

IRWG/TCCON Meeting, Toronto, June 2015

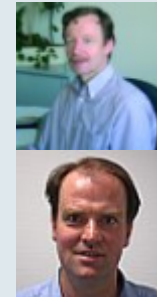
Bruker Atmospheric Measurement Systems News

Dr. A. Keens
Bruker Optik GmbH
Ettlingen, Germany

Bruker Internal News

Internal News:

- Arno Simon has officially retired by end of 2014
(Still available on a consulting basis until end of 2015)
- Roland Harig is new head of development (CTO)
- Michael Gisi has left Bruker (formerly remote sensing business)
- Armin Gembus is product manager for the remote sensing business
- Axel Keens keeps the high resolution business



- IMPORTANT

New e-mail address format: forename.surname@**bruker.com**
opticsorders -> orders.bopt.de@bruker.com

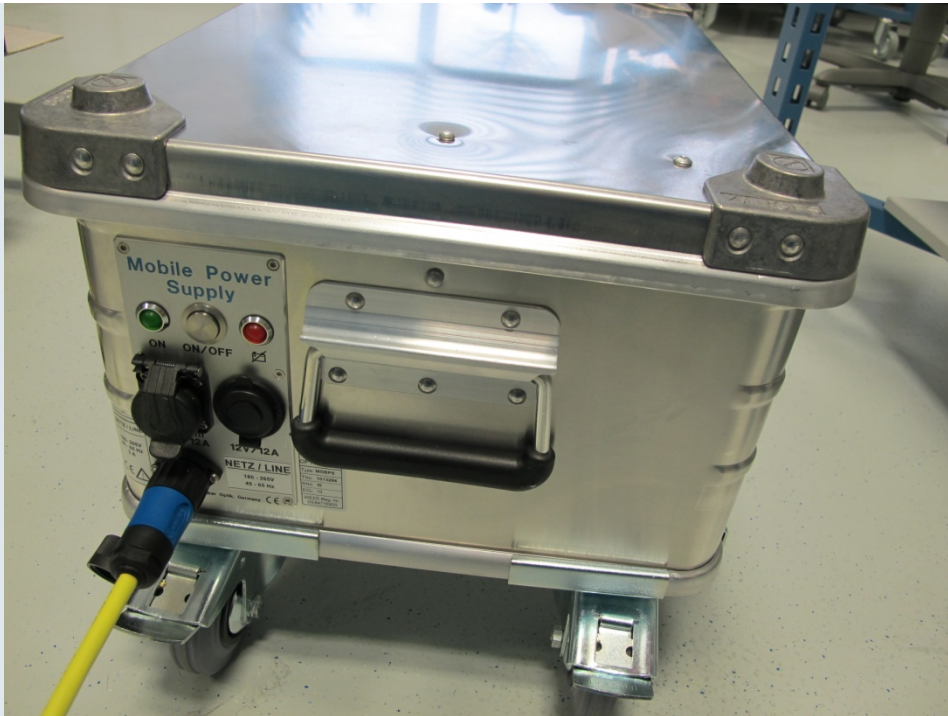
EM27/Sun MIR



Specifications:

- Spectral range:
 $780\text{ cm}^{-1} - 5100\text{ cm}^{-1}$
- Resolution: 0.2 cm^{-1}
- MCT closed cycle detector
- Solar tracker with
CamTracker operation
- Simultaneous AC + DC
data recording

