HYC461 Automatic Circuit Breaker Recloser Controller

Summary

HYC461 ACR controller is a new generation of digital relaying control terminal produced by HEAG. It can protect, control, measure and monitor the grid with voltage below 40.5kV. It is suitable for a variety of system operating modes, including isolated neutral system, resistance-grounded system and arc suppression coils grounding system.

Main characteristics

Rich interface resources

The interface resources provided by HYC461 are: the input passband of 7 channels AC current and 4 channel AC voltage. 10 channel switching value input passband, 7 channel switching value output; the communication interface has two RS485 and one RS232 maintenance ports.

Flexible and convenient connection method

The four AC voltage inputs of HYC461 can connect with the phase voltage, Line voltage or zero-sequence voltage or unbalanced voltage, which adapt to a variety of PT Connection.

High reliable design

With the design principles of stable, reliable and durable, industrial components are adopted, all connections with the outside world are fully isolated as well as anti-lightning protection circuit and power filter are built in.

Event record in order

HYC461 will provider users 100 pieces of SOE for fault analysis (100 is a circle, namely, the next first SOE will cover the 101 SOE), the resolution of SOE is 1ms.

High-precision measurement

The measurement function of HYC461 can measure IA、IB、IC、I0、Ua、Ub、Uc、Uab、Ubc、Uca、P、Q、F、fs、PF precisely and monitor the protection current Ia、Ib、Ic, as well as measurement towards forward kWh, reverse kWh, forward kVarh, forward kVarh.

Accurate time setting

HYC461 has three types of time setting: time setting of artificial device panel, communication time setting and IRIG-B code time setting.

Performance index

Rated data

Power: 110/220VDC or VAC, allowable deviation ＋15%，－20%; 24/48 VDC, allowable deviation ＋15%，－20%.

Frequency: 50Hz, the measurement range is 45.00Hz~55.00Hz.

Phase sequence: ABC

Power consumption

Power: normal<7W; exit actuation <10W

AC voltage: <0.3VA/circuit（when it is rated input）

AC current: <0.2VA/phase（when it is rated input）

Output interface capability

Continuous power: 6A (DC)

Switched current: 20A (DC)

Breaking capacity (10,000times of operation, L/R=40ms)

Actuation time: <5 ms

Switching value input

Insulation voltage rating: 5kVDC

Rated voltage value: 110/220VDC or VAC, allowable deviation ±20%; 24/48 VDC, allowable deviation ±20%.

Current consumption: <3m A /circuit.

Communication

Insulation voltage rating: 2kV DC (except RS232）

RS485 port: baud rate 1200, 2400, 4800, 9600, 19200, 38400 are optional

Communication protocol: IEC60870-5-103protocol、Modbus

RS232: baud rate 19200, exclusive for PLPShell.

Communication media: GSM or GPRS wireless communication.

IRIG-B input

To adopt RS422 apparatus standard or TTL reception level IRIG-B.

Insulation voltage rating: 2kVDC

TTL receiving load: <2 mA (steady state)

RS422 receiving load: <0.2 mA (steady state)

Time setting accuracy: ±1 ms

AC sampling and processing

Filtering circuit: second-order low-pass filtering，cut-off frequency is 700 Hz.

Software filtering: full-cycle cos frequency

Sampling frequency: 32 point/cycle

Actuation interval of protection and control algorithm: 1/4cycle

Actuation interval of measuring algorithm: 1cycle

Actuation precision of steady-state protection and control

Phase current element: ±3%

Voltage element: ±3%

Phase angle: ±2°

Frequency element: ±0.01 Hz

Precision of measurement and metrology

Phase current: ±0.2%

Voltage: ±0.2%

Phase angle: ±0.5°

Frequency: ±0.01 Hz

KWh: ±0.5%

Temperature coefficient: ±2ppm/（℃）2

Ambient conditions

Temperature range of operation: −20℃～+65℃

Relative humidity: 15%~95%

Storage temperature testing: IEC60068-2-48

Insulation performance(IEC 60255-5)

2kV, 50 Hz/1minute Dielectric strength

Impulse withstands voltage: ±5kV (1.2/50us, 0.5J)

Insulation resistance: >100MΩ, 500VDC

Mechanical testing

IEC60255-21-1: 1 stage

Impact testing: IEC60255-21-2: 1stage

Earthquake testing: IEC60255-21-3:2 stage

Electromagnetic compatibility

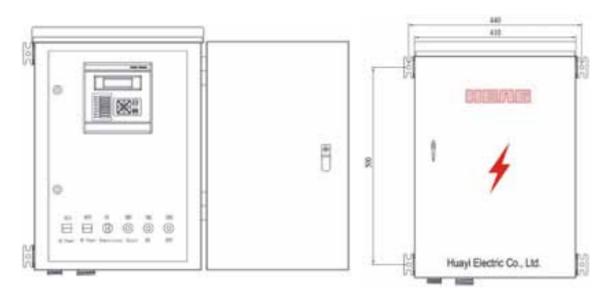Anti-interference towards high-frequency: IEC 60255-22-1: 3

Anti-static discharge: IEC 60255-22-2: 4

Anti-frequency magnetic interference IEC 1000-4-8: 5

Anti-radiated electromagnetic field interference IEC 60255-22-3: 3

Anti-fast transient disturbance interference: IEC 60255-22-4: 4

Anti-surge interference: IEC 1000-4-5: 4

HYC461 Layout Drawing of ACR Controller