

Barrel Module Database Utilities

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- Database Rules and Conventions
- Item Registration
- Shipments
- Data Uploads
 - Assembly Info
 - Datasheets
 - Profiles
 - SCTDAQ data
- Data Retrieval and Display

Database Rules and Conventions

- Modules, ASIC-Hybrids and passive-Hybrids each have unique database serial numbers, but the user always refers to them by their shared visible barcode.
- Similarly the sensor-baseboards and baseboards each have unique serial numbers, but the user refers to them by their shared visible barcode.
- This is a great advantage to the ATLAS user, because data saved locally for any component is associated with the visible barcode without the need to lookup the 'true' serial number.
- On the other hand, this causes considerable overhead for otherwise simple transactions with the SCT database, eg:
 - to register a module, one must also register the passive-hybrid and ASIC-hybrid because they share the same visible barcode.
 - to ship a hybrid, one must also ship the other non-assembled components that share the same visible barcode
 - to upload data, one must substitute the visible barcode number by the correct serial number, if appropriate.
 - etc ...

For this reason some Standalone programs (written in java, suitable for Windows, Linux and MacOSX) have been developed for use by the barrel community to provide an interface to the database, and which take care of all the overhead necessary to ensure consistency of data.

<http://www.hep.phy.cam.ac.uk/~silicon/jBarrels.html>

- Tools specific to the Barrel Community
- Standalone program on your PC
- Item registration, shipments, assemblies, datasheets and profiles
- Extracts data from the excel sheets as defined in Nobu's document

<http://www.hep.phy.cam.ac.uk/~silicon/jSCTDAQ.html>

- Upload of SCTDAQ data
- Standalone program invoked from Rint session window
- Extracts data from SCTDAQ result files

<http://www.hep.phy.cam.ac.uk/~silicon/jSCTDB.html>

- Standalone program for windows/Linux/Mac
- Extracts and displays data from SCT database

Barrel Utilities Application

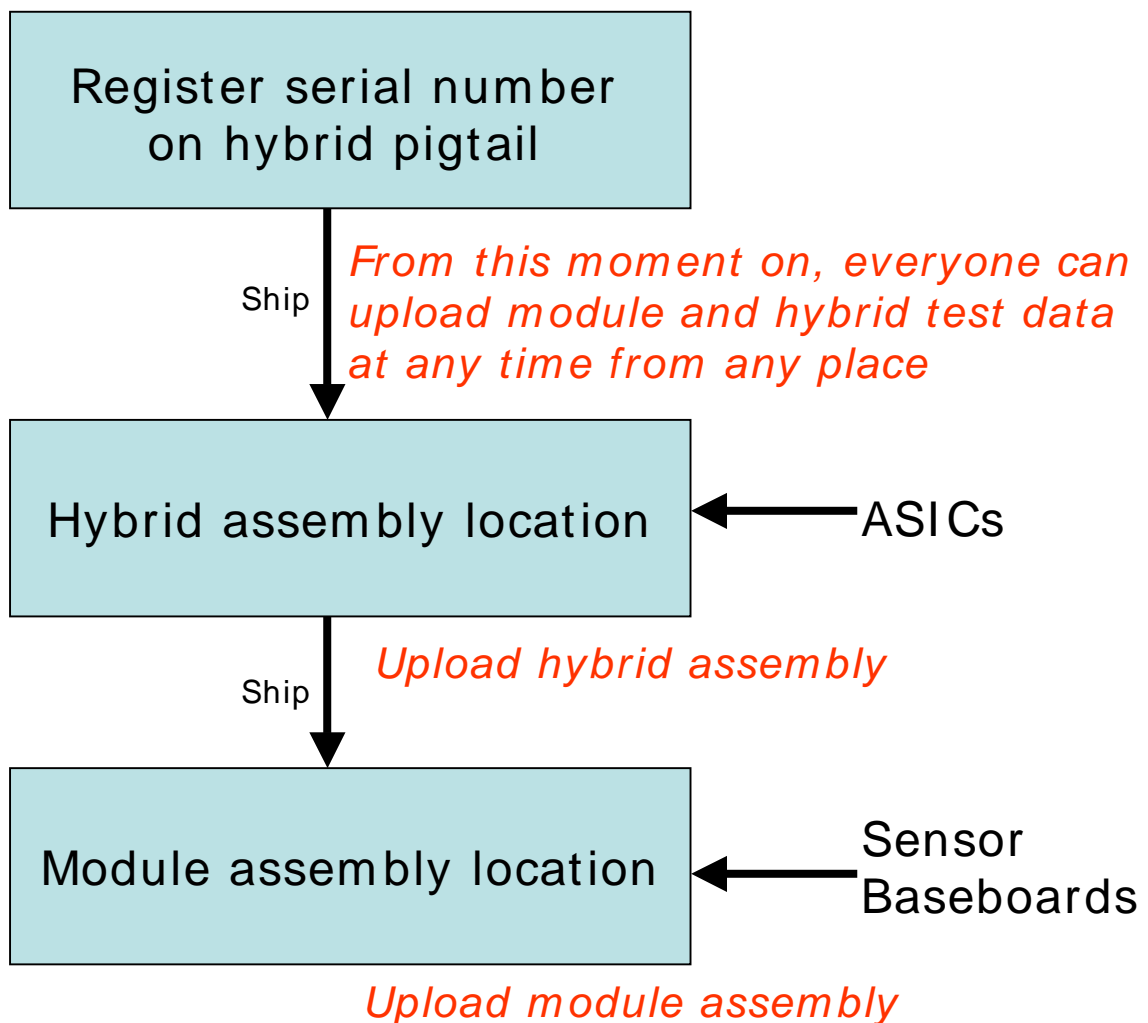
Main features:

- Easy to use Graphical User Interface
- Tabs for Registration, Shipments, Assemblies and Datasheets (Profiles soon...)
- Users only need to know the visible barcode serial number that is associated with their item or their data. All overhead associated with serial number substitutions and special actions are taken care of.
- Interacts with the database to perform extensive verification prior to any uploads (tries to prevent you “making a mistake”)
- Flexibility – can upload just one item of data, or upload your entire backlog of data files in one go

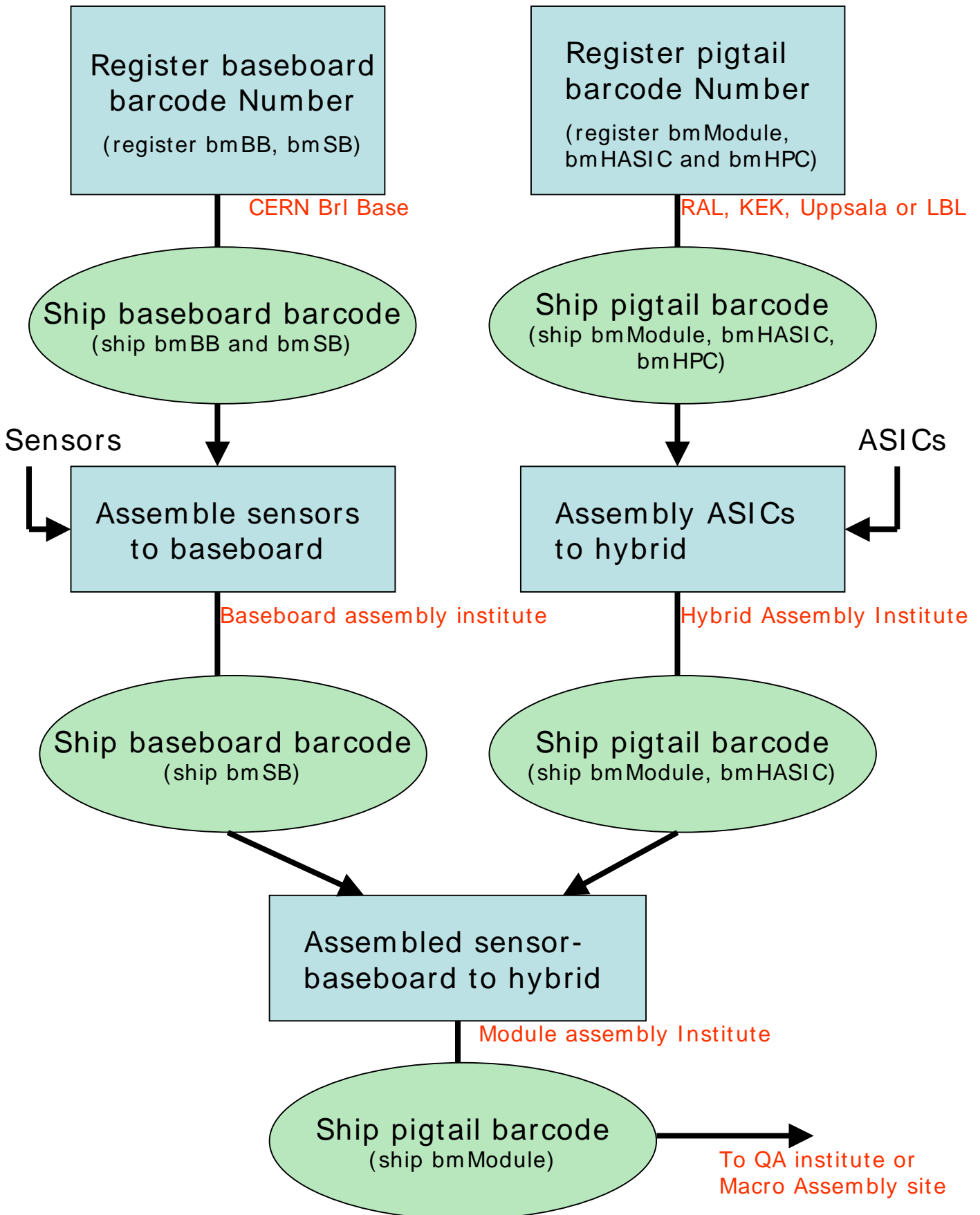
YOU MUST USE THIS APPLICATION TO UPLOAD DATA TO THE DATABASE. THE GENEVA JAVA UTILITIES AND WEB INTERFACE DO NOT PERFORM SERIAL NUMBER SUBSTITUTIONS OR SPECIFIC ACTIONS TO ENSURE VALID AND CONSISTANT BARREL DATA

Item Registration, Shipments and Data Uploads

- Once an item is registered in the database, any institute can upload test data for that item, regardless of where the item is currently located
- To assemble a device from various components, the device and all the components must be located at the same institute at the time of assembly.



