

A Representation of Engineering and Technology



TEMPERATURE CONTROL UNITS

INTRODUCTION

Industrial heating and cooling systems are customised as per process requirements and offer great range of temperatures (between -100 DegC to +250 DegC).

Being dynamic in nature, such units provide higher efficiency and real time temperature record. It is a closed liquid circulation system which helps acheiving the process or jacket temperature at a low power consumption

We provide special heating & cooling systems in which a single machine can operate two different equipments (i.e. reactors) at two different temperatures at a same time. Such machines are termed as **one machine for two reactors**.

Applications: Research labs, pilot plants, big and small industrial productions units and pharmaceutical industries

Attachments / Accessories : High pressure SS insulated flexible hose pipes with adapter flanges and fittings for suitable end connections. Heat transfer fluid catering to relevant temp ranges selected by the client

WORKING PRINCIPLE

- Set temperature on the HMI of the machine
- The machine will take a feedback from the reactor's temperature sensor (PT100) based on which it will activate heater or refrigeration system and try to achieve the set temp in minimum amount of time
- Once the temp achieved it will maintain that temp with an accuracy of +/- 1 DegC
- It is a complete hydraulically sealed system

		TCU LAB I	MODELS					
Model		TCU-320	TCU-420W	TCU-430W				
Medium Temperat	ure Range	-30°C~ +180°C	-38°C~ +180°C	-40°C~ +200°C				
Control Mo	ode	Feedback PID + Our	special dynamic control calculation	on, PLC controller				
Temp con	trol	Switchable : Process tempe	erature control mode and jacket te	emperature control mode				
Temp Differ	ence	Set or control the tempera	ature difference between jacket oi	l and material process				
Program Ed	ditor	5 Programs, each program can edit 40 steps						
Communication	Protocol	MODE	BUS RTU Protocol, RS 485 Interfa	ace				
Material Temp F	eedback	PT100 or 4-20	mA or communication given (Def	ault PT100)				
Temp feedb								
Medium temp a	ccuracy		+/- 0.5 DegC					
Material Temp A	Accuracy		+/- 1 DegC					
Heating Po	wer	2 kW	2 kW	3 kW				
	180 DegC	1.5 kW	1.8 kW	3 kW				
	0 DegC	1.5 kW	1.8 kW	3 kW				
Cooling Capacity	-5 DegC	0.9 kW	1.2 kW	2 kW				
(kW)	-20 DegC	0.6 kW	1 kW	1.5 kW				
	-35 DegC	-	0.3 kW	0.5 kW				
		10 L/min	10 L/min	20 L/min				
Circulation Pun	np (max)	0.8 Bar	0.8 Bar	2 Bar				
Compress	sor		Scope / Highly / Tecumseh					
Expansion \	/alve	Danfos	s / Emerson thermal expansion v	alve				
Evaporat	or	DANF	OSS / KAORI Plate Heat Exchan	ger				
Operating Cor	ntroller	7-inch colour touch screen shows setti	ng temperature and measuring te excel-format	mp, temp curve record, data export				
Security Prot	ection	Self-diagnosis function ; freezer ov protection	erload protection; high pressure and device, etc. Security protection for	•				
Closed Circulation	on System	The whole system is full closed circu temp, pressure do not rise up when sy	_					
Refrigera	nt		R-404A / R-507C					
Connection	Size	G1/2	G1/2	G1/2				
Water cooled type ((@ 20 DegC)	-	450 L/H ; 1.5 ~ 4 bar ; G3/8	550 L/H ; 1.5 ~ 4 bar ; G3/8				
Case mate	rial		SUS 304					
Dimension ((mm)	350*650*800	350*650*800	450*650*1200				
Positive Ex-proof	size (mm)	-	700*750*1215	700*750*1215				
Power max s	50 Hz	AC220V 2.9 kW (max)	AC220V 3.3 kW (max)	AC380V 4.5 kW (max)				
Weight (k	g)	55 kg	60 kg	85 kg				

		TC	CU - 1 SEF	RIES MOD	ELS		
Model		TCU-125W / TCU-125	TCU-135W / TCU-135	TCU-155W / TCU-155	TCU-175W / TCU-175	TCU-1A10W / TCU-1A10	TCU-1A15W / TCU-1A15
Medium Temperat	ure Range			-10°C~	+200°C		
Control Mo	ode		Feedback PID +	Our special dynam	nic control calculation	on, PLC controller	
Temp cont	trol		Process tempera	ature control mode	and jacket tempera	ture control mode	
Temp Differ	ence	S	et or control the ten	nperature difference	e between jacket oi	and material proc	ess
Program Ed	ditor		5 F	Programs, each pro	gram can edit 40 s	eps	
Communication	Protocol		M	ODBUS RTU Proto	ocol, RS 485 Interfa	ice	
Material Temp F	eedback		PT100 or	4-20 mA or commu	nication given (Def	ault PT100)	
Temp feedb	oack	The temp of	f 3 points : the inlet	and outlet of equip	ment, reactor mate	rial temp (external	temp sensor)
Medium temp a	ccuracy			+/- 0.5	5 DegC		
Material Temp A	ccuracy			+/- 1	DegC		
Heating Power	er (kW)	2.5	3.5	5.5	7.5	10	15
	200 DegC	2.5	3.5	5.5	7.5	10	15
Cooling Capacity	20 DegC	2.5	3.5	5.5	7.5	10	15
(kW)	-5 DegC	1.5	2.1	3.3	4.2	6	9
Oirrandation Don	()	20 L/min	35 L/min	35 L/min	50 L/min	50 L/min	75 L/min
Circulation Pun	np (max)	2 Bar	2 Bar	2 Bar	2 Bar	2 Bar	2.5 Bar
Compress	sor	Highly / F	Panasonic	Eme	rson copeland / Da	nfoss scroll compre	essor
Expansion \	/alve		Da	anfoss / Emerson th	ermal expansion v	alve	
Evaporat	or		D	ANFOSS / KAORI	Plate Heat Exchan	ger	
Operating Cor	ntroller	7-inch colour to	ouch screen shows	setting temperature excel-	e and measuring te -format	mp, temp curve red	cord, data export
Security Prot	ection	Self-diagnosis fu		erload protection ; h		-	thermal protection
Closed Circulation	on System	-		culation, there is no system is running. T	_		
Refrigera	nt			R-404A / R507C	; Optional : R448A		
Connection	Size	G1/2	G3/4	G3/4	G1	G1	G1
Water-cooled type ((@ 20 DegC)	600 L/H ; 1.5 - 4 bar ; G3/8	800 L/H ; 1.5 - 4 bar ; G1/2	1000 L/H ; 1.5 - 4 bar ; G3/4	1200 L/H ; 1.5 - 4 bar ; G3/4	1600 L/H ; 1.5 - 4 bar ; G3/4	2000 L/H ; 1.5 - 4 bar ; G3/4
Dimension (Air t	type) mm	450*650*1200	500*850*1300	500*850*1300	550*1000*1750	550*1000*1750	700*1000*1750
Dimension (Water	r type) mm	450*650*1200	500*850*1300	500*850*1300	550*1000*1750	700*1000*1750	700*1000*1750
Power max 380	V 50 Hz	AC 220V 3.6 kW	5.6 kW	7.5 kW	10 kW	13 kW	20 kW
Weight (k	g)	115	165	185	235	280	300
Optiona	I			Liquid low le	vel protection		

