

Origin APPS

CHANGES, ENHANCEMENTS, BUG FIXES

Note: Version is all changes that have happened since the last Check for Update Release V1492 –

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Version 1053 and older not changed.

Calypso (see table below for supported entities)

Version 1492

Enhancements (see CMEngine enhancements also)

- support added for new binary geoactual format (24 byte offset)
- Calypso loader logic for handling internal-to-feature probe changes reworked to prevent extraneous SNSLCT. Particularly, internal probe changes are not added if in "TOOL CHANGE DETECTED" comment mode, nor are they added if they match the current probe, or the current probe has not been defined.
- Preserved PATHs reference direction is no longer corrected to nearest major axis, instead it points exactly at the first geoactuals scan point
- Enabled PATHs check box to preserve Calypso paths for CMECAL2MOD
- Metrologic DMIS output: CORTOLs on planes applied to point projected to plane (as for lines)
- Calypso loader: improved datum letter assignment from feature name
- Characteristic (tolerance) Uuids captured when loading Calypso program.
- removed over zealous circular reference suppression which caused certain coordinate systems to be missed
- >64 character label handling changed to keep rightmost, rather than left most, portion
- coordinate system names with "-Start" now considered synonymous with coordinate system without "-Start" (like the base system with "-BS")
- post alignment offsets now transformed to current coordinate system
- #rotationDistance now supported for offset line construction in alignments
- if pre-alignment base coordinate system does not exist, base alignment is recalled
- support added for free form surface construction from plane with recall-points

Bug Fixes

- CONST/CIRCLE,..CONE,DIST fixed. Calypso distance is w.r.t. reference radius, DMIS distance is w.r.t. cone vertex
- <MEAS markers were being filtered out with other comments, fixed for CMECAL2MOD, CMECAL2EUU
- TOOL CHANGE and OUTPUTS comments were being filtered out with other comments, fixed for CMECAL2MOD, CMECAL2EUU
- fixed issue with direction on BF line between cylinders
- fixed issue with CAL-per-feature file output for slot
- fixed issue with infinite loop with CONST/..TR and some files
- DMIS output: fixed issue with code vectoring into hexagon (6-sided-slot) code for simple circle measurement
- CMEngine x1259
- Calypso loader: fixed issue with measured nested in constructed feature
- fixed QIF loader with inch distance between being scaled twice

Version 1053

Enhancements

- added support for indirect construction of free form surface from single BF feature
- improved handling of range references like Circle1 (1-18)
- added support constructed circle from cone-cone intersection
- added support for nested features (free-form surface option quirk?)
- free form surface measurements use nominal path definition. Actual Calypso path can be quite different particularly near sharp corners.
- all scans on cones are now curve scans
- move holes and slots to surface switch forced to off.
- patterns with features not flat to the pattern defining plane are checked against actual and rotated to the nearest 5 degrees.
- attempt to create base alignment is done after each feature measurement until successful, previously base alignment must be explicitly referenced
- cone TOL/POS now 3D instead of 2D
- patterns with features not flat to the pattern defining plane are now rotate-copied around the pattern instead of just being copied.
- added CAL file per feature option
- RETRIEVE construction of circles from circles are now BF points
- text element now use text body if the text object element name is the default TextElement#, otherwise the name is used. If the comment is populated it is used.
- tolerances which reference the base alignment will cause the base alignment to be created (if necessary), the base alignment is taken to be the alignment with name ending in -BS
- TOL/POS on cylinders and spheres now 3D
- #OMCFProfileOfALine now supported TOL/PROFL instead of TOL/PROFS
- MAXDEV modifier added for TOL/PROFS and TOL/PROFL
- Default angle tolerance of ± 99 now in degrees, not radians
- detection of need for feature redefinition for CORTOL improved
- parentheses inside single quotes now ignored when determining () nesting level correcting problem found with unpaired () in HLL if statements
- added support for OMGeoRadialPoint as a single point surface measurement
- added support for constructed sphere
- moved algorithm assignment so feature algorithm at measurement is based on the first tolerance output, not the first tolerance definition encountered
- at output the original Calypso nominal is compared to the feature nominal and if different the feature is redefined before output of a TOL/CORTOL (learn mode programming leading to differences in feature nominals and tolerance nominals?)
- use EVAL/FA instead of EVAL/FA(),T() for algorithms changes

Bug Fixes

- problem with line-scanned cylinder outer touch point approach direction being flipped fixed
- CONST...THRU now makes sure directional feature precedes point deducible feature

