

Electric Drawing for GTW3624-2413H Flat & Bending Glass Tempering Furnace



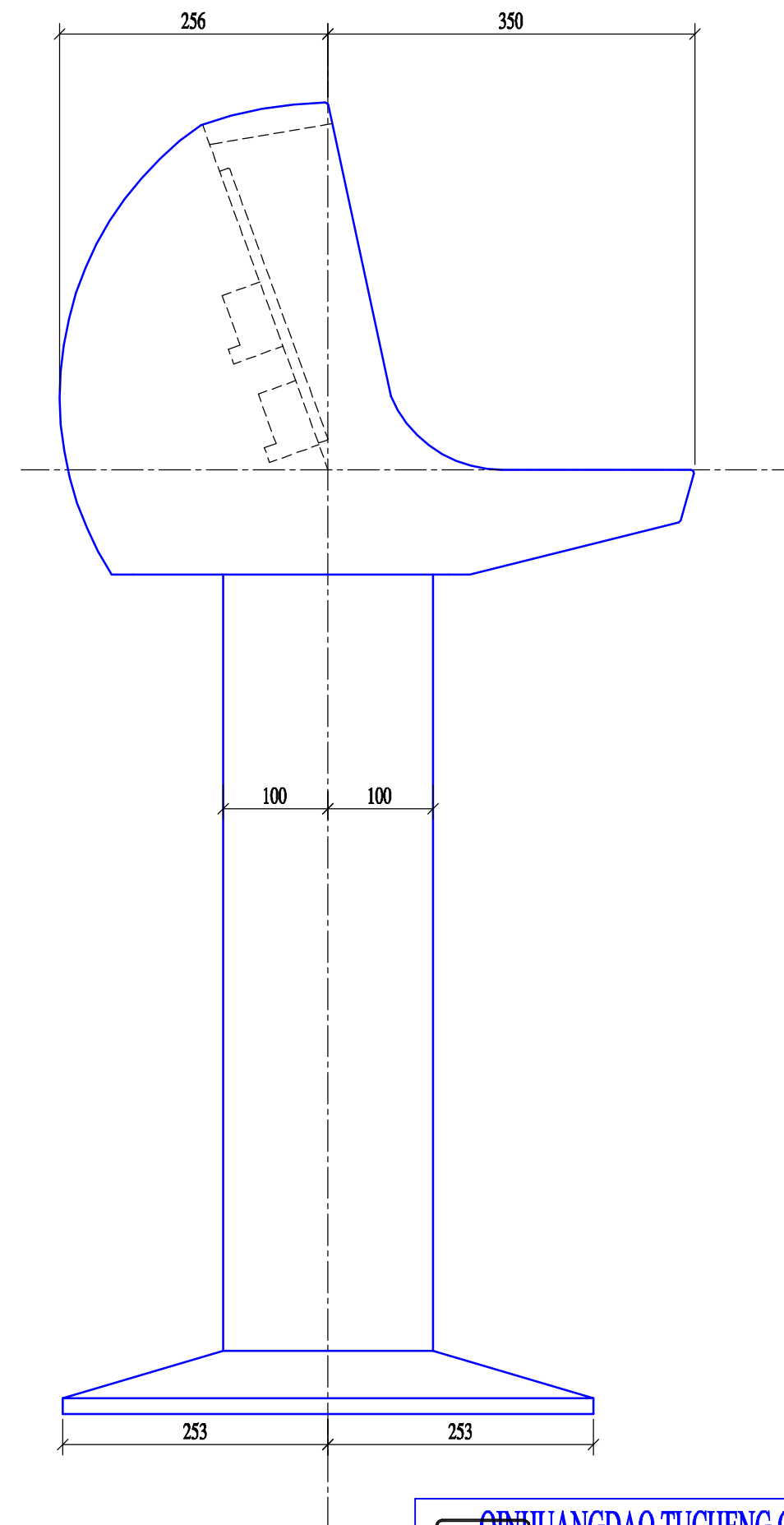
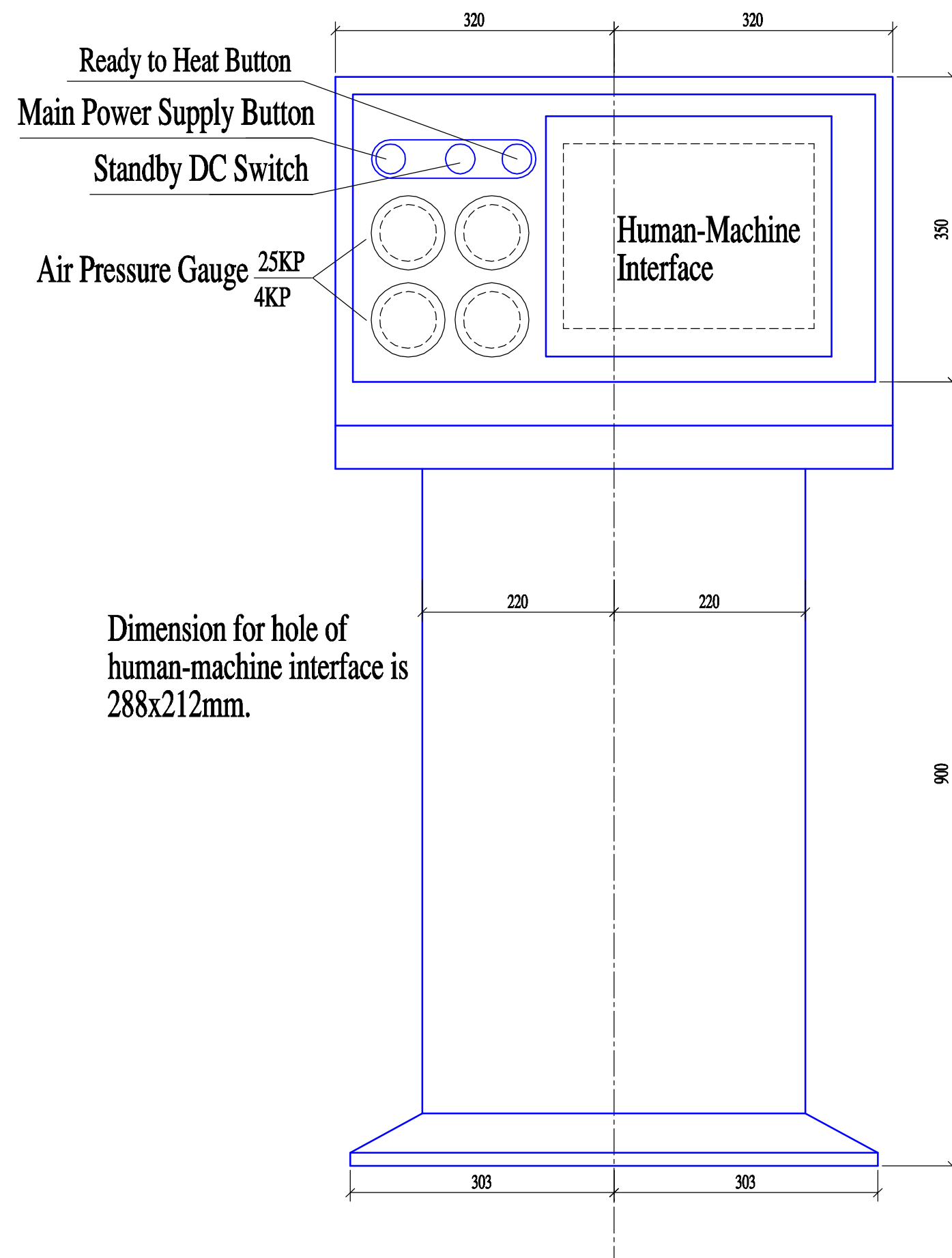
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QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., Ltd.

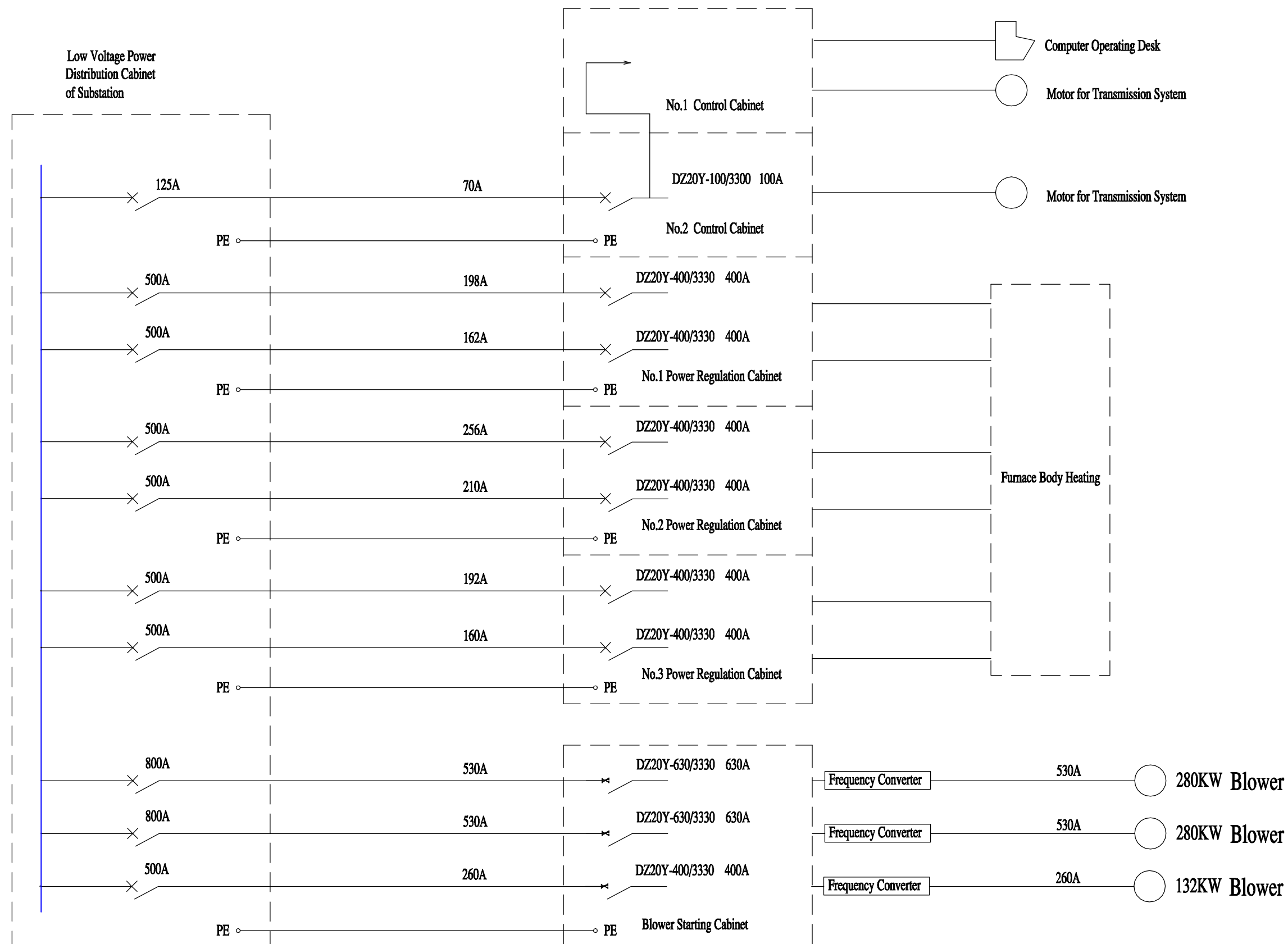
September, 2006



QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Outline Drawing for Electric Control Cabinet
date		No.	GTW3624-2413H-E-01



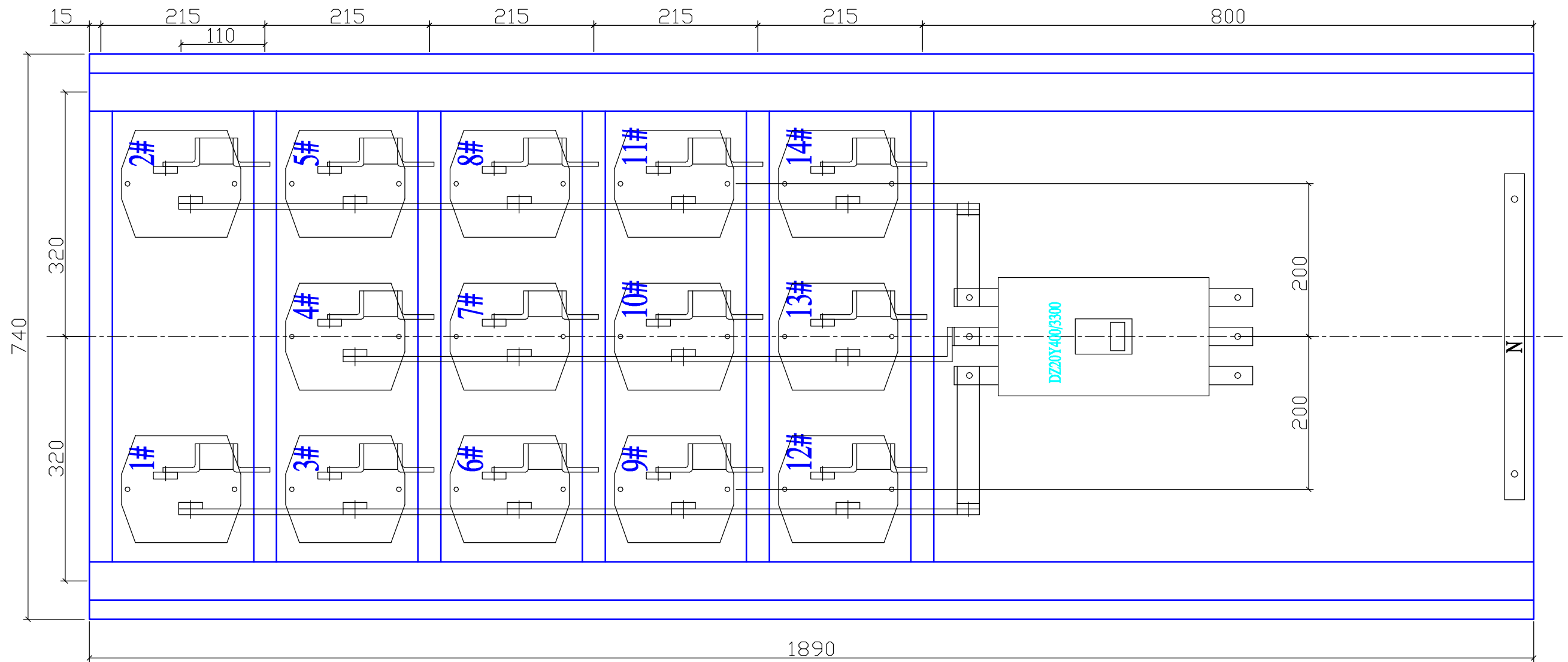
TC QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Outline Drawing for Computer Operating Desk
date		No.	GTW3624-2413H-E-02



Explanation:

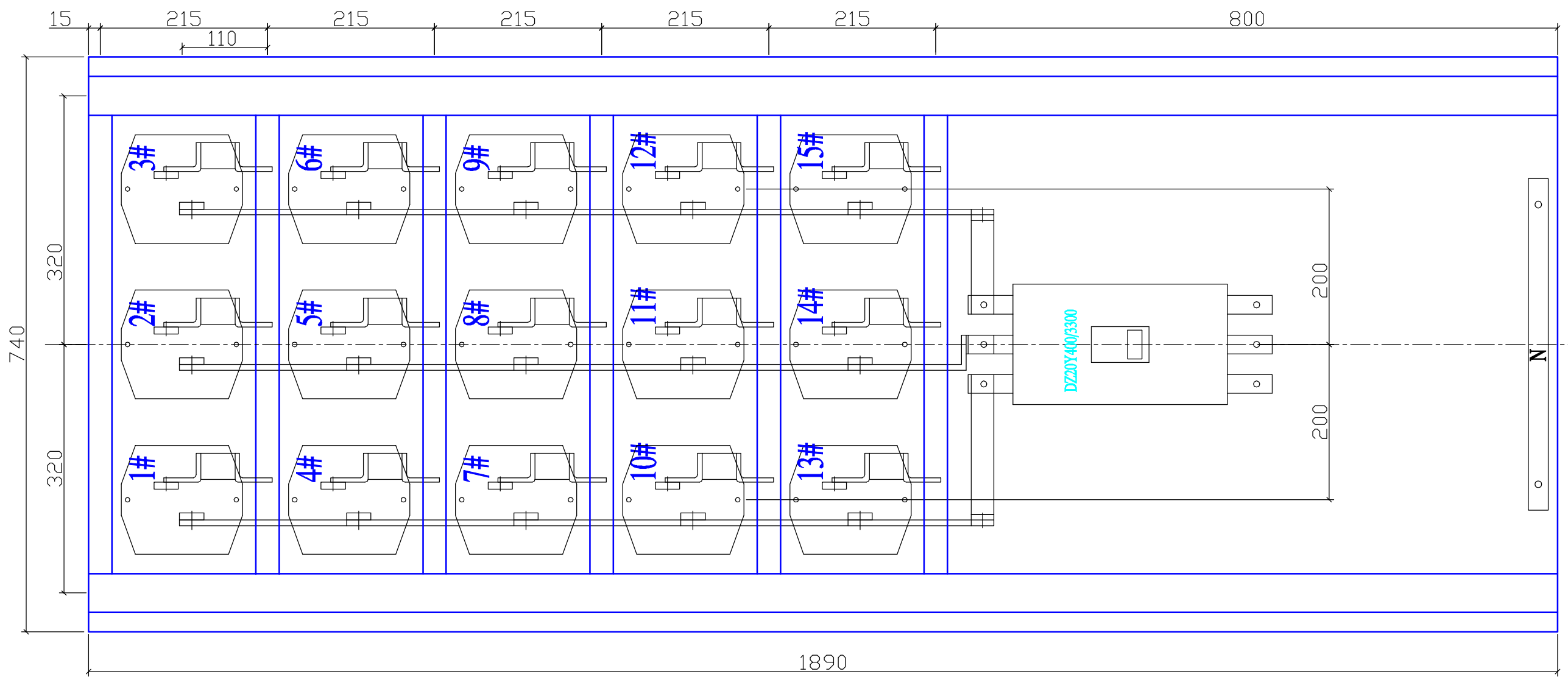
1. Starting of blower is by means of frequency converter adjusting, which is of no pollution to power supplying network.
2. Heating power of the furnace is controlled by three control cabinets with SCR of double direction over-zero trigger, which is of no pollution to power supplying network.
3. Under normal working situation, loading rate of total electric equipment is about 60%.
4. Lower voltage power distribution cabinet of substation, the cable of power supply, and the cable from starting cabinet to blower/motor will be provided by the customer.

QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Drawing for Power Supplying System
date		No.	GT3624-2413H-E-03



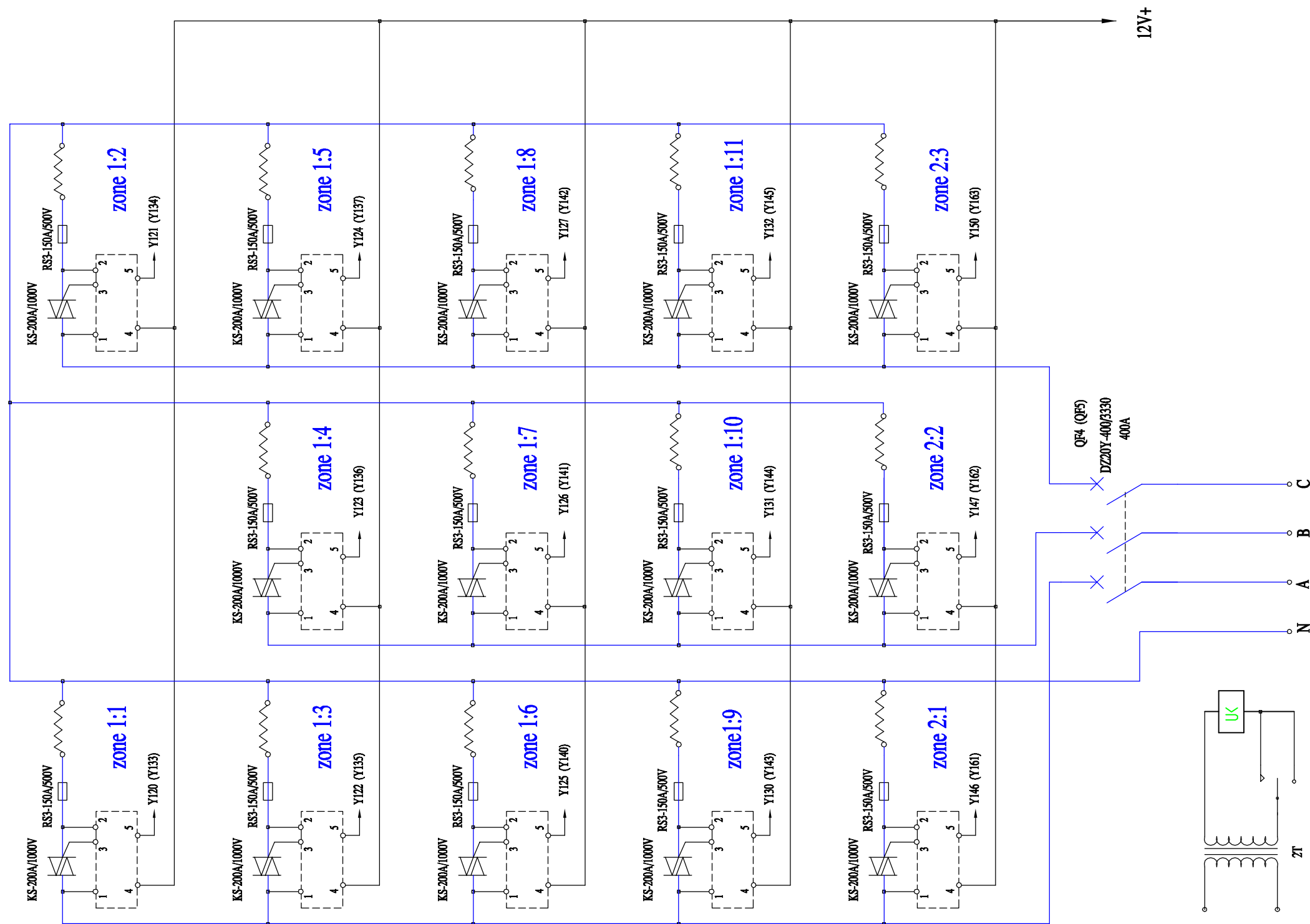
Note: Arrangement method of elements on front and back of installation panel are the same.
Front of installation panel is N line,back of installation pane is PE line.

TUCHENG GUANGDAO TUCHENG GLASS TECHNOLOGY CO.,LTD			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Element on Installation Panel in No.1 Power Regulation Cabinet
date		No.	GTW3624-2413H-E-04



Note: Arrangement method of elements on front and back of installation panel are the same.
Front of installation panel is N line,back of installation pane is PE line.

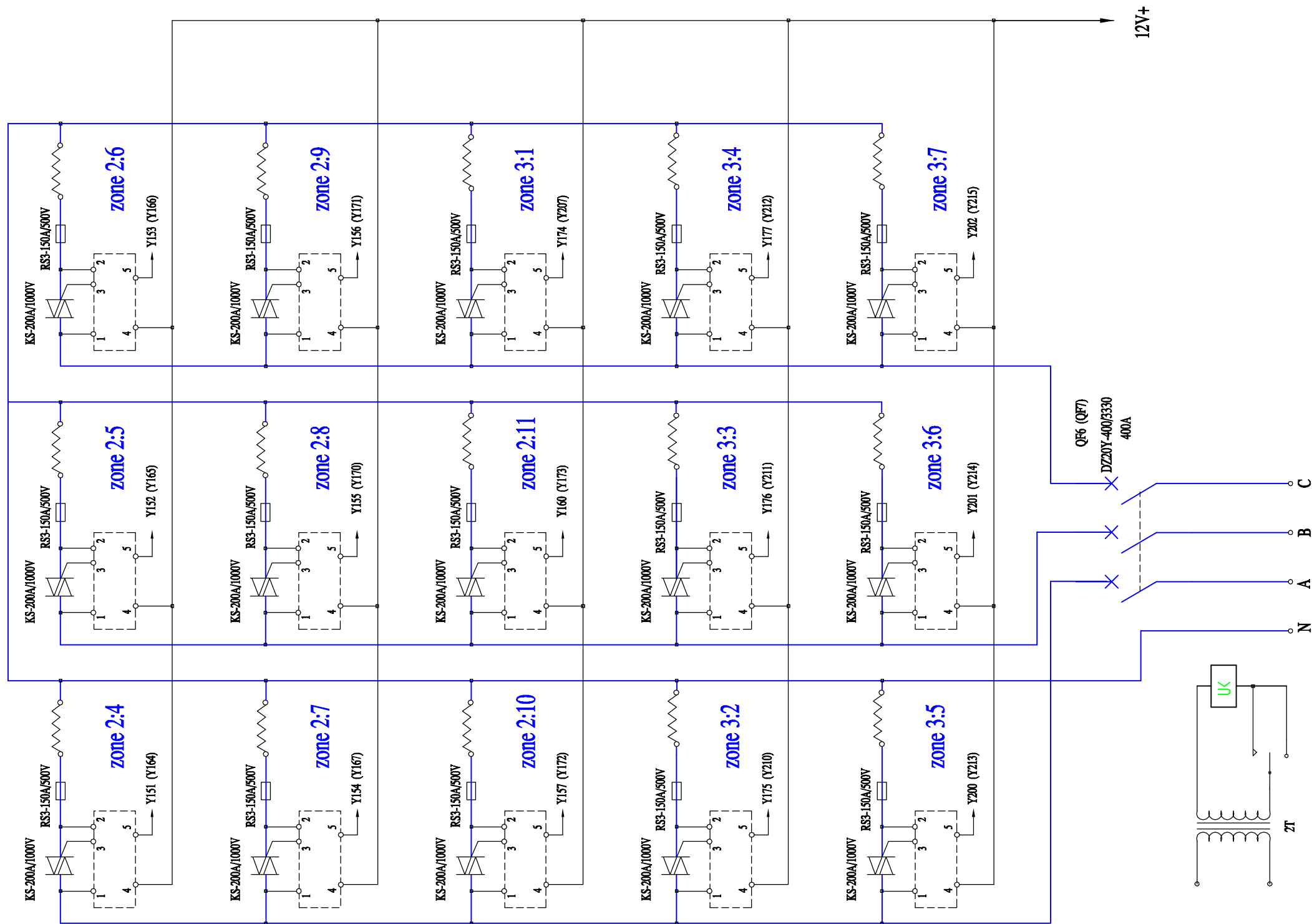
TONGHUANGDAO TUCHENG GLASS TECHNOLOGY CO.,LTD			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Element on Installation Panel in No.2 & No.3 Power Regulation Cabinet
date		No.	GTW3624-2413H-E-05



Note:

1. Front of installation panel in No.1 power regulation cabinet is used for supplying electricity for upper furnace body. Back of installation panel in No.1 power regulation cabinet is used for supplying electricity for lower furnace body. Circuit principle diagram are the same.
- 2.Code out of parenthesis is triggering order for front of power regulation cabinet. Code in parenthesis is triggering order for back of power regulation cabinet.
- 3.QF4 is code of circuit breaker for front of installation panel in power regulation cabinet; QF5 is code of circuit breaker for back of installation panel in power regulation cabinet.

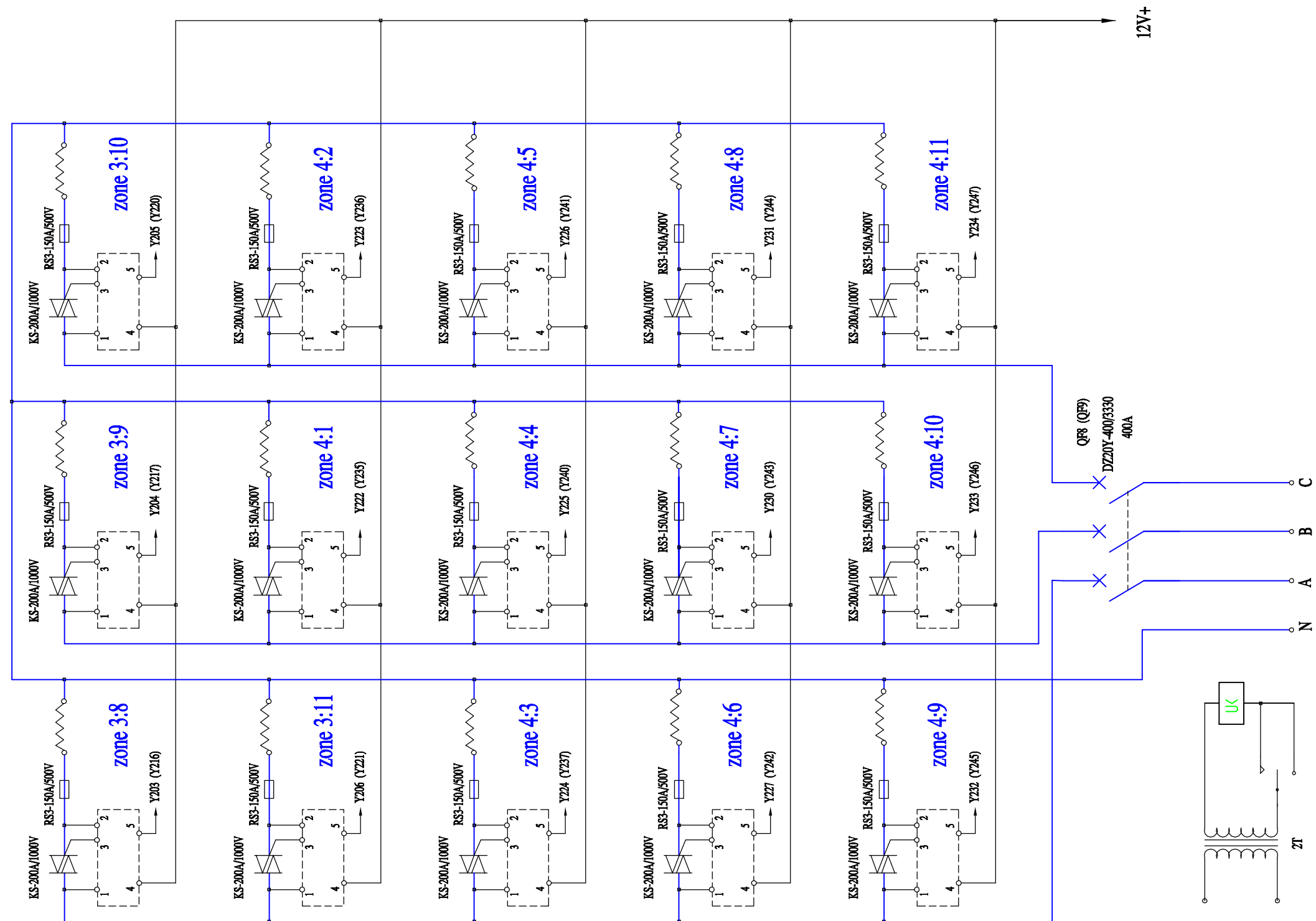
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Circuit Principle Diagram for No.1 Power Regulation Cabin
date		No.	GTW3624-2413H-E-06



Note:

1. Front of installation panel in No.2 power regulation cabinet is used for supplying electricity for upper furnace body. Back of installation panel in No.2 power regulation cabinet is used for supplying electricity for lower furnace body. Circuit principle diagram are the same.
- 2.Code out of parenthesis is triggering order for front of power regulation cabinet. Code in parenthesis is triggering order for back of power regulation cabinet.
- 3.QF6 is code of circuit breaker for front of installation panel in power regulation cabinet; QF7 is code of circuit breaker for back of installation panel in power regulation cabinet.

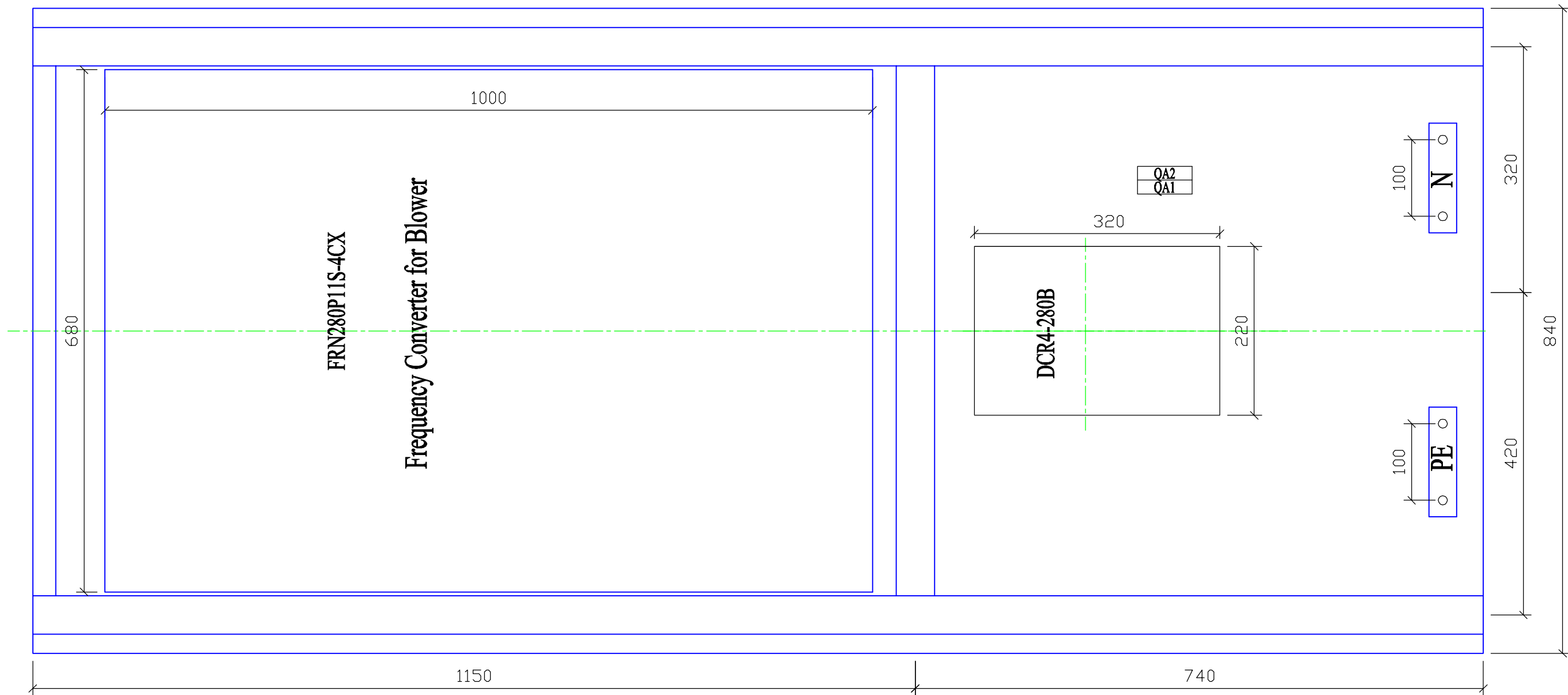
TONGJIANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Circuit Principle Diagram for No.2 Power Regulation Cabin
date		No.	GTW3624-2413H-E-07



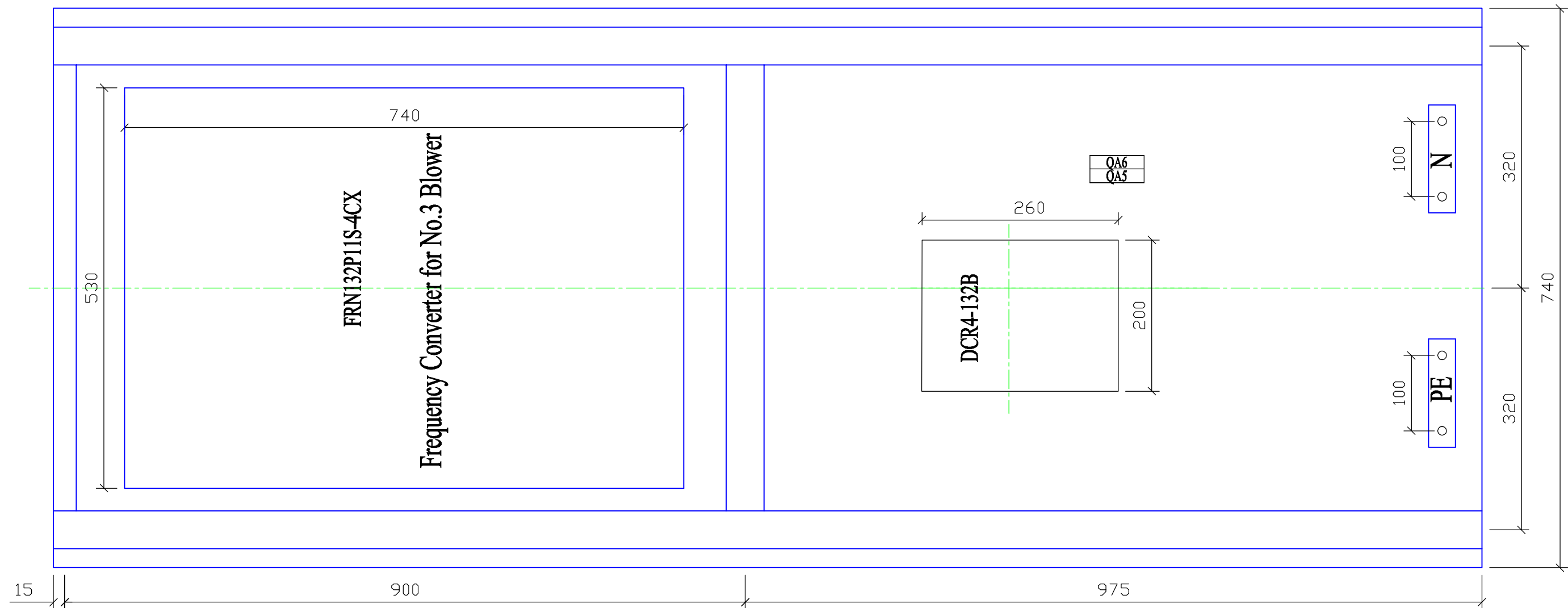
Note:

1. Front of installation panel in No.3 power regulation cabinet is used for supplying electricity for upper furnace body. Back of installation panel in No.3 power regulation cabinet is used for supplying electricity for lower furnace body. Circuit principle diagram are the same.
- 2.Code out of parenthesis is triggering order for front of power regulation cabinet. Code in parenthesis is triggering order for back of power regulation cabinet.
- 3.QF8 is code of circuit breaker for front of installation panel in power regulation cabinet; QF9 is code of circuit breaker for back of installation panel in power regulation cabinet.

