

# KV3 VLIW V2 Core Instruction Set Summary

## BCU

AWAIT	Wait for any event or interrupt.
BARRIER	Instruction Pipeline Barrier
BREAK	Debugger Breakpoint
CALL	Call Subroutine PC-Relative
CB	Conditional Branch PC-Relative
ERROP	Error Opcode
GET	Get System Register
GOTO	Branch Unconditional PC-Relative
ICALL	Indirect Call from Register
IGET	Indirect Get System Register
IGOTO	Indirect Branch from Register
LOOPDO	Hardware Loop setup and Do execute
RET	Return from Call
RFE	Return from Exception
RSWAP	General and System Register Swap
SCALL	System Call
SET	Set System Register
SLEEP	Wait for an eligible interrupt.
STOP	Wait for power controller wake-up.
SYNCGROUP	Synchronize Group of Cores
TLBDINVAL	Invalidate Data Micro-TLB.
TLBIINVAL	Invalidate Instruction Micro-TLB.
TLBPROBE	Probe TLB
TLBREAD	Read TLB Entry
TLBWRITE	TLB Entry Write
WAITIT	Wait for Interrupt
WFXL	Effects on Least Significant Word of System Register
WFXM	Word Effects on Most Significant Word of System Register
XACCESSO	Access from Extension into Octuple Word
XALIGNO	Align Extension into Octuple Word

## LSU

ACSWAPD	Atomic Compare and Swap Double Word
ACSWAPQ	Atomic Compare and Swap Quadruple Word
ACSWAPW	Atomic Compare and Swap Word
ALADDD	Atomic Load and Add Double Word
ALADDW	Atomic Load and Add Word
ALCLRD	Atomic Load and Clear Double Word
ALCLRW	Atomic Load and Clear Word

ALD	Atomic Load Double Word
ALW	Atomic Load Word
ASD	Atomic Store Double Word
ASW	Atomic Store Word
COPYO	Copy Octuple Word
D1INVAL	Data Cache 1 Invalidate
DFLUSHL	Data Cache Flush Line
DFLUSHSW	Data Cache Flush Line by Set and Way
DINVALL	Data Cache Invalidate Line
DINVALSW	Data Cache Invalidate Line by Set and Way
DPURGE	Data Cache Purge Line
DPURGESW	Data Cache Purge Line by Set and Way
DTOUCHL	Data Cache Touch Line
FENCE	Memory Fence
I1INVAL	Instruction Cache 1 Invalidate
I1INVALS	Instruction Cache 1 Invalidate Set
LBS	Load Byte Sign Extended
LBZ	Load Byte Zero Extended
LD	Load Double Word
LHS	Load Half Word Sign Extended
LHZ	Load Half Word Zero Extended
LO	Load Octuple Word
LQ	Load Quadruple Word
LWS	Load Word Sign Extended
LWZ	Load Word Zero Extended
SB	Store Byte
SD	Store Double Word
SH	Store Half Word
SO	Store Octuple Word
SQ	Store Quadruple Word
SW	Store Word
XLO	Extension Load Octuple Word
XPLB	Extension Preload Byte
XPLD	Extension Preload Double Word
XPLH	Extension Preload Half
XPLO	Extension Preload Octuple Word
XPLQ	Extension Preload Quadruple Word
XPLW	Extension Preload Word
XSO	Extension Store Octuple Word

## ALU

ABDBO	Absolute Difference Byte Octuple
ABDD	Absolute Difference of Double Words

ABDHQ	Absolute Difference Half Words Quadruple
ABDSBO	Absolute Difference Saturated of Byte Octuple
ABDSD	Absolute Difference Saturated of Double Words
ABDSHQ	Absolute Difference Saturated of Half Words Quadruple
ABDSW	Absolute Difference Saturated of Words
ABDSWP	Absolute Difference Saturated of Words Packed
ABDUBO	Absolute Difference Byte Octuple
ABDUD	Absolute Difference Unsigned of Double Words
ABDUHQ	Absolute Difference Unsigned Half Words Quadruple
ABDUW	Absolute Difference Unsigned of Words
ABDUWP	Absolute Difference Unsigned Words Packed
ABDW	Absolute Difference of Words
ABDWP	Absolute Difference Words Packed
ADDBO	Add Byte Octuple
ADDCD	Add Double Word to Double Word with Carry
ADDCD.I	Add Double Word to Double Word with Carry Initial
ADDD	Add Double Word to Double Word
ADDHQ	Add Half Words Quadruple
ADDRBOD	Add Reduce Byte Octuple to Double Word
ADDRHQD	Add Reduce Half Word Quadruple to Double Word
ADDRWPD	Add Reduce Word Pair to Double Word
ADDSBO	Add Saturated Byte Octuple
ADDSD	Add Saturated Double Words
ADDSHQ	Add Saturated Half Words Quadruple
ADDSW	Add Saturated Words
ADDSWP	Add Saturated Words Packed
ADDURBOD	Add Unsigned Reduce Byte Octuple to Double Word
ADDURHQD	Add Unsigned Reduce Half Word Quadruple to Double Word
ADDURWPD	Add Unsigned Reduce Word Pair to Double Word
ADDUSBO	Add Unsigned Saturated Byte Octuple
ADDUSD	Add Unsigned Saturated Double Words
ADDUSHQ	Add Unsigned Saturated Half Words Quadruple
ADDUSW	Add Unsigned Saturated Words
ADDUSWP	Add Unsigned Saturated Words Packed
ADDUWD	Add Unsigned Word to Double Word
ADDW	Add Word to Word
ADDWD	Add Word to Double Word
ADDWP	Add Words Packed
ADDX16BO	Add Integer to Integer Times 16 Byte Octuple
ADDX16D	Add Double Word to Double Word Times 16
ADDX16HQ	Add Integer to Integer Times 16 Half Words Quadruple
ADDX16UWD	Add Unsigned Word Times 16 to Double Word
ADDX16W	Add Word to Word Times 16

