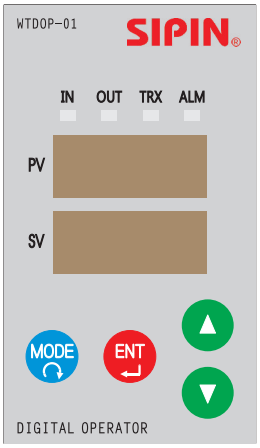
W7

Three-Phase Product Operation and Parameter Description



1.Explanation of indicator lamp：

IN：Input indicator lamp
OUT：Output indicator lamp
TRX：Transmission indicator lamp
ALM：Error indicator lamp

2.Text cross reference table：

1	1	2	2	3	3	4	4	5	5
6	6	7	7	8	8	9	9	0	0
A	A	b	b	C	C	d	d	E	E
F	F	G	G	H	H	i	i	J	J
k	k	L	L	m	m	n	n	o	o
P	P	q	q	r	r	S	S	t	t
u	u	V	V	w	w	X	X	y	y
Z	Z								

3.Description of function keys：

MODE and EXIT key
1.Switch between different layers.
2.Not yet in setting mode: Exit and return to display mode.
3.In setting mode: Exit without saving file.
4.When error happens: Error reset.
5.In setting mode: Press and hold, then press upward cursor to move left, and press downward cursor to move right.

Enter key
1.Not yet in setting mode: Enter parameter setting, SV value blinks.
2.In setting mode: Save value and blinking stops, exit setting mode.

Upward cursor
1. Not yet in setting mode: Switch parameter. (upward)
2. In setting mode: The value increases.

Downward cursor
1.Not yet in setting mode: Switch parameter. (downward)
2.In setting mode: The value decreases.

1-1.Display layer

V-F：Voltage feedback models and full-function models have this parameter.
FULLY：Only full-function models have this parameter.
※：Only 450, 580, 720A models have this parameter.

Parameter Code No.	Description	Unit	Keyboard R/W	Register Address	Comm. R/W	Reference Page
in	Input percentage	0.0 %	R	10	R	
out	Output percentage	0.0 %	R	11	R	
SFS	Soft start	sec	R	12	R	
SFd	Soft down	sec	R	13	R	
nAnL	Maximum output limit	0.0 %	R	14	R	
Vout	V-F Output voltage (RMS)	0.0 V	R	15	R	
Ar	FULLY R-phase output current (RMS)	0.0 A	R	16	R	
AS	FULLY S-phase output current (RMS)	0.0 A	R	17	R	
At	FULLY T-phase output current (RMS)	0.0 A	R	18	R	
kW	FULLY Output power	0.0 KW	R	19	R	
oC	Heat sink temperature	± 0.0 ℃	R	20	R	
SoC	※ S-phase heat sink temperature	± 0.0 ℃	R	21	R	
toC	※ T-phase heat sink temperature	± 0.0 ℃	R	22	R	
HZ	Power supply frequency (45~65Hz)	Hz	R	23	R	
S1	External analog S1 value	0.0 %	R	24	R	
S2	External analog S2 value	0.0 %	R	25	R	
diin	Digital input (Unit is controlled by the Ctnd parameter on the control layer and inSt parameter layer.) (When digital input is selected on the inSt parameter layer, it can be set up from any parameter on the display layer by pressing ENT key.)	0.0 % 0.0 V 0.0 A 0.0 KW	R/W	26	R	
oPtt	Operating time (Unit is determined by the P-2u parameter on the control layer, it will be reset to 0 after there is no output for 1 minute)	Min Hr	R	27	R	
Aout	FULLY Average current of 3 phase supply (RMS)	0.0 A	R	31	R	
Lbdf	FULLY Percentage of unbalanced load	%	R	32	R	

1-2Display Layer (Error record)：On the display layer, press the MODE key for 3 seconds

Parameter Code No.	Description	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
Err 1	Error record 1	R	100	R	
Err2	Error record 2	R	101	R	
Err3	Error record 3	R	102	R	
Err4	Error record 4	R	103	R	

2. Parameter Layer： On the display layer, press the MODE key + ENT key

V+F：Voltage feedback models and full-function models have this parameter.
FULL：Only full-function models have this parameter.
※：Only 450, 580, 720A models have this parameter.

