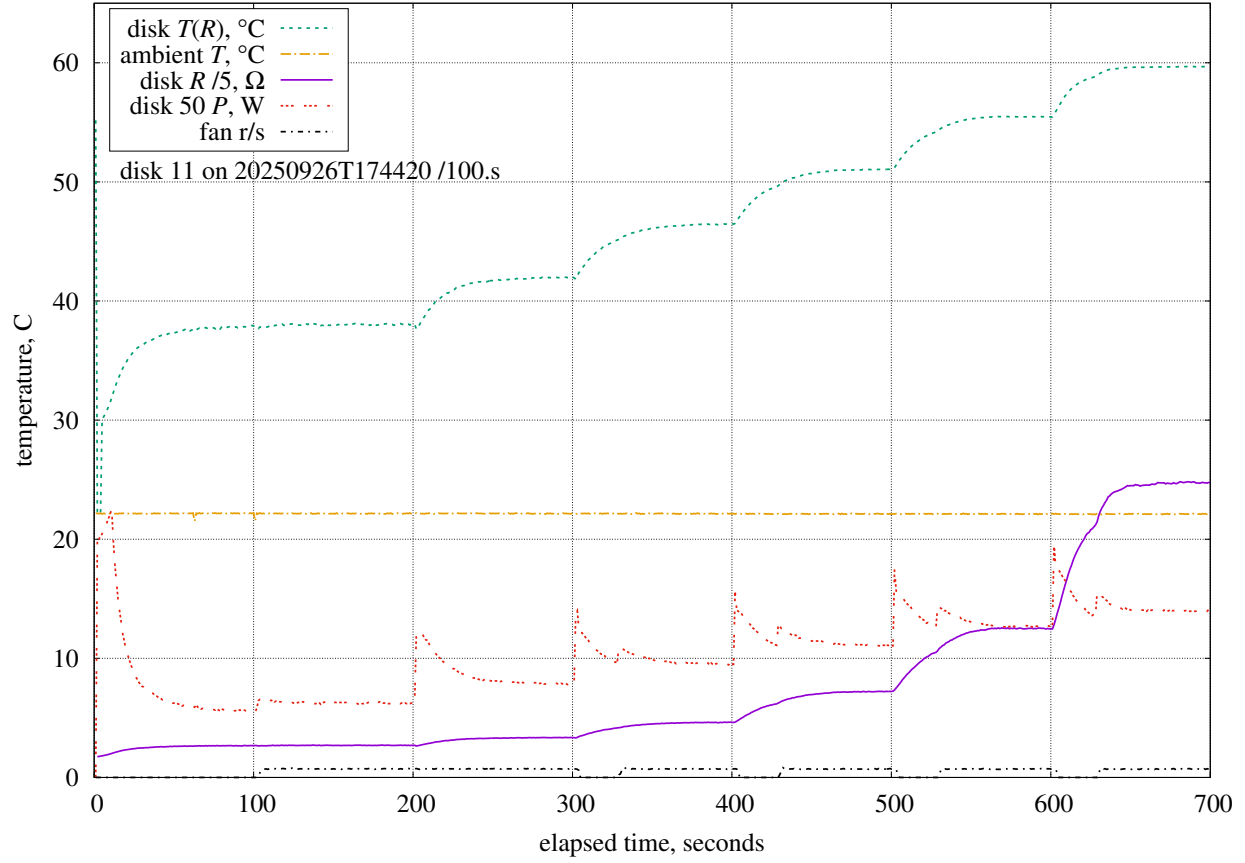


$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 0.000$ m/s (0 r/min)

Estimated measurement uncertainties of natural convection at $\theta = 0.0$.

