CUSTOM 3PH from 1000A to 2700A

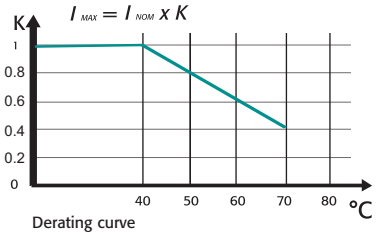
Universal 3 Phase Thyristor Unit

GENERAL DESCRIPTION

- CUSTOM is a Full digital and universal Thyristor unit based on a very powerful dedicated micro configurable via serial communication port for all inputs, firing modes, control modes and loads types.
- Suitable to drive resistive, inductive, transformer and complex loads requiring current limit and power control mode.
- Frontal Key Pad standard to configure all the internal functions and parameters.
- Four Analog output configuirable
- Six Digital input
- Four realay output
- Universal Input signal with automatic zero/span calibration.
- Universal Firing modes, customer configurable via Key Pad or communication port as Burst Firing and Phase Angle.
- Universal Feed back modes
- Soft Start can be used in addition to Burst Firing and Phase Angle.
- Unbalanced load and Heater Break Alarm.
- RS 485 port. Modbus protocol
- Comply with EMC and cULus *

TECHNICAL SPECIFICATION

Operating Temperature	0+40°C over this temperature see derating curve
Voltage Power supply	480V standard, 600V or 690V on request + 10 % Max
Auxiliary Voltage Supply	90÷265V; 20VA power consumption. Fan voltage supply: 230V ±15%
Analog Input 1	Main reference, 4÷20mA, 0÷10V, 10KPOT, RS485 port
Analog Input 2	Secondary reference, 0÷10V, 10KPot
Analog Input 3	External Current Limit Set, via analog input 0-10V or KPot
Analog Ouput	Four Analog output 0÷10V, (0÷20mA or 4÷20mA are as an option), power and current phase 1-2-3 as standard
Digital Input	Six optoisalated digital output (12/24Vdc), for START, STOP, ENABLE, CALIBRATION, RESET ALARM and EXTERNAL ALARM
Relay Output	Three configurable relay output and one critical alarm
Universal Firing	One of these firing modes can be configured Burst Firing BF, Single Cycles SC, Soft Start + Burst Firing; Soft Start + Phase Angle S+PA Delayed Triggering
Soft Start	Digital adjustable ramp rate can be used in up or/end down mode
Control Mode	Voltage (V), Power (VxI) and External feedback
Heater Break Alarm	Circuit microprocessor based to diagnose partial or total load failure and short circuit on Thyristors
Unbalanced load	This protection allow to have Multidrive working up to 20% of unbalance on one phase
Communication	RS485 Port. Modbus communication protocol 9600 or 19200 bauds
Thermal protection	Available on forced ventilated units



Derating curve

* cULus cUL approval up to 500A included

USER'S MANUAL
Rev. 01/2012

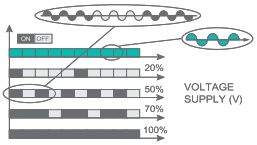
HEATER BREAK ALARM HB

ON FRONT CABINET

= FEW MINUTES TO SET AND CALIBRATE ALL THE UNITS

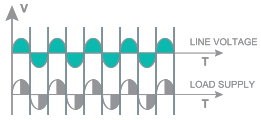
The Heather Break circuit diagnostic partial or total load failure.
circuit is compensated for voltage fluctuation.
On this unit is possible to set the nominal resistance value and the alarm sensitivity.
HB alarm in addition diagnostic the thyristor in short circuit
A normaly open contact gives the alarm condition and an indication of the alarm type appears on display.

BURST FIRING BF



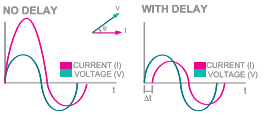
This firing is performed digitally within the thyristor unit at zero volts, producing no EMC interference. Analogue input is necessary for BF and the number of complete cycles must be specified for 50% power demand. This value can be between 1 and 255 complete cycles, determining the speed of firing. When 1 is specified, the firing mode becomes Single Cycle (SC).

