

8.3.8 Pi

$$\pi = 0.f * 2^2 \quad \text{where } f = \text{C90FDAA2 2168C234 C} \leftarrow \text{mantissa}$$

$$\rightarrow 12 \times 16^{-1} + 9 \times 16^{-2} + 15 \times 16^{-4} + 13 \times 16^{-5} + 10 \times 16^{-6} + 10 \times 16^{-7} + 2 \times 16^{-8}$$

$$\frac{\pi}{4} \rightarrow 0.785398163$$

2168C234 C (36-bit)

0010 0001 0110 1000 1100 0010 0011 0100 1100
 ↑ 4 ↑ 1 ↑↑ 1 ↑ 3 ↑↑ 4 1 3 ↑↑ 1 ↑ 2 ↑↑

42D18469 8 (36-bit)

0100 0010 1101 0001 1000 0100 0110 1001 1000
 ↑ 4 ↑ 1 ↑↑ 1 ↑ 3 ↑ 4 ↑ 3 ↑↑ 1 ↑ 2 ↑ ↑

$$\text{high } \pi = 0.\text{C90FDAA2} \cdot 2^{+2}$$

33-bit

$$\text{low } \pi = 0.42D184698 \cdot 2^{-31} \leftarrow +2-33$$

8.3.6 Comparison and Classification Instructions

Condition	ZF/C3	PF/C2	CF/C0	Mask	Branch
ST > ST(i)	0	0	0	4500H	JZ
ST = ST(i)	0	0	1	0100H	JNZ
ST < ST(i)	1	0	0	4000H	JNZ
Unordered	1	1	1	0400H	JNZ

15 14 13 10 9 8 7
 C3 C2 C1 C0

0 0 0 0 0 0 0 & 0100 0101 → 0000 0000

0 0 0 0 0 0 1 & 0000 0001 → 0000 0001

0 1 0 0 0 0 0 & 0100 0000 → 0100 0000

0 1 0 0 0 1 0 & 0000 0100 → 0000 0100

→ Not jump when the same!

8.1.4 x87 FPU Control Word

037F

64-bit PM OM DM
 0000 0011 0111 1111
 ↑ X ↑ RC PC ↑ UM ↑ ZM IM

where FLD is not affected by PC