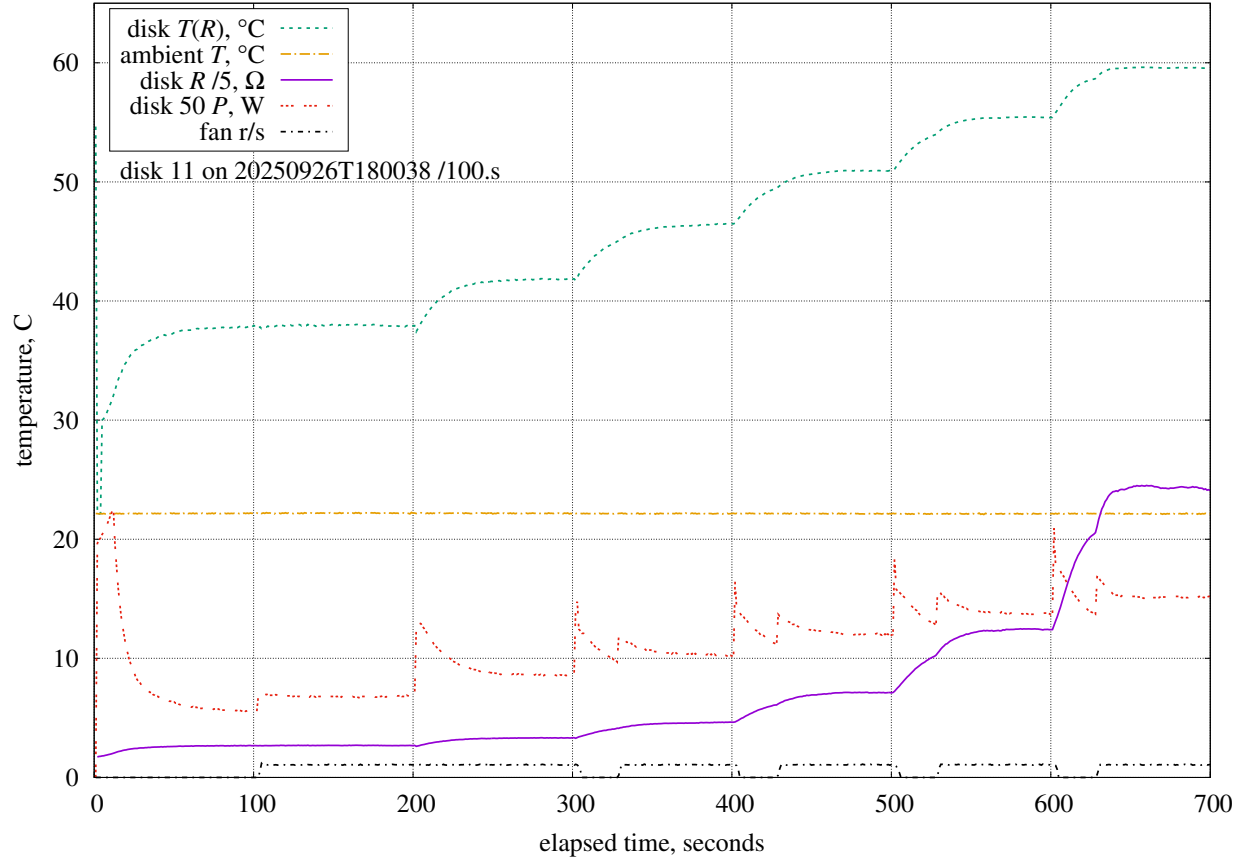
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.34%/K	0.10.K	0.43%	LM35C differential
P	99.7.kPa	+0.0002%/Pa	1.5.kPa	0.28%	MPXH6115A6U air pressure
D_o	2.81.mm	+3105%/m	500.um	1.55%	tube outer diameter
D_i	1.11.mm	+5043%/m	200.um	1.01%	tube inner diameter
D_g	166.um	-1021%/m	750.um	0.77%	tube air gap
L_{wire}	38.0.mm	+896%/m	500.um	0.45%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.118%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.06%	ABS thermal conductivity
d	12.0.mm	+4964%/m	100.um	0.50%	disk diameter
θ	50.0.m°	+20.2%/°	0.20.°	4.04%	plate angle
				4.71%	combined bias uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 0.128$ m/s (43 r/min)

Estimated measurement uncertainties at $Re = 92$.

