



## Cathodic Protection Transformer Rectifier Air cooled Series

YUXI air cooled TR series has a variety of high-quality products, which can meet the various requirements of customers in most application scenarios. The standard air-cooled transformer rectifier series can be divided into Manual and Auto models. Manual model adopts standard 25-step output adjustment, while smart Auto model adopts standard 6-step output adjustment, and can also implement various automatic adjustment functions through touch screen panel / LED digital display + main control board, including constant potential, constant current, manual setting output, timing interruption and other functions. And it can be combined with the manual hierarchical output function to reasonably carry out continuous output adjustment within the full power range. Flexible operation, energy saving and environmental protection, it is the best choice for cathodic protection users.

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- ▶ Support multiple power source (i.e., city electricity, solar panels, wind power, TEG etc.)
- ▶ Customers could choose power modules from SCR, high frequency switch, AC-DC and DC-DC
- ▶ High quality multi-output isolation transformer with moderate heat generation and excellent insulation properties
- ▶ Control system based on embedded operating system with stable performance and excellent scalability
- ▶ High performance CPU and high accuracy sampling AD ensures excellent control accuracy
- ▶ Newly designed control system supporting functions include constant potential, constant current, manual operation, regular suspending and GPS controlled suspending
- ▶ Exclusively designed reference electrode failure on-off protection potential interpolation calculation function ensures system efficient operation under reference electrode failure
- ▶ Large-capacity internal data storage, automatic storage of operating data could exceed 10 years
- ▶ Comprehensive sensor and alarm system to ensure safe and stable operation of the system
- ▶ LCD industrial touch screen which is stable and reliable, easy to operate, and with comprehensive display content
- ▶ Support MODBUS RTU standard communication protocol and other modern communication protocols. Fully compatible with industrial control systems
- ▶ Avoid strong external interference damage of UHV power transmission and transformation system with our specially designed HVDC Interference Protection System
- ▶ Comprehensive lightning strike and short circuit protection system to ensure system reliability
- ▶ Could switch from manual and auto control mode
- ▶ Both air cooling and forced cooling are adopted



# SPECIFICATIONS

## Environmental conditions

- ▶ Operating temperature:  $-15^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- ▶ Relative humidity: 20% ~ 90% RH

## Operation data display and control

Part of the equipment adopts industrial-grade 7-inch touch screen to centrally display the operating modes, as well as the operating parameters under each operating mode: output voltage, output current, tube ground (protection) potential, power failure potential, AC interference voltage, AC input voltage, etc. The operating mode and operating parameters can be set by touch screen operation.

## Soft start

At start-up, the output current increases slowly until it reaches the pre-controlled value, without the phenomenon of inrush current

## Operation mode

- ▶ Constant potential operation mode: continuously controllable in the range of  $-3000 \sim +3000\text{mV}$ ; constant potential accuracy  $\leq 3\text{mV}$
- ▶ Constant current operation mode: continuously adjustable within 1%~100% rated output range, and measuring the on/off power potential display; constant current accuracy  $\leq 1\%$
- ▶ Manual mode: manually adjust the output voltage and current of the constant potential meter
- ▶ Interrupt mode: execution through 12s break 3s power-off potential test mode
- ▶ CIPS mode: Working in CIPS mode, the device interrupts and outputs intermittently according to GPS timing Beijing time according to user-set on/off timing. During the test period, the relevant alarms are shielded

## Related parameters

- ▶ Efficiency  $\geq 80\%$
- ▶ Reference input impedance: input impedance is greater than  $100\text{M}\Omega$
- ▶ Protection potential drift: the instrument works continuously for 24h under rated condition, and the change of protection potential value is not more than  $5\text{mV}$

## Lightning protection

- ▶ The input and output terminals of the instrument are equipped with lightning protection circuits and conform to IEC1024
- ▶ In the instrument output anode, output cathode relative to the ground terminal to introduce the amplitude of  $1.5 \sim 2.0$  million volts, repetition period of  $1 \sim 5\text{s}$ , pulse width of  $25\text{ms}$  pulse wave, time for 1min, the instrument can work normally
- ▶ between the anode and cathode lines: limit voltage:  $100 \sim 150\text{V}$ ; overvoltage through-current  $100\text{KA}$  ( $8 \times 20\mu\text{s}$ ), leakage current  $\leq 20\text{mA}$

## Alarm Status

- ▶ The following alarms are built into the device: over temperature, over voltage, over current, control reference failure, output disconnection
- ▶ In addition to the alarm display through the sound and light alarm, according to different alarm modes, the constant potential meter automatically enters the protection operation state to ensure the safety of the system and equipment

