Stable Release Changes KFLOP/KMotion Versions 4.32 -> 4.33 12/01/2015

Changes KFLOP and KMotion Released Versions 4.32 -> 4.33a 05/22/2014

KFLOP

New FRO Functionality and Script Commands

Coordinated Motion Forward and Reverse Feed rate capability

Automatic FRO slowdown to prevent Buffer starvation in either the forward or reverse directions. Note FlushBuf command is required to allow running to the end of the buffer.

Buffer Downloaded Time and Buffer Lost times now accumulated within KFLOP.
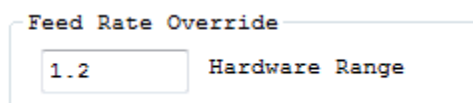
New Script Commands:

FLUSHBUF   FlushBuf Marks the Coord Motion Buffer as complete. Turns off buffer starvation protection ie. FlushBuf
SETFRO   SetFRO F Set Feed Rate Override (1.0 = Normal Feed Rate) ie. FRO 0.9
SETFROTEMP SetFROTemp F Temporarily Set Feed Rate Override (1.0 = Normal Feed Rate)/Force regardless of FeedHold, don't save as last FRO ie. FRO 0.9
SETFROWRATE SetFROwRate F R Set Feed Rate Override (1.0 = Normal Feed Rate) with rate/based on caller specified time (in seconds) to change from FRO 1.0 to 0.0 ie. FRO 0.9 0.25
SETFROWRATETEMP // SetFROwRateTemp F R Temporarily Set Feed Rate Override (1.0 = Normal Feed Rate) with rate based on caller specified time (in seconds) to change from FRO 1.0 to 0.0 Force regardless of FeedHold, don't save as last FRO ie. FRO 0.9 0.25

KMotionCNC/GCode Interpreter

Radius/Diameter Mode Supported for Lathes

Jog Buttons/ Keyboard Buttons orient properly for Lathe and X Forward Front

Hardware FRO Range Supported

Motion Buffer Starvation Protection

M6 sends Tool ID and Tool Slot info to KFLOP based on New Tool Table

GCode State (line number modes) tracks forward and reverse real time with machine progress

Bitmap Buttons now display faster

FeedHold Forward Reverse Buttons

Tool Selectors/Fixture Selectors now have tool tips with relevant info

MDI input highlights after Enter Key for easier data entry. Enter Key only sends MDI if MDI has focus.
Backlash on Jog fix when axis in Defined Coord System is disabled

Mach3 Plugin

HostStatus now updated within KFLOP to indicate when a Job is in progress. This may be useful for disabling MPG activity whenever a Job is in progress. The KFLOP HostStatus HOST_JOB_ACTIVE_BIT will be set appropriately. A macro (`JOB_ACTIVE`) in KFLOP can be used

```
#define JOB_ACTIVE (HostStatus & HOST_JOB_ACTIVE_BIT)
```
This status is set based on the Mach3 Plugin variable MainPlanner->MovementDone

Avoid Crash on Mach3 Threading with Spindle at zero speed

KMotion_dotNet

HardwareFRORange

Export ReadAndSyncCurPositions

SimpleCoordMotion

Sync positions before starting

Dynomotion VB.NET

Fix syncing coordination motion starting position by changing to new call ReadAndSyncCurPositions

User C Programs

Add Texas Instruments Optimizing Compiler Support in <>/C Programs/TI Compiler

ToolChange.c example modified to receive Tool ID and Slot numbers for new Tool table Format

Add USE_POS_NEG_VOLTAGE to Spindle examples for systems that only use magnitude

Changes KFLOP and KMotion Released Versions 4.33a -> 4.33b 05/24/2014

New KMotionCNC Tool Table Fixes

Changes KFLOP and KMotion Released Versions 4.33b -> 4.33c 06/24/2014

KFLOP

Moved FRO defines to KMotionDef.h

Added CS0_HoldAtEnd feature to not terminate at the end of the coordinated motion to allow reversals

Added LinHexEx1 for 8 axis Linear Commands that uses the last endpoint as the begin point to reduce redundant data transfer

KMotionCNC/GCode Interpreter

Support embedded quotes in Tool Table Comments

Fix needing to push Apply with External SSO control

Support embedded quotes in Tool Table Comments

Added Tool Length Immediately Option that causes Tool Dropdown selection to be applied immediately.