Parameter Code No.	Description	Range	Default setting	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
PASL	Preset parameter on the Display layer when powered on	00 in Input percentage; 01 out Output percentage; 02 SFS Soft start; 03 SFd Soft down; 04 mAxL Maximum output limit; V+F 05 Uout Output voltage; FULL 06 Ar R-phase output current; FULL 07 AS S-phase output current; FULL 08 At T-phase output current; FULL 09 PU Output power; 10 °C Heat sink temperature; ※ 11 S°C S- phase temperature; ※ 12 t°C T- phase temperature; 13 HZ Power supply frequency; 14 S1 S1 input percentage; 15 S2 S2 input percentage; FULL 16 dGin Digital input; FULL 17 oPtt Operating time; FULL 18 Aout Average current; FULL 19 LbdF Percentage of unbalanced load	out	R/W	128	R/W	
SFS	Soft start	0~30sec	10	R/W	129	R/W	
SFd	Soft down	0~30sec	0	R/W	130	R/W	
mAn	Maximum output value	0~100%	100	R/W	131	R/W	
bASE	Basic output value	0~50%	0	R/W	132	R/W	
AIF	Function selection for external analog terminal	00 Not in use / Closed: Error reset; 01 Maximum output limit / Closed: Error reset; 02 Maximum output limit / Basic output amount 0-50%; 03 Manual setting / Closed: Error reset; 04 Manual setting / Basic output amount 0-50%; 05 Manual setting (Invalid when automatic) / Open: Automatic Closed: Manual; 06 Manual setting (Restricted when automatic) / Open: Automatic Closed: Manual; 07 Maximum output limit / Zero crossing cycle sampling; 08 Maximum output limit / Zero crossing time sampling; 09 Maximum output limit / Open: Stop Closed: Run; V+F 12 Voltage limit / Closed: Error reset; FULL 13 Current limit / Closed: Error reset; FULL 14 Voltage limit / Current limit	00	R/W	133	R/W	
LCPE	FULL Percentage setting for low current detection	0-80% (Set 0 for no detection, related to the toSt parameter)	0	R/W	136	R/W	
CrFd	FULL Current detection	0.0~toSt (Set 0 for no detection)	0.0	R/W	137	R/W	
LbPE	FULL Percentage setting for load unbalance detection	0-80% (Set 0 for no detection, related to the toSt parameter)	0	R/W	138	R/W	

Parameter Code No.	Description	Range	Default setting	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
LB.MD	[F ONLY] Dry contact for load unbalance or low current detection	**Value** / **Description of function** 0: When detected, continue output, dry contact operation 1: When detected, stop output, dry contact operation 2: When detected, continue output, no dry contact operation	0	R/W	139	R/W	
AL.SL	Multi-function dry contact	**Value** / **Display** / **Description of function** 0 / no / Abnormal dry contact, normally open 1 / nC / Abnormal dry contact, normally closed 2 / run / Operation output contact [F ONLY] 3 / CR.FD / Current detection contact	no	R/W	140	R/W	
IN.SL	Input signal selection	**Value** / **Display** / **Description of function** 0 / AI.IN / External terminal analog input 1 / DG.PE / Digital input percentage [V+F] 2 / DG.RL / Digital input actual value setting	AI.IN	R/W	141	R/W	
DG.IN	Digital input value	It is 0.0~100.0(%) when **IN.SL = DG.PE**. It changes according to the selection of control mode when **IN.SL = DG.RL**, there are 0.0~100.0(%), 0.0~VO.ST(V), 0.0~IO.ST(A), 0.0~KW.ST (KW)	0.0	R/W	142	R/W	
AL.DT	Detection lag time setting for power supply	0~250sec	0	R/W	143	R/W	
WAIT	Time to return to display layer during non-operation	10~250sec	30	R/W	144	R/W	
TH.RS	Overheating reset selection	**Value** / **Display** / **Description of function** 0 / Auto / Automatic reset (80℃) 1 / MANL / Manual reset (Press Mode key to reset)	Auto	R/W	145	R/W	
LO.MD	[F ONLY] Operating mode select in case of open load circuit or when the load output is lower then 10% of rated current	**Value** / **Description of function** 0: When detected, continue output, dry contact operation 1: When detected, stop output, dry contact operation 2: When detected, continue output, dry contact no operation 3: No detection	3	R/W	146	R/W	
LOCK	Parameter protection level	**Value** / **Description of function** 0: Open all parameters 1: Lock the control layer 2: Lock the control layer and communication layer 3: Lock all parameters, only LOCK parameter remains unlocked	0	R/W	147	R	

3-1 Communication Layer：On the display layer, press MODE + ▼ keys for 3 seconds

V+F：Voltage feedback models and full-function models have this parameter.
FULLY：Only full-function models have this parameter.

