

**EHCL Instrumentation Chart**

Sr. No.	Tag Number	Instrument Type	Service	Process Fluid	Unit of Measurement	Equipment Line Number/Location	Instrument Calibrated Range	Signal (Analog/Digital)	Alarms Set Points				Trip Set Point	Logging Required (Acquisition rate = 1 Sample/s)	Monitoring on SCADA Required (Update rate = 1 Sample/s)			
									Signal Type	IO Type	Control/Interlock	H	L	HH	LL			
1	MP-001	Pressure Indicating Transmitter	Pressure measurement at inlet of TSM	Helium Gas	bar (g)	50-EHCL-019-ESA1-PP	0-100	4-20 mA	AI	NA	86	70	88	65	-	Yes	Yes	
2	MP-002	Pressure Indicating Transmitter	Pressure measurement at bypass line	Helium Gas	bar (g)	50-EHCL-018-ESA1-PP	0-100	4-20 mA	AI	Control	86	70	88	65	-	Yes	Yes	
3	MP-003	Pressure Indicating Transmitter	Pressure measurement downstream of TSM/VC-001	Helium Gas	bar (g)	50-EHCL-001-ESA1-PP	0-100	4-20 mA	AI	Interlock	-	-	-	-	Either pressure decay >0.2 bar/s for continuous 30 seconds OR pressure >60	Yes	Yes	
4	MP-004	Pressure Indicating Transmitter	Pressure measurement downstream of TSM/VC-001	Helium Gas	bar (g)	50-EHCL-003-ESA1-PP	0-100	4-20 mA	AI	Interlock	-	-	-	-	<-20 in series with >90	Yes	Yes	
5	MP-005	Pressure Indicating Transmitter	Pressure measurement at inlet of helium-water heat exchanger	Helium Gas	bar (g)	50-EHCL-003-ESA1-PP	0-100	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
6	MP-006	Pressure Indicating Transmitter	Pressure measurement at discharge of helium circulators assembly	Helium Gas	bar (g)	50-EHCL-014-ESA1-PP	0-100	4-20 mA	AI	NA	86	-	89	-	-	Yes	Yes	
7	MP-007	Pressure Indicating Transmitter	Pressure measurement at tanks-2 downstream of circulators assembly	Helium Gas	bar (g)	Tank-2 (downstream of circulators)	0-100	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
8	MP-008	Pressure Indicating Transmitter	Pressure measurement at tanks-1 upstream of circulators assembly	Helium Gas	bar (g)	Tank-1 (upstream of circulators)	0-100	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
9	MP-009	Pressure Indicating Transmitter	Pressure measurement at outlet helium stream of helium-water heat exchanger	Helium Gas	bar (g)	50-EHCL-005-ESA1-PP	0-100	4-20 mA	AI	NA	-	72	-	70	-	-	Yes	Yes
10	MP-010	Pressure Indicating Transmitter	Pressure measurement at the water line inlet	Water	bar (g)	Water inlet line	0-10	4-20 mA	AI	Interlock	4.5	2	-	-	<-2 in series with >5	Yes	Yes	
11	MP-101	Pressure Indicating Transmitter	Pressure measurement at source tank	Helium Gas	bar (g)	25-EHCL-001-ESA2-PP	0-200	4-20 mA	AI	NA	155	80	160	-	-	Yes	Yes	
12	MP-102	Pressure Indicating Transmitter	Pressure measurement at buffer tank	Helium Gas	bar (g)	25-EHCL-004-ESA2-PP	0-200	4-20 mA	AI	NA	155	5	160	-	-	Yes	Yes	
13	MP-103	Pressure Indicating Transmitter	Pressure measurement at storage tank	Helium Gas	bar (g)	25-EHCL-011-ESA2-PP	0-200	4-20 mA	AI	NA	155	55	160	-	-	Yes	Yes	
14	MP-104	Pressure Indicating Transmitter	Pressure measurement at discharge of helium compressor	Helium Gas	bar (g)	25-EHCL-010-ESA2-PP	0-200	4-20 mA	AI	Interlock	-	-	-	-	<-20 in series with >155	Yes	Yes	
