

MAQ[®]20

Industrial Data Acquisition and Control System

MA1060

MAQ20-951 and MAQ20-952 IPEmotion for MAQ20 Dataforth Plugin User Manual



DATAFORTH®

IPEmotion for MAQ20 Dataforth Plugin User Manual MA1060 Rev. B – August 2020 © 2020 Dataforth Corporation. All Rights Reserved. ISO 9001:2015 Registered QMS

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Dataforth spans the globe with more than 50 International Distributors and US Representative Companies. Our customers benefit from a team of over 130 sales people highly trained in the application of precision products for industrial markets. In addition, we have a team of application engineers in our Tucson factory ready to solve any in-depth application questions. Upon receipt of an RFQ or order, our Customer Service Department provides fast one-day delivery information turnaround. We maintain an ample inventory that allows small quantity orders to be shipped from stock.

Dataforth operates under an ISO9001:2015 quality management system.

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1.0 System Features

The MAQ20 Data Acquisition System encompasses more than 35 years of design excellence in the process control industry. It is a family of high performance, DIN rail mounted, programmable, multi-channel, industrially rugged signal conditioning I/O and communications modules.

Instrument Class Performance

- ±0.035% Accuracy
- Industry leading ±0.3°C CJC Accuracy over full operating temperature range
- Ultra low Zero and Span Tempco
- Over-range on one channel does not affect other channels
- 1500Vrms Channel-to-Bus Isolation
- 240Vrms Continuous Field I/O Protection
- ANSI/IEEE C37.90.1 Transient Protection
- Ventilated Communications and I/O Modules
- Industrial Operating Temperature of -40°C to +85°C
- Wide Range 7-34VDC Power
- CE Compliant, UL/CUL Listing and ATEX Compliance pending

Industry Leading Functionality

- The system is a Modbus Server and can be operated remotely with no local PC
- Up to 8GB of logged data can be transferred via FTP during real-time acquisition
- Up to 24 I/O modules, or 384 analog or 480 digital channels, per system, 19" rack width
- Per-channel configurable for range, alarms, and other functions
- · Backbone mounts within DIN rail and distributes power and communications
- System firmware automatically registers the installation and removal of I/O modules
- I/O modules can be mounted remotely from the Communications Module
- Equal load sharing power supply modules allow for system expansion
- Hot Swappable I/O modules with Field-side pluggable terminal blocks on most models
- Sophisticated package enables high density mounting in 3U increments
- DIN Rail can be mounted on a continuous flat panel or plate

Distributed Processing Enables Even More Functionality

- Output modules are programmable for user-defined waveforms
- Discrete I/O modules have seven high level functions:
 - Pulse Counter
 - Frequency Counter
 - Waveform Measurement
 - Time Between Events
 - Frequency Generator
 - PWM Generator
 - One-Shot Pulse Generator

Multiple Software Options

- Intuitive Graphical Control Software
 - > ReDAQ Shape Graphical HMI Design & Runtime Solution
 - > IPEmotion Muli-Vendor and Multi-Language Solution
 - Programming examples and LabVIEW VIs
 - > OPC Server
 - Application Program Interface (API)

2.0 System Description and Documentation

A MAQ20 Data Acquisition System must have as a minimum a Communications Module, a Backbone, and one I/O Module. Examples include:

MAQ20-COM2, -COM4 Communications Module, Ethernet, USB & RS-232 or RS-485 Interface

MAQ20-JTC, -KTC, -TTC, -RSTC Type J, K, T, R, or S Thermocouple Input Module

MAQ20-mVDN, -VSN, -VDN Voltage Input Module

MAQ20-ISN, -IDN Process Current Input Module

MAQ20-IO, -VO Process Current Output and Process Voltage Output Module

MAQ20-BKPL4, -BKPL8, -BKPL16, -BKPL24 4, 8, 16, or 24 Channel System Backbone

Refer to <u>Dataforth MAQ20 Industrial Data Acquistion & Control System</u> for a complete listing of available modules and accessories.

System power is connected to the Communications Module, which in turn powers the I/O modules. For systems with power supply requirements exceeding what the Communications Module can provide, the <u>MAQ20-PWR3</u> Load Share Power Supply module is used to provide additional power. When a MAQ20 I/O module is inserted into a system, module registration occurs automatically, data acquisition starts, and data is stored locally in the module. The system is based on a Modbus compatible memory map for easy access to acquired data, configuration settings, and alarm limits. Information is stored in consistent locations in module memory for ease of use and system design. MAQ20 modules are designed for installation in Class I, Division 2 hazardous locations and have a high level of immunity to environmental noise commonly present in heavy industrial environments.

Input-to-Bus isolation is a robust 1500Vrms and each individual channel is protected up to 240Vrms continuous overload in the case of inadvertent wiring errors. Overloaded channels do not adversely affect other channels in the module which preserves data integrity.

MAQ20 system literature and software is available for download from the <u>MAQ20 Software & User</u> <u>Manual Download Center</u>. This includes, but is not limited to:

MA1036	MAQ20 Quick Start Guide
MA1040	MAQ20 Communications Module Hardware User Manual
MA1041	MAQ20 milliVolt, Volt and Current Input Module Hardware User Manual
<u>MA1066</u>	IPEmotion Software User Manual
MA1064	MAQ20 Python API User Manual
MAQ20-940/-941	ReDAQ Shape Software for MAQ20 – Developer Version/User Version
MAQ20-940/-941	ReDAQ Shape Software for MAQ20 – Developer Version/User Version
MAQ20-951/952	IPEMotion Software for MAQ20
MAQ20-960	MAQ20 Python API

3.0 Overview

This manual describes the structure of the Dataforth Plugin for IPEmotion data acquisition and control software and how to use the features to configure and operate communications and I/O modules in the Dataforth MAQ20 data acquisition and control system.

IPEmotion for MAQ20 Dataforth Plugin

Information in this document applies to the current release of the Dataforth Plugin available on the Dataforth website.

IPEmotion

Information in this documentation applies to the current release of IPEmotion software available on the Dataforth website.

4.0 Introduction

The Dataforth Plugin offers the ability to use the Dataforth MAQ®20 modular data acquisition system in IPEmotion.

The following modules are supported:

MAQ20-COM2	Communication Module; Ethernet, USB, RS-232
MAQ20-COM4	Communication Module; Ethernet, USB, RS-485
MAQ20-MVDN	Analog Input Module; mV, Differential, 8-ch
MAQ20-VDN	Analog Input Module; V, Differential, 8-ch
MAQ20-VSN	Analog Input Module; V, Single Ended, 8-ch
MAQ20-IDN	Analog Input Module; mA, Differential, 8-ch
MAQ20-ISN	Analog Input Module; mA, Single Ended, 8-ch
MAQ20-ISOV1	Isolated Analog Voltage Input Module, +/-1V, 8-ch
MAQ20-ISOV2	Isolated Analog Voltage Input Module, +/-10V, 8-ch
MAQ20-ISOV3	Isolated Analog Voltage Input Module, +/-20V, 8-ch
MAQ20-ISOV4	Isolated Analog Voltage Input Module, +/-40V, 8-ch
MAQ20-ISOV5	Isolated Analog Voltage Input Module, +/-60V, 8-ch
MAQ20-JTC	Analog Input Module; Type J Thermocouple, 8-ch
MAQ20-KTC	Analog Input Module; Type K Thermocouple, 8-ch
MAQ20-RSTC	Analog Input Module; Type R and S Thermocouple, 8-ch
MAQ20-TTC	Analog Input Module; Type T Thermocouple, 8-ch
MAQ20-RTD31	2- or 3-Wire RTD and Potentiometer Input Module; 6-ch
MAQ20-RTD41	4-Wire RTD and Potentiometer Input Module; 5-ch
MAQ20-BRDG1	Strain Gage Input Module, 4-ch
MAQ20-FREQ	Analog Input Module; Frequency, 8-ch
MAQ20-VO	Analog Output Module; Voltage, Ch-Ch Isolated, 8-ch
MAQ20-IO	Analog Output Module; Current, Ch-Ch Isolated, 8-ch
MAQ20-DIOL	Discrete Input/Output Module, 5-ch Input, 5-ch Output
MAQ20-DIOH	Discrete Input/Output Module, High Voltage AC, 4-ch Input, 4-ch Output
MAQ20-DIV20	Discrete Input Module, 20-ch
MAQ20-DIVC20	Discrete Input Module with Compliance Voltage, 20-ch
MAQ20-DODC20SK	Discrete Output Module, 20-ch
MAQ20-DORLY20	Discrete Output Module; Isolated SPST Latching Relay Channels

5.0 Installation, Set Up, and Removal

System Requirements

IPEmotion and the IPEmotion Dataforth Plugin can be run under the following operating systems:

- Windows 7, 32-bit or 64-bit*
- Windows 10, 32-bit or 64-bit*
- * IPEmotion can run on 64-bit systems, but the 32-bit version of the IPEmotion software must be used for compatibility with the 32-bit Dataforth Plugin.

