

GR818 Digital Temperature Controller

Operation Instruction V3. 02

Thank you for using Winpark GR818 digital temperature controller

This instruction describes product function, features and proper usage Before using this controller, please pay special attention to issues below:

- User should master enough electric knowledge
- User must read and understand this instruction well for right usage Please consider applicability to system, machine and equipment
- Please note and observe the prohibition of this product
- The examples in this instruction or other data are only for user reference. No guarantee of a certain action.
- When using this controller with other products, please confirm whether it is in conformity with the relevant specifications, principles, etc..
- Please keep this instruction well to make it available easily anytime

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| | | 14/1 0515 05100252 | | |
|-----------|---|----------------------------|------|----------------------------------|
| | A1 | Conten | t In | dex |
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| | A2 V N A3 E A4 N A5 III A6 G B1 G | Warning | В4 | ALM alarm output function define |
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| A A A A B | Α3 | Installation size | С | System menu parameter |
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| | A1 A2 A3 A4 A5 A6 B1 | GR818-B/GR818-E wiring | | |
| | B2 | Panel funciton explanation | | |

Warning

- (1) To avoid electric shock, DON'T touch the AC power supply terminals after power or
- ② Before power on, please confirm voltage conformity in range of AC 85~265V, to avoid damage to controller
- 3) Never remove, retrofit or repair the product or contact any internal components
- 4 If the output relay exceeds its life span, the contacts may melt and burn.
- ⑤ Tighten screw with 0.74-0.90Nm torque, as loose screws may cause fire
- (i) Use appropriate fuse to ensure power supply line and input / output line to prever current impact
- $\widehat{\gamma}$ Don't use the controller in occasion of flammable, explosive gas, discharge of stean

Note

- ${oxolimits}$ For heat radiation, leave space around the controller and do not jam the ventilation holes in the controller
- 2) Keep enough space between the controller and equipment which generates high frequency and surge
- Connect wires correctly
- ① Use the controller under rated load and power supply
- S Use standard grade of alcohol to clean the controller; don't use paint thinner or
- 6) Read and understand this instruction carefully before using the controller
- (7) Don't use the controller in case the front panel neels off or breaks

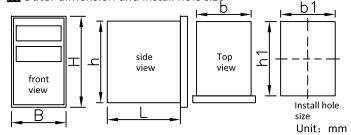
| Don't use the controller in case the front panel peels on or breaks | | | | | | | |
|---|--|--|--|--|--|--|--|
| A3 | Electric specification | | | | | | |
| rated voltage | 85V-265V AC , 50/60HZ | | | | | | |
| power comsumption | ≤5VA | | | | | | |
| working environment | Ambient temperature: 0C ~50C Relative humidity: 35%~85% (no condensation) | | | | | | |
| Storage temperature | -25℃-65℃ (Avoid ice or dew) | | | | | | |
| Resolution | 1°C, 0.1°C (adjustable) | | | | | | |
| Wiring method | terminals | | | | | | |
| accuracy | ±0.5%FS | | | | | | |
| Memory protection | Non-volatile memory (write times: 1,000,000) | | | | | | |
| installation environment | Installation type II, pollution grade 2(IEC61010-1) | | | | | | |
| relay output | relay contacts AC220V/DC30V,3A(Resistive load) | | | | | | |
| logic level output | ON:DC12V₁ OFF₁ below DC0.5V₁ Max current₁ 30mA₄ Load resistance≥1K₊ | | | | | | |

Model selection



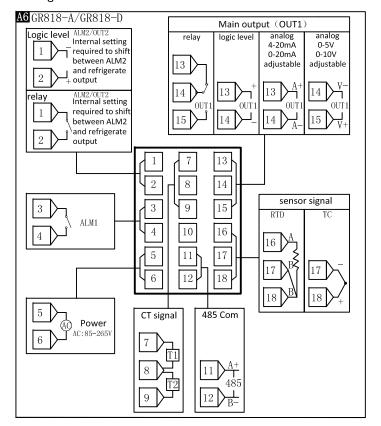
- Panel size
- A: 48*48 B: 48*96 D: 72*72 E: 96*96
- (2) Input signal
- T: Thermocouple/RTD input L: Voltage/current signal input(0-10V/0-20mA) (3) Main output
- 1: relay 2: logic level
- 3: analog (0-5V/0-10V/4-20mA) 4: SCR phase shift 5: SCR zero cross
- (4) Alarm output
 - 1: 1 relay alarm output 2: 2 relay alarm outputs
 - 3: 1 logic level alarm output and 1 relay alarm output
- Strengthened funciton
- 0: No strengthened funcion 1: RS485 communication 2: current measure
- 3: RS485 communication+current measure 4: analog input channel2(0-10V/0-20mA)
- 6 Expension input output
- 00: no expension 22: 2 input 2 output
- 40: 4 input 04: 4 output
- 7 Funcion code