PHASE ANGLE PA



PA controls the power to the load by allowing the thyristor to conduct for part of the AC supply cycle only. The more-power required, the more the conduction angle is advanced until virtually the whole cycle is conducting for 100% power. The load power can be adjusted from 0 to 100% as a function of the analogue input signal, normally determined by a temperature controller or potentiometer, PA is normally used with inductive loads.

DELAYED TRIGGERING DT



Used to switch the primary coil of transformers when coupled with normal resistive loads (not cold resistance) on the secondary, DT prevents the inrush current when zero voltage (ON-OFF) is used to switch the primary. The thyristor unit switches OFF when the load voltage is negative and switches ON only when positive with a pre-set delay for the first half cycle.

CD EASY

This is a memory support tool that can be used by mantenance personnel on shop floor.
The user can copy the configuration of one unit and paste it into another.CD EASY is very simple with one push button to upload the configuration (Read and another to down load the stored configuration (Write)
This tool can be used with our Remote service to mail the working configuration via internet.

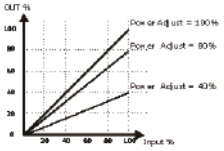
CD-KP

The CD-KP is designed mounted on front cabinet and to be connected with all cd automation's Thyristor units via RS485. On front unit is possible to read parameters, power, current, reference and alarms. One of these variables can be selected and retransmitted via an isolated output (4÷20mA or 0÷10V) On front unit is available a connector to comunicate with PC. In addition are available Local/Remote, up and down and function command.

FIELD BUS MODULE

CD-RS Used to convert RS232 to RS422
TU-RS485-PDP Used to convert RS485 Modbus to Profibus DP
TU-RS485-ETH Used to convert RS485 Modbus to Ethernet
For more informations see "Field Bus Module" Bulletin

POWER SCALING



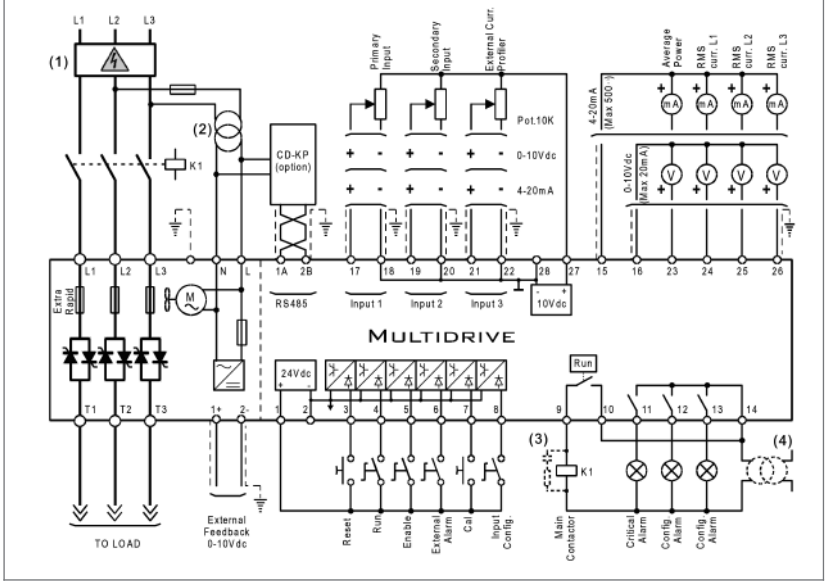
It's a scaling factor of the input command signal and limit the output of Thyristor unit. This parameter can be adjusted from 1 to 99% via RS485 or by the front of the unit If this parameter is setted at 50% and the input signal is 100% the output become 50% This feature is very useful to reduce the power when a zone has been oversized or when a temperature controller gives same reference to more unit along a furnace.
Imagine 3 zones with left and right one close to the doar where in acontinuos furnace the material come into and flow out.The profile of temperature along furnace is higher in central zone because there is less dispersion but if we scale its input we can have a flat profile.