					TCL	I - 2 SERII	ES MODE	LS					
Model		TCU-225W / TCU-225	TCU-235W / TCU-235	TCU-255W / TCU-255	TCU-275W / TCU-275	TCU-2A10W / TCU-2A10	TCU-2A15W / TCU-2A15	TCU-2A25W / TCU-2A25	TCU-2A38W	TCU-2A60W	TCU-2A95W	TCU-2A130W	TCU-2A200W
Medium Temperat	ture Range						-25°C~+	250°C					
Control Mo	ode				F	eedback PID + Ou	ır special dynamic	control calculatio	n, PLC controller				
Temp con	trol				P	rocess temperatur	e control mode ar	d jacket temperat	ture control mode				
Temp Differ	ence				Set o	control the tempe	rature difference l	etween jacket oil	and material prod	ess			
Program Ed	ditor					5 Prog	grams, each progr	am can edit 40 st	eps				
Communication	Protocol					MOD	BUS RTU Protoc	ol, RS 485 Interfa	се				
Material Temp F	eedback					PT100 or 4-2	0 mA or communi	cation given (Defa	ult PT100)				
Temp feedb	back				The temp of 3 p	oints : the inlet and	d outlet of equipm	ent, reactor mater	rial temp (external	temp sensor)			
Medium temp a	occuracy				+/- 0.5 [DegC					+/- 1 [DegC	
Material Temp A	Accuracy					+/- 1 De	egC					+/- 1.5	DegC
Heating Power	er (kW)	2.5	3.5	5.5	7.5	10	15	25	38	60	95	130	200
	200 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60	95	130	200
	100 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60	95	130	200
Cooling Capacity	50 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60	95	130	200
(kW)	20 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60	95	130	200
	-5 DegC	2	3	4.5	6.6	8	12	19	30	46	70	80	125
	-20 DegC	1	1.8	2.8	3.8	4.6	7	12	16	22	32	43	65
Circulation Pun	np (max)	20 L/min	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	150 L/min	250 L/min	400 L/min	400 L/min	600 L/min
	,	2 Bar	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compress	sor	Highly			Emerse	on copeland / Danf	oss scroll compre	ssor			Eme	rson Copeland / Ca	arlyle
Expansion \	Valve					Danfo	ss / Emerson the	mal expansion va	ilve				
Evaporat	tor					DAN	FOSS / KAORI PI	ate Heat Exchang	jer				
Operating Cor	ntroller			7-inch	colour touch scree	n shows setting ter	mperature and me	easuring temp, ten	mp curve record, d	ata export excel-fo	rmat		
Security Prot	ection		Se	elf-diagnosis functio	n ; freezer overload	d protection ; high բ	oressure switch;	overload relay; th	ermal protection d	levice, etc. Security	y protection function	n	
Closed Circulation	on System	The whole s	ystem is full closed	circulation, there is	no oil mist at high	temp and no water	vapour at low ten	np, pressure do no	ot rise up when sy	stem is running. Th	ne system will supp	bly oil automatically	y at low temp
Refrigera	int					F	R-404A ; Optional	: R448A / R125					
Connection	Size	G1/2	G3/4	G3/4	G1	G1	G1	DN32	DN40	DN50	DN65	DN65	DN65
Water-cooled type	(@ 20 DegC)	600 L/H ; 1.5 - 4	800 L/H ; 1.5 - 4	1000 L/H ; 1.5 - 4	1200 L/H ; 1.5 - 4	1600 L/H ; 1.5 - 4	2200 L/H ; 1.5 -	6 m3/h ; 1.5 - 4		14 m3/h ; 1.5 - 4	20 m3/h ; 1.5 - 4	,	36 m3/h ; 1.5 - 4
		bar ; G3/8	bar ; G1/2	bar ; G1/2	bar ; G3/4	bar ; G3/4	4 bar ; G3/4	bar; DN32	bar ; DN40	bar ; DN50	bar ; DN65	bar ; DN65	bar ; DN80
Dimension (Air t	type) mm	500*850*1300	550*680*1450	550*680*1450	550*1000*1750	700*1000*1750	800*1200*1850	1000*1500*185 0	-	-	-	-	-
Dimension (Water	r type) mm	450*650*1200	500*850*1300	500*850*1300	550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850	800*1200*1850	2050*1450*2050	2050*1450*2050	2750*1600*225	2750*1600*225
Power max 380)V 50 Hz	AC 220V 4 kW	6 kW	8 kW	11 kW	14 kW	21 kW	34 kW	52 kW	79 kW	123 kW	165 kW	260 kW
Weight (k	g)	115	165	185	230	280	300	550	750	1000	1250	1580	2150
Optiona	ıl					Liquic	l low level protect	on					

					TCU-	2 SERIES	S 'V' MODELS	ELS					
Model		TCU-225WV / TCU-225V	TCU-235WV / TCU-235V	TCU-255WV / TCU-255V	TCU-275WV / TCU-275V	TCU-2A10WV / TCU-2A10V	TCU-2A15WV / TCU-2A15V	TCU-2A25WV / TCU-2A25V	TCU-2A38WV	TCU-2A60WV	TCU-2A95WV	TCU-2A130WV	TCU-2A200WV
Medium Temperature Range	ure Range						-25°C~ +300°C	300℃					
Control Mode	ode .				ιĹ	Feedback PID + Our special dynamic control calculation, PLC controller	ır special dynamic	control calculation	η, PLC controller				
Temp control	rol				ď	Process temperature control mode and jacket temperature control mode	e control mode an	nd jacket temperatı	ure control mode				
Temp Difference	ance				Set or	Set or control the temperature difference between jacket oil and material process	rature difference t	between jacket oil.	and material proc	SSG			
Program Editor	litor					5 Prog	grams, each progr	5 Programs, each program can edit 40 steps	sdi				
Communication Protocol	Protocol					MOD	BUS RTU Protoc	MODBUS RTU Protocol, RS 485 Interface	Д				
Material Temp Feedback	eedback					PT100 or 4-20	0 mA or communi	PT100 or 4-20 mA or communication given (Default PT100)	ult PT100)				
Temp feedback	ack				The temp of 3 p	The temp of 3 points : the inlet and outlet of equipment, reactor material temp (external temp sensor)	d outlet of equipm	ent, reactor materi	al temp (external	temp sensor)			
Medium temp accuracy	ccuracy				+/- 0.5 DegC) pgc					+/- 1 DegC	CogC	
Material Temp Accuracy	ccuracy					+/- 1 DegC	ogc					+/- 1.5 DegC	DegC
Heating Power (kW)	r (kW)	2.5	3.5	5.5	7.5	10	15	25	38	09	95	130	200
	300 DegC	2.5	3.5	5.5	7.5	10	15	25	38	09	92	130	200
Cooling Capacity	20 DegC	2.5	3.5	5.5	7.5	10	15	25	38	09	96	130	200
(kW)	-5 DegC	2	3	4.5	6.6	8	12	19	30	46	70	80	125
	-20 DegC	-	1.8	2.8	3.8	4.6	7	12	16	22	32	43	65
Circulation Pump (max)	(max)	20 L/min	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	150 L/min	250 L/min	400 L/min	400 L/min	600 L/min
	(vmm) d	2 Bar	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compressor	or					Emerso	on copeland / Dan	Emerson copeland / Danfoss scroll compressor	ssor				
Expansion Valve	alve					Danfo	ss / Emerson ther	Danfoss / Emerson thermal expansion valve	lve				
Evaporator	or					DAN	FOSS / KAORI PI	DANFOSS / KAORI Plate Heat Exchanger	er				
Operating Controller	itroller			7-inch	7-inch colour touch screen shows setting temperature and measuring temp, temp curve record, data export excel-format	n shows setting ter	mperature and me	asuring temp, tem	ıp curve record, dı	ata export excel-for	mat		
Security Protection	ection		, š	M-diagnosis functio	Self-diagnosis function; freezer overload protection; high pressure switch; overload relay; thermal protection device, etc. Security protection function	protection; high p	pressure switch; c	verload relay ; thε	ermal protection do	evice, etc. Security	protection functio	E	
Closed Circulation System	n System	The whole sy	stem is full closed	circulation, there is	The whole system is full closed circulation, there is no oil mist at high temp and no water vapour at low temp, pressure do not rise up when system is running. The system will supply oil automatically at low temp	emp and no water	vapour at low terr	ηρ, pressure do no	t rise up when sys	≭em is running. Th	e system will supp	ny oil automatically	at low temp
Refrigerant	nt						R-404A / R507C	R507C					
Connection Size	Size	G1/2	G3/4	G3/4	19	19	G1	DN32	DN40	09NQ	9NQ	DN65	DN65
Water-cooled type (@ 20 DegC)	@ 20 DegC)	600 L/H;1.5-4 bar: G3/8	800 L/H; 1.5 - 4 bar: G1/2	1000 L/H; 1.5 - 4 bar; G1/2	1200 L/H; 1.5 - 4 bar; G3/4	1600 L/H; 1.5 - 4 bar; G3/4	2200 L/H;1.5 - 4 bar; G3/4	6 m3/h; 1.5 - 4 bar; DN32	10 m3/h; 1.5 - 4 bar; DN40	14 m3/h ; 1.5 - 4 bar ; DN50	20 m3/h; 1.5 - 4 bar: DN65	28 m3/h;1.5 - 4 bar; DN65	36 m3/h; 1.5 - 4 bar; DN80
Dimension (Air type) mm	ype) mm	450*850*1300	450*850*1300	550*1000*1750	550*1000*1750	700*1000*1750	800*1200*1850	1000*1500*185 0					
Dimension (Water type) mm	type) mm	450*850*1300	450*850*1300	450*850*1300	450*850*1300	550*1000*1750	550*1000*1750	800*1200*1850	1000*1500*185	1500*1000*1850	2050*1450*2050	2450*1450*205	2750*1600*225
Power max 380V 50 Hz	V 50 Hz	AC 220V 4 kW	6 kW	6 kW	11 kW	14 kW	21 kW	34 kW	52 kW	79 kW	123 kW	165 kW	260 kW
Weight (kg)	(E	130	180	195	260	320	390	620	820	1100	1350	1680	2250
Optional						Liquid	Liquid low level protection	ion					

