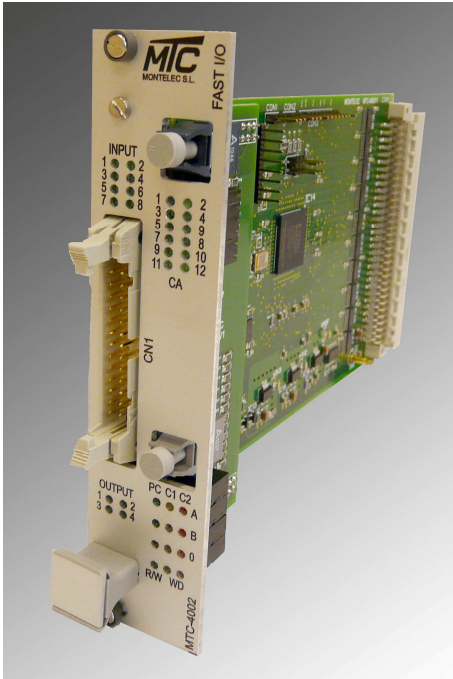


## DESCRIPTION



**MTC-4002** is a fast counters and interrupts handler card designed to be used in simple applications as well as complex real-time controls.

It is a logic programmable versatile card. It has a generic counters group and other more specifics that cover a wide range of applications. It can still be targeted for specific applications on request.

This card can be used to complement the control of one or more *MTC-4011* through the bus. This is useful in applications that require rigorous control of position, speed or shift registers.

Multiple cards can be connected to the same rack.

The setup is done in a simple and intuitive way using graphical software. The access to the counters and fast I/Os is done from CoDeSys programming environment ([www.3s-software.com](http://www.3s-software.com)) using function blocks.

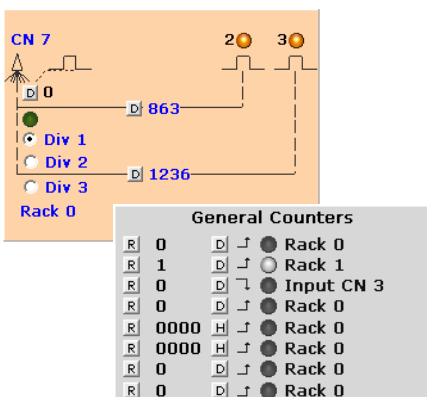
Summary of benefits:

- **Shift register oriented eight counter groups**
- **One counter with eight latched registers**
- **One counter with tracking and one output**
- **One counter with tracking and double output**
- **1 bit Shift Register with four delayed outputs**
- **Twelve interruption sources**

## APPLICATION

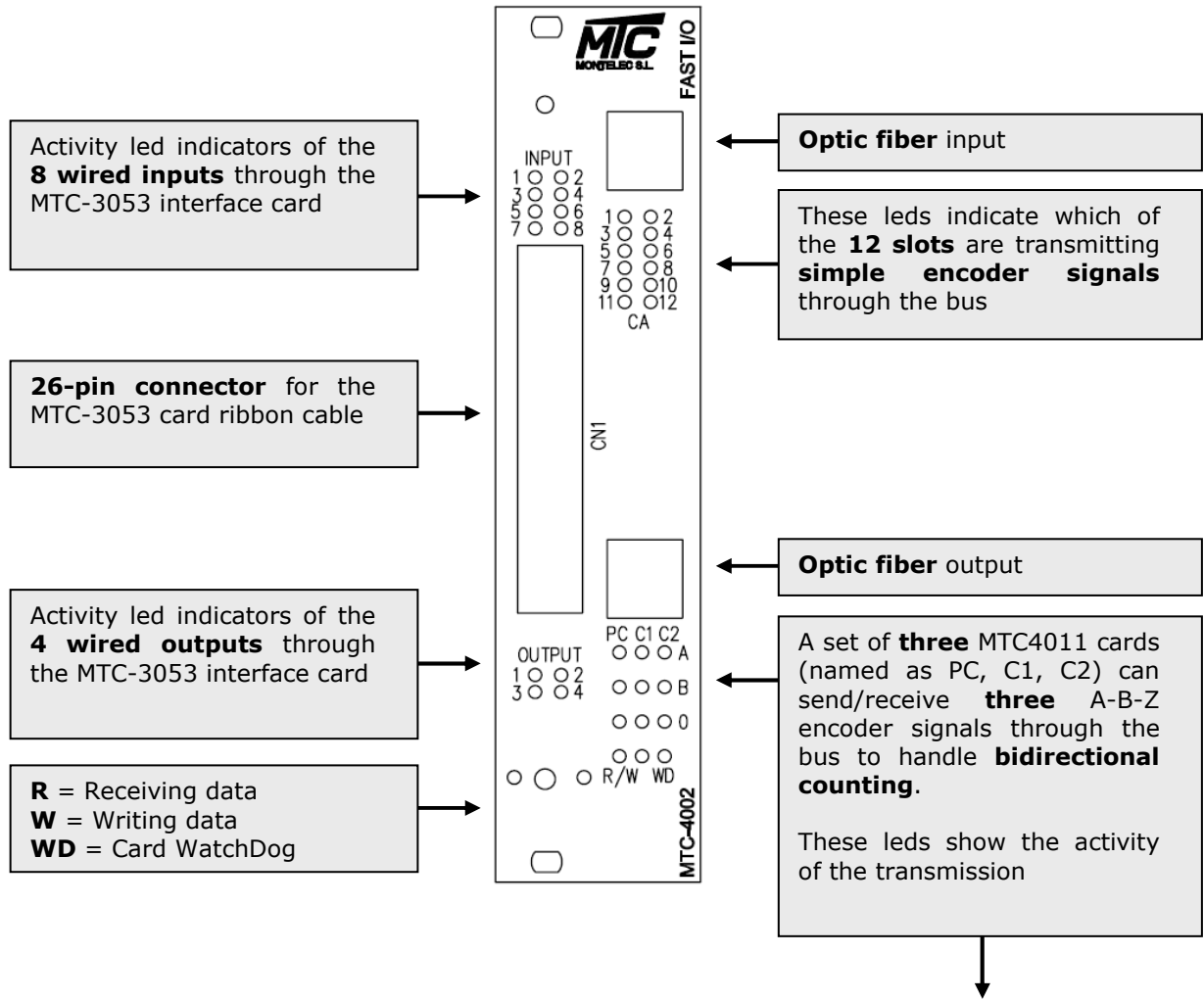
The **MTC-4002** is mainly used in applications that require accuracy on signal counting and a quick response in real time. Note the flexibility and ease of configuration.