APPLICATIONS AND FOCUS ON:

- Infrared lamp.
- Autoclaves.
- Fournaces.
- Chemical
- Petrochemical
- Climatic chambers
- Pharmaceutical

WIRING CONNECTION CUSTOM 3PH from 1000A to 2700A

MULTIDRIVE 3PH



NOTE

(1) • The user installation must be protecting by electromagnetic circuit breaker or by fuse isolator.

(2) • Use an appropriate external transformer based on the voltage supply of the electronic board (see the identification label)

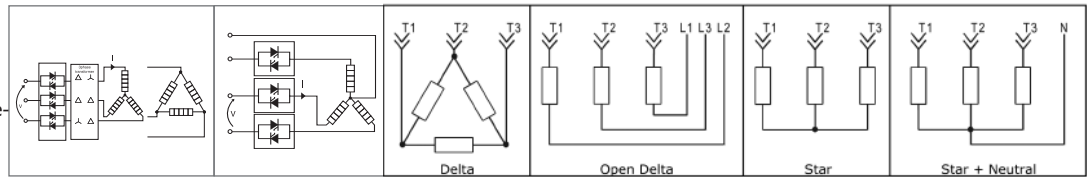
(3) • The coil contactor, the relays and other inductive loads must be equipped with opportune RC filter.

(4) • Before give the Start command supply the auxiliary voltage

LOAD TYPE

Three phase transformer

Cold Resistance
Molibdenum, Tungstenum
KantalSuper Platinum,
Quartz lamp infrared short wave-form
Silicon carbide elements



3 PHASE STACK THYRISTOR

CURRENT	MAX VOLTAGE	DRAWING
1000	500	3P-002
1400	690	3P-006
1500	500	3P-001
1850	690	3P-003
2000	500	3P-004
2400	690	3P-005
2750	500	3P-002

OUTPUT FEATURES (POWER DEVICE)

Current A	Voltage range (V)	Ripetitive peak reverse voltage (600V)	(690V)	Latching current (mAeff)	Max peak one cycle (10msec.)	Leakage current (mAeff)	I2T value for fusing tp=10msec.	Frequency range (Hz)	Power loss I=Inom (W)	Isolation Voltage Vac
1000A	330÷600V	1600	N.A.	700	12500	300	781000	47÷70	3300	2500
1400A	330÷690V	1600	1800	700	24600	300	3026x1E3	47÷70	4620	1700
1500A	330÷600V	1600	N.A.	700	24600	300	3026x1E3	47÷70	5625	1700
1850A	330÷690V	1600	1800	700	36000	300	6480x1E3	47÷70	6105	2500
2000A	330÷600V	1800	N.A.	700	36000	300	6480x1E3	47÷70	6600	2500
2400A	330÷690V	1800	1800	700	60000	300	180000x1E3	47÷70	8000	2500
2700A	330÷600V	2200	N.A.	700	60000	300	180000x1E3	47÷70	10125	2500

ORDERING CODES CUSTOM 3PH from 1000A to 2700A

Note 1

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
CUSTOM 3PH	C	3	_	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
1000A (2)	1 0 0 0
1400A	1 4 0 0
1500A (2)	1 5 0 0
1850A	1 8 5 0
2000A (2)	2 0 0 0
2400A	2 4 0 0
2700A (2)	2 7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7

8 Aux. Voltage supply

Description code	Numeric code
230V	12

9 Input

Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Single Cycle SC	C
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feed Back V	U
Power Feed Back VxI	W
Current Feed Back I	I
External Feed Back	E

12 Option

Description code	Numeric code
4:20mA Retransmission Load Current and Control Mode (3)	A
0:10V Retransmission Load Current and Control Mode (3)	V

