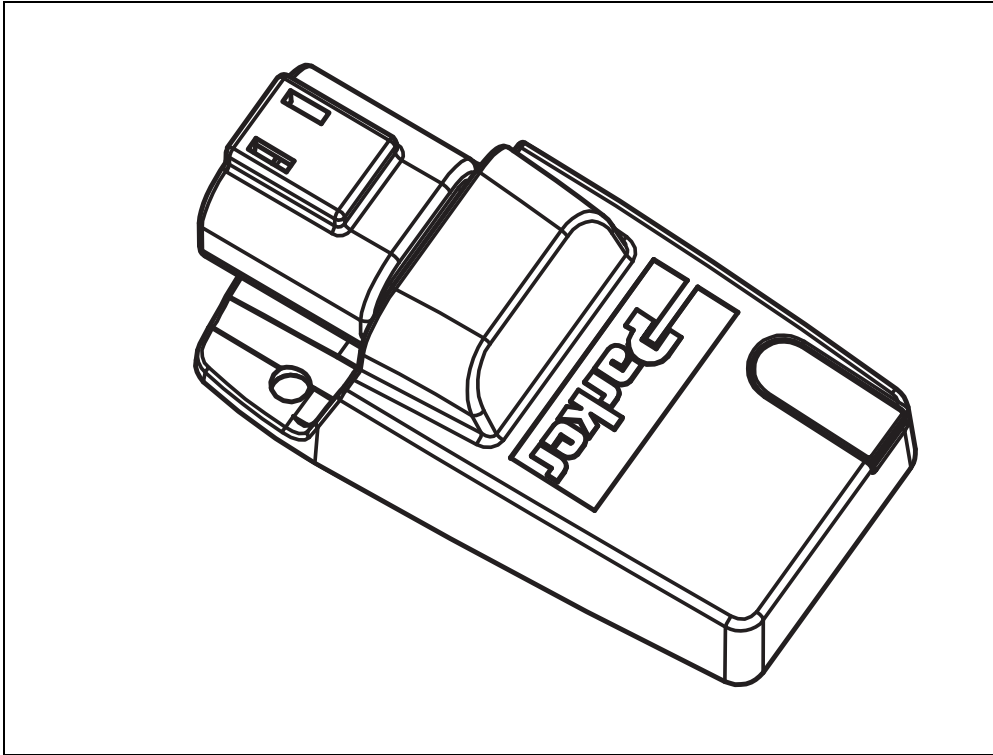


# IQAN-G11

## Instruction book

Publ no MSG17-8416-IB/UK  
Edition 2020-02-05



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## Publication history

The following table provides an overview of the changes made to this document over the course of its publication history.

Revision / date	Description of change
Rev. 001 / 2016-04-21	Updated Appendix A and pictures.
Rev. 002 / 2018-06-09	Added Appendix for IQANsync instructions, "Bypass Application" note and updated document ID.
Rev. 003 / 2020-02-05	Offer of sale removed

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#### Warning

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS 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 and/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.
-

# 1 Introduction

These instructions are to be used as a reference tool for the vehicle manufacturer's design, production, and service personnel.

The user of these instructions should have basic knowledge in the handling of electronic equipment.

## Safety symbols

Sections regarding safety, marked with a symbol in the left margin, must be read and understood by everyone using the system, carrying out service work or making changes to hardware and software.

The different safety levels used in this manual are defined below.



### WARNING

Sections labeled *WARNING* with a caution symbol in the left margin, indicate that a hazardous situation exists. If precautions are not taken, this could result in death, injury, or property damage.



### NOTICE

Sections labeled *NOTICE* with a notice symbol in the left margin, indicate there is important information about the product. Ignoring this could result in less than optimal performance, or damage to the product.

## Compliance with FCC/IC

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment has very low levels of RF energy that it deemed to comply without maximum permissive exposure evaluation (MPE).

Contains transmitter FCC ID: VPYLBZY

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that it deemed to comply without maximum permissive exposure evaluation (MPE).

*Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement émet une énergie RF très faible qui est considérée conforme sans évaluation de l'exposition maximale autorisée.*

Contains IC: 772C-LBZY

Contact the manufacturer if there is anything you are not sure about or if you have any questions regarding the product and its handling or maintenance.

The term "manufacturer" refers to Parker Hannifin Corporation.

## 2 Precautions

Work on the hydraulics control electronics may only be carried out by trained personnel who are well-acquainted with the control system, the machine and its safety regulations.



### WARNING

Make sure that you have sufficient knowledge before designing, modifying or servicing the control system.

Read the relevant sections of this document before conducting any work on the control system.



### WARNING

This product is not field repairable.



### NOTICE

As much as possible of the welding work on the chassis should be done before the installation of the system. If welding has to be done afterwards, the electrical connections on the system must be disconnected from other equipment. The negative cable must always be disconnected from the battery before disconnecting the positive cable. The ground wire of the welder shall be positioned as close as possible to the place of the welding. The cables on the welding unit shall never be placed near the electrical wires of the control system.

## Operation

IQAN-G11 receives and transmits radio frequency energy while switched on.

Follow any special regulations and always switch off the IQAN-G11 wherever forbidden, or when you suspect that it may cause interference or danger.

## Disposal

Observe your local/national regulations when disposing the device and its package.

## Start-up, maintenance, and diagnostics

For all personnel carrying out installation, commissioning, maintenance or troubleshooting.