ADDX16WD .....Add Word Times 16 to Double Word  
ADDX16WP .... Add Integer to Integer Times 16 Words Packed  
ADDX2BO ..... Add Integer to Integer Times 2 Byte Octuple  
ADDX2D ..... Add Double Word to Double Word Times 2  
ADDX2HQ Add Integer to Integer Times 2 Half Words Quadruple  
ADDX2UWD ..... Add Unsigned Word Times 2 to Double Word  
ADDX2W ..... Add Word to Word Times 2  
ADDX2WD ..... Add Word Times 2 to Double Word  
ADDX2WP ..... Add Integer to Integer Times 2 Words Packed  
ADDX32D ..... Add Double Word to Double Word Times 32  
ADDX32UWD ... Add Unsigned Word Times 32 to Double Word  
ADDX32W ..... Add Word to Word Times 32  
ADDX32WD .....Add Word Times 32 to Double Word  
ADDX4BO ..... Add Integer to Integer Times 4 Byte Octuple  
ADDX4D ..... Add Double Word to Double Word Times 4  
ADDX4HQ Add Integer to Integer Times 4 Half Words Quadruple  
ADDX4UWD ..... Add Unsigned Word Times 4 to Double Word  
ADDX4W ..... Add Word to Word Times 4  
ADDX4WD .....Add Word Times 4 to Double Word  
ADDX4WP ..... Add Integer to Integer Times 4 Words Packed  
ADDX64D ..... Add Double Word to Double Word Times 64  
ADDX64UWD ... Add Unsigned Word Times 64 to Double Word  
ADDX64W ..... Add Word to Word Times 64  
ADDX64WD .....Add Word Times 64 to Double Word  
ADDX8BO ..... Add Integer to Integer Times 8 Byte Octuple  
ADDX8D ..... Add Double Word to Double Word Times 8  
ADDX8HQ Add Integer to Integer Times 8 Half Words Quadruple  
ADDX8UWD ..... Add Unsigned Word Times 8 to Double Word  
ADDX8W ..... Add Word to Word Times 8  
ADDX8WD .....Add Word Times 8 to Double Word  
ADDX8WP ..... Add Integer to Integer Times 8 Words Packed  
ANDD .....Bitwise And Between Double Words  
ANDND .Bitwise And with Not Operand Between Double Words  
ANDNW ..... Bitwise And with Not Operand Between Words  
ANDRBOD . Bitwise AND Reduce Byte Octuple to Double Word  
ANDRHQD Bitwise AND Reduce Half Word Quadruple to Double Word  
ANDRWPD ... Bitwise AND Reduce Word Pair to Double Word  
ANDW .....Bitwise And Between Words  
AVGBO .....Average of Byte Octuple  
AVGHQ .....Average of Half Words Quadruple  
AVGRBO ..... Average Rounded of Byte Octuple  
AVGRHQ ..... Average Rounded of Half Words Quadruple  
AVGRUBO .....Average Rounded Unsigned of Byte Octuple  
AVGRUHQ Average Rounded Unsigned of Half Words Quadruple

AVGRUW .....Average Rounded of Unsigned Words  
AVGRUWP ..... Average Rounded Unsigned of Words Packed  
AVGRW .....Average Rounded of Words  
AVGRWP .....Average Rounded of Words Packed  
AVGUBO ..... Average Unsigned of Byte Octuple  
AVGUHQ ..... Average Unsigned of Half Words Quadruple  
AVGUW .....Average of Unsigned Words  
AVGUWP ..... Average Unsigned of Words Packed  
AVGW .....Average of Words  
AVGWP .....Average of Words Packed  
CBSD .....Count Bit Set of Double Word  
CBSW .....Count Bit Set of Word  
CBSWP .....Count Bit Sets of Word Pair  
CLRf .....Clear Field  
CLSD .....Count Leading Sign of Double Word  
CLSW .....Count Leading Sign of Word  
CLSWP .....Count Leading Signs of Word Pair  
CLZD .....Count Leading Zero of Double Word  
CLZW .....Count Leading Zero of Word  
CLZWP .....Count Leading Zeroes of Word Pair  
CMOVEBO .....Conditional Move Byte Octuple  
CMOVED .....Conditional Move Double Word  
CMOVEHQ .....Conditional Move Half Words Quadruple  
CMOVEWP .....Conditional Move Words Packed  
COMPD .....Compare Double Words  
COMPNBOD .....Compare Negate Byte Octuple  
COMPND .....Compare Negate Double Words  
COMPNHQ .....Compare Negate Half Words Quadruple  
COMPNW .....Compare Negate Words  
COMPNWP .....Compare Negate Word Pair  
COMPUWD .....Compare Unsigned Word to Double Word  
COMPW .....Compare Words  
COMPWD .....Compare Word to Double Word  
CTZD .....Count Trailing Zero of Double Word  
CTZW .....Count Trailing Zero of Word  
CTZWP .....Count Trailing Zeroes of Word Pair  
EORD .....Bitwise Exclusive Or Between Double Words  
EORRBOD Bitwise Exclusive OR Reduce Byte Octuple to Double Word  
EORRHQD . Bitwise Exclusive OR Reduce Half Word Quadruple to Double Word  
EORRWPD .. Bitwise Exclusive OR Reduce Word Pair to Double Word  
EORW ..... Bitwise Exclusive Or Between Words  
EXTFS .... Extract Bit Field and Sign Extend to Double Word