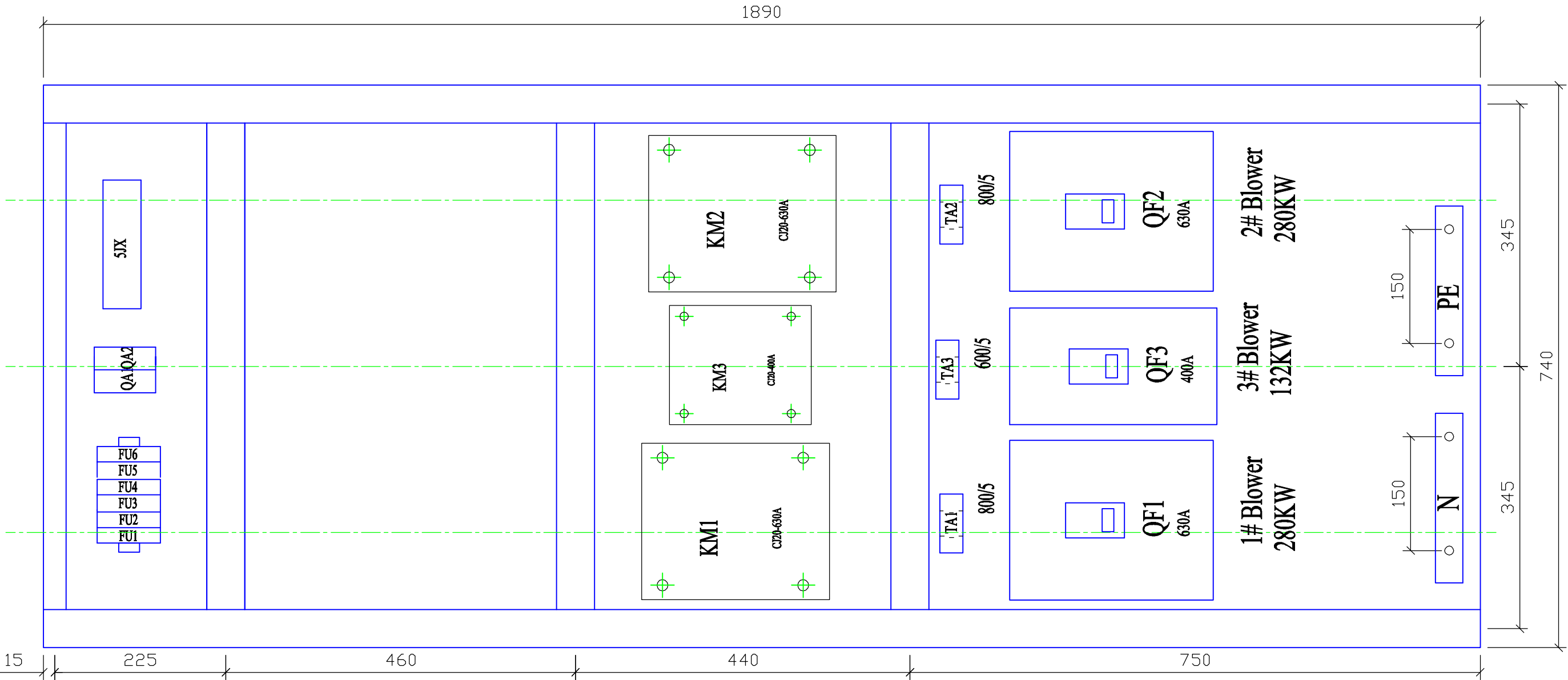
TC QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Circuit Principle Diagram for No.3 Power Regulation Cabin
date		No.	GTW3624-2413H-E-08



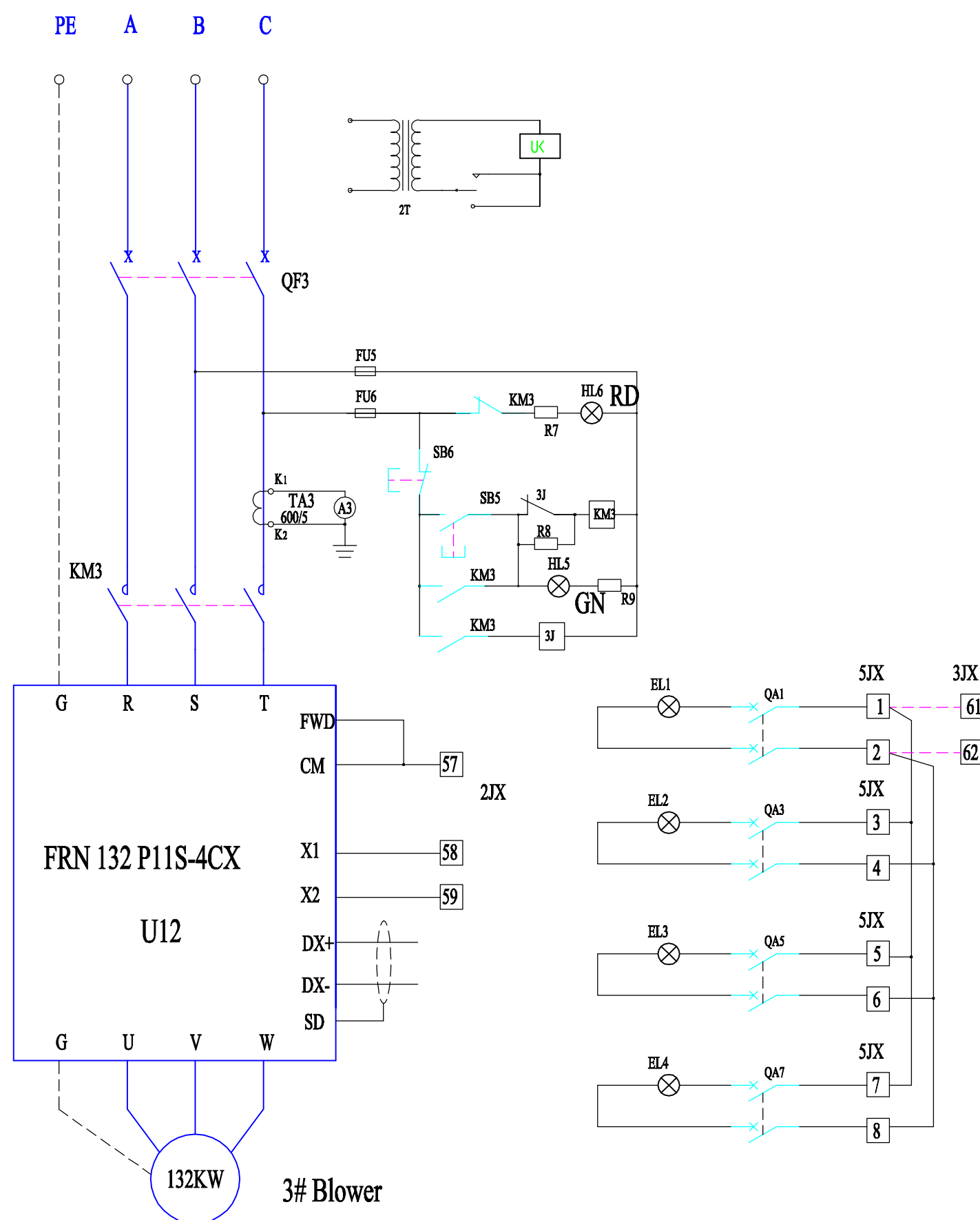
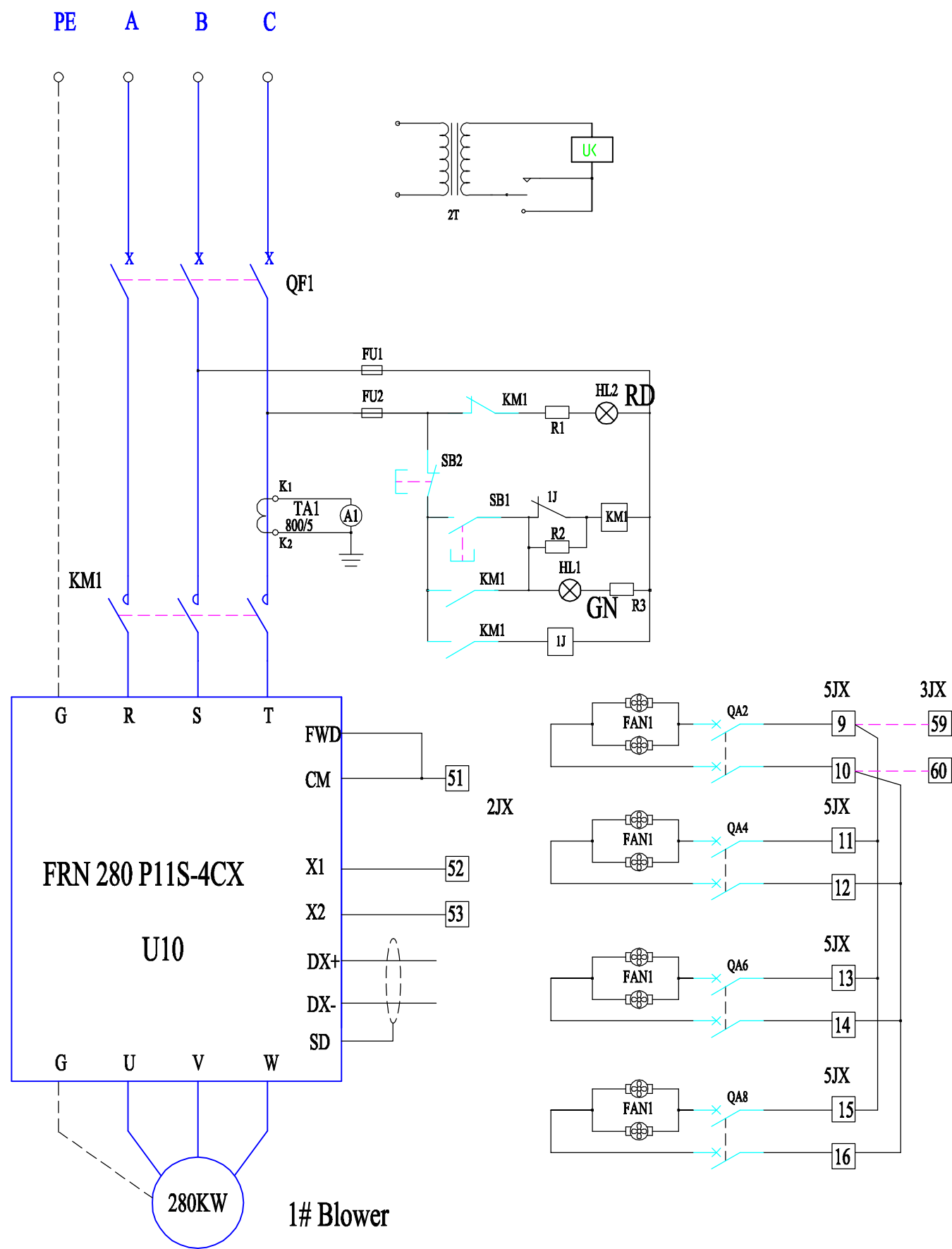
TUCHENG GUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Elements on Installation Panel in No.1 & No.2 Blower Frequency Converter Cabinet
date		No.	GTW3624-2413H-E-09



TUCHENG GUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Elements on Installation Panel in No.3 Blower Frequency Converter Cabinet
date		No.	GTW3624-2413H-E-10



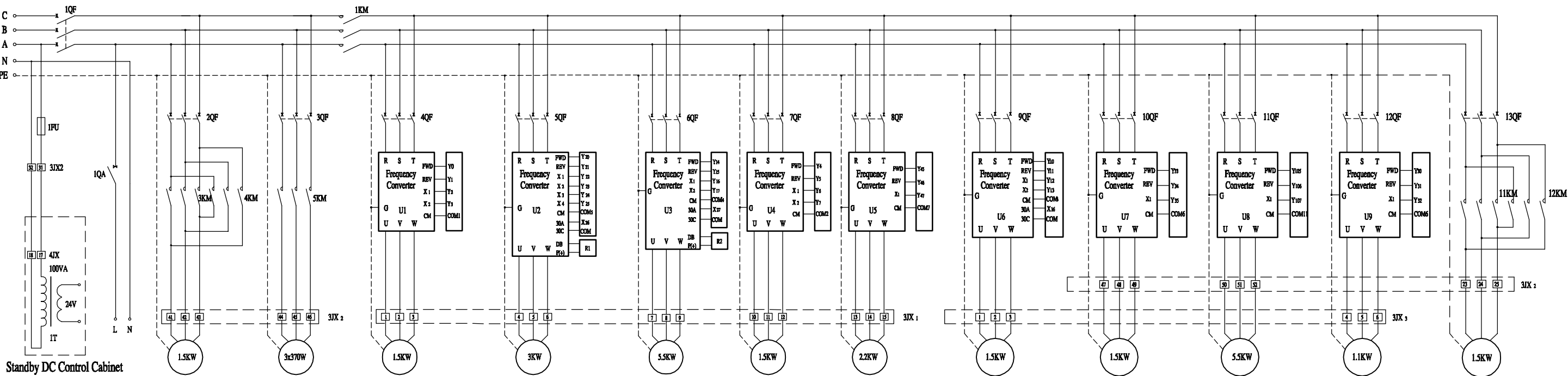
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Elements on Installation Panel in Blower Starting Cabinet
date		No.	GTW3624-2413H-E-11



	Corresponding Code of Blower Element																Frequency Converter	Signal Lamp		Terminal			Motor Power	Mutual Inductor	Amperemeter
1#Blower	EL1	FAN1	QF1	QA1	QA2	TA1	FU1	FU2	A1	SB1	SB2	KM1	R1	R2	R3	1J	U10	HL1	HL2	51	52	53	280KW	800/5	800/5
2#Blower	EL2	FAN2	QF2	QA3	QA4	TA2	FU3	FU4	A2	SB3	SB4	KM2	R4	R5	R6	2J	U11	HL3	HL4	54	55	56	280KW	800/5	800/5
3#Blower	EL3	FAN3	QF3	QA5	QA6	TA3	FU5	FU6	A3	SB5	SB6	KM3	R7	R8	R9	3J	U12			57	58	59	132KW	600/5	600/5

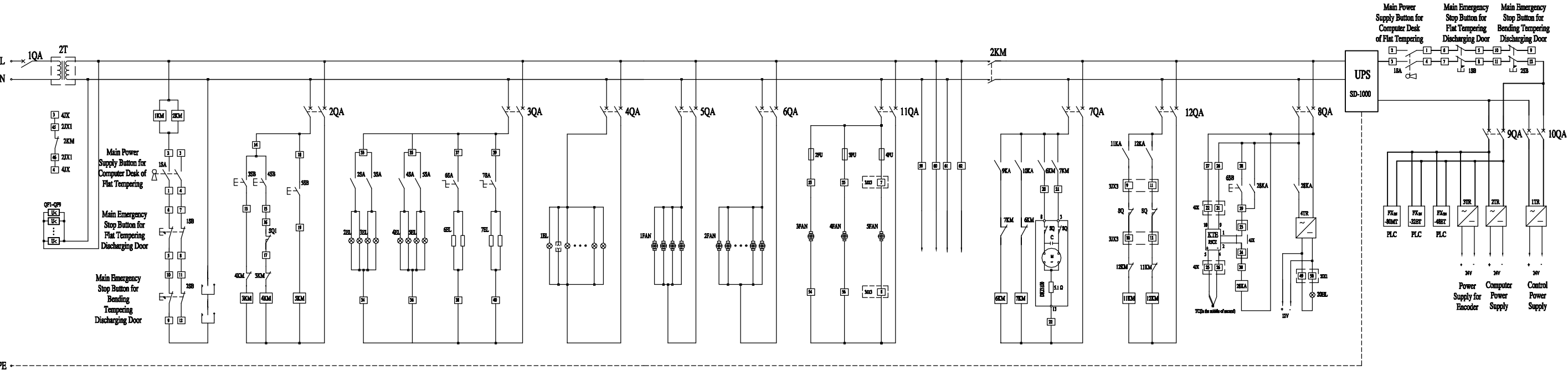
GTW3624-2413H Flat & Bending Glass Tempering Furnace			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Circuit Principle Diagram for Blower Starting
date		No.	GTW3624-2413H-E-12

Main Driving Switch & Float Charging Transformer	Control Power Supply	Driving of Upper Furnace Body Lifting/Dropping	Driving of Flat Lower Chiller Vibrating	Touch Point for Main Starting	Roller Driving of Flat Loading Roller Table /Roller Driving of Bending Unloading Roller Table	Roller Driving of furnace	Roller Driving of Flat Quenching Section	Roller Driving of Flat Unloading Roller Table /Roller Driving of Bending Loading Roller Table	Driving of Flat Chillers Open/Close	Driving of Rollers of Bending Quenching Section	Driving of Upper Bending Quenching Section	Driving of Lower Bending Quenching Section	Driving of Bending Curvature Adjusting for Lower Bending Quenching Section	Driving Motor for Regulation Airflow of Bending Chiller
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QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
TUCHENG			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Circuit Diagram for Driving Motor of Transmission System (I)
date		No.	GTW3624-2413H-E-13

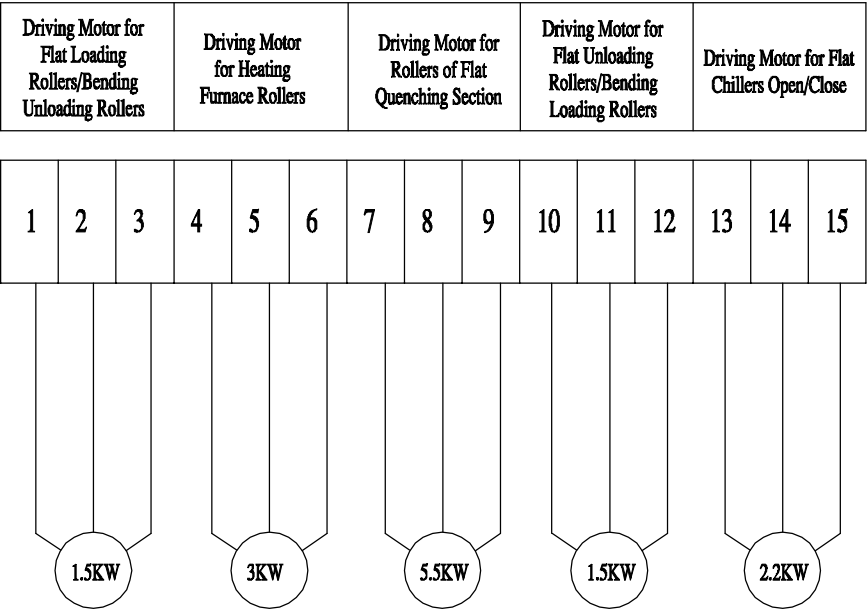
Main Switch for Control Power Supply	Isolating Transformer for Control Power Supply	Trip Coil	Buttons for Main Starting & Main Emergency Stop	Control of Lifting/Dropping of Upper Furnace Body	Control of Vibrating of Lower Flat Quenching Section	Lighting Inside Sound Suppression Cover of Flat Quenching Section	Lighting Inside Sound Suppression Cover of Bending Quenching Section	Lighting for Flat Loading Roller Table	Lighting for Flat Unloading Roller Table	Lighting Inside Control Cabinet	Lighting Inside Power Regulation Cabinet	Fan for Control Cabinet	Fan for Power Regulation Cabinet	Cooling Fan of Furnace Driving	Cooling Fan of Rollers Flat Quenching Section	Cooling Fan of Rollers of Bending Quenching Section	Control Power Supply for Starting Cabinet	Touching Point of Main Starting	Air Adjustment Actuator for Air Distribution Box of Flat Quenching Section	Control of Airflow Adjustment for Lateral Quenching Section	Triggering Power Supply & Limitation of Over-Heating	UPS & Main Power Supply Button	PLC Power Supply
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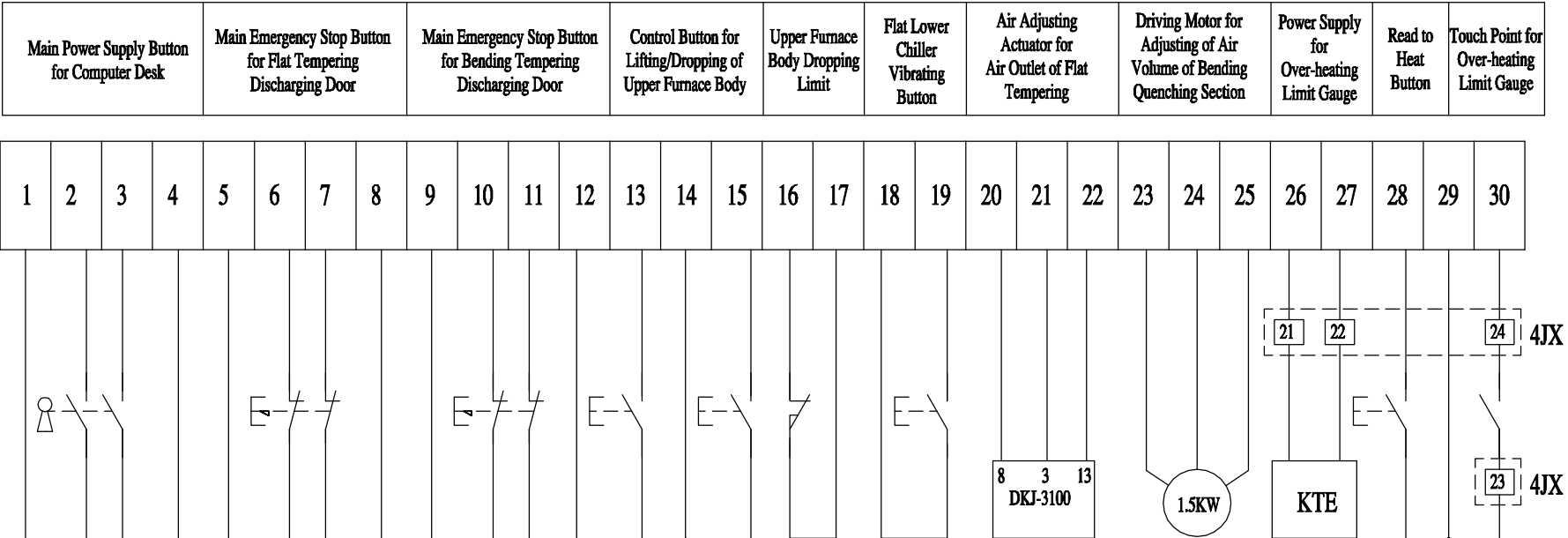
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.