					TCU - 5	SERIES M	ODELS					
Model		TCU-535W / TCU-535	TCU-555W / TCU-555	TCU-575W / TCU-575	TCU-5A10W / TCU-5A10	TCU-5A15W / TCU-5A15	TCU-4A25W / TCU-4A25	TCU-4A38W	TCU-4A60W	TCU-4A95W	TCU-4A130W	TCU-4A200W
Medium Temperat	ture Range						45°C~ +250°C					
Control Mo	ode				Feedback	PID + Our special	dynamic control o	calculation, PLC c	ontroller			
Temp con	trol				Process to	emperature control	mode and jacket	temperature contr	ol mode			
Temp Differ	ence				Set or control t	the temperature dif	ference between j	jacket oil and mat	erial process			
Program E	ditor					5 Programs, ea	ch program can e	edit 40 steps				
Communication	Protocol					MODBUS RT	U Protocol, RS 48	35 Interface				
Material Temp F	eedback				PT1	00 or 4-20 mA or o	ommunication giv	ven (Default PT10	0)			
Temp feeds	oack			The t	emp of 3 points : th	e inlet and outlet o	f equipment, reac	tor material temp	(external temp ser	nsor)		
Medium temp a	ccuracy				+/- 0.5 DegC					+/- 1	DegC	
Material Temp A	Accuracy					+/- 1 DegC					+/- 1.5	DegC
Heating Power	er (kW)	3.5	5.5	7.5	10	15	25	38	60	95	130	200
	250 DegC	3.5	5.5	7.5	10	15	25	38	60	95	130	200
	20 DegC	3.5	5.5	7.5	10	15	25	38	60	95	130	200
Cooling Capacity (kW)	0 DegC	3	5	7	10	15	25	38	60	95	130	200
(KW)	-20 DegC	1.5	2.9	4.2	6	11	16	26	34	50	70	120
	-40 DegC	0.45	0.9	1.5	2	3.8	4.7	9	12	18	24	43
Circulation Pun	nn (max)	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	200 L/min	250 L/min	400 L/min	400 L/min	600 L/min
On Guidion 1 di	iip (iiiux)	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compress	sor					Emerson copela	nd / Danfoss scro	Il compressor				
Expansion \	/alve					Danfoss / Eme	rson thermal expa	ansion valve				
Evaporat	or					DANFOSS / K	AORI Plate Heat	Exchanger				
Operating Co	ntroller			7-inch colour to	ouch screen shows	setting temperatur	e and measuring t	temp, temp curve	record, data expo	rt excel-format		
Security Prot	ection		Self-diagno	osis function ; freezo	er overload protecti	on ; high pressure	switch ; overload	relay ; thermal pro	otection device, et	c. Security protection	on function	
Closed Circulation	on System	The whole system	m is full closed circu	ulation, there is no	oil mist at high temp	and no water vap	our at low temp, p	oressure do not ris	e up when systen	n is running. The sy	stem will supply o	il automatically at
Refrigera	nt					F	R-404A / R507C		_			
Connection	Size	G3/4	G3/4	G3/4	G1	G1	DN32	DN50	DN50	DN65	DN65	DN65
Water-cooled type	(@ 20 DegC)	800 L/H ; 1.5 - 4 bar ; G1/2	1500 L/H ; 1.5 - 4 bar ; G3/4	1800 L/H ; 1.5 - 4 bar ; G3/4	2600 L/H ; 1.5 - 4 bar ; G1	3200 L/H ; 1.5 - 4 bar ; G1	7 m3/h ; 1.5 - 4 bar ; DN40	12 m3/h ; 1.5 - 4 bar ; DN50	17 m3/h ; 1.5 - 4 bar ; DN65	24 m3/h ; 1.5 - 4 bar ; DN65	32 m3/h ; 1.5 - 4 bar ; DN80	42 m3/h ; 1.5 - 4 bar ; DN100
Dimension (Air	type) mm	550*1000*1750	550*1000*1750	550*1000*1750	700*1000*1750	800*1200*1850	800*1200*1850	-	-	-	-	-
Dimension (Water	r type) mm	550*1000*1750	550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850	800*1200*1850	1500*1000*185	2050*1450*2050	2450*1450*2050	3000*1600*225
Power max 380	V 50 Hz	6.5 kW	9 kW	11.5 kW	16 kW	23 kW	36 kW	55 kW	89 kW	135 kW	180 kW	280 kW
Weight (k	g)	180	195	260	320	390	620	820	1100	1350	1680	2250
Optiona	ıl					Liquid	l low level protect	ion				