## Anti-interference ability

- ▶ Anti-AC interference characteristic: when 50 Hz, 100V interference voltage is added between "reference electrode" terminal and "zero contact" terminal, the change of protection potential value is no more than 5mV.
- ▶ Anti-interference: the instrument can work normally after the reference input terminal is instantaneously subjected to 1000V overcharge.
- ▶ Anti-extra-high voltage AC/DC interference, the control system has built-in extra-high voltage AC/DC interference protection module, when the protection module detects the external voltage is higher than the set voltage, it will completely disconnect the equipment and pipeline in time to protect the equipment from damage. Equipment from damage, and automatically recover when normal

## Remote monitoring function

YUXI transformer rectifier supports the standard industrial communication protocol MODBUS RTU, which is compatible with the mainstream industrial control system today, and can realize the full function control of the constant potential meter. And can be customized according to customer And can be customized according to customer needs communication protocol and communication mode:

1. RS-485/232
2. Support GPRS/WIFI/Lora and other mainstream communication methods
3. 4-20mA communication
4. WIFI communication

## Output parameters of transformer rectifier

Output power: single-phase 220V/50Hz, triple-phase 380V/50Hz or customized

Power ( W )	Output voltage/current	Remarks
1000	30V/15A 30V/20A	Automatic or Manual
2000	50V/30A 50V/30A	Automatic or Manual
3000	50V/50A 60V/50A	Automatic or Manual
5000	70V/50A 70V/50A	Automatic or Manual
5000 or more	0-100V/1-500A	Automatic or Manual or Oil cooling

# AIR-COOLED TR SERIES MODEL CODING

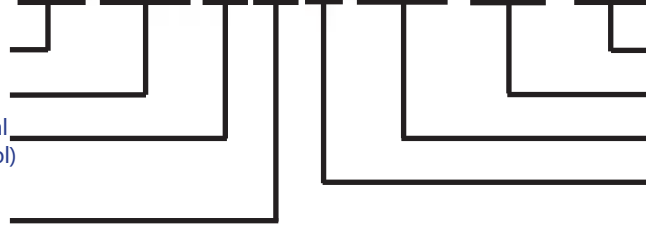
**YX RCP A A 3-400 050 050**

① Company code (YUXI)

② English abbreviation of TR

③ Control mode (M means manual control, A means automatic control)

④ Cooling type (A means air cooled, O means oil cooled)

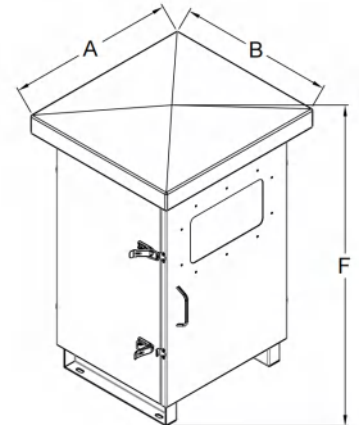
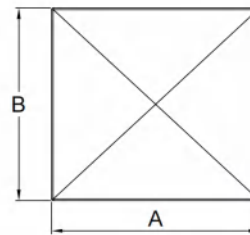
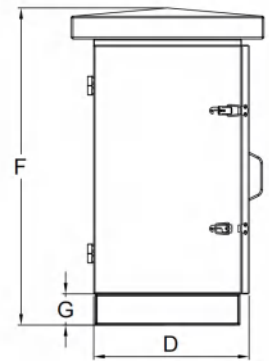
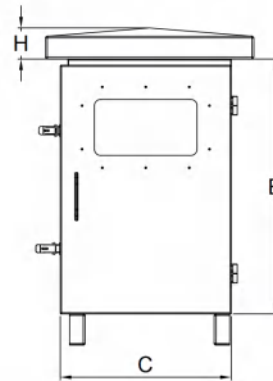
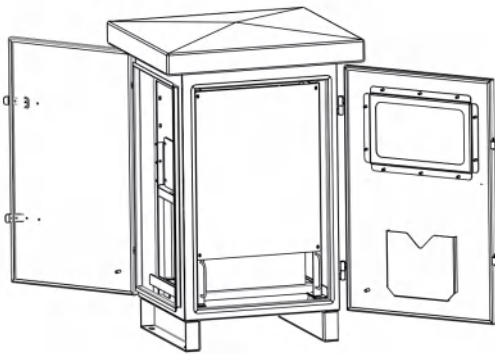


⑧ DC rated output current

⑦ DC rated output voltage

⑥ Input voltage

⑤ Input phase  
(1 means single phase, 3 means three-phase)



ENCLOSURE SIZE	A	B	C	D	E	F	G	H
S	670	620	550	500	820	1020	100	100
M	920	920	800	800	1020	1260	140	100
L	970	970	850	850	1200	1440	140	100

Unit: mm