EXTFZ .... Extract Bit Field and Zero Extend to Double Word  
INSF ..... Insert Bit Field into Word  
IORD ..... Bitwise Inclusive Or Between Double Words  
IORND Bitwise Inclusive Or with Not Operand Between Double Words  
IORNW Bitwise Inclusive Or with Not Operand Between Double Words  
IORRBOD ...Bitwise OR Reduce Byte Octuple to Double Word  
IORRHQD .Bitwise OR Reduce Half Word Quadruple to Double Word  
IORRWPD ..... Bitwise OR Reduce Word Pair to Double Word  
IORW ..... Bitwise Inclusive Or Between Words  
LANDD ..... Logical And of Double Words  
LANDW ..... Logical And of Words  
LIORD .....Logical Or of Double Words  
LIORW ..... Logical Or of Words  
LNANDD ..... Logical Not And of Double Words  
LNANDW ..... Logical Not And of Words  
LNIORD .....Logical Not Or of Double Words  
LNIORW ..... Logical Not Or of Words  
MAKE ..... Make Word from Immediate  
MAXBO ..... Maximum of Byte Octuple  
MAXD ..... Maximum of Double Words  
MAXHQ ..... Maximum of Half Words Quadruple  
MAXRBOD .... Maximum Reduce Byte Octuple to Double Word  
MAXRHQD .. Maximum Reduce Half Word Quadruple to Double Word  
MAXRWPD ..... Maximum Reduce Word Pair to Double Word  
MAXUBO ..... Maximum of Unsigned Byte Octuple  
MAXUD ..... Maximum of Unsigned Double Words  
MAXUHQ .....Maximum of Unsigned Half Words Quadruple  
MAXURBOD Maximum Unsigned Reduce Byte Octuple to Double Word  
MAXURHQD . Maximum Unsigned Reduce Half Word Quadruple to Double Word  
MAXURWPD .. Maximum Unsigned Reduce Word Pair to Double Word  
MAXUW ..... Maximum of Unsigned Words  
MAXUWP .....Maximum of Unsigned Words Packed  
MAXW ..... Maximum of Words  
MAXWP ..... Maximum of Words Packed  
MINBO ..... Minimum of Byte Octuple  
MIND .....Minimum of Double Words  
MINHQ ..... Minimum of Half Words Quadruple  
MINRBOD .... Minimum Reduce Byte Octuple to Double Word

MINRHQD .. Minimum Reduce Half Word Quadruple to Double Word  
MINRWPD ..... Minimum Reduce Word Pair to Double Word  
MINUBO ..... Minimum of Unsigned Byte Octuple  
MINUD ..... Minimum of Unsigned Double Words  
MINUHQ ..... Minimum of Unsigned Half Words Quadruple  
MINURBOD Minimum Unsigned Reduce Byte Octuple to Double Word  
MINURHQD Minimum Unsigned Reduce Half Word Quadruple to Double Word  
MINURWPD .. Minimum Unsigned Reduce Word Pair to Double Word  
MINUW ..... Minimum of Unsigned Words  
MINUWP ..... Minimum of Unsigned Words Packed  
MINW ..... Minimum of Words  
MINWP ..... Minimum of Words Packed  
NANDD ..... Bitwise Not And Between Double Words  
NANDW ..... Bitwise Not And Between Words  
NEORD ..... Bitwise Not Exclusive Or Between Double Words  
NEORW ..... Bitwise Not Exclusive Or Between Words  
NIORD ..... Bitwise Not Inclusive Or Between Double Words  
NIORW ..... Bitwise Not Inclusive Or Between Words  
NOP ..... No Operation  
PCREL ..... PC-Relative  
ROLW ..... Rotate Left Word  
ROLWPS ..... Rotate Left Word Pair by Scalar  
RORW ..... Rotate Right Word  
RORWPS ..... Rotate Right Word Pair by Scalar  
SBFBO ..... Subtract Byte Octuple  
SBFCD .. Subtract Double Word from Double Word with Carry  
SBFCD.I Subtract Double Word from Double Word with Carry Initial  
SBFD ..... Subtract Double Word From Double Word  
SBFHQ ..... Subtract Half Words Quadruple  
SBFSBO ..... Subtract Saturated Byte Octuple  
SBFSD ..... Subtract Saturated Double Words  
SBFSHQ ..... Subtract Saturated Half Words Quadruple  
SBFSW ..... Subtract Saturated Words  
SBFSWP ..... Subtract Saturated Words Packed  
SBFUSBO ..... Subtract Unsigned Saturated Byte Octuple  
SBFUSD ..... Subtract Unsigned Saturated Double Words  
SBFUSHQ . Subtract Unsigned Saturated Half Words Quadruple  
SBFUSW ..... Subtract Unsigned Saturated Words  
SBFUSWP ..... Subtract Unsigned Saturated Words Packed  
SBFUWD ..... Subtract Unsigned Word from Double Word

