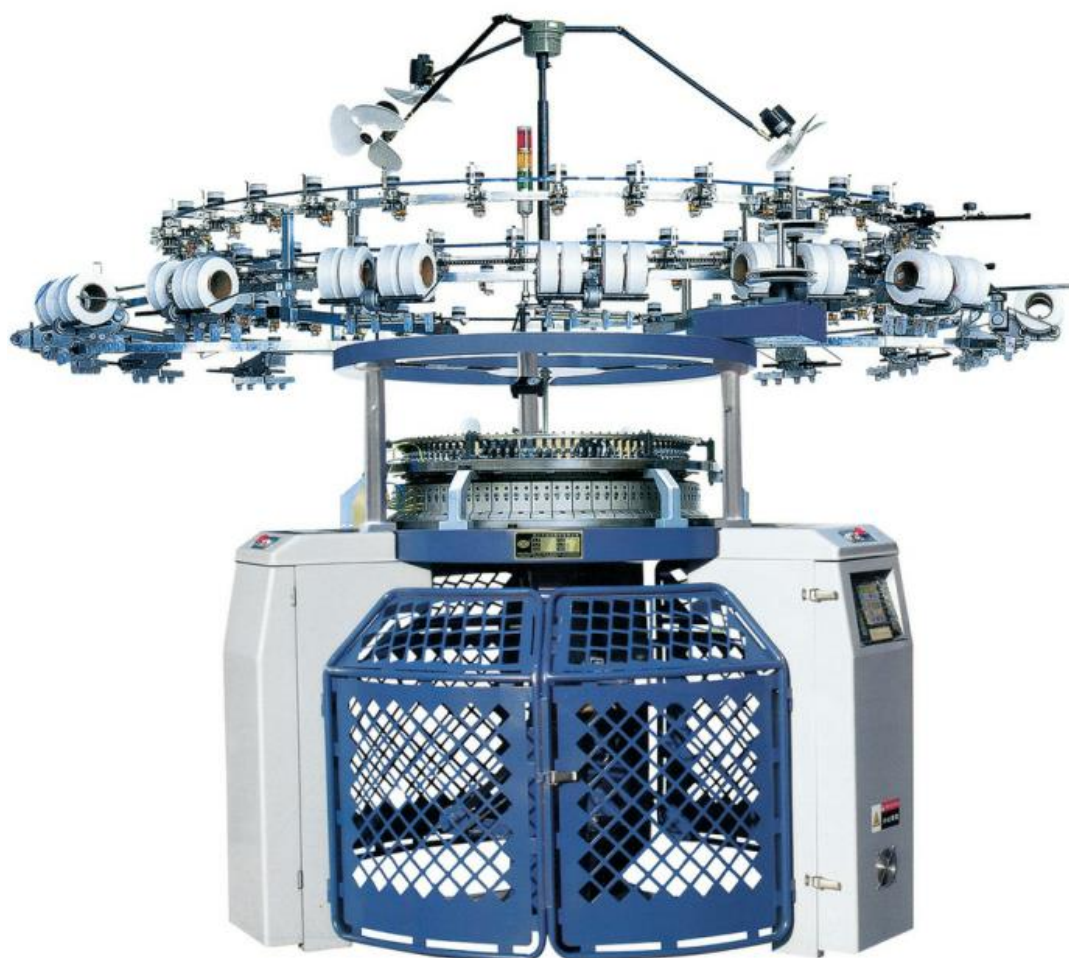


EN600 inverter used for circular knitting machine

The applications of Encom EN600 series inverter for circular knitting machine used well at Zhejiang, Jiangsu and Guangdong etc. area, fully meets the using requirements and exerts the performance of EN600 series inverter like large torque output at low frequency and fast response.

1.The introduction of circular knitting machine:

Circular knitting machine is the main device of knitting sweater. In the process of knitting, it's circular motion form, selecting different needle to weave pattern. The ability of weaving pattern can be achieved high level by some needle selections. The biggest advantage of circular knitting machine is the high yield which favored by many sweater enterprises. The circular knitting machine widely used in the textile industry.



2. Circular knitting machine system project

2.1 Technological requirements

The circular knitting machine requires the motor cannot reversal, otherwise the needle in the needle dial would be bend or broken. For circular knitting machine without one-way bearing, its operation direction depends on the motor direction absolutely. If so, DC braking function need to setup properly.

The system adopts multi-speed control mode:

JOG: 5–6Hz Jog operation;

Normal speed: The maximum frequency can be 80Hz for high speed knitting. The setup frequency can be analog provision or inverter digital setup.

