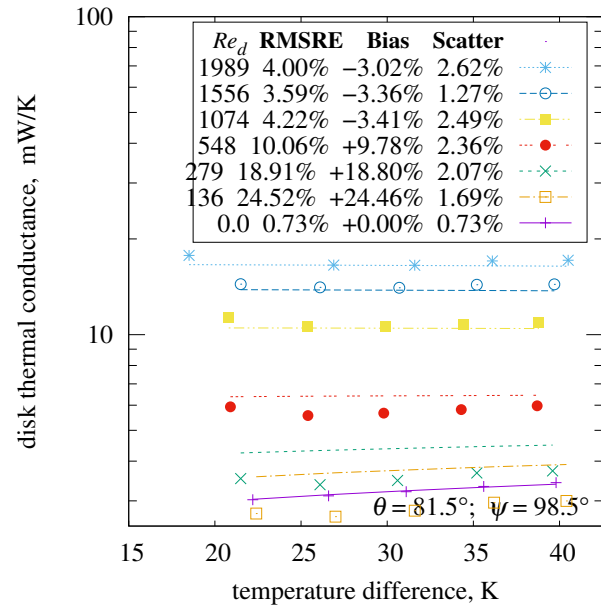
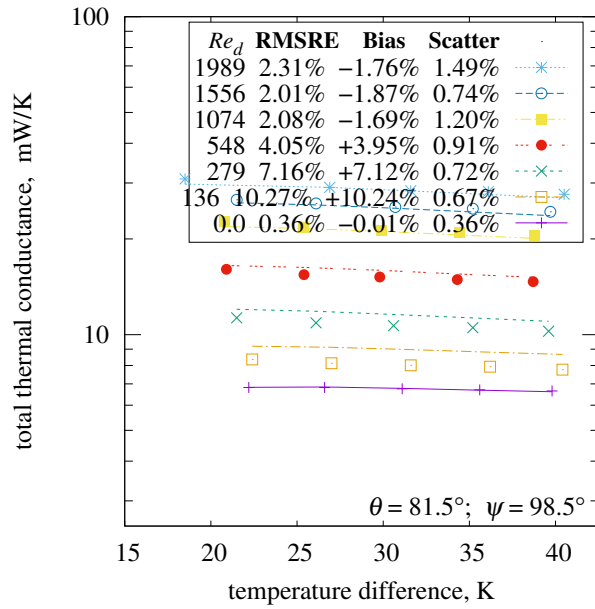
