NXP Semiconductors
Release Notes

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CM RTCESL 4.7.1 Release Notes

1 Overview

These release notes are for the Arm® Cortex®-M0+, Cortex-M4(F), Cortex-M7(F), and Cortex-M33(F) Real-Time Control Embedded Software Libraries release 4.7.1

The purpose of this release is to publish all Keil libraries recompiled in Keil IDE compiler version.

Contents

2 What is new

All Keil libraries are recompiled by new compiler version.

3 Description

This release of RTCESL supports the following platforms:

- Arm Cortex-M0+ (optionally the MMDVSQ peripheral).
- Arm Cortex-M33NODSP. The DSP is not required (optionally the PQ module).
- Arm Cortex-M33 requires the DSP extension (optionally the PQ module).
- Arm Cortex-M33F requires the DSP extension and the FPU (optionally the PQ module).
- Arm Cortex-M4 requires the DSP extension.
- Arm Cortex-M4F requires the DSP extension and the FPU.
- Arm Cortex-M7 requires the DSP extension (optionally the RAM relocation support).
- Arm Cortex-M7F requires the DSP extension and the FPU (optionally the RAM relocation support).

It contains the following libraries:

- MLIB
- GFLIB
- GDFLIB
- GMCLIB
- AMCLIB
- PCLIB

It is compiled using the following IDEs:

- MCUX 11.4.0 [Build 6224] IDE.
- IAR 9.10.2. 39460IDE.
- Keil 5.37.0.2 IDE.

The following optimization is used:

- The accuracy is not guaranteed for some of the float functions in this version.
- The maximum speed optimization is used for all libraries on all compilers.

The following algorithms are in the release for CM33F, CM4F, and CM7F cores (16-/32-bit fixed-point and 32-bit single-precision floating-point, non-float variants CM33, CM33NODSP, CM4 and CM7 do not include the functions that require the FPU):

AMCLIB_ACIMCtrlMTPAInit_FLT
AMCLIB_ACIMCtrlMTPA_FLT
AMCLIB_ACIMRotFluxObsrvInit_FLT
AMCLIB_ACIMRotFluxObsrv_FLT
AMCLIB_ACIMSpeedMRASInit_FLT
AMCLIB_ACIMSpeedMRAS_FLT
AMCLIB_AngleTrackObsrvInit_A32
AMCLIB_AngleTrackObsrvInit_F16
AMCLIB_AngleTrackObsrv_A32ff
AMCLIB_AngleTrackObsrv_F16
AMCLIB_CtrlFluxWkngInit_F16
AMCLIB_CtrlFluxWkngInit_FLT
AMCLIB_CtrlFluxWkng_F16
AMCLIB_CtrlFluxWkng_FLT
AMCLIB_PMSMBemfObsrvABInit_F16
AMCLIB_PMSMBemfObsrvABInit_FLT
AMCLIB_PMSMBemfObsrvAB_F16
AMCLIB_PMSMBemfObsrvAB_FLT
AMCLIB_PMSMBemfObsrvDQInit_A32fff
AMCLIB_PMSMBemfObsrvDQInit_F16
AMCLIB_PMSMBemfObsrvDQ_A32fff
AMCLIB_PMSMBemfObsrvDQ_F16
AMCLIB_TrackObsrvInit_A32af
AMCLIB_TrackObsrvInit_F16
AMCLIB_TrackObsrv_A32af
AMCLIB_TrackObsrv_F16

GDFLIB_FilterExpInit_F16
GDFLIB_FilterExpInit_FLT
GDFLIB_FilterExp_F16
GDFLIB_FilterExp_FLT
GDFLIB_FilterIIR1Init_F16
GDFLIB_FilterIIR1Init_FLT
GDFLIB_FilterIIR1_F16
GDFLIB_FilterIIR1_FLT
GDFLIB_FilterIIR2Init_F16
GDFLIB_FilterIIR2Init_FLT
GDFLIB_FilterIIR2_F16
GDFLIB_FilterIIR2_FLT
GDFLIB_FilterIIR3Init_F16
GDFLIB_FilterIIR3Init_FLT
GDFLIB_FilterIIR3_F16
GDFLIB_FilterIIR3_FLT
GDFLIB_FilterIIR4Init_F16
GDFLIB_FilterIIR4Init_FLT
GDFLIB_FilterIIR4_F16
GDFLIB_FilterIIR4_FLT
GDFLIB_FilterMAInit_F16
GDFLIB_FilterMAInit_FLT
GDFLIB_FilterMA_F16
GDFLIB_FilterMA_FLT

