



# **IQAN** **CONTROL SYSTEMS**

Controllers, Displays, Softwares and Accessories





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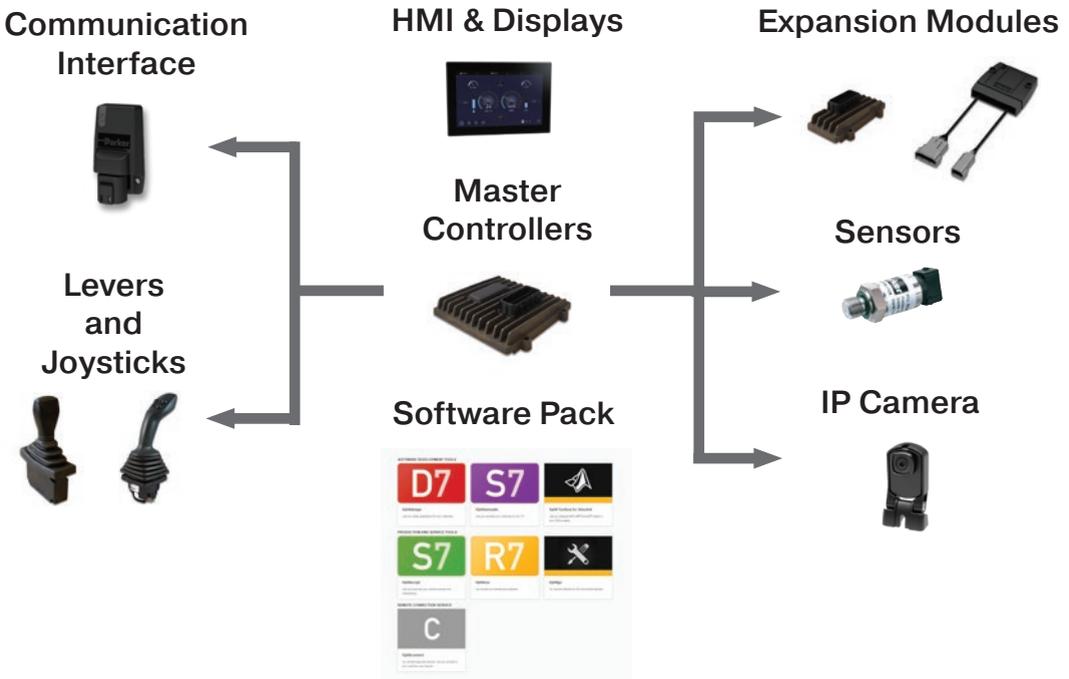
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# Complete Electronic Control Solutions

## What is IQAN?

IQAN is an electronic control system for mobile application with the highest focus on functional safety, precision control of hydraulics and ease of use. The IQAN ecosystem consists of fully integrated solution of controllers and displays that are configured and maintained with the IQAN software toolchain. IQAN makes system integration intuitive and fast along with tools that enable OEMs to create safe and secure machines.

The IQAN toolchain provides a reliable, flexible and efficient solution for controlling mobile machinery. Its robust design, advanced capabilities and comprehensive support features make it an excellent choice for system engineers and manufacturers looking to develop and enhance their mobile control systems.





## Master Controllers - IQAN-MC4x

Parker's IQAN-MC41, -MC42 and -MC43 are rugged master controllers that are designed as the ideal solution for hydraulic control systems in mobile hydraulic vehicles and machinery.

Parker's IQAN-MC4x is a family of master controllers. The 3 sizes are perfectly scaled for: MC41 for cost efficient task oriented control, MC42 mid-size applications and I/O distribution, and MC43 large space-saving centralized control.

|            | IQAN-MC41-M24 | IQAN-MC42-M24 | IQAN-MC43-M24 |
|------------|---------------|---------------|---------------|
| Order code | 20085211      | 20085212      | 20085213      |