Parameter Code No.	Description	Range	Default setting	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
Addr	Address	1~250	1	R/W	256	R/W	
bAud	Baud rate	Value: 0 Display: 4.8E Description of function: 4800bps Value: 1 Display: 9.6E Description of function: 9600bps Value: 2 Display: 19.2E Description of function: 19200bps Value: 3 Display: 38.4E Description of function: 38400bps	9.6E	R/W	257	R/W	
Conn	Communication protocol MODBUS RTU	Value: 0 Display: 8n 1 Description of function: 8 bits, no parity,1 stop bit Value: 1 Display: 8n2 Description of function: 8 bits, no parity,2 stop bits Value: 2 Display: 8o 1 Description of function: 8 bits, odd parity,1 stop bit Value: 3 Display: 8E 1 Description of function: 8 bits, even parity,1 stop bit	8n 1	R/W	258	R/W	
rnSL	Communication operation control selection	Value: 0 Display: no Description of function: Not in use Value: 1 Display: YES Description of function: In use	no	R/W	259	R/W	
CCnd	Communication operation control command	Value: 0 Display: StoP Description of function: Stop Value: 1 Display: run Description of function: In operation	StoP	R	260	R/W	
CrEr	Clear error record	Value: 0 Display: no Description of function: Doesn't clear error record Value: 1 Display: YES Description of function: Clear error record	no	R/W	261	R/W	
rESt	Reset to default value (When in parameter protection mode or in output mode, it cannot be reset to default value)	Value: 0 Display: no Description of function: Doesn't reset to default value Value: 1 Display: YES Description of function: Reset to default value	no	R/W	262	R/W	
UEr	Controller firmware version	0.001~9.999	×	R	263	R	
tUEr	Digital control box firmware version	00.01~09.99	×	R	264	R	
AoSL	Analog output selection	Display: 4-20 Description of function: 4~20mA Display: 0-20 Description of function: 0~20mA	4-20	R/W	×	×	
AoF	Analog output corresponding values	Display: in Description of function: Input percentage Display: out Description of function: Output percentage V+F Display: Ui Description of function: Output voltage corresponding Uin percentage (Uout÷Uin) V+F Display: Uo Description of function: Output voltage corresponding UoSt percentage (Uout÷UoSt) FULLY Display: Aout Description of function: Average current of 3 phase supply percentage (Aout÷AoSt) FULLY Display: tU Description of function: Output power percentage (tU÷tUSt)	out	R/W	×	×	
AoZr	Analog output ZERO adjustment	-10~10%	0	R/W	×	×	
AoSP	Analog output SPAN adjustment	70~130%	100	R/W	×	×	
doSL	Multifunctional electronic contacts	Value: Display: no Description of function: Abnormal dry contact, normally open Display: nC Description of function: Abnormal dry contact, normally closed Display: run Description of function: Operating output contact FULLY Display: Crfd Description of function: Current detection contact	run	R/W	×	×	

※Communication interval must be greater then 10ms.
※Support MODBUS communication function 03H, 06H,10H.
※MODBUS communication function 03H can be read at most 20 times, 10H can be writen at most 10 times.

3-2 Reading area of continuous 20 communications customized parameter layer :