GFLIB_Acos_F16
GFLIB_Acos_FLT
GFLIB_Asin_F16
GFLIB_Asin_FLT
GFLIB_AtanYX_A32f
GFLIB_AtanYX_F16
GFLIB_AtanYX_FLT
GFLIB_Atan_A32f
GFLIB_Atan_F16
GFLIB_Atan_FLT
GFLIB_Cos_F16
GFLIB_Cos_FLT
GFLIB_Cos_FLTa
GFLIB_CtrlBetaIPDpAWInit_F16
GFLIB_CtrlBetaIPDpAWInit_FLT
GFLIB_CtrlBetaIPDpAW_F16
GFLIB_CtrlBetaIPDpAW_FLT
GFLIB_CtrlBetaIPpAWInit_F16
GFLIB_CtrlBetaIPpAWInit_FLT
GFLIB_CtrlBetaIPpAW_F16
GFLIB_CtrlBetaIPpAW_FLT
GFLIB_CtrlPIDpAWInit_F16
GFLIB_CtrlPIDpAWInit_FLT
GFLIB_CtrlPIDpAW_F16
GFLIB_CtrlPIDpAW_FLT
GFLIB_CtrlPIpAWInit_F16
GFLIB_CtrlPIpAWInit_FLT
GFLIB_CtrlPIpAW_F16
GFLIB_CtrlPIpAW_FLT
GFLIB_DFlexRampCalcIncr_F16
GFLIB_DFlexRampCalcIncr_FLT
GFLIB_DFlexRampInit_F16
GFLIB_DFlexRampInit_FLT
GFLIB_DFlexRamp_F16
GFLIB_DFlexRamp_FLT
GFLIB_DRampInit_F16
GFLIB_DRampInit_F32
GFLIB_DRampInit_FLT
GFLIB_DRamp_F16
GFLIB_DRamp_F32
GFLIB_DRamp_FLT
GFLIB_FlexRampCalcIncr_F16
GFLIB_FlexRampCalcIncr_FLT
GFLIB_FlexRampInit_F16
GFLIB_FlexRampInit_FLT
GFLIB_FlexRamp_F16

GFLIB_FlexRamp_FLT
GFLIB_FlexSRampCalcIncr_F16
GFLIB_FlexSRampCalcIncr_FLT
GFLIB_FlexSRampInit_F16
GFLIB_FlexSRampInit_FLT
GFLIB_FlexSRamp_F16
GFLIB_FlexSRamp_FLT
GFLIB_Hyst_F16
GFLIB_Hyst_FLT
GFLIB_IntegratorInit_F16
GFLIB_IntegratorInit_FLT
GFLIB_Integrator_F16
GFLIB_Integrator_FLT
GFLIB_Limit_F16
GFLIB_Limit_F32
GFLIB_Limit_FLT
GFLIB_LowerLimit_F16
GFLIB_LowerLimit_F32
GFLIB_LowerLimit_FLT
GFLIB_Lut1DInit_FLT
GFLIB_Lut1D_F16
GFLIB_Lut1D_F32
GFLIB_Lut1D_FLT
GFLIB_LutPer1DInit_FLT
GFLIB_LutPer1D_F16
GFLIB_LutPer1D_F32
GFLIB_LutPer1D_FLT
GFLIB_RampInit_F16
GFLIB_RampInit_F32
GFLIB_RampInit_FLT
GFLIB_Ramp_F16
GFLIB_Ramp_F32
GFLIB_Ramp_FLT
GFLIB_Sin_F16
GFLIB_Sin_FLT
GFLIB_Sin_FLTa
GFLIB_Sqrt_F16
GFLIB_Sqrt_F16l
GFLIB_Sqrt_FLT
GFLIB_Tan_F16
GFLIB_Tan_FLT
GFLIB_Tan_FLTa
GFLIB_UpperLimit_F16
GFLIB_UpperLimit_F32
GFLIB_UpperLimit_FLT
GFLIB_VectorLimit1_F16
GFLIB_VectorLimit1_FLT
GFLIB_VectorLimit_F16
GFLIB_VectorLimit_FLT