- added support for self-referenced EXTREM construction, caused output like:
CONST/F(POINT1),EXTREM,MIN,FA(PLANE1),FA(PLANE1)
- TOL/POS on planes is converted to TOL/PROFS
- added support for 2-point distance tolerance
- PATH/ARC vectors now do not snap parallel or anti-parallel to feature vector unless they are within 5 degrees
- fixed recursion problem with Calypso surface option
- construction of line from circle/circle/line explodes to circle/circle/circle/circle
- removed reordering of constructions to ensure first feature was a feature actual for LK, Modus and derivatives (feature actual is created from feature nominal)
- fixed issue with projected direction vector auto-detect for features not in coordinate systems aligned to the base alignment (CAD world)
- Fixed issue with machine speeds being corrupted
- INNER/OUTER missing from some feature redefinitions fixed
- CORTOL correction re-instated, somehow lost when EVAL change made
- corrected fault with dummy tolerance like +/-999 coming in as +999/-99
- corrected issue with touch point measurements being output as scans if touch pointpath was preserved
- corrected fault with plane measurements with single scan

QIF

Version 1492

Enhancements (see CMEngine enhancements also)

- QIF support for PC_DMIS canned features (major planes, major axes, origin) added in angle between and distance between tolerances
- enhanced finger print alignment to use clocking point features if present.
- Output of tolerances with duplicate labels reworked, now checks if tolerances were of same type, and if different types nominal/definition not re-referenced, new ones created.
- Calypso loader now handles empty measurement in "actuals" file
- feature and tolerance creation log added to Calypso and PC-DMIS loaders
- backed out change that suppressed empty <Characteristics> element, MiCAT Planner requires that element.
- CMEngine version added as XML comment to QIF document
- PC-DMIS standard (Y14.5, ISO, CUSTOM) used to populate QIF FormalStandard
- ROTATE/FA(circle) now constructs line from existing feature at origin, rather than creating a point at origin
- header.ini label.ini no longer created in local folder if not found in install folder
- number of errors and warning added to DMIS/PPG, PC-DMIS, and Calypso import logs
- DATSET/FA now supported (previously only DATSET/DAT required a temporary datum to be created)
- <Characteristics> element now suppressed if no characteristics (QIF document wouldn't validate)
- added Metrologic CSV (.txt) loader and output
- added QDAS output
- enhanced QDAS loader to handle non-K-code results

- Metrologic CSV loader defaults to distance for unrecognized tolerance types
- new feature type and tolerance markers added

Bug Fixes

Version 1053

Enhancements

- added -MOVENOM command line parameter which preprocesses a .PPG GeoDMIS program moving nominal information for measurements in front of the measurement. This can result in cleaner translations for programs making extensive use of the MEAS_DIR statement.
- added -VERBOSE command line parameter which will output extensive messages in English only to the translation LOG. For use with problem programs to generate a LOG file for Origin to examine.
- added language support for program loaders defined in CSV files in \Users\Public\Documents\
Origin International Inc\CMEngine\CMEQIF2QIF:
"Calypso messages.csv" for Zeiss Calypso (actuals, inspection, geoactuals)
"DMIS messages.csv" for DMIS (*.DMI, *.DMS) and GeoDMIS (GeoMeasure) (*.PPG)
"PC-DMIS messages.csv" for PC-DMIS Visual Basic script files (*.BAS)
The first row of the file defines the language mnemonic (e.g., EN, FR, SP) used in the LANG:<mnemonic>
command line parameter. Column A is populated with the set of English messages which need to be translated into other languages. If there is a "%s" in the English message, there must be a "%s" in the non-English message. "%s" is a placeholder for a string like a feature or tolerance name. Similarly If there is a "%d" in the English message, there must be a "%d" in the non-English message. "%s" is a placeholder for an integer that identifies the location in the source code triggering the error.
- added -NOLOG command line parameter to suppress creation of LOG file
- added -QIFHEAD command line parameter to cause inclusion of the <Header> element in the QIF document
- added -QIFPROD command line parameter to cause inclusion of the <Product> element in the QIF document
- added -QIFTRAC command line parameter to cause inclusion of the <PreinspectionTraceability> element in the QIF document
- added -QIFKEY command line parameter to cause inclusion of the <KeyCharacteristic>/<CharacteristicDesignator> element in the QIF document
- added -QIFCMX command line parameter to cause a CMX CheckMate database export file to be created (for debugging purposes)
- added -FS:<standard> command line parameter to override the default ASME Y14.5 2009 formal standard. For example, -FS:Legacy
- a CMX CheckMate database export file is created (for debugging purposes)
- DMIS loader changes:

- implied DRFs from current coordinate system for legacy position and profile tolerances using these rules:
 - if a feature controls all 3 origin axes it is primary, leveling feature is secondary, rotation feature is tertiary
 - else if the rotation feature controls an origin axis then the leveling feature is primary, the rotation feature is secondary, and the third feature is tertiary
 - else if the rotation feature does not control an origin axis, the leveling feature is primary, the third feature is secondary, and the rotation feature is tertiary
 - datum label extracted from feature label (if possible), otherwise assigned A, B, C, etc.
 - target points are corrected to feature nominal for planes and lines
 - approach direction for measure points on planes and lines corrected to nominal
 - depth is captured when target points are corrected to feature nominal for circles
 - LOG file is more verbose
 - support added for PCD_AUTO_CIRCLE_607 macro
 - QIF nominal target points are offset by depth
 - QIF support for best fit constructions added
- PPG loader changes:
 - supported added for FEAT/GCURVE from CRV file (must be in same folder as PPG)
 - program splits on detection of RECALL/D(FCS_x), separate QIF document produced for second FCS
 - support added for point defined curve and point defined surface

