Dual Stage Pump with PCB

PNs: 9000-2082, 9000-2083

Vacuum Source Preliminary Specification Sheet

Description

The DST Pump with PCB is a vacuum control system for use with IDEX degassing chambers. The system includes a dual stage (DST) vacuum pump and a controller PCB to maintain vacuum levels. There is a connector for optional external LED indicators or error outputs. The part numbers for various product configurations are located on the last page of this specification sheet. This specification sheet includes details for a high flow vacuum pump designed for aqueous based degassers.

PUMP CONTROL SPECIFICATIONS

Power Requirements
15-24 VDC @ 0.75 Amp max.
(< 5 Watts consumption average)

Temperature
50 ºC or lower when run in ambient conditions (20-25 ºC)

Vacuum Accuracy
120 mmHg +/- 10mmHg

Closed-Loop Control Setpoint
120 mmHg absolute pump runs at high RPM until near setpoint, then speed is varied to maintain a value of setpoint— load independent.

Errors Detected

1 – Pumpdown:	Unable to reach 150 mmHg in 10 minutes.
2 – High Vacuum:	Vacuum > 150 mmHg for more than 6 min. in the running state (after pumpdown).
3 – Sensor Signal:	Sensor Failure Detected sensor signal < 25 mmHg.

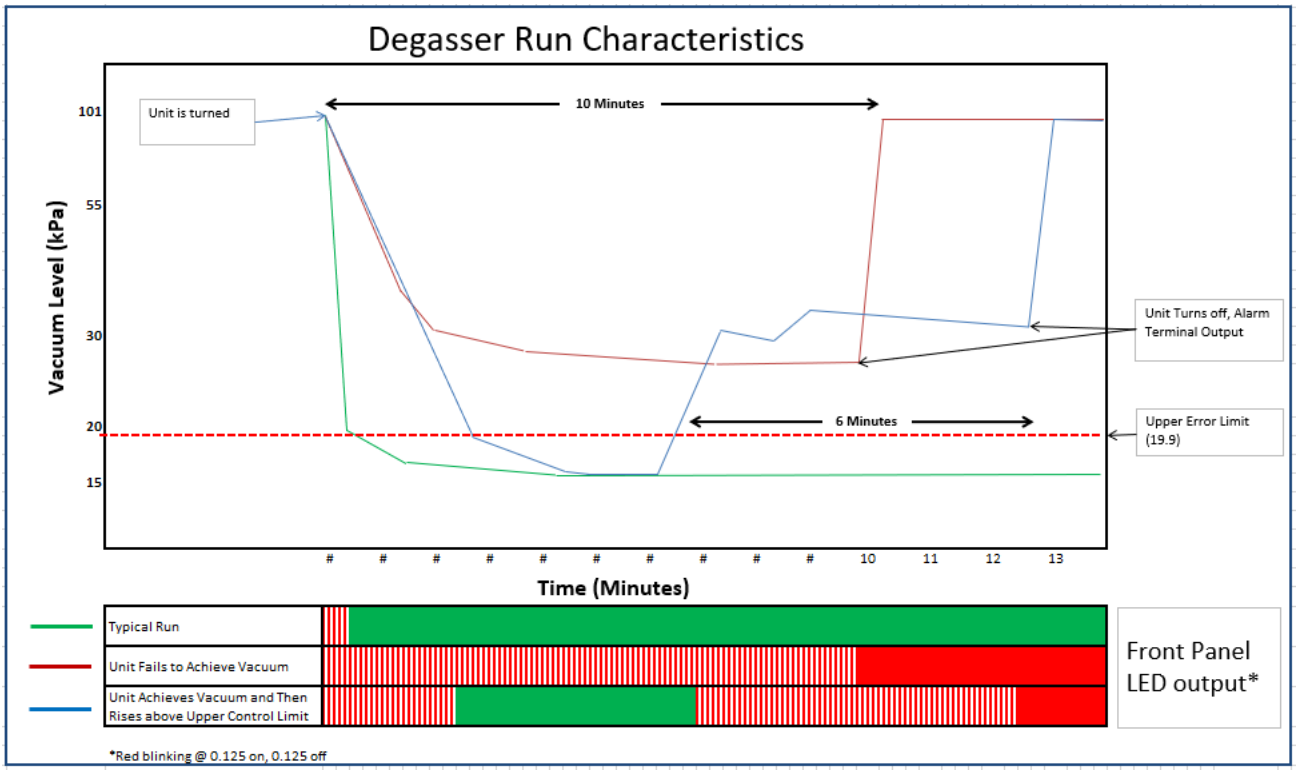
LED Indicators or Optional Error Outputs
Electrical Output – 10mA @ 5VDC
Blinking Rate - 1 second on, 1 second off