check		project	GTW3624-2413H Flat & Bending Glass Tempering Furna
design		name	Circuit Diagram for Control Power Supply
date		No.	GTW3624-2413H-E-14

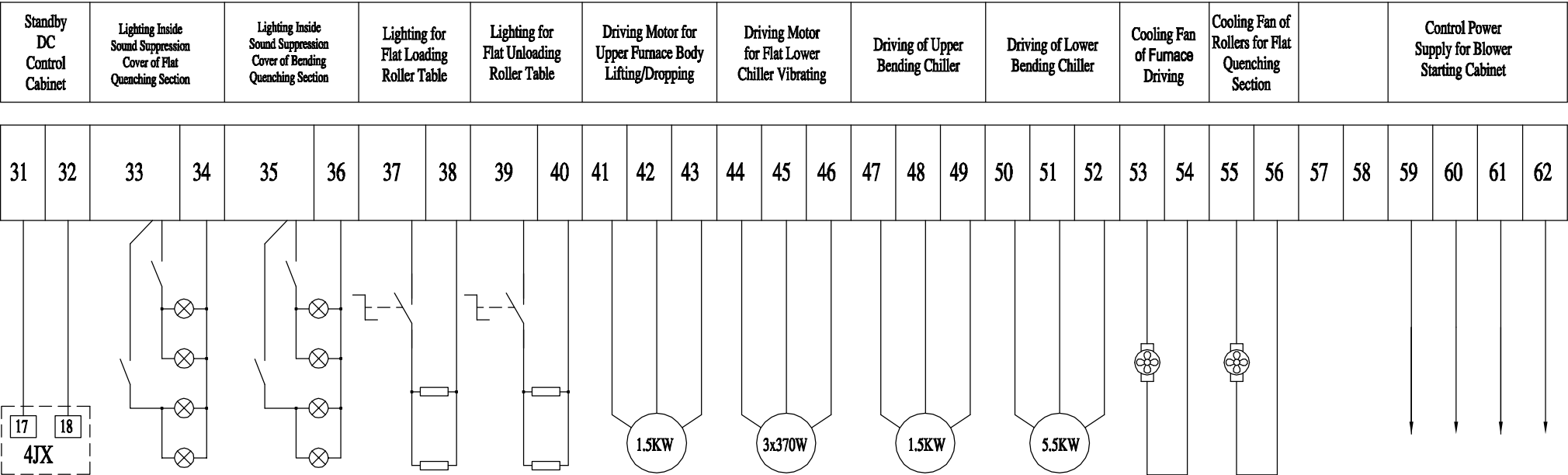
3JX1



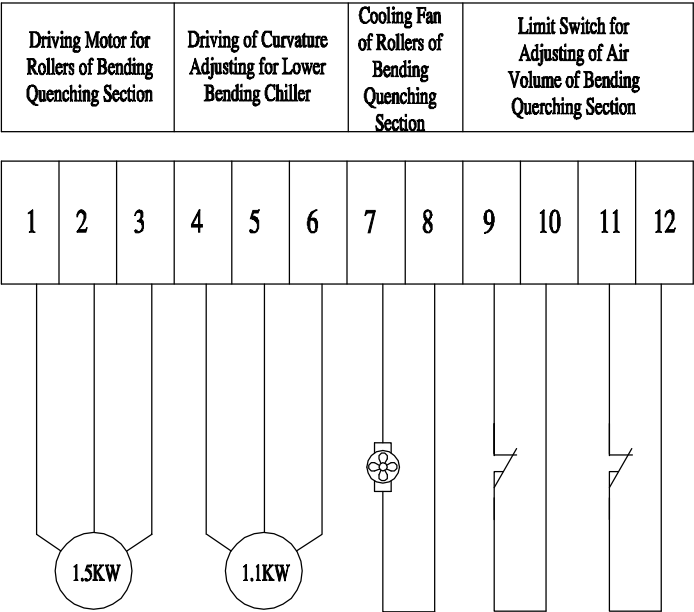
3JX2

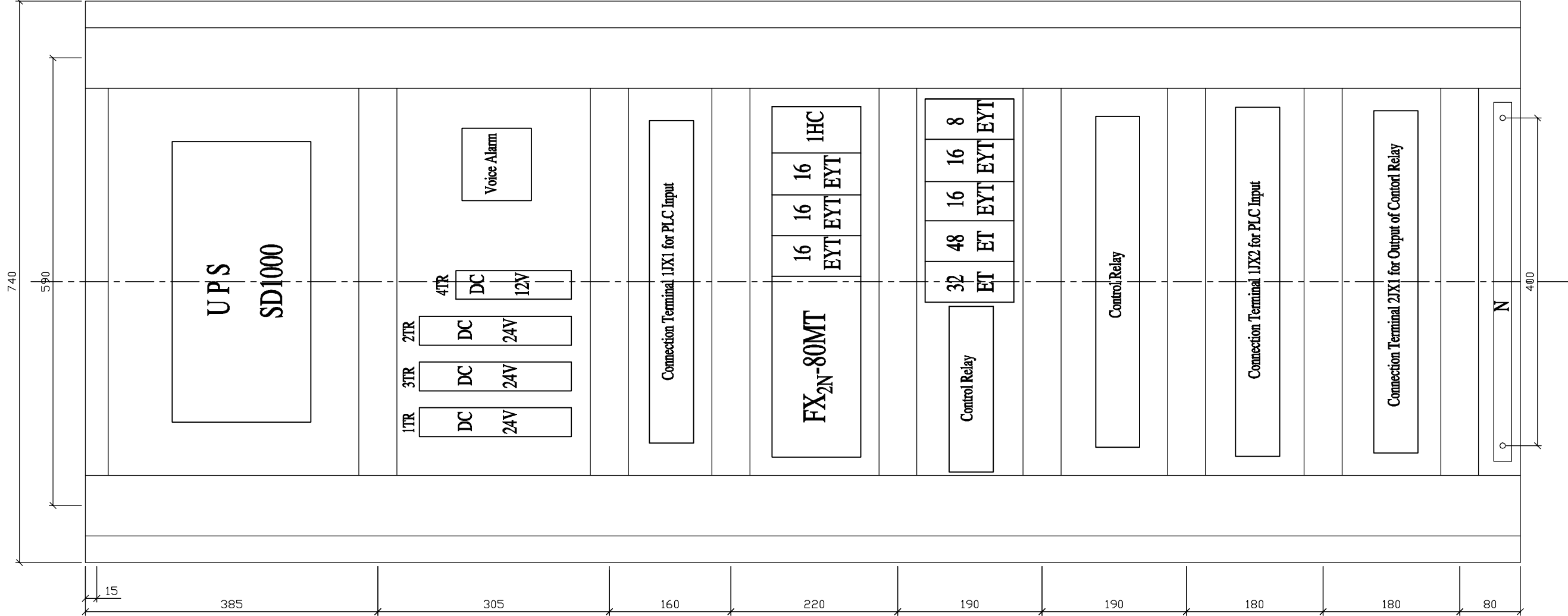


3JX2

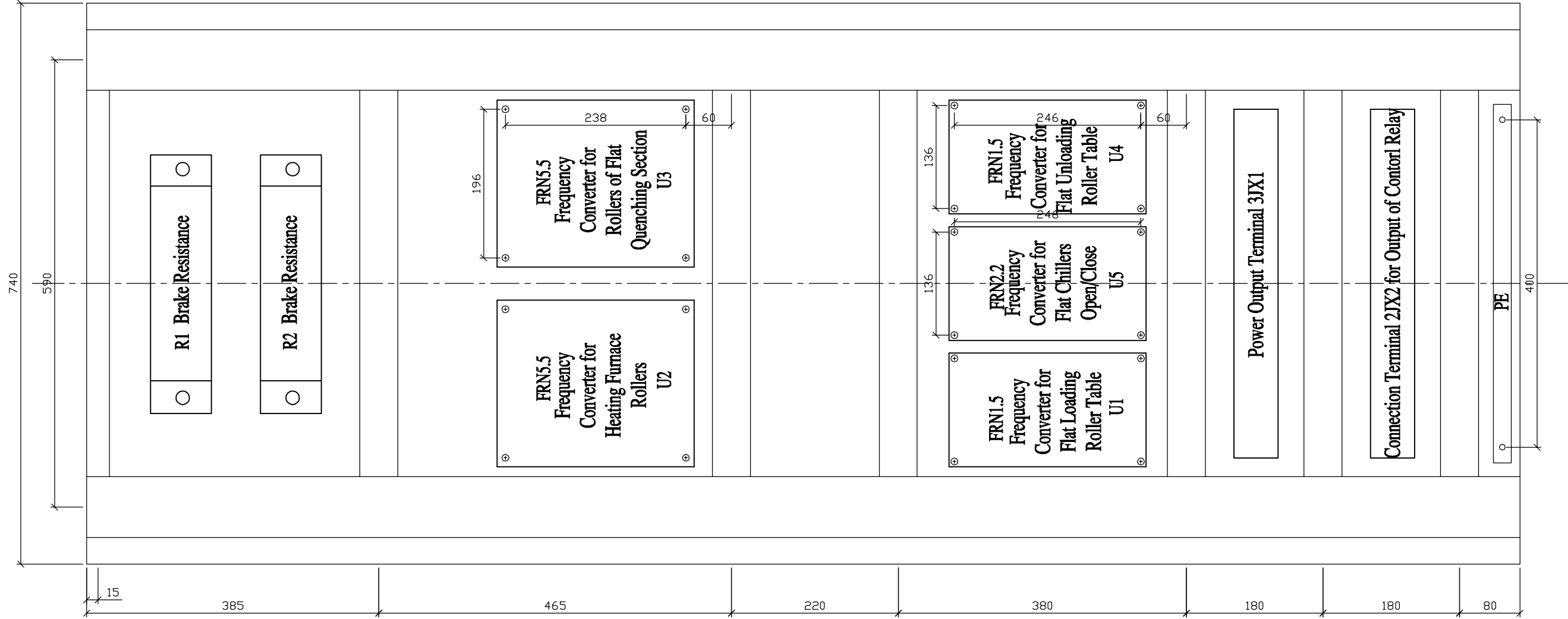


3JX3

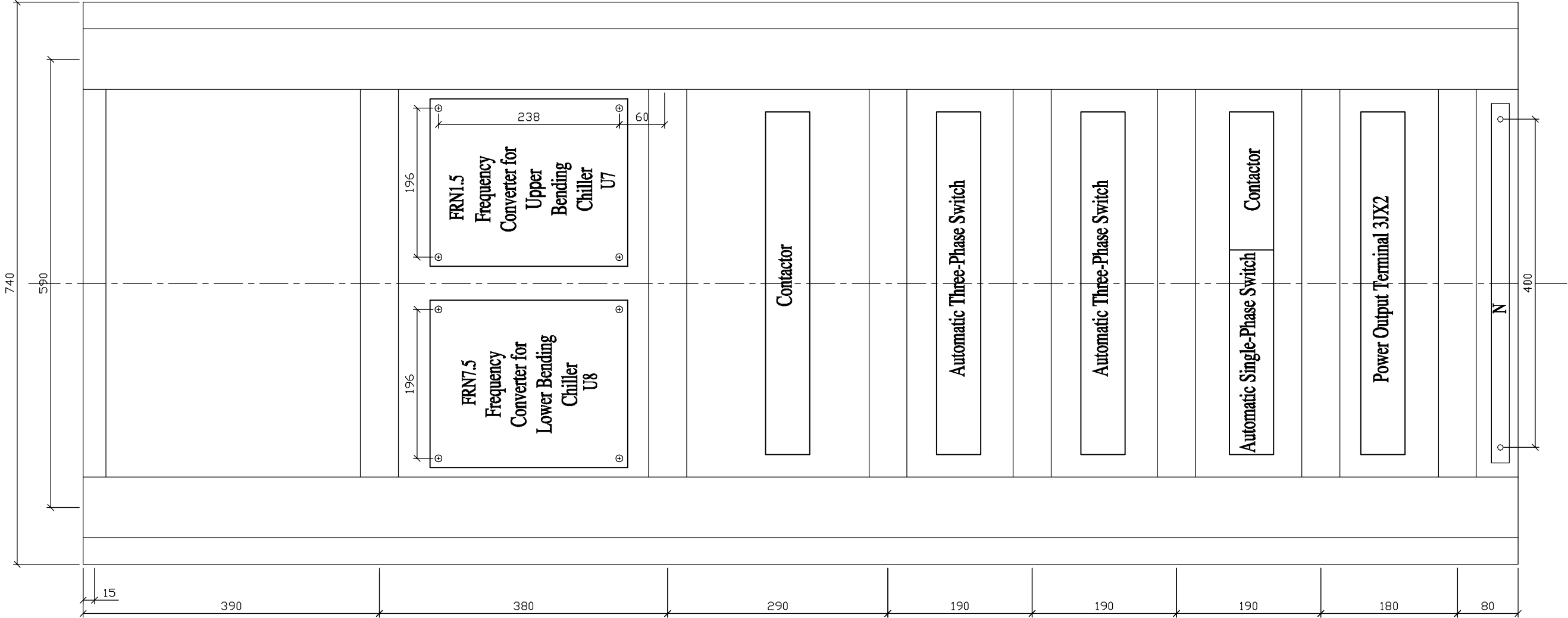




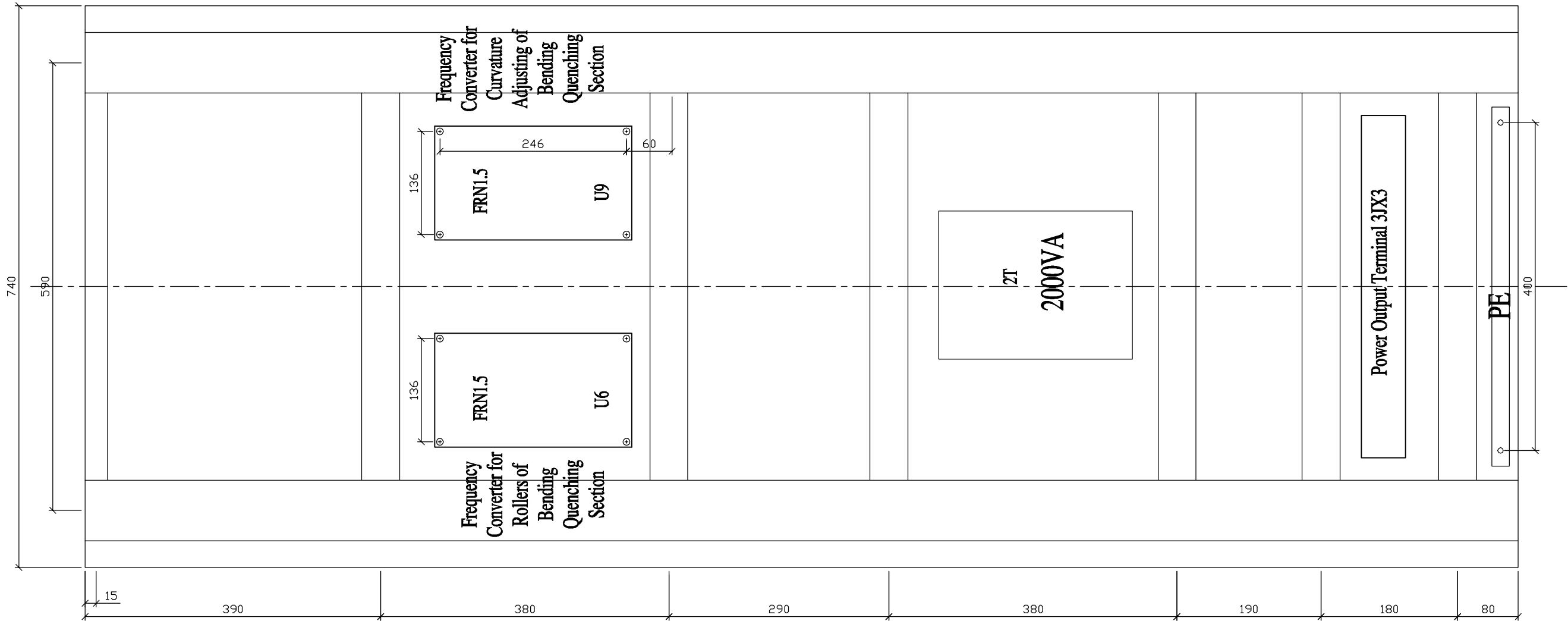
TCCHONGHUANGDAO TUCHENG GLASS TECHNOLOGY CO			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Elements on Front of Installation Panel in No.1 Control Cabinet
date		No.	GTW3624-2413H-E-16



TUCHENG			
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Elements on Back of Installation Panel in No.1 Control Cabinet
date		No.	GTW3624-2413H-E-17

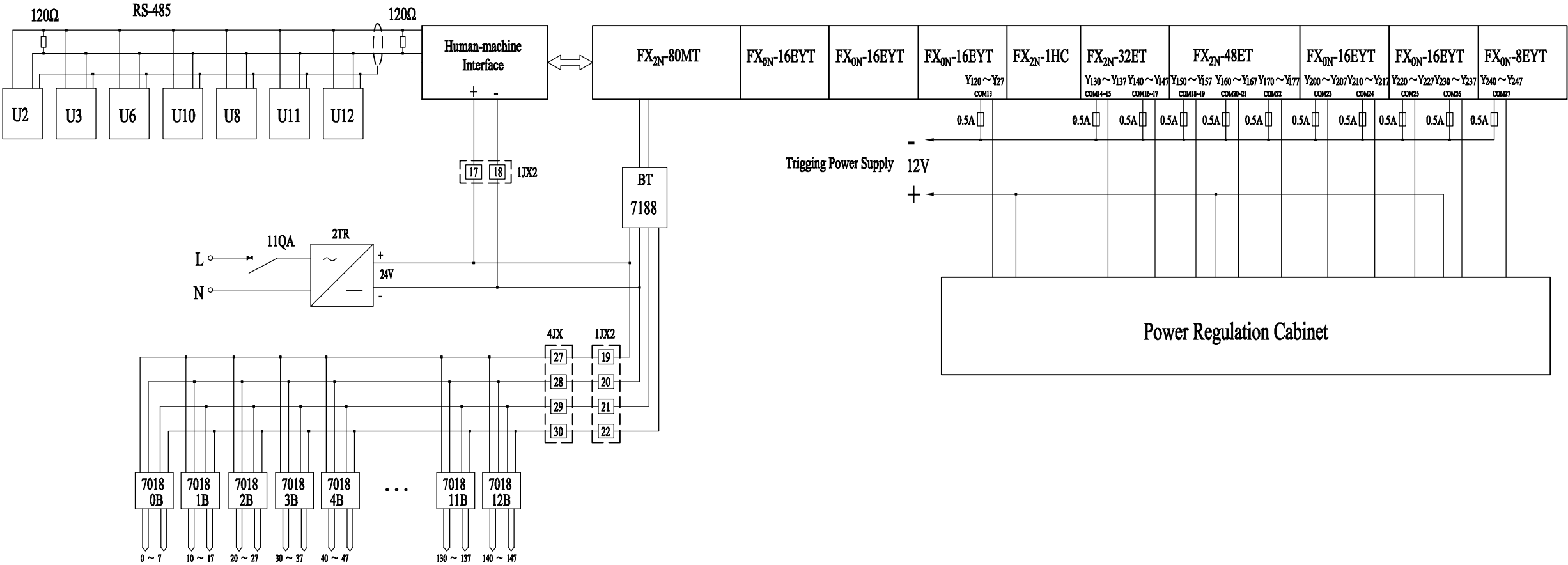


TCCH			
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Elements on Front of Installation Panel in No.2 Control Cabinet
date		No.	GTW3624-2413H-E-18



