How to use I-8084W (4 / 8 – Ch. Counter or 8-Ch. frequency)?

Download FAQ-100 Demo

I-8084W is a Frequency / Counter input card released around Q1, 2009. The major difference between the I-8084W and the I-8080 is listed following.

- The frequency input update rate of the I-8084W (Max. 450 KHz) is much faster than the I-8080. I-8084W update its frequency-input value once about 4 input signal cycle time. For example, if the frequency-input is 1 KHz, then its frequency-reading value will update about every 4 ms. (0.004 second). If the frequency-input is 10KHz, then its frequency-reading value will update about every 0.4 ms. If the frequency input is 100Hz, then its frequency-reading value will update about every 40 ms. (Note: The real frequency update time should also depend on the ISaGRAF PLC scan time. For ex, if the frequency-input is 1 KHz, then its value update time is about 4ms. However if the PLC scan time of the user's ISaGRAF program is 10 ms, then the real frequency update time is 10 ms. Because 10 ms > 4 ms).
- The Counter mode of I-8084W (Max. 450 KHz) supports Dir / Pulse, Up / Down, UP count, plus extra A/B phase (Quadrant mode). The I-8080 doesn't have this A/B phase (Quadrant mode)
- I-8084W can also measure 4-Channel Encoder (Max. 450 KHz). It supports A/B phase (Quadrant mode), Dir / Pulse, Up / Down. The value is ranging from -2,147,483,648 to +2,147,483,647

I-87084W (is released around Oct.2010) has similar functions as the I-8084W.

The following ICP DAS ISaGRAF controllers support I-8084W.

- iPAC-8447 / 8847
- WinPAC-8147 / 8447 / 8847, WinPAC-8146 / 8446 / 8846, XP-8xx7-CE6
- VP-25W7/23W7, VP-25W6/23W6
- Wincon-8x37 / 8x36 (since its ISaGRAF driver ver. 4.07)
- Wincon-8x47 / 8x46 (since its ISaGRAF driver ver. 4.07)

The following ICP DAS ISaGRAF controllers support I-87084W.

XP-8xx7-CE6 (driver 1.07 or later)
WP-8xx7-CE6 (driver 1.28 or later)
VP-2xW7 (driver 1.19 or later)
iP-8xx7 (driver 1.09 or later)
uPAC-7186EG (driver 1.12 or later)