		TCU-	5 SERIES '	/' MODELS		
Model		TCU-555WV	TCU-575WV	TCU-5A10WV	TCU-5A15WV	TCU-5A25WV
Medium Temperat	ure Range		-45°C~ +300	°C (The system add pre	essure 3 bar)	
Control Mo	ode	F	eedback PID + Our spo	ecial dynamic control ca	alculation, PLC control	ler
Temp cont	trol	Р	rocess temperature co	ntrol mode and jacket te	emperature control mo	de
Temp Differe	ence	Set or	control the temperatur	e difference between ja	cket oil and material p	process
Program Ed	ditor		5 Program	s, each program can ed	dit 40 steps	
Communication	Protocol		MODBUS	RTU Protocol, RS 485	Interface	
Material Temp F	eedback		PT100 or 4-20 mA	or communication give	en (Default PT100)	
Temp feedb	oack	The temp of 3 p	oints : the inlet and out	let of equipment, reacto	or material temp (exter	nal temp sensor)
Medium temp a	ccuracy			+/- 0.5 DegC		
Material Temp A	ccuracy			+/- 1 DegC		
Heating Powe	er (kW)	5.5	7.5	10	15	25
	250 DegC	5.5	7.5	10	15	25
	100 DegC	5.5	7.5	10	15	25
Cooling Capacity	20 DegC	5.5	7.5	10	15	25
(kW)	0 DegC	5	7	10	15	25
	-20 DegC	2.9	4.2	6	11	16
	-40 DegC	0.9	1.5	2	3.8	4.7
		35 L/min	50 L/min	60 L/min	110 L/min	150 L/min
Circulation Pun	np (max)	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compress	sor		Emerson co	peland / Danfoss scroll	compressor	
Expansion \	/alve		Danfoss /	Emerson thermal expar	nsion valve	
Evaporate	or		DANFOS	S / KAORI Plate Heat E	xchanger	
Operating Cor	ntroller	7-inch colour touch sc	reen shows setting tem	perature and measurin format	g temp, temp curve re	cord, data export excel-
Security Prote	ection	Self-diagnosis functi	-	otection ; high pressure		ay ; thermal protection
Closed Circulatio	on System	-		there is no oil mist at h	-	
Refrigera	nt		R-404	A / R507C ; Optional : I	R448A	
Connection	Size	G3/4	G3/4	G1	G1	DN32
Water-cooled type ((@ 20 DegC)	1500 L/H ; 1.5 - 4 bar ; G3/4	1800 L/H ; 1.5 - 4 bar ; G3/4	2600 L/H ; 1.5 - 4 bar ; G1	3200 L/H ; 1.5 - 4 bar ; G1	7 m3/h ; 1.5 - 4 bar ; DN40
Dimension ((mm)	450*850*1300	450*850*1300	550*1000*1750	550*1000*1750	800*1200*1850
Power max 380	V 50 Hz	9.5 kW	12 kW	17 kW	24 kW	38 kW
Weight (k	g)	245	285	320	360	420
Optiona	I		L	iquid low level protection	n	

				TCU - 6	SERIES IV	IODELS				
Model		TCU-625W / TCU-625	TCU-635W / TCU-635	TCU-655W / TCU-655	TCU-675W / TCU-675	TCU-6A10W /	TCU-6A15W	TCU-6A25W	TCU-6A38W	TCU-6A60W
Medium Temperat	ure Range					-60°C~ +250°C				
Control Mo	ode			Feedbac	k PID + Our specia	dynamic control c	alculation, PLC co	ontroller		
Temp cont	rol			Process	temperature control	mode and jacket t	emperature contr	ol mode		
Temp Differe	ence			Set or control	the temperature di	fference between ja	acket oil and mate	erial process		
Program Ed	litor				5 Programs, ea	ach program can e	dit 40 steps			
Communication	Protocol				MODBUS RT	U Protocol, RS 48	5 Interface			
Material Temp F	eedback			PT	100 or 4-20 mA or	communication give	en (Default PT10	0)		
Temp feedb	ack		The	temp of 3 points : t	he inlet and outlet c	of equipment, react	or material temp ((external temp ser	isor)	
Medium temp a	ccuracy				+/- 0.5 [DegC				+/- 1 DegC
Material Temp A										
Heating Powe	r (kW)	2.5	3.5	5.5	7.5	10	15	25	38	60
	250 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60
Cooling Capacity	100 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60
(kW)	20 DegC	2.5	3.5	5.5	7.5	10	15	25	38	60
(,	-40 DegC	0.95	1.45	2.3	3.1	4.8	7.8	18	23	31
	-55 DegC	0.25	0.5	0.75	0.9	1.5	2.8	6	8	11
Circulation Pum	ıp (max)	20 L/min	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	200 L/min	250 L/min
Compress	or	2 Bar	2 Bar	2 Bar	2 Bar Emerson copela	2.5 Bar and / Danfoss scrol	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Expansion V						erson thermal expa	·			
Evaporate						KAORI Plate Heat I				
Operating Cor			7-inch colour t	ouch screen shows	s setting temperatur			record, data expo	t excel-format	
Security Prote	ection	Self-diagn	osis function ; freez	er overload protec	tion; high pressure	switch ; overload r	elay ; thermal pro	tection device, etc	c. Security protecti	on function
Closed Circulatio	n System	The whole syste	em is full closed circ	ulation, there is no	_	p and no water vap	· ·	pressure do not ri	se up when syster	m is running. The
Refrigera	nt					R-404A / R507C				
Connection	Size	G3/4	G3/4	G3/4	G1	G1	DN32	DN50	DN50	DN65
Water-cooled type (@ 20 DegC)	800 L/H ; 1.5 - 4 bar ; G1/2	1500 L/H ; 1.5 - 4 bar ; G3/4	1800 L/H ; 1.5 - 4 bar ; G3/4	2600 L/H ; 1.5 - 4 bar ; G1	3200 L/H ; 1.5 - 4 bar ; G1	7 m3/h ; 1.5 - 4 bar ; DN40	12 m3/h ; 1.5 - 4 bar ; DN50	17 m3/h ; 1.5 - 4 bar ; DN65	24 m3/h ; 1.5 - 4 bar ; DN65
Dimension (Air t	ype) mm	550*1000*1750	550*1000*1750	550*1000*1750	700*1000*1750	800*1200*1850	800*1200*1850	-	-	-
Dimension (Water	type) mm	550*1000*1750	550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850	800*1200*1850	1500*1000*185	2050*1450*2050
Power max 380	V 50 Hz	6.5 kW	9 kW	11.5 kW	16 kW	23 kW	36 kW	55 kW	89 kW	135 kW
Weight (k	g)	180	195	260	320	390	620	820	1100	1350
Optiona					Liquid	d low level protection	on			

