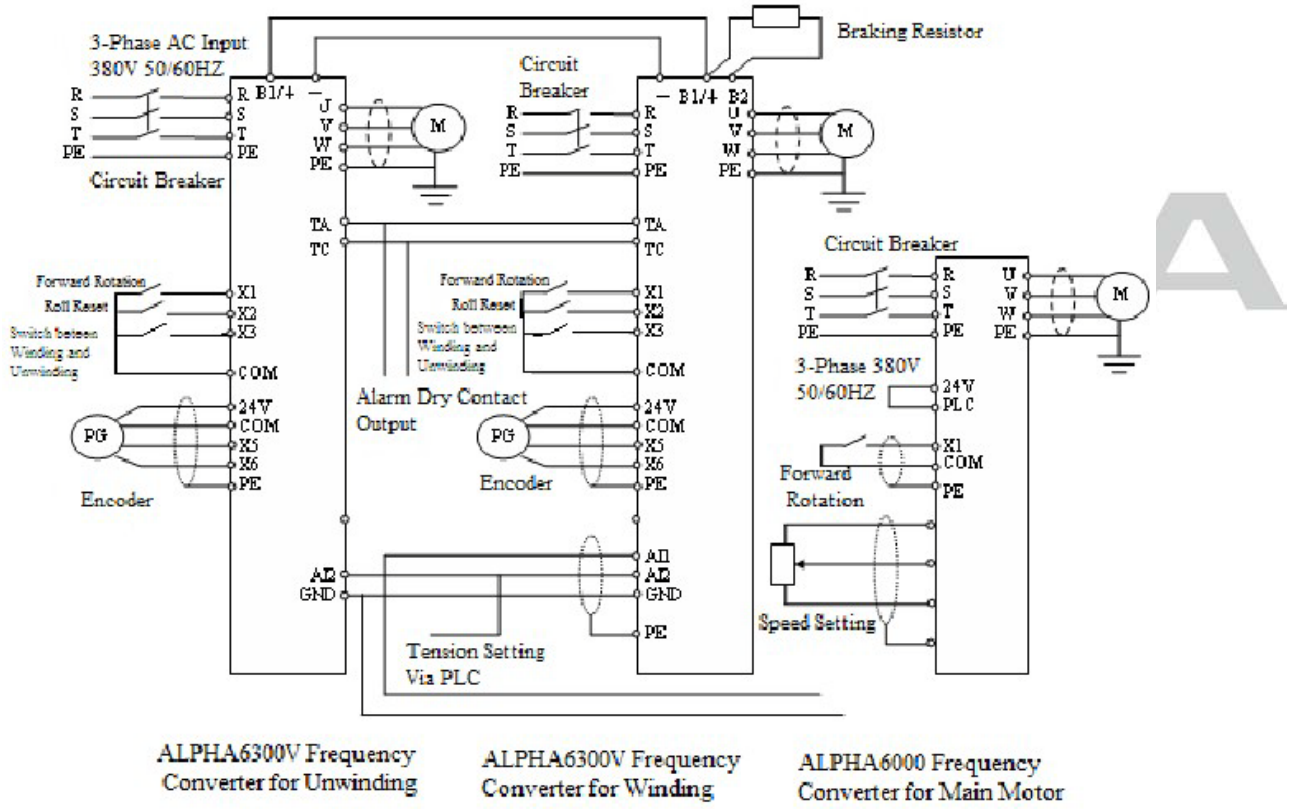
ALPHA6300V Frequency Converter for Vacuum Aluminizing Machine

One primary use of our vacuum aluminizing machine is in the manufacture of aluminized film or paper. Plenty of applications exist for the aluminum film and paper, such as in the packaging of cigarette, wine, food, drugs, and other daily necessities. Aluminized paper uses white paperboards as base materials upon which layers of aluminum are added. Once printed with images, texts, or logos, aluminized paper can be used as the hard cover for cigarette and packaging box for wine. Aluminized paper made of imported wood pulp also can be utilized as labels for glass bottles. In food and drug industry, aluminized paper is one of the most popular packaging materials. It solves the common problem of electrostatic attraction faced with composite material, which would make it harder for users to pour out the powder.

Working Principle

The aluminizing equipment heats the aluminum wire above the boiling temperature under vacuum conditions. The vaporized aluminum in contact with the oxygen in the air forms a protection layer of oxide on the surface of soft material, giving it a metallic luster. In this way, the soft packaging material is prepared for its intended purpose.

System Configuration



Parameters

Feature Code	Parameter Name	Value	Note
Frequency Converter for Winding Motion (ALPHA6300V)			
P0.01	Control Mode	1	PG Vector Control
P0.03	Frequency Setting 1	7	Linear Speed Mode