PPG loader transforms to first coordinate system with 6 dof

- support added for DSTNCE and ANGLE features
- added QIF references to actual component for features and characteristics
- added DMIS report load by NONE support for FEAT/ARC
- added DMIS report load by NONE support for DATDEF
- capture and report features used in DISTB and ANGLB

Bug Fixes

- QIF constructed line </CheckDetails> issue fixed
- corrected PC-DMIS loader handling of REF_ID label.HIT[index]
- reworked handling of duplicate features: features are renamed internally so that CheckMate relationships remain valid, features revert to original duplicate name in QIF document
- fixed issue with "01" being appended to point-defined curve and surface names
- GeoMeasure distance between with respect to the origin, an axis, or a major plane become coordinate, position, or profile tolerances:
 - origin pt2pt - profile
 - origin along axis - coordinate
 - axis pt2pt - position
 - axis along axis - coordinate
 - plane regardless - coordinate
- connection between GeoMeasure GCURVE tolerance and tolerance now made like this:


```
F(GSCN_2)=FEAT/GCURVE,'C:/MEASURE-6000/SCANDATA/yzl.crv'
*****
MEAS/GCURVE,F(GSCN_2),9
...
SF(SF_8)=SCNFNC/GENCUR,FA(SSLEFT-020), 'C:/MEASURE-6000/SCANDATA/A_YZL.crv'
```

EVAL/FA(SSLEFT-020),T(TCRV2)

under the hood, the measured GSCN_2 is renamed to SSLEFT-020 when the connection between the nominal yzl.crv and actual A_YZL.crv is made.

- fixed issue with correction of target points to nominal on lines with no defined nominal
- DATSET on plane will tidy up approximate nominal (from target points) and correct target points (while capturing original target points for optional re-output)
- fixed issue with INTERNAL/EXTERNAL on circles
- fixed issue with nominals being transformed to PCS (QIF is single CS)
- nominal target points from DMIS can be included in the QIF document either corrected, by using the -NPT command line argument, or uncorrected using the -NPT2 command line argument
- units issue with target point depths fixed
- PC-DMIS import reassigns datum labels for legacy geometric tolerances sorting of features/between tolerances fixed to ensure feature exists before between tolerance
- units in DMIS input corrected to use UNITS/ statement
- QIF units match DMIS input units
- line actual corrected to populate Direction element instead of Nominal element
- fixed issue with empty feature ids set
- fixed distance between label issue
- OVERWRITE on command line will overwrite existing QIF document of same name
- extension for QIF Results now QIF instead of XML

PC-DMIS

Version 1492

Enhancements (see CMEngine enhancements also)

- clearance plane move after SNSLCT suppressed (we don't know final probe center location)
- support added for "ORIGIN" canned feature
- TEXT/OPER, TEXT/MAN, SNSLCT/ now only appear in first pass
- TEXT/OUTFIL now only appears in second pass
- BF of cylinder from 2 circles converts to PTS construction
- added support for ASME_TOLERANCE_COMMAND position, circularity, flatness, perpendicularity, parallelism, total runout
- added support for per-unit straightness and flatness tolerances
- multi-line prompt and operator instructions become single statement PROMPT/PROMPTSTR and TEXT/OPER,PROMPTSTR with
PROMPTSTR=ASSIGN/CONCAT('line1',CHR(10),CHR(13),'line2',CHR(10),CHR(13),...)
- F_DEPTH on circle-outers flipped to be up nominal instead of down normal
- datum reference D1/D2/D3 size tolerance support added as prior EVAL/ DIAM or WIDTH. WARNING message issued if
datum is MMC/LMC and size tolerance is missing in .BAS (PC-DMIS bug)
- var.INPUTVALUE from YES/NO prompt used in IF_BLOCK converted to equivalent of var.INPUT. For example var.INPUTVALUE<>0 will

- become IF/(var .NE. "NO"). Note var.INPUT from YES/NO prompt will have values 'YES'/'NO', var.INTPUTVALUE will be 1/0.
- COMMENT_TYPE 3 (INPUT) now has a variable declaration
- improved handline of .INPUT and SYSTEMTIME/SYSTEMDATE in ASSIGNMENT commands
- support added for IF_GOTO_COMMAND, IF_BLOCK_COMMAND, ENDFI_COMMAND command
- support added for THEO_RADIUS and MEAS_RADIUS
- support added for SET_COMMENT formats 6 as TEXT/OUTFIL
- support added for SET_COMMENT formats 5 as PROMPT
- TRACE_FIELD changed from PROMPT/ to TEXT/OUTFIL with HLL support
- source BAS file line numbers added to warning and error messages
- warning and error message added to loaded CheckMate program/DMIS output as passthrough comments
- added warning for ASSIGNMENT commands that need manual editing of the DMIS ASSIGN/
- FA() datum feature references replaced by DATSET and DAT() in TOL/POS
- VFORM setting available on main defaults screen
- VFORM options now include,PLOT
- missing SLOTVEC_I,J,K handled by looking at features used in a construction
- TOL/WIDTH...LONG can be used for MMC on a slot if TOL/WIDTH...SHORT not available