Item Registration and Shipment Map

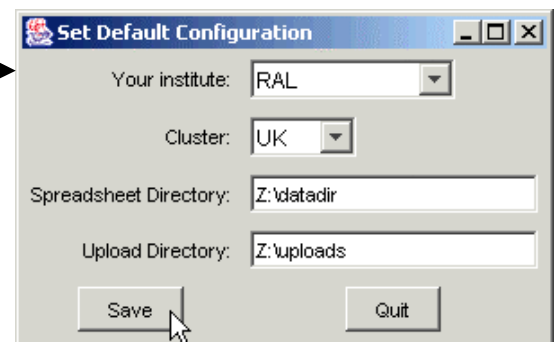
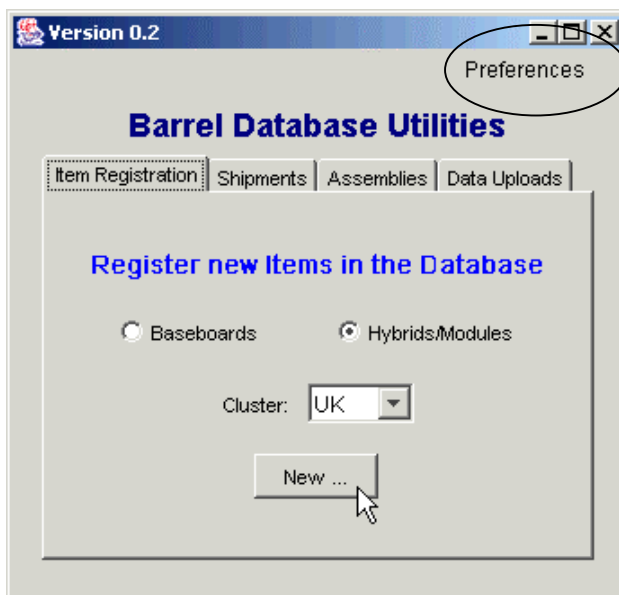


Introduction to the Barrel Utilities Application

- Follow the installation instructions from the website
- Invoke by typing 'java Barrels/DBInterface'
- Enter the password



- Set 'Preferences'

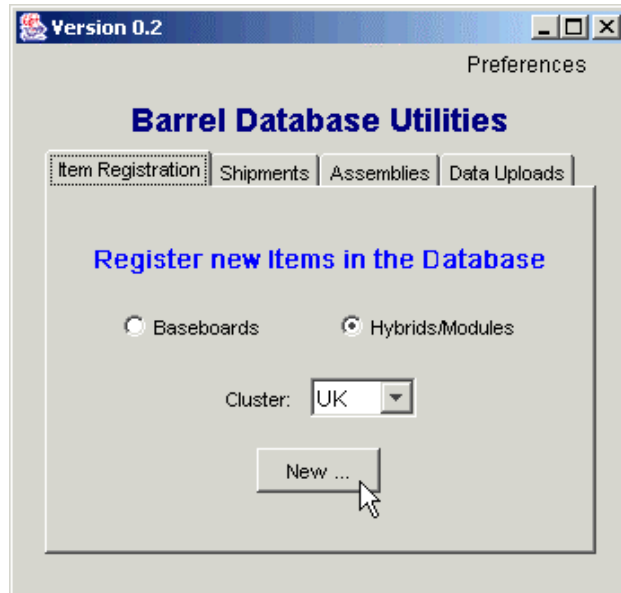


Spreadsheet Dir: location of your data files

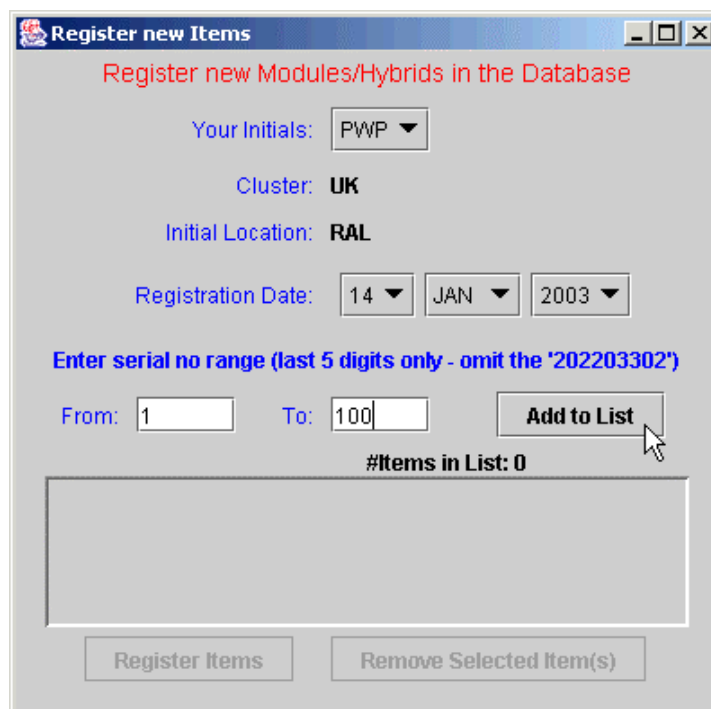
Upload Dir: A directory used for temporary (upload) file creation and upload.

