Users can set input filter functions on X0~X17 one by one.

Hardware Filter
M1630, M1631
D1970~D1985

1. EH3/SV2 supports new hardware filter functions:

Series	Firmware Version
EH3 all series	
28SV2 series	V2.06
24SV2 series	

2. M1630 is for enabling (ON) the filter function on X0~X17 individually.
   M1631 is for disabling (OFF) the filter function on X0~X17 individually. The PLC will clear the flags automatically, after the setup.

3. X0~X7 input points: setting up the responding time for the input filter and storing the settings in D1970~1977.
   X10~X17 input points: setting up the responding time for the input filter and storing the settings in D1978~1985. Setting unit is μs, in the range of 0~20,000.

4. Users need to set M1631 again after any filter time change set in D1970~1985 and then the filter time will be updated on the PLC.

New functions/descriptions are added in the instruction REF (written in italics below).

API						Applicable Series			
50	**REF** P	D n	I/O Refresh			ES/EX/SS	SA/SX/SC	EH/SV	EH3 SV2
						✓	✓	✓	✓

	Bit Devices				Word Devices											
	X	Y	M	S	K	H	Kn X	Kn Y	Kn M	Kn S	T	C	D	E	F	
D	∗	∗														
n					∗	∗										

Explanations: **D** must designate X0, X10, Y0, Y10…the points whose 1s digit is "0". See remarks for more details.
● Range of **n**: 8 ~ 256 (has to be the multiple of 8).
● See the specifications of each model for their range of use.

16-bit (5 STEP)
REF — Continuous type   REFP — Pulse type

32-bit
- - - -

• Flags: None

		PULSE										16-bit											32-bit							
ES	EX	SS	SA	SX	SC	EH	SV	EH3 SV2	ES	EX	SS	SA	SX	SC	EH	SV	EH3 SV2	ES	EX	SS	SA	SX	SC	EH	SV	EH3 SV2

Operands:
D: Start device to be I/O refreshed   **n**: Number of items to be I/O refreshed

Explanations:
1. The status of all PLC input/output terminals will be updated after the program scans to END. When the program starts to scan, the status of the external input terminal is read and stored into the memory of the input point. The output terminal will send the content in the output memory to the output device after END instruction is executed. Therefore, this instruction is applicable when the latest input/output data are needed for the operation.
2. **D** has to be designated to be X0, X10, Y0, Y10…such forms whose 1st digit is "0". Range of **n**: 8 ~ 256 (must be 8's multiple); otherwise it will be regarded as an error. The range varies in different models. See Remarks for more details.

◆ *For EH3/SV2 with V2.06, the positions of the high-speed outputs can be updated immediately.*

Outputs	Y0	Y2	Y4	Y6
Flags to update the positons of the high-speed outputs	*M1640*	*M1641*	*M1642*	*M1643*
Devices to store the current positions of the high-speed outputs	*D1336/D1337*	*D1338/D1339*	*D1375/D1376*	*D1377/D1378*

A. The current positions of the pulse outputs will be updated only when the PLC execute the high-speed instructions.

B. Use the flags M1640~1643 to work with the instruction REF to update the current positions of the pulse outputs immediately. No need to use the high-speed instructions.
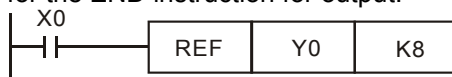
Program Example 1:
When X0 = On, PLC will read the status of input points X0 ~ X17 immediately and refresh the input signals without any input delay.
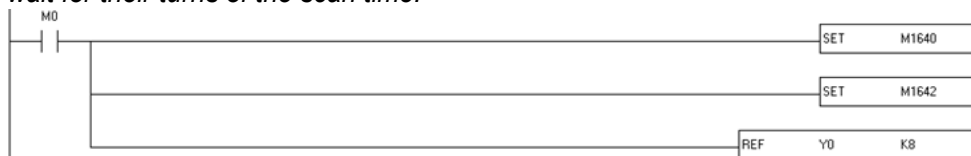
```
 X0
─┤├──────[ REF │ X0 │ K16 ]
```

Program Example 2:
When X0 = On, the 8 output signal from Y0 ~ Y7 will be sent to output terminals and refreshed without having to wait for the END instruction for output.

```
 X0
─┤├──────[ REF │ Y0 │ K8 ]
```

Program Example 3:
When M0 = On, the pulse positions stored in D1336/D1337, D1375/D1376 will be refreshed constantly; no need to wait for their turns of the scan time.

```
 M0
─┤├─────────────────────────────────[ SET  M1640 ]
    │
    ├────────────────────────────────[ SET  M1642 ]
    │
    └──────────────────────────[ REF  Y0  K8 ]
```

Remarks:
The instruction only process the I/O points X0 ~ X17 and Y0 ~ Y17 of ES/EX/SS/SA/SX/SC series CPU, namely **n** = K8 or **n** = K16.