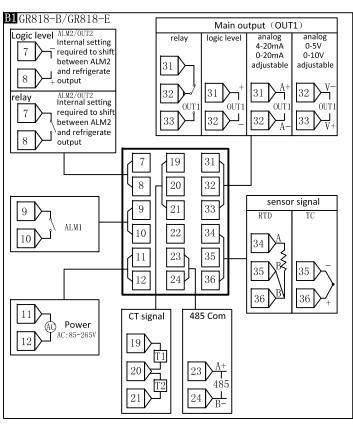
M5 Outer dimension and install hole size



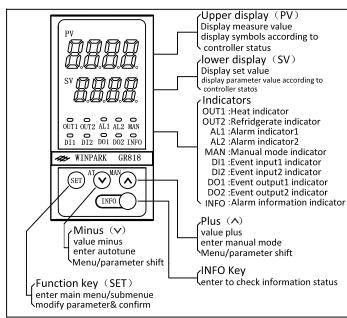
| Model | Panel siz H×B | case size h×b×L | install hole size h1×b1 |
|---------|------------------|----------------------|------------------------------|
| GR818-A | 48×48 | 44. 56×44. 56×79. 00 | $(44.56+1) \times (44.56+1)$ |
| GR818-B | 96×48 | 91. 00×44. 56×79. 00 | $(91.00+1) \times (44.56+1)$ |
| GR818-D | 72×72 | 67. 00×66. 80×79. 00 | $(67.00+1) \times (66.80+1)$ |
| GR818-E | 96×96 | 91. 00×90. 50×79. 00 | $(91.00+1) \times (90.50+1)$ |

Wiring





B2 Operation panel explanation



Alarm

2 current measure NO status

| B3 | ALM alarm pa | ramete | er define |
|------|---|---------|---|
| Code | alarm name | Code | alarm name |
| 0 | No alarm | 1 | upper limit |
| 2 | lower limit | 3 | upper/lower limit |
| 4 | upper/lower limit range | 5 | upper limit (keep) |
| 6 | lower limit(keep) | 7 | upper/lower limit (keep) |
| 8 | upper/lower limit range (keep) | 9 | absolute value upper limit |
| 10 | absolute value upper limit | 11 | absolute value upper/lower limit |
| 12 | | | absolute value upper limit (keep) |
| 14 | absolute vakeepl | 15 | absolute value upper/lower limit (keep) |
| 16 | absolute value lower limit range (keep) | 17 | upper limit reture difference |
| 18 | lower limit reture difference | 19 | absolute value upper limit reture difference |
| 20 | absolute value lower limit reture difference | 21 | upper limte reture difference (keep) |
| 22 | lower limit return difference (keep) | 23 | absolute value upper limite reture difference(keep) |
| 24 | absolute vale lower limit return diff | erence | e(keep) |
| B4 | ALM alarm out | tput fu | nction define |
| Code | alarm name | Code | alarm name |
| 0 | no configure | 1 | current measure NO/NC status |

3 current measure NC status

| Code | alarm name | Code | alarm name |
|------|--------------------------|------|---------------------|
| 4 | alarm output1(ALM1) | 5 | alarm output2(ALM2) |
| 6 | alarm output 3 (ALM3) | 7 | heat output |
| 8 | refrigerate output | 9 | manual symbol |
| 10 | information alarm symbol | | |

B5 Input type

| | Input type | input | Set code | | | | |
|-------------|--------------|--------------|--------------|--------------|------------|---|-------------|
| | | K | PE | -200°C1200°C | | | |
| | | Е | | -200℃—650℃ | | | |
| | | Ј | I | -200℃—850℃ | | | |
| | thermocouple | thermocouple | S | | -50℃—1700℃ | | |
| temperature | | | В | | 0℃—1800℃ | | |
| input | | | thermocouple | thermocouple | N | Ē | -200℃—1300℃ |
| | | | | | | R | 9 |
| | | T | M. | -200℃—400℃ | | | |
| | | W3-25 | | 0℃—2300℃ | | | |
| | | W5-26 | 15 | 0℃—2300℃ | | | |
| | RTD | PT100 | PŁ | -200℃—850℃ | | | |
| | KID | Cu50 | | -50°C—150°C | | | |