GMCLIB_ClarkInv_F16
GMCLIB_ClarkInv_FLT
GMCLIB_Clark_F16
GMCLIB_Clark_FLT
GMCLIB_DecouplingPMSM_F16
GMCLIB_DecouplingPMSM_FLT
GMCLIB_DTCompLut1D_F16
GMCLIB_ElimDcBusRipFOC_F16
GMCLIB_ElimDcBusRipFOC_F16ff
GMCLIB_ElimDcBusRip_F16fff
GMCLIB_ElimDcBusRip_F16sas
GMCLIB_ParkInv_F16
GMCLIB_ParkInv_FLT
GMCLIB_Park_F16
GMCLIB_Park_FLT
GMCLIB_SvmDpwm_F16
GMCLIB_SvmExDpwm_F16
GMCLIB_SvmIct_F16
GMCLIB_SvmStd_F16
GMCLIB_SvmStdShifted_F16
GMCLIB_SvmU0n_F16
GMCLIB_SvmU7n_F16

MLIB_AbsSat_F16
MLIB_AbsSat_F32
MLIB_Abs_F16
MLIB_Abs_F32
MLIB_Abs_FLT
MLIB_Add4Sat_F16
MLIB_Add4Sat_F32
MLIB_Add4_F16
MLIB_Add4_F32
MLIB_Add4_FLT
MLIB_AddSat_F16
MLIB_AddSat_F32
MLIB_Add_A32as
MLIB_Add_A32ss
MLIB_Add_F16
MLIB_Add_F32
MLIB_Add_FLT
MLIB_Clb_U16l
MLIB_Clb_U16s
MLIB_ConvSc_A32ff
MLIB_ConvSc_F16ff
MLIB_ConvSc_F32ff
MLIB_ConvSc_FLTaf
MLIB_ConvSc_FLTlf
MLIB_ConvSc_FLTsf
MLIB_Conv_A32f
MLIB_Conv_F16f
MLIB_Conv_F16l
MLIB_Conv_F32f
MLIB_Conv_F32s
MLIB_Conv_FLTa
MLIB_Conv_FLTl
MLIB_Conv_FLTs
MLIB_Div1QSat_A32as
MLIB_Div1QSat_F16
MLIB_Div1QSat_F16ll
MLIB_Div1QSat_F16ls
MLIB_Div1QSat_F32
MLIB_Div1QSat_F32ls