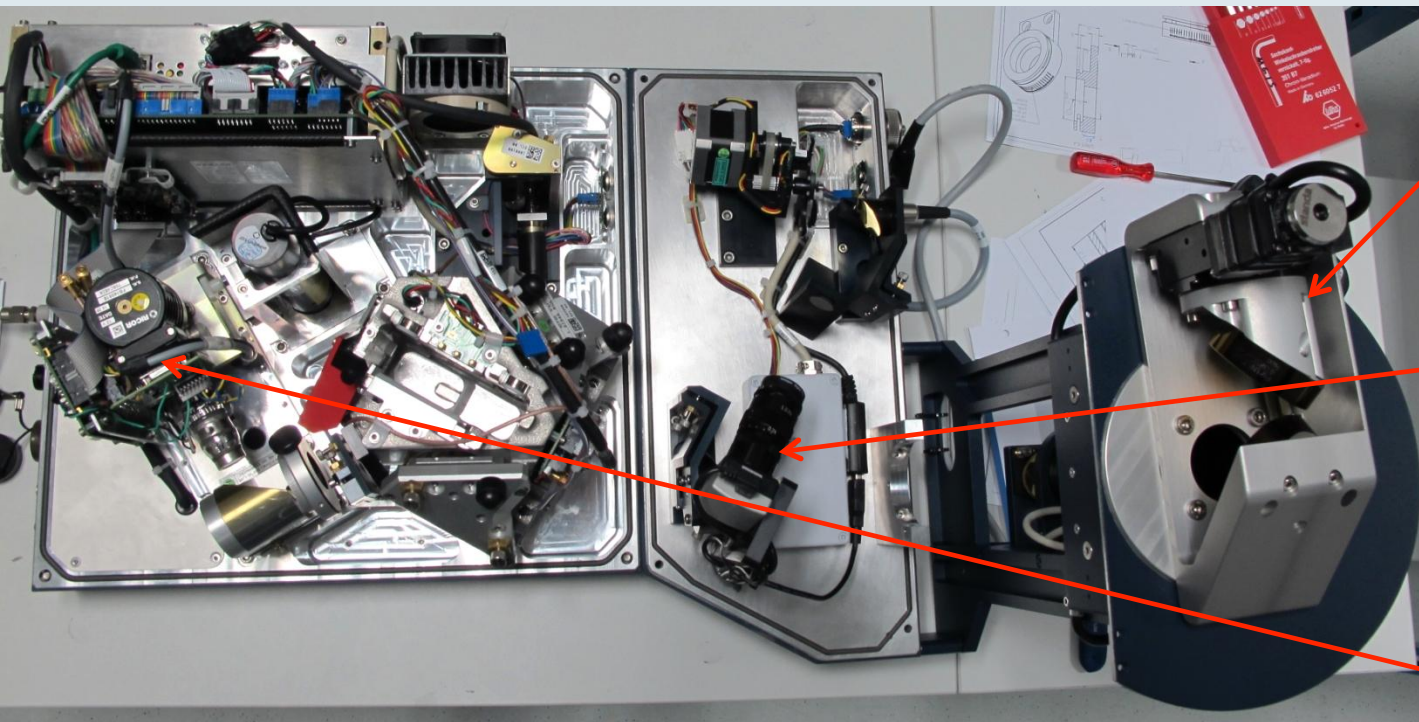
EM27/Sun MIR



Specifications:

- Optional mobile power supply: 24V/50Ah
- Power requirement: 45W + Notebook 25W
- Up to 16h continuous operation possible

