

cia

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Contents

1	cia	1
1.1	cia.doc	1
1.2	cia.resource/AbleICR	1
1.3	cia.resource/AddICRVector	2
1.4	cia.resource/RemICRVector	3
1.5	cia.resource/SetICR	4

Chapter 1

cia

1.1 cia.doc

```
AbleICR()  
AddICRVector()  
RemICRVector()  
SetICR()
```

1.2 cia.resource/AbleICR

NAME
AbleICR -- Enable/disable ICR interrupts.

SYNOPSIS
oldMask = AbleICR(Resource, mask)
D0 A6 D0

WORD AbleICR(struct Library *, WORD);

FUNCTION
This function provides a means of enabling and disabling 8520 CIA interrupt control registers. In addition it returns the previous enable mask.

INPUTS
mask A bit mask indicating which interrupts to be modified. If bit 7 is clear the mask indicates interrupts to be disabled. If bit 7 is set, the mask indicates interrupts to be enabled. Bit positions are identical to those in 8520 ICR.

RESULTS
oldMask The previous enable mask before the requested changes. To get the current mask without making changes, call the function with a null parameter.

EXAMPLES

Get the current mask:

```
mask = AbleICR(0)
```

Enable both timer interrupts:

```
AbleICR(0x83)
```

Disable serial port interrupt:

```
AbleICR(0x08)
```

EXCEPTIONS

Enabling the mask for a pending interrupt will cause an immediate processor interrupt (that is if everything else is enabled). You may want to clear the pending interrupts with SetICR() prior to enabling them.

NOTE

The CIA resources are special in that there is more than one of them in the system. Because of this, the C language stubs in amiga.lib for the CIA resources require an extra parameter to specify which CIA resource to use. The synopsis for the amiga.lib stubs is as follows:

```
oldMask = AbleICR( Resource, mask )
```

```
D0                A6                D0
```

```
WORD AbleICR( struct Library *, WORD );
```

SEE ALSO

```
cia.resource/SetICR()
```

1.3 cia.resource/AddICRVector

NAME

AddICRVector -- attach an interrupt handler to a CIA bit.

SYNOPSIS

```
interrupt = AddICRVector( Resource, iCRBit, interrupt )
```

```
D0                A6                D0                A1
```

```
struct Interrupt *AddICRVector( struct Library *, WORD,
    struct Interrupt * );
```

FUNCTION

Assign interrupt processing code to a particular interrupt bit of the CIA ICR. If the interrupt bit has already been assigned, this function will fail, and return a pointer to the owner interrupt. If it succeeds, a null is returned.

This function will also enable the CIA interrupt for the given ICR bit.

INPUTS

```
iCRBit            Bit number to set (0..4).
```

```
interrupt          Pointer to interrupt structure.
```

RESULT

`interrupt` Zero if successful, otherwise returns a pointer to the current owner interrupt structure.

NOTE

A processor interrupt may be generated immediately if this call is successful.

In general, it is probably best to only call this function while DISABLED so that the resource to which the interrupt handler is being attached may be set to a known state before the handler is called. You MUST NOT change the state of the resource before attaching your handler to it.

The CIA resources are special in that there is more than one of them in the system. Because of this, the C language stubs in `amiga.lib` for the CIA resources require an extra parameter to specify which CIA resource to use. The synopsis for the `amiga.lib` stubs is as follows:

```
interrupt = AddICRVector( Resource, iCRBit, interrupt )
D0                      A6          D0          A1
```

```
struct Interrupt *AddICRVector( struct Library *, WORD,
    struct Interrupt *);
```

WARNING

Never assume that any of the CIA hardware is free for use. Always use the `AddICRVector()` function to obtain ownership of the CIA hardware registers your code will use.

Note that there are two (2) interval timers per CIA. If your application needs one of the interval timers, you can try to obtain any one of the four (4) until `AddICRVector()` succeeds. If all four interval timers are in-use, your application should exit cleanly.

If you just want ownership of a CIA hardware timer, or register, but do not want interrupts generated, use the `AddICRVector()` function to obtain ownership, and use the `AbleICR()` function to turn off (or on) interrupts as needed.

Note that CIA-B generates level 6 interrupts (which can degrade system performance by blocking lower priority interrupts). As usual, interrupt handling code should be optimized for speed.

Always call `RemICRVector()` when your code exits to release ownership of any CIA hardware obtained with `AddICRVector()`.

SEE ALSO

`cia.resource/RemICRVector()`, `cia.resource/AbleICR()`

1.4 `cia.resource/RemICRVector`

NAME

RemICRVector -- Detach an interrupt handler from a CIA bit.

SYNOPSIS

```
RemICRVector( Resource, iCRBit, interrupt )
               A6         D0         A1
```

```
void RemICRVector( struct Library *, WORD, struct Interrupt *);
```

FUNCTION

Disconnect interrupt processing code for a particular interrupt bit of the CIA ICR.

This function will also disable the CIA interrupt for the given ICR bit.

INPUTS

iCRBit Bit number to set (0..4).
interrupt Pointer to interrupt structure.

RESULT

NOTE

The CIA resources are special in that there is more than one of them in the system. Because of this, the C language stubs in amiga.lib for the CIA resources require an extra parameter to specify which CIA resource to use. The synopsis for the amiga.lib stubs is as follows:

```
RemICRVector( Resource, iCRBit, interrupt )
               A6         D0         A1
```

```
void RemICRVector( struct Library *, WORD, struct Interrupt *);
```

SEE ALSO

cia.resource/AddICRVector()

1.5 cia.resource/SetICR

NAME

SetICR -- Cause, clear, and sample ICR interrupts.

SYNOPSIS

```
oldMask = SetICR( Resource, mask )
D0               A6         D0
```

```
WORD SetICR( struct Library *, WORD );
```

FUNCTION

This function provides a means of resetting, causing, and sampling 8520 CIA interrupt control registers.

INPUTS

mask A bit mask indicating which interrupts to be

effected. If bit 7 is clear the mask indicates interrupts to be reset. If bit 7 is set, the mask indicates interrupts to be caused. Bit positions are identical to those in 8520 ICR.

RESULTS

`oldMask` The previous interrupt register status before making the requested changes. To sample current status without making changes, call the function with a null parameter.

EXAMPLES

Get the interrupt mask:

```
mask = SetICR(0)
```

Clear serial port interrupt:

```
SetICR(0x08)
```

NOTE

The CIA resources are special in that there is more than one of them in the system. Because of this, the C language stubs in `amiga.lib` for the CIA resources require an extra parameter to specify which CIA resource to use. The synopsis for the `amiga.lib` stubs is as follows:

```
oldMask = SetICR( Resource, mask )
```

```
D0                            A6            D0
```

```
WORD SetICR( struct Library *, WORD );
```

WARNING

Never read the contents of the CIA interrupt control registers directly. Reading the contents of one of the CIA interrupt control registers clears the register. This can result in interrupts being missed by critical operating system code, and other applications.

EXCEPTIONS

Setting an interrupt bit for an enabled interrupt will cause an immediate interrupt.

SEE ALSO

`cia.resource/AbleICR()`
