

NWK1-GR Series Low Voltage Reactive Compensation Controller

1. Scope of application

NWK1-GR series low voltage reactive power compensation controller adopts large dot matrix LCD screen and mobile phone menu operation mode to realize man-machine exchange.
Its sampling voltage range is AC (100~800) V and operating frequency range is (45~65) Hz, which are suitable for reactive power compensation and power distribution monitoring in different regions of the world.
ASIC chip is used to calculate and analyze the voltage and current collected through FFT (Fast Fourier Transform), so under a large harmonic component of power grid, the reactive power can be used as the basis of switching capacitors and combined with the power factor for switching. The capacitor capacity can be matched or switched in three phases or single phase by cycle, code or any combination of values to realize the optimal compensation effect. It is the newest smart reactive compensation controller introduced by our company.The product integrates the functions of digital power grid measurement, record and storage, as well as Chinese and English or graphic real-time display of dozens of electricity, with high power measurement accuracy under harmonic environment. Besides, it provides power quality analysis, harmonicvalue protection and RS485 communication transmission function.Applicable standards: JB/T9663-2013; DL/T597-1996.

2. Model and definition

NWK 1 -G R - □ GB □

- □: Signal control mode:Default relay, D represents +12V DC
- GB: Compensation mode:GB common compensation FB mixed compensation
- □: Maximum number of output circuits: 12 circuits,16circiuts
- R: Functional option:R indicates Rs485 communication
- G: G represents power factor
- 1: Design serial number
- NWK: Reactive power compensation controller

Note: When the control signal outputs +12V DC, the control object is ZCK smart combination switch or TSC thyristor switch.

3. Operating conditions

3.1 Ambient temperature -20℃ ~55℃ .

3.2 The air humidity shall not exceed 50% at 40℃ and 90% at 20℃ .

3.3 The altitude shall not exceed 2500 m.

3.4 There is no corrosive gas, no conductive dust and no inflammable and explosive medium in the surrounding environment.

3.5 There is no violent vibration at the location of installation.

4. Main functional characteristics:

4.1 The product can realize full three-phase compensation or can be tailor-made for mixed compensation of three phases and single phase.

4.2 The dot matrix LCD displays real-time fundamental power factor, power factor with harmonic, voltage, frequency, current, KVAR, active power, reactive power, apparent power, THDU, THDI, 3rd-15th harmonic bar chart, phase angle, electric energy, temperature, time and other power grid parameters.

4.3 Unique smart line checking function: The product can check the phase sequence of three-phase voltage, current polarity and phase sequence, perform software wire change, and guide users to check and change the line according to Chinese prompts, which is extremely convenient.

4.4 Capacitance setting: The capacitance can be set flexibly and conveniently according to coded value, equal capacity value or arbitrary value.

4.5 For capacitors with the same capacity, select the capacitors according to operation frequency to achieve balanced switching; for more than two kinds of capacitors with different capacity, select suitable capacitors automatically according to the reactive power required, switch them on or off one by one, and give consideration to the number of times; for compensation schemes with both different capacity and the same capacity, select suitable capacitors automatically according to the reactive power required, then switch them according to operation frequency, and switch the capacitors with low operation frequency at first. This mode is especially suitable for users with unstable electric load or frequent light load of distribution transformer.

4.6 The capacity of the capacitors which have been shut down or have fault is set to 0, and such capacitors will no longer be involved in operation.

4.7 The product has a perfect alarm mechanism. The LCD screen will display Chinese prompts for overvoltage, undercurrent, over-harmonic, power factor assessment value and other items, with user-friendly interface.

4.8 Connect to SCADA and PLC system through RS485 communication interface, provide product communication protocol, and directly connect with mainstream industrial control configuration software for data transmission.

5. Main technical parameters

Item	NWK1-GR-16GB
Sampling voltage	AC380V±20% or AC(100~800)V, independent auxiliary power supply
Sampling current(A)	0.05 ~ 5
Rated frequency(Hz)	45~65
Range of CT ratio	5/5~6000/5
COSΦ switch-on threshold	Settable between 0.85L~0.85C
switch-oft threshold	Settable between 0.85L ~ 0.85C
Delay in switching(S)	2~180
Overvoltage threshold(V)	100~800
Undervoltage threshold(V)	75~620
THDV threshold	Off/(3~90)%
Capacitor configuration(kvar)	Set the capacity of each circuit
Capacitor discharge delay(s)	0~240
Zero sequence threshold(%)	Off
Alarm output(S)	Off/(10~300)/Normally on
Fan start-up(C)	Off/35~65
High temperature alarm(℃)	Off/50~85
Large screen main interface	Off/On
Password protection	Off/On
Date change	None
Time change	None
Relay contact output	AC220V,5A,fastest response speed:2 seconds;
Active DC output	+12V DC,100mA,fastest response speed:2 seconds,or dynamic response:100 milliseconds
Power consumption(W)	≤8
Maximum number of output circuits	12 circuits,16 circuits
Restore to factory settings	Off/On