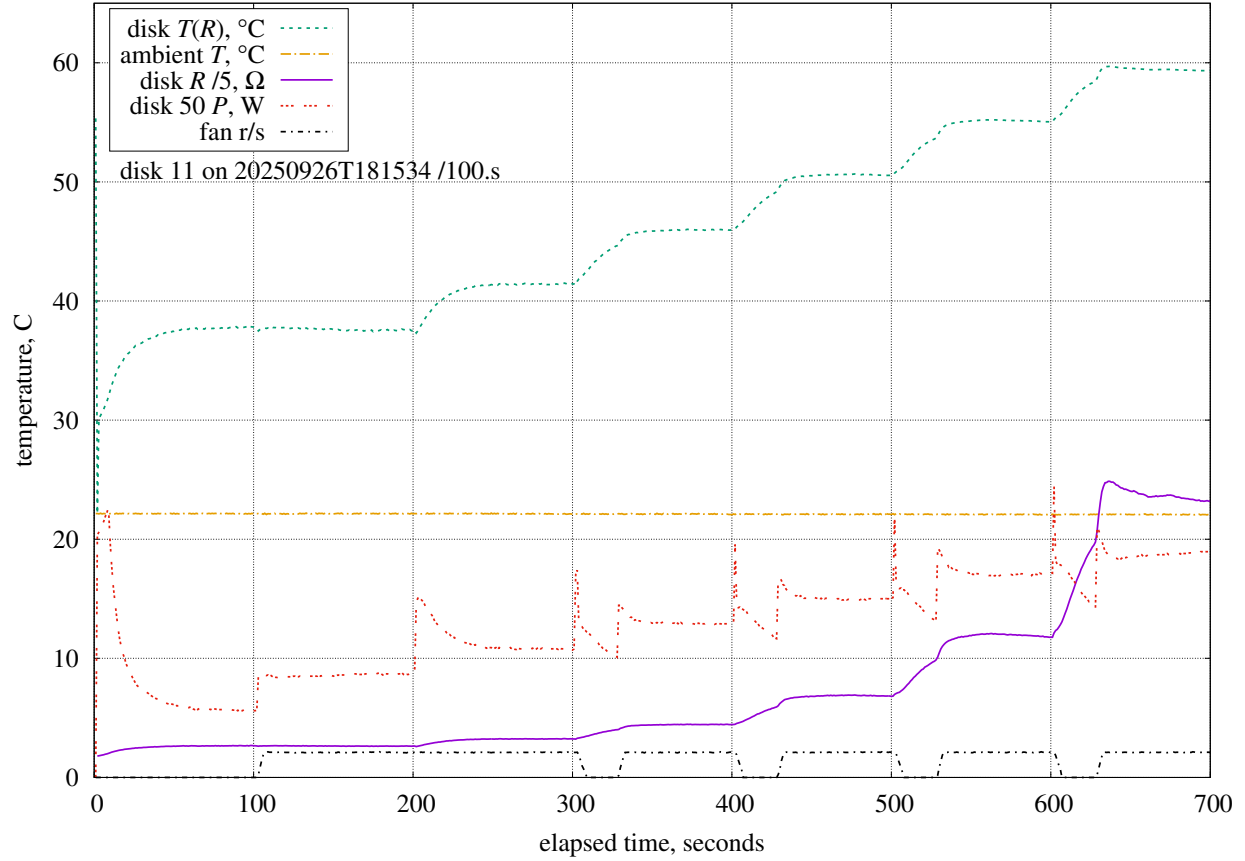
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.06%/K	0.10.K	0.41%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.62%	MPXH6115A6U air pressure
η	0.340	+103%	0.007	0.70%	anemometer calibration
Re_0	600	-0.0053%	60	0.32%	integration lower-bound
D_o	2.81.mm	-3444%/m	500.um	1.72%	tube outer diameter
D_i	1.11.mm	+7563%/m	200.um	1.51%	tube inner diameter
D_g	166.um	-1267%/m	750.um	0.95%	tube air gap
L_{wire}	38.0.mm	+1112%/m	500.um	0.56%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.145%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.30%	ABS thermal conductivity
d	12.0.mm	+4464%/m	100.um	0.45%	disk diameter
ϵ_{ABS}	0.920	-28.6%	0.010	0.29%	ABS emissivity
ϵ_{wt}	0.900	-28.6%	0.025	0.71%	wind-tunnel emissivity
θ	50.0.m°	+6.28%/°	0.20.°	1.26%	plate angle
				3.42%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	42.6.r/min	+0.819%/(r/min)	1.5.r/min	1.24%	fan rotation rate
				4.23%	RSS combined uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 0.193 \text{ m/s}$ (64 r/min)

Estimated measurement uncertainties at $Re = 139$.