SBFW ..... Subtract Word from Word  
SBFWD ..... Subtract Word from Double Word  
SBFWP ..... Subtract Words Packed  
SBFX16BO . Subtract Integer to Integer Times 16 Byte Octuple  
SBFX16D . Subtract Double Word Times 16 from Double Word  
SBFX16HQ ... Subtract Integer to Integer Times 16 Half Words Quadruple  
SBFX16UWD .. Subtract Unsigned Word Times 16 from Double Word  
SBFX16W ..... Subtract Word Times 16 from Word  
SBFX16WD ..... Subtract Word Times 16 from Double Word  
SBFX16WP Subtract Integer to Integer Times 16 Words Packed  
SBFX2BO ... Subtract Integer to Integer Times 2 Byte Octuple  
SBFX2D ... Subtract Double Word Times 2 from Double Word  
SBFX2HQ .... Subtract Integer to Integer Times 2 Half Words Quadruple  
SBFX2UWD Subtract Unsigned Word Times 2 from Double Word  
SBFX2W ..... Subtract Word Times 2 from Word  
SBFX2WD ..... Subtract Word Times 2 from Double Word  
SBFX2WP ... Subtract Integer to Integer Times 2 Words Packed  
SBFX32D . Subtract Double Word Times 32 from Double Word  
SBFX32UWD .. Subtract Unsigned Word Times 32 from Double Word  
SBFX32W ..... Subtract Word Times 32 from Word  
SBFX32WD ..... Subtract Word Times 32 from Double Word  
SBFX4BO ... Subtract Integer to Integer Times 4 Byte Octuple  
SBFX4D ... Subtract Double Word Times 4 from Double Word  
SBFX4HQ .... Subtract Integer to Integer Times 4 Half Words Quadruple  
SBFX4UWD Subtract Unsigned Word Times 4 from Double Word  
SBFX4W ..... Subtract Word Times 4 from Word  
SBFX4WD ..... Subtract Word Times 4 from Double Word  
SBFX4WP ... Subtract Integer to Integer Times 4 Words Packed  
SBFX64D . Subtract Double Word Times 64 from Double Word  
SBFX64UWD .. Subtract Unsigned Word Times 64 from Double Word  
SBFX64W ..... Subtract Word Times 64 from Word  
SBFX64WD ..... Subtract Word Times 64 from Double Word  
SBFX8BO ... Subtract Integer to Integer Times 8 Byte Octuple  
SBFX8D ... Subtract Double Word Times 8 from Double Word  
SBFX8HQ .... Subtract Integer to Integer Times 8 Half Words Quadruple  
SBFX8UWD Subtract Unsigned Word Times 8 from Double Word  
SBFX8W ..... Subtract Word Times 8 from Word  
SBFX8WD ..... Subtract Word Times 8 from Double Word

SBFX8WP ... Subtract Integer to Integer Times 8 Words Packed  
SBMM8D ..... Swapped Bit Matrix Multiplication 8×8  
SBMMT8D . Swapped Bit Matrix Multiplication Transposed 8×8  
SLLBOS ..... Shift Left Logical Byte Octuple by Scalar  
SLLD ..... Shift Left Logical Double Word  
SLLHQS .... Shift Left Logical Half Word Quadruple by Scalar  
SLLW ..... Shift Left Logical Word  
SLLWPS ..... Shift Left Logical Word Pair by Scalar  
SLSBOS ..... Shift Left Saturated Byte Octuple by Scalar  
SLSD ..... Shift Left Saturated Double Word  
SLSHQS .. Shift Left Saturated Half Word Quadruple by Scalar  
SLSW ..... Shift Left Saturated Word  
SLSWPS ..... Shift Left Saturated Word Pair by Scalar  
SLUSBOS Shift Left Unsigned Saturated Byte Octuple by Scalar  
SLUSD ..... Shift Left Unsigned Saturated Double Word  
SLUSHQS . Shift Left Unsigned Saturated Half Word Quadruple by Scalar  
SLUSW ..... Shift Left Unsigned Saturated Word  
SLUSWPS .. Shift Left Unsigned Saturated Word Pair by Scalar  
SRABOS ..... Shift Right Arithmetic Byte Octuple by Scalar  
SRAD ..... Shift Right Arithmetic Double Word  
SRAHQS Shift Right Arithmetic Half Word Quadruple by Scalar  
SRAW ..... Shift Right Arithmetic Word  
SRAWPS ..... Shift Right Arithmetic Word Pair by Scalar  
SRLBOS ..... Shift Right Logical Byte Octuple by Scalar  
SRLD ..... Shift Right Logical Double Word  
SRLHQS ... Shift Right Logical Half Word Quadruple by Scalar  
SRLW ..... Shift Right Logical Word  
SRLWPS ..... Shift Right Logical Word Pair by Scalar  
SRSBOS ..... Shift Right Symmetric Byte Octuple by Scalar  
SRSD ..... Shift Right Symmetric Double Word  
SRSHQS Shift Right Symmetric Half Word Quadruple by Scalar  
SRSW ..... Shift Right Symmetric Word  
SRSWPS ..... Shift Right Symmetric Word Pair by Scalar  
STSUD ..... Subtract, Test and Shift Unsigned Double Words  
STSUHQ ..... Subtract, Test and Shift Unsigned Half Word Quadruple  
STSUW ..... Subtract, Test and Shift Unsigned Word  
STSUWP ..... Subtract, Test and Shift Unsigned Word Pair  
SXLBHQ .... Sign Extend Least Significant Bytes to Half Word Quadruple  
SXLHWP Sign Extend Least Significant Half Words to Word Pair  
SXXMBHQ .... Sign Extend Most Significant Bytes to Half Word Quadruple  
SXXMHP Sign Extend Most Significant Half Words to Word Pair