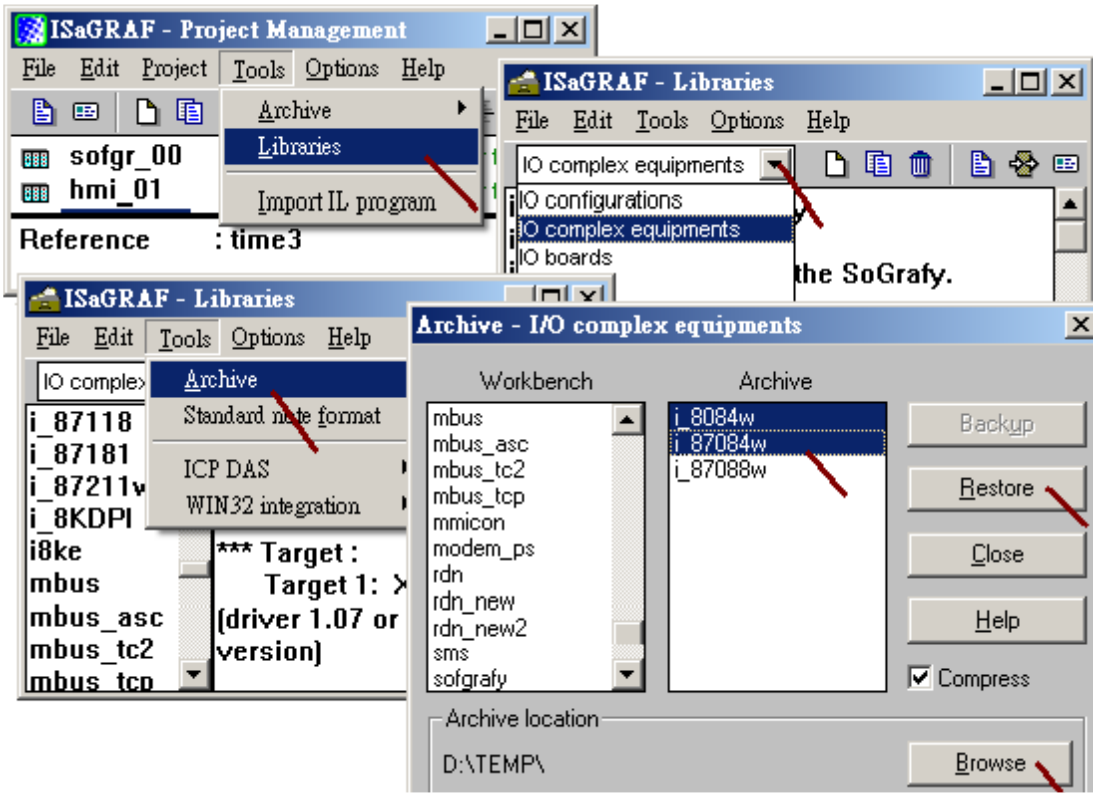
I-8084W and I-87084W can measure “8-Ch. Up Counter” or “4-Ch. Dir/Pulse Counter / Encoder” or “4-Ch. Up/Down Counter / Encoder” or “4-Ch. A/B phase Counter / Encoder”. It also can measure “8-Ch. Frequency inputs”
http://www.icpdas.com/en/product/guide+Remote__I_O__Module__and__Unit+PAC__%EF%BC%86amp;__Local__I_O__Modules+I-8K_I-87K__Series__(High__Profile)#482 > I-8084W and I-87084W

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If there is no “i_8084w” or “i_87084w” found in your ISaGRAF IO connection windows, please visit below address to get the “i_8084w.xia”, “i_87084w.xia” and “i_87084.fia”.

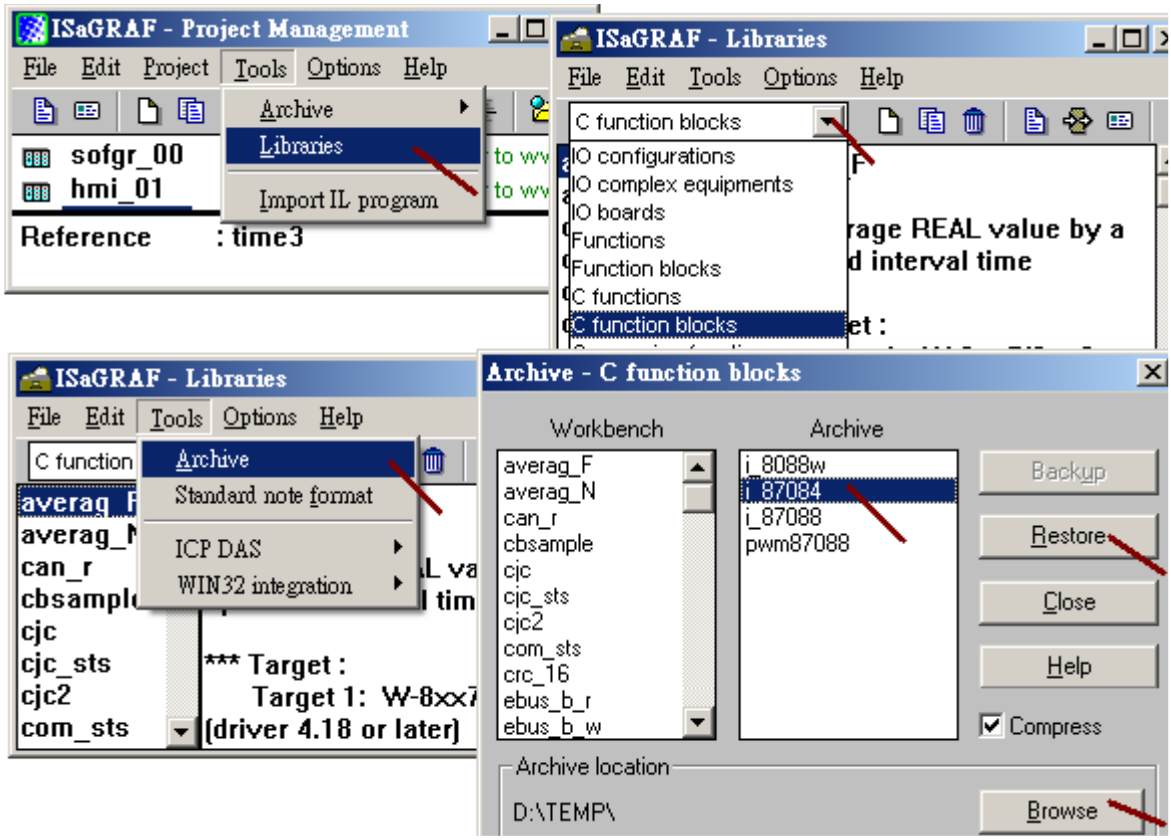
- http://www.icpdas.com/en/download/show.php?num=368&nation=US&kind1=&model=&kw=isagraf
- http://www.icpdas.com/web/product/download/software/development_tool/isagraf/document/faq/faq100_demo.zip or
- http://www.icpdas.com/en/faq/index.php?kind=280#751 > FAQ-100)