		TCU	- 6 SERIES 'V	" MODELS		
Model		TCU-655WV	TCU-675WV	TCU-6A10WV	TCU-6A15WV	TCU-6A25WV
Medium Tempera	ture Range		-60°C~ +30	00°C (System add pressu	re 3 bar)	
Control M	ode		Feedback PID + Our spe	cial dynamic control calc	ulation, PLC controller	
Temp con	Temp control Process temperature control mode and jacket temperature control mode Set or control the temperature difference between jacket oil and material process Program Editor 5 Programs, each program can edit 40 steps					
Temp Differ						
Program E						
Communication	Protocol		MODBUS	RTU Protocol, RS 485 Ir	nterface	
				-		
Material Temp F	eedback		P1100 or 4-20 mA	or communication given	(Default P1100)	
Temp feedl	oack	The temp of 3	points : the inlet and outl	et of equipment, reactor i	material temp (externa	l temp sensor)
Medium temp a	nccuracy			+/- 0.5 DegC		
Material Temp /	Accuracy			+/- 1 DegC		
Heating Powe	er (kW)	5.5	7.5	10	15	25
	300 DegC	5.5	7.5	10	15	25
Cooling Capacity	100 DegC	5.5	7.5	10	15	25
(kW)	20 DegC	5.5	7.5	10	15	25
	-55 DegC	0.75	0.9	1.5	2.8	6
Oirendation Bur	(35 L/min	50 L/min	60 L/min	110 L/min	150 L/min
Circulation Pur	np (max)	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compres	sor		Emerson cop	peland / Danfoss scroll co	ompressor	
Expansion '	Valve		Danfoss / E	merson thermal expansi	on valve	
Evaporat	or		DANFOSS	S / KAORI Plate Heat Exc	changer	
Operating Co	ntroller	7-inch colour touch scre	en shows setting tempera	ature and measuring tem	p, temp curve record,	data export excel-forma
Security Prot	ection	Self-diagnosis function	; freezer overload protec	tion; high pressure switc Security protection function		ermal protection device,
Closed Circulation	on System		Il closed circulation, there e up when system is runr	-		
Refrigera	int			R-404A / R507C		
Connection	Size	G3/4	G1	G1	G1	DN32 PN10
Water-cooled type	(@ 20 DegC)	1800 L/H ; 1.5 - 4 bar ; G3/4	2100 L/H ; 1.5 - 4 bar ; G3/4	3000 L/H ; 1.5 - 4 bar ; G1	4000 L/H ; 1.5 - 4 bar ; G1 1/8	8.5 m3/h ; 1.5 - 4 bar ; DN40
Dimension	(mm)	550*1000*1750	550*1000*1750	700*1000*1750	800*1200*1850	1000*1500*1850
Power max 380)V 50 Hz	10 kW	14 kW	18 kW	26 kW	40 kW
Weight (k	g)	265	305	340	380	980
Optiona	al		Li	quid low level protection		

			TCU - 7 S	ERIES MOI	DELS		
Model		TCU-725W	TCU-735W / TCU-735	TCU-755W / TCU-755	TCU-775W / TCU-775	TCU-7A10W	TCU-7A15W
Medium Tempera	ture Range			-70°C	~ +250°C		
Control Mo	ode		Feedback P	ID + Our special dyna	mic control calculation	n, PLC controller	
Temp con	trol		Process tem	perature control mode	e and jacket temperat	ure control mode	
Temp Differ	Temp control Process temperature control mode and jacket temperature control mode Temp Difference Set or control the temperature difference between jacket oil and material process						
Program E	ditor			5 Programs, each p	rogram can edit 40 ste	eps	
Communication	Protocol			MODBUS RTU Pro	otocol, RS 485 Interfac	ce	
Material Temp F	eedback		PT100	or 4-20 mA or comm	unication given (Defa	ult PT100)	
Temp feedl	oack	The t	emp of 3 points : the	inlet and outlet of equ	ipment, reactor mater	ial temp (external temp se	ensor)
Medium temp a	ccuracy			+/- (0.5 DegC		
Material Temp A	Temp feedback The temp of 3 points: the inlet and outlet of equipment, reactor material temp (external temp sensor) ### defium temp accuracy ### 1 DegC						
Heating Power	er (kW)	2.5	3.5	5.5	7.5	10	15
	250 DegC	2.5	3.5	5.5	7.5	10	15
Cooling Capacity	100 DegC	2.5	3.5	5.5	7.5	10	15
(kW)	20 DegC	2.5	3.5	5.5	7.5	10	15
	-60 DegC	0.4	0.55	0.75	0.9	1.2	2.8
		20 L/min	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min
Circulation Pun	np (max)	2 Bar	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar
Compress	sor			Tecumseh / Emerson	Scroll flexible compre	essor	
Expansion \	Valve			Danfoss / Emerson	thermal expansion va	lve	
Evaporat	or			DANFOSS / KAOP	I Plate Heat Exchang	er	
Operating Co	ntroller	7-inch colour to	ouch screen shows se	etting temperature and	I measuring temp, tem	np curve record, data exp	ort excel-format
Security Prot	ection	Self-diagnosis functi	on ; freezer overload		sure switch ; overload ion function	relay ; thermal protection	device, etc. Security
Closed Circulation	on System	The whole system is full			gh temp and no water	vapour at low temp, pres	sure do not rise up whe
Refrigera	int			R-404A / R23, Option	onal : R125/R23 mixtu	ire	
Connection	Size	G1/2	G3/4	G3/4	G1	G1	G1
Water-cooled type	(@ 20 DegC)	900 L/H ; 1.5 - 4 bar ; G1/2	1200 L/H ; 1.5 - 4 bar ; G3/4	1800 L/H ; 1.5 - 4 bar ; G3/4	2300 L/H ; 1.5 - 4 bar ; G3/4	3200 L/H ; 1.5 - 4 bar ; G1	4500 L/H ; 1.5 - 4 bar G1 1/8
Dimension (water	r type) mm	500*850*1350	550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850
Dimension (air t	type) mm	-	700*1000*1750	700*1000*1750	700*1000*1750	-	-
Power max 380	V 50 Hz	220V 5.2 kW	8 kW	11 kW	15 kW	20 kW	28 kW
Weight (k	(a)	190	275	320	370	370	420