EM27/Sun MIR

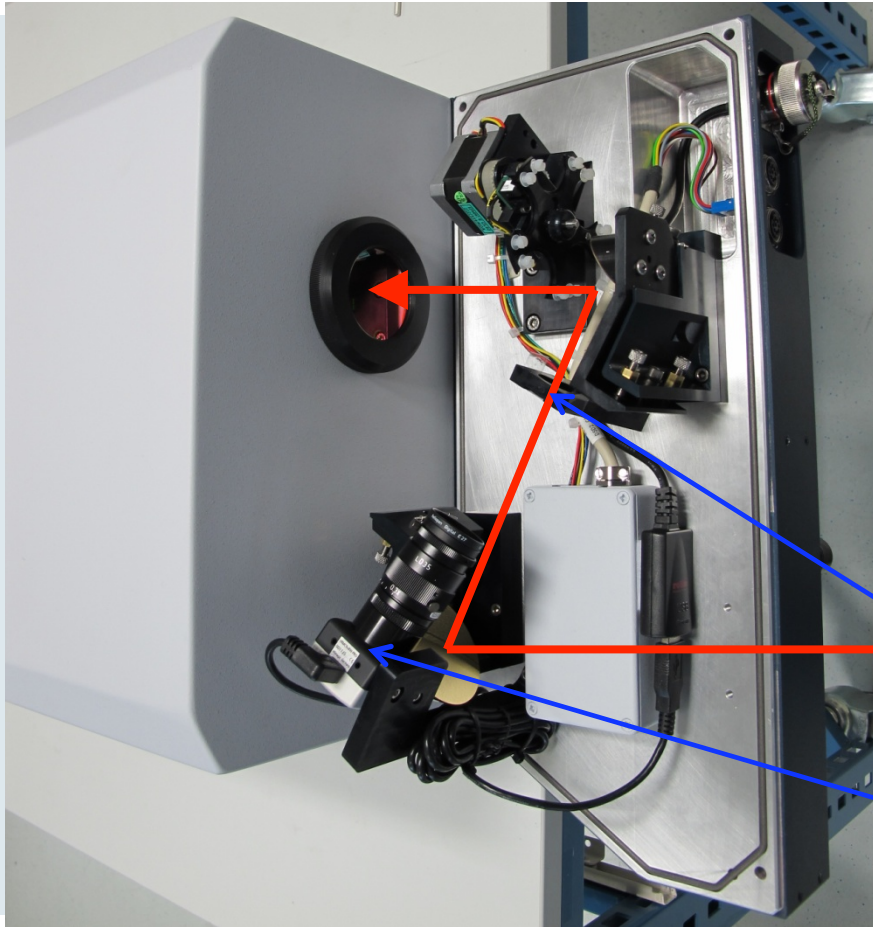


Solar tracker

Camera

MCT (closed cycle)

EM27/Sun MIR



**Extra chamber for
intermediate focus**

Parallel beam from tracker

Focus position

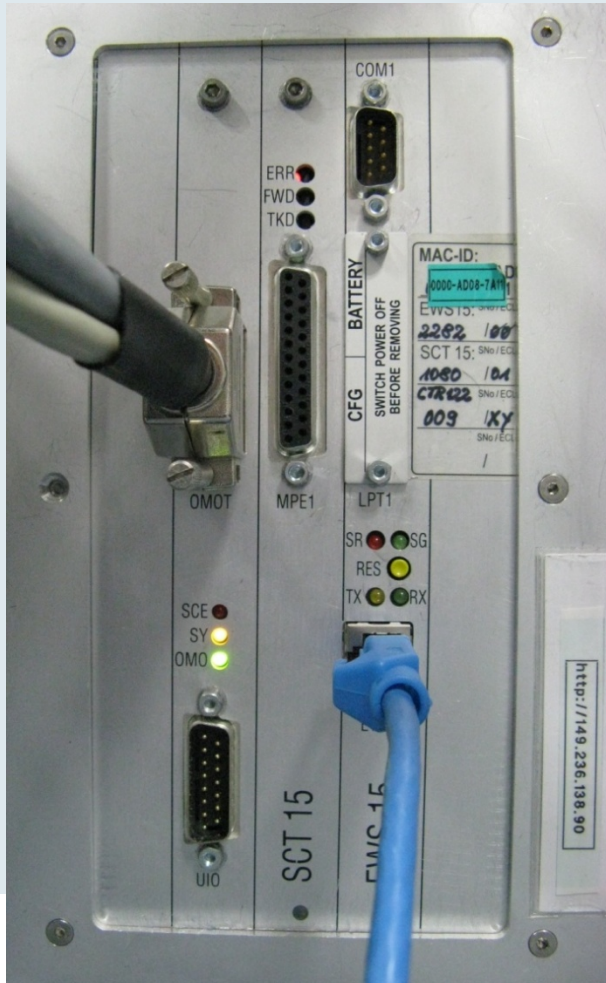
Camera

EM27/Sun MIR

Solar spectrum:

- 780 cm^{-1} – 5100 cm^{-1}
in one spectrum
- Resolution: 0.2 cm^{-1}

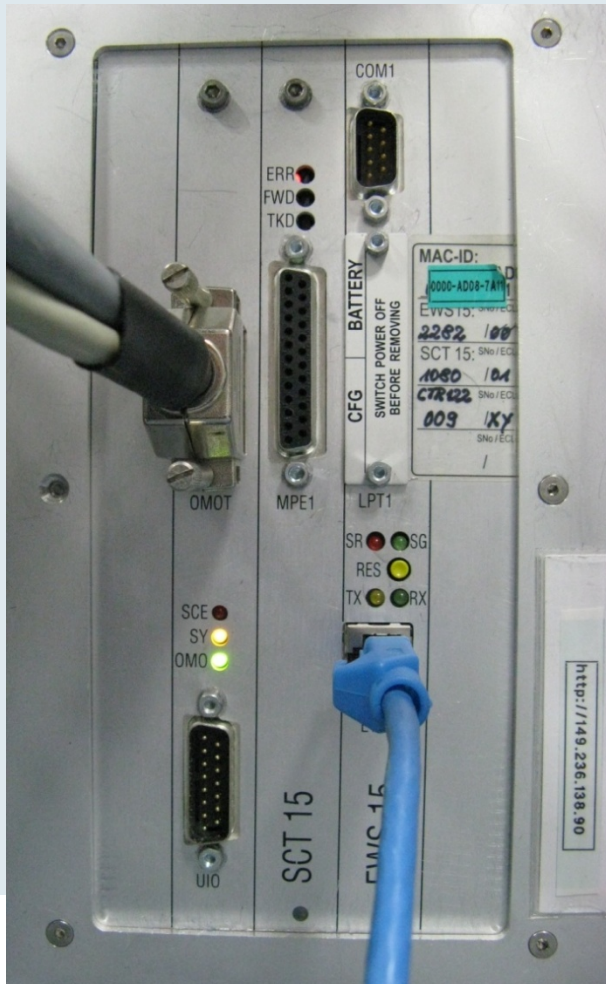
M16 Controller Block IFS 125



M16 Controller:

- Supports up to 320 k samples/sec via 100 Mbit Ethernet
- Excellent speed regulation
- High reliable data acquisition with firmware 2.40 and OPUS 7.5
- Continuous firmware development

M16 Controller Block IFS 125



M16 Controller

Upgrade options from M15:

- I24190 Complete electronics rack (incl. power supply) € 19,300
 - I24249 Controller block € 6,950
 - Exchange only:

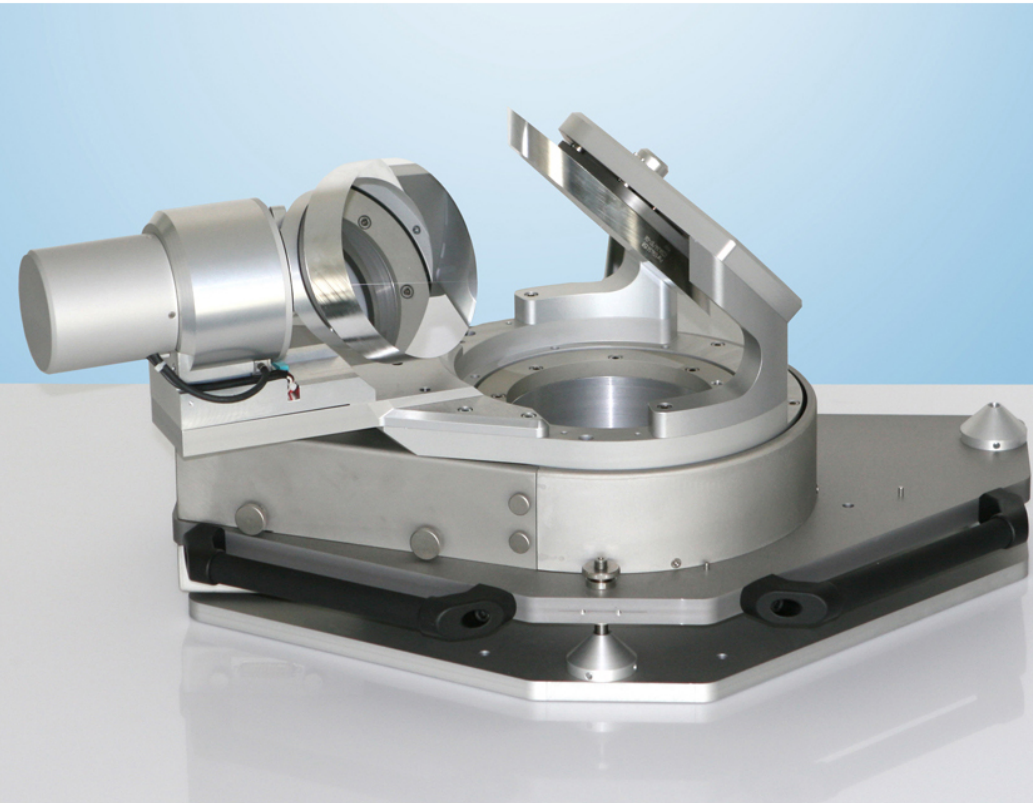
1009410 EWS16	€ 1,540
1009162 SCT16	€ 1,600
- Service call required!