- PC-DMIS to target DMIS configuration added
- Command line operation added with following optional parameters:
 - DMISMD output program as MACRO in DMIS module
 - AUTOMAP map PC-DMIS probe names to native target format (so far only Metrologic implemented)
 - MANALIGN add manual alignment based on first 6-degrees-of-freedom coordinate system
 - EQUATE use first 6-degrees-of-freedom coordinate system to EQUATE to CAD
- in dialog mode operation G.U.I. added to control above behaviors
- **SAMPLE_HITS now captured and output in RMEAS blocks
- RMEAS_TYPE remeasure implemented for circle, cylinder, slot and cone
- DEPTH for slots implemented per DMIS 3.0+
- **PTBUFF points from RMEAS used for level to plane
- RMEAS enabled for Metrologic output
- ** these may require re-working based on Metrologic capabilities

Bug Fixes

- Fixed issue with RMEAS circle related statements creeping into second pass
- Fixed issue with 0-length constructed cylinder
- Fixed issue with PC-DMIS special characters in feature names (e.g., diameter and degree symbols) causing
 - CAL output to fail
- TOL/PROFP problem with planes fixed. Now TOL/PROFS.
- ORGX1 typo in slot constructed from two circles DMIS HLL output fixed. Now ORGX2.
- fixed issue with FCF tolerances not captured
- fixed issue with MMC implied TOL/DIAM not being added to OUTPUT statement
- fixed issue with CheckMate old version updates affecting CMEngine (always version 2.0)

Version 1053

Enhancements

- Redundant feature references are removed from best fit alignment
- assignments are moved as necessary to be after features they reference
- Added support for 2D and 3D best fit alignments as LOCATE/SoftOrient coordinate systems
- Added support for input flavor of comment as DMIS PROMPT statement
- Added support for variable assignment as DMIS ASSIGN statment \$\$ var=ASSIGN/expression passthrough command (requires user editing)
- Added support for generic feature construction (requires user editing)
- added switch for transforming CAL data to single coordinate system (old default behavior) new default behavior is leaving CAL in original coordinate system (this forces CAL file per feature to ON)
- added support for BASIC_SCAN_OBJECT as a stand-alone entity (if it has an ID)
- added simplified defaults dialog
- added support for reverse line construction

Bug Fixes

- fixed issue with coordinate system recall
- fixed issue with measured line approach vector not being transformed
- fixed issue with recall of internal coordinate systems acting like recall of external coordinate systems
- fixed issue with loss of identifier (label) on feature control frame tolerances
- ASSIGNMENT processed as commented-out \$\$ var=ASSIGN/expression passthrough command
- BF2D_ALIGN and BF3D_ALIGN become LOCATE/SoftOrient
- GENERIC_CONSTRUCTION becomes point/line/plane/circle with construction method "GENERIC", DMIS code requires hand editing
- SET_COMMENT type 3 becomes var=PROMPT/'text'
- fixed issue with 0 length and width on contact slots
- circle measurements now corrected by removing extraneous beginning points if number of target points greater than the N_HITS value
- trailing spaces are now stripped from all "ID" and "REF_ID" labels because of extraneous mismatched caused by trailing spaces in one but not the otherD.

CMEngine

Version 1492

Enhancements

- several modifiers added to facilitate custom menu based translations
- simplified base menu when no RCBrowser code is present
- CMM-Manager DMIS measurements now offset by depth (contrary to DMIS spec)
- PC-DMIS loader "fluff" removed from PROMPT/ and TEXT/OPER instructions (i.e., non alphanumeric like *****)
- PC-DMIS loader literal TRACE_VALUE replaced with name of previous PROMPT variable
- trailing underbars no longer removed from tolerance names in QDAS DFQ output
- CMEMLB2DMS x1311: new configuration added for MLB to target DMIS

- QDAS output no longer populates K1002, K1005, K1101, K1303, and all user metadata fields K18x0,K18x1,K18x2
- QDAS output now populates K0016 with EVENT_NUMBER
- Metrologic CSV auto-detect code now handles cases where all foreign language characters have been replaced by the UTF-8 invalid character marker EF BF BD
- QDAS loader: reworked modifier for capturing feature name/tol type from K2002 field
- Metrologic CSV output TolVal changed based on tolerance types from Custom.XML
- QDAS results loader improved to handle more K2009 tolerance types
- QDAS results loader mines K2002 comment field for feature name
- QDAS results loader mines K2002 comment field for tolerance type (to be overridden by K2009 field if present)
- added XMLPATH:path command line parameter for passing location of Metrologic CSV XML mapping files
- Metrologic DMIS output: CONST/TR now fired after a 1D position LOCATE
- Metrologic DMIS output: shared tolerance labels now cTOL_feat_name, e.g., XTOL_CIR19, PTOL_CIR20_TR1, VTOL_PNT1_TR3 (profile)