				-)				
Model		TCU-825W	TCU-835W	TCU-855W	TCU-875W	TCU-8A10W	TCU-8A15W	TCU-8A25W	TCU-8A38W	TCU-8A60W	TCU-8A80W
Medium Temperature Range	ture Range					-80°C~	-80°C~ +250°C				
Control Mode	epo				Feedback PID + (Our special dynami	Feedback PID + Our special dynamic control calculation, PLC controller	, PLC controller			
Temp control	itrol				Process temperat	ture control mode a	Process temperature control mode and jacket temperature control mode	ire control mode			
Temp Difference	rence			Se	et or control the temp	perature difference	Set or control the temperature difference between jacket oil and material process	and material proce	SS		
Program Editor	ditor				5 Pr	rograms, each prog	5 Programs, each program can edit 40 steps	sd			
Communication Protocol	Protocol				W	ODBUS RTU Proto	MODBUS RTU Protocol, RS 485 Interface	Φ			
Material Temp Feedback	Feedback				PT100 or 4	-20 mA or commur	PT100 or 4-20 mA or communication given (Default PT100)	ult PT100)			
Temp feedback	back			The temp of	3 points : the inlet a	and outlet of equipn	The temp of 3 points : the inlet and outlet of equipment, reactor material temp (external temp sensor)	al temp (external to	emp sensor)		
Medium temp accuracy	accuracy				+/- 0.5 DegC	DegC				11-/+	+/- 1 DegC
Material Temp Accuracy	Accuracy					+/- 1 DegC	DegC				
Heating Power (kW)	er (kW)	3	3.5	5.5	7.5	10	15	25	38	09	80
	250 DegC	2.5	3.5	5.5	7.5	10	15	25	38	09	80
Cooling Capacity	20 DegC	2.5	3.5	5.5	7.5	10	15	25	38	09	80
(kW)	-60 DegC	-	1.4	1.6	3	3.5	5.8	10	16	23	32
	-75 DegC	0.3	0.42	0.7	1.3	1.5	2.4	5	8	11	16
Circulation Gramma (max)	(2000)	20 L/min	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	250 L/min	400 L/min	400 L/min
	du (waar)	2 Bar	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compressor	sor				Emer	son copeland / Da	Emerson copeland / Danfoss scroll compressor	ssor			
Expansion Valve	Valve				Dar	nfoss / Emerson the	Danfoss / Emerson thermal expansion valve	e,			
Evaporator	tor				DA	NFOSS / KAORI F	DANFOSS / KAORI Plate Heat Exchanger	ar ar			
Operating Controller	ntroller		7-ir	ich colour touch sc	reen shows setting	temperature and m	7-inch colour touch screen shows setting temperature and measuring temp, temp curve record, data export excel-format	p curve record, da	ta export excel-for	mat	
Security Protection	tection		Self-diagnosis func	ction ; freezer overl	load protection ; hig	h pressure switch ;	Self-diagnosis function ; freezer overload protection ; high pressure switch ; overload relay ; thermal protection device, etc. Security protection function	rmal protection de	vice, etc. Security	protection functior	_
Closed Circulation System	on System	The whole syste	The whole system is full closed circ	ulation, there is no	oil mist at high tem	p and no water vap automatically	culation, there is no oil mist at high temp and no water vapour at low temp, pressure do not rise up when system is running. The system will supply oil automatically at low temp	essure do not rise	up when system is	s running. The syst	tem will supply oil
Refrigerant	ant				R-404/	A / R508B, Optional	R-404A / R508B, Optional : R125/R23/R14 mixture	ixture			
Connection Size	Size	G1/2	G3/4	G3/4	Ğ1	Ğ1	G1	DN32	DN40	DN65	DN65
Water-cooled type (@ 20 DegC)	(@ 20 DegC)	900 L/H; 1.5 - 4 bar; G1/2	1200 L/H ; 1.5 - 4 bar ; G3/4	1800 L/H ; 1.5 - 4 bar ; G3/4	2300 L/H;1.5 - 4 bar; G1	3200 L/H;1.5-4 bar;G1	4500 L/H ; 1.5 - 4 bar ; G1 1/8	8 m3/h ; 1.5 - 4 bar ; DN40	12 m3/h ; 1.5 - 4 bar ; DN50	20 m3/h; 1.5 - 4 bar; DN65	30 m3/h ; 1.5 - 4 bar ; DN80
Dimension (mm)	(mm)	550*1000*1750	550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	1500*1000*1850	1500*1000*185	2050*1450*205	2450*1450*2250	3000*1600*2250
Power max 380V 50 Hz	0V 50 Hz	7.5 kW	10 kW	13 kW	19 kW	25 kW	37 kW	50 kW	71 KW	110 kW	150 kW
Weight (kg)	(g)	240	285	345	200	009	950	1300	1550	2200	2850
Optional	al					Liquid low lev	Liquid low level protection				

				TC	TCU - 9 SER	9 SERIES MODELS	ELS				
Nodel		TCU-925W	TCU-935W	TCU-955W	TCU-975W	TCU-9A10W	TCU-9A15W	TCU-9A25W	TCU-9A38W	TCU-9A60W	TCU-9A80W
Medium Temperature Range	ure Range					-90°C~ +250°C	+250°C				
Control Mode	de				Feedback PID +	Our special dynami	Feedback PID + Our special dynamic control calculation, PLC controller	, PLC controller			
Temp control	rol				Process tempera	ture control mode a	Process temperature control mode and jacket temperature control mode	ure control mode			
Temp Difference	nce			Sei	t or control the tem	perature difference	Set or control the temperature difference between jacket oil and material process	and material proce	SS		
Program Editor	itor				5 P	rograms, each prog	5 Programs, each program can edit 40 steps	sdi			
Communication Protocol	Protocol				M	ODBUS RTU Protoc	MODBUS RTU Protocol, RS 485 Interface	ω			
Material Temp Feedback	edback				PT100 or 4	1-20 mA or commun	PT100 or 4-20 mA or communication given (Default PT100)	ult PT100)			
Temp feedback	ack			The temp of	3 points : the inlet	and outlet of equipm	The temp of 3 points : the inlet and outlet of equipment, reactor material temp (external temp sensor)	al temp (external te	emp sensor)		
Medium temp accuracy	scuracy				+/- 0.5	+/- 0.5 DegC				+/- 1 DegC	OegC
Material Temp Accuracy	ccuracy					+/- 1 DegC	DegC				
Heating Power (kW)	r (kW)	ε	3.5	5.5	2.5	10	15	25	38	09	08
	250 DegC	2.5	3.5	5.5	7.5	10	15	25	38	09	80
Hood	0 DegC	2.5	3.5	5.5	7.5	10	15	25	38	09	80
_	-60 DegC	1	1.9	2.8	3.2	4.2	9	10	16	24	32
]	-80 DegC	0.35	0.5	0.8	1.2	1.6	2.1	3.5	9	Ţ.	15
	-85 DegC	0.2	0.3	0.5	0.7	0.85	1.3	1.9	3.5	9	8
Circulation Dump (max)	(vem)	20 L/min	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	250 L/min	400 L/min	400 L/min
	(vmm) d	2 Bar	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compressor	or				Em	nerson scroll flexible	Emerson scroll flexible compressor / Carlyle	/le			
Expansion Valve	alve			Emerson thema	l expansion valve	/ Emerson electroni	Emerson thermal expansion valve / Emerson electronic expansion valve / Danfoss thermal expansion valve	Danfoss thermal	xpansion valve		
Evaporator	ır				Dγ	ANFOSS / KAORI P	DANFOSS / KAORI Plate Heat Exchanger	e.			
Operating Controller	troller		ni-7	ch colour touch scr	een shows setting	temperature and m	7-inch colour touch screen shows setting temperature and measuring temp, temp curve record, data export excel-format	p curve record, da	ta export excel-for	rmat	
Security Protection	ection		Self-diagnosis func	tion; freezer overk	oad protection ; hig	th pressure switch;	Self-diagnosis function; freezer overload protection; high pressure switch; overload relay; thermal protection device, etc. Security protection function	rmal protection de	vice, etc. Security	r protection function	_
Closed Circulation System	n System	The whole system is ful	-	ulation, there is no	oil mist at high terr	np and no water vapour at low te automatically at low temp	closed circulation, there is no oil mist at high temp and no water vapour at low temp, pressure do not rise up when system is running. The system will supply oil a automatically at low temp	essure do not rise	up when system i:	s running. The syst	em will supply oil
Refrigerant	#				R-404,	A / R508B, Optional	R-404A / R508B, Optional : R125/R23/R14 mixture	ixture			
Connection Size	Size	63/4	63/4	G3/4	G1	G1	G1	DN32	DN40	DN65	DN65
Water-cooled type (@ 20 DegC)	@ 20 DegC)	1100 L/H; 1.5 - 4 bar; G3/4	1900 L/H ; 1.5 - 4 bar ; G3/4	2400 L/H; 1.5 - 4 bar; G3/4	3200 L/H;1.5-4 bar;G1	4000 L/H; 1.5 - 4 bar; G1 1/8	8 m3/h ;1.5 - 4 bar ; DN40	12 m3/h ; 1.5 - 4 bar ; DN50	20 m3/h; 1.5 - 4 bar; DN65	30 m3/h; 1.5 - 4 bar; DN80	40 m3/h; 1.5 - 4 bar; DN100
Dimension (mm)	mm)	550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	700*1000*1750	1000*1500*1850	2050*1450*205	2050*1450*205	24	3000*1600*2250
Power max 380V 50 Hz	V 50 Hz	8 KW	11 kW	16 kW	21 kW	27 kW	38 KW	54 KW	79 kW	120 kW	170 kW
Weight (kg)	(((260	285	365	570	680	950	1400	1750	2400	3150
Optional						Liquid low level protection	rel protection				

