SPECIFICATIONS	CCS-100/202	CCS-100/204	CCS-150	CCS-450	CCS-350	CCS-350S	CCS-250	CCS-350T	CCS-350ST
Temperature Range	11 K - 325 K	9 K - 325 K	10 K - 325	10 K - 500		10 K - 325 K	10 K - 325 K	10 K - 325 K	10 K - 325 K
		(optional 6.5 K - 325 K	K	K					
		with CCS-100/204N)							
Sample Environment	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Sample Change Time	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Refrigeration Capacity			2 W @	0.5 W @	2 W @	1 W @	2 W @	2 W @	1 W @
(bare cold head only,			20 K	20 K	20 K	20 K	20 K	20 K	20 K
excluding heat load)									
60 Hz		2.0 W @ 10 K							
	2.5 W @ 20 K	9.0 W @ 20 K							
	10.0 W @ 77 K	17.0 W @ 77 K							
50 Hz		7.5 W @ 20 K							
(1 is N 0 11 T	8.3 W @ 77 K	14.0 W @ 77 K							
(Initial) Cooldown Time (typical)									
60 Hz	90 minutes to	50 minutes to 10 K	~ 75	~ 2 hours	~ 75 minutes	~ 90 minutes	~ 75 minutes	~ 75 minutes	~ 90 minutes
00112	11 K	oo mindles to 10 K	minutes to		to 10 K	to 10 K	to 10 K	to 10 K	to 10 K
	1110		10 K	10 10 10	10 10 10	10 10 10	10 10 10	10 10 10	10 10 10
System Weight	11.1 kg	12.7 kg		82 kg (180	82 kg	82 kg	82 kg	82 kg	82 kg
Cystem Weight	(24.5 lbs)	(28.0 lbs)	lbs.)	lbs.)	(180 lbs.)	(180 lbs.)	(180 lbs.)	(180 lbs.)	(180 lbs.)
Compressor		75 kg (165 lbs)	59 kg	59 kg	59 kg	59 kg	59 kg	59 kg	59 kg
Compressor	70 kg (100 lb0)	70 kg (100 lb0)	(140 lbs.)	(140 lbs.)	(140 lbs.)	(140 lbs.)	(140 lbs.)	(140 lbs.)	(140 lbs.)
Cold head (not including	6.8 kg (15 lbs)	7.7 kg (17 lbs)	6.6 kg	6.6 kg	6.6 kg	6.6 kg	6.6 kg	6.6 kg	6.6 kg
cryostat parts)	0.0	((15 lbs)	(15 lbs)	(15 lbs)	(15 lbs)	(15 lbs)	(15 lbs)	(15 lbs)
Cryostat			10 kg	10 kg	10 kg	10 kg	10 kg	10 kg	10 kg
5.,75			(22 lbs.)	(22 lbs.)	(22 lbs.)	(22 lbs.)	(22 lbs.)	(22 lbs.)	(22 lbs.)
Power Supply			, , ,		\	\			, , ,
Volts (VAC±5%) /	208	/230 / 1 / 60	208/220	208/220	208/220	208/220	208/220	208/220	208/220
Phase (Ø) /	200 / 1 / 50		VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,
Frequency (Hz)	230/240 / 1 / 50		50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
	r Requirements 3.0 kW, 15.5 amperes full load at 208 V~, 60 Hz and 2.6 kW, 13 amperes full load at 200 V~, 50 Hz. 58 amperes starting current, 68 amperes		2.0 kW,	2.0 kW,	2.0 kW, 8.5A	2.0 kW, 8.5A	2.0 kW, 8.5A	2.0 kW, 8.5A	2.0 kW, 8.5A
			8.5A	8.5A	(water-	(water-	(water-	(water-	(water-
			(water-	(water-	cooled)	cooled)	cooled)	cooled)	cooled)
			cooled)	cooled)	2.1 kW, 10A	2.1 kW, 10A	2.1 kW, 10A	2.1 kW, 10A	2.1 kW, 10A
	locked	-rotor current.	2.1 kW,	2.1 kW,	(air-cooled)	(air-cooled)	(air-cooled)	(air-cooled)	(air-cooled)
			10A (air-	10A (air-					
			cooled)	cooled)					
Water-cooled Compressor									
Requirements									
Flow	2.7 lp	om (0.7 gpm)		3.8 +/- 1.9	3.8	3.8	3.8	3.8	3.8
				lpm (1.0 +/-	+/- 1.9 lpm	+/- 1.9 lpm	+/- 1.9 lpm	+/- 1.9 lpm	+/- 1.9 lpm
			0.5 gpm)	0.5 gpm)	(1.0	(1.0	(1.0	(1.0	(1.0
