60 degree C	45度
ERdJ	Eadj: Select external control to control Vcmd	nULL
uEUE	Vcut: when Vcmd(Ccmd)=0, select Lltd output or close output. Stop: close output Lltd: output by mini. of output value	StoP
НЕШг	Hcur: (optional) high current. when current value bigger than set value, error occurred. see [F HC] parameter. (phase: above 30%, zero cross 50% above start detect. set 0 as close function) range:0~500A	0A
LEUr	Lcur: (optional) low current. when current value lower set value, error occurred. see [F LC] parameter. (phase: above 30%, zero cross 50% above start detect. set 0 as close function) range:0~500A	0A
bRLn	$bALn:(optional) 3 \varphi$ current no-balance setting, when 3 φ current is unbalance, the value between maxi, current & mini, current bigger than set value, error occurred. see [F bL] parameter. (phase: above 30%, zerp cross 50% start detect. set 0 as close function) range:0-500A	0A
F P	Kp: (optional) constant current (voltage/power) control deviation magnification settings. the greater the value the more sensitive response. range: 10~100%	100%
PLEd	Pltd: (optional) constant current control, limit the maximum phase angle. inductive load due to voltage phase is ahead current phase, this feature can prevent failure of SCR trigger. range: 50~100%	100%

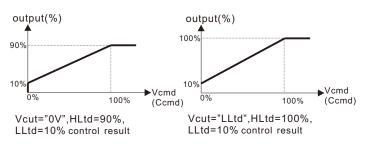
[Step 3] Press [MODE]+[UP] key for 3 seconds to start						
Display	Description	Default Value				
u[nd	Vcmd: setup Vcmd display value to response the control signal. See [inout/output setting] $4 - 20 \rightarrow 0 - 20 \rightarrow 0 - 5 \rightarrow 1 - 5 \rightarrow 0 - 10 \rightarrow 0 - 10 \rightarrow 0 - 20 \rightarrow 0 - 5 \vee 1 - 5 \vee 0 - 10 \vee 0 + 1$	4-20				
<u>ה</u> Π וח	Main:Main power anomaly occurs disposal. 3 options.	<u>520</u> P				
FUSE	Fuse: The fuse blown anomaly occurred disposal. option is same.	<u>520</u> 2				
F L d	F Ld: (LOAD) disconnection occurred disposal. option is same as above. standard type under 75A (non-included) has not this feature, please must set	RLAA				
5655	SENS: temperature switch failure occurred disposal. option is same as above. when output 10 minutes continusally, temperature value is still on 0 degree C.	ALAN				
F HE	F HC: high current anomaly occurred disposal. option is same as above.	RLRĀ				
FLE	F LC: low current anomaly occurred disposal. option is same as above.	RLAA				
F bl	F bL: 3 phase unbalance anomaly disposal. option is same as above.	ALAN				
FSEr	FSCR: SCR breakdown anomaly occurred disposal. option is same as above.	<u>StoP</u>				
Etrl	Ctrl: (optional) control options, phase/constant current/constant voltage/constant power controlled PHRS Poult Phas: phase control iout: constant current vout: constant voltage Poult constant power	PHR5				
ام ر	id:(optional) communication station settingrange:1~99	1				
6RUd	baud: (optional) communication speed range:2.4 + 4.8 + 9.6 + 19.2 + 38.4。kbit/sec	9.6				
dRER	data: (optional) communications serial format. range:8n1 · 8n2 · 8e1 · 8o1 .	8n1				
ñodE	mode: (optional) ModBus communications format range:RTU · ASCii.	RTU				
LoUL	tout: (optional) communication timeout setting, when the communication disconnection time exceeds, then the remove communication output control will transfer to the vcmd to control, range: 2~99S	5Sec.				
[O ther]					
LoEF	Press [MODE]+[DOWN] key for 3 seconds to start Lock: parameter protection setting. range: 0-3 0: all cannot setup 1: open step 1, 2: open step 1,2, 3: all open	3				
£85£	Press [SET key for 3 seconds to start test: manual output testing. range:0~100%	0%				

