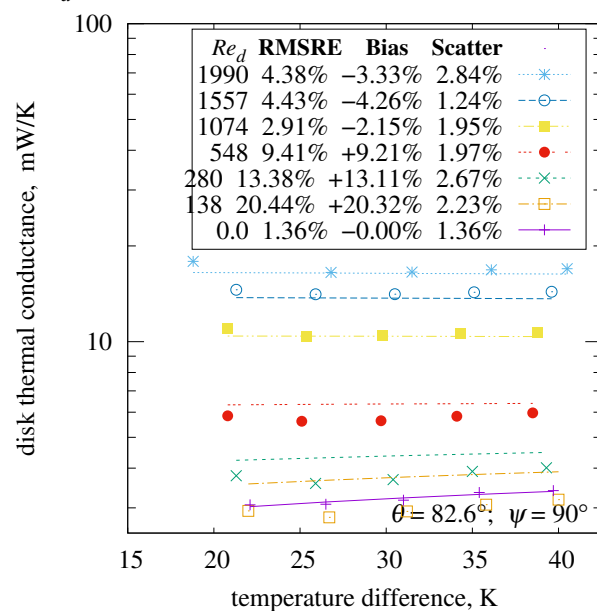
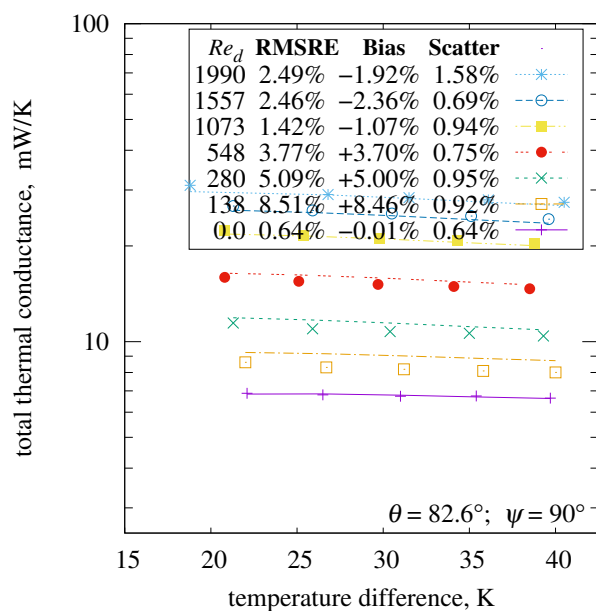