TUCHENG			
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624H Flat & Bending Glass Tempering Furnace
design		name	Arrangement Plan for Elements on Back of Installation Panel in No.2 Control Cabinet
date		No.	GTW3624H-E-19

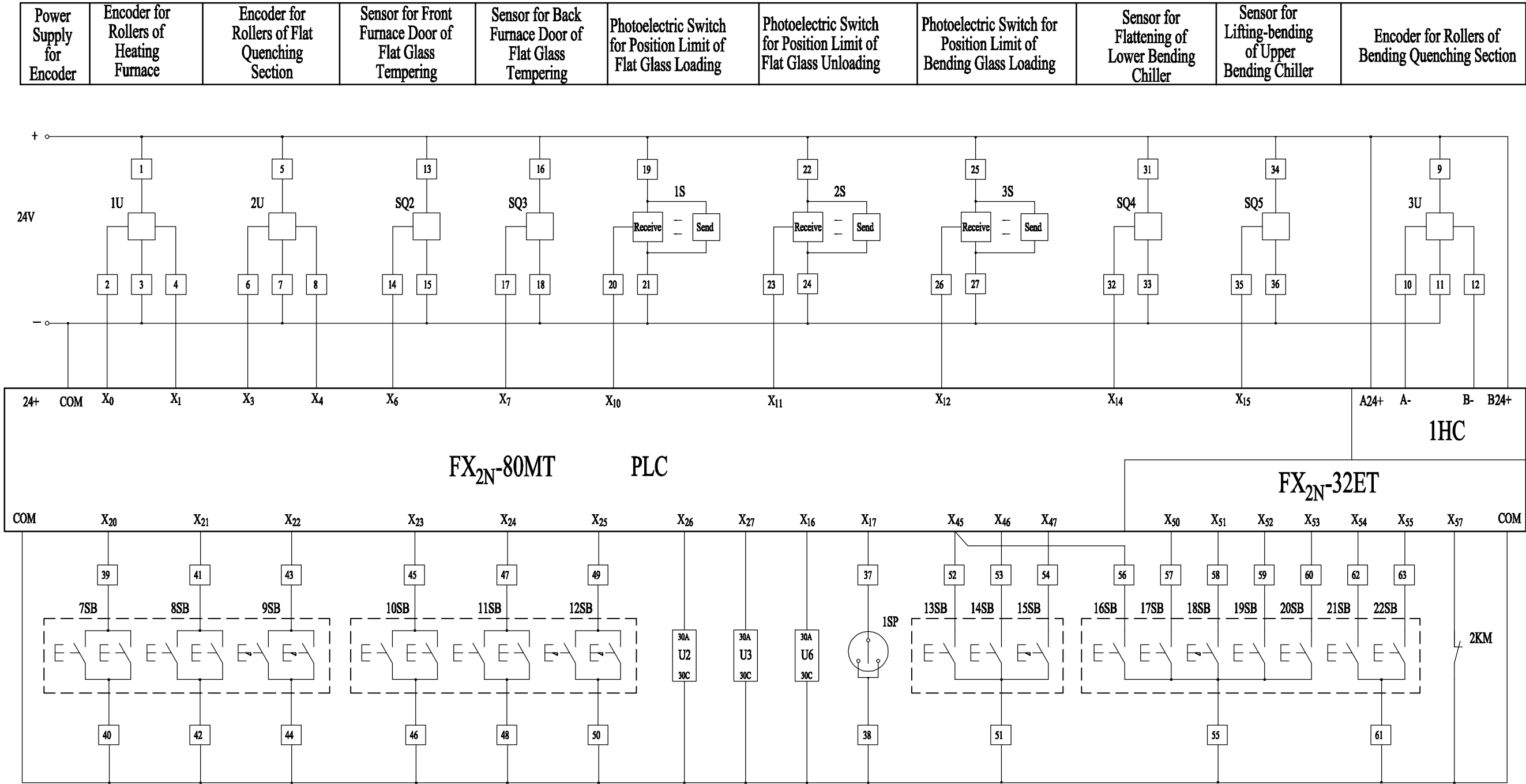
25-cord plug on back of touch screen is Rs-485.
3 plugs are used for communication. 14# is DX+
15# is DX-
7# is SD



- (1) 0-25 are connected to Temp. controlling thermocouples in upper and lower heating zones, which total up to 22,of section 1;26-53 are connected to Temp. controlling thermocouples in upper and lower heating zones, which total up to 22,of section 2.
- (2) 54-101 are connected to Temp. controlling thermocouples in upper and lower heating zones, which total up to 22,of section 3;102-127 are connected to Temp. controlling thermocouples in upper and lower heating zones, which total up to 22,of section 4.
- (3) 130,131,132 are connected to space thermocouples of section 1;
133,134,135 are connected to space thermocouples of section 2;
136,137,140 are connected to space thermocouples of section 3;
141,142,143 are connected to space thermocouples of section 4,
The rest are standby.
- (4) Thermocouple for middle of 2nd section is connected to gauge for temp. exceeding.

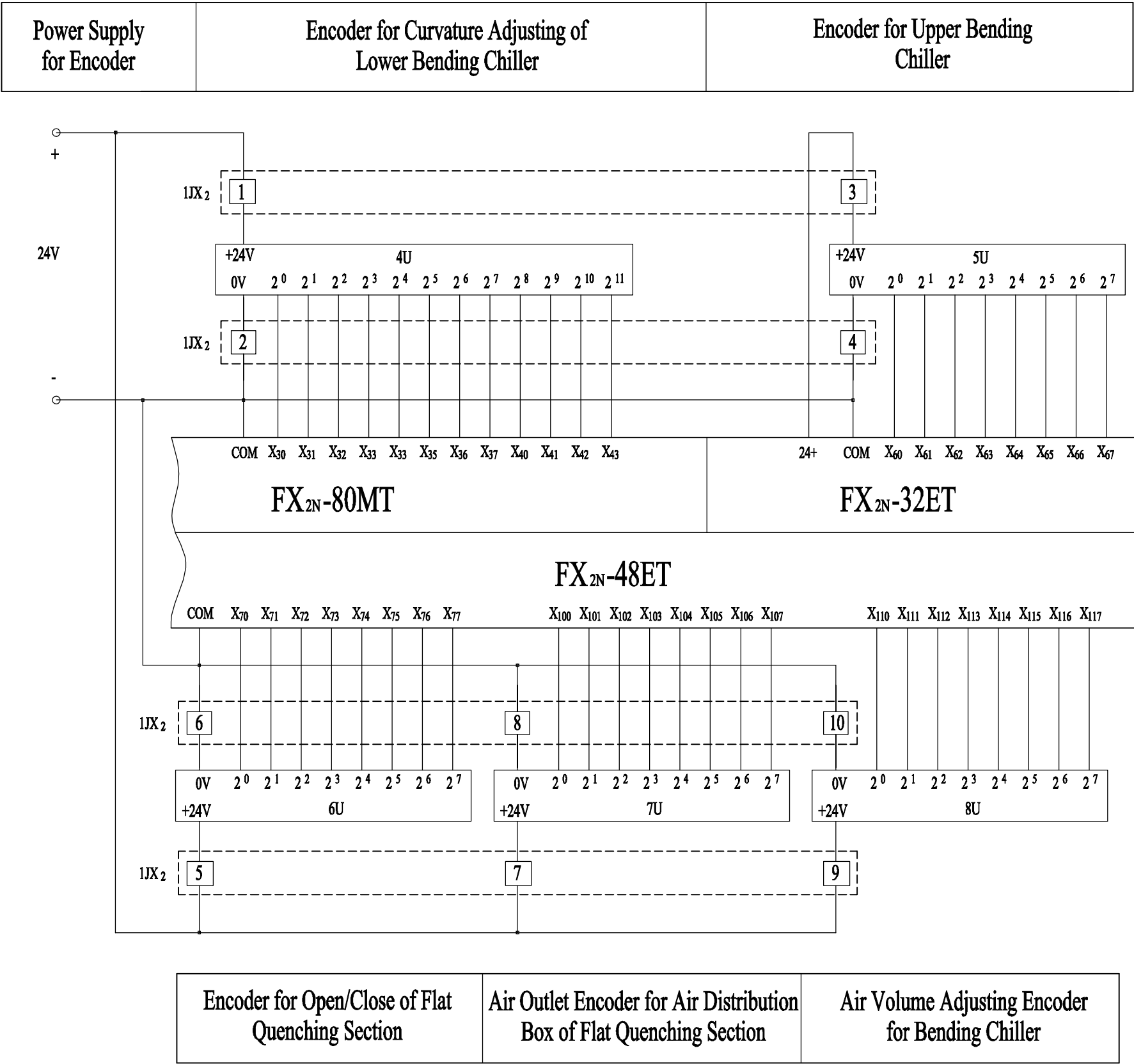
- (1) Zone 1-11 in section 1 of upper furnace body use trigging port of Y120-Y132;
Zone 1-11 in section 1 of lower furnace body use trigging port of Y133-Y145;
- (2) Zone 1-11 in section 2 of upper furnace body use trigging port of Y146-Y160;
Zone 1-11 in section 2 of lower furnace body use trigging port of Y161-Y173;
- (3) Zone 1-11 in section 3 of upper furnace body use trigging port of Y174-Y206;
Zone 1-11 in section 3 of lower furnace body use trigging port of Y207-Y221;
- (4) Zone 1-11 in section 4 of upper furnace body use trigging port of Y222-Y234;
Zone 1-11 in section 4 of lower furnace body use trigging port of Y235-Y247.

TONGJIUANGDAO TUCHENG GLASS TECHNOLOGY CO.,LTD			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Drawing for Computer Control
date		No.	GTW3624-2413H-E-20

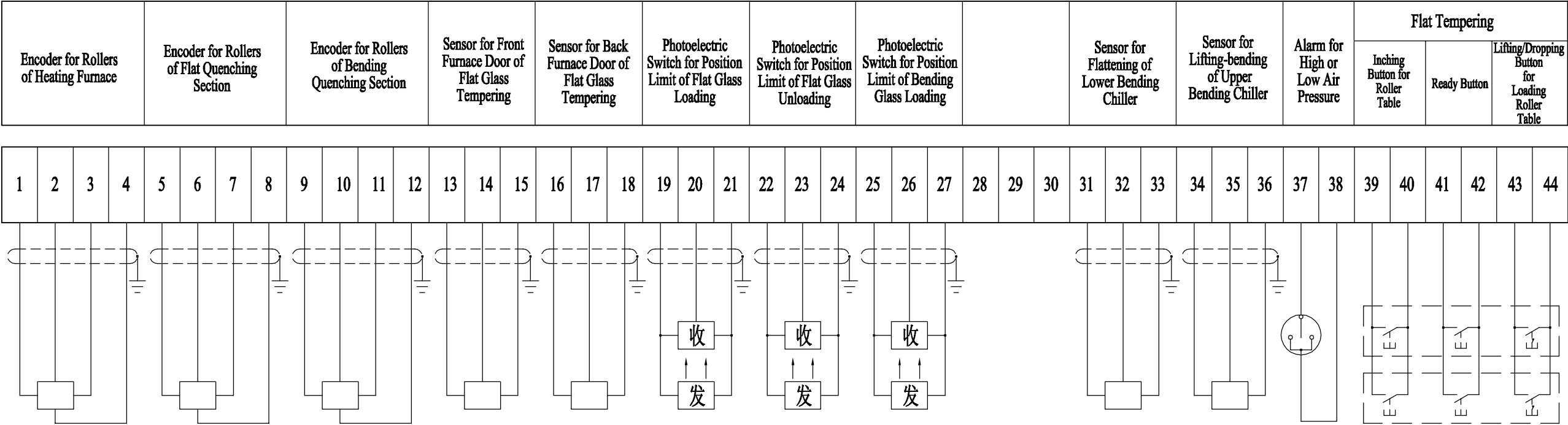


Flat Tempering			Bending Tempering			Frequency Converter Protection of Furnace Rollers	Frequency Converter Protection of Flat Quenching Section Rollers	Frequency Converter Protection of Bending Quenching Section Rollers	Alarm for High or Low Air Pressure	Button for Malfunction of Internal Furnace	Button for Malfunction of Flat Quenching Section	Button for Open/Close of Flat Quenching Section	Button for Malfunction of Internal Furnace	Button for Malfunction of Bending Quenching Section	Button for Lifting/Dropping of Bending Chiller	Button for Lifting-bending of Bending Chiller	Button for Flattening of Bending Chiller	Increasing Curvature of Bending Quenching Section	Reducing Curvature of Bending Quenching Section	Alarm for Power Failure
Inching Button for Roller Table	Ready Button	Lifting/Dropping Button for Loading Roller Table	Inching Button for Roller Table	Ready Button	Lifting/Dropping Button for Loading Roller Table															

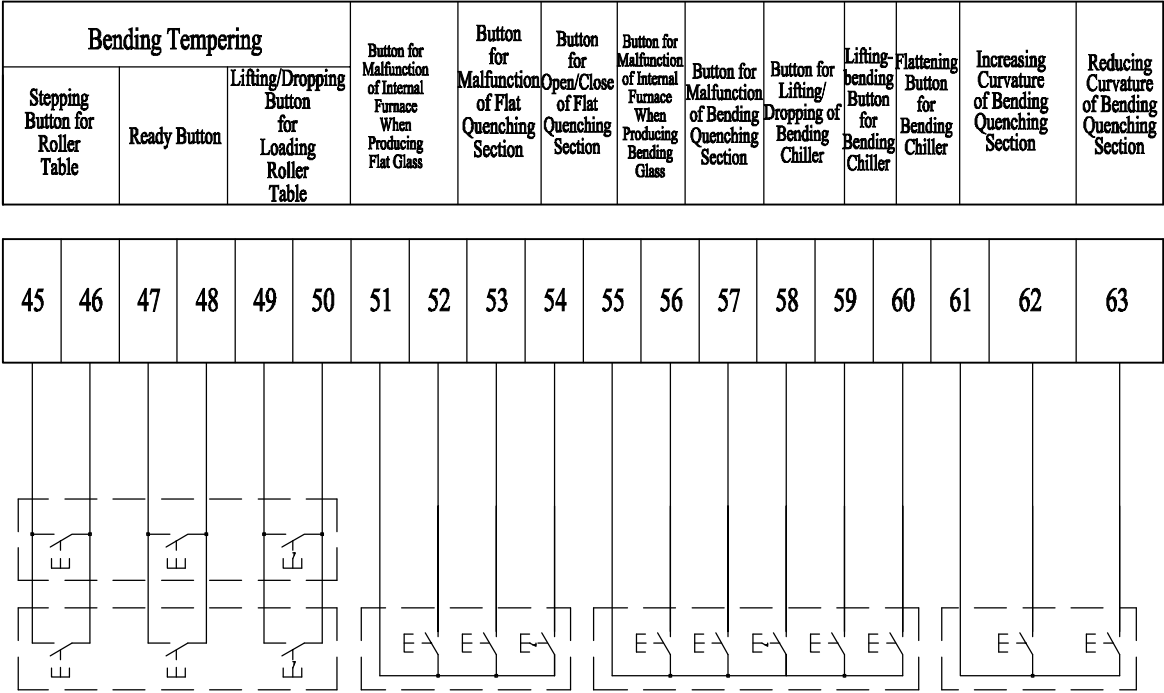
TONGJIANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Circuit Diagram for PLC Input (I)
date		No.	GTW3624-2413H-E-21



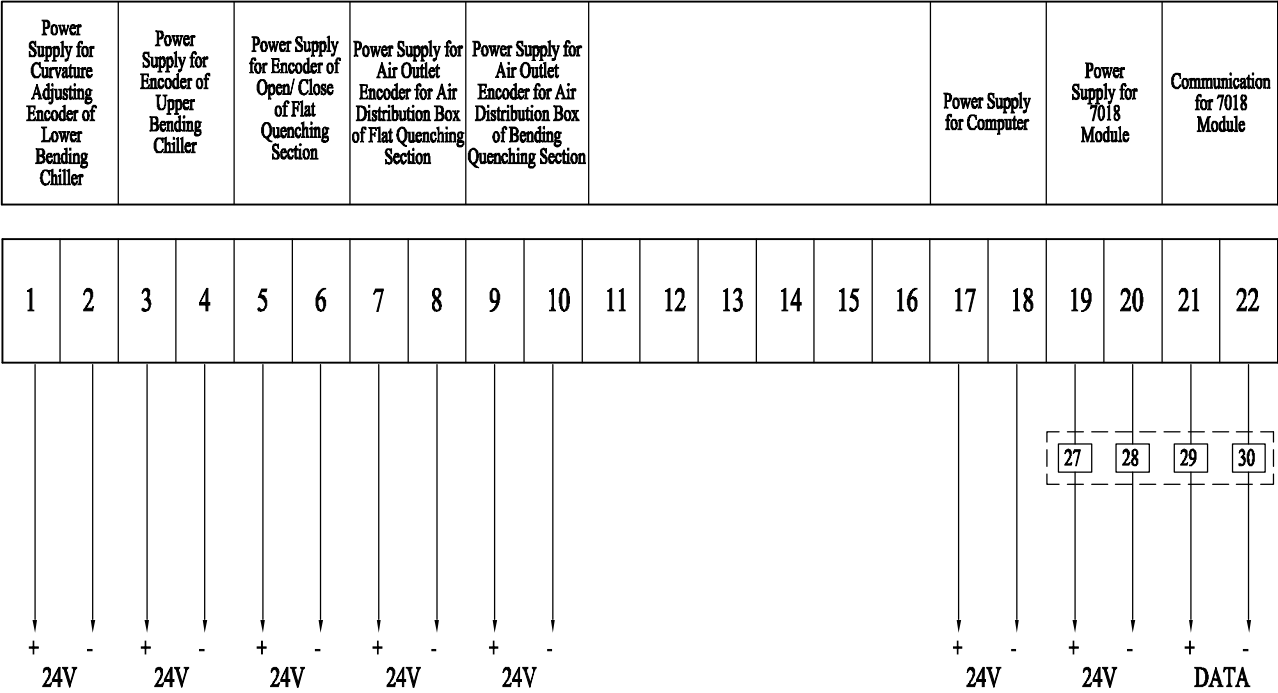
1JX1



1JX1

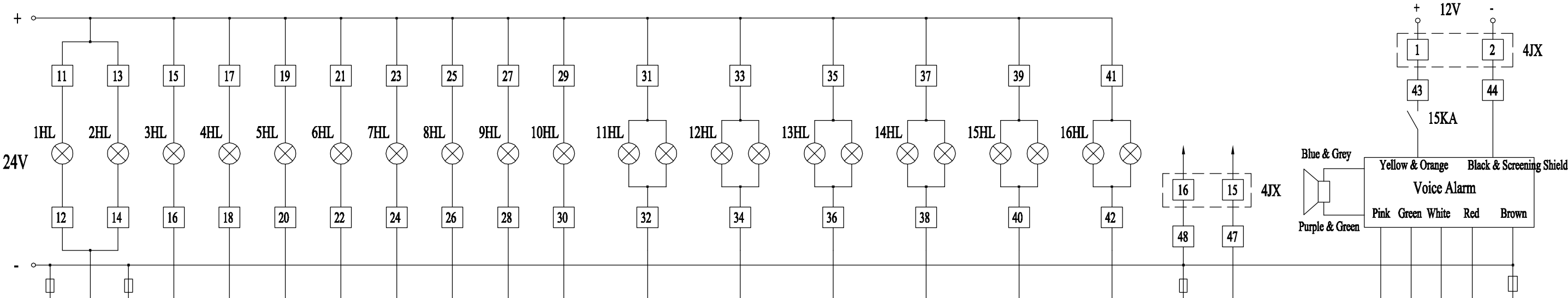


1JX2



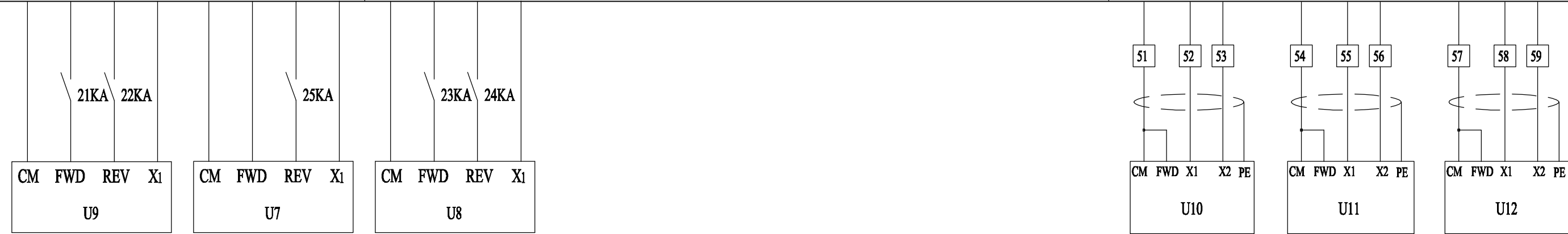
27 28 29 30 4JX

Malfunction Lamp inside Furnace	Flat Quenching Section				Bending Quenching Section				Flat Quenching Section			Bending Quenching Section			Control of Auto- discharge When Power Failure	Voice Alarm
	Lamp of Chillers Malfunction	Lamp of Chillers' Driving	Lamp of Chillers' Lifting	Lamp of Discharging Door Open	Lamp of Chillers Malfunction	Lamp of Chillers' Driving	Lamp of Chillers' Lifting	Lamp of Discharging Door Open	Lamp of Rollers Stepping	Lamp of Ready	Lamp of Rollers Lifting	Lamp of Rollers Stepping	Lamp of Ready	Lamp of Rollers Lifting		



