

Table 1 of §1065.205—Recommended performance specifications for measurement instruments

Measurement Instrument	Measured quantity symbol	Complete System Rise time ( $t_{10-90}$ ) and Fall time ( $t_{90-10}$ ) <sup>a</sup>	Recording update frequency	Accuracy <sup>b</sup>	Repeatability <sup>b</sup>	Noise <sup>b</sup>
Engine speed transducer	$f_n$	1 s	1 Hz means	2.0 % of pt. or 0.5 % of max.	1.0 % of pt. or 0.25 % of max.	0.05 % of max
Engine torque transducer	$T$	1 s	1 Hz means	2.0 % of pt. or 1.0 % of max.	1.0 % of pt. or 0.5 % of max.	0.05 % of max.
Electrical work (active-power meter)	$W$	1 s	1 Hz means	2.0 % of pt. or 0.5 % of max.	1.0 % of pt. or 0.25 % of max.	0.05 % of max
General pressure transducer (not a part of another instrument)	$p$	5 s	1 Hz	2.0 % of pt. or 1.0 % of max.	1.0 % of pt. or 0.50 % of max.	0.1 % of max
Atmospheric pressure meter used for PM-stabilization and balance environments	$p_{atmos}$	50 s	5 times per hour	50 Pa	25 Pa	5 Pa
General purpose atmospheric pressure meter	$p_{atmos}$	50 s	5 times per hour	250 Pa	100Pa	50 Pa
Temperature sensor for PM-stabilization and balance environments	$T$	50 s	0.1 Hz	0.25 K	0.1 K	0.1 K
Other temperature sensor (not a part of another instrument)	$T$	10 s	0.5 Hz	0.4 % of pt. K or 0.2 % of max. K	0.2 % of pt. K or 0.1 % of max. K	0.1 % of max
Dewpoint sensor for PM-stabilization and balance environments	$T_{dew}$	50 s	0.1 Hz	0.25 K	0.1 K	0.02 K
Other dewpoint sensor	$T_{dew}$	50 s	0.1 Hz	1 K	0.5 K	0.1 K
Fuel flow meter (Fuel totalizer)	$\dot{m}$	5 s (N/A)	1 Hz (N/A)	2.0 % of pt. or 1.5 % of max.	1.0 % of pt. or 0.75 % of max.	0.5 % of max.
Total diluted exhaust meter (CVS) (With heat exchanger before meter)	$\dot{n}$	1 s (5 s)	1 Hz means (1 Hz)	2.0 % of pt. or 1.5 % of max.	1.0 % of pt. or 0.75 % of max.	1.0 % of max.
Dilution air, inlet air, exhaust, and sample flow meters	$\dot{n}$	1 s	1 Hz means of 5 Hz samples	2.5 % of pt. or 1.5 % of max.	1.25 % of pt. or 0.75 % of max.	1.0 % of max.
Continuous gas analyzer	$x$	5 s	1 Hz	2.0 % of pt. or 2.0 % of meas.	1.0 % of pt. or 1.0 % of meas.	1.0 % of max.
Batch gas analyzer	$x$	N/A	N/A	2.0 % of pt. or 2.0 % of meas.	1.0 % of pt. or 1.0 % of meas.	1.0 % of max.
Gravimetric PM balance	$m_{PM}$	N/A	N/A	See §1065.790	0.5 µg	N/A
Inertial PM balance	$m_{PM}$	5 s	1 Hz	2.0 % of pt. or 2.0 % of meas.	1.0 % of pt. or 1.0 % of meas.	0.2 % of max.

<sup>a</sup> The performance specifications identified in the table apply separately for rise time and fall time.

<sup>b</sup> Accuracy, repeatability, and noise are all determined with the same collected data, as described in §1065.305, and based on absolute values. “pt.” refers to the overall flow-weighted mean value expected at the standard; “max.” refers to the peak value expected at the standard over any test interval, not the maximum of the instrument’s range; “meas” refers to the actual flow-weighted mean measured over any test interval.