XMOVETD ..... Move To Extension Double Word  
XMOVETQ ..... Move To Extension Quadruple Word  
XRECVO ..... Receive Extension Octuple Word from Channel  
XSEND ..... Send Extension Octuple Word to Channel  
XSENDRECVO ..... Send and Receive Octuple Word to/from Channels  
XSPLATDO ..... Move To Extension Double Word  
ZXLBHQ .... Zero Extend Least Significant Bytes to Half Word Quadruple  
ZXLHWP Zero Extend Least Significant Half Words to Word Pair  
ZXMBHQ .... Zero Extend Most Significant Bytes to Half Word Quadruple  
ZXMHP Zero Extend Most Significant Half Words to Word Pair

# MAU

CMULDT ..... Carryless Multiply Double Words to Tetra Word  
CMULGHXDT .. Carryless Multiply Galois High and Xor Double Words to Tetra Word  
CMULGLXDT ... Carryless Multiply Galois Low and Xor Double Words to Tetra Word  
CMULGMXDT .Carryless Multiply Galois Middle and Xor Double Words to Tetra Word  
CMULXDT .. Carryless Multiply and Xor Double Words to Tetra Word  
COPYQ ..... Copy Quadruple Word  
CRCBELLW ..... Cyclic Redundancy Check Big-Endian Least Significant with Least Significant Words  
CRCBELMW ..... Cyclic Redundancy Check Big-Endian Least Significant with Most Significant Words  
CRCLELLW ..... Cyclic Redundancy Check Little-Endian Least Significant with Least Significant Words  
CRCLELMW ..... Cyclic Redundancy Check Little-Endian Least Significant with Most Significant Words  
DOT2SUWD Dot product of 2x Signed by Unsigned Word Vectors into Double Word  
DOT2SUWDP .... Dot products of 2x Signed by Unsigned Word Vectors into Double Word Pair  
DOT2UWD .....Dot product of 2x Unsigned Word Vectors into Double Word  
DOT2UWDP ....Dot products of 2x Unsigned Word Vectors into Double Word Pair  
DOT2W ..... Dot product of 2x Word Vectors into Word  
DOT2WD ... Dot product of 2x Word Vectors into Double Word

DOT2WDP . Dot products of 2x Word Vectors into Double Word Pair  
DOT2WZP ....Dot products of 2x Word Vectors into Word Zero Extended Pair  
MADDD ..... Multiply-Add Double Word  
MADDDT ..... Multiply-Add Double to Tetra Word  
MADDHQ ..... Multiply-Add Half Word Quadruple  
MADDDHWQ ..... Multiply-Add Half Word to Word Quadruple  
MADDMWQ ..... Multiply-Add Most Significant Word Quadruple  
MADDSUDT . Multiply-Add Signed by Unsigned Double to Tetra Word  
MADDSUHWQ .. Multiply-Add Signed by Unsigned Half Word to Word Quadruple  
MADDSUMWQ Multiply-Add Signed by Unsigned Most Significant Word Quadruple  
MADDSUWD Multiply-Add Signed by Unsigned Words to Double Word  
MADDSUWDP .....Multiply-Add Signed by Unsigned Words to Double Word Pair  
MADDUDT ..... Multiply-Add Unsigned Double to Tetra Word  
MADDUHWQ ..... Multiply-Add Unsigned Half Word to Word Quadruple  
MADDUMWQ .... Multiply-Add Unsigned Most Significant Word Quadruple  
MADDUWD ..... Multiply-Add Unsigned Words to Double Word  
MADDUWDP Multiply-Add Unsigned Words to Double Word Pair  
MADDUZDT ..... Multiply-Add Unsigned Double to Tetra Word  
MADDW ..... Multiply-Add Words  
MADDWD ..... Multiply-Add Words to Double Word  
MADDWDP ..... Multiply-Add Words to Double Word Pair  
MADDWP ..... Multiply-Add Word Pair  
MADDWQ ..... Multiply-Add Word Quadruple  
MM212W ..... Matrix Multiply 2x1x2 Word Quadruple  
MMA212W ..... Matrix Multiply-Add 2x1x2 Word  
MMS212W ..... Matrix Multiply-Subtract 2x1x2 Word  
MSBFD ..... Multiply-Subtract Double Word  
MSBFDT ..... Multiply-Subtract Double to Tetra Word  
MSBFHQ ..... Multiply-Subtract Half Word Quadruple  
MSBFHWQ . Multiply-Subtract Half Word from Word Quadruple  
MSBFMWQ . Multiply-Subtract Most Significant Word Quadruple  
MSBFSUDT ... Multiply-Subtract Signed by Unsigned Double to Tetra Word  
MSBFSUHWQ . Multiply-Subtract Signed by Unsigned Half Word from Word Quadruple