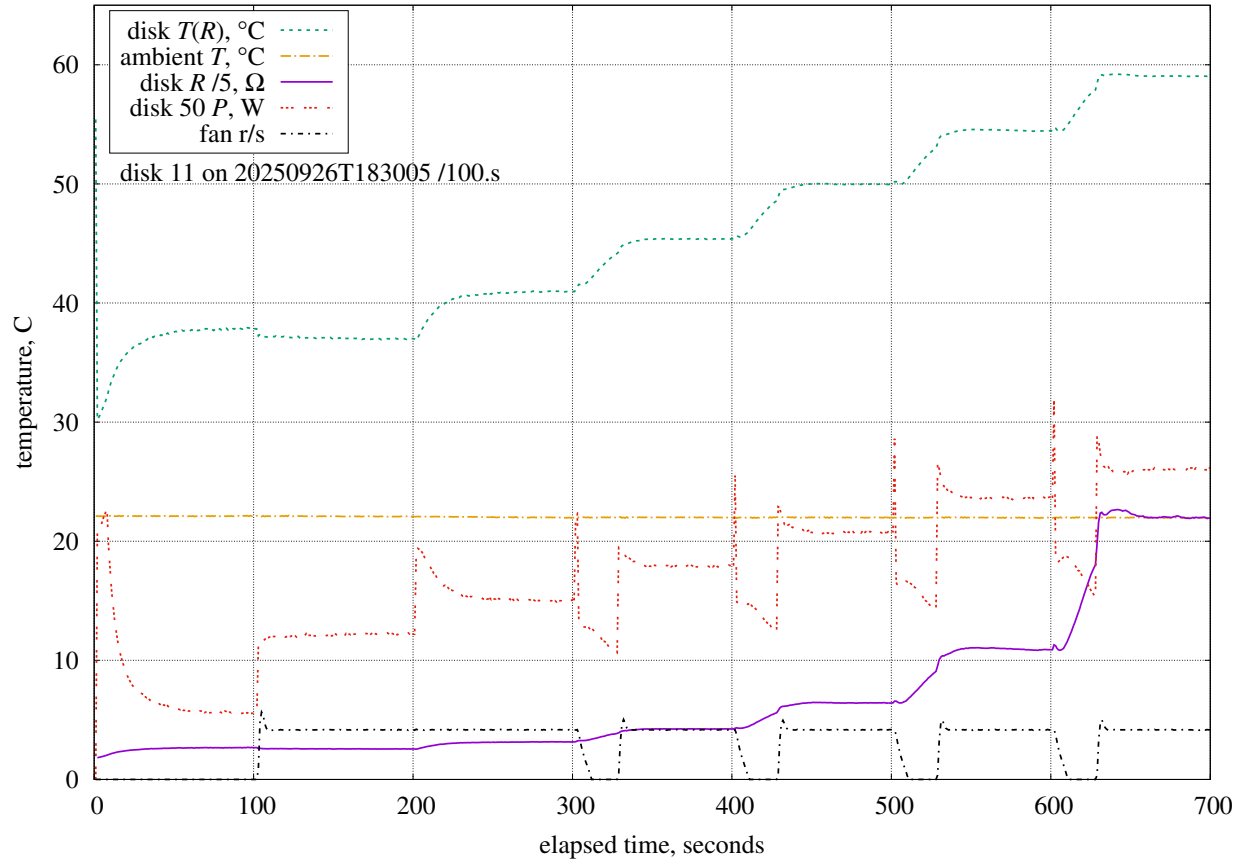
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+4.02%/K	0.10.K	0.40%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.66%	MPXH6115A6U air pressure
η	0.340	+113%	0.007	0.77%	anemometer calibration
Re_0	600	-0.0059%	60	0.35%	integration lower-bound
D_o	2.81.mm	-5274%/m	500.um	2.64%	tube outer diameter
D_i	1.11.mm	+9357%/m	200.um	1.87%	tube inner diameter
D_g	166.um	-1487%/m	750.um	1.11%	tube air gap
L_{wire}	38.0.mm	+1304%/m	500.um	0.65%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.156%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.39%	ABS thermal conductivity
d	12.0.mm	+4415%/m	100.um	0.44%	disk diameter
ϵ_{ABS}	0.920	-33.2%	0.010	0.33%	ABS emissivity
ϵ_{wt}	0.900	-33.3%	0.025	0.83%	wind-tunnel emissivity
θ	50.0.m°	+3.10%/°	0.20.°	0.62%	plate angle
				4.10%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	64.0.r/min	+0.603%/(r/min)	1.3.r/min	0.79%	fan rotation rate
				4.39%	RSS combined uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 0.380 \text{ m/s}$ (126 r/min)

Estimated measurement uncertainties at $Re = 274$.