Anomaly display (press [SET]+[UP] key to clear)

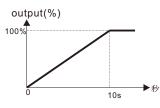
Display	Description	Comm.	code
٥٢	OC: (optional) over-current, when the current value exceeds rated value more than 1.2 times, the controller will stop output. please check the load whether short-circuit.	1	
הו אה	Main: the main power anomaly. check the input switch or the controller fuse if it is normal.	2	
HEUr	Hcur: (optional) high current	3	
5 int	Sink: heat sink temperature exceeds 80 degrees, the controller will stop output. check the fan spins and environmental ventilation.	4	
FUSE	Fuse: fuse breakdown. please confirm fuse spec. < load power or if the connection screws has locked tight (heat fuse)	5	
LoRd	Load: Load Break	6	
LEUr	LCur: (optional) low current.	7	
LHEr	Ther: temperature sensor anomaly. check the pig plug of temperature sensor whether bad connection, (impedance is about 3K ~ 10K ohm) range:8n1 · 8n2 · 8e1 · 8o1.	8	
SEr	SCR: (optional) SCR breakdown. please return for repairing.	9	
Unbl	Unbl: (optional) 3 phase unbalance	10)

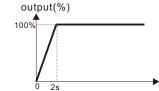
Modulation for control signals





Soft start time (STUP), the relations between response time (RESP) & output





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STUP=10s的Output delay effects (power on or standby over 5 minutes) RESP=2sOutput delay effects

Constant current/voltage/power (optional functions)

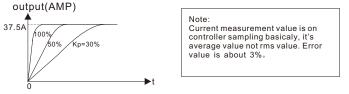
If parameter" CTRL" setup as iOUT current control/vOUT voltage control or pOUT power control (below is the current example), the controller will enter the constant current control mode and Vcmd (Ccmd) will also convert to current target value (SV) automatically.

Ex: model #CR3-A4075P (3 φ phase trigger control 440V/75A)

when Vcmd=50%, current target value=75x50%=37.5A. and so on if HLtd=90%, LLtd=10%, which means the maxi. SV value is limited in 67.5A, the mini. SV start from 7.5A.

The controller adopted a proportional - integral (PI) as a constant current control operation. Parameters "Kp" is for the proportional gain. the greater output response sensitive the more value setting. please see the load characteristics adjusted to the best value.

Below is the diagram shows:



Vcmd=50% different KP output effects

Comm. control output Ccmd (optional function)

The controller can use the communication to control the SCR output value to replace $\ensuremath{\mathsf{Vcmd}}$.

Method:

 Set the contacts (coil) IP 0x01 to 1(comm. control). The first decimal point on the display start flashes.

2. Change the register (reg. Ip4x016) value, SCR output immediate change.

Note:

Under the communication control mode, even if no change the output, which must keep the communicate status with the controller, for example, keep reading the register or contacts address value. Otherwise, the controller will determine the controller will disconnection. If the disconnection time longer than Tout, the controller will automatically remove the communication control function to avoid danger.

Description for communication address

Explanation	Modbus address	Data length	R/W
Unexpected condition cleared 1: Lift the unusual alarm (Automatic recovery to 0)	00001	bit	R/W
Select control mode 1: communication 0: external	00002	bit	R/W
Output mode 1: start 0: stop	00003	bit	R
Fan spinning mode 1: start 0: stop	00004	bit	R