15	MP-105	Pressure Indicating Transmitter	Pressure measurement at suction of helium compressor	Helium Gas	bar (g)	25-EHCL-008-ESA2-PP	0-200	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
16	MP-106	Pressure Indicating Transmitter	Pressure measurement downstream of control valve VC-101	Helium Gas	bar (g)	25-EHCL-003-ESA2-PP	0-200	4-20 mA	AI	Control	95	-	-	-	-	Yes	Yes	
17	MP-107	Pressure Indicating Transmitter	Pressure measurement at supply line (external helium source)	Helium Gas	bar (g)	25-EHCL-017-ESA2-PP	0-200	4-20 mA	AI	NA	155	-	-	-	-	Yes	Yes	
18	MP-108	Pressure Indicating Transmitter	Pressure measurement downstream of PICs intake line from main loop	Helium Gas	bar (g)	25-EHCL-013-ESA2-PP	0-200	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
19	MP-1A	Pressure Indicating Transmitter	Pressure measurement at air compressor discharge	Instrument Air	bar (g)	On Instrument Air Compressor line	0-10	4-20 mA	AI	Interlock	-	5	-	-	<4	Yes	Yes	
20	MTE-001	Temperature Element with Head-Mount Transmitter	Temperature measurement at outlet of TSM	Temperature	°C	50-EHCL-001-ESA1-PP	0-500	4-20 mA	AI	NA	410	280	420	270	-	Yes	Yes	
21	MTE-001A	Temperature Element with Head-Mount Transmitter	Temperature measurement at outlet of TSM	Helium Gas	°C	50-EHCL-001-ESA1-PP	0-500	4-20 mA	AI	NA	410	280	420	270	-	Yes	Yes	
22	MTE-002	Temperature Element with Head-Mount Transmitter	Temperature measurement at inlet of TSM	Helium Gas	°C	50-EHCL-009-ESA1-PP	0-500	4-20 mA	AI	NA	410	280	420	270	-	Yes	Yes	
23	MTE-003	Temperature Element with Head-Mount Transmitter	Temperature measurement at downstream of control valve VC-001	Helium Gas	°C	50-EHCL-018-ESA1-PP	0-500	4-20 mA	AI	NA	410	280	420	270	-	Yes	Yes	
24	MTE-004	Temperature Element with Head-Mount Transmitter	Temperature measurement downstream of control valve VC-001	Helium Gas	°C	50-EHCL-001-ESA1-PP	0-500	4-20 mA	AI	Interlock	-	-	-	-	<100 in series with >425	Yes	Yes	
25	MTE-005	Temperature Element with Head-Mount Transmitter	Temperature measurement downstream of control valve VC-001	Helium Gas	°C	50-EHCL-001-ESA1-PP	0-500	4-20 mA	AI	Interlock	-	-	-	-	<100 in series with >425	Yes	Yes	
26	MTE-006	Temperature Element with Head-Mount Transmitter	Temperature measurement upstream of bypass line	Helium Gas	°C	50-EHCL-017-ESA1-PP	0-500	4-20 mA	AI	Control	340	280	350	270	-	Yes	Yes	
27	MTE-007	Temperature Element with Head-Mount Transmitter	Temperature measurement at hot-leg of EHCL towards recuperator inlet	Helium Gas	°C	50-EHCL-001-ESA1-PP	0-500	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
28	MTE-008	Temperature Element with Head-Mount Transmitter	Temperature measurement at recuperator outlet towards electrical heater inlet	Helium Gas	°C	50-EHCL-015-ESA1-PP	0-500	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
29	MTE-009	Temperature Element with Head-Mount Transmitter	Temperature measurement at the inlet of electrical heater	Helium Gas	°C	50-EHCL-016-ESA1-PP	0-500	4-20 mA	AI	NA	340	-	-	-	-	Yes	Yes	
