

# MGR-STY380D40E

FULL ISOLATION THREE PHASE AC VOLTAGE  
 REGULATOR MODULE



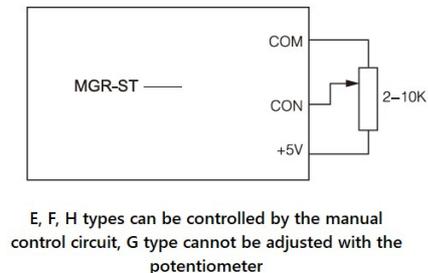
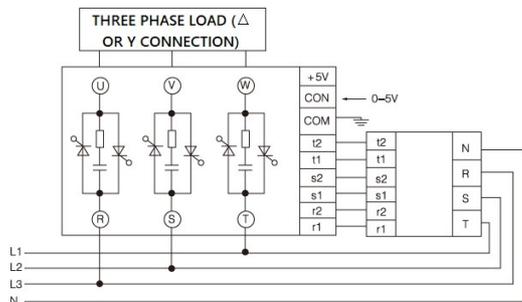
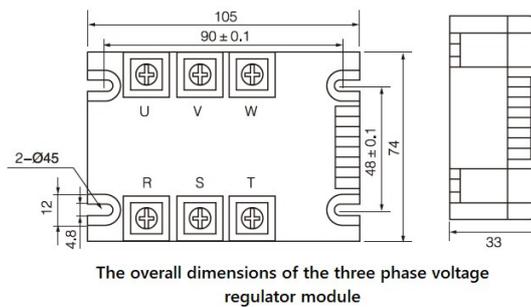
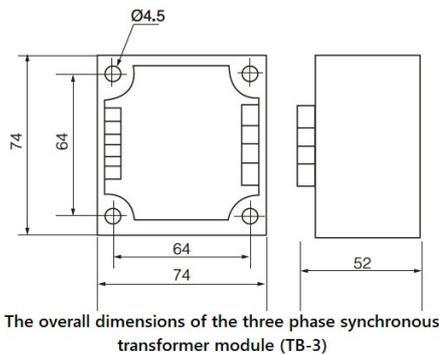
## FULL ISOLATION THREE PHASE AC VOLTAGE REGULATOR MODULE (MGR-STY)

- The full isolation three phase AC voltage regulator module (hereinafter referred to as the three phase voltage regulator module MGR-ST) integrates the three phase phase-detection circuit, the phase-shift circuit, the trigger circuit and three sets of reverse-parallel SCR thyristors. With the support of the three phase synchronous transformer module (TB-3) provided by our company (the synchronous transformer also serves as the internal operation power supply for the three phase voltage regulator module) and no requirement for the external circuit or power supply, the conduction angle of thyristors can be changed by the automatic control method or manual control method (i.e. the external potentiometer), which means the voltage amplitude of the three phase load can be continuously adjusted from 0V to the maximum voltage of the power grid.
- The three phase voltage regulator module MGR-ST should be applied to the 380VAC, 50Hz three phase power grid. According to the different control signals, MGR-ST can be divided into four types: E, F, G, and H types. The following is the model table.

	E Type: CON 0-5V	F Type: CON 0-10V	G Type: CON 4-20mA	H Type: CON 1-5V
35A	MGR-STY380D35E	MGR-STY380D35F	MGR-STY380D35G	MGR-STY380D35H
75A	MGR-STY380D75E	MGR-STY380D75F	MGR-ST380D75G	MGR-STY380D75H
120A	MGR-STY380D120E	MGR-STY380D120F	MGR-STY380D120G	MGR-STY380D120H
150A	MGR-STY380D150E	MGR-STY380D150F	MGR-STY380D150G	MGR-STY380D150H

Note: The current grade in this table is the maximum rms current of one set of the reverse-parallel SCR thyristors

- For convenience of explanation, the following introduces with the 0~5V control signal as a standard (Model: MGR-STY)
- The R, S, T ports of the MGR-STY module and the R, S, T ports of the TB-3 module should be connected to the L1, L2, L3 ports of the power grid (no phase sequence requirement, but the R, S, T ports of these two modules should be connected one-to-one), and the N line of the synchronous transformer module should be grounded. And U, V, W ports should be connected to three phase load (Y or  $\Delta$  connection are all available). The r1, r2, s1, s2, t1, t2 ports of MGR-STY module and the r1, r2, s1, s2, t1, t2 ports of the TB-3 module are connected through terminal strips (plugged together to connect directly). COM port is the internal common ground terminal, CON port is the control terminal, and the +5V port is the power supply generated inside the module only for the manual control of potentiometer. And the strong current part (T, S, R, N, U, W ports) and the weak current part (r1, r2, s1, s2, t1, t2, +5V, CON, COM ports) are fully isolated, and these two parts should be controlled by the automatic control method or manual control method.



## Related technical specifications and precautions

- The circuit consisting of three phase voltage regulator module and three phase synchronous transformer module TB-3 can be applied to 380VAC (300~420VAC), 50Hz power grid.
- CON must be positive relative to COM, and if the polarity is opposite, the output terminal will be out of control (fully open or fully closed). When the control terminal CON changes from 0V to 5V, the voltage on the AC load can be adjusted from 0V to the maximum value (for resistive loads). When the control voltage on CON is around 0V~0.8V (Fully-closed Region), the control signal can reliably shut down the output of the module. When the control voltage on CON is around 0.8V~4.6V (Adjustable Region), the conduction angle  $\alpha$  decreases linearly from  $180^\circ$  to  $0^\circ$  as the control voltage increases, and the voltage on the AC load increases from 0V to the maximum value. When the control voltage on CON is around 4.6V~5V (Full-open Region), the voltage on the AC load is the maximum value (close to the power grid voltage).
- The input impedance between CON and COM is divided into E, F and H type (the impedance of these three types are greater than or equal to  $30K\Omega$ ), and G type (the impedance is  $250\Omega$ ). The +5V voltage signal is only provided for the manual potentiometer (the selected resistance is between 2~10K $\Omega$ ), not for other uses. Note: The G type (4~20mA as control signal) cannot be manually adjusted by the potentiometer, so the +5V port is useless for the G type.
- The insulation voltage between the strong current part, the weak current part, and the module backplane is greater than 2000VAC.
- The heat of the whole module = Actual load current (Amps) \* 1.5 W/Amps. Customers can select MG-Y, MG-H series heat sink according to actual needs.
- The power of the three phase load should be balanced. When the load uses the Y-connection method, the center point Y can be connected or not connected to the neutral line. However, the high-order harmonic interference to the power grid when connected to the neutral line is larger than that when not connected to the neutral line.
- The speed control of the three phase AC asynchronous motor should be adjusted by the frequency converter, while the three phase voltage regulation module can only be applied to fan motors and pump motors where the requirements are not high.
- The N line on the three phase synchronous transformer module TB-3 must be reliably grounded. And the TB-3 is sold together with the three phase voltage regulator module.
- It is recommended to use the voltage regulation system consisting of the SSR-3JK and three random conduction type solid state relays for three phase AC voltage regulation.
- For specifications and precautions for selecting the current grade, device protection, etc., please refer to the instruction of single phase AC solid state relays.