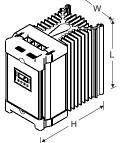
R-phase Abnormal signal00005bitRS-phase Abnormal signal00006bitR1: on 0. off00007bitROver current (C) abnormal status00008bitR1: Abnormal 0: normal00009bitR1: Abnormal 0: normal00010bitR1: Abnormal 0: normal00011bitR1: Abnormal 0: normal00011bitR1: Abnormal 0: normal00012bitR1: Abnormal 0: normal00013bitR1: Abnormal 0: normal00014bitR1: Abnormal 0: normal00015bitR1: Abnormal 0: normal00015bitR1: Abnormal 0: normal00015bitR1: Abnormal 0: normal00016bitR1: Abnormal 0: normal00016bitR <td< th=""><th>Explanation</th><th>Modbus Address</th><th>Data Length</th><th>R/W</th></td<>	Explanation	Modbus Address	Data Length	R/W
1: on 0: off-00000Dr.RT-phase Abnormal signal t: on 0: off00007bitRT-phase Abnormal status00008bitROver current (OC) abnormal status00009bitRI'Abnormal 0: normal00010bitRI'Abnormal 0: normal00011bitRI'Abnormal 0: normal00011bitRI'Abnormal 0: normal00011bitRJ'Abase unbance (UNBL) abnormal status00012bitR1'Abnormal 0: normal00013bitRT'Abnormal 0: normal00014bitRI'Abnormal 0: normal00015bitRSCR (SCR) abnormal status00016bitRSCR (SCR) abnormal status00016wordR/WRange: 1-99 second40002wordR/WMaximum of output value (Htd)40003wordR/WMange: 0-600A40005wordR/WMange: 0-600A40006wordR/WAnge: 0-600A40007wordR/WAnge: 0-600A40006wordR/WAnge: 0-600A40007wordR/WAnge: 0-600A40006wordR/WAnge: 0-600A40017<		00005	bit	R
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1: Abnormal 0: normal00014011RLoad (LOAD) abnormal status00015bitRI: Abnormal 0: normal00016bitRSCR (SCR) abnormal status00016bitRRange: 1~99 second40001wordR/WRange: 1~99 second40002wordR/WMaximum of output value (HId)40003wordR/WManimun of output value (LId)40004wordR/WRange: 0~50%40005wordR/WHigh current setting (HC)40005wordR/WRange: 0~600A40006wordR/WLow current setting (LC)40007wordR/WRange: 0~600A40007wordR/WProportional gain value setting (Kp)40008wordR/WRange: 0~600A400010wordR/WRange: 0~600A40010wordR/WRange: 0~600A40010wordR/WRange: 0~600A40010wordR/WRange: 0~100%40010wordR/WRange: 0~100%40010wordR/WRange: 0~100%40011wordR/WRange: 0~100%40011wordR/WRange: 0~100%40011wordR/WRange: 0~100%40011wordR/WRange: 0~100%40011wordR/WRange: 0~100%40011wordR/WRange: 0~100%40011wordR/WRange: 0~100%	Main power (MAIN) abnormal status 1: Abnormal 0: normal	00013	bit	R
1: Abnormal 0: normal00013Dr.RSCR (SCR) abnormal status 1: Abnormal 0: normal00016bitRSoft start time (STUP) Range: 1-99 second40001wordR/WResponse speed time (RESP) Range: 1-30 second40002wordR/WMaximum of output value (HItd) Range: 0-100%40003wordR/WMaximum of output value (LItd) Range: 0-50%40004wordR/WHigh current setting (HC) Range: 0-600A40005wordR/WLow current setting (LC) 		00014	bit	R
1: Abnormál 0: normal00016DitRSoft start time (STUP) Range: 1-99 second40001wordR/WResponse speed time (RESP) Range: 100%40002wordR/WMaximum of output value (HItd) Range: 50-100%40003wordR/WManimun of output value (LItd) Range: 0-50%40004wordR/WMarimun of output value (LItd) Range: 0-600A40005wordR/WIde current setting (LC) Range: 0-600A40006wordR/WSoft start time (starting (Kp) Range: 0-600A40007wordR/WProportional gain value setting (Kp) Range: 50-100%40008wordR/WAlarm output delay time setting (ALTR) Range: 50-20 second40010wordR/WFan start temperature setting (COOL) Range: 5-60 degree40011wordR/WAnalog control signal (CCMd) Range: 0-1000 (unit 0.1%)40016wordRAnalog control signal (CCMd) Range: 0-1000 (unit 0.1%)40017wordRSCR present output Range: 0-1000 (unit 0.1%)40019wordRResponse current Range: 0-see spec. (unit: 0. 1A)40021wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40022wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40024wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40023wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40024wordRS-phase average current	Load (LOAD) abnormal status 1: Abnormal 0: normal	00015	bit	R