COM8	Y57	COM9	Y60	Y61	Y62	Y63	Y64	Y65	Y66	Y67	Y70	Y71	Y72	Y73	Y74	Y75	COM10	Y77	Y100	Y101	Y102	Y103	COM11
FX0N-16EYT											FX0N-16EYT												

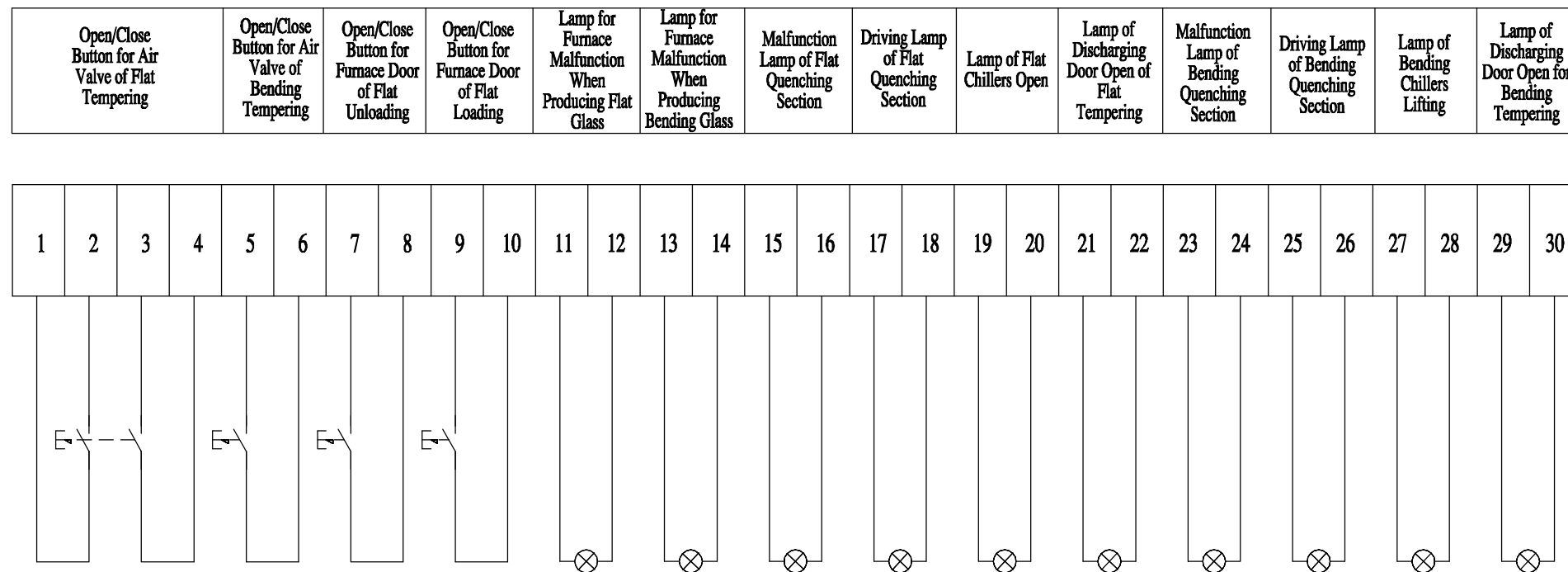
FX ₂ N-80MT								FX ₀ N-16EYT				FX ₀ N-16EYT								
COM ₆	Y ₃₀	Y ₃₁	Y ₃₂	COM ₆	Y ₃₃	Y ₃₄	Y ₃₅	COM ₁₁	Y ₁₀₅	Y ₁₀₆	Y ₁₀₇	COM ₁₂	Y ₁₁₀	Y ₁₁₁	COM ₁₂	Y ₁₁₂	Y ₁₁₃	COM ₁₂	Y ₁₁₄	Y ₁₁₅



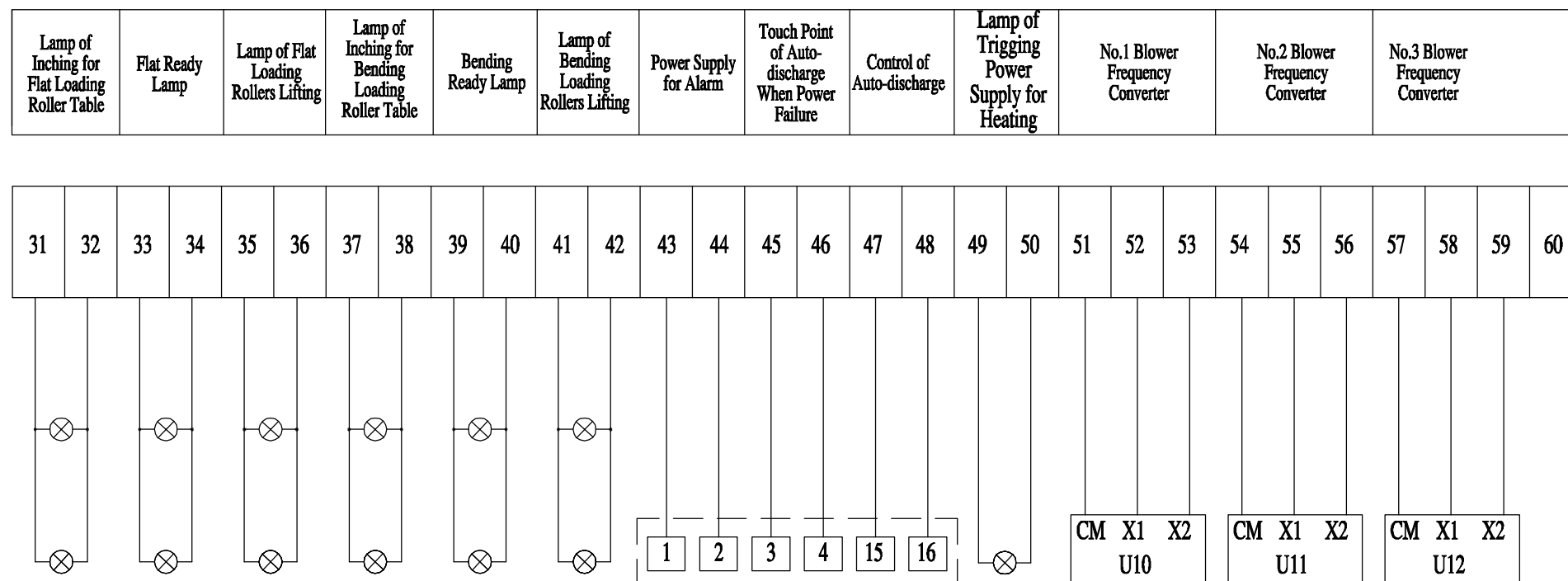
Frequency Converter for Curvature Adjusting of Bending Chillers	Frequency Converter for Upper Bending Chiller	Frequency Converter for Lower Bending Chiller		No.1 Blower Frequency Converter	No.2 Blower Frequency Converter	No.3 Blower Frequency Converter
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TONGJIUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Circuit Diagram for PLC Output (II)
date		No.	GTW3624-2413H-E-25

2JX1

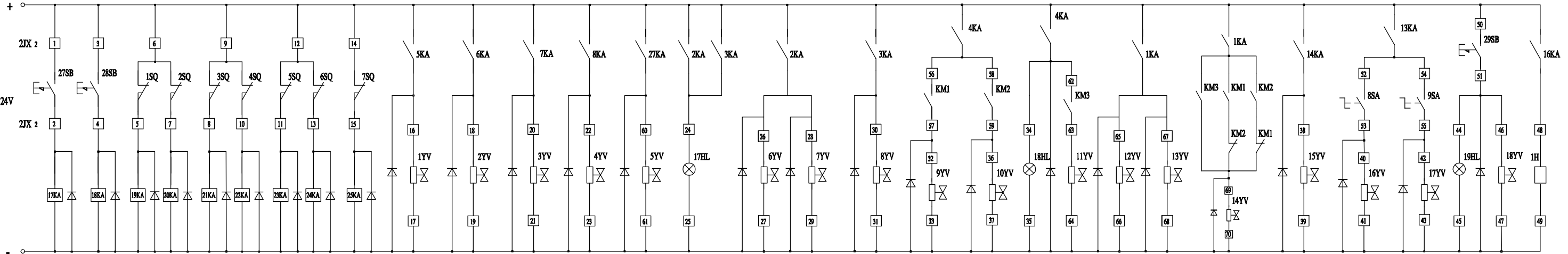


2JX1



4JX

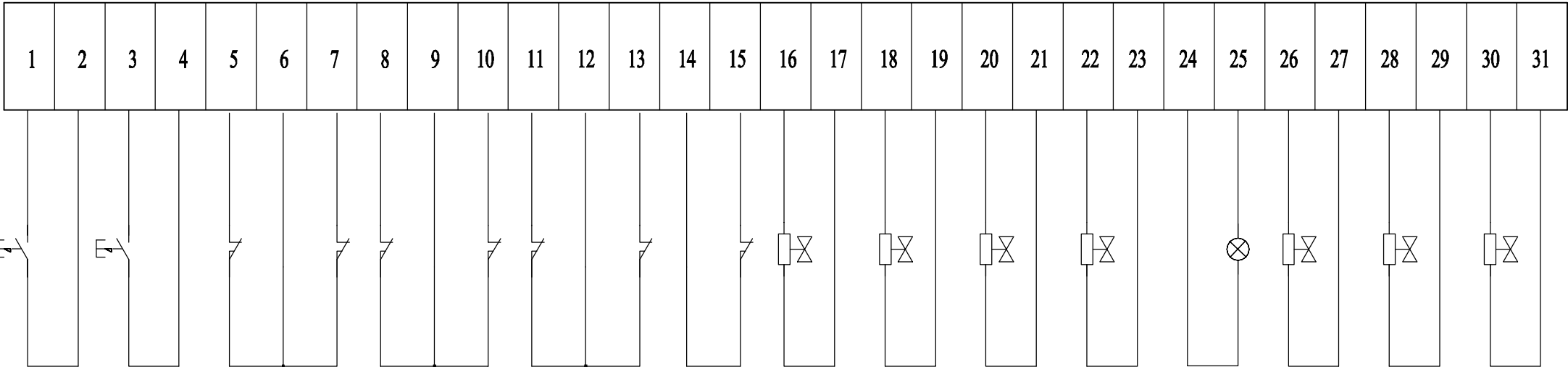
Control Power Supply	Manually Driving for Flat Quenching Section	Manually Driving for Bending Quenching Section	Position Limit for Open of Flat Chillers	Position Limit for Close of Flat Chillers	Curvature Adjusting of Bending Chillers		Lower Bending Chiller		Flatening Limit for Upper Bending Chiller	Lifting Valve for Flat Loading /Bending Unloading Roller Table	Lifting Valve for Flat Unloading /Bending Loading Roller Table	Valve of Glass Entering Door When Producing Bending Tempering Glass	Valve of Glass Entering Door When Producing Flat Tempering Glass	Heat Balance of Furnace	Flat Quenching Section				Bending Quenching Section						Valve for Fence Roller of Bending Chiller	Dropping Valve for Middle Pressing Roller of Upper Bending Chiller	Dropping Valve for Side Pressing Roller of Upper Bending Chiller	Valve & Lamp for Lower Bending Chiller Dropping	Voice Alarm
					Top Limit	Bottom Limit	Lifting- bending Limit	Flatening Limit							Lamp of Valve Open	Valve for No.1 Air Valve	Valve for No.2 Air Valve	Valve for No.3 Air Valve	Valve for No.4Air Valve	Valve for No.5Air Valve	Lamp of Valve Open	Valve for No.6Air Valve	Valve for No.7Air Valve	Valve for No.8Air Valve	Valve for No.9Air Valve				



QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Circuit Diagram for Control-relay Output
date		No.	GTW3624-2413H-E-27

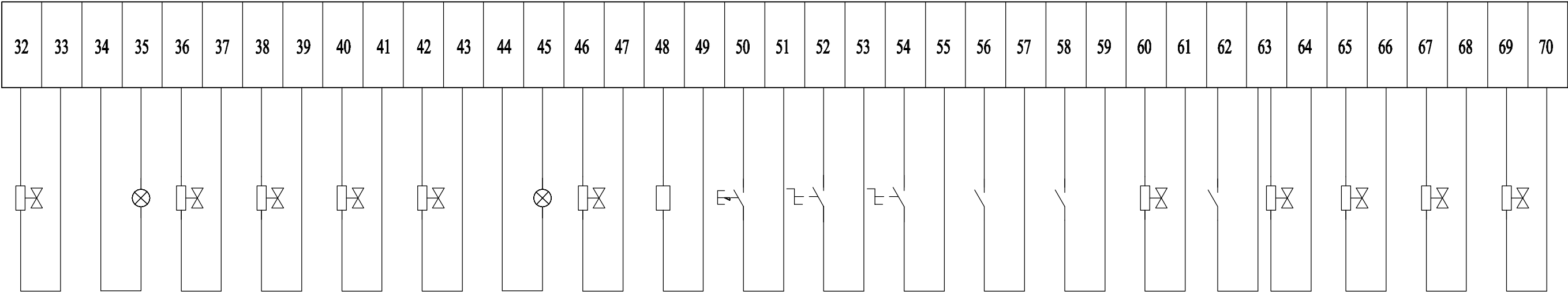
2JX2

Driving Button for Flat Quenching Section	Driving Button for Bending Quenching Section	Position Limit for Flat Quenching Section Opening	Curvature Adjusting for Lower Bending Chiller		Lower Bending Chiller		Open up Limit for Upper Bending Chiller	Lifting Valve for Flat Loading /Bending Unloading Roller Table	Lifting Valve for Flat Unloading /Bending Loading Roller Table	Valve of Glass Entering Door When Producing Bending Tempering Glass	Valve of Glass Entering Door When Producing Flat Tempering Glass	Flat Quenching Section			
			Top Limit	Bottom Limit	Lifting -bending Limit	Open up Limit						Lamp of Valve Open	Valve for No.1 Air Valve	Valve for No.2 Air Valve	Valve for No.3 Air Valve

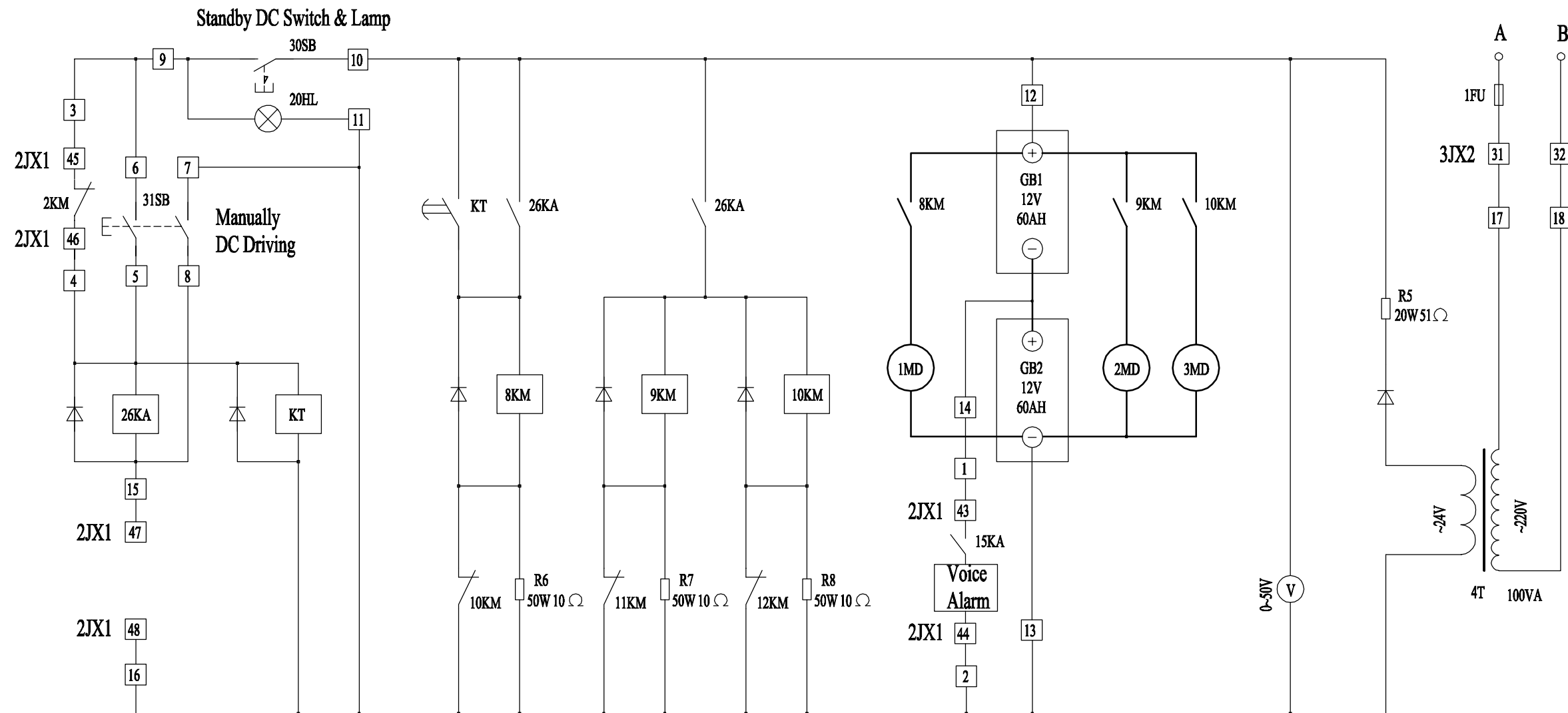


2JX2

Bending Quenching Section			Valve for Fence Roller of Bending Chiller	Dropping Valve for midland Pressing Roller of Upper Bending Chiller	Dropping Valve for Side Pressing Roller of Upper Bending Chiller	Lamp for Lower Bending Chiller Dropping	Valve for Lower Bending Chiller Dropping	Voice Alarm	Button for Lower Bending Chiller Dropping	Ready Button for Middle Pressing Roller Dropping of Upper Bending Chiller	Ready Button for Side Pressing Roller Dropping of Upper Bending Chiller	Start up Inspection for 1# Midium Pressure Blower	Start up Inspection for 2# Midium Pressure Blower	Heat Balance Valve of Furnace	Start up Inspection for Low Pressure Blower	Bending Quenching Section			
Valve for No.4Air Valve	Lamp of Valve Open	Valve for No.5Air Valve														Valve for No.6Air Valve	Valve for No.7Air Valve	Valve for No.8Air Valve	Valve for No.9Air Valve

