26) **math coprocessor data transfer and constant load instructions**

LOAD instructions

**FILD adr** - Loads on the stack the integer variable located at address „adr”. The variable stored in

memory of type DB, DW, or DD is converted to the coprocessor’s internal format.

**FLD adr** - Loads on the stack the real variable (long or short) located at address „adr”. The variable

stored in memory of type DD, DQ, or DT is converted to the coprocessor’s internal format.

**FBLD adr** - Loads on the stack the packed decimal variable located at address „adr”. The variable

stored in memory of type DT is converted to the coprocessor’s internal format.

STORE instructions

**FIST adr** -Stores at the address „adr” the value located on top of the stack (ST (0)) as a number. The

stored value can be only an integer represented on one byte or a short integer, corresponding to the

8 data stored at address „adr” (DW or DD). The stack pointer remains unchanged after the data is

stored. The conversion is done during the store process.

**FISTP adr** - Stores at the address „adr” the value located on top of the stack (ST (0)) as an integer

number. The stored value can be any integer (byte integer, short integer, long integer) corresponding

to the data stored at address „adr” (DW, DD or DQ). The conversion is done during the store process.

The instruction changes the stack: ST (0) is popped and the stack pointer is decremented.

**FST adr** - Stores at the address „adr” the value located on top of the stack (ST (0)) as an integer

number. The stored value can be either a short integer or a double precision, corresponding to

the data stored at address „adr” (DD or DQ). The stack pointer and the data on the stack remain

unchanged after the data is stored. The conversion is done during the store process.

**FSTP adr** - Stores at the address „adr” the value located on top of the stack (ST (0)) as a floating

point number. The value can be a short real with double or extended precision, corresponding to the

data stored at address „adr” (DD, DQ or DT). The conversion is done during the store process. The

instruction changes the stack: ST (0) is popped and the stack pointer is decremented.

**FBSTP adr** - Stores at the address „adr” the value located on top of the stack (ST (0)) as a packed

decimal number (defined at “adr” with DT). The stack pointer is decremented. The conversion

is done during the store process. Internal data transfer instructions

**FLD** ST (i) - Puts the value from ST (i) on top of the stack. Thus the value from ST (i) will be found

twice: in ST (0) and ST (i+1).

**FST** ST (i) - The value from ST (0) is copied in the stack’s “ith” position. The old ST (i) is lost.

**FSTP** ST (i) - The value from ST (0) is copied in the stack’s “ith” position. The old ST (i) is lost. ST

(0) is popped, the stack pointer is decremented.

**FXCH** ST (i) - swaps ST (0) and ST (i).

Constants loading instruction

**FLDZ -** Loads 0 in the top of the stack

**FLD1 -** Loads 1.0 in the top of the stack

**FLDPI –** Loads (‘pi’) in the top of the stack

**FLDL2T** - Loads log210 in the top of the stack

**FLDL2E -** Loads log2e in the top of the stack

**FLDLG2 -** Loads log102 in the top of the stack

**FLDLN2** - Loads ln(2) in the top of the stack