Range: 1-99 second40001wordRNWResponse speed time (RESP) Range: 1-30 second40002wordR/WMaximun of output value (Hltd) Range: 50-100%40004wordR/WMaimun of output value (Lltd) Range: 0-60%40005wordR/WHigh current setting (HC) 		00016	bit	R
Range:1-30 second40002WordR/WMaximum of output value (Hitd) Range:50-100%40003wordR/WManimun of output value (Litd) Range:0-50%40004wordR/WHigh current setting (HC) Range:0-600A40005wordR/WLow current setting (LC) Range:0-600A40007wordR/W3 phase unbalance current setting (BALN) Range:0-600A40007wordR/WProportional gain value setting (Kp) Range:0-600%40008wordR/WAmage: 10-100%40009wordR/WAlarn output delay time setting (ALTR) Range: 0-20 second40010wordR/WAlarn output delay time setting (COOL) Range: 0-1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0-1000 (unit 0.1%)40017wordRSCR present output Range: 0-1000 degree C40019wordRRest sink temperature Range: 0-1000 degree C40019wordRS-phase current Range: 0-1000 degree C40021wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordR0utput voltage Range: 0-see spec. (unit: 0. 1A)40023wordR0utput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput voltage Range: 0-see spec. (unit: 0. 1KW) <td< td=""><td></td><td>40001</td><td>word</td><td>R/W</td></td<>		40001	word	R/W
Range: 50-100%HOUOSWordR/WManimun of output value (Lltd) Range: 0~50%40004wordR/WHigh current setting (HC) Range: 0~600A40005wordR/WLow current setting (LC) Range: 0~600A40007wordR/WProportional gain value setting (BALN) Range: 10~100%40007wordR/WProportional gain value setting (Kp) Range: 0~100%40008wordR/WAlarm output delay time setting (ALTR) Range: 0~200 second40010wordR/WAlarm output delay time setting (COOL) Range: 0~200 second40011wordR/WCommunication control signal (Ccmd) Range: 0~1000 (unit 0.1%)40016wordR/WAnalog control signal (Vemd) Range: 0~1000 (unit 0.1%)40017wordRSCR present output Range: 0~1000 (unit: 0.1A)40020wordRS-phase current Range: 0~see spec. (unit: 0.1A)40022wordRS-phase current Range: 0~see spec. (unit: 0.1A)40022wordR3 phase average current Range: 0~see spec. (unit: 0.1A)40024wordROutput voltage Range: 0~see spec. (unit: 0.1A)40025wordROutput voltage Range: 0~see spec. (unit: 0.1A)40026wordROutput voltage Range: 0~see spec. (unit: 0.1A)40026wordRContacts (coil) Status string pattern40027wordR		40002	word	R/W
Range: 0-50%HO004WordR/WHigh current setting (HC) Range: 0~600A40005wordR/WLow current setting (LC) Range: 0~600A40007wordR/W3 phase unbalance current setting (BALN) Range: 0~100%40007wordR/WProportional gain value setting (Kp) Range: 10~100%40009wordR/WAnage: 50~100%40009wordR/WAlarn output delay time setting (ALTR) Range: 50~100%40010wordR/WAnage: 50~20 second40011wordR/WFan start temperature setting (COOL) Range: 0~20 second40011wordR/WCommunication control signal (Ccmd) Range: 0~1000 (unit 0.1%)40017wordRSCR present output Range: 0~1000 unit 0.1%)40018wordRReage: 0~1000 unit 0.1%)40020wordRSCR present output Range: 0~1000 unit 0.1%)40021wordRSch present output Range: 0~1000 unit: 0.1A)40021wordRS-phase current Range: 0~see spec. (unit: 0.1A)40022wordRS-phase current Range: 0~see spec. (unit: 0.1A)40023wordROutput voltage Range: 0~see spec. (unit: 0.1A)40024wordROutput voltage Range: 0~see spec. (unit: 0.1A)40025wordROutput voltage Range: 0~see spec. (unit: 0.1A)40026wordROutput voltage Range: 0~see spec. (unit: 0.1A)40026wordROutput voltage R		40003	word	R/W
Range: 0~600A40003WordR/WLow current setting (LC) Range: 0~600A40006wordR/W3 phase unbalance current setting (BALN) Range: 10~100%40007wordR/WProportional gain value setting (Kp) Range: 10~100%40008wordR/WProportional gain value setting (Kp) Range: 50~100%40009wordR/WAlarm output delay time setting (ALTR) Range: 50~20 second40010wordR/WCommunication control signal (CCmd) Range: 0~1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0~1000 (unit 0.1%)40017wordRSCR present output Range: 0~1000 degree C40019wordRR-phase current Range: 0~see spec. (unit: 0. 1A)40021wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40026wordROutput voltage Range: 0-see spec. (unit: 0. 1KW)40026wordROutp		40004	word	R/W
