

# FAAM Instrument Reference Guide

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**Summary:** A document providing information on how to reference and describe core instrumentation on board the FAAM BAe-146 ARA. This document complements FAAMIL 'Wording Research Papers', available at <https://drive.google.com/open?id=1ReExCjG1Hftqtwrch0AT7EyNiX52HFD-aA4CwW9Tiyw>.



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## 1 FAAM Core Instrumentation

Instrument	Description
Standard (plate) temperature	Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with IST MiniSens PRT sensor
Fast (loom) temperature	Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with original open-wire PRT sensing element
Fast (thermistor) temperature	Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with GE Fastip Thermoprobe, Price et al. (in prep.)
Turbulence probe transducer	Rosemount Aerospace Inc. Pressure Transducer Model 1221F
Turbulence probe	FAAM Core 5-port Turbulence probe, BAE Systems (2004)
RVSM pressure	Air Data Computer on G-LUXE, BAE Systems (2000)
Cabin pressure	Rosemount Aerospace Inc. Pressure Transducer Model 1201F
AVAPS	Vaisala Airborne Vertical Atmospheric Profiling System (AVAPS) with [RD94 / RD41] dropsonde
AIMMS	AIMMS-20, Aventech Research Inc. (non-standard processing)
Radar altitude	Thales AHV16 Radar Altimeter
GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
Static monitor	JCI 140 Static Monitor
Pyranometers	Kipp & Zonen
Pyrgeometers	Kipp & Zonen CR4
Heimann	Heimann KT 19.82 with pyro-electric
Weather radar	Honeywell RDR-4B
Buck CR2	Buck Research Instruments CR2 Chilled Mirror Hygrometer with heated inlet
General Eastern	GE 1011B Chilled Mirror Hygrometer
WVSSII	SpectraSensors Water Vapor Sensing System (WVSS-II) [with modified Rosemount Type 102 inlet / standard flush inlet]

CCN	Droplet Measurement Technologies Dual Column Cloud Condensation Nuclei Counter (CCN-200), sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
CPC	TSI Modified Water Filled 3786 Condensation Particle Counter, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
Filters	FAAM Non-Core Filters Collection System
Grimm Sky-OPC	Grimm Sky-OPC, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
Nephelometer	Pre 2019: TSI 3563 Three Wavelength Integrating Nephelometer, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
PSAP	Radiance Research Particle Soot Absorption Photometer, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
TAP	Brechtel Tricolor Absorption Photometer 2901, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
CO	Core Aero Laser GmbH model [AL5002 / AL5005] VUV resonance fluorescence spectrometer, Gerbig et al. (1999)
FGGA	Los Gatos Research Inc. customised off-axis integrated cavity output spectrometer model 907-0010-0001, O'Shea et al. (2013)
New FGGA (10 Hz capable)	Los Gatos Research Inc. customised off-axis integrated cavity output spectrometer model 907-0011-0000-0000, Pasternak and Bauguitte, (in prep.)
Tedlar bag sampling pump	Senior Aerospace Metal Bellows pump model MB-158E
NO <sub>x</sub> /HONO	FAAM core NO <sub>x</sub> (non-core HONO), Pollack et al. (2010). Chris Reed should be included as an author.
Teco Ozone	Core Thermo Fisher Scientific Inc. model 49i UV absorption ozone photometer Nott et al. (in prep.)
2B Ozone	Core 2B Technologies Inc. model 205 UV absorption ozone photometer, Wilson and Birks, (2006)
SO <sub>2</sub>	Core customised Thermo Fisher Scientific Inc. model 43i TLE pulsed fluorescence SO <sub>2</sub> spectrometer, Nott et al. (in prep.)

CDP2	Droplet Measurement Technologies Inc. Cloud Droplet Probe (CDP-2). [If calibration used, cite Rosenberg et al. (2012)]
PCASP	Particle Metrics Inc./Droplet Measurement Technologies Inc. Passive Cavity Aerosol Spectrometer Probe 100X with SPP200 electronics. [If calibration used, Rosenberg et al. (2012)]
CAS	Droplet Measurement Technologies Inc. Cloud Aerosol Spectrometer with Depolarization (CAS-DPOL2) (non-standard)
SEA	Science Engineering Associates, inc. Multi-Element Water Content Sensor WCM-2000
CIP 15	Droplet Measurement Technologies Inc. Cloud Imaging Probe, 15 micron resolution with Grayscale and Korolev anti-shatter tips (CIP-15 GS)
CIP 25	Droplet Measurement Technologies Inc. Cloud Imaging Probe, 25 micron resolution with Grayscale and Korolev anti-shatter tips (CIP-25 GS)
CIP 100	Droplet Measurement Technologies Inc. Cloud Imaging Probe, 100 micron resolution with Grayscale and Korolev anti-shatter tips (CIP-100 GS)
Nevzorov	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998)
Cabin temperature	Qualitative indication of cabin temperature in rear core console

## 2 FAAM Core Variables

Variable	Relevant descriptions
SOL_AZIM	Applanix POS AV 410 GPS-aided Inertial Navigation System
SOL_ZEN	Applanix POS AV 410 GPS-aided Inertial Navigation System
TAT_DI_R	Rosemount Aerospace Inc. Type 102 De-iced Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]  Air Data Computer on G-LUXE, BAE Systems (2000)