Issues addressed in CMEngine x1301:

1. HLL expressions like 0+0, 0-41.125 being lost. Fixed.
2. CONST..TR,F(label) instead of CONST..TR,FA(label). Fixed.
3. FA(label_PROJPLN) not defined, construction was using F(label_PROJPLN). Fixed.
4. RMEAS/EDGEPT are now moved to the sample hit plane via PROJPT or to level of sample hit point via HLL and MOVEPT
5. BF/OFFSET line using a reference BF line; reference line is replaced with a reference MIDPT between features of BF line
6. Touch-point IJKs for auto/contact circles corrected to be perpendicular to nominal circle normal
7. Touch-point IJKs for auto/contact slots corrected to be parallel/anti-parallel to length/width vectors
8. Touch-point XYZs for auto/contact circles+slots corrected by actual depth instead of nominal depth
9. Sample-point IJKs for circles+slots corrected to be parallel to feature normal
10. Sample-point XYZs for circles+slots projected to feature nominal plane
11. Auto clearance moves for circle outers fixed to take into account probe size
12. Support added for defining probe tip sizes for star probes and other non prbname_rackpos_diaXlen probe names

Issues previously addressed in CMEngine x1300:

1. Previously the PC-DMIS relative edge point using sample hits of edge-edge-surface was handled as an RMEAS relative to a POINT, now edge-edge-surface-surface-surface handled as well as an RMEAS relative to a 3-point PLANE. (ref PNT6 in AUC14625_MG4_DG5.bas)

2. DMIS output support added for PC-DMIS label.NOM as OBTAIN of nominal from T(label)=TOL/DISTB,NOMINL,dist... (ref CIR102 in AM146460_Partial_3014.BAS, DAT_CL in UC28693_MA11_DA11.bas)
 3. "CPOINT" typo corrected to "POINT" (ref A2 in ph60229391.BAS)
 4. Constructed plane from PC-DMIS SET feature (CONST/GSURF), now uses features in set (instead of FA(gsurflabel)[1.n]) (ref PLN5 in ph60229391.BAS)
 5. PC-DMIS XMINUS, YMINUS and ZMINUS work-planes reworked for polar coordinates (ref PNT72 in UC28693_MA11_DA11.bas)
 6. Removed extraneous PLANE definition when DATSET to sample points plane in RMEAS/CIRCLE or CPARLN (ref ALIGN26 in UC28693_MA11_DA11.bas)
 7. Third axis for TRANS from relative circle uses relative PLANE/POINT instead (ref ALIGN26,ALIGN3 in UC28693_MA11_DA11.bas)
 8. BF LINE used for ROTATE_CIRCLE was using original circles instead of CONST/..TR circles (ref ALIGN26 in UC28693_MA11_DA11.bas)
 9. Support added for ADD_RADIUS and SUB_RADIUS options for distance between two circles/one circle and a plane or a line. (no ref)
- (Note: if there is a third reference feature in a distance between, the distance is taken to be along that feature direction.)

- Metrologic DMIS output: "BASIC" polar angles now default to ± 90 instead of ± 999
- Metrologic DMIS output: "CPOINT" replaced with "POINT" in alignment CONST/POINT...TR
- Metrologic DMIS output: constructed plane from PC-DMIS SET feature (CONST/GSURF), now uses features in set
- PC-DMIS loader: constructed point vectors no longer changed to match parent features, remains unchanged
- Metrologic DMIS output: edge-edge-surface-surface-surface sample hits for edge point now discard edge hits (no DMIS equivalent)
- Metrologic DMIS output: ADD_RADIUS and SUB_RADIUS support for TOL/DISTB in place using HLL
- Metrologic DMIS output: support added for PC-DMIS label.NOM as OBTAIN of nominal from T(label)=TOL/DISTB,NOMINL,dist...
- Metrologic DMIS output: clearance moves added for RMEAS circle outer
- Metrologic DMIS output: intermediate clearance move added for remeasured RMEAS slot
- Metrologic DMIS output: OBTAIN for keyin changed from 10 (circle diameter) to 3 (point x coordinate)
- Metrologic DMIS output: SNSSET flips back and forth for relative/inside measurements between default and turndown
- Metrologic DMIS output: in best fit plane constructions using RMEAS trim measurements, plane vector is compared to surface vector
and if parallel, relative hit label replaces edge hit label in construction.
- PC-DMIS loader: warning issued in LOG and DMIS if surface and edge vectors on edge point are parallel