Range: 0~600A40000WorldR/W3 phase unbalance current setting (BALN) Range: 0~600A40007wordR/WProportional gain value setting (Kp) Range: 10-100%40008wordR/Wthe maximum phase angle limited setting (PLTD) Range: 50~100%40009wordR/WAlarm output delay time setting (ALTR) Range: 0~20 second40010wordR/WFan start temperature setting (COOL) Range: 0~20 degree40011wordR/WCommunication control signal (Ccmd) Range: 0~1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0~1000 (unit 0.1%)40017wordRHeat sink temperature Range: 0~1000 degree C40019wordRR-phase current Range: 0~100 degree C40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40022wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40026wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40026wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40026wordROutput power Range: 0-see spec. (unit: 0. 1KW)40026wordR		40005	word	R/W
Range: 0~600ALate40007WordR/WProportional gain value setting (Kp) Range: 10~100%40008wordR/WProportional gain value setting (Kp) Range: 50~100%40009wordR/WAlarn output delay time setting (ALTR) Range: 0~20 second40010wordR/WFan start temperature setting (COOL) Range: 0~20 second40011wordR/WCommunication control signal (Ccmd) Range: 0~1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0~1000 (unit:0.1%)40017wordRSCR present output Range: 0~1000 (unit:0.1%)40018wordRHeat sink temperature Range: 0~100 degree C40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40025wordROutput power Range: 0-see spec. (unit: 0. 1A)40025wordROutput power Range: 0-see spec. (unit: 0. 1A)40026wordROutput power Range: 0-see spec. (unit: 0. 1A)40025wordROutput power Range: 0-see spec. (unit: 0. 1A)40025wordROutput power Range: 0-see spec. (unit: 0. 1KW)40026wordR<		40006	word	R/W
Range: 10~100%Part of the set		40007	word	R/W
Range: 50~100%HordK/WAlarm output delay time setting (ALTR) Range: 0~20 second40010wordR/WFan start temperature setting (COOL) Range: 5~60 degree40011wordR/WCommunication control signal (Ccmd) Range: 0~1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0~1000 (unit:0.1%)40017wordRSCR present output Range: 0~1000 (unit:0.1%)40018wordRHeat sink temperature Range: 0~100 degree C40020wordRS-phase current Range: 0-see spec. (unit:0.1A)40021wordRS-phase current Range: 0-see spec. (unit:0.1A)40022wordR3 phase average current Range: 0-see spec. (unit:0.1A)40023wordROutput voltage Range: 0-see spec. (unit:0.1V)40024wordROutput voltage Range: 0-see spec. (unit:0.1V)40025wordROutput power Range: 0-see spec. (unit:0.1KW)40026wordROutput power Range: 0-see spec. (unit:0.1KW)40025wordROutput power Range: 0-see spec. (unit:0.1KW)40026wordROutput power Range: 0-see spec. (unit:0.1KW)40026wordR		40008	word	R/W
Range: 0-20 second40010WordR/WFan start temperature setting (COOL) Range: 5-60 degree40011wordR/WCommunication control signal (Ccmd) Range: 0-1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0-input spec. (unit0.1 mA or V)40017wordRSCR present output Range: 0-1000 degree C40019wordRR-phase current Range: 0-see spec. (unit: 0. 1A)40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordR0utput voltage Range: 0-see spec. (unit: 0. 1A)40025wordR0utput voltage Range: 0-see spec. (unit: 0. 1KW)40025wordR0utput power Range: 0-see spec. (unit: 0. 1KW)40026wordR0-see spec. (unit: 0. 1KW)40026wordR		40009	word	R/W
Range: 5-60 degree400111WorldR/WCommunication control signal (Ccmd) Range: 0-1000 (unit 0.1%)40016wordR/WAnalog control signal (Vcmd) Range: 0-input spec. (unit0.1 mA or V)40017wordRSCR present output Range: 0-1000 (unit:0.1%)40018wordRHeat sink temperature Range: 0-1000 degree C40019wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordR0utput voltage Range: 0-see spec. (unit: 0. 1A)40025wordR0utput voltage Range: 0-see spec. (unit: 0. 1A)40025wordR0utput voltage Range: 0-see spec. (unit: 0. 1V)40025wordR0utput power Range: 0-see spec. (unit: 0.1KW)40026wordR0utput power Range: 0-see spec. (unit: 0.1KW)40026wordR0utput code: 0-10 (0: usual)40027wordR		40010	word	R/W