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

14 Approvals

Description code	Numeric code
CE EMC For European Market	0

15 Manual

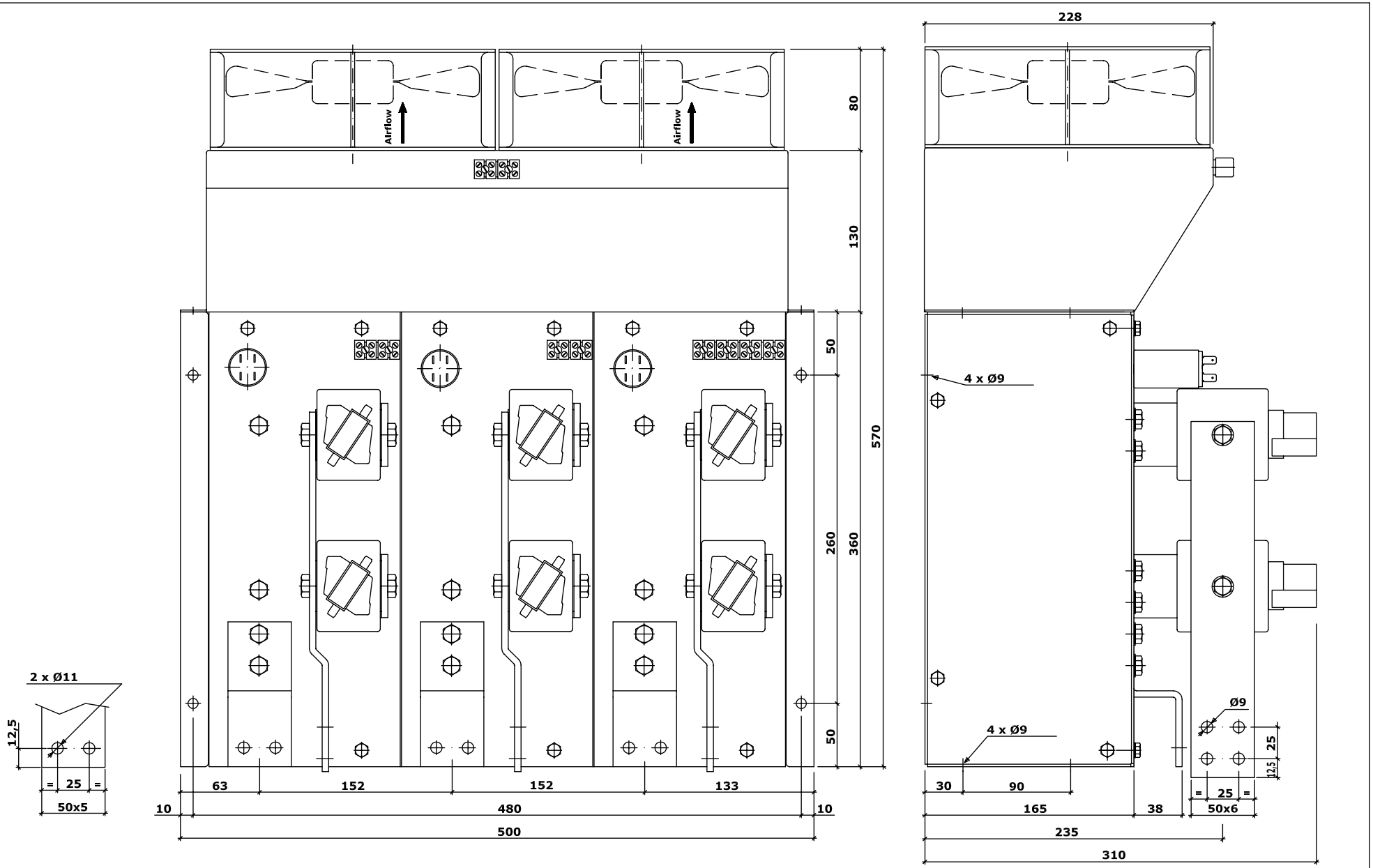
Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Load type/Connection

Description code	Numeric code
Resistive Load/ Delta Connection	1
Resistive Load/ Star Connection	2
Resistive Load/ Star Connection + Neutral	7
Transformer Load/ Delta Connection	3
Transformer Load/ Star Connection	4
Transformer Load/Star Connection + Neutral	5
Resistive Load/ Open delta	6

LEGEND
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (1000A-400V). this is to receive the Thyristor unit already tuned from CD Automation
Note (2): Rating not available at 690V
Note (3): In total are available 4 Analog output . One dedicated to control mode and the other 3 for current on phases 1-2-3