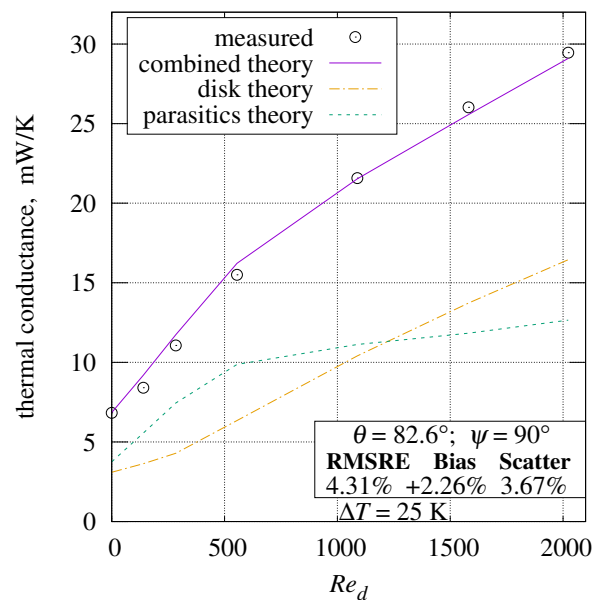
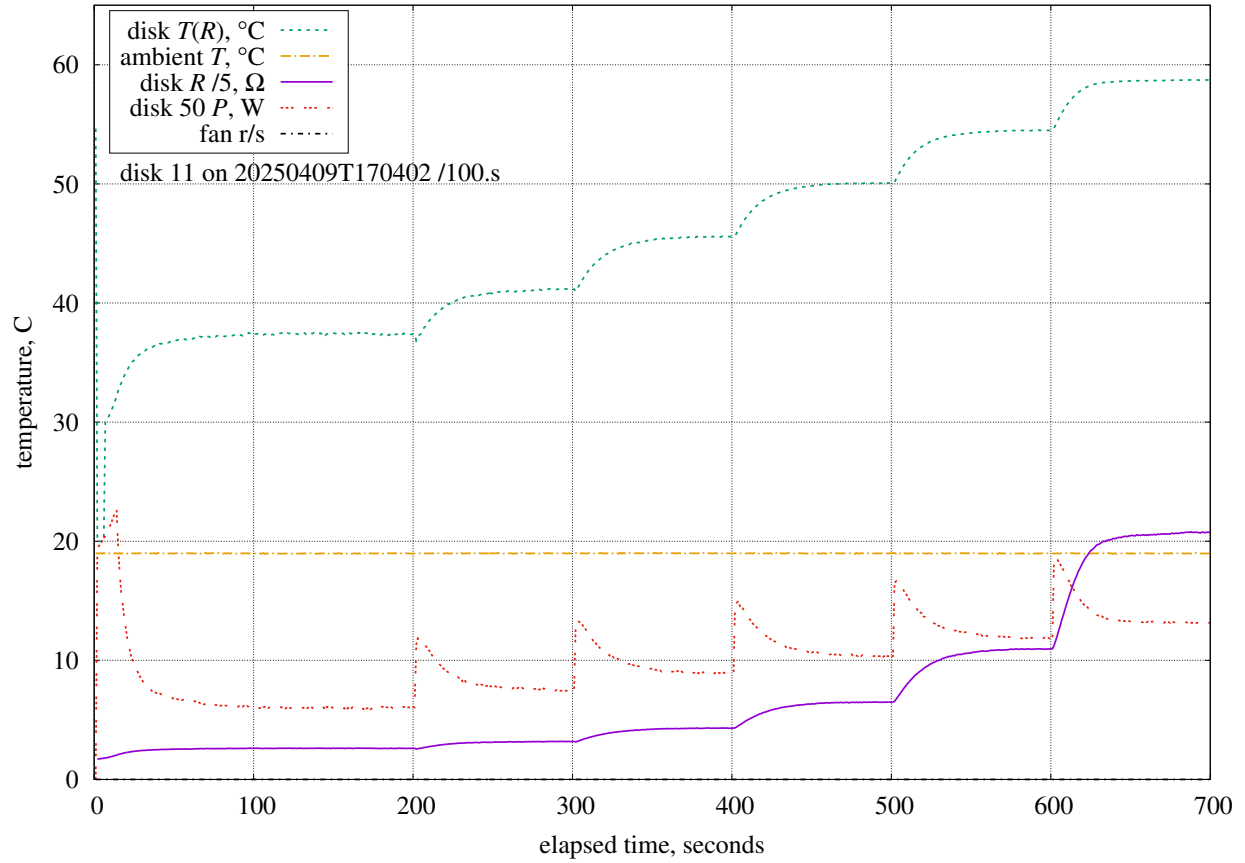


