

Table 1. Gas system quantities used to generate alarm inputs to the nanoautomate. “Ref” refers to the gas system diagram located in the “Description of Gas System” chapter. Values within the safe range produce a closed contact. Mass flowmeters generate alarms based on a percentage of maximum flow (liters/minute). LEL is the lower explosive limit of isobutane in air.

<i>Quantity</i>	<i>Ref</i>	<i>Safe Range</i>		<i>Input</i>
Helium input pressure	DPRT-1	850 – 1500	mbar	2-0
Isobutane input pressure	DPRT-2	750 – 1500	mbar	2-1
Circulation line pressure	DPRT-6	100 – 700	mbar	2-2
Chamber pressure	DPRT-9 OR DPRT-10	2.5 – 10	mbar mbar	2-3
Isobutane temperature	TEMP-1	5 – 50	° C	2-4
Flow in circulation line	FLMC-5	15%–100%	20l/mn	2-5
Flow of fresh gas	FLMC-1 OR FLMC-2 OR FLMC-3 OR FLMC-4	10%–100% 20%–100% 10%–100% 20%–100%	10l/mn 2 l/mn 2 l/mn .5 l/mn	2-6
Concentration of O ₂ in gas	SP ANALYZER	0 – 250	ppm	2-7
Isobutane concentration	SP ANALYZER	19% – 21%	–	2-8
Compressed air pressure	G1 OR G2	?		2-9
Inlet line pressure	DPRT-4	0 – 15	mbar	2-10
Bulkhead flows	FLMC-8 OR FLMC-9	>10	l/min	2-11
110 V wall power	–	On	–	2-12
Gain chamber flow	?	?		3-0
O ₂ in outlet line	O:HAZ	0 – 1%	–	3-7
Isobutane in outlet line	ISO:HAZ	0 – 10%	LEL	3-8
Isobutane in front flush	F:HAD	0 – 10%	LEL	3-10
Isobutane in rear flush	B:HAD	0 – 10%	LEL	3-11