Firmware IFS 125HR/125M

Firmware version 2.40 for M16 based instruments:

- Some bugs have been fixed since original release in Feb 2014:
- /dsp/shr_**243m**.ldr fixes Dual channel corrupt data in 2nd channel
- and fixes stopping of scanner if wrong aperture had been selected
- Remaining bug:
motors 0 & 1 (interferometer alignment) do not work
- If motors 0 & 1 are required:
call Gregor Surawicz to install firmware 2.431c_beta

A547N Solar Tracker

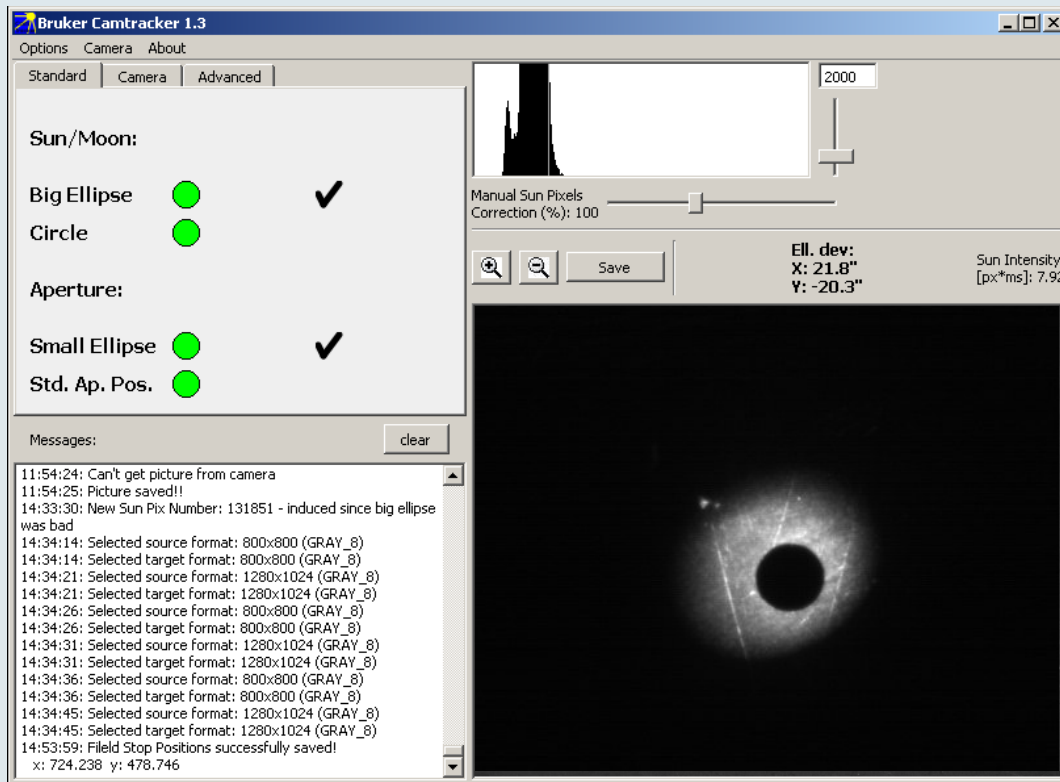


Solar Tracker:

- Electronics based on M16 platform, 24V operation
- Ethernet interface
- CamTracker operation



CamTracker Image Processing



CamTracker:

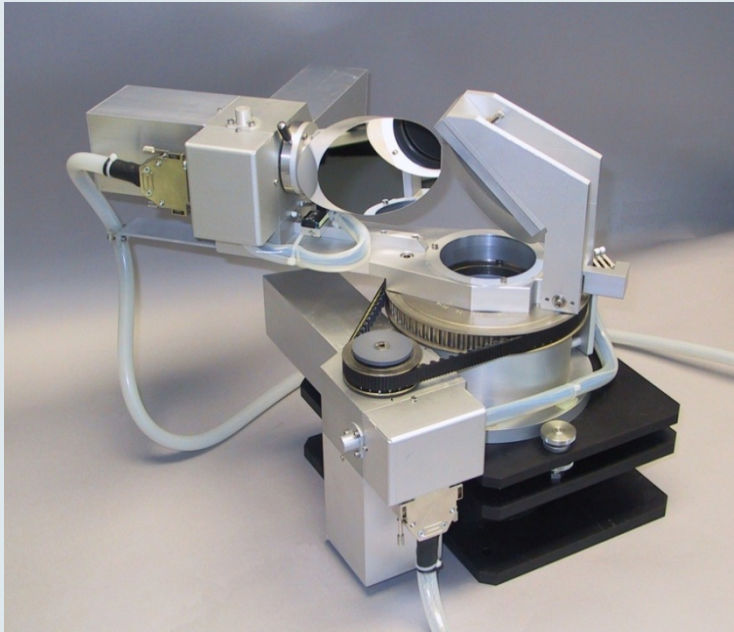
- New trackers will be delivered with CamTracker extension by default
- Upgrade kit for existing trackers:
A547N-CAM € 6,260
(Camera, objective, mount, software license, exchange of controller)
- FOV of camera ~ 2 deg

Solar Tracker Firmware 2.25

Alignment errors:

- New analytical model to fully describe a misaligned rigid tracker
- 10 parameters must be determined from experimental offset data
- P_0 : AZI_OFFSET Offset angle azimuth Local to Geo coordinates
- P_1 : ELE_OFFSET Offset angle elevation Local to tracker horizontal coordinates
- P_2 : AZI_AXIS_NORTHSOUTH_TILT North-south tilt of the tracker axis
- P_3 : AZI_AXIS_EASTWEST_TILT East-west tilt of the tracker axis
- P_4 : APT_X_OFFSET Offset of input aperture relative to center of tracker axis in x
- P_5 : APT_Y_OFFSET Offset of input aperture relative to center of tracker axis in y
- P_6 : AZI_MIRROR_PITCH Deviation of Azi mirror's normal to Azi rotary axis from 45deg
- P_7 : AZI_MIRROR_ROLL Azi mirror tilt about the mirror's longest dimension
- P_8 : ELE_AXIS_PITCH Deviation of angle between Ele and Azi rotary axis from 90deg
- P_9 : ELE_MIRROR_PITCH Deviation of Ele mirror's normal to Ele rotary axis from 45deg
- $S * P = \text{Offset}$ (Matrix equation for experimental Offset)
- $P = S^+ * \text{Offset}$ (Solution for parameters P; S^+ is the pseudoinverse of S)

A547 80 mm Solar Tracker Electronics Update



Electronics update:

- 1023601 Controller for A547 € 12,500
- No changes in motors or cabling
- Full remote control via Ethernet interface
- CamTracker upgrade A547N-CAM € 6,260



OPUS 7.5

OPUS 7.5 is current release

- Error corrections, several new wizards
- Supports Windows XP and Windows 7 (32bit and 64bit)
- Supports only instruments with Ethernet interface (no IFS 120HR)
- Update from versions 7.0 or 7.2 possible (O/IR7.5US € 515)
- Customers with older version have to buy a full OPUS 7.5 license

OPUS Linux version

OPUS Linux Version

First Name / Vorname:*
Last Name / Nachname:*
Title / Titel:
Company / Institute / Firma / Institut:*
Country / Land:*
E-Mail:*
Intended use / Verwendung*
Instrument type / Gerätetyp*

-- Please select / bitte auswählen --
-- Please select / bitte auswählen --

OPUS Linux Download List

☐ opus-7.0.122.1124-1.i386.RHEL5.rpm
☐ opus_7.0.122.1124-1.i386.Ubuntu1004LTS.deb
☐ opus-7.0.122.1124-1.i386.RHEL5.sh
☐ opus_7.0.122.1124-1.i386.Ubuntu1004LTS.sh

Submit / Senden

Detailed information

OPUS for Linux is free for your evaluation. Use it at your own risk. No support from Bruker Optics.

opus-7.0.122.1124-1.i386.RHEL5.rpm

4b77adc58e634956b42efadccc23bd93

RPM package for RHEL5 or similar (CentOS, Scientific Linux)

opus_7.0.122.1124-1_i386.Ubuntu1004LTS.deb

0df18efc83f37f179b6461ac13d4daaf

Debian package for Ubuntu LTS (i.e., 10.04 currently) or similar

opus-7.0.122.1124-1.i386.RHEL5.sh

dbfe9a7e909f918f54ba60f22b15d6e4

Shar (shell-executable archive) file built on RHEL5, for installation on similarly old distributions, or for extraction below any custom directory (fully relocatable installation enabled by packaging) To be executed in shell terminal via
sh ./opus-7.0.122.1124-1.i386.RHEL5.sh

opus_7.0.122.1124-1_i386.Ubuntu1004LTS.sh

82619dcf79009f62886a053a37c1c7a

Shar (shell-executable archive) file built on Ubuntu LTS (10.04), for installation on similarly old distributions, or for extraction below any custom directory (fully relocatable installation enabled by packaging) To be executed in shell terminal via

ChangeLog:

- Entirely new fully cross-platform generic build system (CMake / CPack), much improved packaging - feedback would be useful
- Context-sensitive help now corrected to properly support Linux chm viewers
- Mechanism for automatic backslash path correction in affected OPUS parameters
- Improved support of pseudo MDI (currently active) / real MDI (not enabled) window handling
- Beginnings of printing support
- Working_ support for many other codepages:
 - Single-Byte codepages (LANGUAGE=RUSSIAN, Turkish, ...)
 - Multi-Byte codepages (Simplified Chinese, ...) now also supported (not directly supported due to toolkit limitation - may work on getting this fixed -, but due to conversion to proper UTF-8 working in many cases)
- File Save As format selection now working correctly
- Large encoding handling rework, now able to make use of proper system-provided Unicode-based wx package many misc. fixes / optimizations, e.g.:
 - major implementation parts completely reworked (messaging, window handling, graphics)
- Thread creation fixes, locking granularity improvements
- Many thread locking corrections where needed, for non-primary-thread GUI output (strongly improved correctness/precision)
- Try to contain damage inflicted upon by still pervasive copy-on-write string implementations in current base architecture toolkits