- PC-DMIS loader: target points for AUTO and CONTACT circles repositioned based on nominal center and probing directions
- PC-DMIS loader: probe info file name used to deduce probe diameter if name ends `##X##`, first number is probe size, second is extension length
- Metrologic DMIS output: SAVE/D() and RECALL/D() are now SAVE/DA() and RECALL/DA()
- added QIF support for max-only and min-only tolerances, sadly no DMIS equivalent
- Calypso loader: improved datum letter assignment from feature name
- Metrologic DMIS output: Profile of a surface applied to a constructed point set becomes TOL/PROFP applied to each individual point in the set. Now each point gets its own uniquely named PROFP tolerance.
- PC-DMIS loader: EVAL of datum size added for FEATURE_CONTROL_FRAME
- Metrologic DMIS output: vector for TOL/PROFL changed to feature approach vector
- PC-DMIS loader: addressed argument error with contact line, different number of points and number of vectors now handled
- PC-DMIS loader: implementation of ASME_TOLERANCE_COMMAND begun with profile of a line
- PC-DMIS loader: PERM_HITS with SetToggleString now handled with 1 (false) resolving to 0, and 2 (true) resolving to 1. Interpreting 1 as 1 was causing false positives for RMEAS/VECBLD
- Metrologic DMIS output: CORTOLS on LINEs cause nominal midpoint to be projected to the actual line creating a new point to which the CORTOL is applied, Metrologic does not support CORTOLS on lines
- Metrologic DMIS output: sample hits examined and if three hits have non-matching vectors, the one hit that doesn't match the other two is kept and a reference point is used in place of a reference plane for RMEAS. PC-DMIS relative measure of an edge point using one point on surface and two points on edge has no DMIS counterpart.
- Metrologic DMIS output: vector for TOL/PROFL added as cross product of feature approach vector and feature direction vector
- Metrologic DMIS output of DISTB between two planes forced to PT2PT when XAXIS, YAXIS, ZAXIS encountered.
- Metrologic CSV loader BASE/END and `_1/_2` two level cylinder processing now handles either 2 or 3 of XYZ coordinates. When one coordinate is missing it defines the feature axis, otherwise the feature axis is defined by the difference between the 3D ends.
- PC-DMIS loader added support for GOTO_COMMAND, ELSE_COMMAND, ELSE_IF_COMMAND, END_ELSE_COMMAND, END_ELSE_IF_COMMAND
- PC-DMIS loader added support for CONTACT_POLYGON_FEATURE, 6 sided only, 7 or 12 points only, as series of constructions leading to circle with same center and diameter equal to width
- PC-DMIS loader PROMPT=CONCAT... corrected to PROMPT=ASSIGN/CONCAT...
- CMM-Manager targeted DMIS SAVE/RECALL D changed to DA
- CMM-Manager targeted DMIS PC-DMIS source PIERCE replaced by INTOF
- Metrologic CSV loader/QDAS output:
 - position tolerance name now preserved

- issue with Z of another feature being lumped in with XY from previous feature handling
- position uses reported value except in case of patterns where it is calculated from XYZ
- Profile Min and Max now grouped with overall profile
- Metrologic CSV loader:
 - patterns of canted cylinders or width features skipped, reporting topmost overall position only
- Metrologic CSV loader:
 - added support for Min/Max with SurfaceProfile features
 - SurfaceProfile with min in Actual and max in Dev. exploded into 3 profiles overall/max/min
 - support for Bound profile tolerances added (second with same label, no coordinates)
 - added support for sphere with 3 associated coordinates for position
 - associated coordinated for position turned off for non-othagonal circles/cylinders/slots/parplns
 - "look ahead" for associated coordinates added for non-matching position labels
- PCDMIS loader: /AUTOCORRECT parameter causes sample hits on trims to be projected to nominal depth
- PCDMIS loader: /AUTODISTB parameter causes TOL/DISTB tolerance nominals to be recalculated from feature nominals (default behavior is that nominal is taken verbatim from .BAS file)
- PCDMIS loader: Superfluous TEXT/OPEN,' ' statements removed
- METROLOGIC CSV loader: feature label suffix _1, _2 interpreted as cylinder top/bottom only on XYZ values.
 - METROLOGIC CSV loader: 4-point width measurement support added. Significant coordinate is one with deviation, deviation is the maximum over 4 points. Feature label for XYZ values must include "width" (case insensitive)
 - METROLOGIC CSV loader: rectangular position (with repeated feature labels) now have label suffix _X, _Y, or _Z based on significant coordinate axis
 - METROLOGIC CSV loader: Only 1 significant axis is associated with position, unless /1DIS2D parameter is used in which case a second axis with all results at nominal, if available, zero otherwise, is associated
 - METROLOGIC CSV loader: XY/YZ/ZX deviation to position deviation correlation (to handle mismatched feature labels) improved. All reported missed cases not handled. Mismatched form tolerance label "breaking chain" now tolerated.
 - METROLOGIC CSV loader: Cone with 2 coordinate position and 3rd coordinate tolerance now supported
- /SILENT command line parameter implemented for all program outputs in all configurations
- Modus output with HLL in FEAT/ containing "/expression" becomes "**(expression)**-1", i.e., division becomes multiplication by reciprocal because "/" was being erroneously interpreted as a delimiter
- QDAS output meta-data K fields mapped to per-measurement/non-catalogued values K0054-K0063