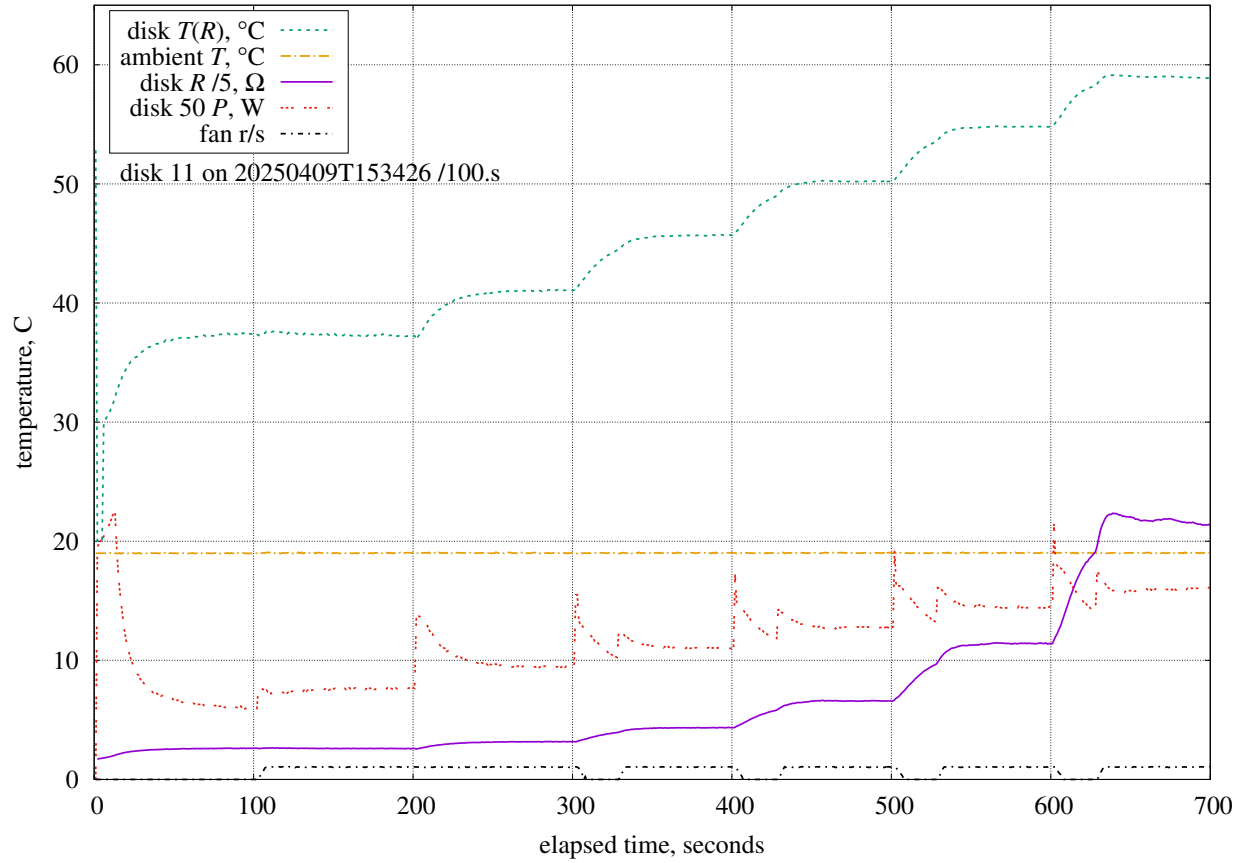




$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 0.000$ m/s (0 r/min)

Estimated measurement uncertainties of natural convection at $\theta = 82.6$.

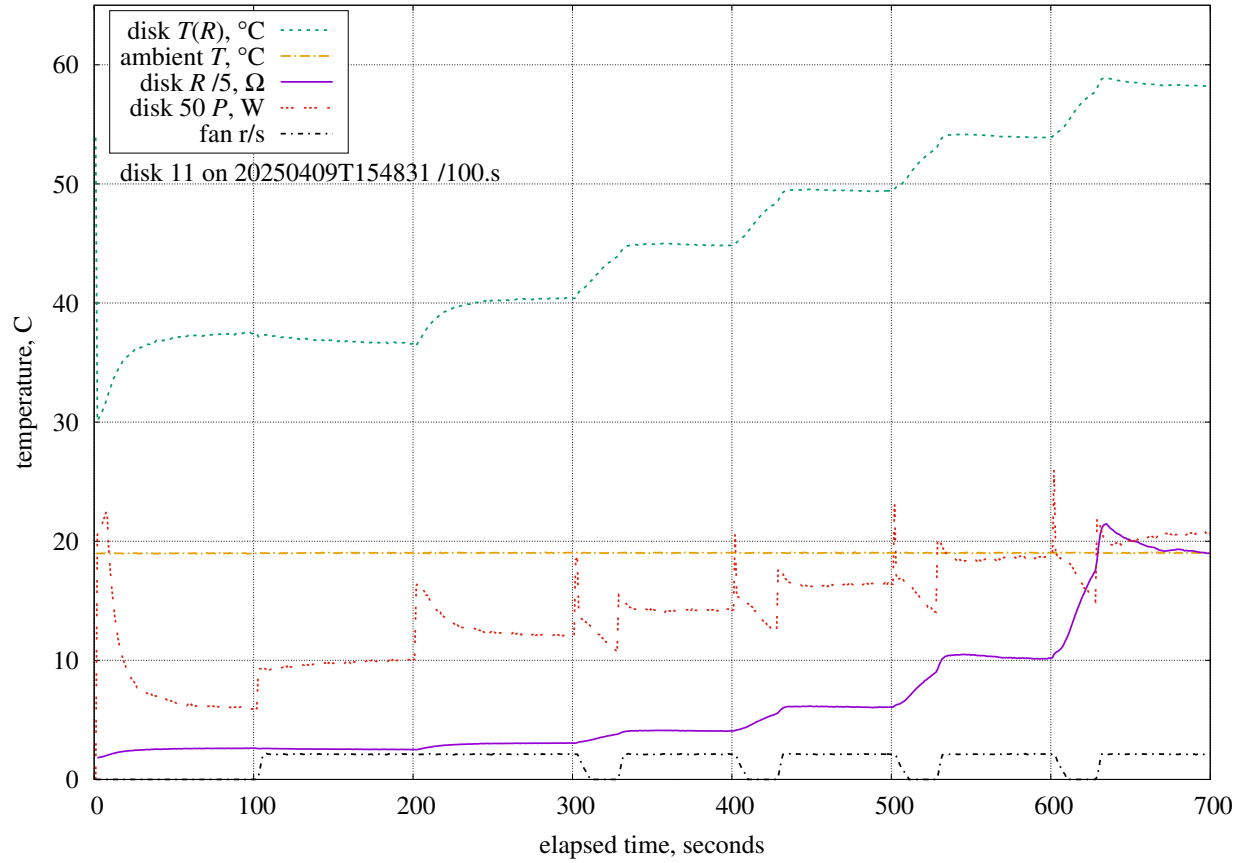
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.31%/K	0.10.K	0.43%	LM35C differential
P	101.kPa	+0.0001%/Pa	1.5.kPa	0.21%	MPXH6115A6U air pressure
C_S	0.420	-6.88%	0.050	0.34%	rim shape factor
D_o	2.81.mm	+2901%/m	500.um	1.45%	tube outer diameter
D_i	1.11.mm	+6347%/m	200.um	1.27%	tube inner diameter
D_g	166.um	-300%/m	750.um	0.22%	tube air gap
L_{wire}	38.0.mm	+1250%/m	500.um	0.62%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.148%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.33%	ABS thermal conductivity
d	12.0.mm	+3408%/m	100.um	0.34%	disk diameter
				2.53%	combined bias uncertainty