### WARNING

Work on the hydraulics control electronics may only be carried out by trained personnel who are well-acquainted with the control system, the machine and its safety regulations.

### Before you start,

Read section "Start-up", on page 13.

### Additional information for service

Mounting and maintenance instruction book.

**Additional information for diagnosing the system**

For information, see Appendix B, on page 16, in this document.



**NOTICE**

It is required to download the operating system 4.01 or later to enable full functionality of the IQAN-G11 in IQANdesign platform systems.

## 3 Quick start guide

### Getting started with remote diagnostics

To use the IQAN-G11 you will also need the smartphone app, IQANsync. The IQAN-G11 can be used in either on-site or remote modes.

#### Tools

- IQAN-G11 Bluetooth® adapter hardware from Parker.
- Smart phone or tablet with internet connectivity.
- IQANsync app, available to download from AppStore. (Android version under development)
- IQANconnect service subscription (for remote diagnostics mode)

Before starting your on-site short range operations, be sure your IQAN-G11 is installed in the IQAN system and powered.

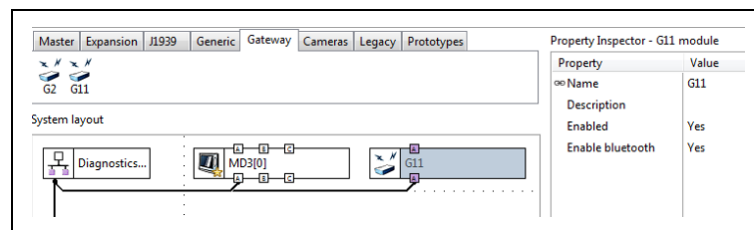


#### NOTICE

Refer to the User Manual, MSG17-8416-UM/UK for detailed information on using the IQAN-G11 with your mobile device, the IQANsync app and IQANconnect.

#### IQANdesign set up for IQAN-G11 support.

To use an IQAN-G11, you must add it in the application and connect it to the diagnostic bus (available from IQANdesign 4.01 and later).

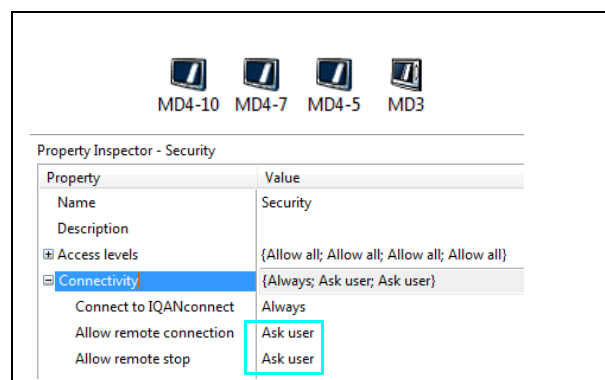


Add IQAN-G11 to diagnostics bus in IQANdesign.

Security settings for Master display units should be set up to:

- "ask user" for remote connection and remote stop

Operators can acknowledge the request for a remote diagnostics connection when it is safe and convenient.



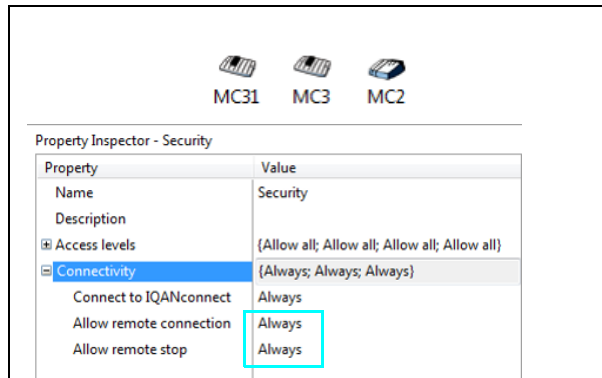
Set security property to "ask user" to use IQAN-G11 and IQANconnect.



Security settings for Master units without a display need to be set up to:

- always allow remote connection and remote stop, or
- to have a digital channel that determines when it is safe to allow a remote connection.

Without a display operators cannot acknowledge the "ask user" alternative.



Set security property to always allow use of IQAN-G11 and IQANconnect in IQANdesign.



**NOTICE**

The "always" option is not the most secure example, for better security it is recommended to use an input to allow a remote stop.



**NOTICE**

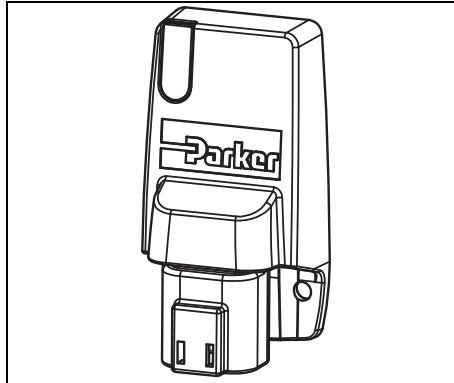
If the connected master is started in the "Bypass application" mode, it is considered to be in a safe state and is set to the "always" option until restarted.