MSBFSUMWQ ..... Multiply-Subtract Signed by Unsigned Most Significant Word Quadruple  
MSBFSUWD ... Multiply-Subtract Signed by Unsigned Words to Double Word  
MSBFSUWDP .. Multiply-Subtract Signed by Unsigned Words to Double Word Pair  
MSBFUDT .. Multiply-Subtract Unsigned Double to Tetra Word  
MSBFUHWQ . Multiply-Subtract Unsigned Half Word from Word Quadruple  
MSBFUMWQ . Multiply-Subtract Unsigned Most Significant Word Quadruple  
MSBFUWD . Multiply-Subtract Unsigned Words to Double Word  
MSBFUWDP Multiply-Subtract Unsigned Words to Double Word Pair  
MSBFUZDT .. Multiply-Subtract Unsigned Double to Quadruple Word  
MSBFW ..... Multiply-Subtract Words  
MSBFDW ..... Multiply-Subtract Words to Double Word  
MSBFDWP ..... Multiply-Subtract Words to Double Word Pair  
MSBFWP ..... Multiply-Subtract Word Pair  
MSBFWQ ..... Multiply-Subtract Word Quadruple  
MULD ..... Multiply Double Word  
MULDT ..... Multiply Double Word to Tetra Word  
MULHQ ..... Multiply Half Word Quadruple  
MULHWQ ..... Multiply Half Word to Word Quadruple  
MULMWQ ..... Multiply Most Significant Word Quadruple  
MULSUDT Multiply Signed by Unsigned Double Words to Tetra Word  
MULSUHWQ .. Multiply Signed by Unsigned Half Word to Word Quadruple  
MULSUMWQ Multiply Signed by Unsigned Most Significant Word Quadruple  
MULSUWD Multiply Signed by Unsigned Words to Double Word  
MULSUWDP Multiply Signed by Unsigned Words to Double Word Pair  
MULUDT ..... Multiply Unsigned Double Words to Tetra Word  
MULUHWQ ... Multiply Unsigned Half Word to Word Quadruple  
MULUMWQ Multiply Unsigned Most Significant Word Quadruple  
MULUWD ..... Multiply Unsigned Words to Double Word  
MULUWDP ..... Multiply Unsigned Words to Double Word Pair  
MULW ..... Multiply Words  
MULWD ..... Multiply Words to Double Word  
MULWDP ..... Multiply Words to Double Word Pair  
MULWP ..... Multiply Word Pair  
MULWQ ..... Multiply Word Quadruple

# FPU

FABSD ..... Floating-Point Absolute Value Double Word  
FABSHQ .. Floating-Point Absolute Value Half Word Quadruple  
FABSW ..... Floating-Point Absolute Value Word Pair  
FABSWP ..... Floating-Point Absolute Value Word Pair  
FADDD ..... Floating-Point Add Double Word  
FADDDC.C ..... Floating-Point Add Double Word Complex Conjugate  
FADDDP ..... Floating-Point Add Double Word Pair  
FADDHO ..... Floating-Point Add Half Word Octuple  
FADDHQ ..... Floating-Point Add Half Word Quadruple  
FADDW ..... Floating-Point Add Words  
FADDWC.C .... Floating-Point Add Word Complex Conjugate  
FADDWCP.C Floating-Point Add Word Complex Pair Conjugate  
FADDWP ..... Floating-Point Add Word Pair  
FADDWQ ..... Floating-Point Add Word Quadruple  
FCDIVD ..... Floating-Point Cases for Division Double Word  
FCDIVW ..... Floating-Point Cases for Word Division  
FCDIVWP ..... Floating-Point Cases for Division Word Pair  
FCOMPD ..... Floating-Point Compare Double  
FCOMPND ..... Floating-Point Compare Negate Double  
FCOMPNHQ ..... Floating-Point Compare Negate Half Word Quadruple  
FCOMPNW ..... Floating-Point Compare Negate Single  
FCOMPNWP ..... Floating-Point Compare Negate Word Pair  
FCOMPW ..... Floating-Point Compare Single  
FDOT2W ..... Floating-Point Dot Product x2 Word  
FDOT2WD Floating-Point Dot Product x2 Word to Double Word  
FDOT2WDP .... Floating-Point Dot Product x2 Word to Double Word Pair  
FDOT2WZP Floating-Point Dot Product x2 Word Zero Extended Pair  
FFDMASW ... Floating-Point Fused Dual Multiply Add Subtract Word  
FFDMASWP .. Floating-Point Fused Dual Multiply Add Subtract Word pair  
FFDMASWQ .. Floating-Point Fused Dual Multiply Add Subtract Word Quadruple  
FFDMAW ..... Floating-Point Fused Dual Multiply Add Word  
FFDMAWP . Floating-Point Fused Dual Multiply Add Word Pair  
FFDMAWQ ..... Floating-Point Fused Dual Multiply Add Word Quadruple

FFDMDAW . Floating-Point Fused Dual Multiply Dual Add Word  
FFDMDAWP Floating-Point Fused Dual Multiply Dual Add Word Pair  
FFDMDAWQ Floating-Point Fused Dual Multiply Dual Add Word Quadruple  
FFDMDSW .. Floating-Point Fused Dual Multiply Dual Subtract Word  
FFDMDSWP . Floating-Point Fused Dual Multiply Dual Subtract Word Pair  
FFDMDSWQ . Floating-Point Fused Dual Multiply Dual Subtract Word Quadruple  
FFDMSAW ... Floating-Point Fused Dual Multiply Subtract Add Word  
FFDMSAWP .. Floating-Point Fused Dual Multiply Subtract Add Word Pair  
FFDMSAWQ .. Floating-Point Fused Dual Multiply Subtract Add Word Quadruple  
FFDMSW ... Floating-Point Fused Dual Multiply Subtract Word  
FFDMSWP .. Floating-Point Fused Dual Multiply Subtract Word Pair  
FFDMSWQ .. Floating-Point Fused Dual Multiply Subtract Word Quadruple  
FFMAD ..... Floating-Point Fused Multiply-Add Double  
FFMAHO Floating-Point Fused Multiply-Add Half Word Octuple  
FFMAHQ ..... Floating-Point Fused Multiply-Add Half Word Quadruple  
FFMAHW .... Floating-Point Fused Multiply-Add Half Words to Word  
FFMAHWQ ... Floating-Point Fused Multiply-Add Half Words to Word Quadruple  
FFMAW ..... Floating-Point Fused Multiply-Add Words  
FFMAWC ..... Floating-Point Multiply Add Word Complex  
FFMAWCP ... Floating-Point Multiply Add Word Complex Pair  
FFMAWD .. Floating-Point Fused Multiply-Add Words to Double Word  
FFMAWDP Floating-Point Fused Multiply-Add Words to Double Word Pair  
FFMAWP ..... Floating-Point Fused Multiply-Add Word Pair  
FFMAWQ .. Floating-Point Fused Multiply-Add Word Quadruple  
FFMSD ..... Floating-Point Fused Multiply-Subtract Double  
FFMSHO ... Floating-Point Fused Multiply-Subtract Half Word Octuple  
FFMSHQ ... Floating-Point Fused Multiply-Subtract Half Word Quadruple