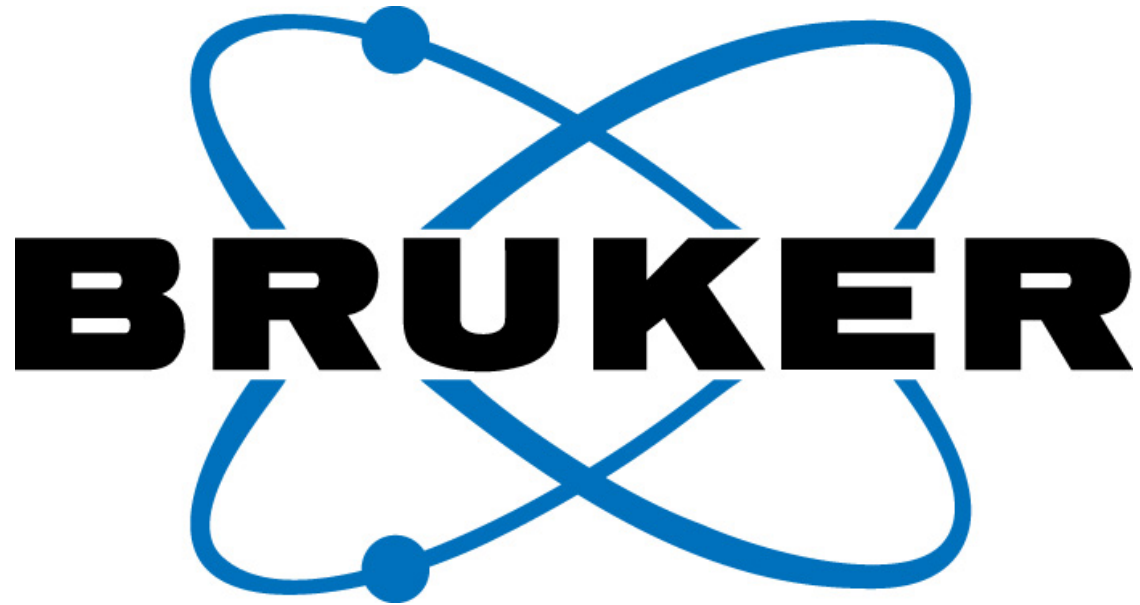
OPUS downloads:

www.bruker.com/service/support-upgrades/software-downloads

- OPUS viewer
- OPUS Linux 7.0.122
 - Use at your own risk
 - **No official support from Bruker**
 - No guarantee that we maintain it
 - May be used in a virtual machine
- OPUS error report

Email address for bug reports:

opusbugs@bruker.com

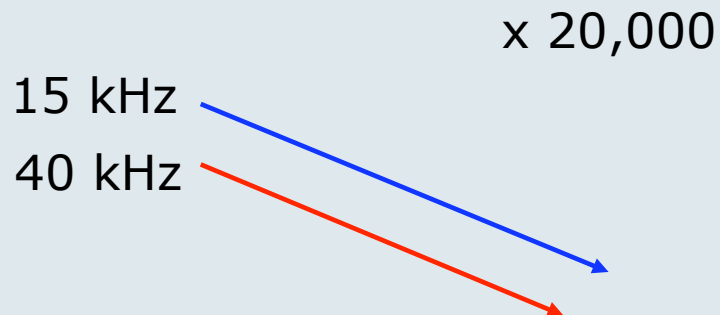


www.bruker.com

Thank you for your attention !

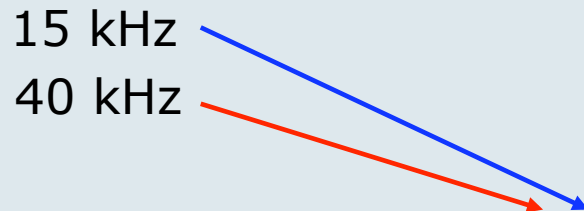
Firmware 2.40 IFS 125HR/125M

- Ghost, poti
adjusted @40kHz



Firmware 2.40 IFS 125HR/125M

- Ghost
XSM=1
(only rising
zero crossing,
falling crossings
interpolated) x 20,000



Firmware 2.40 IFS 125HR/125M

- Ghost
15 kHz
knocked during
acquisition
(-> vel errors)

x 20,000

XSM=1

both zero
crossings

- XSM=1 may be
placed in EWS.INI