				TCU - 10	TCU - 10 SERIES MODELS	MODELS				
ІвроW		TCU-1035W	TCU-1055W	TCU-1075W	TCU-10A10W	TCU-10A15W	TCU-10A25W	TCU-10A38W	TCU-10A60W	TCU-10A80W
Medium Temperature Range	ture Range					-100°C~ +100°C				
Control Mode	ode			Feedbac	Feedback PID + Our special dynamic control calculation, PLC controller	dynamic control c	alculation, PLC cor	ntroller		
Temp control	trol			Process	Process temperature control mode and jacket temperature control mode	I mode and jacket t	emperature contro	l mode		
Temp Difference	ence			Set or contro	Set or control the temperature difference between jacket oil and material process	ifference between ja	acket oil and mater	ial process		
Program Editor	ditor				5 Programs, e	5 Programs, each program can edit 40 steps	dit 40 steps			
Communication Protocol	Protocol				MODBUS R1	MODBUS RTU Protocol, RS 485 Interface	5 Interface			
Material Temp Feedback	eedback			П	PT100 or 4-20 mA or communication given (Default PT100)	communication giv	en (Default PT100)			
Temp feedback	oack		The	temp of 3 points : t	The temp of 3 points : the inlet and outlet of equipment, reactor material temp (external temp sensor)	of equipment, react	or material temp (e	xternal temp sens	or)	
Medium temp accuracy	ıccuracy				+/- 0.5 DegC				+/- 1 DegC	OegC
Material Temp Accuracy	Accuracy					+/- 1 DegC				
Heating Power (kW)	er (kW)	3.5	5.5	7.5	10	15	25	38	09	80
	100 DegC	3.5	5.5	7.5	10	15	25	38	09	80
Sellon Confliction	_	3.5	5.5	7.5	10	15	25	38	90	80
Cooling Capacity		1.9	2.8	3.2	4.1	5	8	13	22	30
	-90 DegC	0.7	1.2	1.2	2	ဗ	4.8	7.5	12	16
	-95 DegC	0.45	0.7	0.7	1.2	1.8	2.9	4.5	7.2	9.5
(your) amil a noiteline i	(2007)	35 L/min	35 L/min	50 L/min	60 L/min	110 L/min	150 L/min	250 L/min	400 L/min	400 L/min
	(vn) d	2 Bar	2 Bar	2 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar	2.5 Bar
Compressor	sor				Emerson scro	Emerson scroll flexible compressor / Carlyle	sor / Carlyle			
Expansion Valve	Valve		Emerso	on thermal expansic	Emerson thermal expansion valve / Emerson electronic expansion valve / Danfoss thermal expansion valve	electronic expansic	on valve / Danfoss	thermal expansior	ı valve	
Evaporator	or				DANFOSS /	DANFOSS / KAORI Plate Heat Exchanger	Exchanger			
Operating Controller	ntroller		7-inch colour	touch screen show	7-inch colour touch screen shows setting temperature and measuring temp, temp curve record, data export excel-format	re and measuring t	emp, temp curve re	ecord, data export	excel-format	
Security Protection	ection	Self-diagr	nosis function ; free	zer overload protec	Self-diagnosis function; freezer overload protection; high pressure switch; overload relay; thermal protection device, etc. Security protection function	switch; overload r	elay ; thermal prot	ection device, etc.	Security protection	function
Closed Circulation System	on System	The whole syst	em is full closed cir	culation, there is no	system is full closed circulation, there is no oil mist at high temp and no water vapour at low temp, pressure do not rise up when system is running. The system is ystem will supply oil automatically at low temp	mist at high temp and no water vapour at low te system will supply oil automatically at low temp	pour at low temp, p / at low temp	ressure do not ris	e up when system	is running. The
Refrigerant	ŧ				R-404A / R23 / R14	R-404A / R23 / R14, Optional : R125/R23/R14 mixture	723/R14 mixture			
Connection Size	Size	G3/4	G3/4	G1	Ğ1	DN32	DN32	DN40	DN65	DN65
Water-cooled type (@ 20 DegC)	(@ 20 DegC)	2400 L/H ; 1.5 - 4 bar ; G3/4	3400 L/H; 1.5 - 4 bar; G1	4000 L/H ; 1.5 - 4 bar ; G1	5000 L/H; 1.5 - 4 bar; G1 1/8	12 m3/h ; 1.5 - 4 bar ; DN50	20 m3/h;1.5-4 bar;DN65	30 m3/h; 1.5 - 4 bar; DN65	40 m3/h; 1.5 - 4 bar; DN80	50 m3/h; 1.5 - 4 bar; DN100
Dimension (mm)	(mm)	700*1000*1750	800*1200*1850	800*1200*1850	1500*1000*1850	1500*1000*1850	2050*1450*205	2450*1450*225	3000*1600*2250	4000*1600*2250
Power max 380V 50 Hz	V 50 Hz	12 kW	18 kW	24 kW	30 kW	40 kW	60 kW	85 kW	135 kW	200 kW
Weight (kg)	(b)	435	299	902	068	1250	1600	2100	2950	3350
Optional	-				Liqui	Liquid low level protection	no			

ONE MACHINE FOR 2 REACTORS - 2 SERIES 2T MODELS									
Model		TCU-225W-2T N / TCU-225-2T N	TCU-235W-2T N / TCU-235-2T N	TCU-255W-2T N / TCU-255-2T N	TCU-275W-2T N / TCU-275-2T N	TCU-2A10W-2T N / TCU-2A10-2T N			
Medium Temperature Range		-25°C~ +200°C							
Control Mode		Feedback PID + Our special dynamic control calculation, PLC controller							
Temp control		Process temperature control mode and jacket temperature control mode TWO GROUPS							
Temp Difference		Set or control the temperature difference between jacket oil and material process TWO GROUPS							
Communication Protocol		MODBUS RTU Protocol, RS 485 Interface							
Material Temp Feedback		PT100 or 4-20 mA or communication given (Default PT100)							
Temp feedback		The temp of 3 points : the inlet and outlet of equipment, reactor material temp (external temp sensor) TWO GROUPS							
Medium temp accuracy		+/- 0.5 DegC							
Material Temp Accuracy		+/- 1 DegC							
Heating Power	er (kW)	2.5 X 2	3.5 X 2	5.5 X 2	7.5 X 2	10 X 2			
	200 DegC	2.5 X 2	3.5 X 2	5.5 X 2	7 X 2	10 X 2			
	100 DegC	2.5 X 2	3.5 X 2	5.5 X 2	7 X 2	10 X 2			
Cooling Capacity (kW)	20 DegC	2.5 X 2	3.5 X 2	5.5 X 2	7 X 2	10 X 2			
	0 DegC	1.5 X 2	2.5 X 2	3.5 X 2	5 X 2	7.5 X 2			
	-20 DegC	1 X 2	1.6 X 2	2.1 X 2	3 X 2	4 X 2			
Circulation Pump (max)		20 L/min X 2	35 L/min X 2	35 L/min X 2	50 L/min X 2	50 L/min X 2			
		1.5 Bar	2 Bar	2 Bar	2 Bar	2 Bar			
Compressor		Highly / Mitsubishi Emerson copeland / Danfoss scroll compressor							
Expansion Valve		Danfoss / Emerson thermal expansion valve							
Evaporator		DANFOSS / KAORI Plate Heat Exchanger							
Operating Controller		7-inch colour touch screen shows setting temperature and measuring temp, temp curve record, data export excel-format							
Security Protection		Self-diagnosis function ; freezer overload protection ; high pressure switch ; overload relay ; thermal protection device, etc. Security protection function							
Closed Circulation System		The whole system is full closed circulation, there is no oil mist at high temp and no water vapour at low temp, pressure do not rise up when system is running. The system will supply oil automatically at low temp							
Refrigerant		R-404A/R507C, Optional : R448A							
Connection Size		G3/4	G3/4	G3/4	G3/4	G1			
Water-cooled type (@ 20 DegC)		1200 L/H ; 1.5 - 4 bar ; G3/4	1400 L/H ; 1.5 - 4 bar ; G3/4	1700 L/H ; 1.5 - 4 bar ; G3/4	2100 L/H ; 1.5 - 4 bar ; G1	2500 L/H ; 1.5 - 4 bar ; G1			
Dimension (Air type) mm		550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850	1000*1500*1850			
Dimension (Water type) mm		550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850			
Power max 50 Hz AC 380V		220V 7.5 kW	11.5 kW	17 kW	23 kW	31 kW			
Weight (kg)		240	285	345	385	480			