Tool Length Entry Index now defaults to -1 when not in use

Fix issue with with constant refresh of tool image due to path case difference

Fix issues with refreshing changes after editing the ToolTable

KMotion

Fix Virtual Extended Digital IO Screen - bottom right 4 checkboxes out of order

Mach3 Plugin

Mach3 Fix - forgot to add FlushBuf at end of motion. Otherwise the data starvation protection feedholds forever

KMotion_dotNet

Expose SpindleRateOverride to .NET

Incorporate Interpreter RealTime Status for returning actual CurrentLine etc

Added to .NET KM_Axis
    public void SetCommandedDest(double dest)
    public void EnableDest(double dest)

Dynomotion VB.NET

Include VB Example of how to obtain real-time Current GCode Line Number

Changes KFLOP and KMotion Released Versions 4.33c -> 4.33d 08/29/2014

KMotionCNC/GCode Interpreter

Add Get/Set Tool Diameter, XOffset, YOffset

Add Input Box From KFLOP to KMotionCNC

Add Runtime Job Log at "\KMotion\Data\RunLog.txt"

Properly Limit Feedrate to axis constraints when both Linear and Rotary Axes are involved

More generic Trajectory Planner Lookahead Error Message

Fix Fixture Offset Tool Tip

KMotion_dotNet

Expose SoftLimitNeg SoftLimitPos

Consistantly use units of Seconds and not Minutes in places

Expose Feedhold, ResumeFeedhold, and ClearFeedhold functionality

Fix .NET Marshaling of some return type bools

Mach3 Plugin

Fix Hang with Mach3 Dwell

C Examples

Add InputMessageBox example

Changes KFLOP and KMotion Released Versions 4.33d -> 4.33f 09/17/2014

KFLOP

Force persist.UserData alignment to 8 bytes (doubles) so legacy pD pointer method will always work

Fix issue with WaitBitBuf on IO bits greater than 255

KMotionCNC/GCode Interpreter

Fix Crash regarding Logging run time for MIDI or tool change

Allow multiple Jog Arrow Keys to be pushed simultaneously.

C Examples

Switch pD approach to Get/SetUserDataDouble

Change examples to use KflopToKMotionCNCFunctions.c

Changes KFLOP and KMotion Released Versions 4.33f -> 4.33g 10/13/2014

KMotionCNC/GCode Interpreter

Fix bug with finding Motion Buffer position when only Embedded Synch IO Commands in Motion Buffer

Gamepad/Joystick - change axis buttons/directions for Lathe and X direction front/back

Toggle GCode Block Delete Feature - Select GCode Lines, Right Click, Toggle Block

Jog Buttons - Rename variables to fix unused constructor

KMotion

Reword KFLOP FLASH Recovery Messages

HELP

Fix Pinout wording for KSTEP JR1 +5V and +12V Pins

Changes KFLOP and KMotion Released Versions 4.33g -> 4.33i 11/02/2014

KFLOP

Fix issue with Independent Moves with Feed Hold not Resuming Properly

Fix Threading in Negative Spindle Direction

Commanding Jog Speed of Zero while in Feed Hold will Clear any Resume After Feed Hold is released

Bode Plot Injection is now included in Feed Forward Path of Closed Loop Step/Dir

KMotionCNC/GCode Interpreter

GCode Interpreter unable to open GCode file error now includes Windows Error code

KMotionCNC avoid repeated Board not Connected errors when KFLOP unplugged with Spindle Configuration Updated

Mach3

Allow Threading in Negative Direction M4

Mach3 True Spindle Speed will always show positive regardless of spindle direction

.NET

KM_Axis HomingParams property Homing_c_Program_Dir added to allow specifying where the auto created Homing Program is located in order avoid Window Permissions issues

Changes KFLOP and KMotion Released Versions 4.33i -> 4.33j 11/10/2014

KMotionCNC/GCode Interpreter

KMotionCNC fix issue with incorrectly attempting to resume when file was switched using Radio Buttons

Restore GViewer Screen if it was open on shut down

.NET

Fix bug with .NET CheckIsReady used for sending Console Commands and checking if all responses have been displayed.

SimpleFormsCS Example

Interface properly with CheckIsReady .NET changes above

Changes KFLOP and KMotion Released Versions 4.33j -> 4.33k 1/2/2015

KFLOP

Fixes serious SnapAmp bug possibly causing "jerky" motion and other problems when the temperature readings are exactly 21.3 deg C. Most systems only have this low of a SnapAmp Temperature shortly after power up. The issue was triggered by special FPGA code 0xAA to KFLOP indicating SnapAmp communication possibly not completed. Real data of 0xAA is handled by second test indicating whether 0xAA is real data or no data available. DSP Firmware handled this incorrectly. Real 0xAA data was always interpreted as no data available. The routine containing the bug is only used for slow temperature readings. 0xAA = 170 counts (1/8th degree per count) = 21.3 deg C. Any SnapAmp temperature sensors (4 possible) at this exact temperature could cause communication stalls, servo sample variations (jittery motion), and extended User Thread Sleep Times.