Performance master, TriCore 0.3GHz / 2MB Flash / 0.5MB RAM

|                     |  |  |  |
|---------------------|--|--|--|
| <b>Inputs total</b> | 18:<br>8x 5V<br>2x 24V<br>2x 0-20mA<br>6x Freq 50kHz / 6 digital 24V | 18:<br>8x 5V<br>2x 24V<br>2x 0-20mA<br>6x Freq 50kHz / 6 digital 24V | 50:<br>20x 5V<br>2x 24V<br>4x 0-20mA<br>6x Freq 50kHz / 18 digital 24V |
|                     | <b>Outputs total</b>   | 8:<br>2x CAM 2.5A<br>4x PWM HS 4A<br>4x PWM LS 2A                    | 16:<br>6x CAM 2.5A<br>4x PWM HS 4A<br>12x PWM LS 2A                    |
|                     | CAN: 2<br>MATLAB Simulink support                                    | CAN: 3<br>MATLAB Simulink support                                    | CAN: 5<br>MATLAB Simulink support                                      |

*The inputs and outputs can have different functionality depending on software configuration*

### Common features

Compliance: CE, UKCA, E-mark R10, CRA prepared

Protection: IP65, IP6k9k

Voltage supply: 12/24V

Interface: CAN (2.0B/FD) supports IQAN proprietary (ICP) SAE J1939 and generic CAN

CAM - Current output with a Current Arithmetic Mean measure method.



# Master Controllers with Functional Safety

They are designed to be either a performance optimized standard controller, or an IEC 61508 SIL2 Functional Safety (FS) variant. When applying EN ISO 13849-1 for safety functions, the FS variant can be used as a PLd subsystem.



|            | IQAN-MC41FS-M24 | IQAN-MC42FS-M24 | IQAN-MC43FS-M24 |
|------------|-----------------|-----------------|-----------------|
| Order code | 20085221        | 20085222        | 20085223        |



Functional safety master, TriCore 0.3GHz / 2MB Flash / 0.7MB RAM

|                      |                               |                               |                                |
|----------------------|-------------------------------|-------------------------------|--------------------------------|
| <b>Inputs total</b>  | 18:                           | 18:                           | 50:                            |
|                      | 8x 5V                         | 8x 5V                         | 20x 5V                         |
|                      | 2x 24V                        | 2x 24V                        | 2x 24V                         |
|                      | 2x 0-20mA                     | 2x 0-20mA                     | 4x 0-20mA                      |
|                      | 6x Freq 50kHz / 6 digital 24V | 6x Freq 50kHz / 6 digital 24V | 6x Freq 50kHz / 18 digital 24V |
| <b>Outputs total</b> | 8:                            | 16:                           | 36:                            |
|                      | 2x CAM 2.5A                   | 6x CAM 2.5A                   | 10x CAM 2.5A                   |
|                      | 4x PWM HS 4A                  | 4x PWM HS 4A                  | 8x PWM HS 4A                   |
|                      | 4x PWM LS 2A                  | 12x PWM LS 2A                 | 20x PWM LS 2A                  |
|                      |                               | 8 digital                     |                                |
|                      | CAN: 2                        | CAN: 3                        | CAN: 5                         |

*The inputs and outputs can have different functionality depending on software configuration*

## Common features

Compliance: CE, UKCA, E-mark R10, IEC 61508 SIL2 (EN 13849-1 Pld), CRA prepared

Protection: IP65, IP6k9k

Voltage supply: 12/24V

Interface: CAN (2.0B/FD) supports IQAN proprietary (ICP), SAE J1939 and generic CAN

CAM - Current output with an Current Arithmetic Mean measure method.



## Expansion Modules - IQAN-XC4x

Parker's IQAN-XC4x expansion modules are perfect for increasing I/O in an IQAN system. They have voltage, current, digital and timer inputs. The outputs are proportional and digital. The modules communicate with an IQAN master module over a CAN bus.