Software Installation

The following instructions guide the installation process of the Dataforth Plugin.

IPEmotion Dataforth Plugin installation requires administrator rights. To complete the installation process a minimum of limited user's or default user's rights is needed.

The installation of the IPEmotion Dataforth Plugin is based on an installation wizard that guides the setup process step by step.

To install the IPEmotion Dataforth Plugin:

- 1. Double-click the **IPEmotion Dataforth PlugIn Vxxx Setup.exe** to start the installation wizard.
- 2. **Welcome screen**: This is the first screen in the IPEmotion Dataforth Plugin installation wizard. Click **Next** to continue.
- 3. **Installation folder**: Accept the default installation location for IPEmotion Dataforth Plugin. To select another location click **Browse...** and select another folder.

To get information about available disk space click Disk Cost...

By default the Plugin is available for all users on the PC. To install it for only the current user, select **Just me**.

Click **Next** to continue.

4. Confirm installation: This screen indicates that IPEmotion Dataforth Plugin is ready to install.

Click Next to start installation.

- 5. **Installation**: A progress bar is shown during the installation process. Installation complete: This screen is shown after successful installation.
- 6. Click **Close** to finish installation.

Software Removal

- 1. Open Programs and Features by clicking the **Star**t button, **Control Panel**, **Programs** and then **Programs and Features**
- 2. Select the IPEmotion Dataforth Plugin, and click Uninstall.
- 3. Click **Yes** to confirm removal.

6.0 Licensing

The MAQ20-951 and MAQ20-952 IPEMotion Software is used with the MAQ20 Data Acquisition System and is distributed by download only. MAQ20-951 is software which operates a system comprised of one MAQ20-COMx module and up to four MAQ20 I/O modules. The MAQ20-952 software allows the operation of up to an additional four MAQ20 I/O modules in a system. Multiple MAQ20-952 software licenses are required for systems with more than 8 MAQ20 I/O modules. A license is required for use of each MAQ20-951 and MAQ20-952.

A single MAQ20-951 license will allow operation of multiple MAQ20-COM2 and MAQ20-COM4 modules. A single MAQ20-951 license enables the operation of unlimited systems on a single computer. Multiple MAQ20-952 licenses must be purchased to cover the total I/O module count for all systems connected to a single computer.

The software is accessed through the Dataforth website Software Download Center. Customers must register on the website prior to downloading.

The software is available for download at no charge but will not operate without a license. Licenses are purchased under part numbers MAQ20-951 or MAQ20-952. The license is generated from the serial number of one of the MAQ20-COM2 or MAQ20-COM4 modules connected to a computer.

The IPEmotion Dataforth Edition serial number MAQ20-COM2 (or MAQ20-COM4) module is encrypted in the IPEmotion license code. If the system is configured manually, enter the serial number of the MAQ20-COMx module in the tab **Device** of the MAQ20-COMx configuration.

If the serial number is not valid the following message will post.

IPEmotion
The licensed serial number could not be found.
QK

7.0 Using the IPEmotion Dataforth Plugin

This section offers an overview about the usage of the Plugin to handle connected Dataforth MAQ20 systems. It shows how to configure modules and acquire data. The documentation of analyzing and managing the acquired data will not be part of this manual. For further information for these topics see <u>MA1066</u> IPEmotion Software User Manual.

This documentation describes the special features and functions of the IPEmotion Dataforth Plugin. Common functionalities are not part of this documentation. For further information see <u>MA1066</u> IPEmotion Software User Manual.

Adding a MAQ20 system to IPEmotion

Hardware detection

The Plugin version can detect MAQ20 systems with a MAQ20-COM2 or a MAQ20-COM4 communication module. The -COMx module must be connected via USB port to the host computer. **Systems connected via TCP/IP or RS232/RS485 will not be detected automatically!**

After starting IPEmotion, the hardware detection process will begin automatically and the Dataforth MAQ20 system with all supported modules will appear in IPEmotion as an acquisition configuration.

If the automatic hardware detection is not configured in IPEmotion, start the detection by clicking **Detect**.

The hardware configuration screen will appear as follows:

2 🗅 🔒 🗄 🛃 👗 🗡	🦌 🖪 🖻 🤌 🛛	🕽 🗙 🗶 🖉 o	r 🦚 🔇	? 🛽	-	_	IPEmotion	1			×
File Project Signals A	Acquisition View	Data manager	Analysis	Re	porting	Scripting	Info			(\uparrow)	0
		274. 🛌 🕹 46	35%								
	+ 🗶 📕	X 📃 🕅	34≯								
DATAFORTH MAQ - System Compor	nents Import Export	Check Adjust Dete	t Initialize	Display	Details						
Hardware	Configuration		Access		View						
V01.01.01.0002 RC	Nar	ne	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate		1-
Name	Σ۴										
	▶ 1-R	STC-0		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-1-COM2	0 1-R	STC-1		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-RSTC	0 1-R	STC-2		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-JTC	0 1-R	STC-3		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-KTC	0 1-R	STC-4		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-ISN	0 1-R	STC-5		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-MVDN	0 1-R	STC-6		°C	0,0	1750,0	0	1750	1 Hz		
MAQ20-DIOL	0 1-R	STC-7		°C	0.0	1750.0	0	1750	1 Hz		Ŧ
MAQ20-VSN	0 Genera	Connection RT	C Device								
		Active: MAQ20-1- Name: MAQ20-1- Description: Communica Reference: MAQ20-1-	COM2 ation Module	USB							
Storing											×
Name	Status	Raw file				Me	asurement file				
Storage group-1	Offline					1.12					
Scoluge group 1											
🖩 Messages 🛛 🖾 Status 🖓 Storing	🖲 Output										
I of 1 selected I petronik	CAN: No suitable CAN me	dium found.									1

Manually Adding MAQ20 System

If Dataforth hardware is not connected via USB, manually define the hardware in IPEmotion:

1. If the Dataforth hardware is not selected, click on the icon in the hardware menu.



2. Press Add system and select the MAQ20-COMx module used in the system.



3. Press Add component and select the I/O modules in the system.



Configuration of individual MAQ20 I/O modules is described in the following sections.

Reassignment and Synchronization

When new modules are added to a MAQ20 system or if existing MAQ20 modules are assigned to other registration slots, update the system configuration in IPEmotion by selecting **Synchronize** in the IPEmotion Signals menu.



Synchronization triggers the following actions:

- The Plugin searches all configured modules. If they are not found, they will be deactivated

Name		2
1 D Margan	2014	8
NAQ2	20-RSTC	
MAC:		16
I> MAQ2	20-RTD31	1
A D MAQ2	20-DIOL	1
f(x) 1	-Timer-0	1
f(x) 1	-Timer-1	
I> MAQ2	20-IO	1
I> MAQ2	20-TTC	1
I> MAQ2	20-ISN	1
I> MAQ2	20-DIOH	1
IN MACC	DIOH	1

- New modules will be added to the configuration
- If existing modules are located at other slot positions the slot ID of the modules will be updated

NOTE: Changes in module configurations will be active only after pressing *Initialize* in IPEmotion. With this action the data will be transferred to the module.

8.0 MAQ20-COM2

Connection

The Plugin can communicate via Ethernet, USB, or RS-232 with the Dataforth MAQ20 hardware.

The Tab Connection shows the configuration for communication.

General Connectio	n RTC Device							
 Select Ethernet 	Ethernet		US	3		RS232/RS485		
 Select USB 	IP Address:	0.0.0.0	F	ort: 1	-	Baud Rate:	115200	Ŧ
 Select RS232 	Subnet Mask:	0.0.0				Parity:	Even	Ŧ
						Slave ID:	16	d
						Com Port:	COM 1	-

To connect the MAQ20-COM2 via TCP/Ethernet:

- 1. Select Select Ethernet Radio Button
- 2. Enter IP Address and Subnet Mask

To connect the MAQ20 COM2 via USB:

- 1. Select Select USB Radio Button
- 2. Enter USB Port

To connect the MAQ20 COM2 via RS-232:

- 1. Select Select RS232 Radio Button
- 2. Enter Baud Rate, Parity, Slave ID and Com Port.

Real Time Clock (RTC)

The on board real time clock (RTC) on the MAQ20-COM2 can be synchronized with the PC system clock.

During hardware detection or initialization the actual date and time of the RTC will updated in the field **Date/Time RTC** in the Tab **RTC**.

General	Connectio	n RTC	Device
		Sync F	RTC to PC time
Date	e/Time RTC:	10.04.201	3 14:28:49
Sync	hronized at:		

Click **Sync RTC to PC time** to synchronize the RTC. Both fields (Date/Time RTC and Synchronized at) will show the time and date stored in the RTC.