$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 0.188$ m/s (63 r/min)

Estimated measurement uncertainties at $Re = 140$.

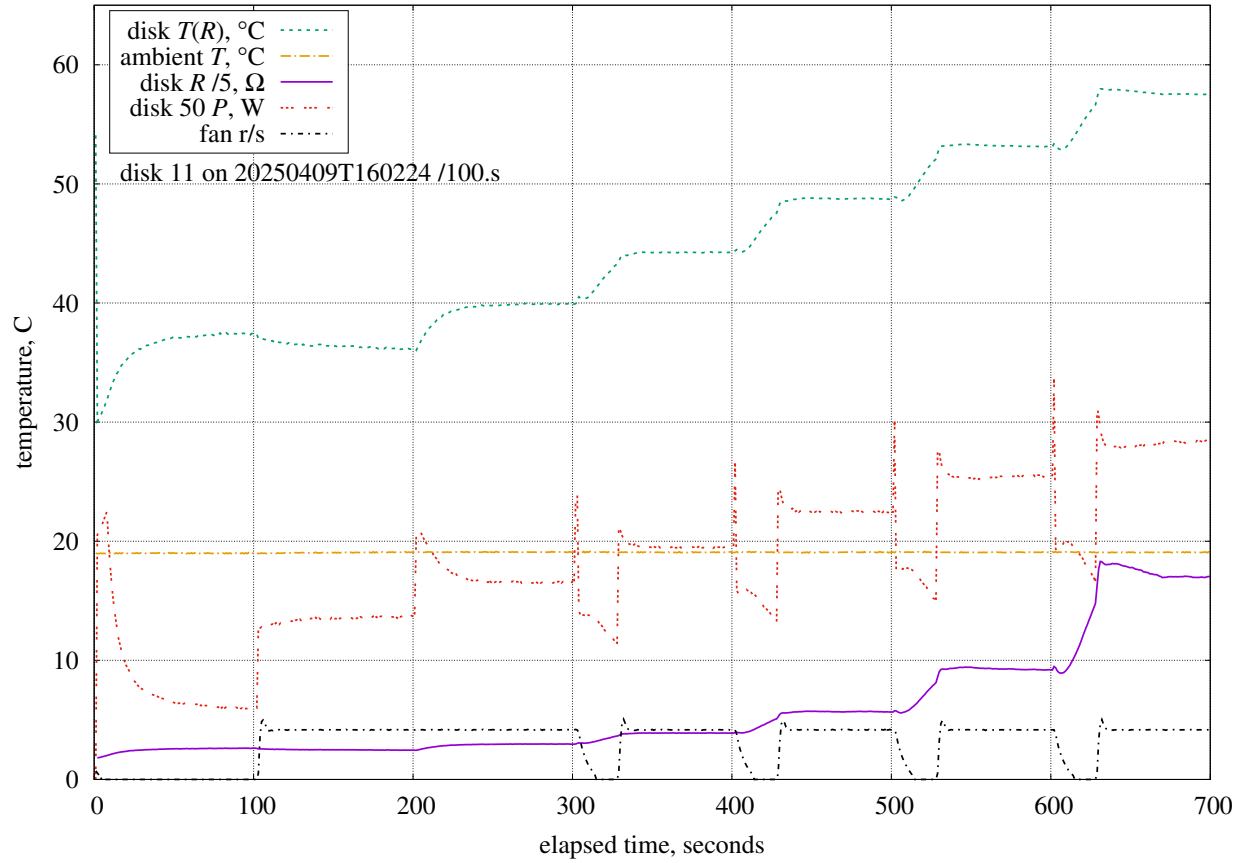
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.13%/K	0.10.K	0.41%	LM35C differential
P	101.kPa	+0.0002%/Pa	1.5.kPa	0.35%	MPXH6115A6U air pressure
η	0.340	+54.4%	0.007	0.37%	anemometer calibration
C_S	0.420	-4.20%	0.050	0.21%	rim shape factor
D_i	1.11.mm	+8706%/m	200.um	1.74%	tube inner diameter
D_g	166.um	-401%/m	750.um	0.30%	tube air gap
L_{wire}	38.0.mm	+1670%/m	500.um	0.84%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.167%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.50%	ABS thermal conductivity
d	12.0.mm	+3401%/m	100.um	0.34%	disk diameter
				2.59%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	62.5.r/min	+0.296%/(r/min)	1.2.r/min	0.35%	fan rotation rate
				2.68%	RSS combined uncertainty