Power on, vacuum above control range:	Red – Blinking
Vacuum reaches upper control range:	Green – Solid
Error Condition, Shutdown:	Red – Solid

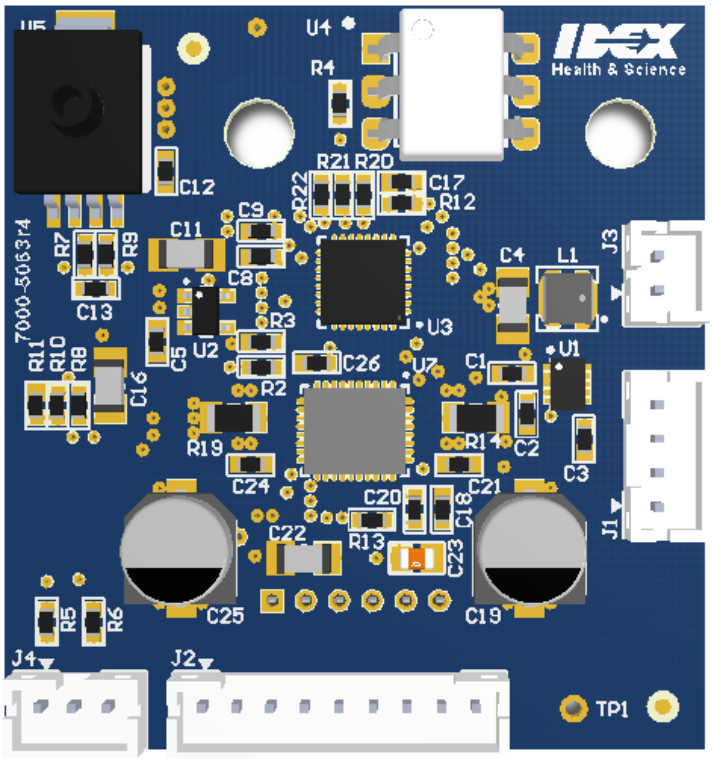
High Flow
120mmHg Set Point
9000-2082, 9000-2083

High Flow Vacuum Pump Technical Data

Air Flow (no vacuum): 650 SCCM @ 400 RPM; 100 SCCM @ 60 RPM
Typical Vacuum Performance: 120 mmHg @ 400 RPM
Pump-down Time: <1 min 080W, <1.5 mins 300W, < 30s 500w, <5 mins 600W
Pump Head Continuous Purge Air Flow Rate: ~12 SCCM
Vacuum Flow Path Materials: 303 Stainless Steel, Polypropylene, PTFE, EPDM Rubber



PCB Connector and Pin Map



Connector J1: Power Input

Header:	JST B4B-PH-K-S(LF)(SN)
Mating Terminal:	SPH-002T-P0.5S
Mating Housing:	JST PHR-4

Connector J4: Bi-Color LED

Header:	JST B3B-PH-K-S(LF)(SN)
Mating Terminal:	SPH-002T-P0.5S
Mating Housing:	JST PHR-3