|                      | IQAN-XC41-M24   | IQAN-XC42-M24   | IQAN-XC43-M24   | IQAN-XC44  |
|----------------------|---|---|---|--|
| <b>Order code</b>    | 20085231  | 20085232  | 20085233  | 20085184   |
|                      |  |  |  |  |
|                      | Expansion controller with functional safety                                       | Expansion controller with functional safety                                       | Expansion controller with functional safety                                       | Expansion controller   |
| <b>Inputs total</b>  | 18:<br>8x 5V<br>2x 24V<br>2x 0-20mA<br>6x Freq 50kHz / 6 digital 24V              | 18:<br>8x 5V<br>2x 24V<br>2x 0-20mA<br>6x Freq 50kHz / 6 digital 24V              | 50:<br>20x 5V<br>2x 24V<br>4x 0-20mA<br>6x Freq 50kHz<br>18 digital 24V           | 50:<br>20x 5V<br>2x 24V<br>4x 0-20mA<br>6x Freq 50kHz<br>18 digital 24V            |
| <b>Outputs total</b> | 8:<br>2x CAM 2.5A<br>4x PWM HS 4A<br>4x PWM LS 2A                                 | 16:<br>6x CAM 2.5A<br>4x PWM HS 4A<br>12x PWM LS 2A                               | 36:<br>10x CAM 2.5A<br>8x PWM HS 4A<br>20x PWM LS 2A<br>8 digital LS 0.2A         | 36:<br>8x PWM HS 4A<br>20x digital LS 2.5A<br>5 digital HS 4A<br>8 digital LS 0.2A |

*The inputs and outputs can have different functionality depending on software configuration*

### Common features

Compliance: CE, UKCA, E-mark R10, CRA prepared

Protection: IP65, IP6k9k

Voltage supply: 12/24V

Interface: CAN x1 (2.0B/FD) supports IQAN proprietary (ICP)



## Expansion Modules - IQAN-XC2x

Parker's IQAN-XC21/XC22/XC23 expansion modules are a subset of the collection of expansion/slave controllers that can be added to an IQAN system. The housing is designed for stacking multiple modules, to provide a high density of I/O in a small footprint.

The IQAN-XC21 is designed for in-cab use on mobile machinery. The small size makes it perfect for use in armrest controls. It uses four Molex Micro-fit connectors of varying pin density to prevent wiring mix-ups.

The IQAN-XC22 and IQAN-XC23 are designed for outdoor use on mobile machinery. The sealed housing uses 2 or 3 keyed Deutsch DTM connectors to prevent wiring mix-ups.

|            | IQAN-XC21 | IQAN-XC22 | IQAN-XC23 |
|------------|-----------|-----------|-----------|
| Order code | 20077775  | 20077784  | 20077792  |



Expansion controller

|                      |  |  |  |
|----------------------|--|--|--|
| <b>Inputs total</b>  | 20: 8x 5V / 10x Freq 20kHz / 20x digital 24V / 1 Encoder | 12: 10x Freq 20kHz / 12x digital 24V / 1 Encoder | 20: 8x 5V / 10x Freq 20kHz / 20x digital 24V / 1 Encoder |
| <b>Outputs total</b> | 8: 8x digital LS 0.3A                                    | 8: 8x digital LS 0.3A                            | 8: 8x digital LS 0.3A                                    |
| <b>Protection</b>    | IP32   | IP65, IP6k9k                                     | IP65, IP6k9k   |

*The inputs and outputs can have different functionality depending on software configuration*

### Common features

Compliance: CE, UKCA

Voltage supply: 12/24V

Interface: CAN x1 (2.0B) supports IQAN proprietary (ICP)

Stackable mounting



## Display Modules - IQAN-MD5

Parker's IQAN-MD5 is a family of display units with touchscreen capability and video inputs. These fully customizable displays reduce engineering expenses and costs with its easy-to-use IQAN software system and are ideal for use in any machine application as a HMI. The IQAN-MD5 displays have a rugged mechanical design with no moving parts and are completely sealed. The use of optical bonded display glass improves the readability, avoids light refraction, and eliminates possible condensation, since there is no air between the glass and LCD.

The IQAN-MD5 includes native IP camera support (SOME/IP and RTSP), eliminating the need for separate dedicated camera monitors. Mounting is easy. Well-integrated, flush mount in cabin panels, or as a stand-alone mount compatible with RAM™ mount components. The displays may be mounted in landscape or portrait orientation for easy integration of HMI or mechanics.

