

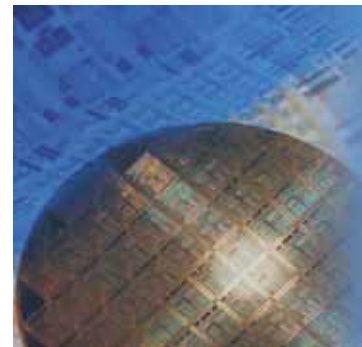


aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
**hydraulics**  
pneumatics  
process control  
sealing & shielding



# IQAN-MC3 Functional Safety Controller

Electronic Control Systems



ENGINEERING YOUR SUCCESS.

## Application

The IQAN-MC3 is a SIL2 rated master module in the IQANdesign platform. It can be used as a standalone controller, as a single bus master, or together with other IQAN master modules.

## Safety

All IQAN modules are designed with the functional safety requirements of mobile machines in mind. The IQAN-MC3 is especially suited for applications with higher demands on functional safety, where there is a need to prove the safety integrity of each implemented safety function.

It is designed in accordance with IEC 61508, and can be used to implement safety functions of up to SIL2. When applying EN ISO 13849-1 for safety functions, it can be used as a PLd subsystem.

The correct operation of the IQAN-MC3 is monitored internally by its Tricore processor and the integrated co-processor.

All outputs have diagnostics for both internal and external faults, and have return switches that provide a redundant shut down path.

- Suitable for connection to output subsystems of category B, 1, 2, 3 or 4 in accordance with EN ISO13849-1, up to PLd.

For flexibility, the inputs can be configured either in pairs for safety functions, or as single inputs for normal functions.

- Suitable for connection to input subsystems of category 2 or 3 in accordance with EN ISO13849-1, up to PLd.

## I/O

### Inputs

All of the 32 inputs on the IQAN-MC3 can be used for safety related signals, when the inputs are configured in pairs.

On the unit there are analog inputs for 0-5 V signals from e.g. hall-effect or potentiometer sensors; digital inputs for e.g. switches; and frequency inputs. Frequency inputs can be configured to read signals from quadrature encoders, or alternatively to be used as digital inputs.

As a supply for sensors, it has two separately monitored 5 V reference signals.

### Outputs

All of the outputs on the IQAN-MC3 can be used for safety related signals.

There are four proportional current outputs designed to drive proportional hydraulic valves, where each output controls one bi-directional valve section.

The unit also has five digital outputs for driving on-off solenoids. Two of these are also intended to function as alarm outputs, for e.g. LED lamps.

## Installation

The enclosure is designed to protect the electronics in a harsh environment on mobile machines. It has good margins against high temperatures, is very robust to vibration, handles cycling of moisture and temperature well, and is well protected from water ingress.

On the front of the unit, there are four sealed and individually keyed Deutsch DT connectors.

It is designed for mounting outdoor on the chassis.

The unit has addressing in the wiring harness with an idTag, the addressing allows for up to 8 modules of this type on the same CAN bus.

## General

Weight	1.1 kg
Temperature range	
Operating, ambient	-40 to +85 °C
Storage, ambient	-40 to +100 °C
Protection	outdoor, chassis
Voltage supply	9 - 32 Vdc
Current consumption (idle)	160 mA (24V) 240 mA (12V)

## Safety

IEC 61508	Up to SIL2
EN ISO 13849-1	Up to PLd
PFHd	< 10 <sup>-7</sup>

## Communication interfaces

CAN buses	4 <sup>1</sup>
Protocols	Parker ICP (IQAN CAN Protocol) SAE J1939, Generic CAN

1) It is recommended that one CAN bus is dedicated for diagnostic purposes (PC interface)

## Performance

Processor	32-bit TriCore
Sample time	≥10 ms.
Logging	80,000 records
Software tools	IQANdesign platform

## Outputs

Proportional outputs	
Current output pairs	4
Type	current closed loop
Signal range	100-2000 mA
Dither frequency	70-333 Hz
Resolution	1 mA

**Digital outputs**

Dedicated digital outputs 5  
 Type high side+low side switch  
 Max load 3 x 3 A  
 2 x 1.5 A

