

Banks Density Analysis - Turbo, Intercooler, Throttle

Location/ Device	Required Inputs	Sensor	Parameter	Acronym	Units	Group	Category	Required Parameters		
Ambient	Ambient	AirMouse	Ambient Air Pressure	AAP	PSIA	AMBIENT CONDITIONS	PRESSURE			
			Ambient Air Temp	AAT	°F	AMBIENT CONDITIONS	TEMPERATURE			
			Relative Humidity - Ambient	RH	%	AMBIENT CONDITIONS	AIR DENSITY			
		Calculated	Density - Ambient Air	AAD	LB/1KFT3	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp		
			Density % - Ambient Air	AAD	%	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp		
			Ambient Air Pressure (inHg)	AAP	INHG	AMBIENT CONDITIONS	PRESSURE	Ambient Air Pressure		
			Gas Correction Factor SAE	J1349		AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp		
			Grains Water per Pound Air	GR-H2O		AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			Density Altitude	DN-ALT	FT	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp		
			Pressure Altitude	PR-ALT	FT	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure		
			Saturation Pressure	SAT-P	INHG	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Temp		
			Vapor Pressure	VAP-P	INHG	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			Dew Point	DEW-P	°F	AMBIENT CONDITIONS	AIR DENSITY	Ambient Air Temp , Relative Humidity - Ambient		
			Ambient Gas Power Potential	HPG-1K	HP/1k	ENGINE PERFORMANCE	ENGINE PERFORMANCE AIR	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			Ambient Diesel Power Potential	HPD-1K	HP/1k	ENGINE PERFORMANCE	ENGINE PERFORMANCE AIR	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			Ambient Methanol Power Potential	HPM-1K	HP/1k	ENGINE PERFORMANCE	ENGINE PERFORMANCE AIR	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			Ambient E85 Power Potential	HPE-1K	HP/1k	ENGINE PERFORMANCE	ENGINE PERFORMANCE AIR	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			Ambient Custom Fuel Power Potential	HPC-1K	HP/1k	ENGINE PERFORMANCE	ENGINE PERFORMANCE AIR	Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
			CFM Ambient	CFMAMB	CFM	ENGINE AIR PROCESS	ENGINE PERFORMANCE AIR	Mass Air Flow , Ambient Air Pressure , Ambient Air Temp , Relative Humidity - Ambient		
	Air Intake Analysis		Ambient & Compressor Inlet	Calculated	Delta Pressure Intake Air System	IAS-DP	PSI	AIRBOX PERFORMANCE	PRESSURE	Ambient Air Pressure , Compressor Inlet Pressure
Delta Temperature Intake Air System		IAS-DT			°F	AIRBOX PERFORMANCE	TEMPERATURE	Ambient Air Temp , Compressor Inlet Temperature		
Delta Density - Intake Air System		IAS-DD			LB/1KFT3	AIRBOX PERFORMANCE	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Compressor Inlet Pressure , Compressor Inlet Temperature		
Delta Density % - Intake Air System		IAS-DD			%	AIRBOX PERFORMANCE	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Compressor Inlet Pressure , Compressor Inlet Temperature		
Pressure Ratio - Intake Air System		IAS-PR				AIRBOX PERFORMANCE	PRESSURE	Ambient Air Pressure , Compressor Inlet Pressure		
Density Ratio - Intake Air System		IAS-DR				AIRBOX PERFORMANCE	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Compressor Inlet Pressure , Compressor Inlet Temperature		
Compressor Inlet (Air Intake Outlet)	Compressor Inlet (Air Intake Outlet)	Temperature Sensor	Compressor Inlet Pressure	CMP-IP	PSIA	COMP INLET CONDITIONS	PRESSURE			
			15 Psia Pressure	CMP-IT	°F	COMP INLET CONDITIONS	TEMPERATURE			
		Calculated	Density - Compressor Inlet	CMP-ID	LB/1KFT3	COMP INLET CONDITIONS	AIR DENSITY	Compressor Inlet Pressure , Compressor Inlet Temperature		