Registering New Items

- Select 'Item Registration' tab
- Select 'Baseboards' or 'Hybrids/Modules'
- Click 'New...'



- Select your initials
- Select registration date (default is today)
- Enter range of serial numbers and 'Add to List'



- Available (ie not yet registered) serial numbers are listed in a spreadsheet
- All components sharing the same visible barcode are also listed

Register new Modules/Hybrids in the Database

Your Initials: PWP

Cluster: UK

Initial Location: RAL

Registration Date: 14 JAN 2003

Enter serial no range (last 5 digits only - omit the '202203302')

From: 1 To: 100 **Add to List**

#items in list: 290

Serial No	Type	Location	Date
20220330200001	bmModule	RAL	14/01/2003
20220338200001	bmHASIC	RAL	14/01/2003
20220337200001	bmHPC	RAL	14/01/2003
20220338200002	bmHASIC	RAL	14/01/2003

Register Items **Remove Selected Item(s)**

In this example, for each bmModule the corresponding bmHASIC and bmHPC are listed too because they share the same visible barcode. There were 10 devices already registered in the database, so only 290 are listed.

- You can remove ranges of numbers by selecting them and then clicking 'Remove Selected Item(s)'
- To register all the items listed, click 'Register Items':

Confirm Request

Are you sure you want to register these 290 items?

Yes **No**

Database Write Access Authorisation

Enter details for institute RAL

Institute username: ral

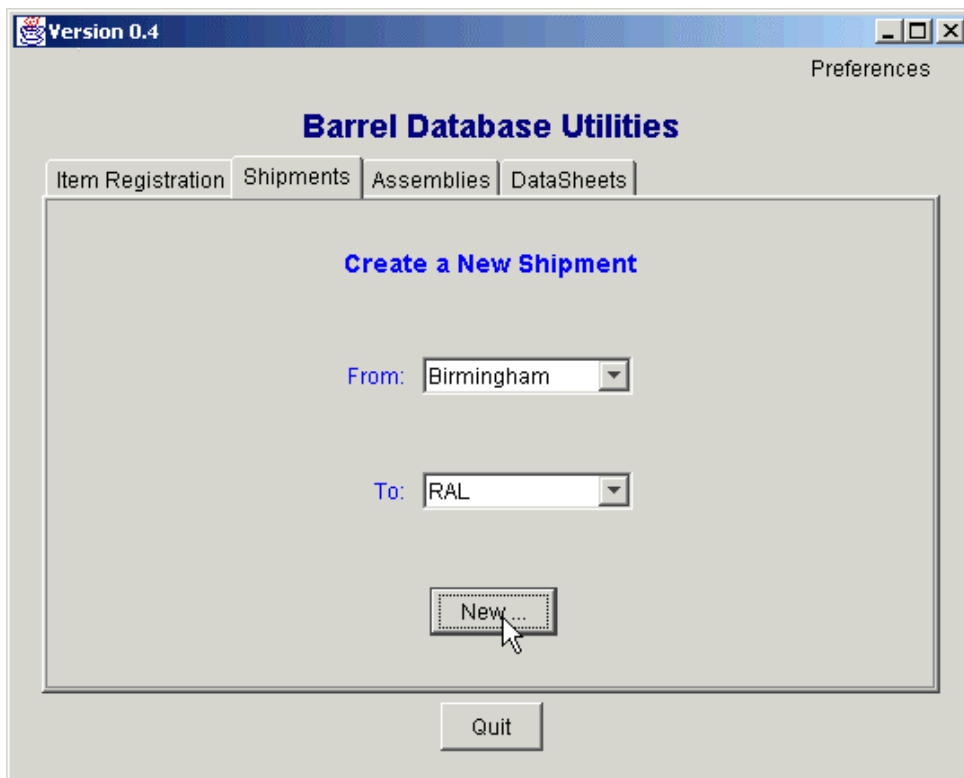
Institute password: #####

Enter **Cancel**

Creating Shipments

Example: Birmingham wish to ship assembled hybrids to RAL for module assembly.

- Select 'Shipments' tab
- Select the destination in the 'To:' menu
- Click on 'New...'



- Enter all the appropriate data
- Enter range of serial numbers that you want to ship (serial numbers correspond to the barcode numbers on the pigtail or baseboard)
- Click on 'Add to List'

Register a New Shipment from Birmingham to RAL

Your Initials: DGC

Your Reference: abcdefgh

Recipient's Initials: PWP

Carrier: DHL

Carrier's Reference: 12345

Shipment Date: 27 FEB 2003

Enter Range of Serial Numbers to Ship (full 14-digit numbers):

From: 20220330200001 To: 20220330200005

#items in shipment: 8

Serial Number	Type	Assembled?
20220330200002	bmModule	NO
20220338200002	bmHASIC	NO
20220330200005	bmModule	NO
20220338200005	bmHASIC	NO

- Only components located at the sending institute are listed
- All components sharing the same visible barcode are also listed *if they are not assembled*

(in this example, we requested to send hybrids 20220330200001 to 20220330200005. However hybrid 20220330200001 is not at Birmingham so 4 hybrids – bmHASICs - are listed, together with the bmModules that share the same visible barcode. Note the bmHPCs are assembled and therefore not included)

- When all components are listed, click on 'Register Shipment'

After you have uploaded the shipment, you must confirm it using the Geneva database web interface:

- Select 'Items' link
- Select 'Shipments' link
- Find your shipment in the list
- Select your shipment by clicking on the 'ShipDate'
- Enter the shipment date in the field 'Send Confirmation Date':

Shipment

SHIP DATE	SHIP NUMBER	SENDER LOCATION NAME	DESTINATION LOCATION NAME	O
20-FEB-2003	99,0,002,011	Valencia	Munich MPI	Se
20-FEB-2003	99,0,002,009	Valencia	Freiburg	Se
20-FEB-2003	99,0,002,008	Valencia	Melbourne	Se
20-FEB-2003	99,0,002,007	Valencia	Geneva	Se
20-FEB-2003	99,0,002,006	Valencia	Manchester	Se
17-FEB-2003	99,0,001,990	Freiburg	RAL	Se
17-FEB-	99,0,001,984	Munich MPI	NIKHEF	Se

Validate your shipment by updating the Send Confirmation Date.

07-FEB-2003, 990001970, RAL, Valencia, Sent

SHIP DATE:

SHIP NUMBER: 99,0,001,970

Send Confirmation Date:

SENDER PERSON INITIALS:

SENDER LOCATION NAME:

Data File Name Conventions

You define a 'Spreadsheet Directory' in your preferences. For assembly and datasheet uploads, the application will try to find excel datasheets in this directory

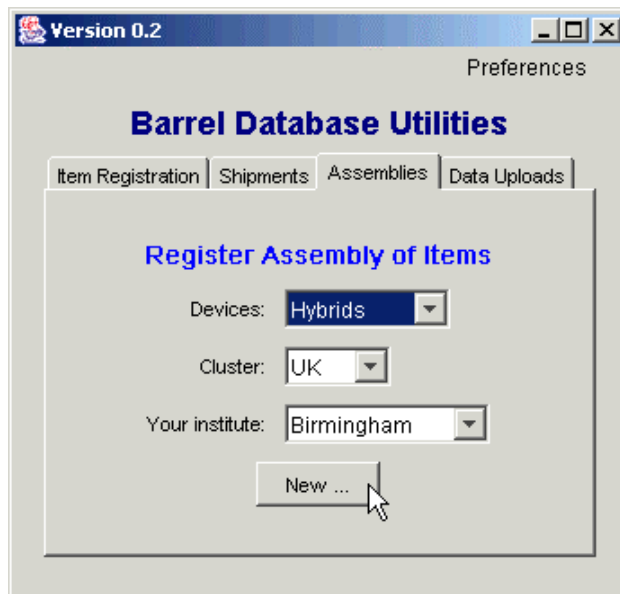
Datasheet	Recommended Filename	Alternative Filename
bmBBrawData	BASEBOARD_nnnnnnnnnnnnnn.xls	Anything.xls
bmSBrawData	SENSOR_BASEBOARD_nnnnnnnnnnnnnn.xls	Anything.xls
bmHPCrawData	HPC_HYBRID_nnnnnnnnnnnnnn.xls	Anything.xls
bmHASICrawData	ASIC_HYBRID_nnnnnnnnnnnnnn.xls	Anything.xls
bmModulerawData	MODULE_nnnnnnnnnnnnnn.xls	Anything.xls
bmSurveyXYrawData	XYSURVEY_nnnnnnnnnnnnnn_mm.xls	Anything.xls
bmSurveyZrawData	ZSURVEY_nnnnnnnnnnnnnn_mm.xls	Anything.xls

If you use 'recommended' filenames, the application can find these files automatically, allowing you to upload an unlimited number of files in one go

Uploading Assembly Information

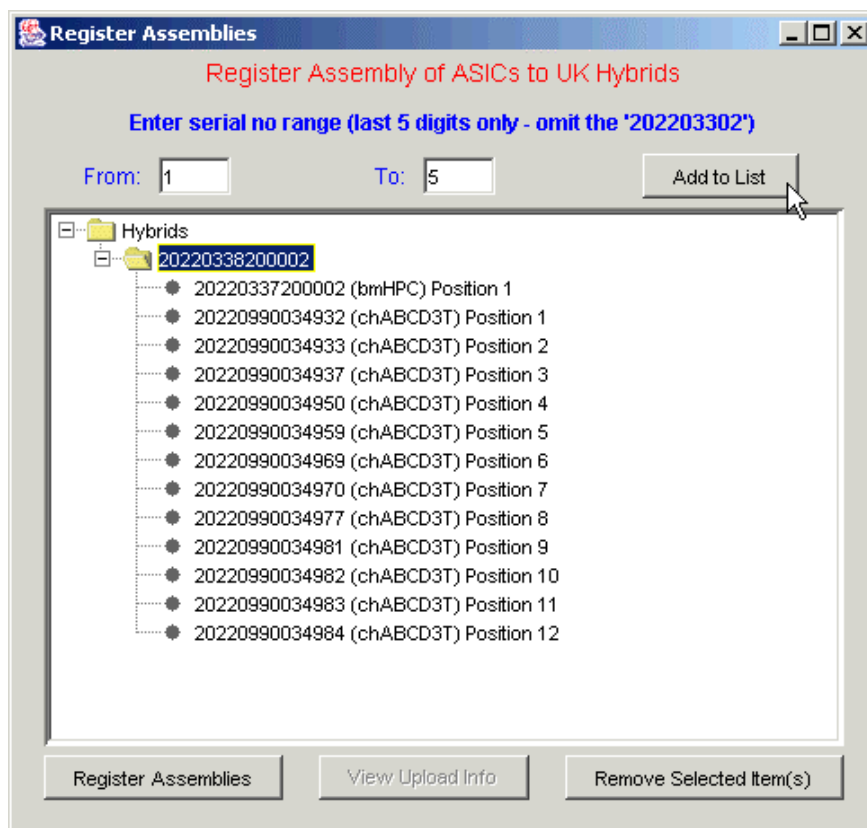
Assembly information is extracted from the 'bmSBrawData', 'bmHASICrawData' and 'bmMODULErawData' excel sheets.