$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 0.382 \text{ m/s}$ (127 r/min)

Estimated measurement uncertainties at $Re = 284$.

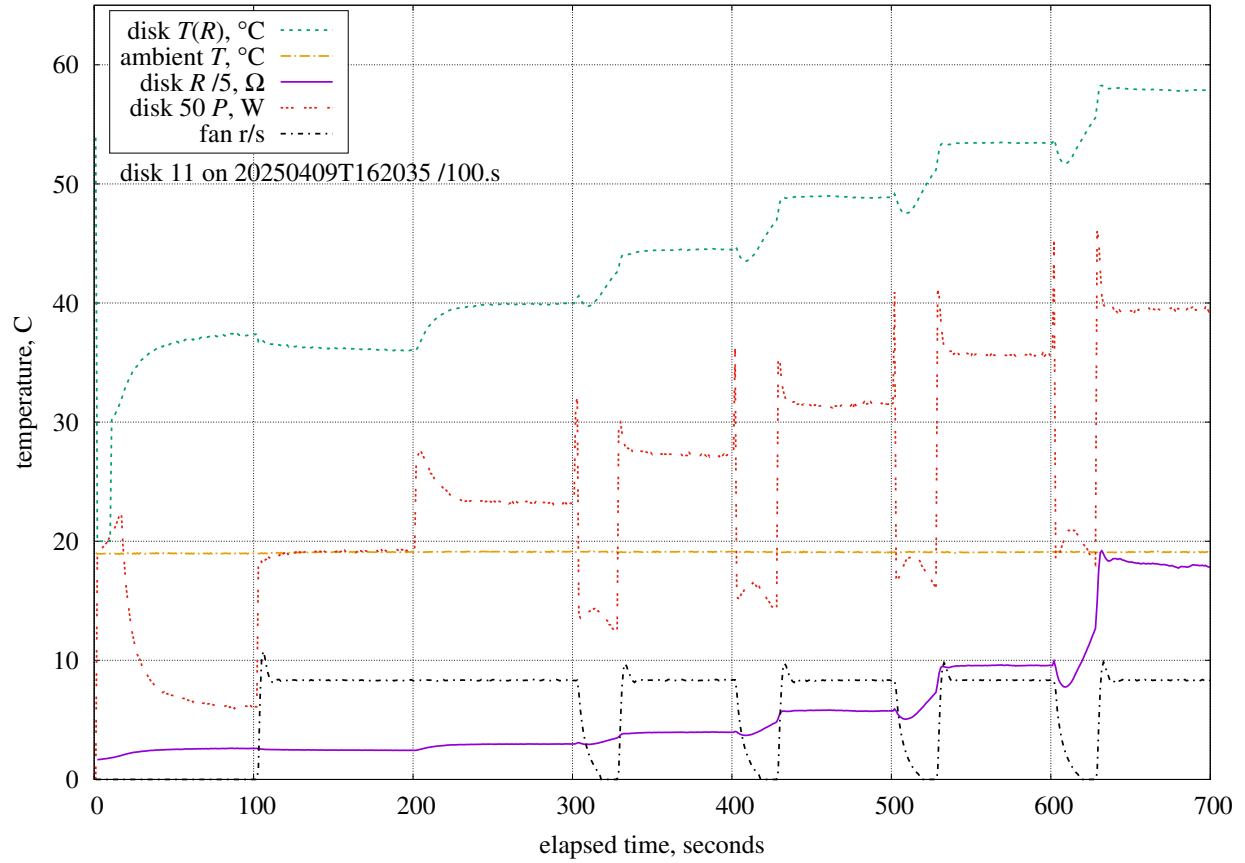
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.04%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0005%/Pa	1.5.kPa	0.76%	MPXH6115A6U air pressure
η	0.340	+148%	0.007	1.01%	anemometer calibration
Re_0	600	-0.0063%	60	0.38%	integration lower-bound
D_o	2.81.mm	+5326%/m	500.um	2.66%	tube outer diameter
D_i	1.11.mm	+12172%/m	200.um	2.43%	tube inner diameter
D_g	166.um	-512%/m	750.um	0.38%	tube air gap
L_{wire}	38.0.mm	+2135%/m	500.um	1.07%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.187%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.67%	ABS thermal conductivity
d	12.0.mm	+3731%/m	100.um	0.37%	disk diameter
				4.38%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	127.r/min	+0.396%/(r/min)	1.1.r/min	0.42%	fan rotation rate
				4.46%	RSS combined uncertainty



$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 0.748$ m/s (250 r/min)

Estimated measurement uncertainties at $Re = 555$.