			Density % - Compressor Inlet	CMP-ID	%	COMP INLET CONDITIONS	AIR DENSITY	Compressor Inlet Pressure , Compressor Inlet Temperature		
Compressor 1 Analysis	Turbo Speed	Turbo Speed Sensor	Turbo RPM	TURBO	KRPM	COMPRESSOR PERFORMANCE	SPEED AND VELOCITY			
			Calculated	Delta Pressure Compressor	CMP-DP	PSI	COMPRESSOR PERFORMANCE	PRESSURE	Compressor Inlet Pressure , Intercooler Inlet Pressure	
	Delta Temperature Compressor	CMP-DT		°F	COMPRESSOR PERFORMANCE	TEMPERATURE	Compressor Inlet Temperature , Intercooler Inlet Temperature			
	Delta Density - Compressor	CMP-DD		LB/1KFT3	COMPRESSOR PERFORMANCE	AIR DENSITY	Compressor Inlet Pressure , Compressor Inlet Temperature , Intercooler Inlet Pressure , Intercooler Inlet Temperature			
	Delta Density % - Compressor	CMP-DD		%	COMPRESSOR PERFORMANCE	AIR DENSITY	Compressor Inlet Pressure , Compressor Inlet Temperature , Intercooler Inlet Pressure , Intercooler Inlet Temperature			
	Pressure Ratio - Compressor	CMP-PR			COMPRESSOR PERFORMANCE	PRESSURE	Compressor Inlet Pressure , Intercooler Inlet Pressure			
	Density Ratio - Compressor	CMP-DR			COMPRESSOR PERFORMANCE	AIR DENSITY	Compressor Inlet Pressure , Compressor Inlet Temperature , Intercooler Inlet Pressure , Intercooler Inlet Temperature			
	Intercooler Inlet (Compressor Outlet)	Intercooler Inlet (Compressor Outlet)		Temperature Sensor	Intercooler Inlet Pressure	IC-IP	PSIA	INTERCOOLER INLET CONDITIONS	PRESSURE	
					Psia Pressure	IC-IT	°F	INTERCOOLER INLET CONDITIONS	TEMPERATURE	
	Intercooler Analysis	Intercooler Inlet & Throttle Inlet	Calculated	Density - Intercooler Inlet	IC-ID	LB/1KFT3	INTERCOOLER INLET CONDITIONS	AIR DENSITY	Intercooler Inlet Pressure , Intercooler Inlet Temperature	
Density % - Intercooler Inlet				IC-ID	%	INTERCOOLER INLET CONDITIONS	AIR DENSITY	Intercooler Inlet Pressure , Intercooler Inlet Temperature		
Delta Pressure Intercooler				IC-DP	PSI	INTERCOOLER PERFORMANCE	PRESSURE	Intercooler Inlet Pressure , Throttle Inlet Pressure		
Delta Temperature Intercooler				IC-DT	°F	INTERCOOLER PERFORMANCE	TEMPERATURE	Intercooler Inlet Temperature , Throttle Inlet Temperature		
Delta Density - Intercooler				IC-DD	LB/1KFT3	INTERCOOLER PERFORMANCE	AIR DENSITY	Intercooler Inlet Pressure , Intercooler Inlet Temperature , Throttle Inlet Pressure , Throttle Inlet Temperature		
Delta Density % - Intercooler				IC-DD	%	INTERCOOLER PERFORMANCE	AIR DENSITY	Intercooler Inlet Pressure , Intercooler Inlet Temperature , Throttle Inlet Pressure , Throttle Inlet Temperature		
Pressure Ratio - Intercooler				IC-PR		INTERCOOLER PERFORMANCE	PRESSURE	Intercooler Inlet Pressure , Throttle Inlet Pressure		
Density Ratio - Intercooler				IC-DR		INTERCOOLER PERFORMANCE	AIR DENSITY	Intercooler Inlet Pressure , Intercooler Inlet Temperature , Throttle Inlet Pressure , Throttle Inlet Temperature		
Intercooler Inlet & Throttle Inlet & Ambient Temp	Calculated	Intercooler Effectiveness Air to Air	IC-EFT	%	INTERCOOLER PERFORMANCE	ENGINE PERFORMANCE AIR	Intercooler Inlet Temperature , Throttle Inlet Temperature , Ambient Air Temp			
		Intercooler Efficiency Air to Air	IC-EFF	%	INTERCOOLER PERFORMANCE	ENGINE PERFORMANCE AIR	Intercooler Inlet Pressure , Intercooler Inlet Temperature , Throttle Inlet Pressure , Throttle Inlet Temperature , Ambient Air Temp			
Throttle Inlet (Intercooler Outlet)	Throttle Inlet (Intercooler Outlet)	Temperature Sensor	Throttle Inlet Pressure	THR-IP	PSIA	THROTTLE INLET CONDITIONS	PRESSURE			