New Script Commands to support Rapid Rate Override

SetRapidFRO F Set Rapid Feed Rate Override (1.0 = Normal Feed Rate) ie. SetRapidFRO 0.9

SetRapidFROwRate F R Set Rapid Feed Rate Override (1.0 = Normal Feed Rate) with rate/based on caller specified time (in seconds) to change from FRO 1.0 to 0.0 ie. SetRapidFROwRate 0.9 0.25

BegRapidBuf Inserts into coordinated move buffer command to indicate Rapid is in progress and to use Rapid FRO ie. BegRapidBuf

EndRapidBuf Inserts into coordinated move buffer command to indicate Rapid is no longer in progress and to resume use normal FRO ie. EndRapidBuf

KMotionCNC

Rapid Rate Override – now separate from Feed Rate Override

Maintain Backup of KMotionCNC configuration

Added M0,M1,M2,M30 Configurable

Added Special Actions for Halt, Stop, CycleStart, Program Start, Program Exit, Feedhold, Resume

Option to perform M6 Tool Change after Editing Tool Table

Now disables Tool Table/Fixture/Zero/Set/ZeroAll/Simulate/Run/Send etc. buttons while running GCode

KMotion.exe

Fix issue with KMotion Axis Screen Current Graphical Gauge for second Snap Amp

.NET

Expose
        RapidFeedRateOverride
        UseOnlyLinearSegments;
        ArcsToSegs;
        FeedRateRapidOverride
        SetAxisDefinitions

C Examples

Ellipse.c/EllipseTest.c - Added Coordinated Motion Ellipse Example

DelayFeedbackCallBack.c – Resonant damping delayed feedback example.

SafeZ_SpindleOff.c – Move to Safe Z and turn off Spindle (Halt Action) example.

WaitForBitMessageBox.c - Example to wait for a signal (clamps) before continuing GCode.

RelayDriverOutputsOn.c - Sets KStep's relay drivers on

Changes KFLOP and KMotion Released Versions 4.33k -> 4.33l 5/17/2015

KFLOP

Move out of Soft Limits Fixes

New Axis Status ch->LastNonZeroDir and ch->DirectionOfMotion

Fix resume Independent Motion After FeedHold

Fix Reverse Feed over embedded commands

Ignore Independent Moves further into Soft Limits when in Soft Limits

Ignore Independent Jogs further into Soft Limits when in Soft Limits

#define PC_COMM_HALT_NEXT_LINE 36 // Stop Application at the Next Line of code
#define PC_COMM_ENABLE_JOG_KEYS 37   // Allow User to Push Jog Buttons while JOB is running
#define PC_COMM_DISABLE_JOG_KEYS 38 // Disable allowing

Increase Direction to Step Time to 32/16.667 = 1.92us
Total Setup time to trailing edge 5.7us meeting 5us requirements for LeadShine Drives

Step Pulse generator now supports CW/CCW mode. Add 48 to Channel number to enable this Mode

Update FTDI USB Drivers to Version 2.12.0.0

KMotionCNC

Fix Bug with KFLOP Programs requesting DROs with odd ordered Axes

Fix Control Key "stuck" down after Ctrl-F (Find) in edit Windows

Allow negative Tool Diameters to allow for small radius compensations on right/left side of tool paths

Fix bug with Tool Table XY Offsets for Arc Endpoint in XY Plane

Fix GCode Viewer Bug with Tool Table XY Offsets in Metric

Fix Issue with GViewer when KFLOP Not connected

To make it easier for other Apps to Find KMotionCNC change to special class name
// Change the name of the class.
wc.lpszClassName = "KMotionCNC";

KMotionCNC responds to Special Windows command from external App to re-load GeoTable File
ON_COMMAND(ID_ReloadGeoCorrection, OnReloadGeoCorrection)

Added warning message for KMotionCNC Startup Action if fails (No KFLOP Connected)

KMotionCNC new KFLOP->KMotionCNC Commands
Halt Next Line (allows Action to complete successfully and then Halt)
Enable/Disable Jog Keys

Fix bug regarding M105 and others not working/saving properly (Bug introduced when adding Special Actions)

KMotion Libraries

CoordMotion Class More responsive to Halt

Allow more time (5sec) to connect to avoid KMotion not Responding issues

KMotion.exe

Fix Control Key "stuck" down after Ctrl-F (Find) in edit Windows

Allow configuration selection of upto to 63 for CW/CCW Step/Dir mode

.NET

Exposed Interpreter Tool Table XY Offsets

Expose .NET To interpreter current block P Q R Word flags and numbers

Fix Constructor of CKMotionDLL from .NET for multiple boards

Update Help System

Mach3

Made Jog buttons more responsive to quick presses

Fix hang after small motions (ie Jog Step) with large Lookahead time due to missing FlushBuf

