

COMPARISON OF MEDIUM TO LARGE UTILITY GRADE METERS

HOW DOES DATTUS FM2 AND FM3 COMPARE WITH ROTARY AND TURBINE METERS

FEATURE	ITRON DATTUS			ROTARY	TURBINE	DISCUSSION
	FM1	FM2	FM3			
Fixed Factor Pressure Correction	YES	YES	YES	NO	NO	Without pressure correction a gas meter will start to underread at pressures above 7"wc or 0.25 psig. For instance at 14"w.c. or 0.5 psig your gas read will be underreading by 1.6%. At 5 psig your meter will be undreading by 32%. Using meters without a means of correcting for pressure at pressures above 7" wc is not recommended and leads to incorrect reading without a manual correction. Manual correction rarely works in most cases since it requires someone to remember to apply the correction factor which in our experience is rarely done or not done consistently over time especially with changing personnel unaware of why or how this factor is applied. It is extremely important to make sure what is shown on the meter is the correct read which is accomplished with fixed factor pressure correction programmed into the meter.
Temperature Correction	OPTION	OPTION	OPTION	OPTION	OPTION	Dattus FM series have temperatue compensation built into the meter which can be easily turned on in the shop for field. Rotary meters can be ordered with mechanical TC but a CTR (std) meter cannot be retrofitted at a reasonable cost. Adding temperature correction to turbine meters requires a flow corrector which adds considerable cost.
Moving Parts	NO	NO	NO	YES	YES	The main problems seen with rotary meters and turbine meters is damage due to particulates and weld slag which essentially locks up the meters and prevents gas from flowing and the meter from spinning. The Dattus meter has no moving parts and is able to handle more particulates without damage although precautions should be taken as internal sensors may be damaged if a strainer is not used and meter is oriented in a horizontal line with the index pointed to the sky. The Dattus FM series meters do have redundant sensors so if one is damaged the second sensor will continue to provide accurate results for the meter.
Oil Required	NO	NO	NO	YES	SOME	Rotary meters require oil be inserted into both sides of the meter so the impellers and gears are lubricated properly to prevent friction and drag. If oil is not filled correctly oil flows into the measuring chamber causing increased friction and increases the chance debris will collect in the measuring chamber. The oil in a rotary and turbine meter should be flushed and changed on a regular basis to remove debris from oil bath.
Flange Misalignment Causing Meter Lock-Up	NO	NO	NO	YES	NO	If stress is placed on a rotary meter due to flange misalignment torque is place on the meter body which may cause the gears and rotary lobes to lock up.
Overspinning	NO	NO	NO	YES	YES	If a rotary or turbine meter is undersized or someone opens a valve downstream to blow down the lines and the meter exceeds its maximum flow rate these meters may overspin and the internals may fail. The Dattus FM2 and FM3 can be run at 25% over capacity without issue. Flow rates exceeding 1.25 rated capacity for Dattus FM2 and FM3 will result in no meter damage and only an error message that you have exceeded the rated capacity.

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Shop or Field Upsizing	YES	YES	YES	NO	NO	Any Dattus FM1, FM2 or FM3 meter can be upsized in your shop or in the field without turning off the gas by simply reconfiguring the electronics with an upgrade key supplied by the factory. For instance an FM1-1M can be upgraded to any size up to 3M, AND FM2-3M can be upsized to an 11M and an FM3-7M meters can be upsized to any size up to 56M.
Orientation Options	ALL	ALL	ALL	LIMITED	LIMITED	Although there are preferred orientations the Dattus meter will function properly in any orientation, horizontal right to left, horizontal left to right, vertical top to bottom and vertical bottom to top. Rotaries and turbine meters are generally limited to horizontal left to right and vertical top to bottom.
Index Rotation	YES	YES	YES	NO	LIMITED	The Dattus meter index can be rotated in 4 different directions allowing a right side up index no matter the meter orientation. Rotary meter indexes are fixed and sometimes are upside down or against a wall and unreadable. Turbine meters can only be configured in two directions and in many cases when they are rotated they are rotated incorrectly causing damage to the meter.
Minimum Flow Rate for 1% accuracy (cfh)	35	60	100	20-1056	830-5870	Over the complete line of meter sizes (1M to 11M for FM2 and 7M to 56M for FM3) the Dattus meter by far has the best accuracy range over rotary and turbines as shown in the data in this row. Again Dattus can also function accurately 25% over the rated capacity which is not recommended for safe operation of rotary and turbine meters.
Lock-up	NO	NO	NO	YES	NO	There are many installation where gas must continue to be supplied to customer. If a rotary meter locks up a small amount of flow may pass through the impellers but not enough to feed downstream demand. The Dattus and turbine meters will continue to pass flow even if there are problems with the meter in most cases.
Data-Logging	YES	YES	YES	SPECIAL	SPECIAL	Datalogging is included as a standard feature in all FM series meters. Datalogging for rotary and turbine meters requires an expensive flow corrector or remote totalizer.
Pulse Outputs	STD	STD	STD	EXTRA	EXTRA	Pulse output is a standard feature for all Dattus meters. Dattus meters are equipped with 4 pulse outputs all configurable for uncorrected or corrected pulse output, pulse type, and pulse width among other options. Rotary and turbine meters require a separate item for pulse output and typically have one pulse output that is not configurable.
Inventory Considerations	SMALL	SMALL	SMALL	LARGE	LARGE	Because Dattus FM2 and FM2 meters can be shop or field upgraded you can stock approximately 30% of what you might stock with rotary and turbine meters and still handle the same order flow.
Size Options	2"	2" or 3"	4"	2 to 8"	2 to 12"	FM2 meters in sizes 1M through 11M can be ordered in 2" or 3" flange sizes which is not possible with rotaries which are one size only in most cases.

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