## 4 Product description

### General

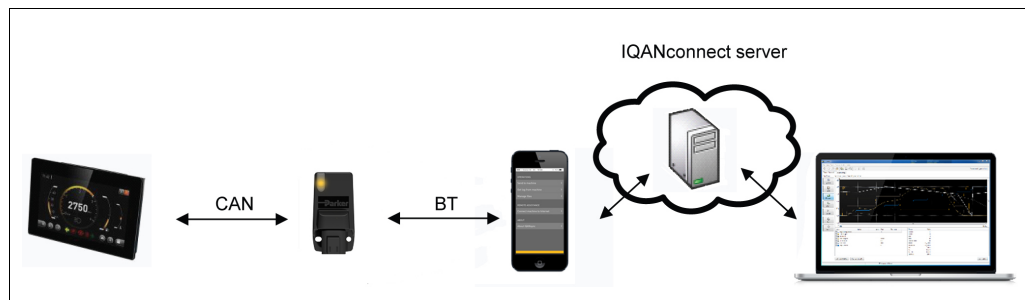
The IQAN-G11 is a Bluetooth dongle that works with the MD4, MD3, MC4, MC3 and MC2 master modules in IQANdesign (4.00 or later) platform control systems.

The IQAN-G11 is designed to transmit wireless diagnostic data from the IQAN system to a smartphone with IQANsync or a tablet with IQANrun.



The IQAN-G11 module.

### System overview



The IQAN-G11 in a typical system.

The gateway module, IQAN-G11, is the wireless diagnostic unit in an IQAN system. All IQAN-G11 devices are equipped with Bluetooth.

### Communication

The communication interfaces are used for uploading/downloading applications or diagnostics and typically communicate with an IQAN master module.

#### CAN

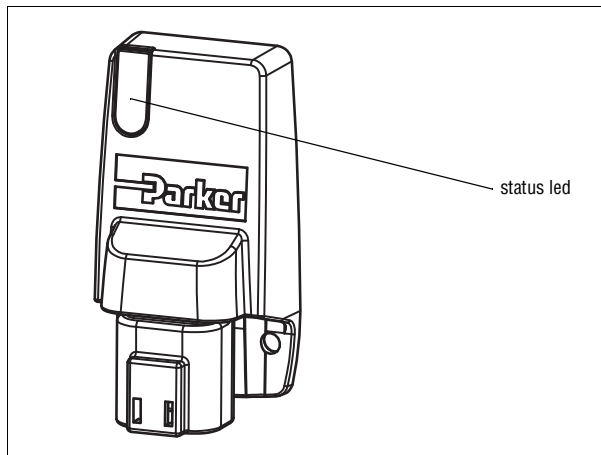
The IQAN-G11 has 1 CAN interface. It is located in the Deutsch DT 4 pin connector and is used to interface with IQAN master modules (e.g. IQAN-MD4).

#### Bluetooth

The IQAN-G11 has an embedded Bluetooth 4.0 low energy, and is suitable for use with a smartphone with IQANsync or tablet with IQANrun.

### System Diagnostics

The IQAN-G11 has 1 bi-color LED light on front surface indicating system status and dongle status.



Location of status LED.

For more information about the status and error messages, see Appendix B, on page 16.

## 5 Markings and approvals

### Declaration of Conformity



### Declaration of Conformity

We: Parker Hannifin Manufacturing Sweden AB  
Electronic Controls Division

Located at: Mölnlycke Fabriker 14  
S-435 35 Mölnlycke, SWEDEN  
Tel. +46 31 750 44 00

Declare that the products identified herein comply with the essential requirements of the following EU directives:

**2004/108/EC**      **EU EMC Directive**  
**2011/65/EU**      **EU RoHS II Directive**

Harmonized standards:

ISO 14982:2009	Agricultural and forestry machines - Electromagnetic compatibility - Test methods and acceptance criteria
EN 13309:2010	Construction machinery - Electromagnetic compatibility of machines with internal electrical power supply
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Trade Name: Electrohydraulic Control Systems

**Products:**      **IQAN-G11**

Signature of responsible party:

A handwritten signature in blue ink, appearing to read 'Håkan Jisland'.

Printed name of responsible party: Håkan Jisland  
Position of responsible party: Operations Manager

Executed on February 23<sup>th</sup> 2016, at Mölnlycke, Sweden

## 6 Mounting

### Mounting the IQAN-G11

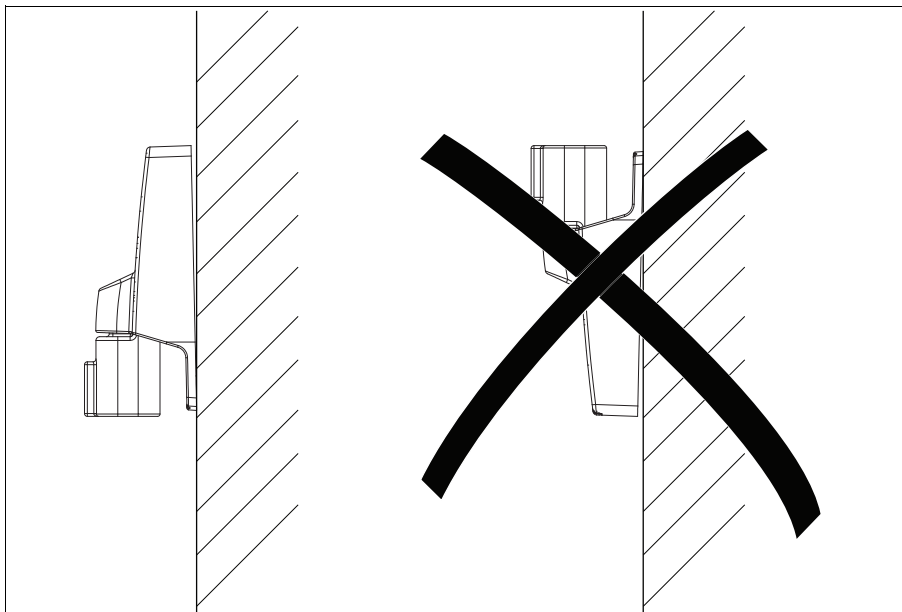
The IQAN-G11 should be mounted with the connector facing down. Fastening method is flange mounting with 2 bolts.