- Metrologic CSV (MCSV) loader now handles position after coordinate values even if it has a different label by comparing the coordinate deviations to the true position actual
- (MCSV) Rectangular position records with the same name now recognized as separate features
- (MCSV) Rectangular position records with one coordinate have second coordinate at 0.0 added X->XY, Y->YZ, Z->ZX
- Metrologic CSV format loader parsing of part name from file name enhanced to handle French format
- Serial number, CMM name, and measurement date captured from French format file name
- Metrologic CSV/QDAS output label size limit increased from 64 characters
- QDAS coordinates associated with true position K2020/K2021 fields now 1/1 instead of 0/0
- QDAS output ignores NOTE type features from Metrologic Text/Value fields
- Metrologic CSV loader trigger strings for foreign language now end at "Comment" column
- Metrologic CSV loader now handles semicolon as delimiter in addition to comma
- Metrologic CSV loader now handles comma as decimal point in addition to period
- Calipso program loader support added for caliper distance
- (max) number of decimal places from input PC-DMIS file for xyz, etc. and ijk separately in DMIS output.
- added support for PC-DMIS BEFORE and AFTER moves with different distances
- added workaround for bogus Y value in first sample point
- cleaned up clearance moves for RMEAS/CIRCLE
- .TL and .L use OBTAIN index 14 instead of 15
- CLASSIFICATION meta data added to Metrologic CSV loader
- QDAS out: K2001 record data now transmitted via K2002 record, K2001 record not output
- command line parameter added -LEXT:<ext> to define report file listener extension, e.g., -LEXT:RTF
- command line parameter added -LPATH:<path> to define report file listener path, e.g., "-LPATH:C:\My Data\" (remember to use quotes when spaces in path)
- command line parameter added -LPROC:<path> to define report file listener path for processed files, e.g., "-LPROC:C:\My Data\Processed\" (remember to use quotes when spaces in path)
- PC-DMIS hit point index syntax has changed from "label.HIT[.]" to "label.HITS[.]" . Either is now handled.
- Things like HITS[12..12] are interpreted as HITS[12]
- Labels like [ITEM 113] now have both square brackets stripped.
- Polar construction definitions (without corresponding Cartesian definition placeholder) now supported
- PC-DMIS ARRAY() operator now stripped.
- MAX now converted to MX, and MIN to MN.
- OBTAIN index for TOL/DISTB actual corrected to be 4
- QDAS corrected characteristic type K2009 for position, others

- all characteristics become root nodes (except for reference characteristics for position/diam)
- cylinder positions are output twice at BASE and END
- QDAS position tol is parent node for XYZ, diameter tol is parent node for diameter2 if it exists
- QDAS actual/nominal decimal places at least 6 places
- PC-DMIS loader added support for DISPLAYPRECISION as number of report decimals
- PC-DMIS loader: now traps for "empty" best-fit constructed (features that do not reference any features) and does not create them. Error message added to LOG file
- DMIS/MLB output: added support for PC-DMIS angle-between using a point reducible feature (point, circle, sphere). A line is constructed from the origin to the feature and that used as a replacement feature.
- MLB output: PC-DMIS "canned" features like "XAXIS", "YAXIS"... now supported in angle between tolerances.
- DMIS output: relative circle has clearance move between pland and circle measurement
- DMIS output: relative circle measurement
- added MLB output support for PC-DMIS best-fit cylinder from circles (instead of points)
- added MLB output support for PC-DMIS cast point construction
- if a menu file has a path then that path is used in place of the default folder
\users\public\documents\origin international inc\CMEngine\CMEngine

CMEngine Bug Fixes

- CMM-Manager DMIS output string CHR(10),CHR(13), were wrongly being interpreted as STR(10),STR(13)
- PC_DMIS loader issue with PROMPTSTR in place of OPERSTR fixed
- PC-DMIS loader units issue with stepback fixed
- issue with Metrologic CSV PROFS/Min/Max and QDAS DFQ groups fixed
- Metrologic DMIS output: CONST/..TR corrected for TOL/PROFx in different c.s. than measurement/construction
- PC-DMIS loader: slot measurement point locations for AUTO and CONTACT slots now corrected if out of position w.r.t. nominal
- PC-DMIS loader: sample point locations for CONTACT circles/slots now corrected if out of position w.r.t. nominal
- Metrologic DMIS output: issue with turndown of approach and retract on slots fixed
- PC-DMIS loader fixed issue with surface vector on edge point measurements being reset to 0,0,1
- fixed issue with sample hits plane for remeasured RMEAS/CIRCLE
- Calypso loader: fixed issue with measured nested in constructed feature
- fixed QIF loader with inch distance between being scaled twice