MLIB_Div1Q_A32as
MLIB_Div1Q_A32ll
MLIB_Div1Q_A32ls
MLIB_Div1Q_A32ss
MLIB_Div1Q_F16
MLIB_Div1Q_F16ll
MLIB_Div1Q_F16ls
MLIB_Div1Q_F32
MLIB_Div1Q_F32ls
MLIB_DivSat_A32as
MLIB_DivSat_F16
MLIB_DivSat_F16ll
MLIB_DivSat_F16ls
MLIB_DivSat_F32
MLIB_DivSat_F32ls
MLIB_Div_A32as
MLIB_Div_A32ll
MLIB_Div_A32ls
MLIB_Div_A32ss
MLIB_Div_F16
MLIB_Div_F16ll
MLIB_Div_F16ls
MLIB_Div_F32
MLIB_Div_F32ls
MLIB_Div_FLT
MLIB_Log2_U16
MLIB_Mac4RndSat_F16
MLIB_Mac4RndSat_F32
MLIB_Mac4Rnd_F16
MLIB_Mac4Rnd_F32
MLIB_Mac4Sat_F32ssss
MLIB_Mac4_F32ssss
MLIB_Mac4_FLT
MLIB_MacRndSat_F16
MLIB_MacRndSat_F32
MLIB_MacRndSat_F32lls
MLIB_MacRnd_A32ass
MLIB_MacRnd_F16
MLIB_MacRnd_F32
MLIB_MacRnd_F32lls
MLIB_MacSat_F16
MLIB_MacSat_F32
MLIB_MacSat_F32lss
MLIB_Mac_A32ass
MLIB_Mac_F16
MLIB_Mac_F32
MLIB_Mac_F32lss
MLIB_Mac_FLT
MLIB_MnacRndSat_F16
MLIB_MnacRndSat_F32
MLIB_MnacRndSat_F32lls
MLIB_MnacRnd_A32ass
MLIB_MnacRnd_F16
MLIB_MnacRnd_F32
MLIB_MnacRnd_F32lls
MLIB_MnacSat_F16
MLIB_MnacSat_F32
MLIB_MnacSat_F32lss
MLIB_Mnac_A32ass
MLIB_Mnac_F16
MLIB_Mnac_F32
MLIB_Mnac_F32lss
MLIB_Mnac_FLT
MLIB_Msu4RndSat_F16
MLIB_Msu4RndSat_F32
MLIB_Msu4Rnd_F16
MLIB_Msu4Rnd_F32
MLIB_Msu4Sat_F32ssss
MLIB_Msu4_F32ssss
MLIB_Msu4_FLT
MLIB_MsuRndSat_F16
MLIB_MsuRndSat_F32
MLIB_MsuRndSat_F32lls
MLIB_MsuRnd_A32ass
MLIB_MsuRnd_F16
MLIB_MsuRnd_F32
MLIB_MsuRnd_F32lls
MLIB_MsuSat_F16
MLIB_MsuSat_F32
MLIB_MsuSat_F32lss
MLIB_Msu_A32ass
MLIB_Msu_F16
MLIB_Msu_F32
MLIB_Msu_F32lss
MLIB_Msu_FLT
MLIB_MulNegRndSat_A32
MLIB_MulNegRndSat_F16as
MLIB_MulNegRnd_A32
MLIB_MulNegRnd_F16
MLIB_MulNegRnd_F16as
MLIB_MulNegRnd_F32
MLIB_MulNegRnd_F32ls
MLIB_MulNegSat_A32
MLIB_MulNegSat_F16as
MLIB_MulNeg_A32
MLIB_MulNeg_F16
MLIB_MulNeg_F16as
MLIB_MulNeg_F32
MLIB_MulNeg_F32ss
MLIB_MulNeg_FLT
MLIB_MulRndSat_A32
MLIB_MulRndSat_F16
MLIB_MulRndSat_F16as
MLIB_MulRndSat_F32
MLIB_MulRndSat_F32ls
MLIB_MulRnd_A32
MLIB_MulRnd_F16
MLIB_MulRnd_F16as
MLIB_MulRnd_F32
MLIB_MulRnd_F32ls
MLIB_MulSat_A32
MLIB_MulSat_F16

MLIB_MulSat_F16as
MLIB_MulSat_F32
MLIB_MulSat_F32ss
MLIB_Mul_A32
MLIB_Mul_F16
MLIB_Mul_F16as
MLIB_Mul_F32
MLIB_Mul_F32ss
MLIB_Mul_FLT
MLIB_NegSat_F16
MLIB_NegSat_F32
MLIB_Neg_F16
MLIB_Neg_F32
MLIB_Neg_FLT
MLIB_Rcp1Q1_A32s
MLIB_Rcp1Q_A32s
MLIB_Rcp1_A32s
MLIB_Rcp_A32s
MLIB_RndSat_F16l
MLIB_Rnd_F16l
MLIB_Sat_F16a
MLIB_Sh1LSat_F16
MLIB_Sh1LSat_F32
MLIB_Sh1L_F16
MLIB_Sh1L_F32
MLIB_Sh1R_F16
MLIB_Sh1R_F32
MLIB_ShLBiSat_F16
MLIB_ShLBiSat_F32
MLIB_ShLBi_F16
MLIB_ShLBi_F32
MLIB_ShLSat_F16
MLIB_ShLSat_F32
MLIB_ShL_F16
MLIB_ShL_F32
MLIB_ShRBiSat_F16
MLIB_ShRBiSat_F32
MLIB_ShRBi_F16
MLIB_ShRBi_F32
MLIB_ShR_F16
MLIB_ShR_F32
MLIB_Sign_F16
MLIB_Sign_F32
MLIB_Sign_FLT
MLIB_Sub4Sat_F16
MLIB_Sub4Sat_F32
MLIB_Sub4_F16
MLIB_Sub4_F32
MLIB_Sub4_FLT
MLIB_SubSat_F16
MLIB_SubSat_F32
MLIB_Sub_A32as
MLIB_Sub_A32ss
MLIB_Sub_F16
MLIB_Sub_F32
MLIB_Sub_FLT