#### NOTICE

The IQAN-G11 module should be mounted according to the following instructions:

- Locate the module eliminating the risk for the cabling to be folded, crushed or damaged in any way. Ensure the cabling cannot pull, twist or induce side load on the connector.
- Locate the module so that physical impact is avoided.
- Locate the module so that air can circulate to eliminate excess heat. Ensure that no external heat, e.g. from the engine or heater, is transferred to the module.
- Locate the module to protect it from pressure washing and water directly spraying on the connector or similar.
- Locate the module so the LED is visible.



Mounting orientation of the IQAN-G11.



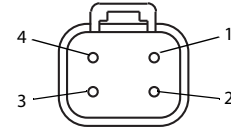
#### NOTICE

The IQAN-G11 module must not be placed in any marine related or similar continuously damp environment without external protection.

## 7 Installation

### Connector

<b>Connector kit</b>	<b>Parker no. 5031113</b>
Housing	DT06-4S
Wedge	W4S
Sockets	1062-16-0122



### Connector pin assignments

Logical Symbol	Pin No.	(I)input or (O)utput	Function description and/or Signal name(s)
-BAT	1	-	Power supply, negative ground
+BAT	2	-	Power supply, positive
CAN-L	3	-	CAN low
CAN-H	4	-	CAN high

## Supply voltage

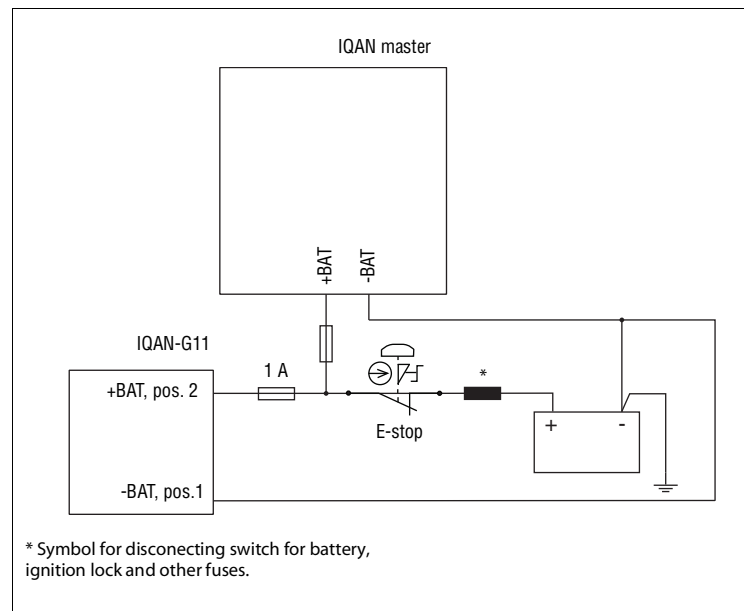


### WARNING

Before any installation of the IQAN system can take place, make sure the ignition lock is turned off and the battery is disconnected.

### Connecting of Supply Voltage

The supply voltage, should be within the operating range, see Appendix A, on page 14. Connect the supply voltage to +BAT, position 2 and -BAT, position 1. Protect the module by using a fuse. Requisite fuse level should be 1 A, fast (F).



Connecting the voltage supply.



### NOTICE

Connect the dongle to the same power and ground as the IQAN master.

The power supply must be common to both the dongle and the master unit to ensure trouble free communication. Most importantly, the ground connection (-BAT), must be the same.



### NOTICE

Do not use the chassis as the negative terminal.

### Polarity reversal

The IQAN-G11 module is protected against power supply polarity reversal, provided an external fuse, max 1 A (Fast) is being used.

If this fuse is not used, polarity reversal can damage the unit.



### NOTICE

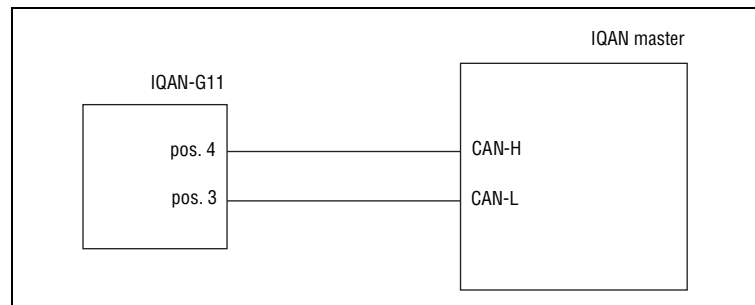
IQAN-G11 does not have load-dump protection and must be mounted within approx 2 meters from a unit with load-dump protection.

## Communication

### CAN connection

The IQAN-G11 has a *CAN interface* in its connector to communicate with IQAN master modules to provide them with remote diagnostic capabilities.