If a system is manually created, the **Sync RTC to PC time** button is disabled. Initializing the system will enable this button.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)

General Connect Device:	tion RTC Device		
Serial Number:	0094847-08		
Date Code:	D0214		
Firmware Rev.:	F1.22		
System Number:	1 d		

The fields for device, date code and firmware revision are read only. The field for the serial number is writable. This is used for licensing.

The edit field **System Number** can be used to define the system number of the MAQ20-COM2. This value has no relevance for system configuration but it makes it easier to allocate a module channel to a MAQ20-COM2 module. All unnamed channels of modules start with the system number of the MAQ20-COM2 in its name the modules belong to. Changing the system number will rename all unnamed channel names.

9.0 MAQ20-COM4

Connection

The Plugin can communicate via Ethernet, USB or RS-485 with the Dataforth MAQ20 hardware.

The Tab Connection shows the configuration for communication.

General	Connection	RTC Device					
🔾 Select Et	hernet	Ethernet		USB	RS232/RS485		
Select US	SB	IP Address:	0.0.0	Port: 1	Baud Rate:	115200	Ŧ
Select RS	\$485	Subnet Mask:	0.0.0.0		Parity:	Even	-
					Slave ID:	16	d
					Com Port:	COM 1	Ŧ

To connect the MAQ20-COM4 via TCP/Ethernet:

- 1. Select Select Ethernet Radio Button
- 2. Enter IP Address and Subnet Mask

To connect the MAQ20-COM4 via USB:

- 1. Select Select USB Radio Button
- 2. Enter USB Port

To connect the MAQ20-COM4 via RS485:

- 1. Select Select RS485 Radio Button
- 2. Enter Baud Rate, Parity, Slave ID and Com Port.

Real Time Clock (RTC)

The on board real time clock (RTC) on the MAQ20-COM4 can be synchronized with the PC system clock.

During hardware detection or initialization the actual date and time of the RTC will updated in the field **Date/Time RTC** in the Tab **RTC**.

neral Connecti	on RTC Device	1		
Date/Time RTC:	10.04.2013 14:28:49			
Synchronized at:				

Click **Sync RTC to PC time** to synchronize the RTC. Both fields (Date/Time RTC and Synchronized at) will show the time and date stored in the RTC.

If a system is manually created, the **Sync RTC to PC time** button will be disabled. The button will be enabled after initializing the system.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)

General	Connecti	on RTC	Device
	Device:	MAQ20-CO	M4
Seria	al Number:	0074248-03	1
D	ate Code:	D0412	
Firmw	vare Rev.:	F1.00	
System	n Number:	1	d

The fields for device, date code and firmware revision are read only. The field for the serial number is writable. This is used for licensing.

The edit field **System Number** can be used to define the system number of the MAQ20-COM4. This value has no relevance for system configuration but it makes it easier to allocate a module channel to a MAQ20-COM4 module. All unnamed channels of modules start with the system number of the MAQ20-COM4 in its name the modules belong to. Changing the system number will rename all unnamed channel names.

10.0 MAQ20-MVDN, MAQ20-VDN, MAQ20-VSN, MAQ20-IDN, MAQ20-ISN

This section describes the interface to the MAQ20-MVDN, MAQ20-VDN, MAQ20-VSN, MAQ20-IDN, and MAQ20-ISN voltage and current input modules. For a detailed description of module functions and operation, see <u>MA1041</u> MAQ20-MVDN/-VDN/-VSN/-IDN/-ISN Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

MAQ20-VSN
0087354-29
D0513
F1.50
8 *
0

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Channels

Input range for each channel can be defined separately. The possible ranges are defined in the sensor range of the scaling tab.

	Name			Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	4	•
7												
>	2-VDN-0											
	2-VDN-1				٧	-5,000	5,000	-5	5	1 Hz		_
	2-VDN-2				٧	-5,000	5,000	-5	5	1 Hz	1	
	2-VDN-3				٧	-5,000	5,000	-5	5	1 Hz		
	2-VDN-4				٧	-5,000	5,000	-5	5	1 Hz		
	2-VDN-5				٧	-5,000	5,000	-5	5	1 Hz		1
	2-VDN-6				٧	-5,000	5,000	-5	5	1 Hz		
	2-VDN-7				٧	-5,000	5,000	-5	5	1 Hz		r
G	eneral	Format	Scaling	Display	Setup							
-	Sensor mod	de										
		Mode:	Voltage						Scaling calc	ulator		
4	iensor ran	ige										
		Min:	-40	-		Max: 4			Unit: V			
			-60	_								
F	hysical rai	nge	-40									
		Min:	-10			Max: 4	0,000		Unit: V			
1			-5									

The channels for current input or voltage input can be configured to display:

- Current channel = shows the actual voltage value
- Average channel = shows average value since acquisition start
- Minimum channel = shows minimum value since acquisition start
- Maximum channel = shows maximum value since acquisition start

These settings can be configured in the **Setup** tab for a channel

	Name			Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	-
7											
>	2-VDN-0	0			, V	-40,000	40,000	-40	40	1 Hz	
	2-VDN-	1			۷	-5,000	5,000	-5	5	1 Hz	=
	2-VDN-2	2			٧	-5,000	5,000	-5	5	1 Hz	
	2-VDN-:	3			۷	-5,000	5,000	-5	5	1 Hz	
	2-VDN-	4			٧	-5,000	5,000	-5	5	1 Hz	
	2-VDN-	5			۷	-5,000	5,000	-5	5	1 Hz	
	2-VDN-6	6			٧	-5,000	5,000	-5	5	1 Hz	
	2-VDN-3	7			٧	-5,000	5,000	-5	5	1 Hz	-
G	eneral	Format	Scaling	Display	Setup						
	Inc	out select:	Current	-							
		- THE REP.	Current								
	Averag	e weight:	Average								
			Maximum								
			Minimum		l						

If the channel is configured to display average data the average weight can be defined in the field **Average Weight**.

If the channel is not set to display current data and has not been named by the user, the name of the channel will be added by the channel type (e. g. **2-VDN-0-Average**).

11.0 MAQ20-ISOMV1, MAQ20-ISOI1, MAQ20-ISOV1 through -ISOV5

This section describes the interface to the MAQ20-ISOMV1, MAQ20-ISOI1 and MAQ20-ISOV1 through -ISOV5 isolated channel-to-channel voltage and current input modules. For a detailed description of module functions and operation, see <u>MA1062</u> MAQ20-ISOMV/-ISOV/-ISOI Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

G	eneral Device	•
	Devic	e: MAQ20-ISOV1
	Serial Numbe	r: 0126970-04
	Date Cod	E: D1018
	Firmware Rev	.: F1.02
	Slo	t: 6 •

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Channels

Input ranges for each channel can be defined separately. The possible ranges are defined in the sensor range of the scaling tab.

Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate
₽							
> 1-ISOV1-0			0.00000	1.00000			
1-ISOV1-1		V	0.00000	1.00000	0	1	1 Hz
1-ISOV1-2		V	-1.00000	1.00000	-1	1	1 Hz
1-ISOV1-3		V	-1.00000	1.00000	-1	1	1 Hz
1-ISOV1-4		V	-1.00000	1.00000	-1	1	1 Hz
1-ISOV1-5		V	-1.00000	1.00000	-1	1	1 Hz
1-ISOV1-6		V	-1.00000	1.00000	-1	1	1 Hz
1-ISOV1-7		V	-1.00000	1.00000	-1	1	1 Hz
General Scaling Display	Setup						
Sensor mode							
Mode: Voltag	e			*		Scaling calco	ulator
Sensor range							
Min: 0	٣		Max: 1			Unit: V	
-1 Physical range 0							
Min: 0.000	00		Max: 1.0	0000		Unit: V	

The channels for current input or voltage input can be configured to display:

- Current channel
- = shows the actual voltage value
- Average channel
- = shows average value since acquisition start
- Minimum channel
- = shows minimum value since acquisition start
- Maximum channel
- = shows maximum value since acquisition start

	Name		Active	Unit	1	Phys Min	Phys Max		Sensor Min	Sensor	Max 9	Sampling rate	
7													
>	1-ISOV1-0					0.00000	1.00000		0				
	1-ISOV1-1			۷	(0.00000	1.00000	(0	1	1	1 Hz	
	1-ISOV1-2			V	•	-1.00000	1.00000		-1	1		1 Hz	
	1-ISOV1-3			V		-1.00000	1.00000		-1	1	1	1 Hz	
	1-ISOV1-4			V		-1.00000	1.00000		-1	1	1	1 Hz	
	1-ISOV1-5			V		-1.00000	1.00000		-1	1	1	1 Hz	
	1-ISOV1-6			V	•	-1.00000	1.00000		-1	1	1	1 Hz	
	1-ISOV1-7			V	·	-1.00000	1.00000		-1	1		1 Hz	
G	eneral Scaling Disp	olay	Setup										
	Input select: Curr	rent	٠		Alarm	1							
	Average Weight: Curr	rent							High-High Lir	nit: 1.1	1		
	Max	erage ximum			ту	ype: Tra	cking	-	High Lir	nit: 1.1	1		
	Mini	imum			Lin	nits: Lov	v Limit	-	Low Lir	nit: -0.	.0999302	24	
									Low-Low Lir	mit: -0.	.0999651	13	
									HHLL Deadba	nd: -2.	905934E	-06	
									HL Deadba	nd: -2.	905934E	-06	

These settings can be configured in the Setup tab for a channel

If the channel is configured to display average data the average weight can be defined in the field **Average Weight**.

