

**Templin**<sup>TM</sup>  
*preserving life*

**Centrifuges**

TISU



**TSIU**

**Refrigerated  
(Templin Super Speed Universal)**

**Refrigerated - 30,000 rpm / 70,434 xg**

# TISU-Refrigerated ( TempIn Super Speed Universal)

## ➤ High-Speed Centrifuge with Flexible Axis!

- This provides the best smooth running.
- The separation of the own centering of the motor and the centering of the installed rotor protects the bearing of the entire drive system.
- Thus your centrifuge will be maintenance free for a very long time.

Catalogue No.	Description	Voltage	Phases	Hz
21 14 075	TISU with Touchscreen Display refrigerated	230 V	1	50 Hz
21 14 077	TISU with Touchscreen Display refrigerated	208-230 V	1	60 Hz
21 14 076	TISU with Touchscreen Display refrigerated	115 V	1	60 Hz

- **maximum capacity: 4 x 200 ml**
- for centrifuge tubes and bottles, Microtiter plates, Tissue-culture tubes, Microliter tubes, etc.
- 3 swing-out rotors, 1 microhematocrit rotor, 14 angle rotors
- **speed: 500 –30,000 rpm**
- **g-force (RCF): max. 70,434 x g**

## Swing-out Rotors

TISU-Refrigerated ( TempIn Super Speed Universal)

Cat. - No.	Type	Max. Capacity		Max. Speed	Max. g-Force
21 14 550	TS 2.6	2 – 6 microtiter plates (max. height 56 mm)	incl. 2 carriers for microtiter plates	3,000 rpm	1,036 x g
21 14 700	TS 24.2	24 x 2.2 ml	incl. windshield, hermetically sealing lid and 6 carriers for 4 tubes 2.2 ml	14,000 rpm	16,215 x g
21 14 600	TS 4.200	4 x 200 ml	incl. 4 buckets 200 ml with screw cap	5,000 rpm	4,081 x g
21 14 600-01	TS 4.200	4 x 200 ml	Rotor without buckets	5,000 rpm	4,081 x g
21 14 607	Trunnion rings	4 x (2 x 50 ml)	4 trunnion rings with stainless steel tubes	5,000 rpm	4,081 x g
21 14 605	Trunnion rings	4 x (7 x 15 ml)	4 trunnion rings with stainless steel tubes	5,000 rpm	4,081 x g



## Microhematocrit Rotors

TISU-Refrigerated ( TempIn Super Speed Universal)

Cat. - No.	Type	Max. Capacity		Max. Speed	Max. g-Force
21 14 750	TF 24 MH	24 Capillaries 50 µl Ø 1.5 x 75 mm	complete with rotor lid and capillary reader card	12,000 rpm	14,489 x g

## Angle Rotors (with hermetic sealing lid)

TISU-Refrigerated (TempIn Super Speed Universal)

Cat. - No.	Type	Max. Capacity	Angle		Max. Speed	Max. g-Force	Max. Speed	Max. g-Force
21 14 200	TF 12.8 <sup>H</sup>	12 PCR strips of 8 x 0.2 ml	45°	Reaction Vials	12,000 rpm	15,777 x g	14,000 rpm	21,475 x g
21 14 170	TF 12.2 <sup>H</sup>	12 x 1.5/2.2 ml	45°	Reaction Vials	18,000 rpm	25,356 x g	24,000 rpm	45,078 x g
21 14 180	TF 18.2 <sup>H</sup>	18 x 1.5/2.2 ml	45°	Reaction Vials	16,000 rpm	20,464 x g	22,000 rpm	38,690 x g
21 14 155	TF 24.2 Biosafe	24 x 1.5/2.2 ml	45°	Reaction Vials	15,000 rpm	20,501 x g	19,000 rpm	32,893 x g
21 14 105	TF 30.2 Biosafe	30 x 1.5/2.2 ml	45°	Reaction Vials	13,000 rpm	17,761 x g	15,500 rpm	25,248 x g
21 14 175	TF 12.5 Biosafe	12 x 5 ml	40°	Reaction Vials	16,000 rpm	24,041 x g	18,000 rpm	30,427 x g
21 14 251	TF 12.10 <sup>H</sup>	12 x 10 ml	35°		16,000 rpm	23,755 x g	18,000 rpm	30,065 x g
21 14 455	TF 10.15 F Biosafe	10 x 15 ml Falcon	25°	Falcon tubes	10,000 rpm	10,118 x g	14,000 rpm	19,831 x g
21 14 300	TF 20.15	20 x 15 ml	33°		4,000 rpm	2,463 x g	4,000 rpm	2,463 x g
21 14 351	TF 30.15	30 x 15 ml	33°		4,000 rpm	2,463 x g	4,000 rpm	2,463 x g
21 14 335	TF 12.30 Biosafe	12 x 30 ml	28°		10,000 rpm	11,739 x g	12,800 rpm	19,233 x g
21 14 405	TF 6.50 F Biosafe	6 x 50 ml Falcon	25°	Falcon tubes	10,000 rpm	10,565 x g	14,000 rpm	20,708 x g
21 14 505	TF 8.50 Biosafe	8 x 50 ml	25°		10,000 rpm	10,733 x g	14,000 rpm	21,036 x g
21 14 655	TF 6.94 Biosafe	6 x 94 ml	30°		8,500 rpm	8,449 x g	12,000 rpm	16,840 x g