These are some of their applications:

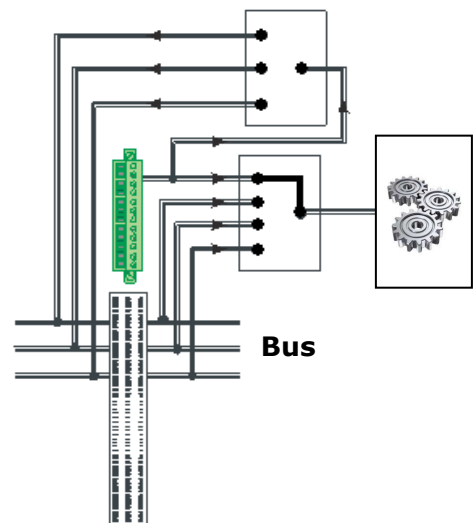


- Incremental / decremental counting
- Angular speed and frequency measurements
- Interrupts generation to the MTC-4000 CPU
- Signal tracking
- Shift registers
- Motor controls with speed or position loops
- System synchronizations
- Signals delay
- Period measurements

## FRONTAL COVER ELEMENTS DESCRIPTION



For more information related with the interface card, refer to this manual:  
*"MTC-3053 Interface fast inputs"*



## TECHNICAL SPECIFICATIONS

<b>Size format</b>	
▪ Europe size card	
<b>Precision</b>	
▪ High-speed internal oscillator.....	80MHz
<b>Frontal elements</b>	
▪ 1 optic fiber input .....	clock input ( <i>optional</i> )
▪ 1 optic fiber output .....	physical inputs repeater mode ( <i>optional</i> )
▪ 1 ribbon cable connector.....	26-wires ( <i>interface card</i> )
▪ I/O status led diodes .....	8 inputs + 4 outputs
▪ Encoder status led diodes	..... 3 triple inputs (A-B-Z) of MTC4011
	..... 12 simple inputs of MTC4011
<b>Inputs</b>	
▪ Input type .....	opto-coupled (24V)
▪ Quantity .....	8 (through interface) + 1(optic fiber)
▪ Maximum operating frequency .....	150 KHz
▪ Resource .....	MTC-3053 Interface card
<b>Outputs</b>	
▪ Output type: .....	opto-coupled (24V)
▪ Quantity .....	4 (through interface) + 1(optic fiber)
▪ Resource .....	MTC-3053 Interface card
<b>Interrupts</b>	
▪ Source quantity .....	12
▪ Generation source.....	two hardware interrupts (BUS1 / BUS2) in CoDeSys
▪ Edges .....	rising edge ↑ / falling edge ↓
▪ Enabling mask registers	
▪ Triggering flags registers	
<b>Comunication between cards</b>	
▪ Signal handling between MTC-4002 .....	2 double I/O channels
▪ Encoder signal handling of MTC-4011 .....	3 triple configurable channels
<b>Counters</b>	
▪ Shift register oriented 8 counter groups .....	1 channel / 16bits
▪ One counter with eight latched registers .....	1 channel / 32bits
▪ One counter with tracking and double output	
▪ One counter with tracking and one output	
→ Clock source:.....	configurable
→ Input source:.....	configurable
▪ Counter for position control with sensor	
→ 1 self-directioned counter X4 .....	16 bits
→ 1 self-directioned counter X4 .....	32 bits
→ 2 inputs and 2 asociated registers	
<b>Shift Registers</b>	
▪ Register resolution .....	1 bit
▪ Input source: .....	8 external inputs ( <i>configurable</i> )
▪ Output quantity:.....	4
▪ Register clock: .....	divisible X1 or X2 ( <i>configurable</i> )
▪ Maximum delay: .....	65536 steps
<b>Filters</b>	
▪ Configurable by program for all elements .....	16 filters
▪ Filter $f_{max}$ ( <i>clocks</i> ):.....	1,25MHz
▪ Filter $f_{min}$ ( <i>clocks</i> ): .....	38,1469Hz
▪ Minimum filter pulse width ( <i>I/Os and INTs</i> ).....	400ns
▪ Maximum filter pulse width ( <i>I/Os and INTs</i> ).....	13,1072ms