The signals on the CAN connection terminals CAN-Low and CAN-High must match the signals on the CAN terminals of the connected devices.



Connecting IQAN master to IQAN-G11.

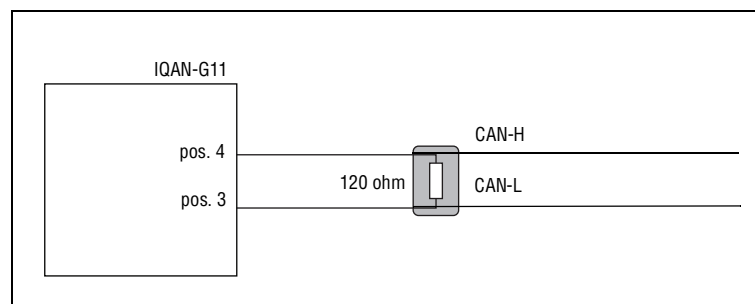


### NOTICE

A connection will be charged against your IQANconnect subscription whenever you initiate communication with a system.

### CAN termination

If the IQAN-G11 is located at the end of the CAN bus, it must have a termination resistor installed to terminate the bus.



Terminating IQAN master to IQAN-G11.



### NOTICE

A terminating resistor of 120 ohms must be installed between the CAN-H and CAN-L pins at the IQAN-G11 if it is located at the end of the CAN bus.



## 8 Start-up

### Start-up procedures

This chapter contains instructions for action to be taken in connection with the initial start.



#### **WARNING**

Risk of injury!

If the control system is not fitted properly, the machine could move uncontrollably. The machine's engine shall not be started before the control system is completely fitted and its signals are verified.

### Starting the control system

#### **Start the control system as follows:**

- Prior to start, all modules and cables are to be fitted correctly.
- Check fuses, i.e. make sure that the supply voltage to the modules is equipped with the correct fuse.
- Make sure that connections for supply voltage and return lines are correct in the cable's conductor joint.
- Make sure an emergency stop is installed.  
The emergency stop should disconnect the supply voltage to all modules. Alternatively, the emergency stop may also shut off the diesel engine or a dump valve, and with that, depressurize the hydraulic system.

### Prepare for system start



#### **WARNING**

Make sure no one is in dangerous proximity to the vehicle to avoid injuries when it starts.

#### **Prepare for the initial system start as follows:**

- The engine for the hydraulic system's pump shall be in off position.
- Make sure that all connectors are properly connected.
- Turn on the control system.
- Make sure that voltage is being supplied to all modules; the power/status diode shall be illuminated on all modules. Also, make sure that the master is in contact with all modules by reading the master's display.
- Make sure the emergency stop is functioning properly.

### Start the system

#### **Start the system as follows:**

- Start the engine for the hydraulic system's pump, assuming that the above mentioned inspections have been carried out and shown correct values.
- Calibrate and adjust input and output signals according to the instructions related to the master menu system and check each and every output function carefully.

## Appendix A

### IQAN-G11 Technical Overview

#### Absolute Maximum Ratings<sup>a</sup>

Parameter	Limit values			Unit	Remark
	min.	typ.	max.		
Ambient temperature, T <sub>AOP</sub>	- 40		+85	°C	
Storage temperature, T <sub>AST</sub>	- 40		+105	°C	
Voltage supply on +BAT	6.5		36	V	Reverse polarity protected with 1A fuse.
Voltage on any pin with respect to -BAT			36	V	

a. The “Absolute Maximum Ratings” table lists the maximum limits to which the device can be subjected without damage. **This doesn’t imply that the device will function at these extreme conditions**, only that, when these conditions are removed and the device operated within the “Recommended Operating Conditions”, it will still be functional and its useful life won’t have been shortened.

#### Environmental ratings

Parameter	Remark
EMC  ISO 13309:2010/ISO 14982:2009, radiated emission EN 55025:2008, 0.15-108 MHz, conducted emission ISO 11452-4:2005, conducted susceptibility ISO 11452-2:2004, radiated susceptibility ISO 11452-2:2004, radiated susceptibility ISO 7637-2:2004, conducted transients susceptibility ISO 7637-3:2007, conducted transients susceptibility	0.15-108 MHz, Class 1 1 - 200 MHz, 1 kHz, 80% AM, 150 mA 200-2000 MHz, 1kHz, 80% AM, 100 V/m 800-2000 MHz, PM 577 us / 4.6 ms, 60 V/m Pulse 1, 2a, 2b, 3a, 3b, 4, Level 3; Pulse 5, Level 3 Level 3
ESD  ISO 10605:2008, operation  ISO 10605:2008, handling	15 kV, air 8 kV contact 8 kV contact
Mechanical environment  EN 60068-2-64:2008 Fh, randomvibration EN 60068-2-29:1987 Eb, bump	15-1000 Hz, 11.6 Grms, 3x10 hours 40g, 6 ms, 1000 x 6 directions
Climate environment  IEC 60529:2001;DIN 40050 Part 9:1993, IP protection 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, operation IEC 60068-2-2:2007 Bb, Heat, storage IEC 60068-2-1:1993 Ab, Cold IEC 60068-2-14:1984 Nb, Change of temperature	IP6K9K +55°C, 95% RH, 6 cycles +40°C, 93% RH, 21 days +85°C, 16 hours +105°C, 240 hours -40°C, 16 hours - 30°C to +55°C, 100 x 4 hours