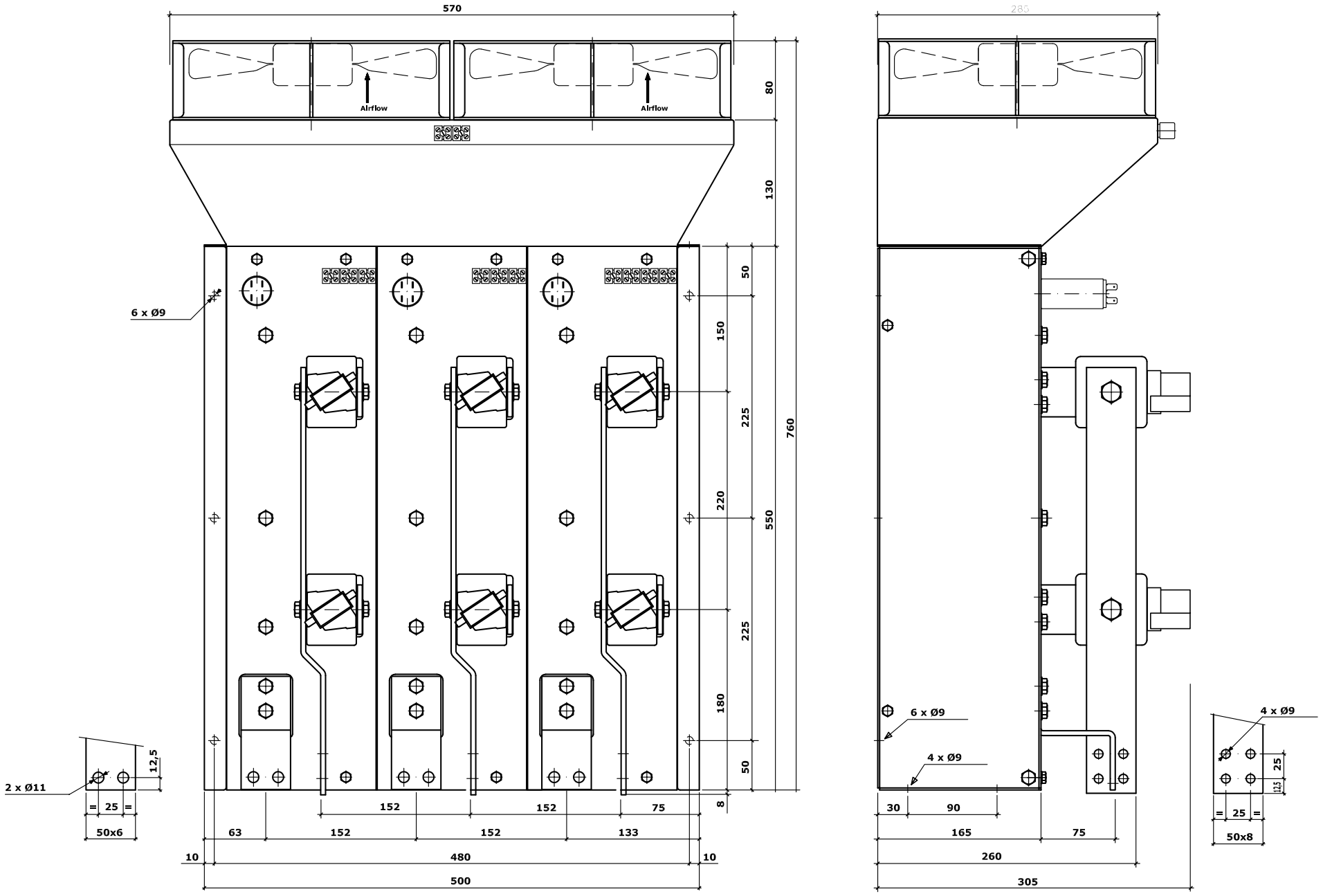
CD Automation
Tel. 0331-577479
Fax 0331-579479