Display	TFT-Monitor
User Interface	<b>Touchscreen</b>
Languages	German, English
Program Memory	50
Timer	h, m, 99:59
Real Run Time (RRT) display, Timer starts if set rotor speed is attained	✓ (selectable)
"HOLD" provision for longer runs	✓
"SHORT" for short runs	✓
RCF in x g	✓ (in steps of 10 x g)
Speed in rpm	✓ (in steps of 100 rpm)
RPM and RCF displayed	Both permanently shown
RPM, RCF, Time and Temperature	Current and preset values shown simultaneously
Rotor type, max. speed, Acceleration and Deceleration Rates	Permanently shown
Acceleration and Deceleration Rates, individually selectable	9 Ramps in steps of 15 sec. from 0 to 120 sec. in the range of 0 – 1.000 rpm
Dynamic electric brake system	✓
Fast Brake function with max. deceleration	✓
Temperature control range for instruments with refrigeration	-20°C to +40°C in steps of 1°C-, Tmin at maximum speed: <4°C, except Rotor TF 12.2
<b>Cooling at standstill</b>	✓
<b>Fast pre-cooling program</b>	✓
<b>Sample Protection</b>	✓
<b>Overheating Protecting</b>	✓
Automatic speed reduction if liquid density is set higher than 1.2 g/cm <sup>3</sup>	✓
<b>Audible signal</b> at end of run or failure message	✓ (selectable)
Automatic Lid opening at end of run	Selectable
Password protection	✓ (selectable)

➤ **High-Speed Centrifuges with Flexible Axis!**



Specifications	TISU
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Maximum Capacity	4 x 200 ml
Maximum Speed	30,000 rpm
Max. g-Force/RCF (depending on rotor)	70,434 x g
Rotor Detection	<b>YES</b> - APRI™ System = Automatic positive rotor identification for Tempin rotors
Program Memory	<b>50 programs</b>
Preset Time	Touchscreen: h, m, 99:59
Preset Speed	From 300 rpm to max. speed or <b>HOLD (continuous)</b> or <b>SHORT (short runs)</b>
Preset g-Force/RCF	Direct setting
Drive System	<b>Direct self-centering drive system with brushless induction motor</b>
Speed Accuracy	± 2 rpm at 1,000 rpm / ± 20 rpm at max. speed
Acceleration Time (depending on rotor)	30 sec. – 1.5 min.
Deceleration Time (depending on rotor)	40 sec. – 2.5 min.
Acceleration/Deceleration Rates	9 Ramps in steps of 15 sec. from 0 to 120 sec. in the range of 0 – 1.000 rpm
Braking System	Dynamic electric brake system – Acoustic Signal at the end of run
Temperature Set Range	-20°C to +40°C in steps of 1°C-, Tmin at maximum speed: <4°C, except Rotor TF 12.2
<b>Cooling at Standstill, Fast Cooling</b>	<b>YES, YES</b>
Temperature Control Accuracy	±2°C on calibrated rotor
Temperature Control System	Bypass System
<b>Sample Protection</b>	<b>YES</b>
<b>Overheating Protection</b>	<b>YES</b>
<b>1. Motor</b>	<b>YES</b>
<b>2. Rotor Chamber</b>	<b>YES</b>
Refrigeration System	CFC-free refrigerant
Noise Level	57db A with TF 24.2 at 18.000 min <sup>-1</sup>

### Safety Features




Microprocessor controlled Stainless Steel Chamber with additional inner guard ring Overspeed detection and cut-off, Imbalance detection and cut-off Motorized lid-lock system, Four point lid fixing, Emergency lid-lock release Overheating Protection

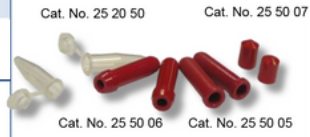
Dimensions (W x D x H): in cm (in inches)	64,0 x 55,0 x 36,0 (25,2 x 21,7 x 14,2)
Shipping Dimensions in cm (in inches)	80,0 x 65,0 x 74,0 (31,5 x 25,6 x 29,1)
Net Weight	82,0 kg (180,8 lbs.)
Gross Weight	96,0 kg (211,6 lbs.)