- Select the 'Assemblies' tab
- Select the Device Type (Baseboards, Hybrids or Modules)
- Check you cluster and institute are correct
- Click on 'New...'



Click on 'Add to List' to extract the assembly info from the appropriate excel sheet:

- If the 'From:' and 'To:' fields are both blank, you are presented with a dialog box to find and open the excel file.
- If a number is in the 'From:' field and the 'To:' field is blank, the application will find and open one excel file corresponding to that one serial number
- If a range of serial numbers is entered, the application opens all excel files for that range of serial numbers



Assembly data is only listed if:

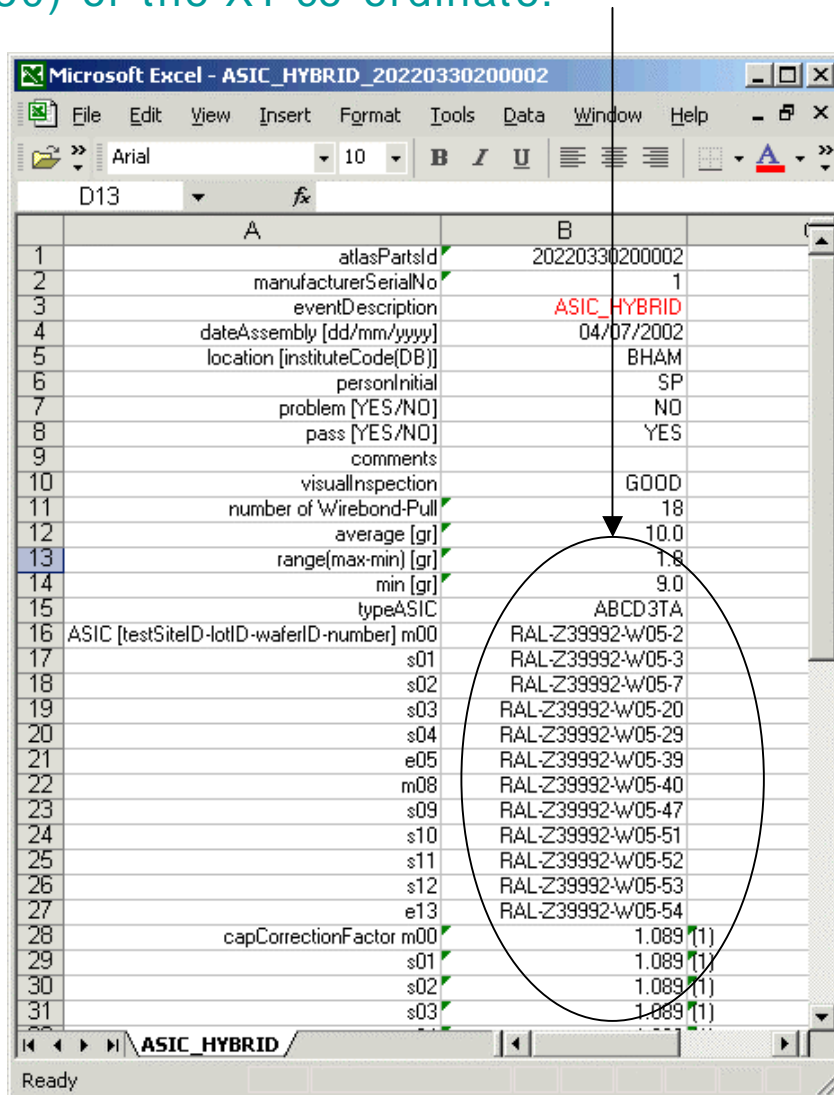
- the excel file(s) exist
- all components are not already assembled
- all components are located at your institute

Note ASICs are defined by:

“TestSite”-“Lot Number”-“Wafer Number”-“Chip site on wafer”

Where

“Chip site on wafer” is either a sequence number (between 1 and 250) or the XY co-ordinate.