If the channel is not set to display current data and has not been named by the user, the name of the channel will be added by the channel type (e. g. **2-ISOV1-0-Average**).

12.0 MAQ20-JTC, MAQ20-KTC, MAQ20-TTC, MAQ20-RSTC

This section describes the interface to the MAQ20-JTC, MAQ20-KTC, MAQ20-TTC and MAQ20-RSTC thermocouple input modules. For a detailed description of module functions and operation, see <u>MA1047</u> MAQ20-JTC/-KTC/-RSTC Hardware User Manual.

Device

After hardware detection or after initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General	Device	
	Device:	MAQ20-JTC
Serial N	umber:	0088360-05
Date	e Code:	D1013
Firmware	e Rev.:	F2.50
	Slot:	2 *

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Channels

The input range for each channel can be defined separately. The possible ranges are defined in the sensor range of the scaling tab.

Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	
8				l.				
> 2-JTC-0		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-1		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-2		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-3		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-4		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-5		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-6		°C	-100,0	760,0	-100	760	1 Hz	
2-JTC-7		°C	-100,0	760,0	-100	760	1 Hz	
General Format Scalin	Display	Setup						
Sensor mode	-							
	1	7				Scaling cale	ulator	
Mode: Inerr	io element or	cype J				Jeaning cale	diacor	
Sensor range								
Min: -100			Max: 7	60 .		Unit: °C		
				60		07		
			1	00				
Physical range			3	93				

The thermocouple input modules allow channel definition as

- Current channel =
 - = shows the actual TC value
- Average channelMinimum channel
- = shows average value since acquisition start= shows minimum value since acquisition start
- Maximum channel = shows maximum value since acquisition start

N	lame		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	-
7										
> 2-	-JTC-0-Averag	3		°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-1			°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-2			°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-3			°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-4			°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-5			°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-6			°C	-100,0	760,0	-100	760	1 Hz	
2.	-JTC-7			°C	-100,0	760,0	-100	760	1 Hz	
Gen	eral Format	Scaling	Display	Setup						
	Input select	Average	-							
		Current								
А	verage weight	Average								
		Maximum	Č.							
		Minimum		1						

To configure the channel, select the type in the tab **Setup**

If the channel is an average channel the average weight can be defined in the field Average Weight.

If the channel is not a current channel and if the channel is not named by the user, the name of the channel will be added by the channel type, e. g. **2-JTC-0-Average**).

13.0 MAQ20-RTD31, MAQ30-RTD41

This section describes the interface to the MAQ20-RTD31 three-wire RTD and potentiometer input module and MAQ20-RTD41 four-wire RTD input module. For a detailed description of module functions and operation, see <u>MA1044</u> MAQ20-RTD31/-RTD41 Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General Device	
Device:	MAQ20-RTD31
Serial Number:	0114836-03
Date Code:	D0916
Firmware Rev.:	F2.15
Slot:	3 🔹

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Channel

In the Tab **Scaling**, the following input modes can be selected:

- PT100
- Resistance
- Temperature

General Format	Scaling Display Setup	
Sensor mode		
Mode:	PT100 -	Scaling calculator
	PT100	
Sensor range	Resistance	
Min:	Temperature	Unit: °C 👻
Physical range		
Min:	-200,0 Max: 850,0	Unit: C

The RTD and potentiometer input modules allow channel definition as

- Current channel
- = shows the actual input sensor value
- Average channel
- = shows average value since acquisition start
- Minimum channel = shows m
 - = shows minimum value since acquisition start
- Maximum channel = shows maximum value since acquisition start

	Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate
9									
>	1-RTD31-0-Average		✓	°C	-200.0	850.0	-200	850	
	1-RTD31-1		✓	°C	-200.0	850.0	-200	850	1 Hz
	1-RTD31-2		~	°C	-200.0	850.0	-200	850	1 Hz
	1-RTD31-3		~	°C	-200.0	850.0	-200	850	1 Hz
	1-RTD31-4		v	°C	-200.0	850.0	-200	850	1 Hz
	1-RTD31-5		✓	°C	-200.0	850.0	-200	850	1 Hz
G	eneral Scaling	Display	Setup						
	Input select:	Average	-		Alarm				
	Average Weight:	Current					High-High Li	imit: -0.20157	23
		Average Maximum			Type: Trackir	ng 🝷	High Li	imit: 0.010078	861
		Minimum			Limits: Low Li	mit 👻	Low Li	imit: 866.7204	1
							Low-Low Li	imit: _0.20157	
									2.5
							HHLL Deadba	and: -0.20157	23
							HL Deadba	and: 0.010078	861

To configure the channel, select the type in the tab **Setup**

If the channel is an average channel the average weight can be defined in the field **Average Weight**.

If the channel is not a current channel and if the channel is not named by the user, the name of the channel will be added by the channel type, e. g. **2-RTD-0-Average**).

14.0 MAQ20-BRDG1

This section describes the interface to the MAQ20-BRDG1 strain gage module. For a detailed description of module functions and operation, see <u>MA1046</u> MAQ20-BRDG1 Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

Device:	
	Ingeo breosi
Serial Number:	0110001-12
Date Code:	04516
Firmware Rev.:	F1.51
Slot: 5	5 🔻

The fields for device, serial number, date code and firmware revision are read only.

The field Slot defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Settings

The tab Settings contains the configuration parameters for the module. The parameters are

- Excitation Voltage
- Burst Scan Data Rate
- V/V Calibration
- FIR Filter
- Shunt Calibration

General Device Setti	ngs			
Excitation Voltage:	2.5 V -]		
Burst Scan Data Rate:	4 kS/s 🔻]		
V/V Calibration:	Disabled 🔻]		
FIR Filter:	Disabled 🔻]		
Shunt Calibration:	OFF -]		

Strain Gage Input Channels

Strain Gage Input channels can be configured via Settings tab. The configuration parameters are

- Bridge type
- Shunt resistor
- Auto zero

General Format Sca	ling Display Set	tings
Bridge type:	Full Bridge 🔹 👻	
Shunt resistor:	60kohm 👻	
Auto zero:	Clear 🔻	

Excitation Channels

There is no special configuration for MAQ20-BRDG1 excitation channels. All configurations for excitation channels are typical IPEmotion functionalities. For further information see <u>MA1066</u> IPEmotion Software User Manual.

15.0 MAQ20-FREQ

This section describes the interface to the MAQ20-FREQ frequency input module. For a detailed description of module functions and operation, see <u>MA1048</u> MAQ20-FREQ Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General Device	Settings
Device:	MAQ20-FREQ
Serial Number:	0118010-02
Date Code:	D0217
Firmware Rev.:	F1.20
Slot:	2 *

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

The tab **Settings** contains the configuration parameters for the module. Define the timebase for measurement.

- 1 s
- 100 ms
- 10 ms

General	Device Settings			
Tim	ebase: 10 ms	Ŧ		

Channels

The MAQ20-FREQ has 8 channels used as frequency counter or to measure RPM.

In IPEmotion the channel list has 8 frequency/rpm channels and 8 counter channels. The counter channels show the input signals of the frequency channels by counting the input signals.