## System

$T_A = +25\text{ °C}$  (unless otherwise specified)

Parameter	Limit values			Unit	Remark
	min.	typ.	max.		
Weight		60		grams	
Ambient temperature	-40		+85	°C	
Voltage supply, $V_{BAT}$	9		32	V	
Current consumption		17 10		mA	@14 Vdc @28 Vdc

## Approvals

Parameter	Remark
FCC (United States) IC (Canada) CE (Europe) E-mark	FCC ID: VPYLBZY IC: 772C-VPZY 2004/108/EC ECE regulation No. 10.05:2014, Approval number E5 10 R-05273

## Bluetooth

Parameter	Remark
Bluetooth	Bluetooth 4.0 LE (Bluetooth Smart)
Output power	0 dBm
Range Normal	up to 20m (in most cases 5 to 10m)
Data rate	up to 70 Kbit/sec

## CAN

Parameter	Remark
CAN specification	2.0A and 2.0B
CAN bus speed	100 kbit to 500 kbit
Protection	SCB, SCG

## Appendix B

### LED messages and actions

If an error is detected, a message will be presented on the LED.



#### WARNING

An error message could indicate that a hazardous situation exists. If precautions are not taken, this could result in death, serious injury or major property damage.

#### LED indicators showing different IQAN-G11 modes

Status		Flash (yellow)
Init	100 ms on 100 ms off	
Waiting	100 ms on 2900 ms off	
Connected	900 ms on 100 ms off	

Error code	Error	Primary Flash (red) Error category	Secondary Flash (yellow) Error description
3:1	CAN, no contact		
3:4	CAN error (bus off)		
4:1	Internal error/OSE		
4:2	Internal error/G11		

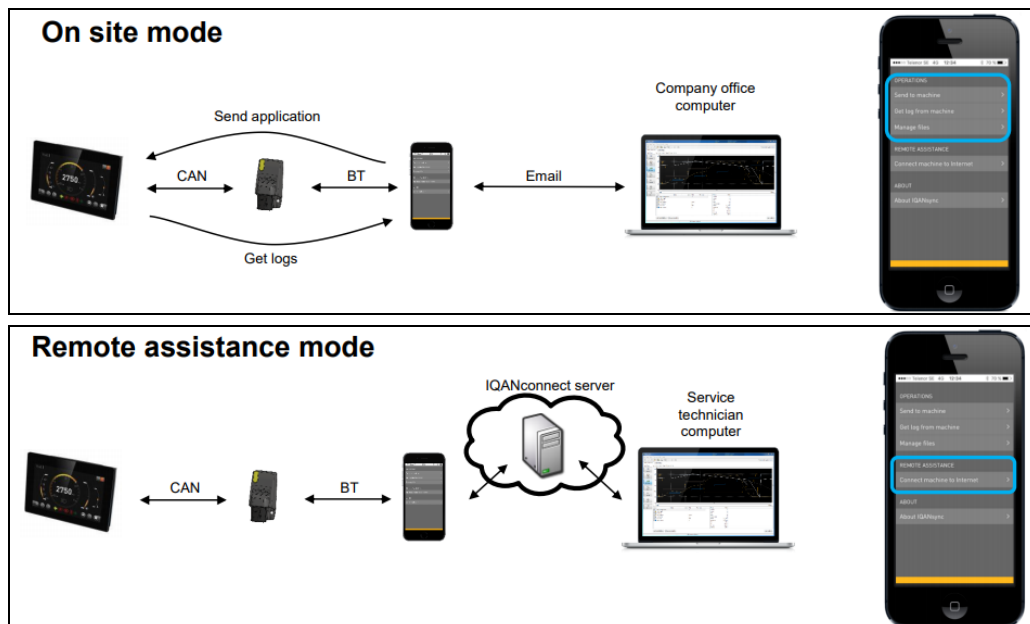
## Appendix C

### IQANsync manual



#### IQANsync modes together with the IQAN-G11

- **On site mode** - short range mode where IQANsync can act as a "memory card". The user can send files stored on the smart phone to the IQAN master unit via the IQAN-G11 module. The user can also download logs from the IQAN master to the phone and store on smart phone or forward files via email or store in dropbox folder Smart phone or tablet with internet connectivity.
- **Remote assistance mode** - the IQANsync app together with the IQANG11 connects the machine to internet and makes the IQAN master available to remote support using the IQANconnect service.



IQANsync modes

### Send and get operations

- Start the IQANsync app and Select "Send to machine" or "Get log from machine".
- Send to machine: Select the project, clone or settings file you want to send to machine.
- When the correct machine ID shows up, select it and tap "Connect"



Send and get operations.