Range: 0~1000 (unit 0.1%)40010K/WAnalog control signal (Vcmd) Range: 0~input spec. (unit0.1 mA or V)40017wordRSCR present output Range: 0~1000 (unit:0.1%)40018wordRHeat sink temperature Range: 0~100 degree C40019wordRR-phase current Range: 0-see spec. (unit: 0. 1A)40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordRT-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40024wordROutput voltage Range: 0-see spec. (unit: 0. 1V)40025wordROutput power Range: 0-see spec. (unit: 0.1W)40026wordROutput power Range: 0-see spec. (unit: 0.1KW)40026wordRUnexpected condition Unsual code: 0~10 (0: usual)40027wordR		40011	word	R/W
Range: 0input Spec. (unitô.1 mA or V)400117WorldRSCR present output Range: 0-1000 (unit:0.1%)40018wordRHeat sink temperature Range: 0-100 degree C40019wordRR-phase current Range: 0-see spec. (unit: 0. 1A)40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordRT-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1V)40024wordROutput power Range: 0-see spec. (unit: 0.1V)40025wordROutput power Range: 0-see spec. (unit: 0.1kW)40026wordRUnexpected condition Unusual code: 0~10 (0: usual)40027wordR		40016	word	R/W
Range: 0~1000 (unit:0.1%)400113WorldRHeat sink temperature Range: 0~100 degree C40019wordRR-phase current Range: 0-see spec. (unit: 0. 1A)40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordRT-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordR0utput voltage Range: 0-see spec. (unit: 0. 1A)40024wordR0utput voltage Range: 0-see spec. (unit: 0.1KW)40025wordR0utput power Range: 0-see spec. (unit: 0.1kW)40026wordR0utput code: 0~10 (0: usual)40026wordR		40017	word	R
Range: 0~100 degree C40010WordRR-phase current Range: 0-see spec. (unit: 0. 1A)40020wordRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordRT-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1V)40024wordROutput voltage Range: 0-see spec. (unit: 0.1kW)40025wordRUnexpected condition Unusual code: 0~10 (0: usual)40026wordR		40018	word	R
Range: 0-see spec. (unit: 0. 1A)40020WorldRS-phase current Range: 0-see spec. (unit: 0. 1A)40021wordRT-phase current Range: 0-see spec. (unit: 0. 1A)40022wordR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1V)40024wordROutput power Range: 0-see spec. (unit: 0.1KW)40025wordRUnexpected condition Unusual code: 0~10 (0: usual)40026wordR	Heat sink temperature Range:0~100 degree C	40019	word	R
Range: 0-see spec. (unit: 0. 1A)HOOL 1WorldRT-phase current Range: 0-see spec. (unit: 0. 1A)40022worldR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023worldROutput voltage Range: 0-see spec. (unit: 0. 1V)40024worldROutput power 		40020	word	R
Range: 0-see spec. (unit: 0. 1A)40022WorldR3 phase average current Range: 0-see spec. (unit: 0. 1A)40023wordROutput voltage Range: 0-see spec. (unit: 0. 1V)40024wordROutput power Range: 0-see spec. (unit: 0. 1kW)40025wordRUnexpected condition Unusual code: 0~10 (0: usual)40026wordR		40021	word	R
Range: 0-see Spec. (unit: 0. 1A)HODESWorldROutput voltage Range: 0-see spec. (unit: 0. 1V)40024worldROutput power Range: 0-see spec. (unit: 0. 1kW)40025worldRUnexpected condition Unusual code: 0~10 (0: usual)40026worldRContacts (coil) Status string pattern40027worldR		40022	word	R
Range: 0~see spec. (unit:0.1V) 40024 word R Output power Range: 0~see spec. (unit:0.1kW) 40025 word R Unexpected condition Unusual code: 0~10 (0: usual) 40026 word R		40023	word	R
Range: 0~see spec. (unit:0.1kW) 40020 word R Unexpected condition Unusual code: 0~10 (0: usual) 40026 word R Contacts (coil) Status string pattern 40027 word P		40024	word	R
Unusual code: 0~10 (0: usual) 40020 word R Contacts (coil) Status string pattern 40027 word P		40025	word	R
		40026	word	R
		40027	word	R