TISU-Refrigerated ( TempIn Super  
Speed Universal)

**TUBES AND ADAPTERS FOR**

**Rotors TF 12.2, TF 18.2, TF 24.2, TF 30.2 + TS 24.2:**

Tubes	2.0-2.2 ml	1.5 ml	0.5-0.7 ml	0.25-0.4 ml	0.2 ml
Tubes Ø x Length (mm)	11/13 x 40	11/13 x 40	8/10 x 28-31	Ø 6 mm	PCR® Tubes
Material of Tubes + Tempin Cat. No	Tubes not available from Tempin	conical with lid PP: 25 20 50	Tubes not available from Tempin	Tubes not available from Tempin	Tubes not available from Tempin
Necessary Adapter	---	---			
Tempin Cat. No	---	---	25 50 06	25 50 05	25 50 07
Tubes per Adapter	-	-	1	1	1



Cat. No. 25 24 01 / 11 / 41 / 51



**for Rotors TF 12.10**

Tubes	10 ml AOR	13.5 ml
Tubes Ø x Length (mm)	16 x 80	16 x 76
Material of Tubes + Tempin Cat. No	PC: 25 24 01 PPCO: 25 24 11 PE: 25 24 41 PF: 25 24 51	PP: 25 24 70
Necessary Adapter	---	---
Tempin Cat. No	---	---
Tubes per Adapter / Rotor	- / 12	- / 12

Prices of tubes see last page.

**TF 20.15 + 30.15**

15 ml Glass	15 ml Falcon
17 x 98	17 x 122
D: 25 12 80	Tubes not available from Tempin
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- / 20 resp. 30	- / 20 resp. 30



Cat. No. 25 29 51 / 61 / 65 / 71



**for Rotors TF 12.30**

Tubes	30 ml AOR
Tubes Ø x Length (mm)	25 x 92
Material of Tubes + Tempin Cat. No	PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71
Necessary Adapter	---
Tempin Cat. No	---
Tubes per Adapter / Rotor	- / 12

**TF 10.15 F**

15 ml Falcon
17 x 122
Tubes not available from Tempin
---
---
- / 10

**TF 6.50 F**

50 ml Falcon	30 ml AOR	15 ml Falcon
29 x 118	25 x 92	17 x 122
Tubes not available from Herolab	PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71	Tubes not available from Tempin
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---	25 50 62	25 53 80
- / 6	1 / 6	1 / 6

## TUBES AND ADAPTERS FOR

## TISU-Refrigerated (TempIn Super Speed Universal)



### Rotor TS 4.200

Tubes	200 ml	200 ml	100 ml	100 ml	80 ml AOR/94 ml	50ml AOR	50 ml with rim	50 ml with cap
Max. Ø x Length (mm)	56 x 112	56 x 113	46 x 104	40 x 100/120	38 x 112	29 x 103	29 x 103	29 x 103
Material of Tubes + Tempin Cat. No	PC: 25 33 71 PPCO: 25 33 73	conical PC: 25 33 75 PPCO: 25 33 77	PC: 25 33 20	Tubes not available from Herolab	PC: 25 32 41 PPCO: 25 32 45 PE: 25 32 47 PF: 25 32 49	PC: 25 32 01 PPCO: 25 32 11 PE: 25 32 15 PF: 25 32 21	PC: 25 31 00 PPCO: 25 31 60 PE: 25 31 30 PF: 25 31 51	PC: 25 31 05 PPCO: 25 31 45
Necessary Adapter	direct							
Tempin Cat. No	---	21 14 610	21 14 643	21 14 641	21 14 645		21 14 638	
Tubes per Adapter / Rotor	1 / 4	1 / 4	1 / 4	1 / 4	1 / 4		1 / 4	

Tubes	50 ml	50 ml Falcon	30 ml AOR	30 ml Glass	17 ml	13/15 ml	15 ml Falcon	9-10 ml /15 ml
Max. Ø x Length (mm)	35 x 100	29 x 118	25 x 92	24 x 110	16 x 102	17 x 110	17 x 122	17/20 x 90-110
Material of Tubes + Tempin Cat. No	Tubes not available from Tempin	Tubes not available from Tempin	PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71	B: 25 11 10 HS: 25 11 41	thin-walled: PA: 25 26 20 thick-walled PC: 25 26 40	15 ml D: 25 12 80 Vacutainer 10 ml 15/17 x 105	Tubes not available from Tempin	Monovettes 17,1/19,4 x 60 / 110 Tubes not available from Tempin
Necessary Adapter								
Tempin Cat. No	21 14 640	21 14 637	21 14 631		21 14 622		21 14 628	21 14 625
Tubes per Adapter / Rotor	1 / 4	1 / 4	2 / 8		7 / 28		3 / 12	4 / 16