PCLIB_Ctrl2P2ZInit_F16
PCLIB_Ctrl2P2Z_F16
PCLIB_Ctrl3P3ZInit_F16
PCLIB_Ctrl3P3Z_F16
PCLIB_CtrlPIDInit_F16
PCLIB_CtrlPID_F16
PCLIB_CtrlPIInit_F16
PCLIB_CtrlPI_F16
PCLIB_CtrlPIandLPInit_F16
PCLIB_CtrlPIandLP_F16

For the CM33 core with the Power Quad peripheral module:
GFLIB_AtanYXPQ_F16
GFLIB_CosPQ_F16
GFLIB_SinPQ_F16
GFLIB_CosPQ_FLT
GFLIB_SinPQ_FLT
GFLIB_SqrtPQ_F16l
GFLIB_SqrtPQ_F16
GDFLIB_FilterIIR2InitPQ_F16
GDFLIB_FilterIIR2PQ_F16

The following algorithms are in the release for the CM0+ core (16-bit and 32-bit fixed-point versions):

AMCLIB_AngleTrackObsrvInit_F16
AMCLIB_AngleTrackObsrv_F16
AMCLIB_CtrlFluxWkngInit_F16
AMCLIB_CtrlFluxWkng_F16
AMCLIB_PMSMBemfObsrvABInit_F16
AMCLIB_PMSMBemfObsrvAB_F16
AMCLIB_PMSMBemfObsrvDQInit_F16
AMCLIB_PMSMBemfObsrvDQ_F16
AMCLIB_TrackObsrvInit_F16
AMCLIB_TrackObsrv_F16

GDFLIB_FilterExpInit_F16
GDFLIB_FilterExp_F16
GDFLIB_FilterIIR1Init_F16
GDFLIB_FilterIIR1_F16
GDFLIB_FilterIIR2Init_F16
GDFLIB_FilterIIR2_F16
GDFLIB_FilterMAInit_F16

GDFLIB_FilterMA_F16

GFLIB_AtanYX_F16
GFLIB_Atan_F16
GFLIB_Cos_F16
GFLIB_CtrlBetaIPpAWInit_F16
GFLIB_CtrlBetaIPpAW_F16
GFLIB_CtrlPIpAWInit_F16
GFLIB_CtrlPIpAW_F16
GFLIB_DFlexRampCalcIncr_F16
GFLIB_DFlexRampInit_F16
GFLIB_DFlexRamp_F16
GFLIB_DRampInit_F16
GFLIB_DRampInit_F32
GFLIB_DRamp_F16
GFLIB_DRamp_F32
GFLIB_FlexRampCalcIncr_F16
GFLIB_FlexRampInit_F16
GFLIB_FlexRamp_F16
GFLIB_Hyst_F16
GFLIB_IntegratorInit_F16
GFLIB_Integrator_F16
GFLIB_Limit_F16
GFLIB_Limit_F32
GFLIB_LowerLimit_F16
GFLIB_LowerLimit_F32
GFLIB_Lut1D_F16
GFLIB_Lut1D_F32
GFLIB_LutPer1D_F16
GFLIB_LutPer1D_F32
GFLIB_RampInit_F16
GFLIB_RampInit_F32
GFLIB_Ramp_F16
GFLIB_Ramp_F32
GFLIB_Sin_F16
GFLIB__F16l
GFLIB_Sqrt_F16
GFLIB_Sqrt_F16l
GFLIB_UpperLimit_F16
GFLIB_UpperLimit_F32
GFLIB_VectorLimit1_F16

GMCLIB_ClarkInv_F16
GMCLIB_Clark_F16
GMCLIB_DecouplingPMSM_F16
GMCLIB_DTCompLut1D_F16
GMCLIB_ElimDcBusRipFOC_F16
GMCLIB_ElimDcBusRip_F16sas
GMCLIB_ParkInv_F16
GMCLIB_Park_F16
GMCLIB_SvmDpwm_F16
GMCLIB_SvmExDpwm_F16
GMCLIB_SvmIct_F16
GMCLIB_SvmStd_F16
GMCLIB_SvmStdShifted_F16
GMCLIB_SvmU0n_F16
GMCLIB_SvmU7n_F16