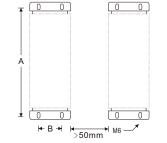
Communication can support RTF or ASCII format, allows up to continuously 8 data for reading/writing. the above address is 10 hex.

Read and write please refer to the ModBus protocal. •

Dimension

Type Current Length Width Height A&B(mm) Cod	
	oling Way P
75A 203 80 180 215,50 Natu	ure cooling 1
Cr1 100A 125A 241 80 180 215,50 100A 191W 100A	1
180A 225A 306 80 180 280,50 Fai	n cooling 2
300A 380A 306 120 220 280,80	5
35A 203 80 180 215,50 Nat	ure cooling 1
Cr2 75A 241 80 180 215,50	1
3φ2W 100A 125A 150A 241 120 220 215,80	an cooling
180A 306 120 220 280,80	5
300A 380A 310 245 220 295,160	
35A 203 120 153 215,80 Natu	ure cooling 3
Cr3 50A 228 120 153 215,80	3
3φ3W 75A 241 120 220 215,80	4
125A 150A 306 120 220 280,80 Fa	an cooling 5
180A 225A 310 245 220 295,160	
300A 380A 395 245 220 380,160	
450A 395 365 220 380,280	

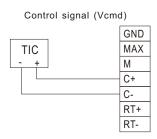


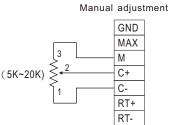


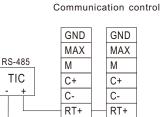
Installation instruction

- Adopts vertical installing so as to achieve the best radiation effect Notice the width of the interspace between two heat sinks to ensure the best radiation ability (>50mm)
- Keep the sufficient space for ventilation at the upper and lower side (>50mm) Control cabinet should have vent holes and mounted with fans so as to make
- ventilation better
- of rated current

Input signal wiring diagram







RT-

Wiring diagram

1Ø1W

(F)

AC-L

AC-N

A1

A2

GND

MAX

М

C+

RT+

control power

alarm output

Main power

R

☐ F1

⋧⋠

Main power

F2

NFB

1Ø2W

(F)

AC-L

AC-N

A1

A2

GND

MAX

М

C+ C-

RT+

control power

alarm output

GND MAX

RT-

Muti-unit link in control 4~20mA GND GND GND MAX MAX MAX TIC М М М C+ C+ C+ C-C-C-

RT+

RT+

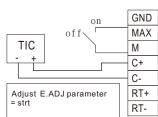
1~5V

RT+

RT+

1~5V

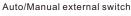
Start/stop control

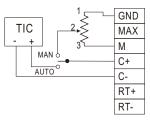


RT+

RT-

4~20mA





Control signal external adjustment