			Psia Pressure	THR-IT	°F	THROTTLE INLET CONDITIONS	TEMPERATURE			
		Calculated	Density - Throttle Inlet	THR-ID	LB/1KFT3	THROTTLE INLET CONDITIONS	AIR DENSITY	Throttle Inlet Pressure , Throttle Inlet Temperature		
			Density % - Throttle Inlet	THR-ID	%	THROTTLE INLET CONDITIONS	AIR DENSITY	Throttle Inlet Pressure , Throttle Inlet Temperature		
Throttle Analysis	Throttle Inlet & Manifold	Calculated	Delta Pressure Throttle	THR-DP	PSI	THROTTLE PERFORMANCE	PRESSURE	Throttle Inlet Pressure , Manifold Absolute Pressure		
			Delta Temperature Throttle	THR-DT	°F	THROTTLE PERFORMANCE	TEMPERATURE	Throttle Inlet Temperature , Manifold Air Temp		
			Delta Density - Throttle	THR-DD	LB/1KFT3	THROTTLE PERFORMANCE	AIR DENSITY	Throttle Inlet Pressure , Throttle Inlet Temperature , Manifold Absolute Pressure , Manifold Air Temp		
			Delta Density % - Throttle	THR-DD	%	THROTTLE PERFORMANCE	AIR DENSITY	Throttle Inlet Pressure , Throttle Inlet Temperature , Manifold Absolute Pressure , Manifold Air Temp		
			Pressure Ratio - Throttle	THR-PR		THROTTLE PERFORMANCE	PRESSURE	Throttle Inlet Pressure , Manifold Absolute Pressure		
			Density Ratio - Throttle	THR-DR		THROTTLE PERFORMANCE	AIR DENSITY	Throttle Inlet Pressure , Throttle Inlet Temperature , Manifold Absolute Pressure , Manifold Air Temp		
Manifold	Manifold	Temperature Sensor	Manifold Absolute Pressure	MAP	PSIA	MANIFOLD CONDITIONS	PRESSURE			
			Psia Pressure	MAT	°F	MANIFOLD CONDITIONS	TEMPERATURE			
		Calculated	Density - Manifold Air	MAD	LB/1KFT3	MANIFOLD CONDITIONS	AIR DENSITY	Manifold Absolute Pressure , Manifold Air Temp		
			Density % - Manifold Air	MAD	%	MANIFOLD CONDITIONS	AIR DENSITY	Manifold Absolute Pressure , Manifold Air Temp		
Cylinder Head	Manifold & MAF	Calculated	Density - Cylinder	CAD	LB/1KFT3	COMP INLET CONDITIONS	AIR DENSITY	Manifold Absolute Pressure , Manifold Air Temp , Engine RPM , Mass Air Flow		
			Density % - Cylinder	CAD	%	COMP INLET CONDITIONS	AIR DENSITY	Manifold Absolute Pressure , Manifold Air Temp , Engine RPM , Mass Air Flow		
Air System Analysis	Ambient & Manifold	Calculated	Boost Pressure	BOOST	PSIG	ENGINE PERFORMANCE	PRESSURE	Ambient Air Pressure , Manifold Absolute Pressure		
			Delta Temperature System	SYS-DT	°F	ENGINE PERFORMANCE	TEMPERATURE	Ambient Air Temp , Manifold Air Temp		
			Density - Boost Air	BAD	LB/1KFT3	ENGINE PERFORMANCE	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Manifold Absolute Pressure , Manifold Air Temp		
			Density % - Boost Air	BAD	%	ENGINE PERFORMANCE	AIR DENSITY	Ambient Air Pressure , Ambient Air Temp , Manifold Absolute Pressure , Manifold Air Temp		
			Pressure Ratio - System	P-RAT		ENGINE PERFORMANCE	PRESSURE	Ambient Air Pressure , Manifold Absolute Pressure		
Exhaust/Turbine										
Exhaust	Turbine Inlet and Outlet	Psia Pressure	Turbine Inlet Pressure	TBN-IP	PSIA	EXHAUST SYSTEMS	PRESSURE			
			Temperature Sensor	Turbine Inlet Temp	TBN-IT	°F	EXHAUST SYSTEMS	TEMPERATURE		
		Temperature Sensor	Turbine Outlet Pressure	TBN-OP	PSIA	EXHAUST SYSTEMS	PRESSURE			
			Turbine Outlet Temp	TBN-OT	°F	EXHAUST SYSTEMS	TEMPERATURE			
	Turbine Analysis	Calculated	Turbine Inlet Pressure (psig)	TBN-IP	PSIG	EXHAUST SYSTEMS	PRESSURE	Turbine Inlet Pressure , Ambient Air Pressure		
			Delta Pressure Turbine	TUR-DP	PSI	EXHAUST SYSTEMS	PRESSURE	Turbine Inlet Pressure , Turbine Outlet Pressure		
			Delta Temperature Turbine	TUR-DT	°F	EXHAUST SYSTEMS	TEMPERATURE	Turbine Inlet Temp , Turbine Outlet Temp		