TAT_ND_R	<p>Rosemount Aerospace Inc. Type 102 Non-de-iced Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p>
EXX_JCI	JCI 140 Static Monitor
AOA	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p>
AOSS	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p>
TAS	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p>

PSP_TURB	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p>
IAS_RVSM	<p>Air Data Computer on G-LUXE, BAE Systems (2000)</p>
TAS_RVSM	<p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p>
SW_DN_C	Kipp & Zonen
RED_DN_C	Kipp & Zonen
SW_UP_C	<p>Kipp &amp; Zonen</p> <p>Applanix POS AV 410 GPS-aided Inertial Navigation System</p>
RED_UP_C	<p>Kipp &amp; Zonen</p> <p>Applanix POS AV 410 GPS-aided Inertial Navigation System</p>
LAT_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
LON_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
ALT_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
VELN_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
VELE_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
VELD_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System

ROLL_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
PTCH_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
HDG_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
WAND_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
TRCK_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
GSPD_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
ROLR_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
PITR_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
HDGR_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
ACLF_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
ACLS_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
ACLD_GIN	Applanix POS AV 410 GPS-aided Inertial Navigation System
CPC_CNTS	TSI Modified Water Filled 3786 Condensation Particle Counter, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
CAB_PRES	Rosemount Aerospace Inc. Pressure Transducer Model 1201F
O3_TECO	Core Thermo Fisher Scientific Inc. model 49i UV absorption ozone photometer Nott et al. (in prep.)
U_NOTURB	Air Data Computer on G-LUXE, BAE Systems (2000) Applanix POS AV 410 GPS-aided Inertial Navigation System

V_NOTURB	Air Data Computer on G-LUXE, BAE Systems (2000) Applanix POS AV 410 GPS-aided Inertial Navigation System
HGT_RADR	Thales AHV16 Radar Altimeter
VMR_CR2	Buck Research Instruments CR2 Chilled Mirror Hygrometer with heated inlet Air Data Computer on G-LUXE, BAE Systems (2000)
VMR_C_U	Buck Research Instruments CR2 Chilled Mirror Hygrometer with heated inlet Air Data Computer on G-LUXE, BAE Systems (2000)
TDEW_CR2	Buck Research Instruments CR2 Chilled Mirror Hygrometer with heated inlet
TDEW_C_U	Buck Research Instruments CR2 Chilled Mirror Hygrometer with heated inlet Air Data Computer on G-LUXE, BAE Systems (2000)
TDEWCR2C	Buck Research Instruments CR2 Chilled Mirror Hygrometer with heated inlet Air Data Computer on G-LUXE, BAE Systems (2000)
NV_TWC_U	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998)
NV_TWC_C	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998) Air Data Computer on G-LUXE, BAE Systems (2000)
NV_TWC_COL_P	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998)
NV_LWC1_U	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998) Air Data Computer on G-LUXE, BAE Systems (2000)



NV_LWC1_C	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998) Air Data Computer on G-LUXE, BAE Systems (2000)
NV_LWC2_U	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998) Air Data Computer on G-LUXE, BAE Systems (2000)
NV_LWC2_C	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998) Air Data Computer on G-LUXE, BAE Systems (2000)
NV_REF_P	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998)
NV_LWC1_COL_P	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998)
NV_LWC2_COL_P	Sky Phys Tech Inc. Nevzorov probe, Korolev et al. (1998)
WOW_IND	
PSAP_LIN	Radianc Research Particle Soot Absorption Photometer, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
PSAP_LOG	Radianc Research Particle Soot Absorption Photometer, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
PSAP_FLO	Radianc Research Particle Soot Absorption Photometer, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
PSAP_TRA	Radianc Research Particle Soot Absorption Photometer, sampled through modified Rosemount Aerospace Inc. Type 102 Total Temperature Housing
CAB_TEMP	Qualitative indication of cabin temperature in rear core console

V_C	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p> <p>Applanix POS AV 410 GPS-aided Inertial Navigation System</p>
U_C	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p> <p>Applanix POS AV 410 GPS-aided Inertial Navigation System</p>
W_C	<p>FAAM Core 5-port Turbulence probe, BAE Systems (2004)</p> <p>Air Data Computer on G-LUXE, BAE Systems (2000)</p> <p>Rosemount Aerospace Inc. Type 102 [De-iced / Non-de-iced] Total Temperature Housing fitted with [IST MiniSens PRT sensor / original open-wire PRT sensing element / GE Fastip Thermoprobe, Price et al. (in prep.)]</p> <p>Applanix POS AV 410 GPS-aided Inertial Navigation System</p>
CO_AERO	<p>Core Aero Laser GmbH model [AL5002 / AL5005] VUV resonance fluorescence spectrometer, Gerbig et al. (1999)</p>
SO2_TECO	<p>Core customised Thermo Fisher Scientific Inc. model 43i TLE pulsed fluorescence SO2 spectrometer, Nott et al. (in prep.)</p>
TDEW_GE	<p>GE 1011B Chilled Mirror Hygrometer</p>

PS_RVSM	Air Data Computer on G-LUXE, BAE Systems (2000)
Q_RVSM	Air Data Computer on G-LUXE, BAE Systems (2000)
PALT_RVS	Air Data Computer on G-LUXE, BAE Systems (2000)
IR_UP_C	Kipp & Zonen CR4
IR_DN_C	Kipp & Zonen CR4

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