					+/- 0.5 gpm)	+/- 0.5 gpm)	+/- 0.5 gpm)	+/- 0.5 gpm)	+/- 0.5 gpm)
Temperature		4-27 °C	32 C	32 C	32 C (90 F)	32 C (90 F)			
Temperature 4-27 C		1 -21 U	(90 F)	(90 F)	, ,	` ,	` '	, ,	` ,
		max,	max,	max, 10 C (50 F)					
		10 C	10 C	min	min	min	min	min	
			(50 F)	(50 F)	111111	111111	111111	111111	111111
			min	(SUF)					
Chiller Requirement	3 2 1/1/1	11,000 BTU/hr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crimer Requirement	J. Z KVV (11,000 010/111)	111/74	IN/A	IN/A	IN/A	IN/A	IN/A	IN/A
Pressure	30	See table on page 2.							
Vibrational Line Broadening	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SPECIFICATIONS	CCS-950	CCS-950T	CCS-550	CCS-550T	
Temperature Range	12 K - 300 K	12 K - 300 K	15 K - 300 K	15 K - 300 K	
Sample Environment	Exchange	Exchange	Exchange	Exchange	
	Gas	Gas	Gas	Gas	
Sample Change Time	2 minutes	2 minutes	2 minutes	2 minutes	
Refrigeration Capacity					
(bare cryocooler only,	\times	$\mid \times \mid$	$\mid \times \mid$		
no heat load)					
(Initial) Cooldown Time (typical)					
60 Hz	~3 hours to	~3 hours to	~3 hours to	~3 hours to	
	12 K	12 K	15 K	15 K	
50 Hz					
System Weight	93 kg	93 kg	87 kg	87 kg	
	(205 lbs.)	(205 lbs.)	(190 lbs.)	(190 lbs.)	
Compressor	59 kg	59 kg	59 kg	59 kg	
	(140 lbs.)	(140 lbs.)	(140 lbs.)	(140 lbs.)	
Expander (not including cryostat parts)					
Cold head	21 kg	21 kg	14 kg	14 kg	
	(45 lbs.)	(45 lbs.)	(30 lbs.)	(30 lbs.)	
Optical Access	,	N/A	,	N/A	
Power Supply					
Volts (VAC±5%) /	208/220	208/220	208/220	208/220	
Phase (Ø) /	VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,	VAC, 1Ø,	
Frequency (Hz)	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	
Power Requirements	2.0 kW, 8.5A	2.0 kW, 8.5A	2.0 kW, 8.5A	2.0 kW, 8.5A	
	(water-	(water-	(water-	(water-	
	cooled)	cooled)	cooled)	cooled)	
	2.1 kW, 10A	2.1 kW, 10A	2.1 kW, 10A	2.1 kW, 10A	
	(air-cooled)	(air-cooled)	(air-cooled)	(air-cooled)	
Water-cooled Compressor					
Requirements					
Flow	3.8	3.8	3.8	3.8	
	+/- 1.9 lpm	+/- 1.9 lpm	+/- 1.9 lpm	+/- 1.9 lpm	
	(1.0	(1.0	(1.0	(1.0	
	+/- 0.5 gpm)	+/- 0.5 gpm)	+/- 0.5 gpm)	+/- 0.5 gpm)	
Temperature	32 C (90 F)	32 C (90 F)	32 C (90 F)	32 C (90 F)	
	max,	max,	max,	max,	
	10 C (50 F)	10 C (50 F)	10 C (50 F)	10 C (50 F)	
	min	min	min	min	
Chiller Requirement	N/A	N/A	N/A	N/A	
Pressure	See table on Page 2.				
Vibrational Line Broadening	N/A	N/A	N/A	N/A	



Cooling Water: Flow and Pressure Requirements

Use graphs Figure 3-3: "8200 Compressor Cooling Water Flow and Pressure Requirements" and Figure 3-4: "8200 Compressor Water Cooling Requirements" to determine the minimum acceptable cooling water supply pressure at different flow rates and temperatures.

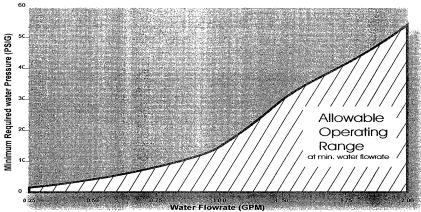


Figure 3-3: 8200 Compressor Cooling Water Flow and Pressure Requirements

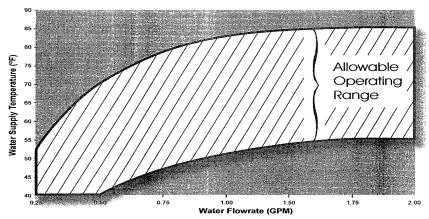


Figure 3-4: 8200 Compressor Water Cooling Requirements