**Inputs**

Max number of inputs 32

**Voltage inputs**

Number 16  
 Signal range 0 - 5 Vdc  
 Resolution 1.2 mV

**Frequency inputs**

Number 8  
 Signal high 4 Vdc - 32 Vdc  
 Signal low 0 - 1 Vdc  
 Alternative configuration Quadrature in (4)  
 Digital in (8)

**Digital inputs**

Dedicated digital inputs 8  
 Signal high 4 Vdc - 32 Vdc  
 Signal low 0 - 1 Vdc

**Connector**

Type 4 x DT04-18P(A-D)

**Ordering part numbers**

IQAN-MC3 20077717

**Environmental protection**

**EMI**

ISO 13766/ISO 14982 (radiated emission)  
 EN 55025:2003 (conducted emission)  
 ISO 11452-2:2004 (immunity vs EM field)  
 ISO 11452-4:2005 (immunity vs injected RF)  
 ISO 7637-2:2004 (immunity vs supply transients)  
 ISO 7637-3:2007 (immunity vs supply transients)

**ESD**

ISO 10605:2008 (external)

**Mechanical environment**

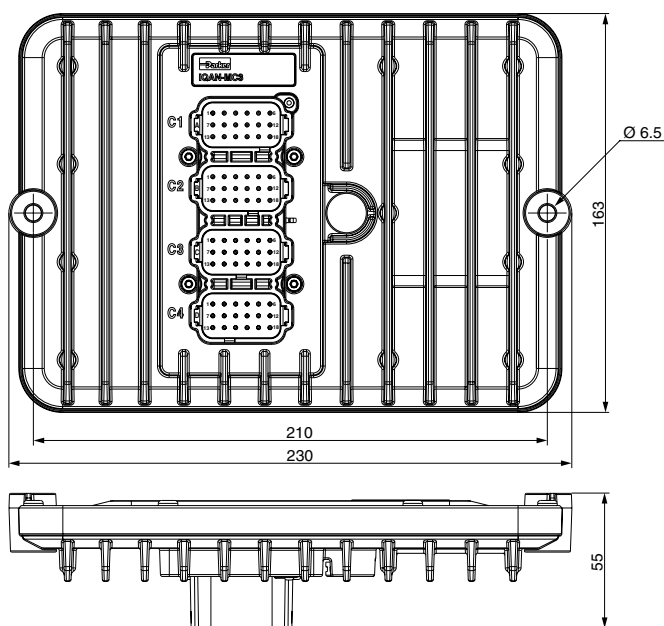
IEC 60068-2-64:2008 Fh (random)  
 IEC 60068-2-27:2008 Ea (bump)

**Climate environment**

IEC 60529:2001 IP67 (dust, water)  
 DIN 40050 Part 9:1993 IP6K9K (steam jet cleaning)  
 IEC 60068-2-30:2005 Db (damp heat, cyclic)  
 IEC 60068-2-78:2001 Cab (damp heat, steady state)  
 IEC 60068-2-2:2007 Bb (heat)  
 IEC 60068-2-1:1993 Ab (cold)  
 IEC 60068-2-14:1984 Nb (change of temperature)

**Chemical environment**

IEC 60068-2-52:1996 Kb (salt mist, cyclic)



units = mm



**WARNING - USER RESPONSIBILITY**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

**Offer of Sale**

Please contact your Parker representation for a detailed "Offer of Sale".