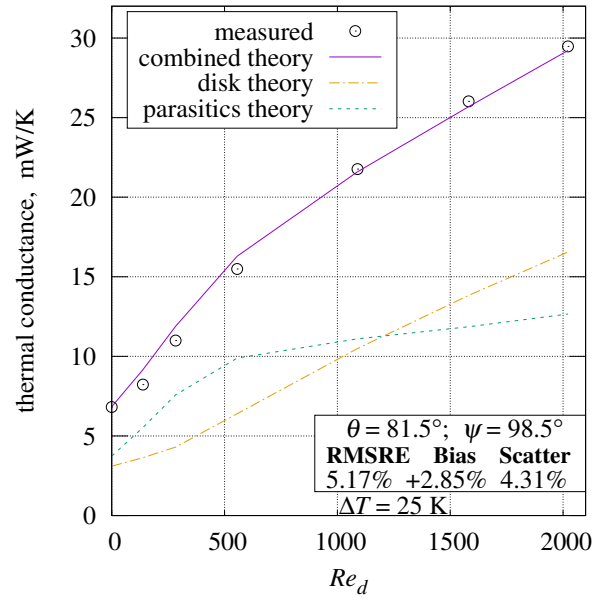
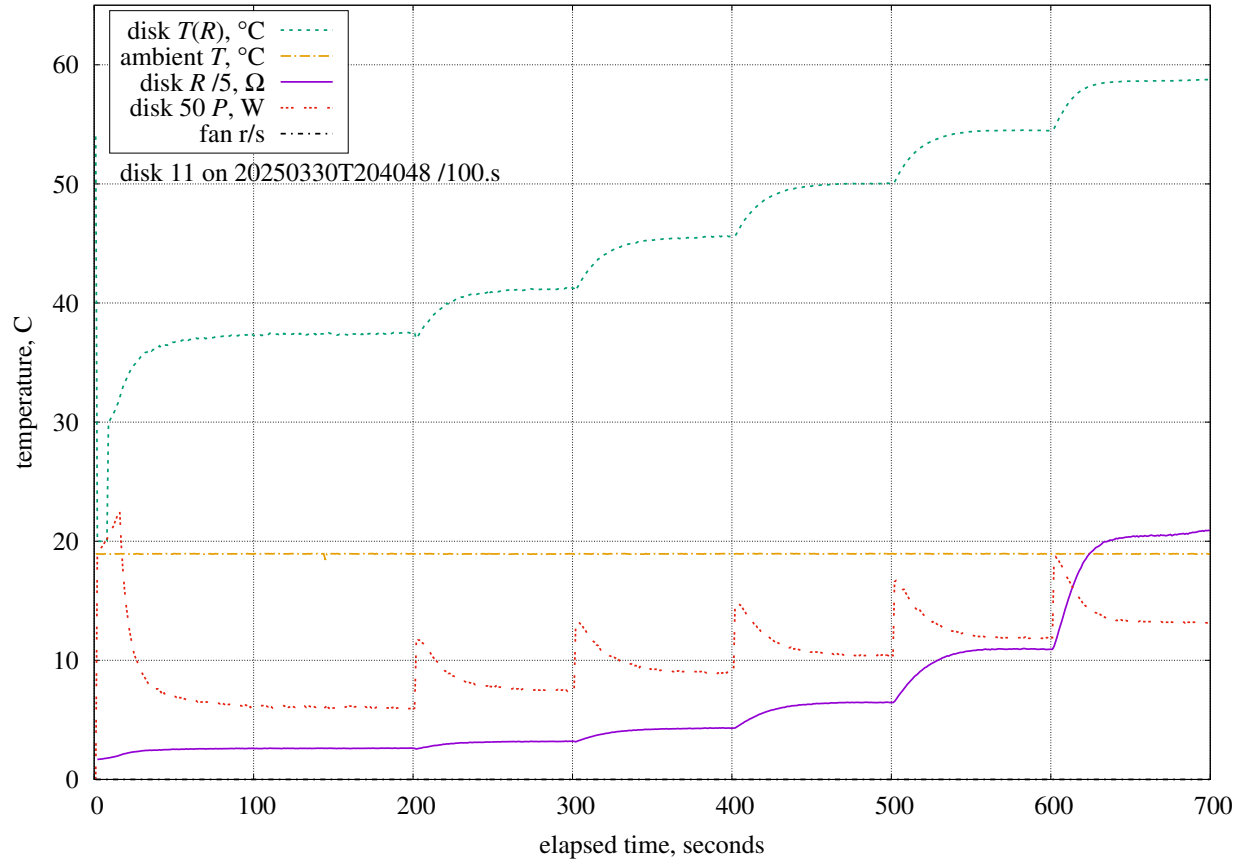