3 Phase Thyristor unit
1000 A

Dimensions in mm

Code: 3P-002

Date: 09-11-11



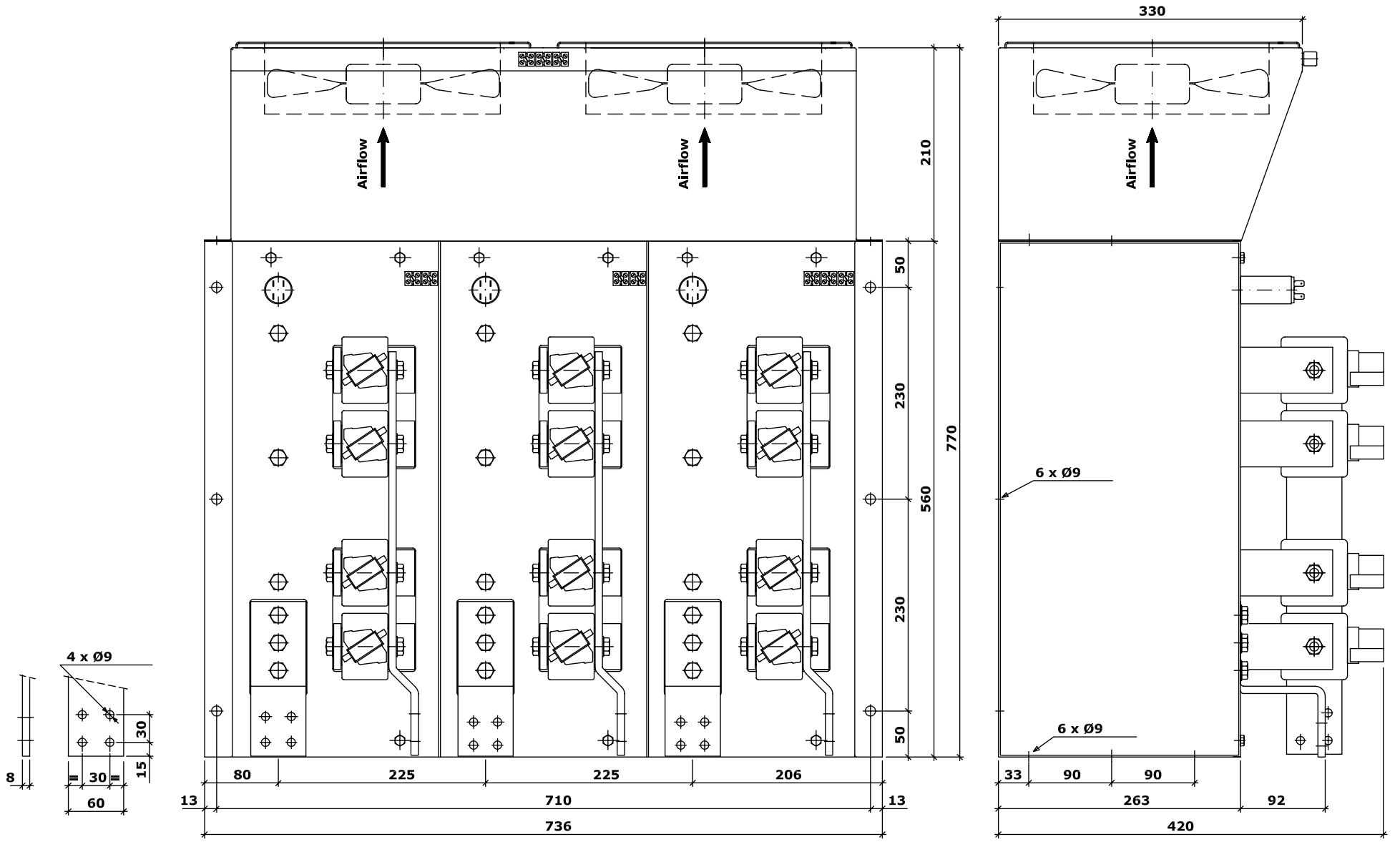
Tel. 0331-577479
Fax 0331-579479

3 Phase Thyristor unit
1500 A