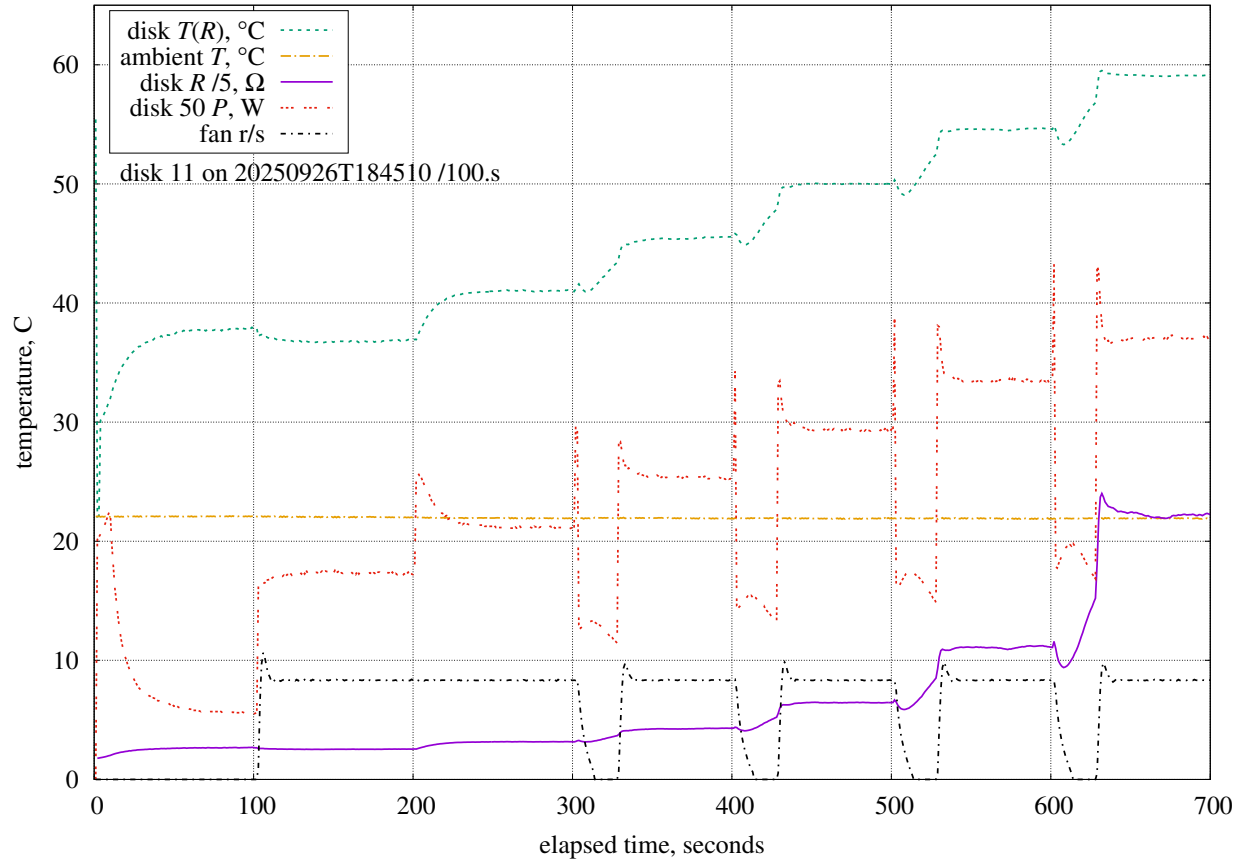
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.98%/K	0.10.K	0.40%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.65%	MPXH6115A6U air pressure
η	0.340	+115%	0.007	0.78%	anemometer calibration
Re_0	600	-0.0059%	60	0.36%	integration lower-bound
D_o	2.81.mm	-7799%/m	500.um	3.90%	tube outer diameter
D_i	1.11.mm	+12607%/m	200.um	2.52%	tube inner diameter
D_g	166.um	-1918%/m	750.um	1.44%	tube air gap
L_{wire}	38.0.mm	+1682%/m	500.um	0.84%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.172%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.54%	ABS thermal conductivity
d	12.0.mm	+4433%/m	100.um	0.44%	disk diameter
ϵ_{ABS}	0.920	-35.7%	0.010	0.36%	ABS emissivity
ϵ_{wt}	0.900	-36.1%	0.025	0.90%	wind-tunnel emissivity
				5.41%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	126.r/min	+0.310%/(r/min)	0.98.r/min	0.30%	fan rotation rate
				5.44%	RSS combined uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 0.748$ m/s (250 r/min)