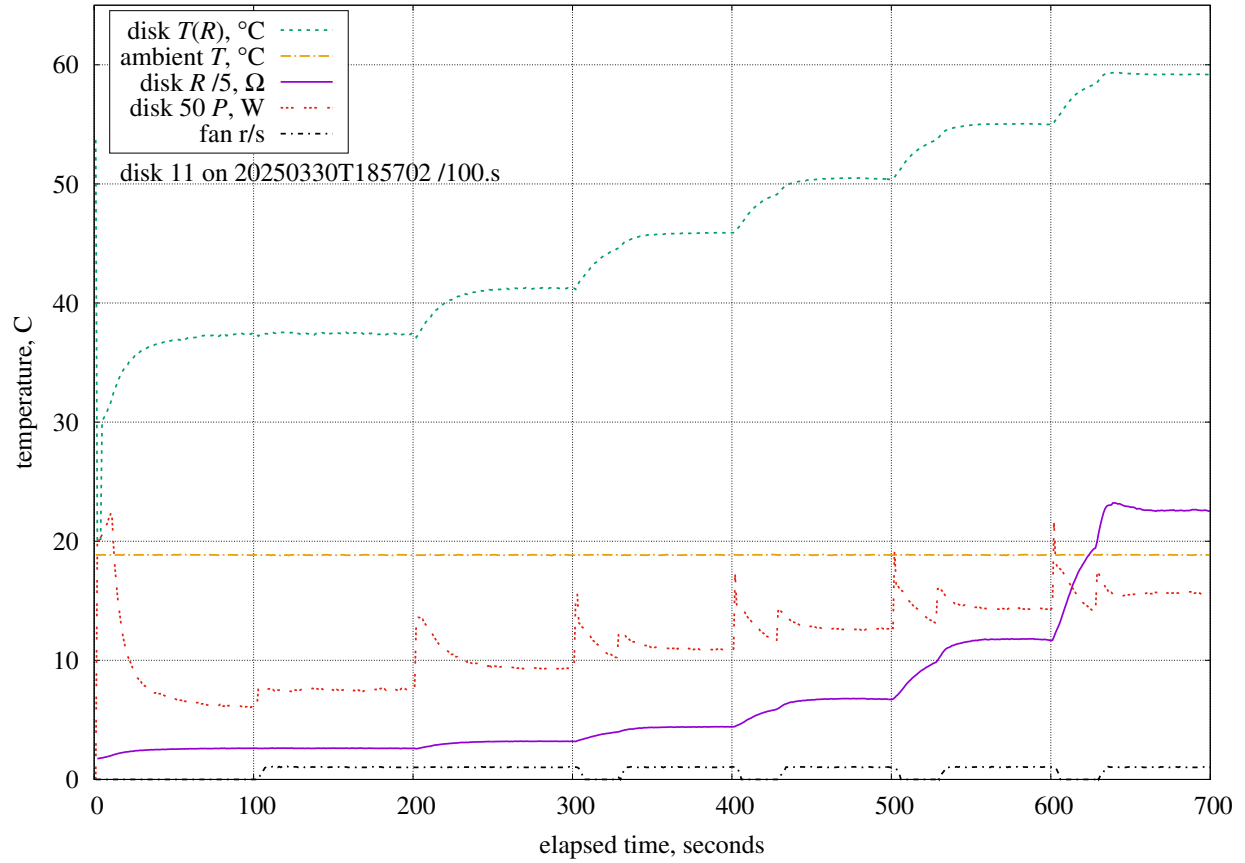




$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 0.000$ m/s (0 r/min)

Estimated measurement uncertainties of natural convection at $\theta = 81.6$.

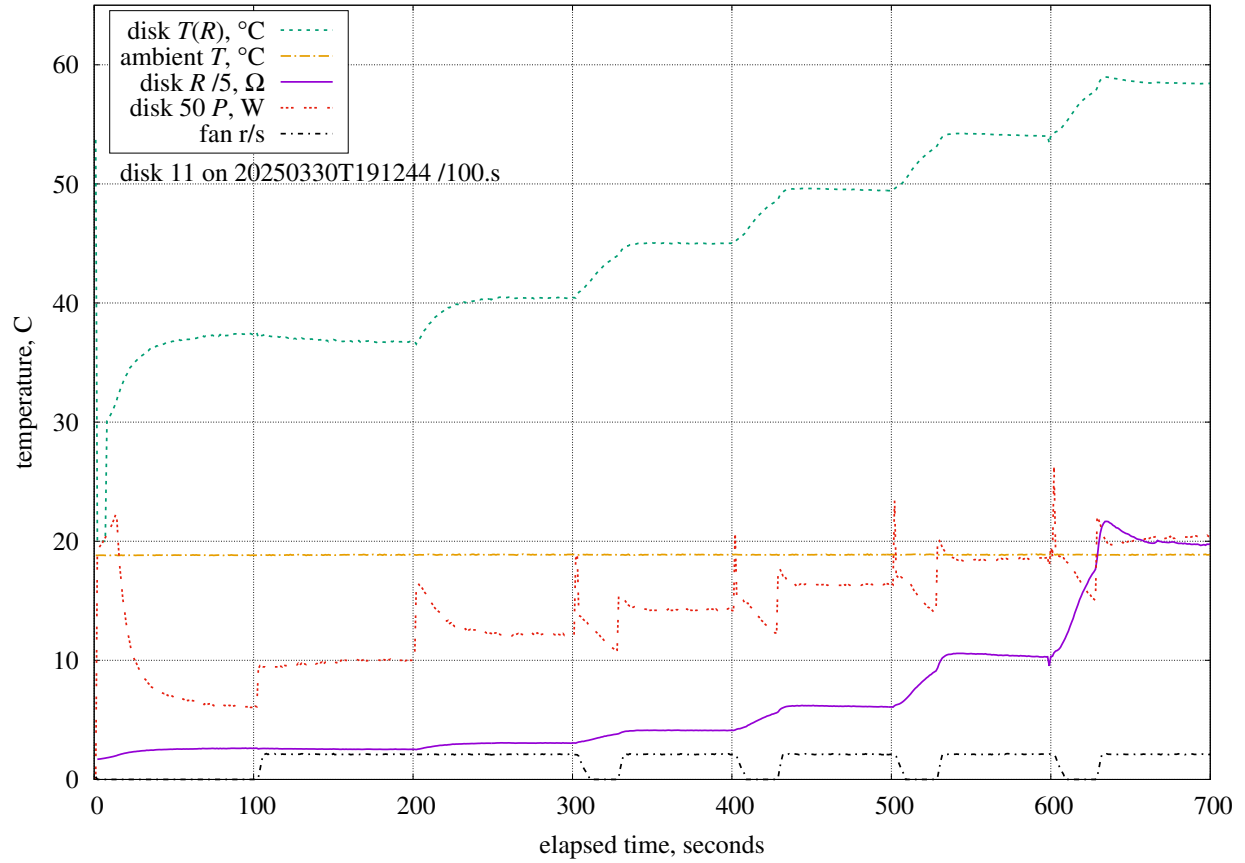
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.31%/K	0.10.K	0.43%	LM35C differential
P	101.kPa	+0.0001%/Pa	1.5.kPa	0.21%	MPXH6115A6U air pressure
C_S	0.420	-6.88%	0.050	0.34%	rim shape factor
D_o	2.81.mm	+2911%/m	500.um	1.46%	tube outer diameter
D_i	1.11.mm	+6356%/m	200.um	1.27%	tube inner diameter
D_g	166.um	-301%/m	750.um	0.23%	tube air gap
L_{wire}	38.0.mm	+1252%/m	500.um	0.63%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.149%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.33%	ABS thermal conductivity
d	12.0.mm	+3392%/m	100.um	0.34%	disk diameter
				2.54%	combined bias uncertainty