# Parker Worldwide

## Europe, Middle East, Africa

**AE – United Arab Emirates,**  
Dubai

Tel: +971 4 8127100  
parker.me@parker.com

**AT – Austria,** Wiener Neustadt

Tel: +43 (0)2622 23501-0  
parker.austria@parker.com

**AT – Eastern Europe,** Wiener  
Neustadt

Tel: +43 (0)2622 23501 900  
parker.easteurope@parker.com

**AZ – Azerbaijan,** Baku

Tel: +994 50 2233 458  
parker.azerbaijan@parker.com

**BE/LU – Belgium,** Nivelles

Tel: +32 (0)67 280 900  
parker.belgium@parker.com

**BY – Belarus,** Minsk

Tel: +375 17 209 9399  
parker.belarus@parker.com

**CH – Switzerland,** Etoy

Tel: +41 (0)21 821 87 00  
parker.switzerland@parker.com

**CZ – Czech Republic,** Klecany

Tel: +420 284 083 111  
parker.czechrepublic@parker.com

**DE – Germany,** Kaarst

Tel: +49 (0)2131 4016 0  
parker.germany@parker.com

**DK – Denmark,** Ballerup

Tel: +45 43 56 04 00  
parker.denmark@parker.com

**ES – Spain,** Madrid

Tel: +34 902 330 001  
parker.spain@parker.com

**FI – Finland,** Vantaa

Tel: +358 (0)20 753 2500  
parker.finland@parker.com

**FR – France,** Contamine s/Arve

Tel: +33 (0)4 50 25 80 25  
parker.france@parker.com

**GR – Greece,** Athens

Tel: +30 210 933 6450  
parker.greece@parker.com

**HU – Hungary,** Budapest

Tel: +36 1 220 4155  
parker.hungary@parker.com

**IE – Ireland,** Dublin

Tel: +353 (0)1 466 6370  
parker.ireland@parker.com

**IT – Italy,** Corsico (MI)

Tel: +39 02 45 19 21  
parker.italy@parker.com

**KZ – Kazakhstan,** Almaty

Tel: +7 7272 505 800  
parker.easteurope@parker.com

**NL – The Netherlands,** Oldenzaal

Tel: +31 (0)541 585 000  
parker.nl@parker.com

**NO – Norway,** Asker

Tel: +47 66 75 34 00  
parker.norway@parker.com

**PL – Poland,** Warsaw

Tel: +48 (0)22 573 24 00  
parker.poland@parker.com

**PT – Portugal,** Leca da Palmeira

Tel: +351 22 999 7360  
parker.portugal@parker.com

**RO – Romania,** Bucharest

Tel: +40 21 252 1382  
parker.romania@parker.com

**RU – Russia,** Moscow

Tel: +7 495 645-2156  
parker.russia@parker.com

**SE – Sweden,** Spånga

Tel: +46 (0)8 59 79 50 00  
parker.sweden@parker.com

**SK – Slovakia,** Banská Bystrica

Tel: +421 484 162 252  
parker.slovakia@parker.com

**SL – Slovenia,** Novo Mesto

Tel: +386 7 337 6650  
parker.slovenia@parker.com

**TR – Turkey,** Istanbul

Tel: +90 216 4997081  
parker.turkey@parker.com

**UA – Ukraine,** Kiev

Tel: +380 44 494 2731  
parker.ukraine@parker.com

**UK – United Kingdom,** Warwick

Tel: +44 (0)1926 317 878  
parker.uk@parker.com

**ZA – South Africa,** Kempton Park

Tel: +27 (0)11 961 0700  
parker.southafrica@parker.com

## North America

**CA – Canada,** Milton, Ontario

Tel: +1 905 693 3000

**US – USA,** Cleveland

(industrial)  
Tel: +1 216 896 3000

**US – USA,** Elk Grove Village

(mobile)  
Tel: +1 847 258 6200

## Asia Pacific

**AU – Australia,** Castle Hill

Tel: +61 (0)2-9634 7777

**CN – China,** Shanghai

Tel: +86 21 2899 5000

**HK – Hong Kong**

Tel: +852 2428 8008

**IN – India,** Mumbai

Tel: +91 22 6513 7081-85

**JP – Japan,** Fujisawa

Tel: +81 (0)4 6635 3050

**KR – South Korea,** Seoul

Tel: +82 2 559 0400

**MY – Malaysia,** Shah Alam

Tel: +60 3 7849 0800

**NZ – New Zealand,** Mt Wellington

Tel: +64 9 574 1744

**SG – Singapore**

Tel: +65 6887 6300

**TH – Thailand,** Bangkok

Tel: +662 717 8140

**TW – Taiwan,** Taipei

Tel: +886 2 2298 8987

## South America

**AR – Argentina,** Buenos Aires

Tel: +54 3327 44 4129

**BR – Brazil,** Cachoeirinha RS

Tel: +55 51 3470 9144

**CL – Chile,** Santiago

Tel: +56 2 623 1216

**MX – Mexico,** Apodaca

Tel: +52 81 8156 6000

ESB 2011-07-07

### European Product Information Centre

Free phone: 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL,  
IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

### US Product Information Centre

Free phone: 1 800 272 7537

www.parker.com