### Manage files

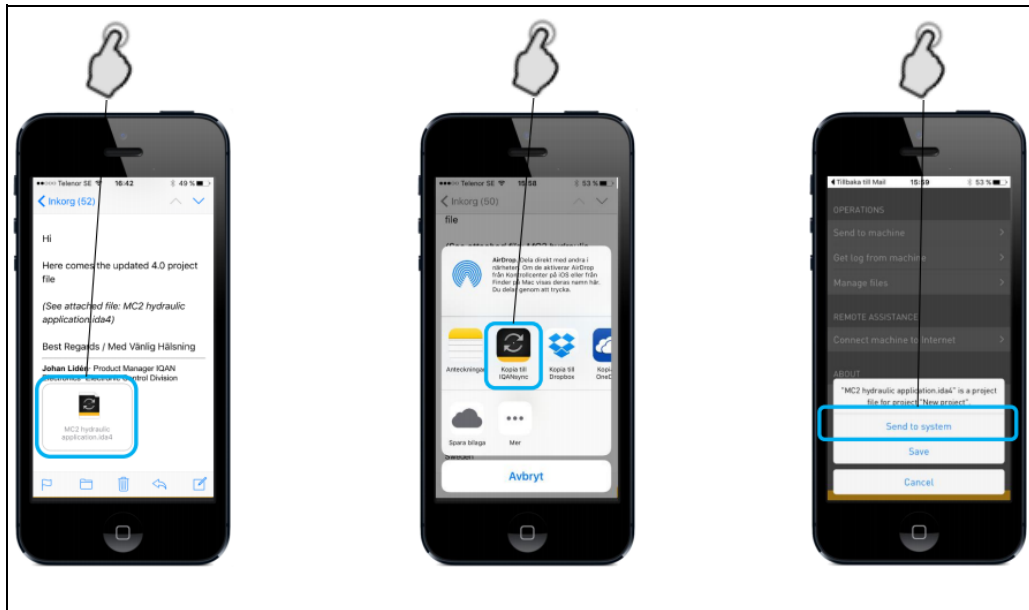
- Start the IQANsync app and Select "Manage files".
- Select the file you want to work with
- Select the desired operation



Manage files.

### Receiving project file via email

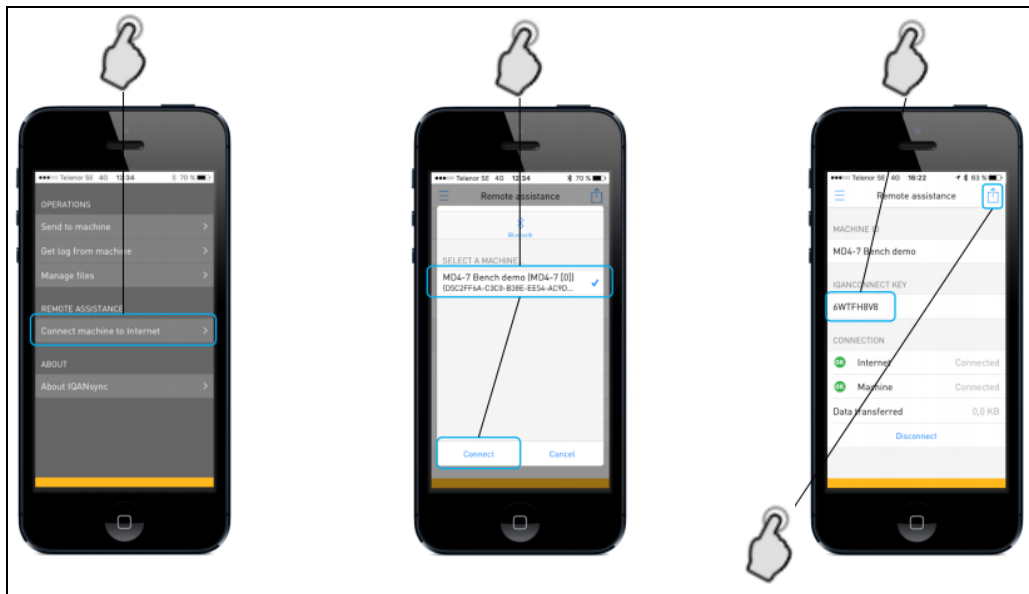
- Click on the attached file in the Mail app
- Select "Copy to IQANsync"
- Select if file shall be sent to system straight away or saved to phone for later access



Receiving project file via email.

### Connect machine to internet

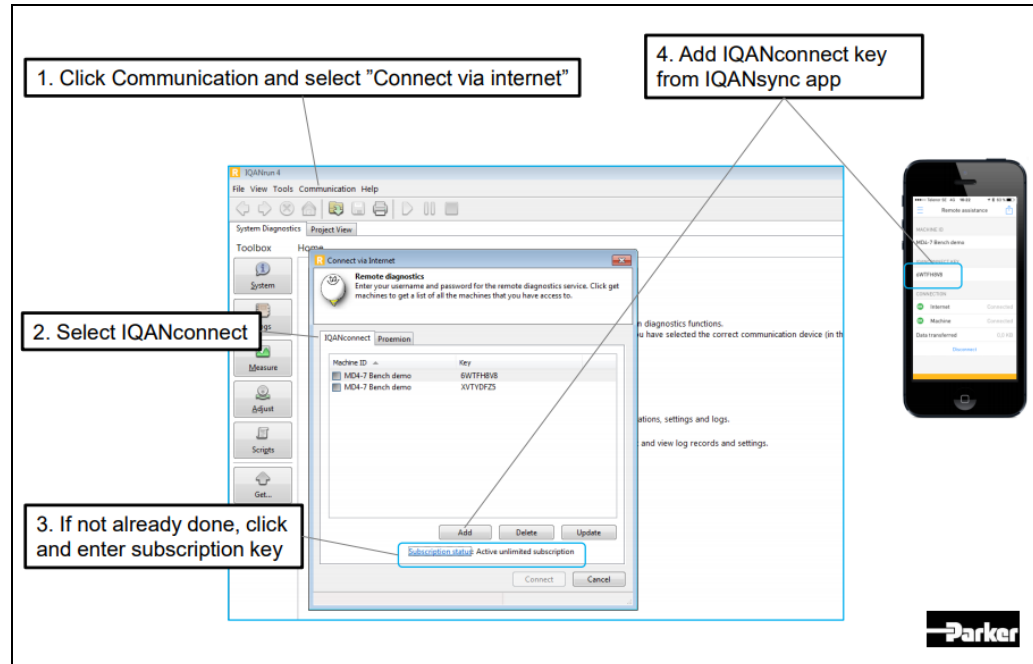
- Start the IQANsync app and Select "Connect machine to Internet"
- When the correct machine ID shows up, select it and tap "Connect"
- The IQANconnect key is shown in the Remote assistance view
- The IQANconnect key can be sent to another person by tapping this icon