FFMSHW Floating-Point Fused Multiply-Subtract Half Words to Word  
FFMSHWQ .. Floating-Point Fused Multiply-Subtract Half Words to Word Quadruple  
FFMSW ..... Floating-Point Fused Multiply-Subtract Words  
FFMSWC .... Floating-Point Multiply Subtract Word Complex  
FFMSWCP Floating-Point Multiply Subtract Word Complex Pair  
FFMSWD .... Floating-Point Fused Multiply-Subtract Words to Double Word  
FFMSWDP ... Floating-Point Fused Multiply-Subtract Words to Double Word Pair  
FFMSWP ... Floating-Point Fused Multiply-Subtract Word Pair  
FFMSWQ ..... Floating-Point Fused Multiply-Subtract Word Quadruple  
FIXEDD .... Floating Point Conversion to Fixed-Point Double  
FIXEDUD .. Floating Point Conversion to Unsigned Fixed-Point Double  
FIXEDUW .. Floating Point Conversion to Unsigned Fixed-Point  
FIXEDUWP . Floating Point Conversion to Unsigned Fixed-Point Word Pair  
FIXEDW ..... Floating Point Conversion to Fixed-Point  
FIXEDWP . Floating Point Conversion to Fixed-Point Word Pair  
FLOATD ... Floating Point Conversion from Fixed-Point Double  
FLOATUD Floating Point Conversion from Unsigned Fixed-Point Double  
FLOATUW Floating Point Conversion from Unsigned Fixed-Point  
FLOATUWP ..... Floating Point Conversion from Unsigned Fixed-Point Word Pair  
FLOATW ..... Floating Point Conversion from Fixed-Point  
FLOATWP ... Floating Point Conversion from Fixed-Point Word Pair  
FMAXD ..... Floating-Point Maximum Double Word  
FMAXHQ ..... Floating-Point Maximum Half Word Quadruple  
FMAXW ..... Floating-Point Maximum Word  
FMAXWP ..... Floating-Point Maximum Word Pair  
FMIND ..... Floating-Point Minimum Double Word  
FMINHQ ..... Floating-Point Minimum Half Word Quadruple  
FMINW ..... Floating-Point Minimum Word  
FMINWP ..... Floating-Point Minimum Word Pair  
FMM212W ..... Floating-Point Matrix Multiply 2x1x2 Word  
FMM222W ..... Floating-Point Matrix Multiply 2x2x2 Word  
FMMA212W .. Floating-Point Matrix Multiply Add 2x1x2 Word  
FMMA222W .. Floating-Point Matrix Multiply Add 2x2x2 Word  
FMMS212W .... Floating-Point Matrix Multiply Subtract 2x1x2 Word

FMMS222W . . . . Floating-Point Matrix Multiply Subtract 2x2x2 Word  
FMULD . . . . . Floating-Point Multiply Double Word  
FMULHO . . . . . Floating-Point Multiply Half Word Octuple  
FMULHQ . . . . . Floating-Point Multiply Half Word Quadruple  
FMULHW . . . . . Floating-Point Multiply Half Words to Word  
FMULHWQ . . . . . Floating-Point Multiply Half Word to Word Quadruple  
FMULW . . . . . Floating-Point Multiply Words  
FMULWC . . . . . Floating-Point Multiply Word Complex  
FMULWCP . . . . . Floating-Point Multiply Word Complex Pair  
FMULWD . . . . . Floating-Point Multiply Words to Double Word  
FMULWDP . Floating-Point Multiply Word to Double Word Pair  
FMULWP . . . . . Floating-Point Multiply Word Pair  
FMULWQ . . . . . Floating-Point Multiply Word Quadruple  
FNARROWDW . . . . Floating Point Narrow Double Word to Word  
FNARROWDWP . . . . Floating Point Narrow Double to Word Pair  
FNARROWWH . . . . . Floating Point Narrow Word to Half Word  
FNARROWWHQ . . . . . Floating Point Narrow Word to Half Word Quadruple  
FNEGd . . . . . Floating-Point Negate Double Word  
FNEGHQ . . . . . Floating-Point Negate Half Word Quadruple  
FNEGw . . . . . Floating-Point Negate Word  
FNEGWP . . . . . Floating-Point Negate Word Pair  
FRECW . . . . . Floating-Point Reciprocal of Word  
FRSRW . . . . . Floating-Point Reciprocal of Square Root Word  
FSBFD . . . . . Floating-Point Subtract From Double Word  
FSBFDC.C . . . . . Floating-Point Subtract From Double Word Complex Conjugate  
FSBFDP . . . Floating-Point Subtract Word to Double Word Pair  
FSBFHO . . . . Floating-Point Subtract From Half Word Octuple  
FSBFHQ . . Floating-Point Subtract From Half Word Quadruple  
FSBFW . . . . . Floating-Point Subtract From Words  
FSBFWC.C . . . . Floating-Point Subtract From Word Complex Conjugate  
FSBFWCP.C Floating-Point Subtract From Word Complex Pair Conjugate  
FSBFWP . . . . . Floating-Point Subtract From Word Pair  
FSBFWQ . . . . . Floating-Point Subtract From Word Quadruple  
FSDIVD . . . . . Floating-Point Seed for Division Double Word  
FSDIVW . . . . . Floating-Point Seed for Word Division  
FSDIVWP . . . . . Floating-Point Seed for Division Word Pair  
FSRECD . . . . . Floating-Point Seed for Reciprocal Double Word  
FSRECW . . . . . Floating-Point Seed for Reciprocal Word  
FSRECWP . . . . Floating-Point Seed for Reciprocal on Word Pair