Then restoring the IO complex equipment “i_8084w.xia” and “i_87084w.xia” to your PC / ISaGRAF.



And restoring the c-function block - “i_87084.fia”to your PC / ISaGRAF.

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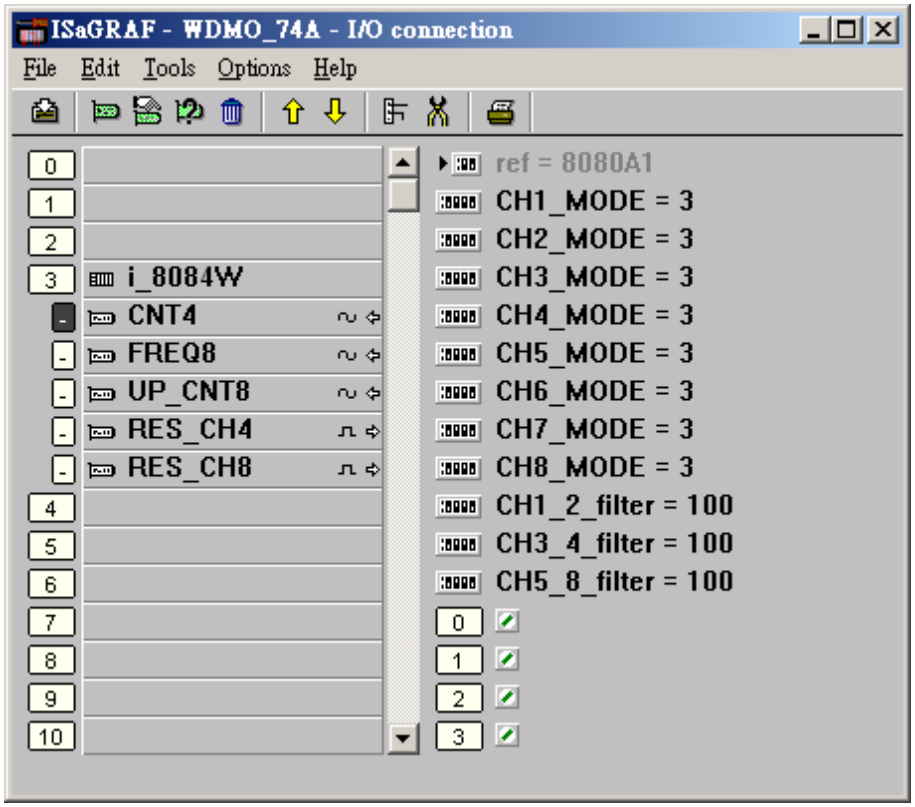


1.1: Using the I-8084W and I-87084W in slot No. 0 to 7 of the PAC

Please refer to section 1.2 if using the I-87084w as RS-485 remote I/O.