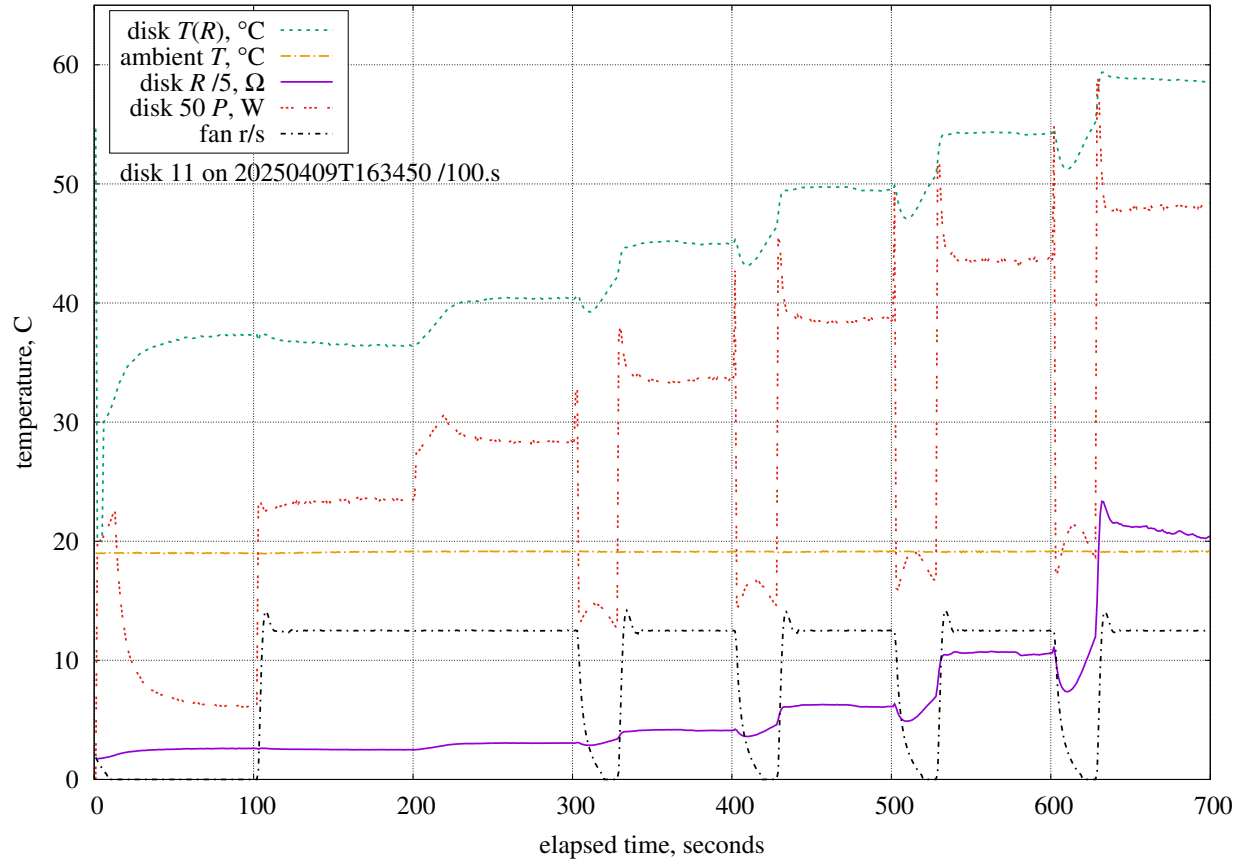
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.99%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0004%/Pa	1.5.kPa	0.55%	MPXH6115A6U air pressure
η	0.340	+115%	0.007	0.78%	anemometer calibration
Re_0	600	-0.0094%	60	0.56%	integration lower-bound
D_o	2.81.mm	-5284%/m	500.um	2.64%	tube outer diameter
D_i	1.11.mm	+15197%/m	200.um	3.04%	tube inner diameter
D_g	166.um	-608%/m	750.um	0.46%	tube air gap
L_{wire}	38.0.mm	+2532%/m	500.um	1.27%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.194%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.74%	ABS thermal conductivity
d	12.0.mm	+5001%/m	100.um	0.50%	disk diameter
				4.77%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	250.r/min	+0.156%/(r/min)	0.85.r/min	0.13%	fan rotation rate
				4.77%	RSS combined uncertainty



$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 1.467 \text{ m/s}$ (500 r/min)

Estimated measurement uncertainties at $Re = 1088$.