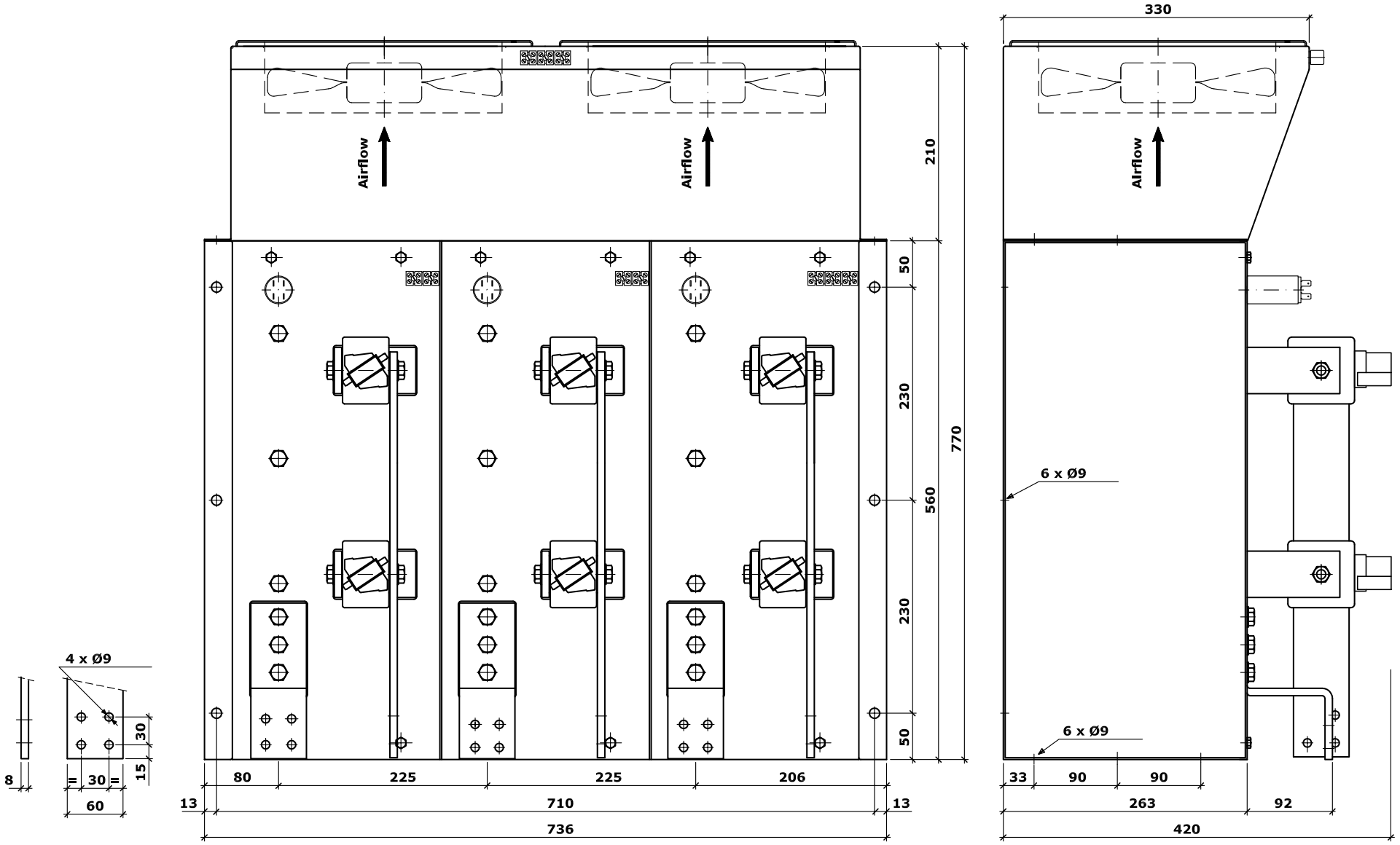
Dimensions in mm

Code: 3P-001

Date: 09-11-11



Tel. 0331-577479 Fax 0331-579479	3 Phase Thyristor unit 1850 A Dimensions in mm	Code: 3P-003 Date: 09-11-11