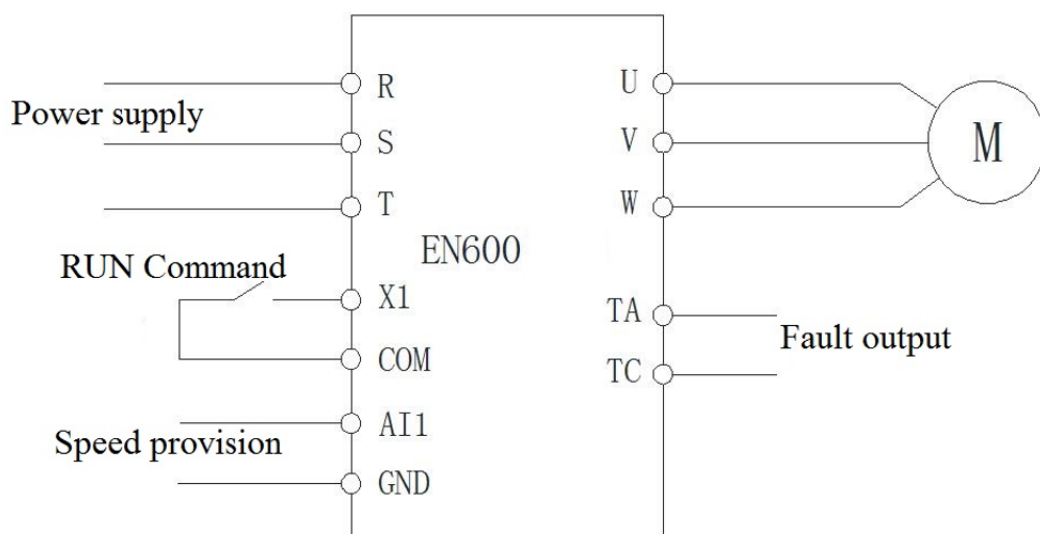
Winding cloth: 20HZ low speed for winding cloth operation.

2.2 Performance requirements

The load is heavy when knitting, it needs JOG or Start quickly, so the inverter should output large torque at low frequency and has fast response. The inverter adopts vector control mode to improve the motor stability precision and torque output at low frequency.

2.3 Frequency inverter wiring

The control system of circular knitting machine adopts MCU or PLC with HMI to control the inverter start and stop by terminal and adjust the inverter frequency by analog provision or multi-speed terminal provision mode.



There are two ways to provide frequency provision for multi-speed control requirements, analog channel provision and multi-speed terminal provision. The control system will control the inverter by analog signal or switch signal.

2.4 Frequency inverter parameters setup

Function code	Setup value	Definition
F00.00	2	Select senior list mode
F00.24	1	SVC vector control mode
F01.00	1	Select AI1 analog setup
F01.15	1	Terminal control
F01.17	50	Acc. Time 5s
F01.18	8	Dec. Time 0.8s
F01.11	80	Upper limit Fre. 80HZ
F01.20	1	S curve for Acc. and Dec.
F02.02	0.5	Start-up frequency
F02.11	2	Deceleration + DC braking stop mode
F02.14	0.5	DC braking Fre. for stop
F02.15	2	DC braking time
F02.16	120	DC braking current for stop
F14.25	0.1	Pre-excitation time constant
F15.01	Base on motor	Motor rated power
F15.02	Base on motor	Motor rated voltage
F15.03	Base on motor	Motor rated current
F15.04	Base on motor	Motor rated frequency
F15.05	Base on motor	Motor rated speed
F15.06	Base on motor	Motor pole pairs No.
F15.19	1	Auto-tuning

3. Debugging attentions

3.1 Select EN600 series SVC vector control mode, setup motor parameters according to the motor nameplate, auto-tuning motor characteristic parameters.

3.2 For circular knitting machine without one-way bearing, the motor cannot be reversal. Slightly reversal of motor may cause the needle dial broken. To meet the above requirements, it need the frequency inverter to control the motor well and ensure the motor shaft stops completely when the machine stops by setting inverter DC braking parameters for stop.

4. The advantages of EN600 for circular knitting machine application

4.1 S curve for Acc. and Dec. makes start and stop smooth

4.2 SVC control mode with large torque output at low frequency and fast response

4.3 DC braking function during Acc. and Dec., makes inverter stop and brake stable

4.4 Adopts magnetic field correction function to avoid breakage of needle when device reversal.

5. Epilogue

The applications of Encom EN600 series inverter for circular knitting machine used well at Zhejiang, Jiangsu and Guangdong etc. area, fully meets the using requirements and exerts the performance of EN600 series inverter like large torque output at low frequency and fast response. EN600 series inverter belongs to high performance flux vector frequency inverter, adopts 32-bits DSP (Digital signal processor) platform and advanced control algorithm to realize PG vector control and sensorless vector control. Speed vector control and torque vector control also available, It can limit impact current quickly and widely used in high-end manufacturing with abundant application function. This series inverter with high control precision, fast response, superior low frequency characteristic, intelligent detection and protection, has a wide range of network function and friendly user habits, abundant peripheral bus expansion, terminal expansion, relay expansion, analog expansion etc.