On the communication layer, press MODE + ▼ keys

Parameter Code No.	Description	Range	Default setting	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
ud01	Parameter reading address of customized DATA 01	0~639	0	R/W	512	R/W	
ud02	Parameter reading address of customized DATA 02	0~639	0	R/W	513	R/W	
ud03	Parameter reading address of customized DATA 03	0~639	0	R/W	514	R/W	
ud04	Parameter reading address of customized DATA 04	0~639	0	R/W	515	R/W	
ud05	Parameter reading address of customized DATA 05	0~639	0	R/W	516	R/W	
ud06	Parameter reading address of customized DATA 06	0~639	0	R/W	517	R/W	
ud07	Parameter reading address of customized DATA 07	0~639	0	R/W	518	R/W	
ud08	Parameter reading address of customized DATA 08	0~639	0	R/W	519	R/W	
ud09	Parameter reading address of customized DATA 09	0~639	0	R/W	520	R/W	
ud 10	Parameter reading address of customized DATA 10	0~639	0	R/W	521	R/W	
ud 11	Parameter reading address of customized DATA 11	0~639	0	R/W	522	R/W	
ud 12	Parameter reading address of customized DATA 12	0~639	0	R/W	523	R/W	
ud 13	Parameter reading address of customized DATA 13	0~639	0	R/W	524	R/W	
ud 14	Parameter reading address of customized DATA 14	0~639	0	R/W	525	R/W	
ud 15	Parameter reading address of customized DATA 15	0~639	0	R/W	526	R/W	
ud 16	Parameter reading address of customized DATA 16	0~639	0	R/W	527	R/W	
ud 17	Parameter reading address of customized DATA17	0~639	0	R/W	528	R/W	
ud 18	Parameter reading address of customized DATA 18	0~639	0	R/W	529	R/W	
ud 19	Parameter reading address of customized DATA19	0~639	0	R/W	530	R/W	
ud20	Parameter reading address of customized DATA 20	0~639	0	R/W	531	R/W	

Reading area of continuous 20 communications

Parameter Code No.	Description	Range	Default setting	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
DATA01	Read the parameter address data set by ud01	The same as the data range for the parameter address set for ud01	×	×	640	R	
DATA02	Read the parameter address data set by ud02	The same as the data range for the parameter address set for ud02	×	×	641	R	
DATA03	Read the parameter address data set by ud03	The same as the data range for the parameter address set for ud03	×	×	642	R	
DATA04	Read the parameter address data set by ud04	The same as the data range for the parameter address set for ud04	×	×	643	R	
DATA05	Read the parameter address data set by ud05	The same as the data range for the parameter address set for ud05	×	×	644	R	
DATA06	Read the parameter address data set by ud06	The same as the data range for the parameter address set for ud06	×	×	645	R	
DATA07	Read the parameter address data set by ud07	The same as the data range for the parameter address set for ud07	×	×	646	R	
DATA08	Read the parameter address data set by ud08	The same as the data range for the parameter address set for ud08	×	×	647	R	
DATA09	Read the parameter address data set by ud09	The same as the data range for the parameter address set for ud09	×	×	648	R	
DATA10	Read the parameter address data set by ud10	The same as the data range for the parameter address set for ud10	×	×	649	R	
DATA11	Read the parameter address data set by ud11	The same as the data range for the parameter address set for ud11	×	×	650	R	
DATA12	Read the parameter address data set by ud12	The same as the data range for the parameter address set for ud12	×	×	651	R	
DATA13	Read the parameter address data set by ud13	The same as the data range for the parameter address set for ud13	×	×	652	R	
DATA14	Read the parameter address data set by ud14	The same as the data range for the parameter address set for ud14	×	×	653	R	
DATA15	Read the parameter address data set by ud15	The same as the data range for the parameter address set for ud15	×	×	654	R	
DATA16	Read the parameter address data set by ud16	The same as the data range for the parameter address set for ud16	×	×	655	R	
DATA17	Read the parameter address data set by ud17	The same as the data range for the parameter address set for ud17	×	×	656	R	
DATA18	Read the parameter address data set by ud18	The same as the data range for the parameter address set for ud18	×	×	657	R	
DATA19	Read the parameter address data set by ud19	The same as the data range for the parameter address set for ud19	×	×	658	R	
DATA20	Read the parameter address data set by ud20	The same as the data range for the parameter address set for ud20	×	×	659	R	

4. Control Layer：On the display layer, press MODE + ▲ keys for 5 seconds

V/F：Voltage feedback models and full-function models have this parameter.
F：Only full-function models have this parameter.