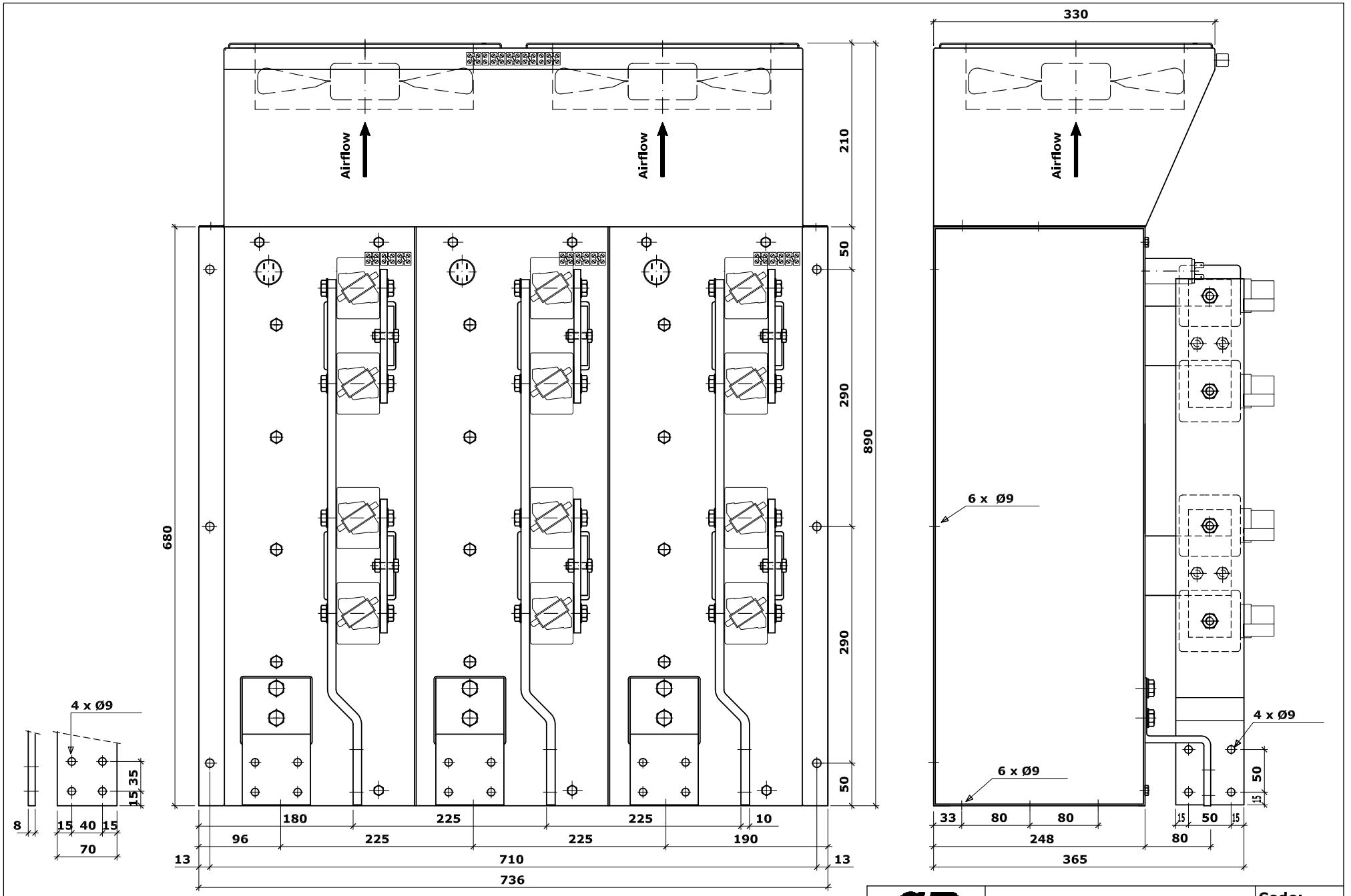
Tel. 0331-577479
Fax 0331-579479

3 Phase Thyristor unit
2000 A

Dimensions in mm

Code: 3P-004

Date: 09-11-11



Tel. 0331-577479
Fax 0331-579479

3 Phase Thyristor unit
2400 - 2750A

Dimensions in mm

Code: 3P-005

Date: 09-11-11