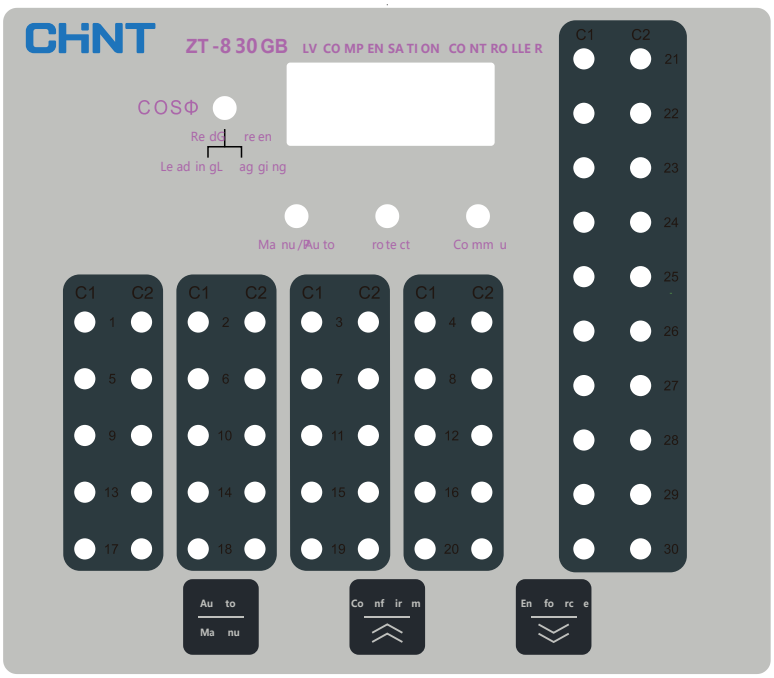
6. Configuration of main models

Model	Number of circuits	Sampling voltage(V)	Output mode	Functional Characteristics
NWK1-GR-12GB	12	100-800	Relay contact	Basic type +RS485+subharmonic +alarm
NWK1-GR-12GBD	12	100-800	+12VDC	Basic type +RS485+subharmonic
NWK1-GR-16GB	16	100-800	Relay contact	Basic type +RS485+subharmonic
NWK1-GR-16GBD	16	100-800	+12VDC	Basic type +RS485+subharmonic

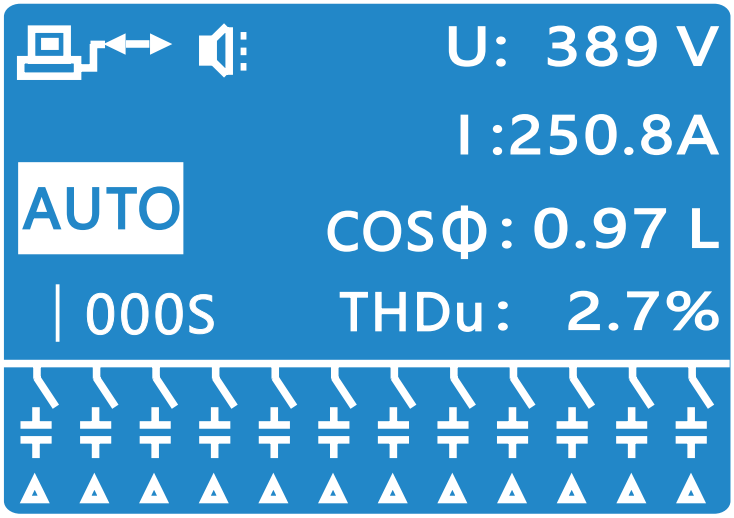
Note: When the control signal outputs +12V DC, the control object is ZCK smart combination switch or TSC thyristor switch.