B6 control method and sensor type selection

| Г | | Main menu | submenu | set code | | code define |
|---|----------------|-----------|---------|----------|----------|--|
| (| control | | | Pd | | PID control |
| r | method | LEÑP | P-11 1 | PdZ | | two-way PID control (heat/refridgerate) |
| | | | | bit | | Step control |
| | | LENP | p.nj | H.E. | i . 5 | K, E, J, S |
| | sensor type | | | TC b.A. | r.E | B. N. R. T |
| | | | | rj i | 5 | W3-25、W3-26 |
| | | | | RTD PL . | Pii U | PT100、Cu50 |

B7 information status explanation

| | INFO informa | ation statu | s table |
|--------|--|-------------|----------------------------------|
| Code | Code define | Code | Code define |
| F. 100 | currnet value measured | F. 101 | manual output value |
| F. 102 | maintain output value | F. 103 | temperature control output value |
| F. 104 | cold end temperature (room temperature) | F. 200 | total curent value of channel 1 |
| F. 201 | total curent value of channel2 | F. 202 | Min current per single wire |
| F. 203 | temperature resistor value (RTD) | F. 204 | temperature voltage value(TC |
| F. 300 | MODBUS Baud rate | F. 301 | MODBUS station number |
| F. 302 | RS485 communication status | F. 303 | USB port communication status |
| F. 304 | Phase shift board communication status | F. 400 | controller working days |
| F. 401 | relay output times | F. 900 | producing date: year |
| F. 901 | producing date: month | F. 902 | producing date: day |
| F. 903 | menu table version | F. 904 | system software version |
| F. 905 | user customize version | | |

B8 Error display explanation

| | Error code table | | | | | | | | |
|------------------|-------------------------------------|--|---|--|--|--|--|--|--|
| Error display | code explanation | Troubleshooting | Remark | | | | | | |
| Err0 | exceed AD input upper limit | check if thermocouple is disconnected | | | | | | | |
| Err1 | exceed AD input lower limit | Check if analog input is connected reversedly | | | | | | | |
| Err2 | RTD Break | check if RTD is disconnected | | | | | | | |
| Err3 | exceed measure range upper limit | check if the used sensor type is in accordance with setting | PV display | | | | | | |
| Err4 | exceed measure range lower limit | check if the used sensor type is in accordance with setting | tube flashes | | | | | | |
| Err5 | exceed set value upper limit | check if the SV upper limit is too small | | | | | | | |
| Err6 | exceed set value lower limit | check if the SV upper limit is too | | | | | | | |
| Err7 | room temperature error | Controller malfunction, please contact supplier for service. | | | | | | | |
| Err8 | thermocouple connect reversed | check if thermocouple is connected reversedly | | | | | | | |
| F. 001 | control cycle set vaule conflict | set reasonable control cycle | | | | | | | |
| F. 002 | output breaks | check if heating circuitbreaks | INFO indicator flashes, press INFO key to | | | | | | |
| F. 003 | output adheres | check if heat circuit has unnormal NC parts | | | | | | | |
| F. 004 | relay output reaches set times | change controller | checkdetails | | | | | | |
| F. 005 | working temperature exceed | check if temperature in cabinet is too high | | | | | | | |