MLIB_AbsSat_F16
MLIB_AbsSat_F32
MLIB_Abs_F16
MLIB_Abs_F32
MLIB_Add4Sat_F16
MLIB_Add4Sat_F32
MLIB_Add4_F16
MLIB_Add4_F32
MLIB_AddSat_F16
MLIB_AddSat_F32
MLIB_Add_A32as
MLIB_Add_A32ss
MLIB_Add_F16
MLIB_Add_F32
MLIB_Clb_U16l
MLIB_Clb_U16s
MLIB_Conv_F16l
MLIB_Conv_F32s
MLIB_Div1QSat_A32as
MLIB_Div1QSat_F16
MLIB_Div1QSat_F16ll
MLIB_Div1QSat_F16ls
MLIB_Div1QSat_F32
MLIB_Div1QSat_F32ls
MLIB_Div1Q_A32as
MLIB_Div1Q_A32ll
MLIB_Div1Q_A32ls
MLIB_Div1Q_A32ss
MLIB_Div1Q_F16
MLIB_Div1Q_F16ll
MLIB_Div1Q_F16ls
MLIB_Div1Q_F32
MLIB_Div1Q_F32ls

MLIB_DivSat_A32as
MLIB_DivSat_F16
MLIB_DivSat_F16ll
MLIB_DivSat_F16ls
MLIB_DivSat_F32
MLIB_DivSat_F32ls
MLIB_Div_A32as
MLIB_Div_A32ll
MLIB_Div_A32ls
MLIB_Div_A32ss
MLIB_Div_F16
MLIB_Div_F16ll
MLIB_Div_F16ls
MLIB_Div_F32
MLIB_Div_F32ls
MLIB_Log2_U16
MLIB_Mac4RndSat_F16
MLIB_Mac4RndSat_F32
MLIB_Mac4Rnd_F16
MLIB_Mac4Rnd_F32

MLIB_Mac4Sat_F32ssss
MLIB_Mac4_F32ssss
MLIB_MacRndSat_F16
MLIB_MacRndSat_F32
MLIB_MacRndSat_F32lls
MLIB_MacRnd_A32ass
MLIB_MacRnd_F16
MLIB_MacRnd_F32
MLIB_MacRnd_F32lls
MLIB_MacSat_F16
MLIB_MacSat_F32
MLIB_MacSat_F32lss
MLIB_Mac_A32ass
MLIB_Mac_F16
MLIB_Mac_F32
MLIB_Mac_F32lss
MLIB_MnacRndSat_F16
MLIB_MnacRndSat_F32
MLIB_MnacRndSat_F32lls
MLIB_MnacRnd_A32ass
MLIB_MnacRnd_F16
MLIB_MnacRnd_F32
MLIB_MnacRnd_F32lls
MLIB_MnacSat_F16
MLIB_MnacSat_F32
MLIB_MnacSat_F32lss
MLIB_Mnac_A32ass
MLIB_Mnac_F16
MLIB_Mnac_F32
MLIB_Mnac_F32lss
MLIB_Msu4RndSat_F16
MLIB_Msu4RndSat_F32
MLIB_Msu4Rnd_F16
MLIB_Msu4Rnd_F32
MLIB_Msu4Sat_F32ssss
MLIB_Msu4_F32ssss
MLIB_MsuRndSat_F16
MLIB_MsuRndSat_F32
MLIB_MsuRndSat_F32lls
MLIB_MsuRnd_A32ass
MLIB_MsuRnd_F16
MLIB_MsuRnd_F32
MLIB_MsuRnd_F32lls
MLIB_MsuSat_F16
MLIB_MsuSat_F32
MLIB_MsuSat_F32lss
MLIB_Msu_A32ass
MLIB_Msu_F16
MLIB_Msu_F32
MLIB_Msu_F32lss
MLIB_MulNegRndSat_A32
MLIB_MulNegRndSat_F16as
MLIB_MulNegRnd_A32
MLIB_MulNegRnd_F16
MLIB_MulNegRnd_F16as
MLIB_MulNegRnd_F32
MLIB_MulNegRnd_F32ls
MLIB_MulNegSat_A32
MLIB_MulNegSat_F16as
MLIB_MulNeg_A32
MLIB_MulNeg_F16
MLIB_MulNeg_F16as
MLIB_MulNeg_F32
MLIB_MulNeg_F32ss
MLIB_MulRndSat_A32
MLIB_MulRndSat_F16
MLIB_MulRndSat_F16as
MLIB_MulRndSat_F32
MLIB_MulRndSat_F32ls
MLIB_MulRnd_A32
MLIB_MulRnd_F16
MLIB_MulRnd_F16as
MLIB_MulRnd_F32
MLIB_MulRnd_F32ls
MLIB_MulSat_A32
MLIB_MulSat_F16
MLIB_MulSat_F16as
MLIB_MulSat_F32
MLIB_MulSat_F32ss
MLIB_Mul_A32
MLIB_Mul_F16
MLIB_Mul_F16as
MLIB_Mul_F32
MLIB_Mul_F32ss
MLIB_NegSat_F16
MLIB_NegSat_F32
MLIB_Neg_F16
MLIB_Neg_F32
MLIB_Rcp1Q1_A32s
MLIB_Rcp1Q_A32s
MLIB_Rcp1_A32s
MLIB_RcpHw1Q1_A32s
MLIB_RcpHw1Q_A32s
MLIB_RcpHw1_A32s
MLIB_RcpHw_A32s
MLIB_Rcp_A32s
MLIB_RndSat_F16l
MLIB_Rnd_F16l
MLIB_Sat_F16a
MLIB_Sh1LSat_F16
MLIB_Sh1LSat_F32
MLIB_Sh1L_F16
MLIB_Sh1L_F32
MLIB_Sh1R_F16
MLIB_Sh1R_F32
MLIB_ShLBiSat_F16
MLIB_ShLBiSat_F32
MLIB_ShLBi_F16
MLIB_ShLBi_F32
MLIB_ShLSat_F16
MLIB_ShLSat_F32
MLIB_ShL_F16