Estimated measurement uncertainties at $Re = 540$.

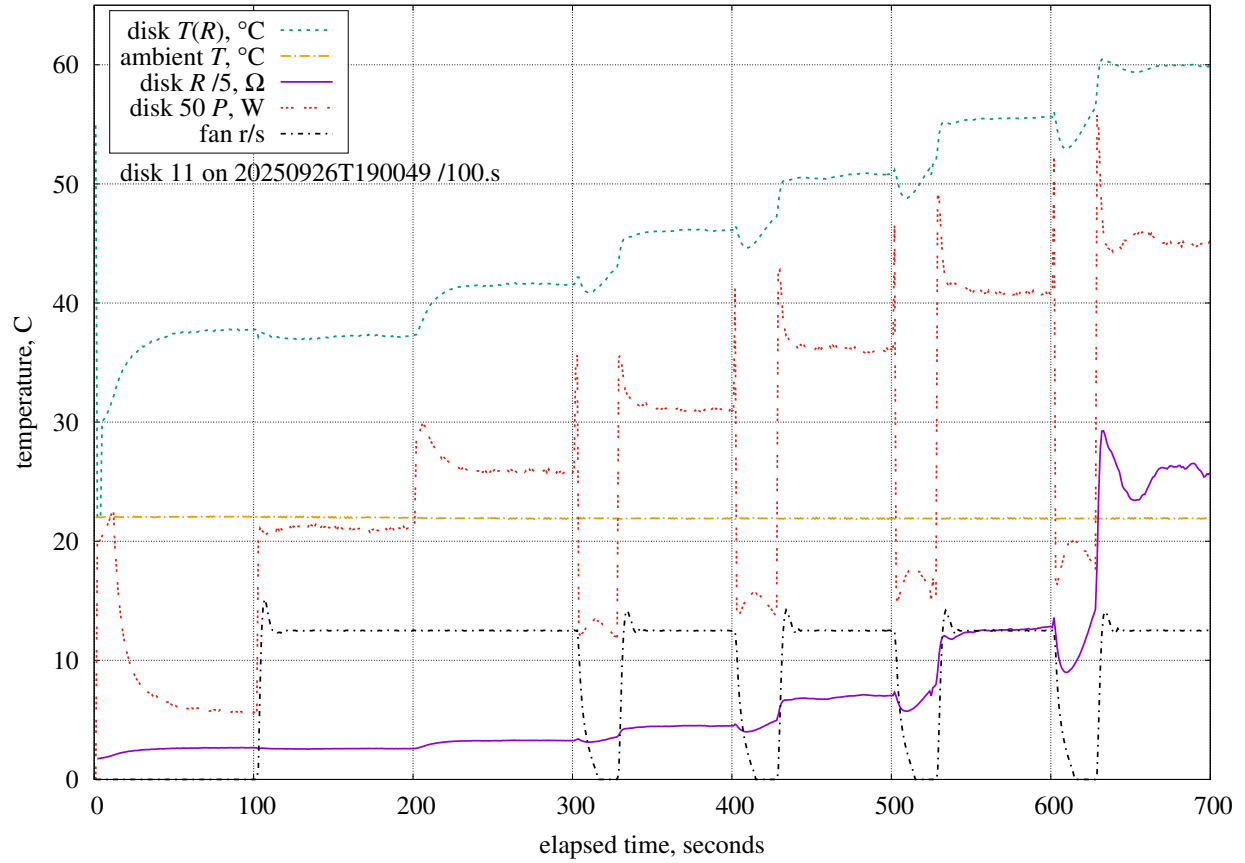
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.90%/K	0.10.K	0.39%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.63%	MPXH6115A6U air pressure
η	0.340	+114%	0.007	0.78%	anemometer calibration
Re_0	600	-0.0069%	60	0.41%	integration lower-bound
D_o	2.81.mm	-10225%/m	500.um	5.11%	tube outer diameter
D_i	1.11.mm	+15922%/m	200.um	3.18%	tube inner diameter
D_g	166.um	-2429%/m	750.um	1.82%	tube air gap
L_{wire}	38.0.mm	+2131%/m	500.um	1.07%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.186%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.66%	ABS thermal conductivity
d	12.0.mm	+4584%/m	100.um	0.46%	disk diameter
ϵ_{ABS}	0.920	-36.1%	0.010	0.36%	ABS emissivity
ϵ_{wt}	0.900	-36.6%	0.025	0.92%	wind-tunnel emissivity
				6.79%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	250.r/min	+0.155%/(r/min)	0.97.r/min	0.15%	fan rotation rate
				6.79%	RSS combined uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 1.467 \text{ m/s}$ (500 r/min)