Parameter Code No.	Description	Range	Default setting	Keyboard R/W	Parameter Address	Comm. R/W	Reference Page
Ctrd	Control mode	Value / Display / Description of function 0 / tP-P / Phase control proportional output 1 / tZ-A / Zero crossing cycle sampling 2 / tZ-S / Zero crossing time sampling 3 / tP.ZA / Phase start for cycle sampling 4 / tP.ZS / Phase start for time sampling V/F 5 / tP.CU / Phase constant voltage F 6 / tP.CL / Phase limit current F 7 / tP.CC / Phase constant current F 8 / tP.CW / Phase constant power	Standard tP-P Voltage feedback tP.CU Full-function tP.CL	R/W	384	R/W	
3P4W	3 phase 4 wire control (Load connected to Y, neutral point connected to N-phase)	Value / Display / Description of function 0 / no / No 1 / YES / Yes	no	R/W	385	R/W	
Stim	Sampling time ※1	1~10sec	2	R/W	386	R/W	
P-Ot	Phase operation time ※2	1~250minutes or hours (Unit will refer to the setting of P-Ou)	1	R/W	387	R/W	
P-Ou	Time unit of phase operation ※2	Value / Display / Description of function 0 / Min / Minute 1 / Hr / Hour	Min	R/W	388	R/W	
Vin	V/F Input power supply voltage	Product main power supply voltage specification: 1V：40~120VAC; 4V：180~480VAC; 6V：460~690VAC	1V:110 4V:380 6V:660	R/W	389	R/W	
Vo.St	V/F Output voltage setting	0~Input power supply voltage	1V:110 4V:380 6V:660	R/W	390	R/W	
Io.St	F Output current setting	0~Rated current	Rated current	R/W	391	R/W	
oC.St	F Over current setting	0~150% (Set 0 for no detection)	120	R/W	392	R/W	
KW.St	F Power setting ※3	0.0~Rated power	※4	R/W	393	R/W	

※Note 1: Shall be needed when TZ-S or TP.ZS is selected.
※Note 2: Shall be needed when TP.ZA or TP.ZS is selected.
※Note 3: Shall be needed when TP.CW is selected.
※Note 4: Default value of KW.ST = Vin × Io.ST × $\sqrt{3}$ ÷ 1000 (KW)

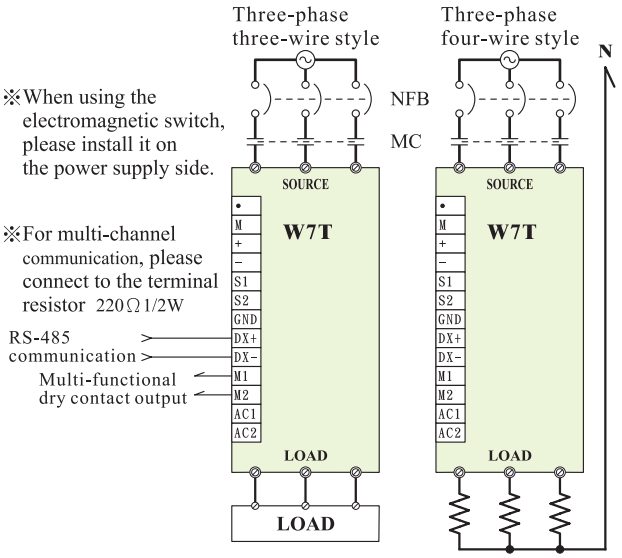
5. Description of transmission and error codes：

VH：Voltage feedback models and full-function models have this parameter.
FULL：Only full-function models have this parameter.
※：Only 450, 580, 720A models have this parameter.

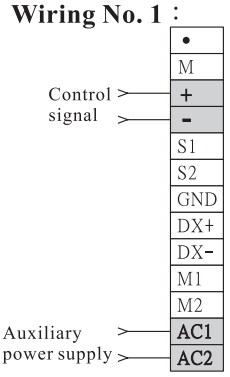
Parameter Code No.	Description	Range				Parameter Address	Comm. R/W	Reference Page
		Value	Error Code	Description	With multi-functional dry contact output			
Er.HP	Error message	0	nonE	No error		8	R	
		1	Fb-r	R-phase fuse is blown	◎			
		2	Fb-S	S-phase fuse is blown	◎			
		3	Fb-t	T-phase fuse is blown	◎			
		4	Fb	No power transmission or fuse is blown	◎			
		FULL 5	oC	Over current	◎			
		6	oH	Overheat（85℃）	◎			
		7	tHEr	Temperature sensor error	◎			
		※ 8	r oH	R-phase overheat（85℃）	◎			
		※ 9	trEr	R-phase temperature sensor error	◎			
		※ 10	S oH	S-phase overheat（85℃）	◎			
		※ 11	tSEr	S-phase temperature sensor error	◎			
		※ 12	t oH	T-phase overheat（85℃）	◎			
		※ 13	ttEr	T-phase temperature sensor error	◎			
		FULL 14	AF	Current detection	◎			
		FULL 15	LC	Low current detection	◎			
		FULL 16	Lb	Three-phase load imbalance	◎			
		FULL 17	Lo	Open load or output load lower than 10%	◎			
		VH 18	UFEr	Voltage feedback error	◎			
		31	EPEr	EEPROM error				
		32	Er 1	Communication function code error				
		33	Er2	Communication address out of range				
		34	Er3	Communication data value out of range				
		35	Er4	Attempt to change read only or locked data during communication				
		36	Er5	Communication read and write excess ※5				
		37	LinE	Linkage error of slave				
ERRS	Error reset	0, 1 (Write 1 for error reset)				9	R/W	
SEC	Operation time second	0-59 seconds				28	R	
MIN	Operation time minute	0-59 minutes				29	R	
HR	Operation time hour	0-255 hours				30	R	