Tubes	10 ml AOR	13.5 ml	7 ml	6 ml	5 ml	5 ml	1.5/2.2 ml	1.2 ml
Max. Ø x Length (mm)	17 x 75	17 x 75	12 x 100	13.5/17.5 x 100	13.5/17.5 x 75	12 x 75	11 x 40	9 x 66
Material of Tubes + Tempin Cat. No	PC: 25 24 01 PPCO: 25 24 11 PE: 25 24 41 PF: 25 24 51	PP: 25 24 70 Vacutainer 10 ml	Tubes not available from Tempin	Vacutainer Tubes not available from Tempin	Vacutainer Tubes not available from Tempin	B: 25 10 20 PS: 25 22 00 PP: 25 22 30	conical with lid PP: 25 20 50 - Eppendorf Tubes	S-Monovette Tubes not available from Tempin
Necessary Adapter								
Tempin Cat. No	21 14 616		21 14 613	21 14 635	21 14 634	21 14 619	21 14 611	21 14 612
Tubes per Adapter / Rotor	7 / 28		12 / 48	7 / 28	7 / 28	12 / 48	12 / 48	12 / 48






Please note: The design and color may differ at the time of the delivery




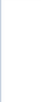




## TUBES AND ADAPTERS FOR

## TISU-Refrigerated (Tempin Super Speed Universal)

### Rotor TF 8.50

Tubes	50ml AOR	50 ml with rim	50 ml with cap	45 ml Glass	30 ml AOR	30 ml Glass	16 ml with rim	12/15 ml Glass
Tubes Ø x Length (mm)	29 x 103	29 x 103	29 x 103	28 x 102	25 x 92	24 x 105	18 x 100	18 x 102
Material of Tubes + Tempin Cat. No	PC: 25 32 01 PPCO: 25 32 11 PE: 25 32 15 PF: 25 32 21	PC: 25 31 00 PPCO: 25 31 60 PE: 25 31 30 PF: 25 31 51	PC: 25 31 05 PPCO: 25 31 45	B: 25 12 60	PC: 25 29 51 PPCO: 25 29 61 PE: 25 29 65 PF: 25 29 71	B: 25 11 10 HS: 25 11 41	PC: 25 27 00 PPCO: 25 27 20 PE: 25 27 40 PF: 25 27 51	12 ml: B: 25 11 00 15 ml HS: 25 10 91
Necessary Adapter	---	---	---					
Tempin Cat. No	---	---	---	25 58 00	25 50 61	25 55 60	25 50 50	25 55 50
Tubes per Adapter / Rotor	- / 8	- / 8	- / 8	1 / 8	1 / 8	1 / 8	1 / 8	1 / 8

Tubes	10ml AOR	10 ml Glass	10 ml Glass	4.5/5 ml	3 ml Glass	1.5 ml	1 ml
Tubes Ø x Length (mm)	16 x 80	18 x 102	13 x 100	12 x 75	10 x 75	11 x 40	7 x 50
Material of Tubes + Tempin Cat. No	PC: 25 24 01 PPCO: 25 24 11 PE: 25 24 41 PF: 25 24 51	conical D: 25 10 60	D: 25 10 40	PP: 25 22 30 PS: 25 22 00	D: 25 10 10	conical with lid PP: 25 20 50	PS: 25 20 00
Necessary Adapter			Rubber adapter				
Tempin Cat. No	25 50 30	25 55 40	25 55 30	25 50 11	25 55 10	25 50 10	25 50 00
Tubes per Adapter / Rotor	1 / 8	1 / 8	1 / 8	2 / 16	2 / 16	2 / 16	4 / 32



Cat. No. 25 32 01 / 11 / 15 / 21



Cat. No. 25 31 05 / 45



Cat. No. 25 31 00 / 60 / 30 / 51

Cat. No. 25 32 41 / 45 / 47 / 49



### Rotor TF 6.94

Tubes	94 ml	94 ml	80 ml AOR
Tubes Ø x Length (mm)	38 x 102	38 x 106	38 x 105
Material of Tubes + Tempin Cat. No	thick-walled PC: 25 32 80 PA: 25 32 60 thick-w. w. thread PC: 25 32 90	PP: 25 32 50	PC: 25 32 41 PPCO: 25 32 45 PE: 25 32 47 PF: 25 32 49
Necessary Adapter	---	---	---
Tempin Cat. No	---	---	---
Tubes per Adapter / Rotor	- / 6	- / 6	- / 6