30	MTE-010	Temperature Element with Head-Mount Transmitter	Temperature measurement at downstream of electrical heater	Helium Gas	°C	50-EHCL-016-ESA1-PP	0-500	4-20 mA	AI	NA	340	-	-	-	-	Yes	Yes	
31	MTE-011	Temperature Element with Head-Mount Transmitter	Temperature measurement at pipe surface at the outlet of electrical heater	SS Surface	°C	50-EHCL-016-ESA1-PP	0-500	4-20 mA	AI	NA	420	-	-	-	-	Yes	Yes	
32	MTE-012	Temperature Element with Head-Mount Transmitter	Temperature measurement at circulator discharge to recuperator inlet	Helium Gas	°C	50-EHCL-014-ESA1-PP	0-500	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
33	MTE-013	Temperature Element with Head-Mount Transmitter	Temperature measurement at recuperator outlet towards helium-water heat exchanger	Helium Gas	°C	50-EHCL-002-ESA1-PP	0-500	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
34	MTE-014	Temperature Element with Head-Mount Transmitter	Temperature measurement before entering the helium-water heat exchanger	Helium Gas	°C	50-EHCL-003-ESA1-PP	0-500	4-20 mA	AI	NA	120	-	-	-	-	Yes	Yes	
35	MTE-015	Temperature Element with Head-Mount Transmitter	Temperature measurement at the discharge of circulators	Helium Gas	°C	50-EHCL-014-ESA1-PP	0-500	4-20 mA	AI	NA	85	-	-	-	-	Yes	Yes	
36	MTE-016	Temperature Element with Head-Mount Transmitter	Temperature measurement directly at the suction of circulators	Helium Gas	°C	50-EHCL-005-ESA1-PP	0-500	4-20 mA	AI	Interlock	-	-	-	-	<100 in series with >265	Yes	Yes	
37	MTE-017	Temperature Element with Head-Mount Transmitter	Temperature measurement directly at the suction of circulators	Helium Gas	°C	50-EHCL-005-ESA1-PP	0-500	4-20 mA	AI	Control	55	-	60	-	-	Yes	Yes	
38	MTE-018	Temperature Element with Head-Mount Transmitter	Temperature measurement at water inlet line	Water	°C	Water inlet line	0-100	4-20 mA	AI	NA	40	-	-	-	-	Yes	Yes	
39	MTE-019	Temperature Element with Head-Mount Transmitter	Temperature measurement at water outlet line	Water	°C	Water outlet line	0-100	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
40	MTE-101	Temperature Element with Head-Mount Transmitter	Temperature measurement of helium stream withdrawn from EHCL main loop	Helium Gas	°C	25-EHCL-013-ESA2-PP	0-100	4-20 mA	AI	NA	55	-	-	-	-	Yes	Yes	
41	MPD-001	Differential Pressure Indicating Transmitter	Differential pressure measurement across TSM	Helium Gas	bar	Across TSM	0-5	4-20 mA	AI	-	-	-	-	-	Yes	Yes		
42	MPD-002	Differential Pressure Indicating Transmitter	Differential pressure measurement across the control valve VC-001	Helium Gas	bar	50-EHCL-018-ESA1-PP	0.5	4-20 mA	AI	NA	3	-	-	-	-	Yes	Yes	
43	MPD-003	Differential Pressure Indicating Transmitter	Differential pressure measurement across recuperator	Helium Gas	bar	Across Recuperator Nozzles	0.5	4-20 mA	AI	NA	-	-	-	-	-	Yes	Yes	
44	MPD-004	Differential Pressure Indicating Transmitter	Differential pressure measurement across recuperator	Helium Gas	bar	Across Recuperator Nozzles	0.5	4-20 mA	AI	NA	1.5	-	-	-	-	Yes	Yes	
45	MPD-005	Differential Pressure Indicating Transmitter	Differential pressure measurement across electrical heater	Helium Gas	bar	50-EHCL-016-ESA1-PP	0.5	4-20 mA	AI									