To configure a frequency channel to measure frequency select **Frequency** as sensor mode in the Scaling Tab, otherwise select **Revolutions** to report the data in revolutions.

eit) 🖴 🖴 📾 📾 🗛 🔌 🖿 🖻		۵ 🛇	0 🗖	-					DF FR(
File Project Signals Acquisition	View Data manager	Analysis	Rep	orting I	nfo				
System Components Import Export Check Adjust	Detect Initialize Display Deta	ails							
Configuration	Access	w							
V01.02.01.0001 RC	Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	
Name S	ę								
	1-FREQ-0	~	Hz		1000000		1000000	1 Hz	
4 D MAQ20-1-COM4 4	FREQ-1		Hz	0	1000000	0	1000000	1 Hz	
MAQ20-DIOL 2	1-FREQ-2		Hz	0	1000000	0	1000000	1 Hz	
f(X) 1-Timer-0 1	1-FREQ-3		Hz	0	1000000	0	1000000	1 Hz	
f(x) 1-Timer-1 1	1-FREQ-4		Hz	0	1000000	0	1000000	1 Hz	
MAQ20-FREQ 2	1-FREQ-5		Hz	0	1000000	0	1000000	1 Hz	
	1-FREQ-6		Hz	0	1000000	0	1000000	1 Hz	
	1-FREQ-7		Hz	0	1000000	0	1000000	1 Hz	
	1-CNT-0	4		0	4294967295	0	4294967295	1 Hz	
	1-CNT-1			0	4294967295	0	4294967295	1 Hz	
	1-CNT-2			0	4294967295	0	4294967295	1 Hz	
	1-CNT-3			0	4294967295	0	4294967295	1 Hz	
	General Format Scaling	Display	Settings						
	Sensor mode								
	Mode: Frequency				Ŧ		Scaling calcula	itor	
	Sensor range Revolutions	· _							
	Min: 0	_		Max: 1000			Unit: Hz		
	Physical range								
	Min: 0			Max: 1000	000		Unit: Hz		

In the RPM mode, define the pulses per revolution in tab Settings.

Also use tab **Settings** to define the input trigger for the counter,

- Positive edge or
- Negative edge



Hint: The counter channels will be cleared if the Initialize button in IPEmotion is pressed. If any configuration parameters are changed, IPEmotion automatically initializes the modules.



16.0 MAQ20-VO

This section describes the interface to the MAQ20-VO voltage output module. For a detailed description of module functions and operation, see $\underline{MA1042}$ MAQ20-VO/-IO Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General Device		
Device:	MAQ20-VO	Standard Reset Register
Serial Number:	0074053-19	Reset Register to Default
Date Code:	D0312	
Firmware Rev.:	F1.02	Save Ranges to EEPROM
Slot:	3 🔹	Save Default Output to EEPROM

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

The button **Standard Reset Register** resets the register contents to the last values saved by the user. The button **Reset Register to Default** resets the register to the factory default values.

The button **Save Ranges to EEPROM** saves the default output values of all module channels to the module internal EEPROM.

The button **Save Default Output to EEPROM** saves the ranges of all module channels to the module internal EEPROM.

All buttons only are enabled after hardware initialization (press Initialize or Start displaying).

Channel

Define the default output values in the Tab Default.

	Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	
8										
>	1-VO-0			V.	-10,000	10,000	-10	10	1 Hz	
	1-VO-1			٧	-10,000	10,000	-10	10	1 Hz	
	1-VO-2			V	-10,000	10,000	-10	10	1 Hz	
	1-VO-3			V	-10,000	10,000	-10	10	1 Hz	
	1-VO-4			V	-10,000	10,000	-10	10	1 Hz	
	1-VO-5			Ŷ	-10,000	10,000	-10	10	1 Hz	
	1-VO-6			۷	-10,000	10,000	-10	10	1 Hz	
	1-VO-7			Ŷ	-10,000	10,000	-10	10	1 Hz	
G	eneral F	ormat Scaling) Output	Display	Default					
	Defaul	lt output value:	0,998779		Unit: V					

NOTE: The Default output value will be configured in the MAQ20-VO. Before starting and after stopping an acquisition in IPEmotion the default value will be set in the module.

17.0 MAQ20-IO

This section describes the interface to the MAQ20-IO current output module. For a detailed description of module functions and operation, see $\underline{MA1042}$ MAQ20-VO/-IO Hardware User Manual.

Device

After hardware detection or initialization, the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General Devic	<u>_</u>
ouncrui Dunia	
Device:	MAQ20-IO
Serial Number:	0096451-01
Date Code:	D0514
Firmware Rev.:	F1.51
Slot:	7 -

The fields for device, serial number, date code and firmware revision are read only.

The field Slot defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Channel

R I-10-0 A 0,000000 0,020000 0 0,02 1 Hz 1-10-1 A 0,000000 0,020000 0 0,02 1 Hz 1-10-2 A 0,000000 0,020000 0 0,02 1 Hz 1-10-3 A 0,000000 0,020000 0 0,02 1 Hz 1-10-4 A 0,000000 0,020000 0 0,02 1 Hz 1-10-5 A 0,000000 0,020000 0 0,02 1 Hz 1-10-6 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	P Image: Constraint of the second	R I-10-0 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-1 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-1 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-2 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0,020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A		Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate
1-10-0 A 0,000000 0,020000 0 0,02 1 Hz 1-10-1 A 0,000000 0,020000 0 0,02 1 Hz 1-10-2 A 0,000000 0,020000 0 0,02 1 Hz 1-10-3 A 0,000000 0,020000 0 0,02 1 Hz 1-10-4 A 0,000000 0,020000 0 0,02 1 Hz 1-10-5 A 0,000000 0,020000 0 0,02 1 Hz 1-10-6 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	1-10-0 A 0,000000 0,020000 0 0,02 1 Hz 1-10-1 A 0,000000 0,020000 0 0,02 1 Hz 1-10-2 A 0,000000 0,020000 0 0,02 1 Hz 1-10-3 A 0,000000 0,020000 0 0,02 1 Hz 1-10-4 A 0,000000 0,020000 0 0,02 1 Hz 1-10-5 A 0,000000 0,020000 0 0,02 1 Hz 1-10-6 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	1-10-0 A 0,000000 0,020000 0 0,02 1 Hz 1-10-1 A 0,000000 0,020000 0 0,02 1 Hz 1-10-2 A 0,000000 0,020000 0 0,02 1 Hz 1-10-3 A 0,000000 0,020000 0 0,02 1 Hz 1-10-4 A 0,000000 0,020000 0 0,02 1 Hz 1-10-5 A 0,000000 0,020000 0 0,02 1 Hz 1-10-6 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz 1-10-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	7								
1-IO-1 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-2 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-1 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-2 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz I-IO-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-1 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-2 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	Þ	1-IO-0							
1-IO-2 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-2 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-2 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-3 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,00000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz I-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A		1-IO-1		A	0,000000	0,020000	0	0,02	1 Hz
1-IO-3 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-3 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-3 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0,020000 0 0,02 1 Hz General Format Scaling Output Display Default Unit: A		1-IO-2		Α	0,000000	0,020000	0	0,02	1 Hz
1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-4 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0,000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A		1-IO-3		A	0,000000	0,020000	0	0,02	1 Hz
1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-5 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A		1-IO-4		Α	0,000000	0,020000	0	0,02	1 Hz
1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default	1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A	1-IO-6 A 0,000000 0,020000 0 0,02 1 Hz 1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Unit: A		1-IO-5		A	0,000000	0,020000	0	0,02	1 Hz
1-IO-7 A 0.000000 0.02 1 Hz General Format Scaling Output Display Default Default Default output value: 0 Unit: A	1-IO-7 A 0.000000 0.020000 0 0.02 1 Hz General Format Scaling Output Display Default Default output value: 0 Unit: A	1-IO-7 A 0.000000 0.02 1 Hz General Format Scaling Output Display Default Default output value: 0 Unit: A		1-IO-6		Α	0,000000	0,020000	0	0,02	1 Hz
General Format Scaling Output Display Default output value: 0 Unit: A	General Format Scaling Output Display Default output value: 0 Unit: A	General Format Scaling Output Display Default Default output value: 0 Unit: A		1-IO-7		A	0.000000	0.020000	0	0.02	1 Hz
Default output value: 0 Unit:	Default output value: 0 Unit: A	Default output value: 0 Unit: A	Ge	neral Format Scaling	Output	Display	Default				
				Default output value: 0			Unit: A				

D

NOTE: The Default output value will be configured in the MAQ20-IO. Before starting and after stopping an acquisition in IPEmotion the default value will be set in the module.

18.0 MAQ20-DIOL

This section describes the interface to the MAQ20-DIOL discrete I/O module. For a detailed description of module functions and operation, see <u>MA1043</u> MAQ20-DIOL Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General Device	
Device:	MAQ20-DIOL
Serial Number:	0074048-06
Date Code:	D0112
Firmware Rev.:	F1.04
Slot:	4 -

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Input channel

There are no special configurations for MAQ20-DIOL input channels. All configurations for digital channels are typical IPEmotion functionalities. For further information see <u>MA1066</u> IPEmotion Software User Manual.

Output channel

Among the usual configurations for digital output, default output values are defined in the Tab **Default**.

NOTE: The Default output value will be configured in the MAQ20-DIOL. Before starting and after stopping an acquisition in IPEmotion the default value will be set in the module.

General Format Scaling Output Display	Default
Default Output Value: 0	
0	
1	

Timer

The device tab in the IPEmotion Signals view shows the DIOL with two timers as sub-elements.