## Tempin Tubes for Rotors of the TISU Series

Catalogue No.	Description	Pieces/Pack
25 10 10	Tubes 3 ml Duran Glass, round bottom	10
25 10 20	Tubes 5 ml Borex Glass, round bottom	10
25 10 40	Tubes 10 ml Duran Glass, round bottom	10
25 10 60	Tubes 10 ml Duran-Glass, conical bottom / graduated	10
25 10 91	Tubes 15 ml High-Speed Glass, round bottom	6
25 11 00	Tubes 12 ml Borex Glass, round bottom	10
25 11 10	Tubes 30 ml Borex Glass, round bottom	10
25 11 41	Tubes 30 ml High-Speed Glass, round bottom	6
25 12 60	Tubes 45 ml Borex Glass, round bottom	10
25 12 80	Tubes 15 ml Duran-Glass, round bottom	10
25 20 00	Tubes 1,0 ml PS, round bottom	1.000
25 20 50	Tubes 1,5 ml PP, conical bottom, with lid (Eppendorf)	1.000
25 22 00	Tubes 5,0 ml PS, round bottom	1.000
25 22 30	Tubes 4,5 ml PP, round bottom	1.000
25 24 01	Tubes 10 ml PC-AOR with lid	10
25 24 11	Tubes 10 ml PPCO-AOR with lid	10
25 24 41	Tubes 10 ml PE-AOR with lid	10
25 24 51	Tubes 10 ml PF-AOR with lid	2
25 24 70	Tubes 13,5 ml PP, round bottom	10
25 26 20	Tubes 17,0 ml PA thin-walled, Ultra Centrifuge Tubes	50
25 26 40	Tubes 17,0 ml PC thick-walled, Ultra Centrifuge Tubes	50
25 27 00	Tubes 16 ml PC, round bottom / with rim	10
25 27 20	Tubes 16 ml PPCO, Round bottom / with rim	10
25 27 40	Tubes 16 ml PE, round bottom / with rim	10
25 27 51	Tubes 16 ml PF, round bottom / with rim	2
25 29 51	Tubes 30 ml PC-AOR with lid	10
25 29 61	Tubes 30 ml PPCO-AOR with lid	10
25 29 65	Tubes 30 ml PE-AOR with lid	10
25 29 71	Tubes 30 ml PF-AOR with lid	2
25 31 00	Tubes 50 ml PC, round bottom / with rim	10
25 31 05	Tubes 50 ml PC, round bottom / with rim and Loop Cap	10
25 31 30	Tubes 50 ml PE, round bottom / with rim	10
25 31 45	Tubes 50 ml PPCO, round bottom / with rim and Loop Cap	10
25 31 51	Tubes 50 ml PF, round bottom / with rim	2
25 31 60	Tubes 50 ml PPCO, round bottom / with rim	10
25 32 01	Tubes 50 ml PC-AOR with lid	10
25 32 11	Tubes 50 ml PPCO-AOR with lid	10
25 32 15	Tubes 50 ml PE-AOR with lid	10
25 32 21	Tubes 50 ml PF-AOR with lid	2
25 32 41	Tubes 80 ml PC-AOR with lid	10
25 32 45	Tubes 80 ml PPCO-AOR with lid	10
25 32 47	Tubes 80 ml PE-AOR with lid	10
25 32 49	Tubes 80 ml PF-AOR with lid	2
25 32 60	Tubes 94,0 ml PA thick-walled, Ultra Centrifuge Tubes	25
25 32 80	Tubes 94,0 ml PC thick-walled, Ultra Centrifuge Tubes	25
25 32 90	Tubes 94,0 ml PC thick-walled with thread, Ultra Centrifuge Tubes	25
25 33 20	Tubes 100 ml PC, round bottom / graduated	2
25 33 71	Bottles 200 ml PC, flat bottom, with lid	6
25 33 73	Bottles 200 ml PPCO, flat bottom, with lid	6
25 33 75	Bottles 200 ml PC, conical bottom, with lid	6
25 33 77	Bottles 200 ml PPCO, conical bottom, with lid	6

B	Borex Glass	AOR	Advanced Oak Ridge	PE	Polyethylene	PPCO	Polypropylene Copolymer
D	Duran Glass	PA	Polyallomer	PF	Polyflor®	PS	Polystyrene
HS	High-Speed Glass	PC	Polycarbonate	PP	Polypropylene		



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