$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 0.186 \text{ m/s}$ (62 r/min)

Estimated measurement uncertainties at $Re = 138$.

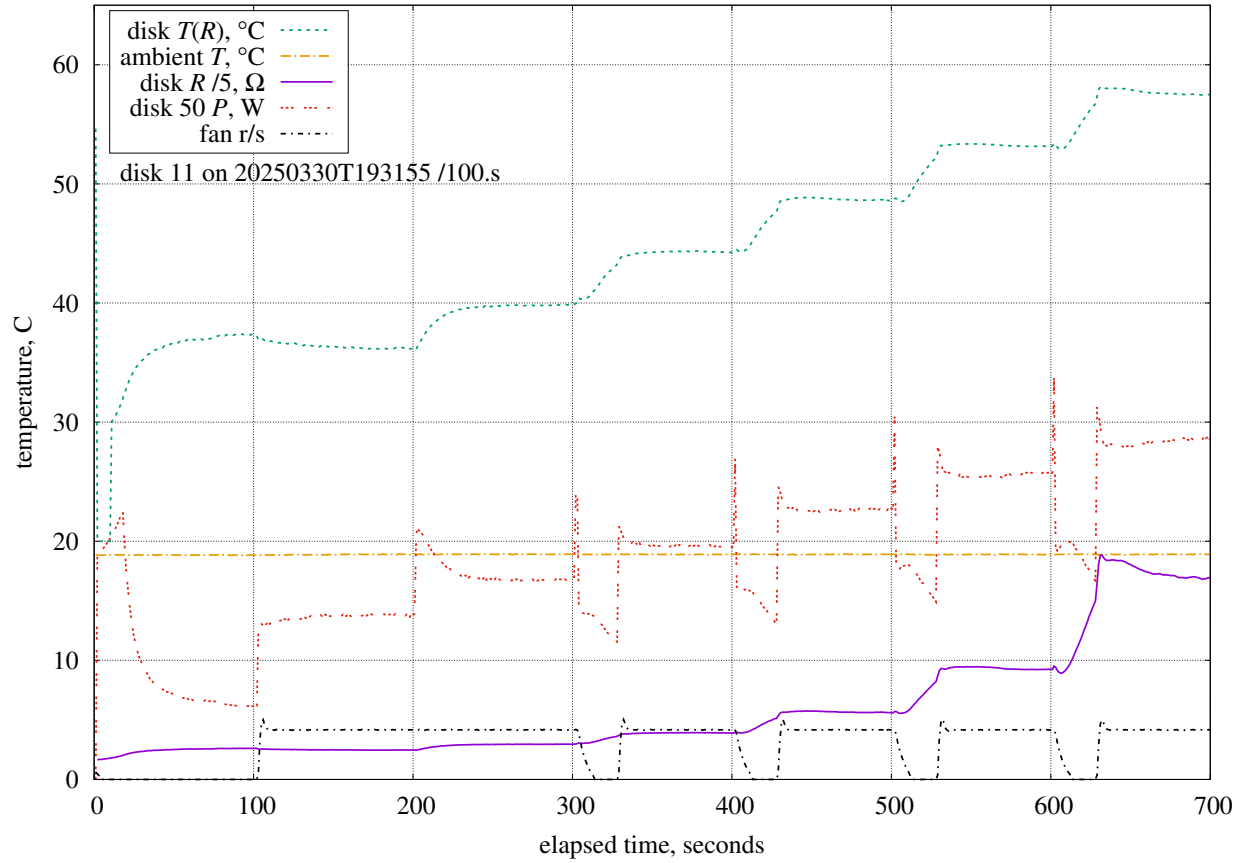
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.12%/K	0.10.K	0.41%	LM35C differential
P	101.kPa	+0.0002%/Pa	1.5.kPa	0.36%	MPXH6115A6U air pressure
η	0.340	+58.1%	0.007	0.40%	anemometer calibration
D_i	1.11.mm	+8572%/m	200.um	1.71%	tube inner diameter
D_g	166.um	-396%/m	750.um	0.30%	tube air gap
L_{wire}	38.0.mm	+1650%/m	500.um	0.83%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.166%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.48%	ABS thermal conductivity
d	12.0.mm	+3478%/m	100.um	0.35%	disk diameter
				2.57%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	61.7.r/min	+0.320%/(r/min)	1.0.r/min	0.32%	fan rotation rate
				2.65%	RSS combined uncertainty