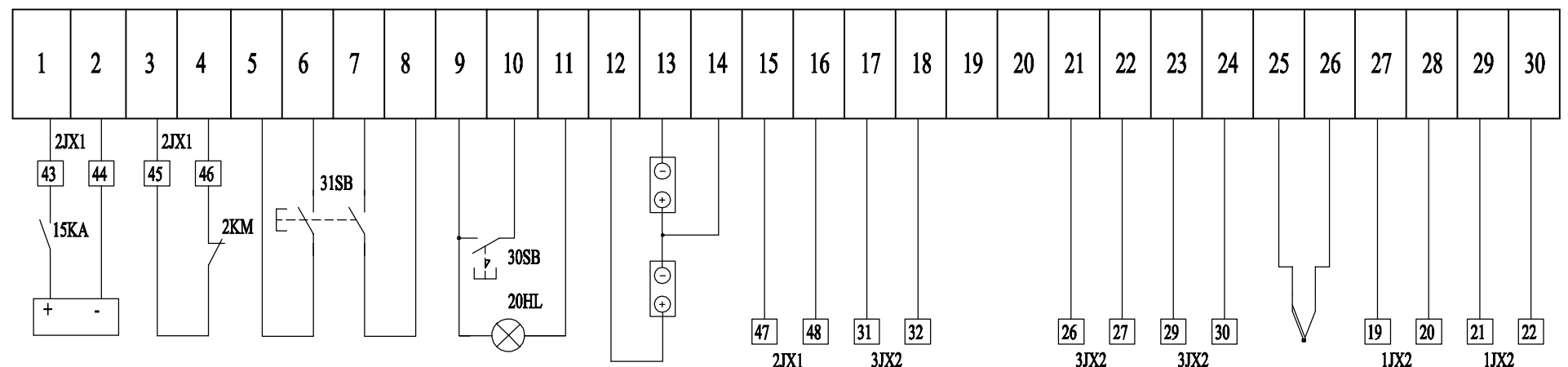


QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Connection Drawing for Terminal 2JX2 of Control-relay Outp
date		No.	GTW3624-2413H-E-28



4 J X

Voice Alarm	Auto-touching Point When Power Failure	Button for Manually DC Driving	Standby DC Switch & Lamp	Standby Power Supply (Storage Battery)	Control of Auto-discharge	Float Charging Power Supply		Power Supply for Over-heating Limit Gauge	Contact Point for Over-heating Limit Gauge	Detect Thermocouple for Over-heating Limit Gauge	Power Supply for 7018 Module	Communication for 7018 Module
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TC (In the middle of two sections)

Note:

- 1MD DC Motor for Heating Furnace Roller;
- 2MD DC Motor for Rollers of Flat Quenching Section;
- 3MD DC Motor for Flat Unloading Roller.

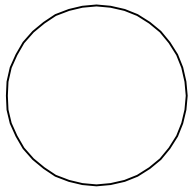
QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Standby DC Driving Circuit Diagram & Terminal 4JX Connection Drawing
date		No.	GTW3624-2413H-E-29

• 风栅故障按钮：按一次，风栅根停转；再按，关风阀、风栅张开、正常出片；按三次，风栅闭合至原位。
注：只按一次，后续动作正常，再出炉时，风栅自动闭合。
• 风栅开合按钮：按一次，风栅张开；再按，风栅闭合至原位。
• 风栅振动按钮：按此按钮，下风栅振动以清理表面碎片。
• 开风阀按钮：按一次，开风阀；再按，关风阀。
• 开炉门按钮：按一次，开后炉门，再按，关后炉门。
• 风栅传动按钮：按一次，风栅及出片辊道转动；再按，停转。

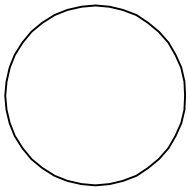
• 炉内故障按钮：按一次，自动开后炉门、炉内玻璃一直排至出片辊道外；再按，关炉门、恢复正常生产。
• Chiller Failure button: Push once, rollers of chilling section stop running. Push again, blower valve closes, chiller opens, glass discharges normally. Push the third time, chiller closes to original position.
Note: Only push once, following action is under normal state, and

the chiller closes automatically when glass discharges again.
• Chiller Open/Close button: Push once, chiller opens. Push again, chiller closes to original position.
• Chiller Vibrating button: Push this button, the lower part of chiller vibrates so as to clear away the cullet.
• Open Blower Valve button: Push once, blower valve opens. Push again, blower valve closes.

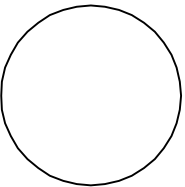
• Open Discharging Door button: Push once, discharging door opens. Push again, the door closes.
• Chiller Driving button: Push once, rollers of chilling table and unloading table start running. Push again, stop running.
• Furnace Failure button: Push once, discharging door opens automatically and glass discharges to unloading roller table. Push again, the door closes, and the furnace recovers to normal condition.



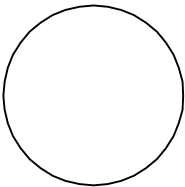
风栅故障 Chiller Failure



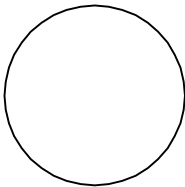
风栅开合 Chiller Open/Close



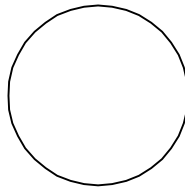
风栅振动 Chiller Vibrating



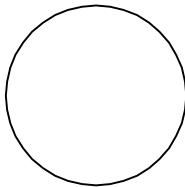
开风阀 Open Blower Valve



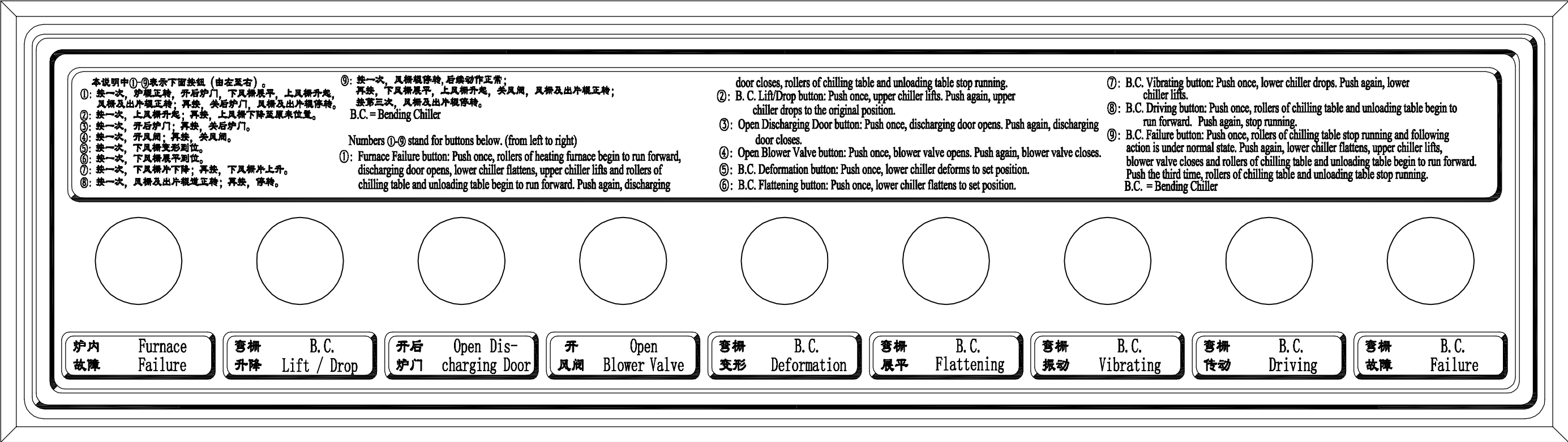
开炉门 Open Discharging Door



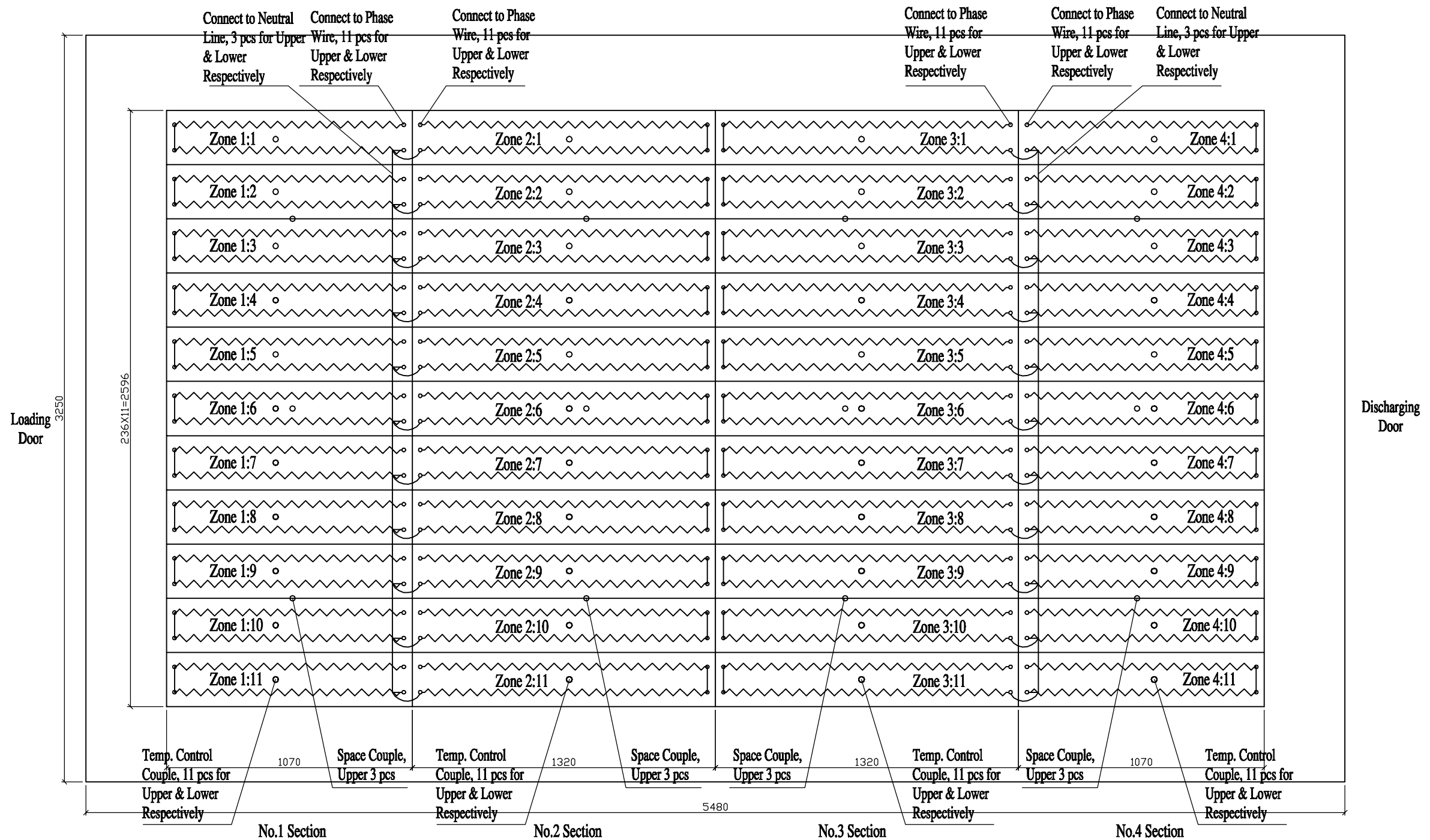
风栅传动 Chiller Driving



炉内故障 Furnace Failure

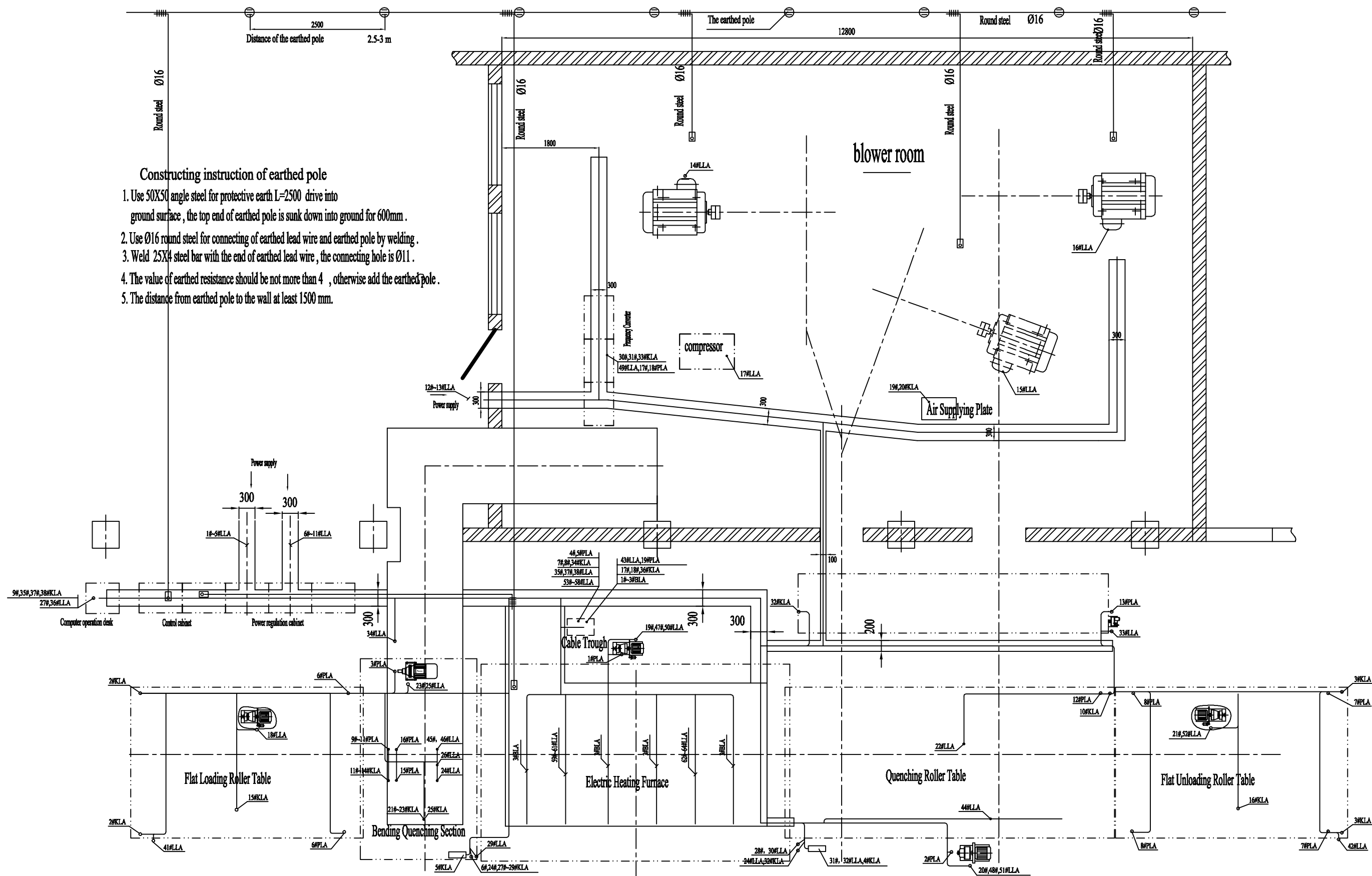


TCCHONGHUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Drawing for Operation Cabinet Panel of Lateral Bending Quenching Section
date		No.	GTW3624-2413H-E-31



- Note:
1. The whole furnace is divided into four sections. There are 11 electric heating zones for each section. Wire heating of which is controlled by a Temp. control couple respectively and 2 heating wires of each zone are connected and arranged paralleled.
 2. Wire arrangement method in upper and lower chamber are the same, which is controlled by 88 Temp. Control thermocouples altogether. Thermocouple between two sections connect to over-heating limit gauge.
 3. Thermocouples for ambient Temp. detecting total up to 12 pcs, which are installed in upper furnace body and 3 pcs for each section.
 4. 22 heating wires of Ø3.2mm are used for Section 1 of upper chamber; 44 heating wires of Ø4.0mm are used for Section 2 & Section 3 of upper chamber; 22 heating wires of Ø2.8mm are used for Section 4 of upper chamber.
22 heating wires of Ø2.8mm are used for Section 1 of lower chamber; 44 heating wires of Ø3.5mm are used for Section 2 & Section 3 of lower chamber; 22 heating wires of Ø2.5mm are used for Section 4 of lower chamber.