Menu display explanation

| | nain menu | | subme | nu | | menu define | Ad |
|---|--------------------------|-------------------|-------------|---------------|-------------------|--|----------------|
| | | 1-1 | P | | Р | Proportional band | W2 |
| | | 1-2 | D D | | Ι | Integral time | W2 |
| | | 1-3 | đ | ĺ | D | Derivative time | W2 |
| _ | | 1-4 | 12 | | IT | Overshooting restrain | W2 |
| 1 | P dd (PID) | 1-5 | HŁ | | HT | heat cycle | W2 |
| | basic control | 1-6 | | | CT | refrigerate cycle | W2 |
| | parameter | 1-7 | HHYS | ò | HHYS | heat return difference | W2 |
| | | 1-8 | AL | | AT | Autotune switch | W2 |
| | | 2-1 | libu | | OBJ | control model | W2 |
| | | 2-2 | PL | | PC | refrigerate P | W2 |
| | | 2-3 | | | IC | refrigerate I | W2 |
| | | 2-4 | di | | DC | refrigerate D | W2 |
| | | 2-5 | FPY | | СРК | Refrigerate power coefficient | W2 |
| | | 2-6 | | Į į | RUCY | valve stroke time | W1 |
| | | 2-7 | hd | | BD | dead zone value | W2 |
| | | 2-8 | | - | INOS | Overshoot suppression | |
| 2 | P 182 | 2-9 | LEU | g | | factor Control intensity | W2 |
| | (PID2) main control | 2-10 | | _ | LEV | coefficient Proportional refrigeration | W2 |
| | parameter | | | 7) | CP0 | displacement | W2 |
| | | 2-11 | £-01 | Š | T-ON | Min boot time | W2 |
| | | 2-12 | | · | T-OF | Min shutdown time | W2 |
| | | 2-13 | onRu | | OMAX | max output value limit | W2 |
| | | 2-14 | ani i | | OMIN | min output value limit | W2 |
| | | 2-15 | dottu | | DMAX | Output variationlimit | W2 |
| | | 3-1 | P-11 | | P-N1 | Control method | W2 |
| | | 3-2 | P-116 | 7 | P-N2 | input type *1 | W1 |
| | | 3-3 | Er | | TR | input compensation *1 | W1 |
| | | 3-4 | P-df | 7 | P-DP | display accuracy *1 | W1 |
| | | 3-5 | P-IF | > | P-CF | Fahrenheit *1 | W1 |
| | | 3-6 | P-112 | 9 | P-N2 | Input type *2 | W1 |
| | | 3-7 | d-00 | 1 | D-MD | compensation type *2 | W1 |
| 3 | LEAP | 3-8 | d- 1 | Į. | D-iH | filter input high *2 | W1 |
| | (TEMP) | 3-9 | d- il | $\overline{}$ | D-iL | filter input low | W1 |
| | temperature measure | 3-10 | d-ah | | D-oH | filter output high | W1 |
| | | 3-11 | d-al | 4 | D-oL | filter onput low | |
| | | 3-12 | P-51 | Q . | P-SH | set upper limit | W1 |
| | | 3-13 | P-51 | 4 | | set lower limit | W1 |
| | | 3-14 | Fit | , | P-SL | | W1 |
| | | 3 14 | | F | FiT | temperature process (C-MD) temperature | |
| | | | 3-14-1 | | <u>nd</u> IP i | filter type | <u>W</u> 1 |
| | | | 3-14-2 | | | (COP1) filter parameter1 | W1 |
| | | | 3-14-3 | - | <u> </u> | (COP2) filter parameter2 (D-MD) compensation | W1 |
| | | | 3-14-4 | 0 | <u>-uq</u> | type (D-iH) filter input high | W1 |
| | | | 3-14-5 | <u> </u> | <u> </u> | point (D-iL) filter input low | W1 |
| | | | 3-14-6 | ď | ٠ الم | point | W1 |
| | | | 3-14-7 | d | -oH | (D-oH) filter output high point | W1 |
| | | | 3-14-8 | d | -aL | (D-oL) filter output lowh point | W1 |
| | | 4-1 | ALÃ | Ø Ø | ALM1 | alarm type1 | W1 |
| | | 4-2 | AH i | | AH1 | alarm upper limit 1 | W1 |
| | | 4-3 | AL I | | AL1 | alarm lower limit1 | W1 |
| | | 4-4 | AUP . | Q Q | AOP1 | alarm option1 | W1 |
| | | 4-5 | ALAC | 7 | ALM2 | alarm type 2 | W1 |
| | | 4-6 | AHZ | | AH2 | alarm upper limit 2 | W1 |
| , | | | 1 1 1 1 1 1 | | AL2 | | W1 |
| 4 | ALA | 4-7 | #! J | | | Lalarm lower limit? | *# I |
| 4 | (ALM) alarm | | ALZ Ano: | 7 | | alarm lower limit2 | |
| 4 | (ALM) | 4-7 | ALZ AUPZ | _ | AOP2 | alarm option2 | W1 |
| 4 | (ALM) alarm | 4-7 4-8 4-9 | | _ | AOP2 ALM3 | alarm option2 alarm type3 | W1 |
| 4 | (ALM) alarm | 4-7 | | _ | AOP2 | alarm option2 | W1 W1 W1 |

