

Bit number				31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID				A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Reset 0x00000000				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ID	R/W	Field	Value ID	Value				Description																											
A	RW	VAL						Machine Scratch value																											

8.26.3.7 MEPC

Address offset: 0x341

Machine Exception Program Counter

When a trap is taken into M-mode, mepc is written with the virtual address of the instruction that was interrupted or that encountered the exception. Otherwise, mepc is never written by the implementation, though it may be explicitly written by software

Bit number				31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0																															
ID				A A																															
Reset 0x00000000				0 0																															
ID	R/W	Field	Value ID	Value																Description															
A	RW	VAL		Machine Exception Program Counter value																															

8.26.3.8 MCAUSE

Address offset: 0x342

Machine Cause

When a trap is taken into M-mode, mcause is written with a code indicating the event that caused the trap. Otherwise, mcause is never written by the implementation, though it may be explicitly written by software.

Bit number					31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID					F	E	D	D	C				B	B	B	B	B	B	B					A	A	A	A	A	A	A	A	A	A	A	A	
Reset 0x30000000					0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ID	R/W	Field	Value ID	Value	Description																															
A	RW	EXCEPTIONCODE			Exception code																															

See RISC-V Instruction Set Manual Volume II: Privileged Architecture for details on the exception codes. Exception codes listed here only apply if the trap is not caused by an interrupt (Interrupt bitfield set to 0)

INSTADDRMISALIGN	0x0	Instruction Address Misaligned
INSTACCESSFAULT	0x1	Instruction Access Fault
ILLEGALINST	0x2	Illegal Instruction
BKPT	0x3	Breakpoint
LOADADDRMISALIGN	0x4	Load Address Misaligned
LOADACCESSFAULT	0x5	Load Access Fault
STOREADDRMISALIGN	0x6	Store/AMO Address Misaligned
STOREACCESSFAULT	0x7	Store/AMO Access Fault
ECALLMMODE	0xB	Environment Call M-Mode
MISALIGNSTACKING	0x18	Misaligned Stacking
BUSFAULTSTACKING	0x19	Bus Fault on Stacking
INTVECTORFAULT	0x1A	Interrupt Vector Fault
MISALIGNUNSTACKING	0x1B	Misaligned Unstacking
BUSFAULTUNSTACKING	0x1C	Bus Fault on Unstacking
STORETIMEOUTFAULT	0x1D	Store Timeout Fault