FSRSRD Floating-Point Seed for Reciprocal Square Root Double Word  
FSRSRW . . . . . Floating-Point Seed for Reciprocal Square Root  
FSRSRWP . . Floating-Point Seed for Reciprocal Square Root on Word Pair  
FWIDENLHW Floating Point Widen Least Significant Half Word to Word  
FWIDENLHWP . . . . Floating Point Widen Least Significant Half Words to Word Pair  
FWIDENLWD . . Floating Point Widen Least Significant Word to Double  
FWIDENMHW . Floating Point Widen Most Significant Half Word to Word  
FWIDENMHWp . . . . Floating Point Widen Most Significant Half Words to Word Pair  
FWIDENMWD . . . Floating Point Widen Most Significant Word to Double

# EXT

XANDNO Bitwise And with Not Operand Between Octuple Words  
XANDO . . . . . Bitwise And Between Octuple Words  
XCLAMPWO . . . . . Clamp Word Octuple  
XCOPYO . . . . . Copy Extension Octuple Word  
XCOPYV . . . . . Copy Word Vector  
XCOPYX . . . . . Copy Word Hexadecuple  
XEORO . . . . . Bitwise Exclusive Or Between Octuple Words  
XFFMA44HW . . . . Floating-Point Fused Multiply-Add 4x4 Half Words to Words  
XFMAXHX . . . Floating-Point Maximum Half Word Hexadecuple  
XFMINHX . . . Floating-Point Minimum Half Word Hexadecuple  
XFMMA484HW . Floating-Point Matrix Multiply-Add 4x8x4 Half Words to Words  
XFNARROW44WH . . . Floating Point Narrow 4x4 Matrix Word to Half Word  
XFSCALEWO . . . . . Floating Point Scale Word Vector  
XIORNO Bitwise Or with Not Operand Between Octuple Words  
XIORO . . . . . Bitwise Or Between Octuple Words  
XMADD44BW0 . . . . . Multiply Add 4x4 Matrix Byte to Word 0  
XMADD44BW1 . . . . . Multiply Add 4x4 Matrix Byte to Word 1  
XMADDIFWO Multiply Add Integer Floating Point Word Octuple  
XMADDSU44BW0 Multiply-Add Signed by Unsigned 4x4 Matrix Byte to Word 0

XMADDSU44BW1 Multiply-Add Signed by Unsigned 4x4 Matrix Byte to Word 1  
XMADDU44BW0 . . . . Multiply-Add Unsigned 4x4 Matrix Byte to Word 0  
XMADDU44BW1 . . . . Multiply-Add Unsigned 4x4 Matrix Byte to Word 1  
XMAA4164BW . . . Matrix Multiply-Add 4x16x4 Bytes to Words  
XMAA484BW . . . Extension Matrix Multiply-Add 4x8x4 Bytes to Words  
XMMASU4164BW . . . . . Matrix Multiply-Add 4x16x4 Signed by Unsigned Bytes to Words  
XMMASU484BW Matrix Multiply-Add 4x8x4 Signed by Unsigned Bytes to Words  
XMAAU4164BW . . . . . Matrix Multiply-Add 4x16x4 Unsigned by Unsigned Bytes to Words  
XMAAU484BW . . . . . Matrix Multiply-Add 4x8x4 Unsigned by Unsigned Bytes to Words  
XMAAUS4164BW . . . . Matrix Multiply-Add 4x16x4 Unsigned by Signed Bytes to Words  
XMAAUS484BW Matrix Multiply-Add 4x8x4 Unsigned by Signed Bytes to Words  
XMOVEFD . . . . . Move From Extension Double Word  
XMOVEFO . . . . . Move From Extension Octuple Word  
XMOVEFQ . . . . . Move From Extension Quadruple Word  
XMSBFIFWO . . . Multiply Subtract Integer Floating Point Word Octuple  
XNANDO . . . . . Bitwise Not And Between Octuple Words  
XNEORO . . . . Bitwise Not Exclusive Or Between Octuple Words  
XNIORO . . . . . Bitwise Not Or Between Octuple Words  
XSBMM8DQ . . . Swapped Bit Matrix Multiplication 8×8 Double Quadruple  
XSBMMT8DQ . . Swapped Bit Matrix Multiplication 8×8 Double Quadruple  
XSPLATOV . . . . . Splat Word Octuple to Vector  
XSPLATOX . . . . . Splat Word Octuple to Hexadecuple  
XSX48BW . . . . . Sign Extend 4x8 Matrix Byte to Word  
XTRUNC48WB . . . . . Truncate 4x8 Matrix Word to Byte  
XZX48BW . . . . . Zero Extend 4x8 Matrix Byte to Word