Connector J3: Opto-isolated Error Output

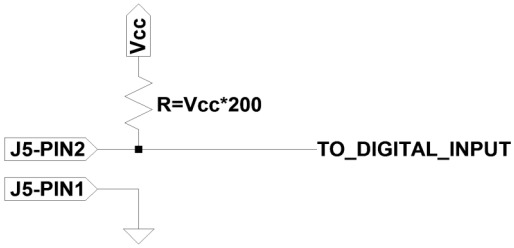
Header:	JST B2B-PH-K-S(LF)(SN)
Mating Terminal:	SPH-002T-P0.5S
Mating Housing:	JST PHR-2

The recommended wiring for these connectors is stranded 24

Connector	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
J1	+24VDC	+24VDC	GND	GND					
J2	I2C_SDA	I2C_SCL	U1_TX	U1_RX	U0_RX	U0_TX	GND	ISPn	RESETn
J3	Emitter	Collector							
J4	Red LED Anode	GND	Green LED Anode						

AWG, UL 1007.

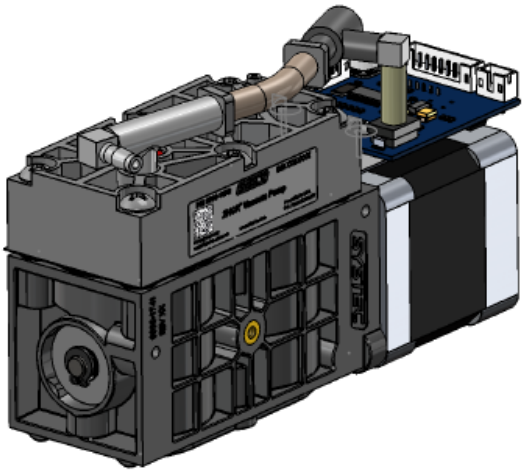
J2 provides I2C and UART communication interfaces. Both IDEX and Modbus command protocols are available.

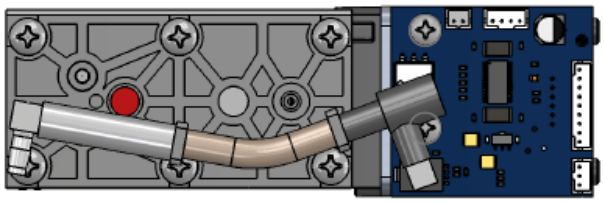


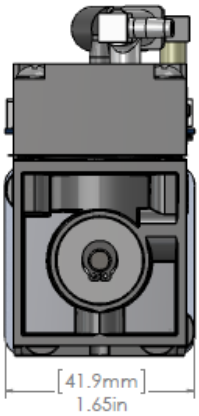
J3 exposes the opto-isolated, bi-polar transistor outputs of the onboard Fairchild Semiconductor H11G2SR2M integrated circuit. The collector and emitter of the opto-coupled transistor are exposed. The recommended circuit for interfacing to digital CMOS or TTL systems is shown in Figure 2.

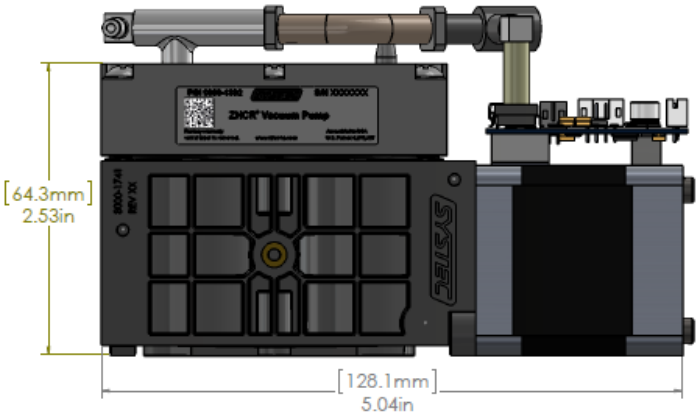
Dimensional Drawings

Dimensions are in inches and millimeters [mm]









Vacuum Degassing Control System

Part Number	Description	Mounting	Scale
9000-2082	Vacuum Control System (Pump, PCB and Air Bleed)	Bottom	High Flow
9000-2083	Vacuum Control System (Pump, PCB and Air Bleed)	Side	High Flow