$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 0.381$ m/s (127 r/min)

Estimated measurement uncertainties at $Re = 283$.

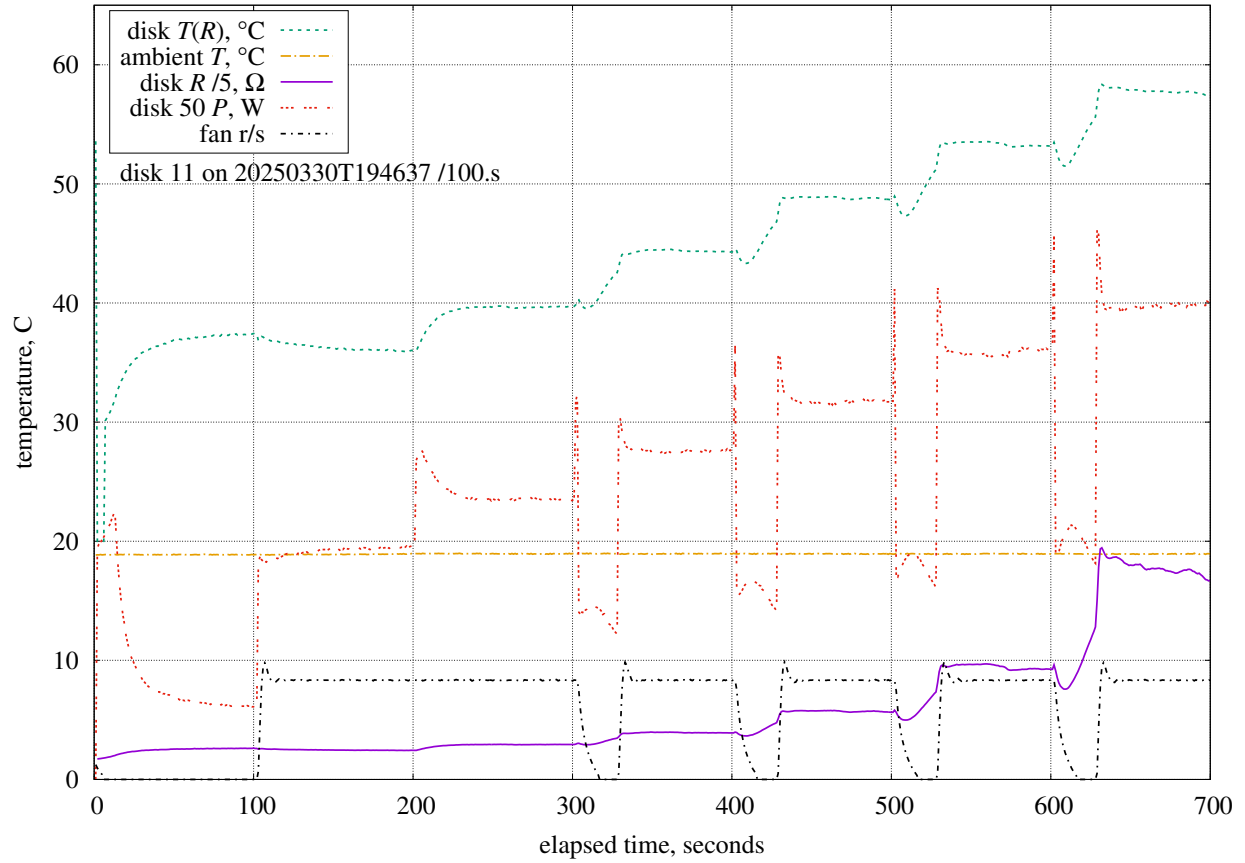
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.05%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0005%/Pa	1.5.kPa	0.78%	MPXH6115A6U air pressure
η	0.340	+151%	0.007	1.03%	anemometer calibration
Re_0	600	-0.0063%	60	0.38%	integration lower-bound
D_o	2.81.mm	+5591%/m	500.um	2.80%	tube outer diameter
D_i	1.11.mm	+12385%/m	200.um	2.48%	tube inner diameter
D_g	166.um	-516%/m	750.um	0.39%	tube air gap
L_{wire}	38.0.mm	+2151%/m	500.um	1.08%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.188%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.68%	ABS thermal conductivity
d	12.0.mm	+3764%/m	100.um	0.38%	disk diameter
				4.50%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	127.r/min	+0.406%/(r/min)	1.00.r/min	0.40%	fan rotation rate
				4.57%	RSS combined uncertainty