※Note 5: MODBUS communication function 03H can be read at most 20 times, 10H can be writen at most 10 times.

Main circuit wiring diagram :

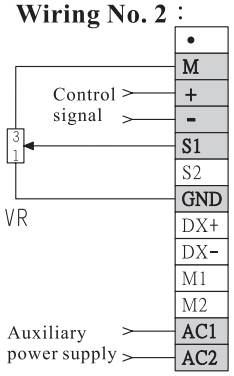


Wiring No. 1 :



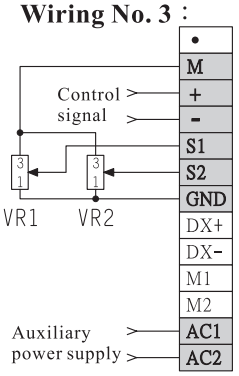
A.F 00	+ Control signal input

Wiring No. 2 :



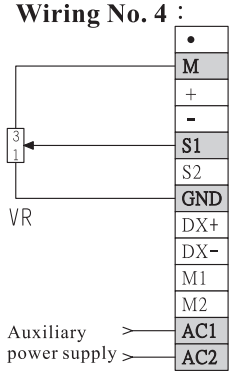
A.F 01	+ Control signal input S1 Maximum output limit setting
A.F 12	+ Control signal input S1 Voltage limit setting
A.F 13	+ Control signal input S1 Current limit setting

Wiring No. 3 :



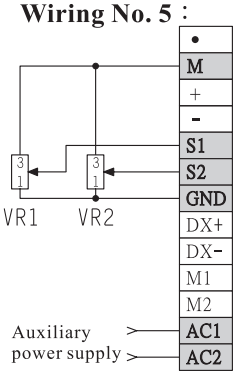
A.F 02	+ Control signal input S1 Maximum output limit setting S2 Basic output value setting
A.F 14	+ Control signal input S1 Voltage limit setting S2 Current limit setting

Wiring No. 4 :



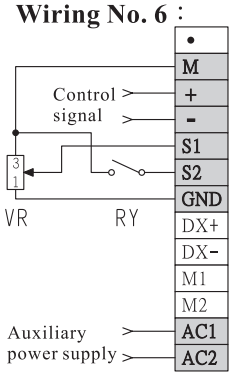
A.F 03	S1 Manual setting

Wiring No. 5 :



A.F 04	S1 Manual setting S2 Basic output value setting

Wiring No. 6 :



A.F 05	+ Control signal input S1 Manual setting (Invalid at automatic setting) S2 Open: Automatic, Closed: Manual
A.F 06	+ Control signal input S1 Manual setting (Output limited at automatic setting) S2 Open: Automatic, Closed: Manual
A.F 07	+ Control signal input S1 Maximum output limit setting ※2 S2 Open:※1 , Closed: Zero crossing cycle sampling
A.F 08	+ Control signal input S1 Maximum output limit setting ※2 S2 Open: ※1 , Closed: Zero crossing time sampling
A.F 09	+ Control signal input S1 Maximum output limit setting ※2 S2 Open: Stop,Closed: Run

※Note 1: When the contact is disconnected output will be according to CT.MD control mode.

※Note 2: Maximum output limit setting, when VR is not used please connect M & S1 with short circuit.