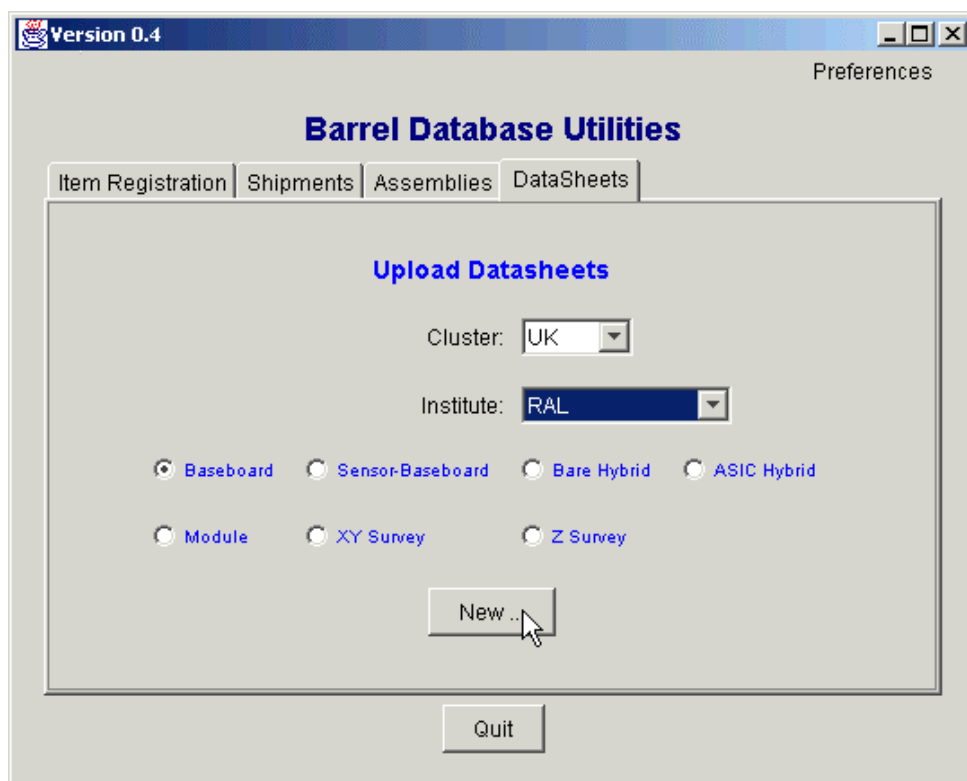


Eg RAL-Z39992-W05-X8-Y0 or RAL-Z3992-W05-2

The application interprets this string and looks up the appropriate 14-digit serial number

Uploading DataSheets

- Select the 'DataSheets' tab
- Ensure your cluster and institute are correct
- Select the datasheet type
- Click on 'New ...'



- Enter one serial number, or a range of serial numbers, or leave the serial number fields blank
- Click on 'Add to List'
- If both number fields are blank, you are prompted to find an excel file, otherwise the application automatically finds and opens the appropriate excel files
- Excel files (and some information extracted from them) are listed in a spreadsheet
- If 'Prevent Duplicate Uploads' is ticked, files are only listed if they have not previously been uploaded.

Register new Items

Upload Module data files to the Database

Prevent Duplicate Uploads?

Enter range of serial numbers (leave out the '202203302' part):

From: To:

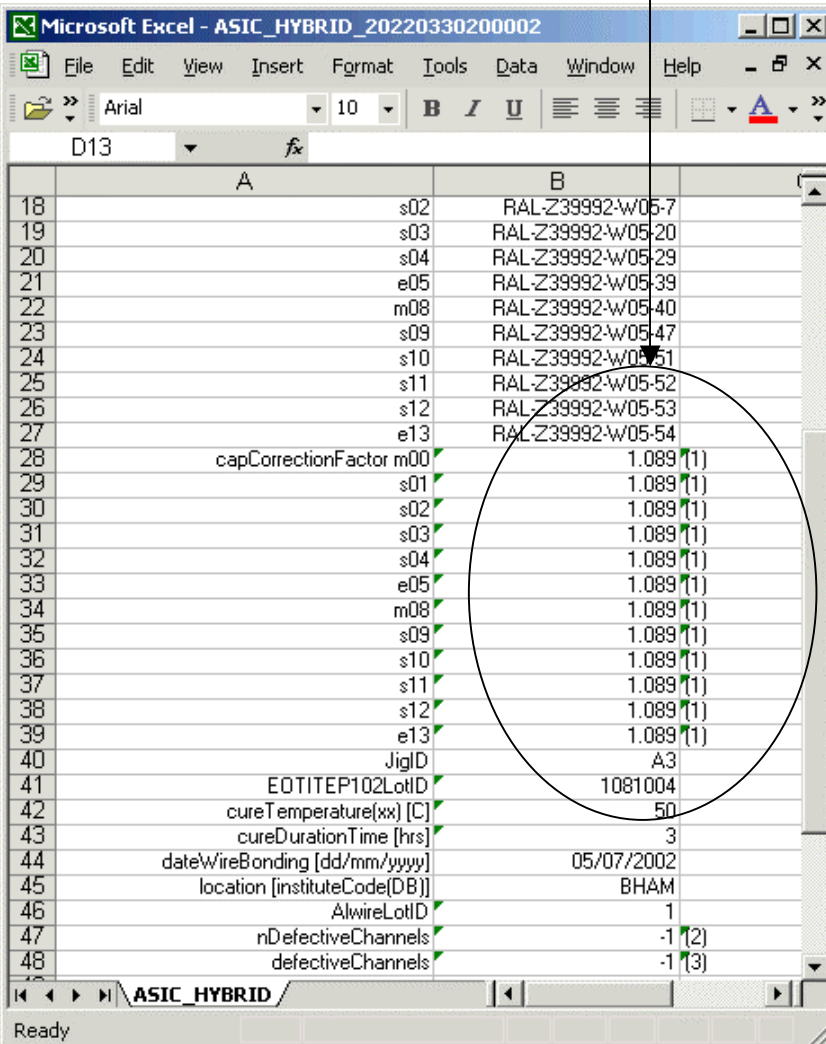
#datasheets in list: 3

File	SerialNo	Event	Date	Status	Comment
MODULE_20220330200002.xls	20220330200002	MODULE	08/07/2002	Ok	None
MODULE_20220330200003.xls	20220330200003	MODULE	10/07/2002	Ok	None
MODULE_20220330200005.xls	20220330200005	MODULE	18/07/2002	Ok	None

- click on 'Upload Datasheet(s)' to upload.