$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 0.748$ m/s (250 r/min)

Estimated measurement uncertainties at $Re = 556$.

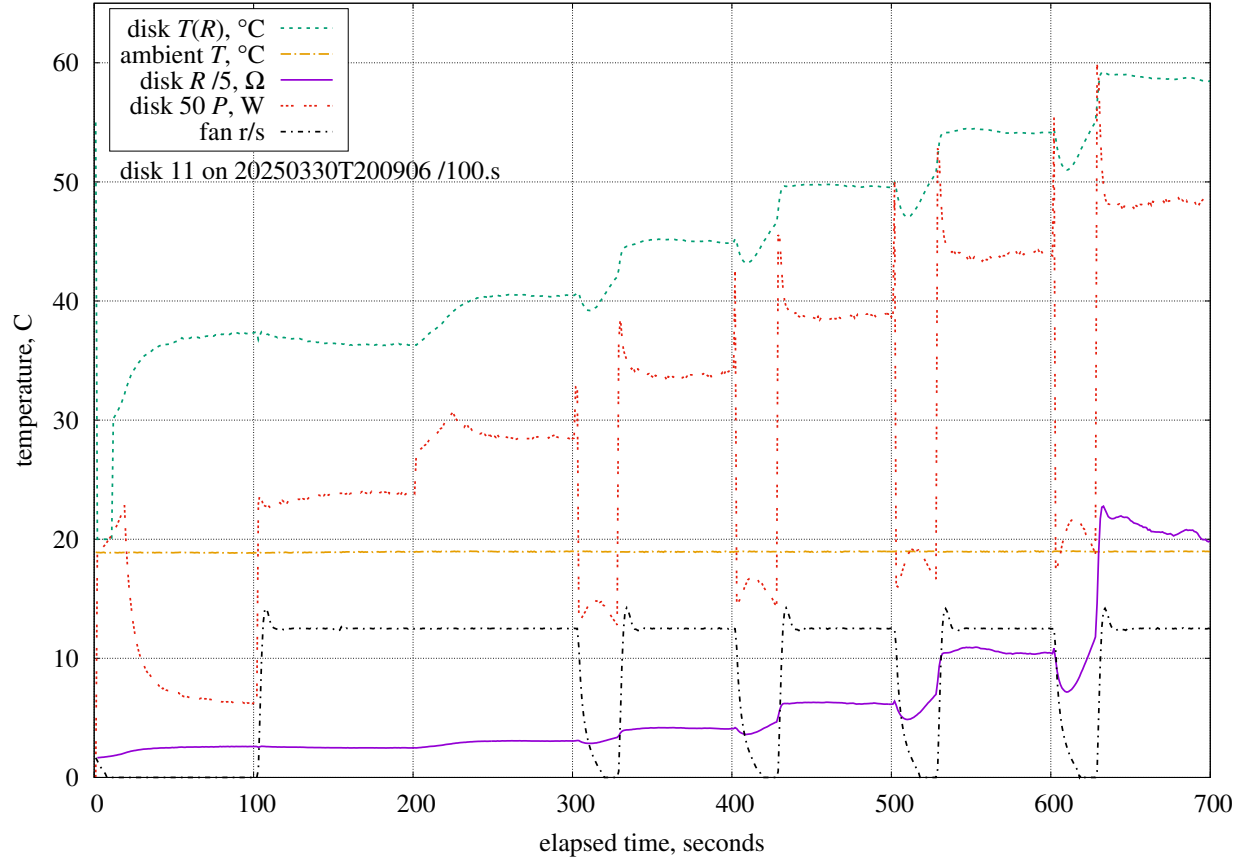
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.99%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0004%/Pa	1.5.kPa	0.55%	MPXH6115A6U air pressure
η	0.340	+115%	0.007	0.78%	anemometer calibration
Re_0	600	-0.0093%	60	0.56%	integration lower-bound
D_o	2.81.mm	-5196%/m	500.um	2.60%	tube outer diameter
D_i	1.11.mm	+14948%/m	200.um	2.99%	tube inner diameter
D_g	166.um	-602%/m	750.um	0.45%	tube air gap
L_{wire}	38.0.mm	+2511%/m	500.um	1.26%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.192%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.72%	ABS thermal conductivity
d	12.0.mm	+5060%/m	100.um	0.51%	disk diameter
				4.70%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	250.r/min	+0.156%/(r/min)	1.0.r/min	0.16%	fan rotation rate
				4.71%	RSS combined uncertainty