Connecting machine to internet.

## Connect via Internet from IQANrun

- Click Communication and select "Connect via internet".
- Select IQANconnect.
- If not already done, click and enter subscription key.
- Add IQANconnect key from IQANsync app.

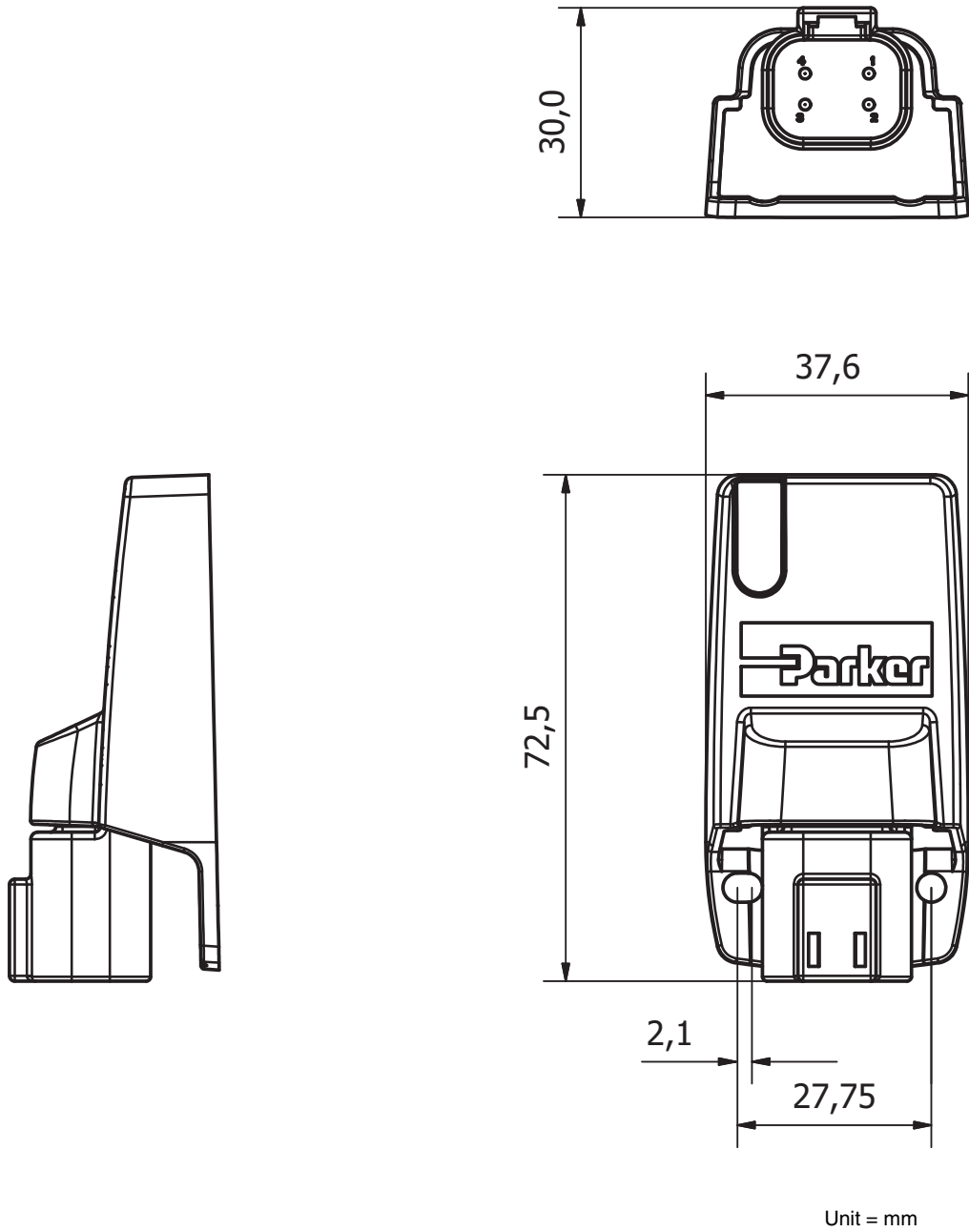


Connect via internet from IQANrun.



## Appendix D

### Dimensioning of the IQAN-G11 module



For latest information visit our website [www.iqan.com](http://www.iqan.com)

Information in this instructionbook is subject to change without notice

Publ no MSG17-8416-IB/UK  
Edition 2020-02-05

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