Special Actions on Datasheets

1. Capacitor correction factors (in bmHASICrawData sheet) will be automatically filled by lookup from the database. If you have filled them in (to a value not equal to 1.0), a warning is generated for your information if it is incorrect



The screenshot shows a Microsoft Excel window titled "Microsoft Excel - ASIC_HYBRID_20220330200002". The spreadsheet displays data for various components and their correction factors. A circle highlights the "capCorrectionFactor" column, which contains values of 1.089 for various component types (m00, s01, s02, s03, s04, e05, m08, s09, s10, s11, s12, e13). The status bar at the bottom indicates "Ready".

Row	Component	Value	Warning
18	s02	RAL-Z39992-w05-7	
19	s03	RAL-Z39992-w05-20	
20	s04	RAL-Z39992-w05-29	
21	e05	RAL-Z39992-w05-39	
22	m08	RAL-Z39992-w05-40	
23	s09	RAL-Z39992-w05-47	
24	s10	RAL-Z39992-w05-51	
25	s11	RAL-Z39992-w05-52	
26	s12	RAL-Z39992-w05-53	
27	e13	RAL-Z39992-w05-54	
28	capCorrectionFactor m00	1.089	(1)
29	s01	1.089	(1)
30	s02	1.089	(1)
31	s03	1.089	(1)
32	s04	1.089	(1)
33	e05	1.089	(1)
34	m08	1.089	(1)
35	s09	1.089	(1)
36	s10	1.089	(1)
37	s11	1.089	(1)
38	s12	1.089	(1)
39	e13	1.089	(1)
40	JigID	A3	
41	EOTITEP102LotID	1081004	
42	cureTemperature(xx) [C]	50	
43	cureDurationTime [hrs]	3	
44	dateWireBonding [dd/mm/yyyy]	05/07/2002	
45	location [instituteCode(DB)]	BHAM	
46	AlwireLotID	1	
47	nDefectiveChannels	-1	(2)
48	defectiveChannels	-1	(3)

2. Recalculation of data in bmSurveyXYrawData sheet to convert from μm to mm, and to convert to measured values in place of deviations

Summary of Barrel Utilities Application

Available now to download from
<http://www.hep.phy.cam.ac.uk/~silicon/jBarrels.html>

Action	Status
Item Registration	Ready
Shipments	Ready
Assembly Uploads	Ready
Datasheet Uploads	In Progress
Profiles	Not yet started

Final Note

Please adhere strictly to the sheet format as defined in Nobu's document, for the first two columns. Other columns are ignored.

	A	B	C	D
1	atlasPartId	20220330200002		
2	manufacturerSerialNo	1		
3	eventDescription	ASIC_HYBRID		
4	dateAssembly [dd/mm/yyyy]	04/07/2002		
5	location [instituteCode(DB)]	BHAM		
6	personInitial	SP		
7	problem [YES/NO]	NO		
8	pass [YES/NO]	YES		
9	comments			
10	visuallInspection	GOOD		
11	number of Wirebond-Pull	18		
12	average [gr]	10.0		
13	range(max-min) [gr]	1.8		
14	min [gr]	9.0		
15	typeASIC	ABCD3TA		
16	ASIC [testSiteID-lotID-waferID-number] m00	RAL-Z39992-w05-2		
17	s01	RAL-Z39992-w05-3		
18	s02	RAL-Z39992-w05-7		
19	s03	RAL-Z39992-w05-20		
20	s04	RAL-Z39992-w05-29		
21	e05	RAL-Z39992-w05-39		
22	m08	RAL-Z39992-w05-40		
23	s09	RAL-Z39992-w05-47		
24	s10	RAL-Z39992-w05-51		
25	s11	RAL-Z39992-w05-52		
26	s12	RAL-Z39992-w05-53		
27	e13	RAL-Z39992-w05-54		
28	capCorrectionFactor m00	1.089 (1)		
29	s01	1.089 (1)		
30	s02	1.089 (1)		
31	s03	1.089 (1)		
32	s04	1.089 (1)		
33	e05	1.089 (1)		
34	m08	1.089 (1)		
35	s09	1.089 (1)		
36	s10	1.089 (1)		
37	s11	1.089 (1)		
38	s12	1.089 (1)		
39	e13	1.089 (1)		
40	JiglD	A3		
41	EOTITEP102LotD	1081004		
42	cureTemperature(xx) [C]	50		
43	cureDurationTime [hrs]	3		
44	dateWireBonding [dd/mm/yyyy]	05/07/2002		
45	location [instituteCode(DB)]	BHAM		
46	AlwireLotD	1		
47	nDefectiveChannels	-1 (2)		
48	defectiveChannels	-1 (3)		
49	comment			