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File Project Signals Acquit	sition	View Data	manager	Analysi	s Rep	orting	Scripting	Info				⑦
DATAFORTH MAQ System Components	Function	ns Import Export	Check Adjus	t Dete	ct Initialize	Display	Details					
Hardware	Con	figuration			Access		View					
V01.01.03.0004 RC		Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate		
Name	Σ	۴										^
		▶ 1-DIN-0				0	1	0	1	1 Hz		
MAQ20-1-COM4	0	1-DIN-1				0	1	0	1	1 Hz		
MAQ20-DIOL	0	1-DIN-2				0	1	0	1	1 Hz		
f(x) 1-Timer-0	0	1-DIN-3				0	1	0	1	1 Hz		
7(×) 1-Timer-1	0	1-DIN-4				0	1	0	1	1 Hz		
		1-DOUT-0				0	1	0	1	1 Hz		
		1-DOUT-1				0	1	0	1	1 Hz		-
		Consult on the				0	4	0	4	< 11-		
		General Device										
		Active:	~									
		Name:	MAQ20-DIOL									
		Description:	Digital IO Mod	ule								
		Reference:										
		Sampling rate:	1 Hz									
Name	Status		Raw file					M	leasurement file			
Storage group-1	Offline											
R Messages 🖽 Status 🖼 Storing	Output											

By default, the two timers in the DIOL are deactivated. When a timer is selected in the left component list, the tabs for the Timer configuration appear in the right panel. Expanding the **Type** box in the **Select** tab allows to select the special function needed for the timer.

File Project Signals Acquisition View Data manager Analysis System Components Functions Import Export Check Adjust Detect Initialze Display Details V01.01.03.0005 RC Name Configuration Name Active Unit Name V Import Import Import Import Import	Reporting Scripting Info (*) t Phys Min Phys Max Sensor Min Sensor Max Sampling rate 0 10000 0 100000 1 Hz 0 10000000 0 10000000 1 Hz n 0 65535 0 65535 1 Hz	8								
Name Name	Phys Min Phys Max Sensor Min Sensor Max Sampling rate 0 10000 0 10000 1 Hz 0 10000000 0 10000000 1 Hz n 0 65535 0 65535 1 Hz									
Configuration Access View V01.01.03.0005 RC Name Active Unit Name ∑ ? Image: Configuration	t Phys Min Phys Max Sensor Min Sensor Max Sampling rate 0 10000 0 100000 1 Hz 0 10000000 0 10000000 1 Hz n 0 65535 0 65535 1 Hz									
V01.01.03.0005 RC Name Active Unit Name ∑ ? Image: Compare the second s	t Phys Min Phys Max Sensor Min Sensor Max Sampling rate 0 10000 0 10000 1Hz 0 10000000 0 10000000 1Hz n 0 65535 0 65535 1Hz									
Name	0 10000 0 10000 1Hz 0 10000000 0 10000000 1Hz n 0 65535 0 65535 1Hz									
▶ 1-Timer-0-Frequency Hz	0 10000 0 10000 1Hz 0 10000000 0 10000000 1Hz n 0 65535 0 65535 1Hz									
	0 10000000 0 1000000 1 Hz n 0 65535 0 65535 1 Hz									
MAQ20-1-COM4 0 1-Timer-0-Pulses	n 0 65535 0 65535 1Hz									
AQ20-DIOL 0 1-Timer-0-RPM prom										
f(2) 1-Timer-1 0 General Select Pulse/Frequency Counter Alarm Type: Pulse/Frequency Counter *										
Messages										

The DIOL has the following special functions for every timer:

- Pulse/Frequency Counter
- Pulse/Frequency Counter w/Debounce
- Waveform Measurement
- Time Between Events
- Frequency Generator
- PWM Generator
- One-Shot Pulse Generator

Depending on the selected special function configuration tabs for the selected special function and timer alarms will be visible on the right side of the **Select** tab. At the same time a new set of timer channels will be shown in the right IPEmotion view. Detailed information on the special functions is presented below.

Special Function 1: Pulse / Frequency Counter



To configure a timer as a pulse/frequency counter, select the **Pulse/Frequency Counter** in the **Type** selection

When selected the plug-in adds the following new channels to the DIOL device

- Timer Frequency
- Timer Pulses
- Timer RPM

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System	Components F	unctions 1	Import	Export C	heck	Adjus	Detect	t Initialize D	isplay D	etails							
		Configur	ation					Access		/iew							
V01.01.0	3.0005 RC					Nam	2		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling	rate	
Name				Σ		,											
						1-Ti	ner-0-Freq	quency		Hz	0	10000	0	10000	1 Hz		
- I	MAQ20-1-COM	4			0	1-Ti	ner-0-Puls	es			0	10000000	0	1000000	1 Hz		
× 1	MAQ20-DIC	DL			0	1-Ti	ner-0-RPM			rpm	0	65535	0	65535	1 Hz		
	f(X) 1-Timer	-0			0												
General Select Pulse/Frequency Counter Alarm																	
							Type:	Pulse/Frequ	Jency Coun	ter		-					
								Not activat Pulse/Fred	ed uency Cour	nter		<u>^</u>					
								Pulse/Freq	uency Cour	nter w/E	ebounce						
								Waveform Time Betwe	Measiurem een Events	ent							
								Frequency	Generator								
								PWM Gene	rator			·					
R Mes	ages 🖽 Stat	us 🖼 S	toring	🖲 Outpu	ut												
10	f 1 selected 🕞	A PC: 0	Control F	Panel - Ene	rgy op	tions: T	urn-off the	hard drive ac	tive								

After selecting the special function two new tabs, Pulse/Frequency Counter and Alarm, appear.

v	Timer 0: Main Input = DIO Input 0, Trigger Input = DIO Input 1 Timer 1: Main Input = DIO Input 2, Trigger Input = DIO Input 3
Ŧ	Timer 1: Main Input = DIO Input 2, Trigger Input = DIO Input 3
d	
	d

The tab **Pulse/Frequency Counter** contains the configuration parameters for the selected timer as a pulse/frequency counter. The three parameters are

- Internal Trigger
- External Enable
- Pulses Per Revolution

For a detailed description of module functions and operation, see $\underline{MA1043}$ MAQ20-DIOL Hardware User Manual.

In the Alarm tab, timer alarms can be configured. See Special Functions: Alarm configuration.

Special Function 2: Pulse / Frequency Counter with Debounce

To configure a timer as a pulse/frequency counter with debounce, select the **Pulse/Frequency Counter w. Debounce** in the **Type** selection

When selected the plug-in adds the following new channels to the DIOL device

- Timer Frequency
- Timer Pulses

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System 	Components Fu	nctions 1	Import Ex	xport Ch	neck	Adjust	Detect	Initialize Dis	splay De	tails							
		Configur	ation					Access	V	iew							
V01.01.0	3.0005 RC					Name			Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling) rate	
Name				Σ	٩												
					•	1-Time	er-0-Frequ	iency		Hz	0	3000	0	3000	1 Hz		
- D	MAQ20-1-COM4			0		1-Time	er-0-Pulse	S			0	10000000	0	10000000	1 Hz		
A 📘	MAQ20-DIO	L		0													
	f(X) 1-Timer-	0		0	1												
					G	General Select Pulse/Frequency Counter with Debounce Alarm Type: Pulse/Frequency Counter w/Debounce Not activated Pulse/Frequency Counter Pulse/Frequency Counter Waveform Measurement Troms Refueen Events											
Messages Status Storing Output																	

When selecting the special function two new tabs, **Pulse/Frequency Counter with Debounce** and **Alarm**, appear.

Internal Trigger:	Negative Edge	T	
Debounce Output Enabled:	Disbled	-	
Low Time:	100	d	
High Time:	100	d	

The tab **Pulse/Frequency Counter with Debounce** contains the configuration parameters for the selected timer as a pulse/frequency counter with debounce. The parameters are

- Internal Trigger
- Debounce Output Enabled
- Low Time
- High Time

For a detailed description of module functions and operation, see <u>MA1043</u> MAQ20-DIOL Hardware User Manual.

In the Alarm tab, timer alarms can be configured. See Special Functions: Alarm configuration.