$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 1.467$ m/s (500 r/min)

Estimated measurement uncertainties at $Re = 1089$.

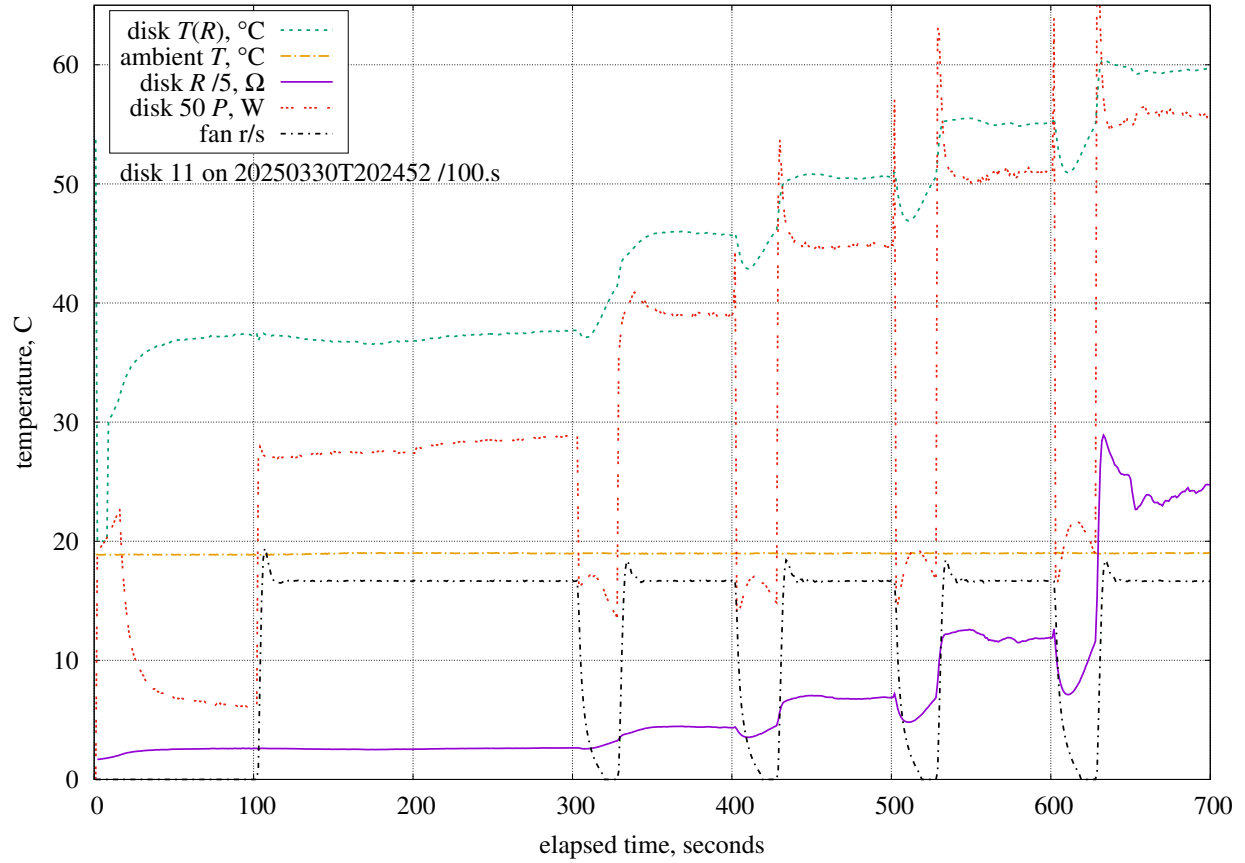
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.97%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0003%/Pa	1.5.kPa	0.48%	MPXH6115A6U air pressure
η	0.340	+99.5%	0.007	0.68%	anemometer calibration
Re_0	600	-0.010%	60	0.61%	integration lower-bound
D_o	2.81.mm	-8855%/m	500.um	4.43%	tube outer diameter
D_i	1.11.mm	+12779%/m	200.um	2.56%	tube inner diameter
D_g	166.um	-572%/m	750.um	0.43%	tube air gap
L_{wire}	38.0.mm	+2382%/m	500.um	1.19%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.162%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.45%	ABS thermal conductivity
d	12.0.mm	+6566%/m	100.um	0.66%	disk diameter
				5.62%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	500.r/min	+0.068%/(r/min)	1.6.r/min	0.11%	fan rotation rate
				5.62%	RSS combined uncertainty



$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 2.131$ m/s (750 r/min)

Estimated measurement uncertainties at $Re = 1582$.

Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.97%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0004%/Pa	1.5.kPa	0.65%	MPXH6115A6U air pressure
η	0.340	+125%	0.007	0.85%	anemometer calibration
Re_0	600	-0.010%	60	0.60%	integration lower-bound
C_B	0.541	+2.20%	0.100	0.22%	bypass coefficient
D_o	2.81.mm	-5399%/m	500.um	2.70%	tube outer diameter
D_i	1.11.mm	+11602%/m	200.um	2.32%	tube inner diameter
D_g	166.um	-552%/m	750.um	0.41%	tube air gap
L_{wire}	38.0.mm	+2301%/m	500.um	1.15%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.146%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.31%	ABS thermal conductivity
d	12.0.mm	+7339%/m	100.um	0.73%	disk diameter
				4.26%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	750.r/min	+0.057%/(r/min)	1.2.r/min	0.07%	fan rotation rate
				4.27%	RSS combined uncertainty



$\theta = 81.5^\circ$; $\psi = 98.5^\circ$; $V = 2.725$ m/s (1000 r/min)

Estimated measurement uncertainties at $Re = 2022$.

Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.97%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0005%/Pa	1.5.kPa	0.69%	MPXH6115A6U air pressure
η	0.340	+120%	0.007	0.82%	anemometer calibration
Re_0	600	-0.0097%	60	0.58%	integration lower-bound
C_B	0.541	+2.55%	0.100	0.26%	bypass coefficient
D_o	2.81.mm	-5046%/m	500.um	2.52%	tube outer diameter
D_i	1.11.mm	+11532%/m	200.um	2.31%	tube inner diameter
D_g	166.um	-549%/m	750.um	0.41%	tube air gap
L_{wire}	38.0.mm	+2289%/m	500.um	1.14%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.140%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.26%	ABS thermal conductivity
d	12.0.mm	+7738%/m	100.um	0.77%	disk diameter
				4.13%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	1000.r/min	+0.041%/(r/min)	1.6.r/min	0.06%	fan rotation rate
				4.14%	RSS combined uncertainty