To use the I-8084W (or I-87084W) in slot 0 to 7, please connect “i_8084W”(“i_87084w”) in the proper slot number.

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The default "CHx_x_filter" setting is 0. It is for filtering, the input signal with smaller time-width (that is, larger input frequency) will be filtered out. (Can be 0, 1 to 32767, unit is 0.001 ms)

Please set a proper filter value according to the physical input signal.

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Max. allowed input signal (Hz)	CHx_x_filter value
0 ~ 0.1K	2000
0 ~ 0.25K	800
0 ~ 0.5K	400
0 ~ 1K	200
0 ~ 2K	100
2K ~ 5K	40
5K ~ 10K	20
10K ~ 20K	10
20K ~ 100K	2
100K ~ 450K	1
0 ~ 450K	**0 (means the filter is disabled)**

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CH1_2_filter: for Ch.1 and Ch.2 of “8-Ch. Up Counter” and “8-Ch. Frequency” or
Ch.1 of “4-Ch. Dir/Pulse Counter” and “4-Ch. Up/Down Counter” and
“4-Ch. A/B phase (Quadrant) Counter“

CH3_4_filter: for Ch.3 and Ch.4 of “8-Ch. Up Counter” or “8-Ch. Frequency” or
Ch.2 of “4-Ch. Dir/Pulse Counter” and “4-Ch. Up/Down Counter” and
“4-Ch. A/B phase (Quadrant) Counter”

CH5_8_filter: for Ch.5, 6, 7, 8 of “8-Ch. Up Counter” and “8-Ch. Frequency” or
Ch.3 and Ch.4 of “4-Ch. Dir/Pulse Counter” and “4-Ch. Up/Down Counter” and
“4-Ch. A/B phase (Quadrant) Counter”

The “CHx_MODE” setting is to set the signal input type of each channel as below.

“CH1_MODE”to “CH8_MODE”is for Ch.1 to Ch.8 of “8-Ch Up Counter” and “8-Ch Frequency”.

If setting as “4-Ch. DIR / Pulse Counter” or “4-Ch. Up / Down Counter” or “4-Ch. A/B phase (Quadrant mode) Counter” mode,

CH1_MODE and CH2_MODE must set as the same value. It is for Ch1.
CH3_MODE and CH4_MODE must set as the same value. It is for Ch2.
CH5_MODE and CH6_MODE must set as the same value. It is for Ch3.
CH7_MODE and CH8_MODE must set as the same value. It is for Ch4.

For example,
1. if setting CH1_MODE as 4: “A/B phase “(4-Ch), then CH2_MODE should be also set as 4.
2. if setting CH1_MODE as 3: “Up Count”(8-Ch), then CH2_MODE can be set as 83, 2, or 82

Below value is for Counter input type.