MLIB_ShL_F32
MLIB_ShRBiSat_F16
MLIB_ShRBiSat_F32
MLIB_ShRBi_F16
MLIB_ShRBi_F32
MLIB_ShR_F16
MLIB_ShR_F32
MLIB_Sign_F16
MLIB_Sign_F32
MLIB_Sub4Sat_F16
MLIB_Sub4Sat_F32
MLIB_Sub4_F16
MLIB_Sub4_F32
MLIB_SubSat_F16
MLIB_SubSat_F32
MLIB_Sub_A32as
MLIB_Sub_A32ss
MLIB_Sub_F16
MLIB_Sub_F32

PCLIB_Ctrl2P2ZInit_F16
PCLIB_Ctrl2P2Z_F16
PCLIB_Ctrl3P3ZInit_F16
PCLIB_Ctrl3P3Z_F16
PCLIB_CtrlPIDInit_F16
PCLIB_CtrlPID_F16
PCLIB_CtrlPIInit_F16
PCLIB_CtrlPI_F16
PCLIB_CtrlPIandLPInit_F16
PCLIB_CtrlPIandLP_F16

MLIB_DivHwSat_F16ls
MLIB_DivHwSat_F32
MLIB_DivHwSat_F32ls
MLIB_DivHwSat_F32ls
MLIB_DivHw_A32ll
MLIB_DivHw_A32ls
MLIB_DivHw_A32ss
MLIB_DivHw_F16
MLIB_DivHw_F16ll
MLIB_DivHw_F16ls
MLIB_DivHw_F32
MLIB_DivHw_F32ls
MLIB_DivHw_F32ls

For the CM0+ core with the MMDVSQ peripheral module:

AMCLIB_PMSMBemfObsrvABHw_F16
AMCLIB_PMSMBemfObsrvDQHw_F16
GFLIB_AtanYXHw_F16
GFLIB_DFlexRampCalcIncrHw_F16
GFLIB_FlexRampCalcIncrHw_F16
GFLIB_SqrtHw_F16
GFLIB_VectorLimit1Hw_F16
GMCLIB_ElimDcBusRipFOCHw_F16
GMCLIB_ElimDcBusRipHw_F16sas
MLIB_DivHw1QSat_F16
MLIB_DivHw1QSat_F16ll
MLIB_DivHw1QSat_F16ls
MLIB_DivHw1QSat_F32
MLIB_DivHw1QSat_F32ls
MLIB_DivHw1QSat_F32ls
MLIB_DivHw1Q_A32ll
MLIB_DivHw1Q_A32ls
MLIB_DivHw1Q_A32ss
MLIB_DivHw1Q_F16
MLIB_DivHw1Q_F16ll
MLIB_DivHw1Q_F16ls
MLIB_DivHw1Q_F32
MLIB_DivHw1Q_F32ls
MLIB_DivHw1Q_F32ls
MLIB_DivHwSat_F16
MLIB_DivHwSat_F16ll

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