|                      | IQAN-MD5-5  | IQAN-MD5-8  | IQAN-MD5-10   | IQAN-MD5-12  |
|----------------------|---|---|---|--|
| Part number          | 20085201  | 20085202  | 20085203  | 20085204   |
|                      |  |  |  |  |
| Enclosure Size [mm]  | 102x141x45  | 141x215x45  | 173x252x45  | 147x329x45   |
| Aspect ratio         | 16:9  | 16:9  | 16:10   | 21:8   |
| Resolution [pixel]   | 800x480   | 1280x720  | 1280x800  | 1920x720   |
| Monitor arm mount    | RAM 49  | RAM 30x38   | RAM 30x38   | RAM 30x38  |
| Digital in, encoder  | 8/2   | 8/2   | 8/2   | 8/2  |
| Digital out          | 1 x HS (5V), 2 x LS (300 mA)  | 1 x HS (5V), 2 x LS (300 mA)  | 1 x HS (5V), 2 x LS (300 mA)  | 1 x HS (5V), 2 x LS (300 mA)   |
| Ethernet 100 Base-TX | 1   | 2   | 2   | 2  |
| Wake                 | Yes (LWU, CAN, RTC)  |
| RTC                  | Yes   | Yes   | Yes   | Yes  |

### Common features

Compliance: CE, UKCA, E-mark R10, CRA prepared

Protection: IP65, IP6k9k

Voltage supply: 12/24V

Screen: TCapacitive touch glove use / 16M colors / LED Backlight / 85° viewing angle / Ambient light sensor

Interface: CAN x3 (2.0B/FD) supports IQAN proprietary (ICP), SAE J1939 and generic CAN

Molex MX123 (56pol) connector

CPU 4 x ARM 1.25 GHz

Memory Flash 8 GB / RAM 512 MB



## Levers and Joysticks

Parker's diverse selection of levers and joysticks includes mini and paddle-style, single-axis and two-axis analog joysticks designed for use in demanding mobile applications. They are available in a variety of formats and mounting and installation configurations as well as with deployment/actuation options such as buttons, thumb wheels, and triggers.

|                         | IQAN-LSL  | IQAN-LST  | IQAN-LC6-X05  | IQAN-LC5-X05  |
|-------------------------|---|---|---|---|
|                         |  |  |  |  |
|                         | Single axis hall effect   | Single axis hall effect   | 4 Proportional  | 4 Proportional  |
|                         | 5 VDC   | 5 VDC   | 5 VDC   | 5 VDC   |
| <b>Connector</b>        | AMP/Tyco, Deutsch DT, Molex Microfit 3.0  | AMP/Tyco, Deutsch DT  | Molex MicroFit 3.0  | Deutsch DTM   |
|                         | IP65/IP44   | IP66  | IP67  | IP65  |
| <b>Cycles</b>           | 5 Million / 2 Million   | 5 Million   | 5 Million   | 5 Million   |
| <b>Options</b>          | Switch, detent  | Detent  | Rocker, ring  | 1-8 buttons, 1-2 thumbwheels, trigger   |
| <b>Deflection angle</b> | 20 degrees  | 30 degrees  | 20 degrees  | 20 degrees  |
| <b>Dimensions [mm]</b>  | 111 (57) x 112 x 42   | 53 (8)x 48 x 32   | 109 (38) x 65 x 65  | 240 (49) x 105 x 105  |



## IQAN Software Development Tools



### Best-in-class software

We believe that superior machine functionality is the number one priority and that the way to get there shall be simple, fast and intuitive.

On all devices



IQAN tools are available for PCs, tablets and smartphones. Advanced engineering and service tools are available for PC installation.

### Secure and reliable

IQAN lets you protect your Intellectual Property with multiple encrypted access levels. With a well-defined structure for access levels you can make sure that all parts of your organization have access to service and maintain your machines for maximum uptime

## IQANdesign

IQANdesign is a high-level graphical design tool that simplifies application development for your mobile machine and reduces development time. This tool is mainly used for system layout and machine function design. A wide range of predefined building blocks is available, such as closed-loop control, signal processing, math calculations, communication protocols (e.g., SAE J1939), and system diagnostics.



## IQANsimulate

IQANsimulate is a simulation tool, which simplifies function test, validation and reduces development time. It simulates all of the hardware modules in an IQAN application. Software simulation is a safer way to test new applications than on an actual machine.



## IQANrun

IQANrun is a user-friendly service, production and machine owner tool which lets you diagnose, measure, configure, adjust and update your machine. Future software updates are included with the IQANrun purchase.