Special Function 3: Waveform Measurement

To configure a timer for waveform measurement, select the $\ensuremath{\textbf{Waveform}}\xspace$ Measurement in the $\ensuremath{\textbf{Type}}\xspace$ selection

When selected the plug-in adds the following new channels to the DIOL device

- Timer Frequency
- Timer Duty Cycle
- Timer Events
- Timer Period
- Timer Low Time
- Timer High Time
- Timer Max Low Time
- Timer Min Low Time
- Timer Max High Time
- Timer Min High Time
- Timer Average Low Time
- Timer Average High Time

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File Project Signals Acquisition System Components Functions Import Export Ch Configuration	v eck	iew Data manager Analysis Adjust Detect Initialize Display Access Vi	tails	porting	Scripting	Info			(ð ()
V01.01.03.0005 RC		Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling ra	te
Name	•				,	,				
	-	1-Timer-0-WM Frequency		Hz	0	10000	0	10000	1 Hz	
MAQ20-1-COM4 0		1-Timer-0-WM Duty Cycle		%	0	100	0	100	1 Hz	
MAQ20-DIOL 0		1-Timer-0-WM Events			0	10000000	0	10000000	1 Hz	
f(x) 1-Timer-0 0		1-Timer-0-WM Period			0	10000000	0	1000000	1 Hz	
f(x) 1-Timer-1 0		1-Timer-0-WM Low Time			0	10000000	0	1000000	1 Hz	
		1-Timer-0-WM High Time			0	10000000	0	1000000	1 Hz	
		1-Timer-0-WM Max Low Time			0	10000000	0	10000000	1 Hz	
		1-Timer-0-WM Min Low Time			0	10000000	0	10000000	1 Hz	
		1-Timer-0-WM Max High Time			0	10000000	0	1000000	1 Hz	
		1-Timer-0-WM Min High Time			0	10000000	0	10000000	1 Hz	
		1-Timer-0-WM Average Low Time			0	10000000	0	10000000	1 Hz	
		1-Timer-0-WM Average High Time			0	10000000	0	10000000	1 Hz	Ŧ
	G	eneral Select Waveform Measureme Active: Name: 1-Timer-0 Description: Reference: 1-Timer-0/MAQ20-DIOL	/MAQ20-1	com4						
Nessages 🖽 Status 🖼 Storing 🖲 Output										
I of 1 selected I of 1 sele	iy opti	ons: Turn-off the hard drive active							[2

When the special function is selected two new tabs, Waveform Measurement and Alarm, appear.

	Internal Trigger:	Negative Edge	-	
	Timebase:	Milliseconds	-	
	Average Weight:	0	d	
E١	ents to Measure:	0	d	

The tab **Waveform Measurement** contains the configuration parameters for the selected timer for waveform measurement. The parameters are

- Internal Trigger
- Timebase
- Average Weight
- Events to Measure

For a detailed description of module functions and operation, see $\underline{MA1043}$ MAQ20-DIOL Hardware User Manual.

In the Alarm tab, timer alarms can be configured. See Special Functions: Alarm configuration.

Special Function 4: Time Between Events

To configure a timer to measure time between events, select the **Time Between Events** in the **Type** selection

When selected the plug-in adds the following new channels to the DIOL device

- Timer Frequency
- Timer Events
- Timer Current
- Timer Average
- Timer Min
- Timer Max

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System Components Functions Import Export	Check	Adjust Detect Initialize Display Det	ails							
Configuration		Access	w							
V01.01.03.0005 RC		Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling ra	ate
Name	9									
	•	1-Timer-0-TBE Frequency		Hz	0	10000	0	10000	1 Hz	
MAQ20-1-COM4	0	1-Timer-0-TBE Events			0	10000000	0	10000000	1 Hz	
MAQ20-DIOL	0	1-Timer-0-TBE Current			0	10000000	0	10000000	1 Hz	
f(x) 1-Timer-0	0	1-Timer-0-TBE Average			0	10000000	0	10000000	1 Hz	
7(X) 1-Timer-1	0	1-Timer-0-TBE Min			0	10000000	0	10000000	1 Hz	
1-Timer-0-TBE Max 0 10000000 0 10000000 1 Hz										
			Alama							
	G	eneral Select Time Between Events	Alarm							
		Type: Time Between Events			T					
🗏 Messages 🖽 Status 🖼 Storing 🖲 Outp	ut									
I of 1 selected > A PC: Control Panel - End	ergy opti	ons: Turn-off the hard drive active								

When the special function is selected two new tabs, Time Between Events and Alarm, appear.

General Select Time	Between Events	Alarm
Internal Trigger 1:	Negative Edge	-
Internal Trigger 2:	Negative Edge	T
Timebase:	Milliseconds	T
Average Weight:	0	d
Events to Measure:	0	d

The tab **Time Between Events** contains the configuration parameters for the selected timer to measure time between events. The parameters are

- Internal Trigger 1
- Internal Trigger 2
- Timebase
- Average Weight
- Events to Measure

For a detailed description of module functions and operation, see <u>MA1043</u> MAQ20-DIOL Hardware User Manual.

In the Alarm tab, timer alarms can be configured. See Special Functions: Alarm configuration.

Special Function 5: Frequency Generator

To configure a timer as a frequency generator, select the $\ensuremath{\text{Frequency Generator}}$ in the $\ensuremath{\text{Type}}$ selection

When selected the plug-in adds the following new channels to the DIOL device

- Timer Frequency

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File Project Signals Acquisition	V	iew	Data m	nanager	Analysis	Re	porting	Scripting	Info				•
	>		ĸ	*									
System Components Functions Import Export Ch	eck	Adjust	Detect	Initialize Dis	play Det	ails							
Configuration				Access	Vie	ew							
V01.01.03.0005 RC		Name				Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling ra	te
Name S	٩												
	•	1-Time	er-0-FG Fre	quency			Hz	0	10000	0	10000	1 Hz	
MAQ20-1-COM4 0													
f(x) 1-Timer-0 0	G	eneral	Select										
f(x) 1-Timer-1 0			Type:	Frequency G	enerator			-					
			.,,					/					
🏽 Messages 🖾 Status 🔛 Storing 🖲 Output													
📧 1 of 1 selected 🕟 🛕 PC: Control Panel - Energy	🔹 1 of 1 selected 🕟 🛕 PC: Control Panel - Energy options: Turn-off the hard drive active												

For a detailed description of module functions and operation, see $\underline{MA1043}$ MAQ20-DIOL Hardware User Manual.

Special Function 6: PWM Generator

To configure a timer as a PWM generator, select the **PWM Generator** in the **Type** selection When selected the plug-in adds the following new channels to the DIOL device

- Timer Frequency
- Timer Duty Cycle 0
- Timer Duty Cycle 1

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File Project Signals Acquisition System Components Functions Import Export Che Configuration Configuration Configuration Che Che </td <td>V ck</td> <td>iew Data n Adjust Detect</td> <td>Analy Analy Initialize Access</td> <td>vsis Re Details View</td> <td>porting</td> <td>Scripting</td> <td>Info</td> <td></td> <td></td> <td></td> <td>⑦</td>	V ck	iew Data n Adjust Detect	Analy Analy Initialize Access	vsis Re Details View	porting	Scripting	Info				⑦
V01.01.03.0005 RC		Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling ra	te
Name 5	9										-
	•	1-Timer-0-PWM F	Frequency		Hz	0,1	5000	0,1	5000	1 Hz	
⊿ MAQ20-1-COM4 0		1-Timer-0-Duty (Cyde-0		%	0	100	0	100	1 Hz	
MAQ20-DIOL 0		1-Timer-0-Duty (Cyde-1		%	0	100	0	100	1 Hz	
f(x) 1-Timer-1 0	G	eneral Select Type:	PWM Generator PWM Generator			•					
K Messages 🖽 Status 🖼 Storing 🖲 Output											
< 1 of 1 selected 🕟 🛕 PC: Control Panel - Energy	optio	ons: Turn-off the h	nard drive active								

With the special function tab is selected a new tab **PWM Generator** appears.

General	Select	PWM Generator	
Second	Output En	abled:	

The tab contains the configuration parameter for the selected timer as a PWM generator. The parameter is

- Second Output Enabled

For a detailed description of module functions and operation, see <u>MA1043</u> MAQ20-DIOL Hardware User Manual.

Special Function 7: One-Shot Pulse Generator

To configure a timer as a one-shot pulse generator, select the **One-Shot Pulse Generator** in the **Type** selection

When selected the plug-in adds the following new channels to the DIOL device

- Timer Pulses
- Timer Trigger

e 17 🔒 🔒 🗟 🏯 A 🗴 🖻 🖻		h là X % n n 🗞 🛇	?	n 🕹 -	Ŧ	1 - IPEmot	tion	- 🗆	×
File Project Signals Acquisition	V ck	ew Data manager Analysis Adjust Detect Initialize Display Det Access View	ails	leporting	Scripting	Info			⑦
V01.01.03.0005 RC		Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Samplir
Name S	٩								
		1-Timer-0-OPG Pulses	~		0	10000000	0	10000000	1 Hz
MAQ20-1-COM4 12 MAQ20-VSN 0 MAQ20-DIOL 12 f00 1-Timer-0 7(x) 1-Timer-1 0 MAQ20-DIOH 0 MAQ20-DIOH 0	+ G	1-Timer-0-OPG Trigger	ator or		▼ ,0000000	1,0000000	0		1Hz
En storing to output									

When the special function is selected a new tab **One-Shot Pulse Generator** appears.

		ator	Shot Pulse Gene	Select One-S
0	Pulse Count Limit:	-	Milliseconds	Timebase:
1	Pulse Width:	-	Positive	Pulse Polarity:
100	Pre-delay:	-	Channel	Trigger Select:
100	Post-delay:			

The tab contains the configuration parameters for the selected timer as a one-shot pulse generator. The parameters are

- Timebase
- Pulse Polarity
- Trigger Select
- Pulse Count Limit
- Pulse Width
- Pre-delay
- Post-delay

For a detailed description of module functions and operation, see <u>MA1043</u> MAQ20-DIOL Hardware User Manual.