Feature Code	Parameter Name	Value	Note
P0.07	Terminals Control	2	Terminal Control STOP Effective)
P2.28	Accelerating Time 2	3.0	According to site setting
P2.29	Decelerating Time 2	6.0	According to site setting
P1. 01	Startup Frequency	0.2HZ	Startup Frequency
P1.10	Stop Mode	1	Free Stop
P2.44	Number of Pulses per Revolution (Built-in PG)	360	According to the specific encoder line count
P3.01	X1Terminal Default Setting	1	Forward Rotation
P3.02	X2 Terminal Default Setting	54	Coil Diameter Resetting
P3.03	X3 Terminal Default Setting	61	Switch between Coil Wind-in and Wind-out
P3.05	X5 Terminal Default Setting	81	2-Phase Speed Measurement A/B Pulse Input
P3.06	X6 Terminal Default Setting	82	2-Phase Speed Measurement A/B Pulse Input
P6.00	Tension Control Mode	1	Default Tension Control Mode
P6.01	Wind-in Mode	0	Wind-in
P6.02	Mechanical Transmission Ratio	2.0	According to site setting
P6.03	Tension Setting	3	AI3
P6.05	Maximum Tension	600	According to site setting. Refer to the following for details
P6.13	Coil Diameter Calculation Method	1	According to feedback linear speed
P6.14	Maximum Coil Diameter	1100	According to site setting
P6.15	Initial Coil Diameter	105	According to site setting
P6.20	Coil Diameter Filter Time	10.0s	According to site setting
P6.31	Linear Speed Input Port	1	AI1
P6.32	Maximum Linear Speed	353.5	According to site setting. Refer to the following for details
P6.33	Minimum Linear Speed	50	According to site setting
P6.55	Linear Speed Input	1	AI1
P6.59	Coil Calculation Stop Delay Time	15S	According to site setting
P8.23	Zero Speed Tension Increase	40	According to site setting
P8.24	Zero Speed	10	According to site setting

Feature Code	Parameter Name	Value	Note
	Threshhold		
Frequency Converter for Unwinding Motion (ALPHA6300V)			
P0.01	Control Mode	1	PG Vector Control
P0.03	Frequency Setting 1	7	Linear Speed Mode
P0.07	Terminal Control	2	Terminal Control STOP Effective)
P2.28	Accelerating Time 2	3.0	According to site setting
P2.29	Decelerating Time 2	6.0	According to site setting
P1. 01	Start-up Frequency	0.2HZ	Startup Frequency
P1.10	Stop Method	1	Free Stop
P2.44	Number of Pulses per Revolution (Built-in PG)	360	According to the specific encoder line count
P3.01	X1 Terminal Default Setting	1	Forward Rotation
P3.02	X2 Terminal Default Setting	54	Coil Diameter Resetting
P3.03	X3 Terminal Default Setting	61	Switch between Coil Wind-in and Wind-out
P3.05	X5 Terminal Default Setting	81	2-Phase Speed Measurement A/B Pulse Input
P3.06	X6 Terminal Default Setting	82	2-Phase Speed Measurement A/B Pulse Input
P6.00	Tension Control Mode	1	Default Tension Control Mode
P6.01	Wind-in Mode	1	Coil Wind-in
P6.02	Mechanical Transmission Ratio	2.0	According to site setting
P6.03	Tension Setting	3	AI3
P6.05	Maximum Tension	600	According to site setting. Refer to the following for details
P6.13	Coil Diameter Calculation Method	1	According to feedback linear speed
P6.14	Maximum Coil Diameter	1100	According to site setting
P6.15	Initial Coil Diameter	105	According to site setting
P6.20	Coil Diameter Filter Time	10.0s	According to site setting
P6.31	Linear Speed Input	1	AI1
P6.32	Maximum Linear Speed	353.5	According to site setting. Refer to the following for details
P6.33	Minimum Linear Speed	50	According to site setting
P6.55	Linear Speed Input Port	1	AI1
P6.59	Coil Calculation Stop	15S	According to site setting

Feature Code	Parameter Name	Value	Note
	Delay Time		
P8.23	Zero Speed Tension Increase	40	According to site setting
P8.24	Zero Speed Threshhold	10	According to site setting
Frequency Converter for Main Roller (ALPHA6000)			
P0.01	Frequency Setting 1	3	AI2
P0.04	Control Mode	2	Terminal Control (STOP Effective)
P0.21	Accelerating Time 1	20.0S	According to site setting
P0.22	Decelerating Time 1	12S	According to site contidions
P1.08	Stop Method	0	Free stop
P3.01	X1 Terminal Default Setting	1	Forward Rotation
P3.02	X2 Terminal Default Setting	2	Reverse Rotation
P4.17	AO1 Output	11	Output Frequency (after error compensation)

Note

1. Accelerating and decelerating time of the frequency converter for coil wind-out should be stet via the P2.28 and P2.29.
2. Coil wind-out speed should be maintained the same as the clamping speed, in order to maintain a constant linear speed. As pictured above, the clamping device has a speed reduction rate of 6:1. The roller diameter is 450mm. The number of motor pole pairs is 2. Given that the maximum output frequency of our frequency converter for the clamping device is 56Hz, the maximum linear speed equals to N×π×D×/ K = f×60×π×D / P/K (N: rotational sped; D: roller diameter; K: speed reduction ratio; f: frequency; P: number of pairs of motor poles.)
Maximum Linear Speed = 50 ×60× 0.45 × 3.14 / 2 / 2 = 353.5m/min

3. The maximum tension is decided by the transmission mechanism of the coil wind-out roller. It calculation formula is listed below.
Maximum Tension = T / R = P×9550×K / N /R (T: rated rotational torque; D: roller diameter; P: motor power (KW); K: speed reduction ratio(2:1); N: rated rotational speed; Conversion Coefficient between the power and torque ×rotational speed: 9550; R: minimum coil diameter (105)mm;)
Maximum Tension= 22×9550×2/ 1440 /0.0525m = 5558N
The setting value is typically greater than the calculated data.
4. The linear speed is decided by the main roller. The frequency converter for the main roller adopts the 6000 series without linear speed output function. It only puts out the analog quantity of compensated output frequency. Therefore the analog quantity is not the same with actual linear speed which varies according to specific loads on the main roller. You'd better choose a 6300V frequency converter for your main roller if you want constant linear speed.