ONE MACHINE FOR 2 REACTORS - 4 SERIES 2T MODELS									
Model		TCU-425W-2T N / TCU-425-2T N	TCU-435W-2T N / TCU-435-2T N	TCU-455W-2T N / TCU-455-2T N	TCU-475W-2T N / TCU-475-2T N	TCU-4A10W-2T N / TCU-4A10-2T N			
Medium Temperature Range		-40°C~ +200°C							
Control Mode		Feedback PID + Our special dynamic control calculation, PLC controller							
Temp control		Process temperature control mode and jacket temperature control mode TWO GROUPS							
Temp Difference		Set or control the temperature difference between jacket oil and material process TWO GROUPS							
Communication Protocol		MODBUS RTU Protocol, RS 485 Interface							
Material Temp Feedback		PT100 or 4-20 mA or communication given (Default PT100)							
Temp feedback		The temp of 3 points : the inlet and outlet of equipment, reactor material temp (external temp sensor) TWO GROUPS							
Medium temp accuracy		+/- 0.5 DegC							
Material Temp Accuracy		+/- 1 DegC							
Heating Power	er (kW)	2.5 X 2	3.5 X 2	5.5 X 2	7.5 X 2	10 X 2			
	200 DegC	2.5 X 2	3.5 X 2	5.5 X 2	7 X 2	10 X 2			
	100 DegC	2.5 X 2	3.5 X 2	5.5 X 2	7 X 2	10 X 2			
Cooling Capacity	20 DegC	2.5 X 2	3.5 X 2	5.5 X 2	7 X 2	10 X 2			
(kW)	0 DegC	1.5 X 2	2.5 X 2	3.5 X 2	5 X 2	7.5 X 2			
	-20 DegC	1 X 2	1.6 X 2	2.1 X 2	3 X 2	4 X 2			
	-35 DegC	0.45 x 2	0.75 x 2	1 x 2	1.4 x 2	1.8 x 2			
Circulation Pump (max)		20 L/min X 2	35 L/min X 2	35 L/min X 2	50 L/min X 2	60 L/min X 2			
		1.5 Bar	2 Bar	2 Bar	2 Bar	2 Bar			
Compressor		Highly / Mitsubishi Emerson copeland / Danfoss scroll compressor							
Expansion Valve		Danfoss / Emerson thermal expansion valve							
Evaporator		DANFOSS / KAORI Plate Heat Exchanger							
Operating Controller		7-inch colour touch screen shows setting temperature and measuring temp, temp curve record, data export excel-format							
Security Protection		Self-diagnosis function; freezer overload protection; high pressure switch; overload relay; thermal protection device, etc. Security protection function							
Closed Circulation System		The whole system is full closed circulation, there is no oil mist at high temp and no water vapour at low temp, pressure do not rise up when system is running. The system will supply oil automatically at low temp							
Refrigerant		R-404A/R507C, Optional : R448A							
Connection Size		G3/4	G3/4	G3/4	G3/4	G1			
Water-cooled type (@ 20 DegC)		1200 L/H ; 1.5 - 4 bar ; G3/4	1800 L/H ; 1.5 - 4 bar ; G3/4	2200 L/H ; 1.5 - 4 bar ; G3/4	2600 L/H ; 1.5 - 4 bar ; G1	3500 L/H ; 1.5 - 4 bar ; G1			
Dimension (Air type) mm		550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850	1000*1500*1850			
Dimension (Water type) mm		550*1000*1750	550*1000*1750	700*1000*1750	700*1000*1750	800*1200*1850			
Power max 50 Hz AC 380V		220V 8 kW	12 kW	17.5 kW	24 kW	33 kW			
Weight (kg)		240	285	345	385	480			

DIFFERENT DISPLAYS OF THE FUNCTIONS

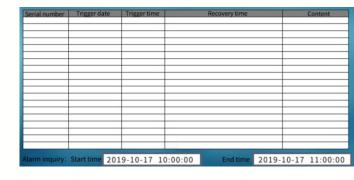


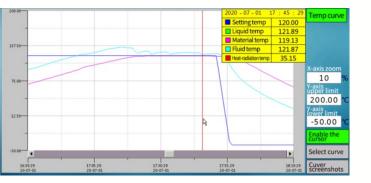
Description: Screen depicts the selection of different functions



Description: Screen depicts the set point value and other indications and control functions such as start / stop, compressor on/off etc

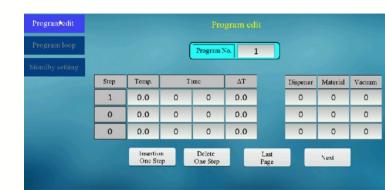
Description: Detailed information about alarm record





Description: Display of temperature curves and details

Description: Program setting feature



EX-PROOF MACHINES

POSITIVE PRESSURE EXPLOSION PROOF CABINET (EXPXdmb | BT4 / EXPXdmb | CT4)

The positive pressure cabinet is composed of positive pressure cavity and control cavity. Positive pressure cavity is used for installing various of instrument or electronics which with non ex-proof. The control cavity has ex-proof control box and pressure control system. The case material of positive pressure cabinet with 2-3 mm cold rolled steel sheet welding and air duct with galvanized steel pipe. There is a glass display in front of the door and display the information of instrument and indicator light



 Detailed technical datasheets of ex-proof machines can be provided on formal request

EX-PROOF MACHINES

ISOLATED EXPLOSION PROOF CABINET (EXCIIBT4)

- 1) Electrical cabinet
- Separate wiring chamber
- Heating power > 7.5 kW with independent heat dissipation aluminium fins ex-proof cabinet
- Electric cabinet adopts whole aluminium mold
- Equipped with ex-proof mouse, to operate 7-inch touch screen (Optional Siemens ex-proof touch screen 7 inch and 12 inch)
- 2) Compressor
- Using isolated ex-proof
- Adopt terminal block packaging process (Intrinsically safe)
- 3) Circulating fan using isolated ex-proof and Aluminium fan
- 4) Circulating pump adopts isolated ex-proof motor
- 5) Heater adopts flameproof type (heating power per unit area < 3W)
- 6) Temp sensor adopts flameproof type
- 7) Pressure sensor adopts flameproof type
- 8) Various protection areas are installed in flameproof boxes





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THANK YOU

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