TONGJI HUANGDAO TUCHENG GLASS TECHNOLOGY CO., LTD.			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Arrangement Plan for Heating Wire & Thermocouple in Heating Furnace
date		No.	GTW3624-2413H-E-32



Workshop

TONGJIUANGDAO TUCHENG GLASS TECHNOLOGY CO			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnac
design		name	Layout for Cable Arrangement
date		No.	GTW3624-2413H-E-33

Power Cable/Wire List Installed on Spot							
No. of Cable	Type & Spec. of Cable	Starting Point to Terminal Point of Cable	Length	No. of Cable	Type & Spec. of Cable	Starting Point to Terminal Point of Cable	Length
1#LLA	VV ₂₂ 1KV3x50+1x25mm ²	From Substation to No.2 Control Cabinet (IPC)	Provided by User	40#LLA	RVV 2x1.0mm ²	From No.35, No.36 3JX2 Terminal in Control Cabinet to Lighting in Sound Suppression Cover of Bending Chiller	17m
2#LLA	VV ₂₂ 1KV25mm ²	From Substation to No.2 Control Cabinet (IPC)	Provided by User	41#LLA	RVV 2x1.0mm ²	From No.37, No.38 3JX2 Terminal in Control Cabinet to Lighting of Flat Loading Roller Table	20m
3#LLA	VV ₂₂ 1KV3x95+1x50mm ²	From Substation to No.1 Power Regulation Cabinet (IPC)	Provided by User	42#LLA	RVV 2x1.0mm ²	From No.39, No.40 3JX2 Terminal in Control Cabinet to Lighting of Bending Loading Roller Table	32m
4#LLA	VV ₂₂ 1KV3x70+1x35mm ²	From Substation to No.1 Power Regulation Cabinet (IPC)	Provided by User	43#LLA	RVV 4x1.5mm ²	From No.41~No.43 3JX2 Terminal in Control Cabinet to Driving Motor for Upper Furnace Body Lifting/Dropping	22m
5#LLA	VV ₂₂ 1KV70mm ²	From Substation to No.1 Power Regulation Cabinet (IPC)	Provided by User	44#LLA	RVV 4x1.0mm ²	From No.44~No.46 3JX2 Terminal in Control Cabinet to Motor for Lower Flat Chiller Vibrating	26m
6#LLA	VV ₂₂ 1KV3x120+1x70mm ²	From Substation to No.2 Power Regulation Cabinet (IPC)	Provided by User	45#LLA	RVV 4x2.5mm ²	From No.47~No.49 3JX2 Terminal in Control Cabinet to Driving Motor for Upper Bending Chiller	19m
7#LLA	VV ₂₂ 1KV3x95+1x50mm ²	From Substation to No.2 Power Regulation Cabinet (IPC)	Provided by User	46#LLA	RVV 4x2.5mm ²	From No.50~No.52 3JX2 Terminal in Control Cabinet to Driving Motor for Lower Bending Chiller	23m
8#LLA	VV ₂₂ 1KV95mm ²	From Substation to No.2 Power Regulation Cabinet (IPC)	Provided by User	47#LLA	RVV 2x0.5mm ²	From No.53, No.54 3JX2 Terminal in Control Cabinet to Colling Fan of Driving Motor for Heating Furnace Rollers	18m
9#LLA	VV ₂₂ 1KV3x95+1x50mm ²	From Substation to No.3 Power Regulation Cabinet (IPC)	Provided by User	48#LLA	RVV 2x0.5mm ²	From No.55, No.56 3JX2 Terminal in Control Cabinet to Colling Fan of Driving Motor for Flat Chiller Rollers	26m
10#LLA	VV ₂₂ 1KV3x70+1x35mm ²	From Substation to No.3 Power Regulation Cabinet (IPC)	Provided by User	49#LLA	RVV 2x1.0mm ²	From No.59~No.62 3JX2 Terminal in Control Cabinet to Control Power Supply for Starting Cabinet	21m
11#LLA	VV ₂₂ 1KV70mm ²	From Substation to No.3 Power Regulation Cabinet (IPC)	Provided by User	50#LLA	BVR 10mm ²	Standby DC Control Cabinet to Storage Battery to Standby DC Motor for Furnace Rollers	2x7m
12#LLA	VV ₂₂ 1KV3x120+1x70mm ²	From Substation to Starting Cabinet (SPCS)	Provided by User	51#LLA	BVR 10mm ²	Standby DC Control Cabinet to Storage Battery to Standby DC Motor for Flat Chiller Rollers	2x19m
13#LLA	VV ₂₂ 120mm ²	From Substation to Starting Cabinet (2PCS)	Provided by User	52#LLA	BVR 10mm ²	Standby DC Control Cabinet to Storage Battery to Standby DC Motor for Flat Unloading Table	2x21m
14#LLA	VV 1KV3x120+1x70mm ²	From Starting Cabinet to No.1 Blower Motor (2PCS)	Provided by User	53#LLA	BVR 10mm ²	No.1~No.11 Silica on Front of Panel of No.1 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Upper Furnace Body No.1 Section	11x17m
15#LLA	VV 1KV3x120+1x70mm ²	From Starting Cabinet to No.2 Blower Motor (2PCS)	Provided by User			No.12~No.14 Silica on Front of Panel of No.1 Power Regulation Cabinet & No.1~No.8 Silica on Front of Panel of No.2 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Upper Furnace Body No.2 Section	11x18m
16#LLA	VV 1KV3x120+1x70mm ²	From Starting Cabinet to No.3 Blower Motor (IPC)	Provided by User	54#LLA	BVR 16mm ²	N Terminal of No.1 & No.2 Power Regulation Cabinet to N Terminal of Heating Zones of Upper Furnace Body No.1 Section	2x18m
17#LLA	RVV 4x2.5mm ²	From Starting Cabinet to Air Compressor (Less than 7.5KW)	17m	55#LLA	BVR 25mm ²	No.9~No.15 Silica on Front of Panel of No.2 Power Regulation Cabinet & No.1~No.4 Silica on Front of Panel of No.3 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Upper Furnace Body No.3 Section	11x19m
18#LLA	RVV 4x1.5mm ²	From No.1~No.3 3JX1 Terminal in Control Cabinet to Driving Motor for Flat Loading Roller	20m	56#LLA	BVR 16mm ²	No.5~No.15 Silica on Front of Panel of No.3 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Upper Furnace Body No.4 Section	11x20m
19#LLA	RVV 4x2.5mm ²	From No.4~No.6 3JX1 Terminal in Control Cabinet to Driving Motor for Heating Furnace Rollers	18m	57#LLA	BVR 6mm ²	N Terminal of No.2 & No.3 Power Regulation Cabinet to N Terminal of Heating Zones of Upper Furnace Body No.4 Section	2x20m
20#LLA	RVV 4x2.5mm ²	From No.7~No.9 3JX1 Terminal in Control Cabinet to Driving Motor for Flat Chiller Rollers	26m	58#LLA	BVR 25mm ²	No.1~No.11 Silica on Back of Panel of No.1 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Lower Furnace Body No.1 Section	11x15m
21#LLA	RVV 4x1.5mm ²	From No.10~No.12 3JX1 Terminal in Control Cabinet to Driving Motor for Flat Unloading Roller	28m	59#LLA	BVR 6mm ²	No.12~No.14 Silica on Back of Panel of No.1 Power Regulation Cabinet & No.1~No.8 Silica on Back of Panel of No.2 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Lower Furnace Body No.2 Section	11x16m
22#LLA	RVV 4x1.5mm ²	From No.13~No.15 3JX1 Terminal in Control Cabinet to Driving Motor for Flat Chiller Open/Close	33m	60#LLA	BVR 16mm ²	N Terminal of No.1 & No.2 Power Regulation Cabinet to N Terminal of Heating Zones of Lower Furnace Body No.1 Section	2x16m
23#LLA	RVV 4x1.5mm ²	From No.1~No.3 3JX3 Terminal in Control Cabinet to Driving Motor for Bending Chiller Rollers	13m	61#LLA	BVR 25mm ²	No.9~No.15 Silica on Back of Panel of No.2 Power Regulation Cabinet & No.1~No.4 Silica on Back of Panel of No.3 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Lower Furnace Body No.3 Section	11x17m
24#LLA	RVV 4x1.5mm ²	From No.4~No.6 3JX3 Terminal in Control Cabinet to Driving Motor for Curvature Adjusting of Lower Bending Chiller	17m	62#LLA	BVR 16mm ²	No.5~No.15 Silica on Back of Panel of No.3 Power Regulation Cabinet to Phase of No.1~No.11 Heating Zones of Lower Furnace Body No.4 Section	11x18m
25#LLA	RVV 2x1.0mm ²	From No.7, No.8 3JX3 Terminal in Control Cabinet to Colling Fan of Driving Motor for Bending Chiller Rollers	17m	63#LLA	BVR 6mm ²	N Terminal of No.3 & No.4 Power Regulation Cabinet to N Terminal of Heating Zones of Lower Furnace Body No.4 Section	2x18m
26#LLA	RVV 2x0.5mm ²	From No.9~No.12 3JX3 Terminal in Control Cabinet to Limit Switch for Adjusting Bending Chiller Air Valve	2X7m				
27#LLA	RVV 4x0.5mm ²	From No.1~No.4 3JX2 Terminal in Control Cabinet to Main Power Supply Button on Operation Desk	5m				
28#LLA	RVV 4x0.5mm ²	From No.5~No.8 3JX2 Terminal in Control Cabinet to Main Emergency Stop Button on Discharging Door for Flat Glass Tempering	24 m				
29#LLA	RVV 4x0.5mm ²	From No.9~No.12 3JX2 Terminal in Control Cabinet to Main Emergency Stop Button on Discharging Door for Bending Glass Tempering	18m				
30#LLA	RVV 4x0.5mm ²	From No.13~No.15 3JX2 Terminal in Control Cabinet to Upper Furnace Body Lifting/Dropping	24 m				
31#LLA	RVV 2x0.5mm ²	From No.16, No.17 3JX2 Terminal in Control Cabinet to Limit Switch of Upper Furnace Body Dropping	23m				
32#LLA	RVV 2x0.5mm ²	From No.18, No.19 3JX2 Terminal in Control Cabinet to Lower Chiller Vibrating in Flat Chiller Operation Box	24 m				
33#LLA	RVV 4x0.5mm ²	From No.20~No.22 3JX2 Terminal in Control Cabinet to Air Adjusting Actuator of Flat Chiller Air Outlet Valve	23m				
34#LLA	RVV 4x0.5mm ²	From No.23~No.25 3JX2 Terminal in Control Cabinet to Driving Motor for Adjusting of Bending Air Outlet of Cable Trough	14m				
35#LLA	RVV 2x0.5mm ²	From No.26~No.27 3JX2 Terminal in Control Cabinet to No.21~No.22 4JX Terminal	13m				
36#LLA	RVV 2x0.5mm ²	From No.28~No.29 3JX2 Terminal in Control Cabinet to Ready to Heat Button	5m				
37#LLA	RVV 2x0.5mm ²	From No.29~No.30 3JX2 Terminal in Control Cabinet to No.23~No.24 4JX Terminal	13m				
38#LLA	RVV 2x0.5mm ²	From No.31, No.32 3JX2 Terminal in Control Cabinet to No.17, No.18 4JX Terminal	13m				
39#LLA	RVV 2x1.0mm ²	From No.33, No.34 3JX2 Terminal in Control Cabinet to Lighting in Sound Suppression Cover of Flat Chiller	34 m				

TCCH QINHUANGDAO TUCHENG GLASS TECHNOLOGY CO.,LTD			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Installation Cable Chart (1)
date		No.	GTW3624-2413H-E-34

Control Cable/Wire List Installed on Spot			
No. of Cable	Type & Spec. of Cable	Starting Point to Terminal Point of Cable	Length
1#KLA	RVV2x0.5mm ²	From No.37, No.38 1JX1 Terminal of Control Cabinet to Air Pressure Alarm	14m
2#KLA	RVV16x0.2mm ²	From No.39~No.44 1JX1 Terminal & No.31~No.36 2JX1 Terminal to Button on End of Flat Loading Table	22m
3#KLA	RVV16x0.2mm ²	From No.45~No.50 1JX1 Terminal & No.37~No.42 2JX1 Terminal to Button on End of Bending Loading Table	36m
4#KLA	RVV16x0.2mm ²	From No.51~No.54 1JX1 Terminal & No.1~No.4, No.7, No.8, No.11, No.12, No.15~No.22 2JX1 Terminal & No.1, No.2, No.24, No.25 2JX2 Terminal to Operation Cabinet of Flat Chiller	2x26m
5#KLA	RVV16x0.2mm ²	From No.55~No.60 1JX1 Terminal & No.5, No.6, No.9, No.10, No.13, No.14, No.23~No.30 2JX1 Terminal & No.3, No.4, No.34, No.35 2JX2 Terminal to Operation Cabinet of Bending Chiller	2x19m
6#KLA	RVV4x0.5mm ²	From No.61~No.63 1JX1 Terminal of Control Cabinet to Control Button of Curvature Adjusting Motor of Lower Bending Chiller	19m
7#KLA	RVV4x1.0mm ²	From No.12~No.14 4JX Terminal of Standby DC Control Cabinet to Storage Battery	2m
8#KLA	RVV8x0.5mm ²	From No.43~No.48 2JX1 Terminal of Control Cabinet to No.1~No.4 & No.15, No.16 4JX Terminal of Standby DC Switch Cabinet	13m
9#KLA	RVV2x0.5mm ²	From No.49, No.50 2JX1 Terminal of Control Cabinet to Lamp of Trigging Power Supply for Heating	5m
10#KLA	RVV2x0.5mm ²	From No.5~No.7 2JX2 Terminal of Control Cabinet to Open/Close Limit of Flat Chiller	2x26m
11#KLA	RVV2x0.5mm ²	From No.8~No.10 2JX2 Terminal of Control Cabinet to Upper/Lower Limit of Curvature Adjusting of Lower Bending Chiller	2x16m
12#KLA	RVV2x0.5mm ²	From No.11, No.12 2JX2 Terminal of Control Cabinet to Lifting Limit of Lower Bending Chiller	16m
13#KLA	RVV2x0.5mm ²	From No.12, No.13 2JX2 Terminal of Control Cabinet to Flatening Limit of Lower Bending Chiller	16m
14#KLA	RVV2x0.5mm ²	From No.14, No.15 2JX2 Terminal of Control Cabinet to Flatening Limit of Upper Bending Chiller	16m
15#KLA	RVV2x0.5mm ²	From No.16, No.17 2JX2 Terminal of Control Cabinet to Lifting Valve of Flat Loading Table/Bending Unloading Table	17m
16#KLA	RVV2x0.5mm ²	From No.18, No.19 2JX2 Terminal of Control Cabinet to Lifting Valve of Flat Unloading Table/Bending Loading Table	29m
17#KLA	RVV2x0.5mm ²	From No.20, No.21 2JX2 Terminal of Control Cabinet to Furnace Door Valve of Flat Glass Unloading/Bending Glass Loading	21m
18#KLA	RVV2x0.5mm ²	From No.22, No.23 2JX2 Terminal of Control Cabinet to Furnace Door Valve of Flat Glass Loading/Bending Glass Unloading	18m
19#KLA	RVV2x0.5mm ²	From No.26~No.31 2JX2 Terminal of Control Cabinet to Valve for Flat Quenching Section	3x24m
20#KLA	RVV2x0.5mm ²	From No.32, No.33, No.36, No.37, No.63~No.70 2JX2 Terminal of Control Cabinet to Valve & Lamp for Bending Quenching Section	6x24m
21#KLA	RVV2x0.5mm ²	From No.38, No.39 2JX2 Terminal of Control Cabinet to Fence Roller Valve of Bending Chiller	16m
22#KLA	RVV2x0.5mm ²	From No.40, No.41 2JX2 Terminal of Control Cabinet to Dropping Valve of Pressing Roller of Upper Bending Chiller	16m
23#KLA	RVV2x0.5mm ²	From No.42, No.43 2JX2 Terminal of Control Cabinet to Dropping Valve of Side Pressing Roller of Upper Bending Chiller	16m
24#KLA	RVV2x0.5mm ²	From No.44, No.45 2JX2 Terminal of Control Cabinet to Dropping Lamp of Lower Bending Chiller	19m
25#KLA	RVV2x0.5mm ²	From No.46, No.47 2JX2 Terminal of Control Cabinet to Dropping Valve of Lower Bending Chiller	16m
26#KLA	RVV2x0.5mm ²	From No.48, No.49 2JX2 Terminal of Control Cabinet to Voice Alarm	8m
27#KLA	RVV2x0.5mm ²	From No.50, No.51 2JX2 Terminal of Control Cabinet to Dropping Button of Lower Bending Chiller	19m
28#KLA	RVV2x0.5mm ²	From No.52, No.53 2JX2 Terminal of Control Cabinet to Dropping Button of Middle Pressing Roller of Upper Bending Chiller	19m
29#KLA	RVV2x0.5mm ²	From No.54, No.55 2JX2 Terminal of Control Cabinet to Dropping Button of Side Pressing Roller of Upper Bending Chiller	19m
30#KLA	RVV2x0.5mm ²	From No.56, No.57 2JX2 Terminal of Control Cabinet to Start up Inspection for No.1 Midium Pressure Blower	26m
31#KLA	RVV2x0.5mm ²	From No.58, No.59 2JX2 Terminal of Control Cabinet to Start up Inspection for No.2 Midium Pressure Blower	26m
32#KLA	RVV2x0.5mm ²	From No.60, No.61 2JX2 Terminal of Control Cabinet to Heat Balance Valve of Furnace	17m
33#KLA	RVV2x0.5mm ²	From No.62, No.63 2JX2 Terminal of Control Cabinet to Start up Inspection for Low Pressure	26m

Control Cable/Wire List Installed on Spot			
No. of Cable	Type & Spec. of Cable	Starting Point to Terminal Point of Cable	Length
34#KLA	RVV4x1.0mm ²	From No.5~No.8 4JX Terminal of Standby DC Control Cabinet to Manually DC Driving Buton	17m
35#KLA	RVV2x0.5mm ²	From No.17, No.18 1JX2 Terminal of Control Cabinet to Power Supply for Operation Desk	5m
36#KLA	RVV2x0.5mm ²	From No.19, No.20 1JX2 Terminal of Control Cabinet to Power Supply For 7018 Module	15m
37#KLA	RVtwist pair2x0.5mm ²	From Human-machine Interface to Frequency Converter of Blower with R485 Protocol	100m
38#KLA	RVV4x0.5mm ²	From Human-machine Interface Standby DC Switch & Lamp for Operation Desk to No.9~No.11 4JX Terminal of Standby DC Control Cabinet	17m
Shielded Cable/Wire List Installed on Spot			
No. of Cable	Type & Spec. of Cable	Starting Point to Terminal Point of Cable	Length
1#PLA	RVVP 4x0.2mm ²	From No.1~No.4 1JX1 Terminal of Control Cabinet to Encoder for Furnace Rollers	18m
2#PLA	RVVP 4x0.2mm ²	From No.5~No.8 1JX1 Terminal of Control Cabinet to Encoder for Flat Chiller Rollers	26m
3#PLA	RVVP 4x0.2mm ²	From No.9~No.12 1JX1 Terminal of Control Cabinet to Encoder for Bending Chiller Rollers	17m
4#PLA	RVVP 4x0.2mm ²	From No.13~No.15 1JX1 Terminal of Control Cabinet to Front Furnace Door Sensor of Flat Glass Loading/Bending Glass Unloading	19m
5#PLA	RVVP 4x0.2mm ²	From No.16~No.18 1JX1 Terminal of Control Cabinet to Back Furnace Door Sensor of Flat Glass Unloading/Bending Glass Loading	22m
6#PLA	RVVP 4x0.2mm ²	From No.19~No.21 1JX1 Terminal of Control Cabinet to Photoelectric Switch for Glass Ready Entering Furnace When Temper Flat Glass	18m
7#PLA	RVVP 4x0.2mm ²	From No.22~No.24 1JX1 Terminal of Control Cabinet to Photoelectric Switch for Glass Ready to Unload When Temper Flat Glass	32m
8#PLA	RVVP 4x0.2mm ²	From No.25~No.27 1JX1 Terminal of Control Cabinet to Photoelectric Switch for Glass Ready Entering Furnace When Temper Bending Glass	33m
9#PLA	RVVP 4x0.2mm ²	From No.31~No.33 1JX1 Terminal of Control Cabinet to Sensor for Flattening of Lower Bending Chiller	18m
10#PLA	RVVP 4x0.2mm ²	From No.34~No.36 1JX1 Terminal of Control Cabinet to Sensor for Lifting-bending of Upper Bending Chiller	18m
11#PLA	RVVP 12x0.2mm ²	Encoder for Open/Close of Flat Chiller to PLC X70~X77 & No.5, No.6 1JX2 Terminal	28m
12#PLA	RVVP 12x0.2mm ²	Encoder for Open/Close of Air Suppression Cabinet Outlet of Flat Chiller to PLC X100~X107 & No.7, No.8 1JX2 Terminal	20m
13#PLA	RVVP 12x0.2mm ²	Encoder for Open/Close of Air Suppression Cabinet Outlet of Bending Chiller to PLC X110~X117 & No.9, No.10 1JX2 Terminal	11m
14#PLA	RVVP 12x0.2mm ²	Encoder for Upper Bending Chiller to PLC X60~X67 & No.3, No.4 1JX2 Terminal	18m
15#PLA	RVVP 12x0.2mm ²	Curvature Adjusting Encoder for Lower Bending Chiller to PLC X30~X41 & No.1, No.2 1JX2 Terminal	18m
16#PLA	RVVP 4x0.2mm ²	From No.51~No.53 2JX1 Terminal of Control Cabinet to Control of No.1 Blower Frequency Converter	26m
17#PLA	RVVP 4x0.2mm ²	From No.54~No.56 2JX1 Terminal of Control Cabinet to Control of No.2 Blower Frequency Converter	26m
18#PLA	RVVP 4x0.2mm ²	From No.57~No.59 2JX1 Terminal of Control Cabinet to Control of No.3 Blower Frequency Converter	26m
19#PLA	RVVPtwist pair 4x0.2mm ²	From No.21, No.22 1JX2 Terminal of Control Cabinet to 7018 Module with R485 Protocol	15m
Compensation Cable/Wire List Installed on Spot			
No. of Cable	Type & Spec. of Cable	Starting Point to Terminal Point of Cable	Length
1#BLA	KX- 2x0.5mm ²	Temp. Control Thermocouple of Upper Furnace Body to A/D Module	44x9m
2#BLA	KX- 2x0.5mm ²	Space Thermocouple of Upper Furnace Body to A/D Module	12x9m
3#BLA	KX- 2x0.5mm ²	Temp. Control Thermocouple of Lower Furnace Body to A/D Module	44x9m

TONGJIANGDAO TUCHENG GLASS TECHNOLOGY CO.,LTD			
check		project	GTW3624-2413H Flat & Bending Glass Tempering Furnace
design		name	Installation Cable Chart(Ⅱ)(Ⅲ)(Ⅳ)
date		No.	GTW3624-2413H-E-35