Estimated measurement uncertainties at $Re = 1058$.

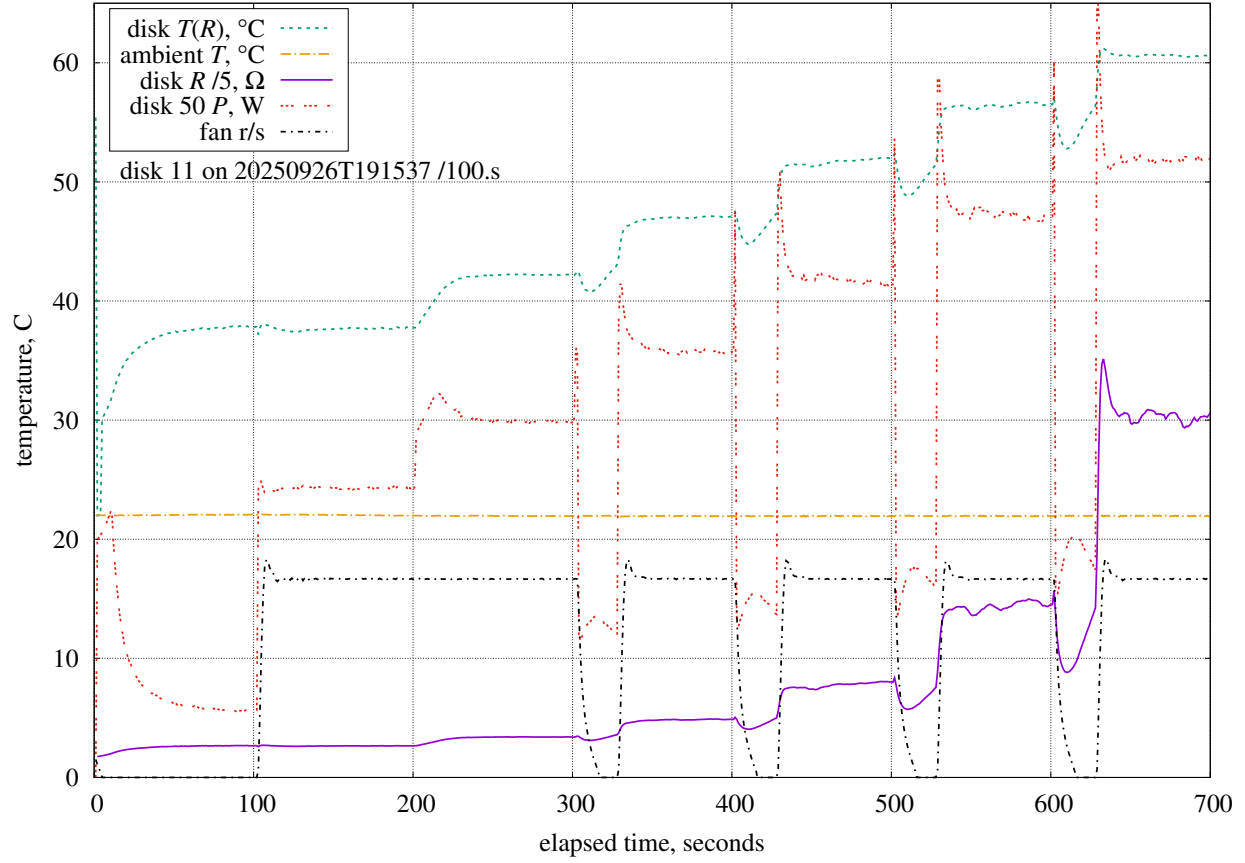
Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.79%/K	0.10.K	0.38%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.63%	MPXH6115A6U air pressure
η	0.340	+115%	0.007	0.78%	anemometer calibration
Re_0	600	-0.0096%	60	0.57%	integration lower-bound
D_o	2.81.mm	-12376%/m	500.um	6.19%	tube outer diameter
D_i	1.11.mm	+18566%/m	200.um	3.71%	tube inner diameter
D_g	166.um	-2923%/m	750.um	2.19%	tube air gap
L_{wire}	38.0.mm	+2565%/m	500.um	1.28%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.193%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.73%	ABS thermal conductivity
d	12.0.mm	+5077%/m	100.um	0.51%	disk diameter
ϵ_{ABS}	0.920	-35.4%	0.010	0.35%	ABS emissivity
ϵ_{wt}	0.900	-35.9%	0.025	0.90%	wind-tunnel emissivity
				8.01%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	500.r/min	+0.078%/(r/min)	1.6.r/min	0.12%	fan rotation rate
				8.02%	RSS combined uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 2.130$ m/s (750 r/min)

