The Technical data and detailed list of components are given below.

1. **Cold head:** Cold head with water-cooled compressor, operating at 230V-50Hz, connected through a pair of 10' hoses and should operate over a temperature between approximately 4K and 310K.
2. **Instrumentation collar, rotary seal and thrust race**: This item should provide wiring access through a 19 pin feedthrough, pressure relief for the vacuum space and should have two blanked ports for additional services, if required. The instrumentation collar should provide a rotary movement between the cold head and the vacuum shroud.
3. **Vacuum shroud**: This shroud should have 5 – 32 mm Ø clear window ports, 4 in the side at 90° and 1 in the base. The window ports should be 'O' ringed and should accept 40mm Ø KBr windows. At 45° to one of the windows should be a gas injection port. A KF40 evacuation port should be fitted to allow the vacuum shroud to be pumped rapidly during injection of condensing gas. The upper section of the vacuum shroud can mate with the thrust race and rotary seal on the instrumentation collar. Five off window retaining discs should be included.
4. **Radiation shield:** Radiation shield with 5 x Ø holes to align with outer windows and injection port should be included.
5. **Sample mount:** Sample mount in OFHC copper with 25mm Ø KBr window condensate disc
6. **Calibrated sensor and heating unit:** A calibrated sensor should be included with an accuracy of 0.1 K over the working range of the equipment between 4K and 325 K along with a suitable heater assembly with variable power (25Q 100W heater).
7. **System integration and cryo-test**: System integration and cryo-test to be included to base temperature and to check the temperature control function across the temperature range.
8. **Temperature Controller**: Suitable temperature controller with two channels to heat the cold head to the desired temperature range using variable heating power within the working range of the equipment.

List of equipments and accessories including required quantities:

S.No.	Item/Description	Quantity
1.	Cold head with water-cooled compressor and with the above specification **1** (4.2 K), cold head to compressor cables, spanners and manuals	1
2	Instrument collar, rotary seal and trust race with the above specification **2**	1
3.	Vacuum shroud with the above specification **3**	1
4	Radiation shield with 5 x Ø holes to align with outer windows and injection port	1
5	Sample mount in OFHC copper with 25mm Ø KBr window condensate disc	1
6	Window blank Aluminium 40mm Ø x 2mm thk	1
7	KBr window 40mm Ø x 5 mm thk	2
8	Crystal quartz window 40mm Ø x 2 mm thk	3
9	KBr window 25mm Ø x 2 mm thk (spare)	2
10	Calibrated sensor and a suitable heater assembly as specified in **6**	1