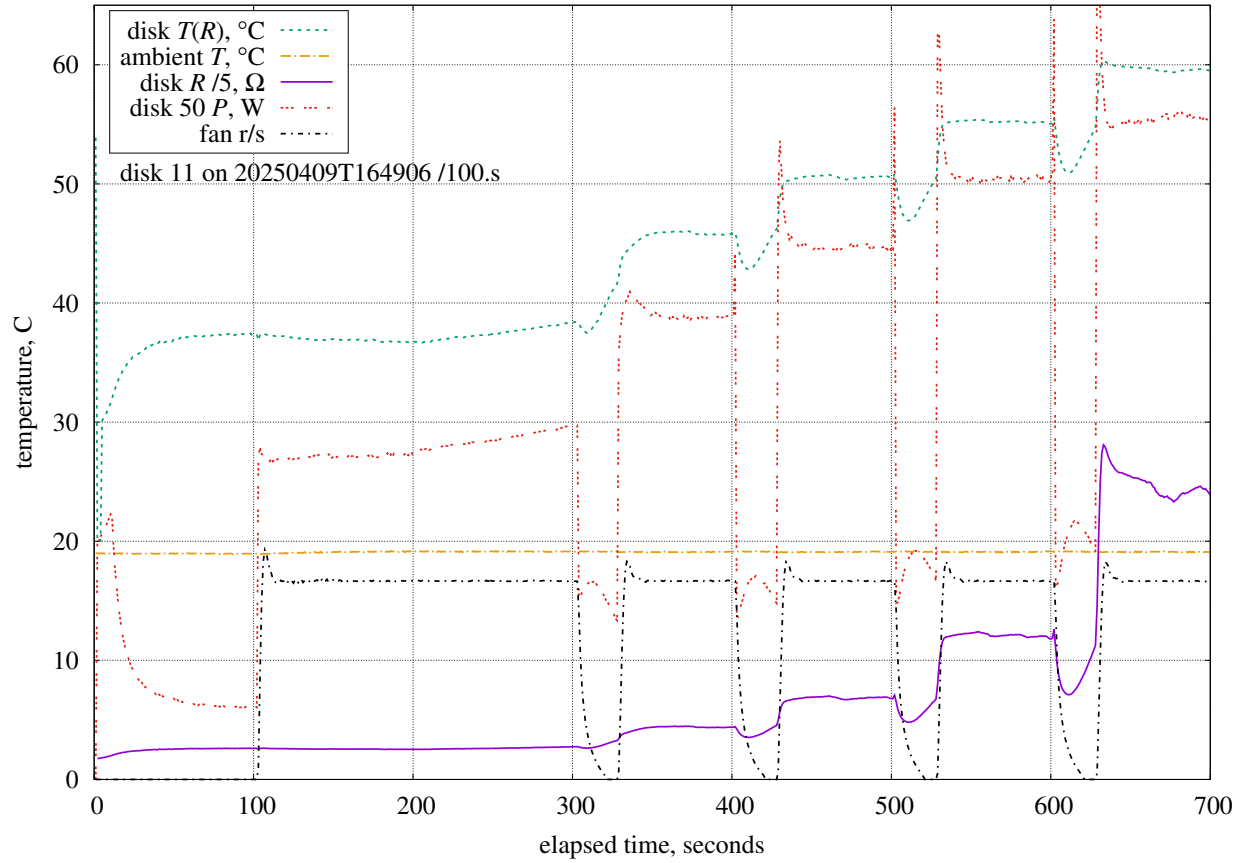
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.97%/K	0.10.K	0.40%	LM35C differential
P	101.kPa	+0.0003%/Pa	1.5.kPa	0.47%	MPXH6115A6U air pressure
η	0.340	+97.9%	0.007	0.67%	anemometer calibration
Re_0	600	-0.010%	60	0.61%	integration lower-bound
D_o	2.81.mm	-9143%/m	500.um	4.57%	tube outer diameter
D_i	1.11.mm	+13163%/m	200.um	2.63%	tube inner diameter
D_g	166.um	-578%/m	750.um	0.43%	tube air gap
L_{wire}	38.0.mm	+2408%/m	500.um	1.20%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.165%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.48%	ABS thermal conductivity
d	12.0.mm	+6513%/m	100.um	0.65%	disk diameter
				5.77%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	500.r/min	+0.067%/(r/min)	1.9.r/min	0.13%	fan rotation rate
				5.78%	RSS combined uncertainty



$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 2.130$ m/s (750 r/min)

Estimated measurement uncertainties at $Re = 1581$.

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	0.61%	integration lower-bound
D_o	2.81.mm	-5583%/m	500.um	2.79%	tube outer diameter
D_i	1.11.mm	+11788%/m	200.um	2.36%	tube inner diameter
D_g	166.um	-555%/m	750.um	0.42%	tube air gap
L_{wire}	38.0.mm	+2314%/m	500.um	1.16%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.148%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.32%	ABS thermal conductivity
d	12.0.mm	+7312%/m	100.um	0.73%	disk diameter
				4.34%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	750.r/min	+0.057%/(r/min)	0.86.r/min	0.05%	fan rotation rate
				4.35%	RSS combined uncertainty



$\theta = 82.6^\circ$; $\psi = 90.0^\circ$; $V = 2.726$ m/s (1000 r/min)

Estimated measurement uncertainties at $Re = 2023$.

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	+121%	0.007	0.82%	anemometer calibration
Re_0	600	-0.0099%	60	0.59%	integration lower-bound
C_B	0.541	+2.09%	0.100	0.21%	bypass coefficient
D_o	2.81.mm	-5124%/m	500.um	2.56%	tube outer diameter
D_i	1.11.mm	+11659%/m	200.um	2.33%	tube inner diameter
D_g	166.um	-552%/m	750.um	0.41%	tube air gap
L_{wire}	38.0.mm	+2299%/m	500.um	1.15%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.141%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.26%	ABS thermal conductivity
d	12.0.mm	+7728%/m	100.um	0.77%	disk diameter
				4.18%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	1.00.kr/min	+0.041%/(r/min)	1.3.r/min	0.06%	fan rotation rate
				4.18%	RSS combined uncertainty