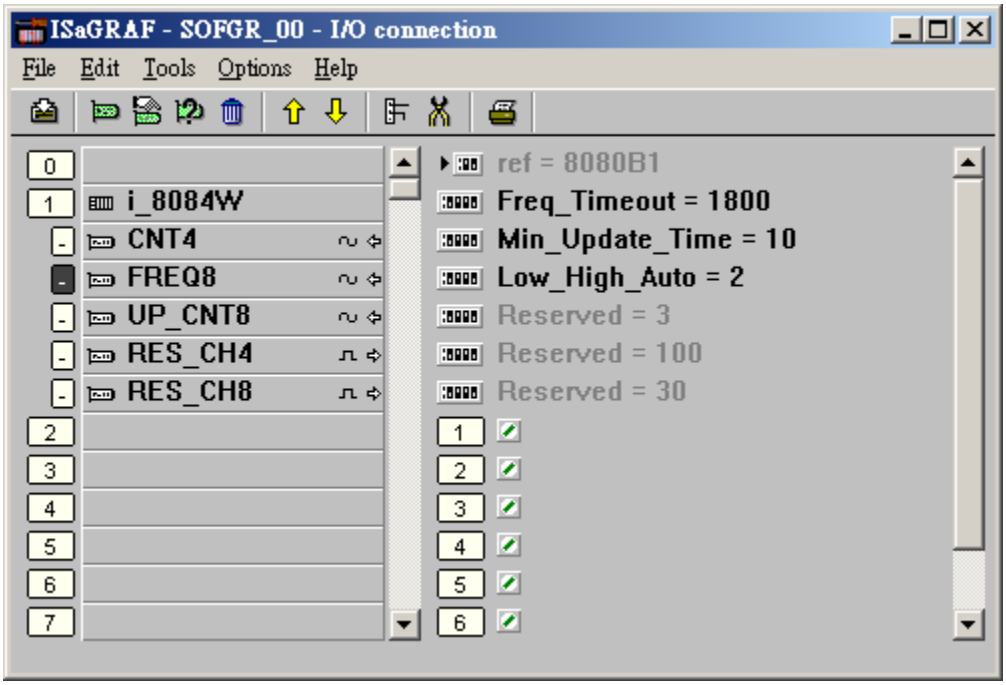
I-8084W Chx_Mode setting	I-87084W Chx_Mode setting	Description
0	55	Dir / Pulse (4-Ch.)
1	54	Up / Down (4-Ch.)
3	50	Up Count (8-Ch.)
4	56	A/B phase (Quadrant mode) (4-Ch)
80	N/A	Dir / Pulse (4-Ch. Inverse input signal)
81	N/A	Up/Down (4-Ch. Inverse input signal)
83	N/A	Up Count (8-Ch. Inverse input signal)
84	N/A	A/B phase (Quadrant mode) (4-Ch. Inverse input signal)

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Below values is for Frequency input type.

I-8084W Chx_Mode setting	I-87084W Chx_Mode setting	Description
2	51	Frequency (8-Ch)
82	N/A	Frequency (8-Ch. Inverse input signal)

The “Freq_Timeout” set the frequency timeout interval for measuring the 0Hz frequency. If there is no signal wave input to the related channel in this “Freq_Timeout” time, the frequency is updated as 0.



Note:

1. “DIR / Pulse” mode and “Up / Down Counter” mode and “A/B phase (Quadrant)”mode are similar as Encoder Input. The Counter value should be controlled in between -2,147,483,648 to 2,147,483,647. Or it will be overflow.

2. The input value of “Up Counter” mode is a 32-bit integer. It starts at 0, then increasing by the signal input, 1, 2, … to max. value of +2,147,483,647, then if one more signal input, the value will suddenly drop to -2,147,483,648. Then increasing … to -2, -1, 0, 1, 2, … to +2,147,483,647.
The ISaGRAF integer value is a signed 32-bit integer, it can not get a positive value larger than +2,147,483,647.

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If user apply SCADA software which can handle unsigned 32-bit integer, then the value displayed in the SCADA software can be 0, 1, …, +2147483647, +2147483648, +2147483649, …, +4294967295, then back to 0, 1, …

For example, setting "Freq_Timeout" as 100 ms. If no signal wave input to the related channel in every 100 ms, the frequency value will be updated as 0. This also means the frequency value under 10Hz is not detectable. However it make sure the frequency update time is no longer than 100 ms even the input is 0 Hz.

If setting as 1800, then when frequency input is a low value like 0 Hz, or close to 1 Hz, the max. update time will be 1.8 second. However the frequency input of 0 and 1 to 10 Hz and..., 1K, 2K,... are detectable.

Note: The larger frequency input, the fater update rate. The 0Hz frequency input will be updated until the "Freq_Timeout" time elapse.