7. Introduction of panel functions

7.1 Boot screen

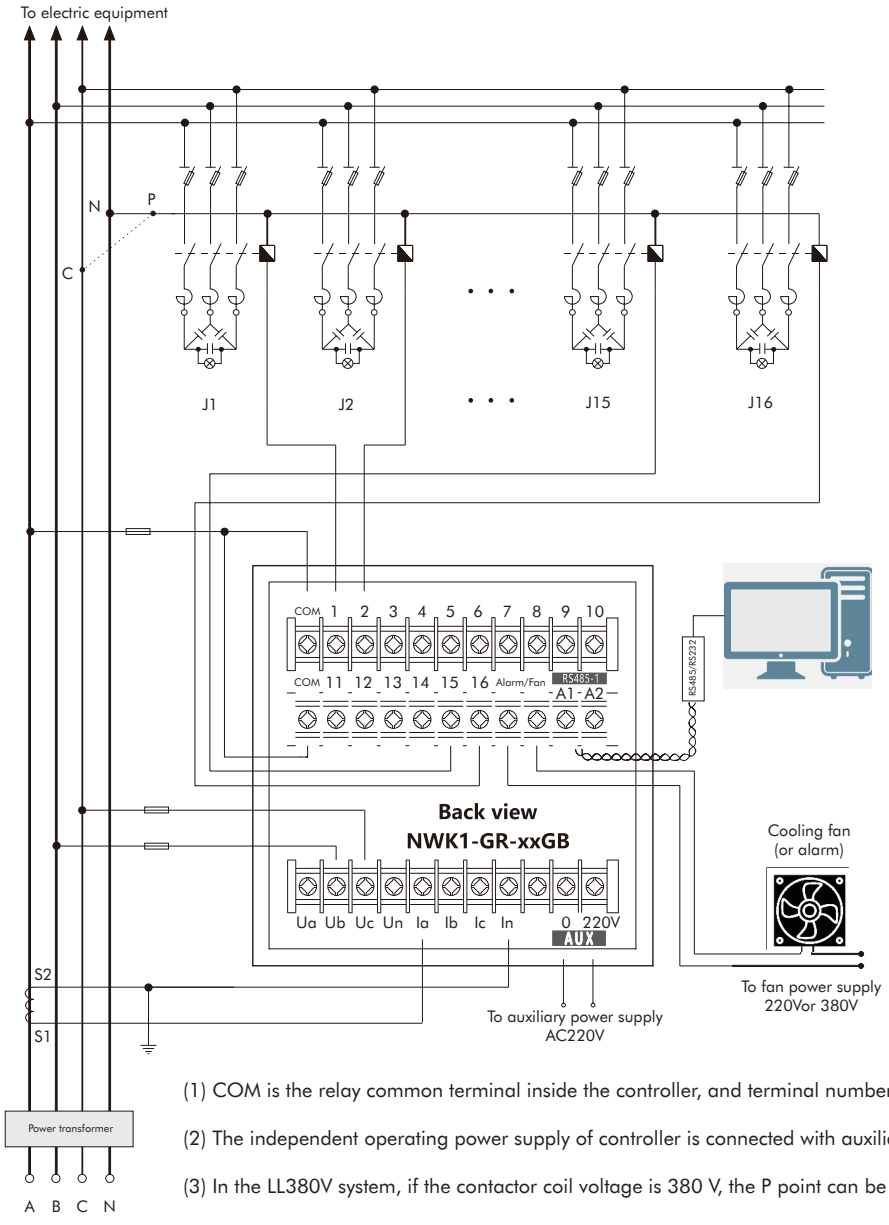


7.2 Automatic main interface



8. Product wiring diagram

8.1 Common compensation controller NWK1-GR-12GB / NWK1-GR-16GB (relay contact output, applicable to AC 127V / 220V, 220V /380V or three-phase 660V power grid systems)



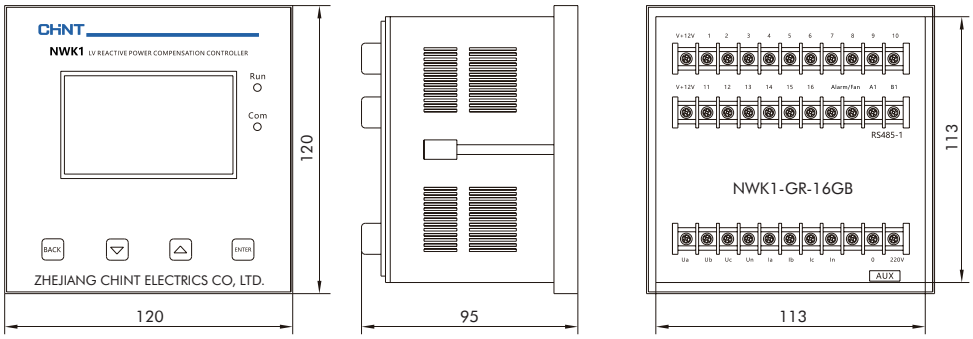
(1) COM is the relay common terminal inside the controller, and terminal number 1-16 is the control output.

(2) The independent operating power supply of controller is connected with auxiliary power supply AC 220V.

(3) In the LL380V system, if the contactor coil voltage is 380 V, the P point can be connected to C phase instead of N phase.

(4) If used for LL660V system or LL220V system, AC contactor coil is connected to auxiliary power supply AC220V.

9. Product installation and overall dimensions



Overall dimension:120 mm × 120 mm x 95 mm,embedded hole size:113 mm x 113mm

10. Ordering information

When ordering, users are responsible for selecting the compensation type, rated voltage, number of output circuits, control signal output mode (default relay output, suffix D represents +12VDC), etc. If the product exceeds the operating condition and main technical parameters, it can be ordered through negotiation.

For example: Order NWK1-GR-16GB, 10 sets.

It indicates ordering NWK1-GR series low-voltage reactive compensation controller, with common compensation type, 16 channels, control signal relay output, RS485 communication and data transmission function, and the ordering quantity is 10 sets.