- Metrologic DMIS output: Issue with VEC,i,j,k being applied to all PROFP/PROFS/PROFL fixed, now only applied to PROFL
- Metrologic DMIS output: Double transformation of sample hit plane nominal (and point) fixed
- PC-DMIS loader: EVAL of datum size only coming out for tertiary datum, fixed for primary and secondary
- Metrologic DMIS output of tolerances attached to PC-DMIS CONST_SET fixed
- Metrologic CSV loader fixed issue with duplicated PTOL labels, now have _BASE, _END suffix
- Metrologic CSV loader fixed issue with _BASE remaining part of feature label
- Metrologic CSV loader fixed issue with feature names with _2 suffix firing _1/_2 cylinder end handling erroneously
- QDAS output fixed issue with worst deviation being applied to both cylinder ends when bottom was the worst end
- fixed generic issue with hung action line when unsupported feature encountered
- fixed issue with CONTACT_EDGE_POINT causing runtime to exit in unusual way
- PC-DMIS loader undeclared variable with some var_name=PROMPT fixed
- PC-DMIS loader redeclaration of reused variables fixed
- QDAS output issue with K2020/K2021 fields with YZ positions fixed
- Issue with day in measurement date fixed (first digit doubled, last digit missing)
- fixed issue with tolerance decimal places defaulting to 0 with some report loaders (e.g., DMIS)
- Kotem cylinder patterns support added to "Metrologic" format CSV
- Profiles now properly captured with "Metrologic" format CSV
- Width differentiated from Distance (despite XML) with "Metrologic" format CSV
- ±999 and empty tolerances ingored for "Metrologic" format CSV, except for XYZ on positions
- QDAS 2D cylinders no longer need to be exactly up axis, uses 0.00001 as threshold
- QDAS issue with 3D cylinders fixed
- _TP label on Metrologic source cylinders fixed
- corrected issue with Zeiss UMESS CMM mode being output in MLB
- implemented ballooned width and length toleraces for PC-DMIS source slots in MLB
- implemented CAST constructions for plane/line/circle/cylinder/cone/slot
- automatically flip features for cylinder/cone-plane intersection circle construction
- added support for best fit web/cparlnc/cparlnr (BW, BX) for PC-DMIS source slots in MLB
- added support for arbitrary ordering of line/plane in intersection point construction
- Metrologic CSV loader PartName/PartNumber issue fixed
- corrected ordering of partname and partnumber from Metologic CSV results
- now handles nested {} in Metologic CSV results
- input source (Kotem, Metrologic) logged to preserve 1/2 and BASE/END labeling from Metologic CSV results
- partname extracted from file name if it isn't specified in Metologic CSV results metadata

- non-zero low tolerance on position used to indicated MMC and actual bonus in Metologic CSV results
- QDAS output of MMC cylinders is now RFS+XYZ, then BONUS, and then MMC with bonus from midpoint of tolerance zone
- added K8500, K8501 to indicate AIAG subgroup size of 1, which is really a moving range over adjacent samples

Version 1053

Enhancements

- the unlock code REG file can be specified in a command line parameter instead of being installed in the registry
- help about now shows build date and maintenance expiry
- all failed to start messages now include revision number and build date
- polar coordinate tolerances now output for features measured as Cartesian

Bug Fixes

- added support for OGP MeasureMind reports
- added -OUTNAME parameter to be followed by name of output file as next parameter, otherwise the output file name is based on input file name
- instability with respect to ARC/GSURF/GCURVE DMIS algorithms fixed
- addressed issue with locking under Windows 10
- corrected issue with LK/Nikon/Modus radius results loading
- fixed issue with respect to processing PC-DMIS results columns (array overrun)

Calypso supported Entities.

Supported nominal types:	Supported tolerance types:
OMGeoPlane	OMCFDistanceRec
OMGeoPoint	OMCFRunoutRadial
OMGeo2Planes	OMCFRunoutAxial
OMGeoCylinder	OMCFabsolute
OMGeoSlot	OMCFReadUniToleranceLen
OMGeoFreeformSurface	OMCFPosition
OMGeoSphere	OMCFAngle
OMGeoTorus	OMCFRoundness
OMGeoLine3d	OMCFFlatness
OMGeoCone	OMCFProfile
OMGeoCurve	OMCFPerpendicularity
OMGeoCircle	OMCFParallelism
OMGeoSpacePoint	OMCFDistance2d
OMGeoSteppedCylinder	OMCFSpaceNetPoint
OMGeoCons	OMCFAngularity
OMTextelement	OMCFCoaxiality
OMDefineFitFromFreeformSurface	OMCFConcentricity
	OMCFCurveForm
Supported construction types:	OMCFCylindricity
OMGeoTheoretical	OMCFZoneFlatness
OMGeoRecallPoints	OMCFStraightness
OMGeoRecall	OMCFProfileOfALine
OMGeoSym	
OMGeoProjection	
OMGeoIntersect	
OMGeoPerp	
OMGeoVectorOffset	
OMGeoConeAdd	
OMGeoMaxPoint	
OMGeoMinPoint	
OMGeoMaximum	
OMGeoMinimum	