| | | 1 | | | | I | A .l.l | |
|--|------------------------|------------|--------------------------|-------|--|---|---|------|
| - " | nain menu | 5-1 | subme | | MODE | menu define mulțistage control | Add | |
| | SUL (SVC) | 5-2 | 5-1 d | | MODE | mode multistage control | W142 | |
| | multi stage | | 2 | 1 | S-ID | number | W141 | |
| 5 | temperature control | 5-4 | 14 2-52 | | SV | set temperature | W131 | |
| | (programmable | - | 1 1 | | T-ST | Heating time Energy saving | W139 | |
| | parameter) | 5-5 | | 1 | J-SV | temperature Energy saving delay | W512 | |
| | | 5-6 6-1 | an T | 0 | J-TM AOMD | time | W502 | |
| | | 6-2 | AUP: | | AOPZ | analog output mode analog output | W126 | |
| | | 6-3 | AUH | | AOH | configure Analog output transmission high point | W127 W128 | |
| | | 6-4 | AUL | | | Analog output | W120 | |
| | | 6-5 | 9 PN | Ø | AOL M-SW | transmission low point control mode | - | |
| 6 | กับ | 6-6 | n-j: | | MAN | (manual/auto) | W171 W170 | |
| | (MV) output | 6-7 | P | | E-MV | manual output value | W170 | |
| | control | 6-8 | L'AU | | K-SW | error output value | W172 | |
| | | 6-9 | | | K-TM | maintain switch | W174 | |
| | | 6-10 | P-PI | , | K-PC | maintain judge time maintain judge | W175 | |
| | | 6-11 | 0.0 | , | K-MV | deviation range maintain valve *3 | W173 | |
| | | 6-12 | P-It | | K-CT | maintain count | W177 | |
| | | 7-1 | | | SET | total current measure | W270 | |
| | | 7-2 | uut uut | | ONE | switch | W263 | |
| | | 7-3 | | | CH1 | min single current | W264 | |
| | | 7-4 | | | CH2 | current save-channel 1 | W265 | |
| | | 7-5 | d5P | | DSP | current display | #200 | |
| | | 7.5 | 7-5 | | P | ~ nd | current display (C-MD) current measure | W262 |
| | | | | 0 | - <u> </u> | mode (C-sw) current display | W937 | |
| 7 | | | 7-5-3 | P | -Fñ | switch (C-FM) transformer | W260 | |
| | (CURR) | | 7-5-4 | P | F | denominator (C-FZ) transformer | W261 | |
| | transformer current | | 7-5-5 | 2 | | numerator (CT)real time total | W253 | |
| | | | 7-5-6 | 2 | £ { | (CT1) real time | W254 | |
| | | | 7-5-7 | يا ال | - | (CT2) real time | W255 | |
| | | | 7-5-8 | ¥ | <u> </u> | current2 *3 keep total (KP) current(2sec) *3 | W257 | |
| | | | 7-5-9 | Ų | <u>, </u> | (KP1) keep current1 *3 | W258 | |
| | | | 7-5-10 | ¥ | pj | (KP2) keep current2 *3 | W259 | |
| | | | 7-5-11 | ¥ | <u>EEP</u> | keep total (KEEP) current(long term)*3 | W256 | |
| | | 8-1 | bAlid | _= | BAUD | MODBUS baud rate | W900 | |
| | | 8-2 | PLUL | | PCOL | MODBUS station No. | W901 | |
| | | 8-3 | bii | | BRI | brightness | W936 | |
| | | 8-4 | 5-50 | ø | R-SW | relay detect switch *4 | W123 | |
| | | 8-5 | 8-15 | | R-JS | relay times *4 | W125 | |
| | | 8-6 | | | RUN | running time *3 | W908 | |
| | | 8-7 | infa | | INF0 | system information | | |
| | | | 8-7-1 | | di | (HD1) Hardware type1 *3 | W919 | |
| | | | 8-7-2 | H | dZ | (HD2) Hardware type2 *3 | W920 | |
| | | | 8-7-3 | H | d3 | (HD3) Hardware type3 *3 | W921 | |
| | gc | | 8-7-4 | H | 4 | (HD4) Hardware type4 *3 | W922 | |
| 8 | 545 | | 8-7-5 | ¥ | ERF | (YEAR) producing year *3 | W909 | |
| | (SYS) system | | 8-7-6 | | | (MON) producing *3 | W910 | |
| | configure | | 8-7-7 | | Ay | (DAY) producing day *3 | W911 | |
| | | | 8-7-8 | H | MUT UUI | (HOUR) producing hour *3 | W912 | |
| | | | 8-7-9 | | | (MIN) producing min *3 | W913 | |
| | | | 8-7-10 | | EL | (SEC) producing sec *3 | W914 | |
| | | | 8-7-11 | P | l d | (PID) control base version *3 | W924 | |
| 9 | dEF | (DEF) p | arameter | def | ault | | | |
| 10 | Lock | | | | | ic data 8888-unlock all da | | |
| lak | Jei <u> </u> | | ith tempei ith analog | | | "*3" parameter read on "OUT1 display with relay | | |
| . | Form | | | | | ity,all in decimal system | | |
| Modbus Common address:PV-W130,SV-W131,Heah indicator-B224,Autotune-B3296 | | | | | | | | |

