

# HUMUSOFT MF614

## Synopsis:

```
rtload('mf614',slot,opt)
```

## Parameter Description:

*It is highly recommended to use the driver GUI together with `rtscript` to select correct driver parameters. Otherwise a mistake can easily be made.*

`slot` specifies PCI slot number. Value of 65535 means auto-detect the board, i.e. the board can be in any slot.

`opt` is a vector of hardware specific options.

`opt(1)` specifies digital I/O options. It is bit-oriented and therefore shows as a sum of numbers corresponding to individual bit weights. These numbers are summarized in the table below.

| <i>Parameter</i>    | <i>Option</i> | <i>Value</i> |
|---------------------|---------------|--------------|
| digital input mode  | bit           | 0            |
|                     | byte          | 1            |
| digital output mode | bit           | 0            |
|                     | byte          | 2            |

`opt(2)` to `opt(9)` specify analog input ranges for channels 1 to 8. The input ranges are coded by numbers listed in the table below.

When using GUI to specify channel gains, the columns correspond to channels and the rows correspond to

| <i>Range</i> | <i>Code</i> |
|--------------|-------------|
| 0...5V       | 0           |
| ±5V          | 1           |
| 0...10V      | 2           |
| ±10V         | 3           |

gain values. Select a gain for a single channel by clicking the radio button at the appropriate position. Select a gain for all the channels at once by clicking the push button labeled by the gain value, left to the corresponding row of the radio button array.

opt(10) to opt(13) specify lowpass filter frequency for encoder inputs.

opt(14) to opt(17) specify timer/counter mode for timers 1 to 4. The timer modes are coded by numbers listed in the table below.

| <i>Mode</i>                | <i>Code</i> |
|----------------------------|-------------|
| Counter with reset on read | 0           |
| Counter without reset      | 1           |
| Chained counter            | 2           |
| Frequency generator        | 3           |
| Delayed pulse              | 4           |

**In mode 0** counter counts input pulses. Read operation from such channel returns current pulse count and resets the counter.

**In mode 1** counter counts input pulses. Read operation from such channel returns current pulse count and does not reset the counter.

**In mode 2** counter is chained with previous counter using the same mode. Read operation from previous channel returns 32 bit values instead of 16 bit values.

**In mode 3** counter works as frequency generator with variable frequency and duty cycle. Two output channels are assigned to one counter in this mode. First one (TimerxA) frequency, second (TimerxB) represents duty cycle (-1 to 1).

**In mode 4** counter works as delayed pulse generator. Two output channels are assigned to one counter in this mode. First one (TimerxA) represents pulse width, second (TimerxB) represents pulse delay. Each write operation to TimerxB channel generates one delayed pulse.

Both `slot` and `opt` are optional. The defaults are:

`slot`: 65535

`opt(1)`: [0].

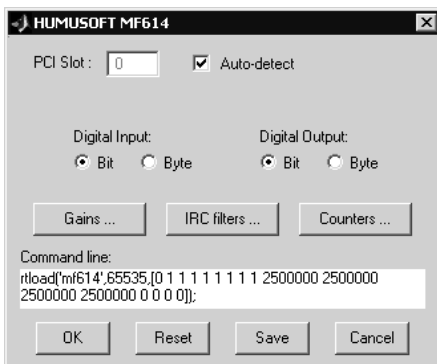
Also the channel gains are optional and defaults are 1 (range  $\pm 5V$ ).

### Channel Assignment:

Both input and output hardware channels are assigned to channel numbers starting with analog channels, then following with digital channels. This is summarized in the table below.

| <i>HUMUSOFT MF614</i> | <i>Real Time Toolbox</i>                               |
|-----------------------|--|
| AD0 .. AD7            | Inputs 1 .. 8  |
| IRC0 .. IRC3          | Inputs 9 .. 12   |
| Count0 .. Count3      | Inputs 13 .. 16  |
| DIN0 .. DIN7          | Inputs 17 .. 24 in bit mode<br>Input 17 in byte mode   |
| DA0 .. DA3            | Outputs 1 .. 4   |
| Timer0A .. Timer0B    | Outputs 5 .. 6   |
| Timer1A .. Timer1B    | Outputs 7 .. 8   |
| Timer2A .. Timer2B    | Outputs 9 .. 10  |
| Timer3A .. Timer3B    | Outputs 11 .. 12                                       |
| DOUT0 .. DOUT7        | Outputs 13 .. 20 in bit mode<br>Output 13 in byte mode |

### GUI Window:



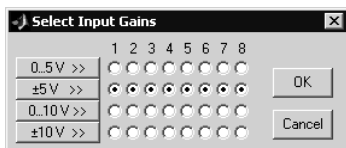
**HUMUSOFT MF614**

PCI Slot :  ☒ Auto-detect

Digital Input: ☒ Bit ☐ Byte

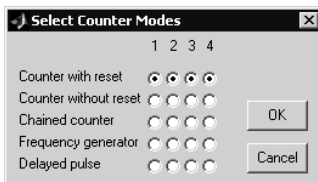
Digital Output: ☒ Bit ☐ Byte

Command line:  
rtload('mf614';65535,[0 1 1 1 1 1 1 1 1 2500000 2500000  
2500000 2500000 0 0 0 0]);



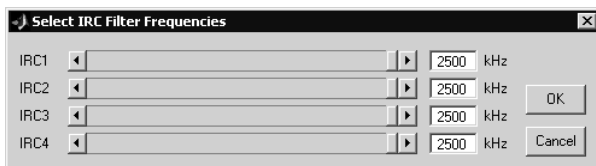
**Select Input Gains**

|            | 1                     | 2                     | 3                     | 4                     | 5                     | 6                     | 7                     | 8                     |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0..5 V >>  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| ±5 V >>    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 0..10 V >> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| ±10 V >>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |



**Select Counter Modes**

|                       | 1                                | 2                                | 3                                | 4                                |
|-----------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Counter with reset    | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Counter without reset | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |
| Chained counter       | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |
| Frequency generator   | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |
| Delayed pulse         | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |



**Select IRC Filter Frequencies**

|      |                                       |
|------|---------------------------------------|
| IRC1 | <input type="text" value="2500"/> kHz |
| IRC2 | <input type="text" value="2500"/> kHz |
| IRC3 | <input type="text" value="2500"/> kHz |
| IRC4 | <input type="text" value="2500"/> kHz |

## Input Scan:

Input scan is not supported for any input channel.

## Output Waveform:

Waveform generation is not supported for any output channel.

## Switch and Jumper Settings:

There are no switches or jumpers. The board settings are determined entirely by the driver options.