Low_High_Auto: Recommed to set as 2: Auto (0: low-freq. Mode, 1: high-freq. Mode)

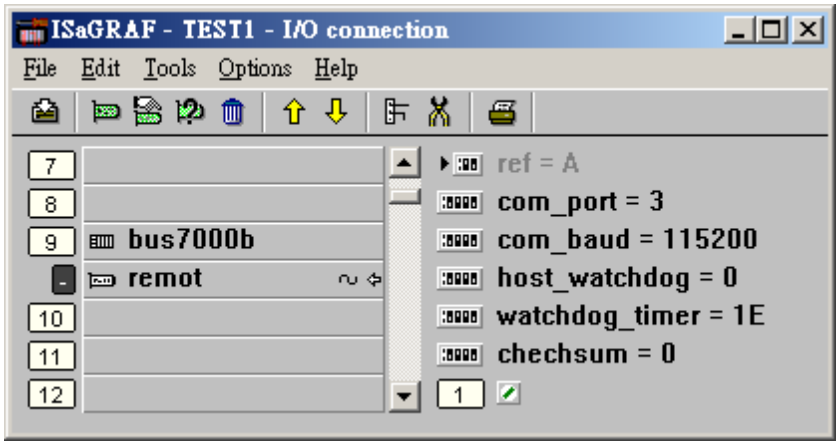
Min_Update_Time: Only for the I-8084W. It means the fresh time of the freq. Value, unit is ms.

1.2: Using the I-87084W as RS-485 remote I/O

Please refer to section 1.1 if using the I-8084w or I-87084w in slot 0 to 7 of the PAC.

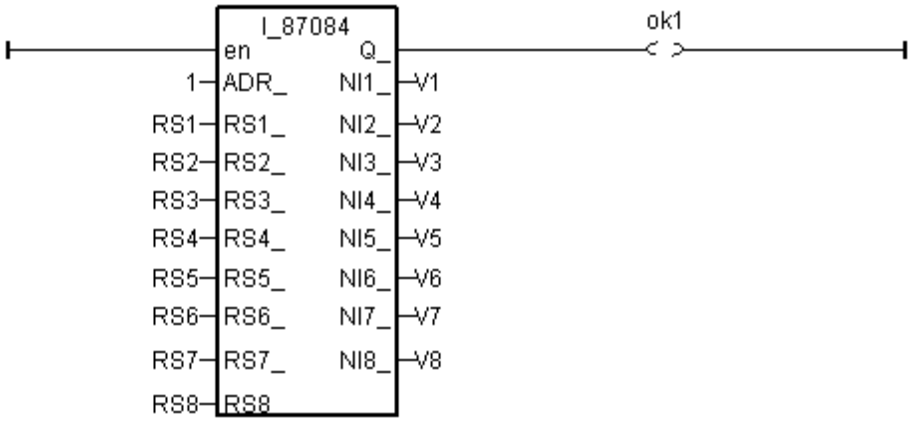
I-87084W can plug in I-87K4/5/8/9 expansion base or in the RU-87P4/8 expansion base to become remote I/O. Please run DCON Utility in your PC first to well configure the I-87084W (Address (NET-ID), Baud-rate, range mode, Filter, Frequency timeout, Frequency Auto-Low-High Mode and others)

Then connect "bus7000b"in the IO connection window. Set proper com_port, com_baud and others.



Then program in a Ladder program similar as below.

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ADR_: Remote I/O Address (NET-ID)
RS1_ ~ RS8_: to Reset Counter value as 0 (When rising from False to True)
NI1_ ~ NI8_: value of Frequency (or Counter).

Note: If using I-87084W as 4-Ch. Counter (Up/Down, A/B Phase or Dir / Pulse), its channel value is listed as below.

Ch1: NI1_, NI2_, these two value will be the same.
Ch2: NI3_, NI4_, these two value will be the same.
Ch3: NI5_, NI6_, these two value will be the same.
Ch4: NI7_, NI8_, these two value will be the same.

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