Estimated measurement uncertainties at $Re = 1537$.

Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.73%/K	0.10.K	0.37%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.63%	MPXH6115A6U air pressure
η	0.340	+108%	0.007	0.73%	anemometer calibration
Re_0	600	-0.010%	60	0.62%	integration lower-bound
D_o	2.81.mm	-13389%/m	500.um	6.69%	tube outer diameter
D_i	1.11.mm	+19539%/m	200.um	3.91%	tube inner diameter
D_g	166.um	-3163%/m	750.um	2.37%	tube air gap
L_{wire}	38.0.mm	+2775%/m	500.um	1.39%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.193%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.73%	ABS thermal conductivity
d	12.0.mm	+5437%/m	100.um	0.54%	disk diameter
ϵ_{ABS}	0.920	-34.7%	0.010	0.35%	ABS emissivity
ϵ_{wt}	0.900	-35.3%	0.025	0.88%	wind-tunnel emissivity
				8.56%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	750.r/min	+0.049%/(r/min)	0.96.r/min	0.05%	fan rotation rate
				8.56%	RSS combined uncertainty



$\theta = 0.0^\circ$; $\psi = 7.7^\circ$; $V = 2.726$ m/s (1000 r/min)

Estimated measurement uncertainties at $Re = 1966$.

Symbol	Nominal	Sensitivity	Bias	Uncertainty	Component
ΔT	25.0.K	+3.69%/K	0.10.K	0.37%	LM35C differential
P	99.7.kPa	+0.0004%/Pa	1.5.kPa	0.62%	MPXH6115A6U air pressure
η	0.340	+98.7%	0.007	0.67%	anemometer calibration
Re_0	600	-0.011%	60	0.63%	integration lower-bound
D_o	2.81.mm	-13975%/m	500.um	6.99%	tube outer diameter
D_i	1.11.mm	+19980%/m	200.um	4.00%	tube inner diameter
D_g	166.um	-3305%/m	750.um	2.48%	tube air gap
L_{wire}	38.0.mm	+2900%/m	500.um	1.45%	wire length
k_{ABS}	179. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	+0.191%/ $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	9.0. $\frac{\text{mW}}{\text{K}\cdot\text{m}}$	1.71%	ABS thermal conductivity
d	12.0.mm	+5689%/m	100.um	0.57%	disk diameter
ϵ_{ABS}	0.920	-34.3%	0.010	0.34%	ABS emissivity
ϵ_{wt}	0.900	-34.9%	0.025	0.87%	wind-tunnel emissivity
				8.87%	combined bias uncertainty
Symbol	Nominal	Sensitivity	Variability	Uncertainty	Component
ω	1.00.kr/min	+0.034%/(r/min)	1.6.r/min	0.05%	fan rotation rate
				8.87%	RSS combined uncertainty