KFLOPWebNC

Fix KFLOPWebNC Mcode Configuration settings for MCode 100-119

C Examples

VelocityToPWM.c // Drives PWM output proportional to current Speed

StopCallBack.c //Turn off KFLOP 90us Sample Callback to User Code

SpindleOnePulse.c // counts pulses on single pulse encoder for Spindle

SPI V6.c // Bit bang output to 8-bit SPI Device ~450Kbps

MPGSmoothAccelerate.c "Accelerates" by increasing rate depending on speed of MPG Rotation

MCodeToCapturePointsAskPush.c // MCode to Push upto 3 Measured Positionsinto Stack for use in calcs for center find etc

GlitchCheck.c // Simple check for Glitch on Input Pin

EStopDisablesAll.c // Watches for EStop Input and disables Axes when detected
CS Examples

SimpleFormsCS - added KM_Axis MoveTo Example

SimpleFormsCS - Add button to test communication to 2nd KFLOP Board

Added New Measure Fiducials App. See Video https://youtu.be/a_p38zktIZI

TCC67

Fix Compiler bug where Compiler thinks a register is free when being used as the second of a double pair

Fix Compiler bug with regard to storing (as opposed to testing) result of certain conditionals.
 ie.   i = (40.0 >= 0)

LabView

Example Files in PC LabView Examples Directory
See video https://youtu.be/dPZIdLSd_4M

Help

Added Fiducial Align Description

Added KStep Tutorial

Changes KFLOP and KMotion Released Versions 4.33l -> 4.33q 8/29/2015

KFLOP

For fopen from KFLOP force close of any previous file before re-opening new file

Add DisableKanalogDetectOnBoot and DisableSnapAmpDetectOnBoot options

Add PC Disk Read capability with fgets, fscanf, and feof

ReadDiskData S N/Set Disk Read Data in KFLOP (as 8 bit Hex words)/into the ReadDisk Buffer/Used internally in conjunction with fgets()/for decimal N words/ie. ReadDiskData 0 3 /41 42 43

Expose CurrentThread in KMotionDef.h

Flash non-volatile constants/functions exposed
#define FLASH ((volatile char *)0x90000000) // beginning of FLASH - first 1MByte is for System Use
#define FLASH_USER ((volatile char *)0x90100000) // 2nd MegByte is for User use
#define FLASH_BLOCK_SIZE (0x10000) // FLASH erases in 64KByte Blocks
#define IRAM ((volatile char *)0x10000000)
#define SDRAM ((volatile char *)0x80000000)

int ProgramFlash(volatile char *src, int Length, volatile char *dest, char *message); //Programs Flash source address of data, length in 16-bit words, dest add must be on 64KByte block, optional \n terminated message
void SetFlashBank(volatile unsigned short *add); // sets the currently addressable flash bank (address bits 14-19)

Flash Firmware Update only programs first 1 MByte (not 2nd User 1MByte)

Fixed Reboot! – KFLOP now reliably reboots from Script Command without hardware reset or power cycle

KMotionCNC

KMotionCNC will now apply Interpreter Tool Length and offsets on program startup if the Tool Setup Option "Tool Length/Offset Immediately" and "M6 on Tool Table Changes" are both selected.

SetKFLOPCommandResult all to have negative error return codes

KMotionCNC Tool table Index checks now consistently <100

KMotion Libraries

GCode Interpreter - Fix GCode Interpreter issue with GCode Variables not being updated correctly with Halt/Resume of GCode

GCode Interpreter - Handle Linux Line Endings

GCode Interpreter - Fix Spindle CSS to include Tool Table X Offset

GCode Interpreter - Fix issue with pure angular motion in metric mode being treated as mm rather than degrees causing incorrect feed rate

GCode Interpreter - Fix issue with combined ABC with XYZ motion with inverse time mode

CoordMotion - Add Do Rapids as Feeds Option for non-linear kinematic systems

Trajectory Planner - Fix corner rounding algorithm to have equal angles throughout corner

.NET

Expose to .NET MaxRapidFRO and DoRapidsAsFeeds

Expose Interpreter FeedRate

C Examples

Multiple Flash Non-volatile Examples Added and fixed

MPGSmoothHardwareEnc - Includes check for JOB_ACTIVE to inhibit motion

CS Examples

Measure Fiducials – Some Fixes and beginning of Microscope Offset Feature

VB Examples

Jogger.NET - Example of Thread=-1 to Flash Firmware
Fix KM_ViaVB Short/Integer bugs

Dynomotion VB.net - Fix Compiler build option to fix crash running outside of VS

Jogger - Add PackToFlash to LoadCoff for Flashing new Firmware Version to KFLOP

TCC67

#ifdef for Visual Studio Community 2013 compatibility

KMviaVB

Fix declaration of KMVIaVB_LoadCoff

Add PackToFlash to LoadCoff for Flashing new Firmware Version to KFLOP