## IQANgo



IQANgo is a user-friendly service tool for the IQAN series of controllers and displays. It enables service technicians or machine owners to connect wireless to IQAN modules in their machines and perform actions such as check system status, view logs, measure in real-time, change settings and remote assistance.

Available for Android and iOS



## IQANtoolbox for simulink

Using the IQAN Toolbox for Simulink makes it easy to export Simulink models from MATLAB®/Simulink® for use with compatible IQAN master modules in IQANdesign. Integrate Simulink models with your IQAN application using IQANdesign, simulate using IQANsimulate and deploy the complete project to master modules with a single send operation.



## Bluetooth® communication adapter - IQAN-G12

Parker's IQAN-G12 Bluetooth adapter delivers on-site short range or off-site remote diagnostic access to machines in rugged outdoor environments by wireless communication, using IQAN software tools. The IQAN-G12 is designed to transmit wireless diagnostic data from the IQAN system to a user's smartphone or a tablet with IQANgo app, or to a PC with IQANrun. To communicate with the machine remotely, the phone or tablet can connect to a remote computer via IQANconnect



|                     |                        |
|---------------------|------------------------|
| <b>Model</b>        | <b>IQAN-G12</b>        |
| <b>Part Number</b>  | <b>20085200</b>        |
| <b>IP rating</b>    | IP6k9k                 |
| <b>Power rating</b> | 12/24V                 |
| <b>Connector</b>    | DT06-4S                |
| <b>Bluetooth</b>    | 5.2                    |
| <b>Range</b>        | Up to 30m              |
| <b>Security</b>     | Pairing and encryption |



## Accessories

### Vision System Camera - IQAN-SV

Parker's IQAN-SV is a digital, high resolution IP camera utilizing the SOME/IP protocol over Ethernet for seamless integration with IQAN displays. The vision system supports multiple cameras via an Ethernet switch. IQAN-SV provides a 120° field of view with high image quality, accurate color reproduction, and high light sensitivity. Its high frame rate delivers a low latency video stream with no perceptible delay.



| Model                       | IQAN-SV        |
|-----------------------------|----------------|
| Part Number                 | 20085106       |
| IP rating                   | IP67, IP6K9K   |
| Voltage supply              | 9 - 32 Vdc     |
| Temperature operating range | -40°C to +85°C |
| Ethernet                    | 100 base-TX    |

### Pressure Sensors - IQAN-SP

Parker's IQAN-SP has stainless steel construction for strength. Its sensor cells use thin film technology with no internal o-rings or fluid. The high pressure capability makes the sensor very robust and able to withstand vibration.



| Model                 | IQAN-SP035-D           | IQAN-SP500-D           | IQAN-SP035-B | IQAN-SP500-B |
|-----------------------|------------------------|------------------------|--------------|--------------|
| Part Number           | 2820008                | 2820009                | 5020026      | 5020027      |
| Pressure Range (bar)  | 0-35                   | 0-500                  | 0-35         | 0-500        |
| Electrical Connection | AMP/Tyco               | AMP/Tyco               | Deutsch DT   | Deutsch DT   |
| Threaded interface    | 9/16"-18 UNF,<br>SAE 6 | 9/16"-18 UNF,<br>SAE 6 | G1/4 BSP     | G1/4 BSP     |

### Temperature Sensors - IQAN-ST

Parker's IQAN-ST has stainless steel construction for strength. Its PT100 sensor uses thin film technology with internal amplification. All versions of the sensor have high pressure capability. The IQAN-ST is very robust and able to withstand heavy vibrations.



| Model                 | IQAN-ST-G-B   | IQAN-ST-U-D     | IQAN-ST-M-B         |
|-----------------------|---------------|-----------------|---------------------|
| Part Number           | 20073657      | 20073658        | 20073659            |
| Electrical Connection | AMP/Tyco      | Deutsch DT04-4P | AMP/Tyco            |
| Threaded interface    | G1/4 - 19 BSP | M10             | 9/16"-18 UNF, SAE 6 |

### Other Sensors, Connectors, Cables

Parker's diverse selection of mobile controller accessories includes IQAN address tags and terminating resistors for identifying IQAN CANBus system modules or controllers; Delphi, AMP Superseal, Deutsch and Molex connector kits that contain mating connector housing parts, terminals and seals; and a wide array of other accessories.