Special Functions: Alarm configuration

When selecting a special function that allows an alarm, an additional tab for the alarm configuration appears. By default, the alarm is disabled.

e 1 🕆 🖵 🗃 🗟 🏯 8 🗙 🖿 🛍	a 🗈 X % 🖍 🖻 🌼 🛇	? 🔏 💩	~ -		1 - IPEn	notion	-	. 🗆	×
File Project Signals Acquisition System Components Functions Import Export Oned Configuration Configuration Configuration Configuration Configuration Configuration	View Data manager Analysis	Reporting	g Scripting	Info					⑦
V01.01.03.0005 RC	Name A	Active Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate		
Name Σ	Υ								
	I-Timer-0-Frequency	Hz	0	10000	0	10000	1 Hz		
MAQ20-1-COM4 10	1-Timer-0-Pulses		0	1000000	0	1000000	1 Hz		
MAQ20-VSN 0	1-Timer-0-RPM	rpm	0	65535	0	65535	1 Hz		
MAQ20-DIOL 10									
f(x) 1-Timer-1 0	General Select Pulse/Freguency Counter	Alarm							
MAQ20-DIOH 0	barn: Disabled	•	High-High Lir High Lir	mit: 0 mit: 0	d d	Timer 0: AL Ala Timer 1: AL	arm L-H Output = DIO arm LL_HH Output = DIO arm L-H Output = DIO	Output 0 IO Output 1 Output 2	L
	Output LH: Register	*	Low Lin	mit: 0	d	Ala	arm LL_HH Output = D	IO Output 3	3
	Output LL/HH: Register	~	Low-Low Lin	mit: 0	d				
	Type: Tracking	*	HHLL Deadba	nd: 0	d				
			HL Deadba	ind: 0	d				
🗏 Messages 🛛 Status 🖓 Storing 🖲 Output									

Depending on the special function there will be an individual selection of input channels an alarm can be assigned to.

For example: If the special function **Pulse/Frequency Counter** is selected, the alarm can be assigned to one of the following channels:

- Pulse Count
- Frequency
- RPM

When selecting one of these alarm sources a new channel **Alarm** appears.

	Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	
٩										
Þ	1-Timer-0-Frequency			Hz	0	10000	0	10000	1 Hz	
	1-Timer-0-Pulses				0	1000000	0	10000000	1 Hz	
	1-Times 0 DDM			rpm	0	65535	0	65535	1 Hz	
	1-Timer-0-Alarm				0	3	0	3	1 Hz	
G	eneral Select Pulse/Fi	Frequency Count	ter Ala	irm	High High Lin	wite 0	4	Timer 0: Al	arm I. H. Quitaut – DIO	Output 0
G	eneral Select Dulce/Fr	Frequency Count	ter Ala	rm						
G	ieneral Select Pulse/Fi	Frequency Count	ter Ala	irm	High-High Lin	nit: 0	d	Timer 0: AL	.arm L-H Output = DIO arm LL_HH Output = D	Output 0
G	ieneral Select Pulse/Fi Alarm: P Limits: [Frequency Count Pulse Count Disabled Pulse Count	ter Ala	irm	High-High Lin High Lin	nit: 0 nit: 0	d	Timer 0: AL Ala Timer 1: AL	.arm L-H Output = DIO arm LL_HH Output = D .arm L-H Output = DIO	Output 0 IO Output 1 Output 2
G	ieneral Select Pulse/Fi Alarm: P Limits: L Output LH: F	Frequency Count Pulse Count Disabled Pulse Count Frequency	ter Ala	irm	High-High Lin High Lin Low Lin	nit: 0 nit: 0 nit: 0	d d	Timer 0: AL Ala Timer 1: AL Ala	.arm L-H Output = DIO arm LL_HH Output = D .arm L-H Output = DIO arm LL_HH Output = D	Output 0 IO Output 1 Output 2 IO Output 3
G	eneral Select Pulse/F Alarm: P Limits: C Output LH: F Output LL/HH: M	Frequency Count Pulse Count Disabled Pulse Count Frequency RPM Register	ter Ala	Irm	High-High Lin High Lin Low Lin Low-Low Lin	nit: 0 nit: 0 nit: 0 nit: 0	d d d	Timer 0: AL Ala Timer 1: AL Ala	.arm L-H Output = DIO arm LL_HH Output = D .arm L-H Output = DIO arm LL_HH Output = D	Output 0 IO Output 1 Output 2 IO Output 3
G	ieneral Select Pulse/F Alarm: P Limits: T Output LH: F Output LL/HH: M Type: T	Frequency Count Pulse Count Disabled Pulse Count Frequency RPM Kegister Tracking	ter Ala	irm	High-High Lin High Lin Low Lin Low-Low Lin HHLL Deadbar	nit: 0 nit: 0 nit: 0 nit: 0 nit: 0	d d d d d	Timer 0: AL Ala Timer 1: AL Ala	.arm L-H Output = DIO arm LL_HH Output = D .arm L-H Output = DIO arm LL_HH Output = D	Output 0 IO Output 1 Output 2 IO Output 3

Depending on the alarm limits selected, the alarm channel can have four states between 0 and 3.

The following parameters can be set

- Alarm
- Limits
- Output LH (Target for low/high alarm)
- Output LL//HH (Target for low low/high high alarm)
- Туре
- High-High Limit
- High Limit
- Low Limit
- Low-Low Limit
- HHLL Deadband
- HL Deadband

For a detailed description of module functions and operation, see $\underline{\mathsf{MA1043}}$ MAQ20-DIOL Hardware User Manual.

If an alarm is set and the output of the alarm is configured to a digital output, the corresponding output channel will be set as an input channel in the configuration. This is done to avoid setting the output during an acquisition by other sources.

For example: Timer 0 is configured as a pulse/frequency counter. The alarm is set to pulse count and the output for LH alarm is set to 'default on'.

				Access	View							
01.01.03.0	0006 R.C			Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	x Sampling rate	
ame		Σ	۲									
				1-Timer-0-Frequency		Hz	0	10000	0	10000	1 Hz	
ID N	MAQ20-1-COM4	0		1-Timer-0-Pulses			0	10000000	0	10000000	1 Hz	
1>	MAQ20-VSN	0		1-Timer-0-RPM		rpm	0	65535	0	65535	1 Hz	
12	MAQ20-RTD31	0		1-Timer-0-Alarm			0	3	0	3	1 Hz	
15	MAQ20-DIOL	0										
	the strength in	0										
-	(b) 1-Timer-1	0										
D	(%) 1-Timer-1 MAQ20-IO MAQ20-ITC	0										
	(%) 1-Timer-1 MAQ20-10 MAQ20-TTC MAQ20-TTC	0										
	(%) 1-Timer-1 MAQ20-IO MAQ20-TTC MAQ20-TTC MAQ20-DIOH	0	G	eneral Select Pulse/Frequency	Counter A	sm						
	(%) 1-Timer-1 MAQ20-10 MAQ20-10 MAQ20-51N MAQ20-510H MAQ20-510H	000000000000000000000000000000000000000	G	eneral Select Pulse/Frequency	Counter A	arm	Hinh Hinh	Limit: 0	al	Timur 0:	Al arm I. Ji Outnut = F	10.04
	MAQ20-IO MAQ20-IO MAQ20-ITC MAQ20-ISN MAQ20-DIOH MAQ20-DIOH	000000000000000000000000000000000000000	G	eneral Select: Pulse,Prequency Alarm: Pulse Court	Jounter A	rm	High-High	Limit: 0	d	Timer 0:	ALarm L-H Output = C Alarm LL_HH Output :)10 Out; = DIO O
	(%) 1-Timer-1 MAQ20-IO MAQ20-TC MAQ20-ISN MAQ20-ISN MAQ20-DIOH MAQ20-DIOH	000000000000000000000000000000000000000	G	eneral Select Pulse/Frequency Alarm: Pulse Coun Contist: Low	Counter A	¥m	High-High High	Limit: 0 Limit: 0	d d	Timer 0: Timer 1:	ALarm L-H Output = [Alarm LL_HH Output = [ALarm L-H Output = [10 Outs = DIO O
	(* 1-Timer-1 MAQ20-10 MAQ20-15N MAQ20-15N MAQ20-010H MAQ20-010H	000000000000000000000000000000000000000	G	eneral Select Pulse//Frequency Alarm: Pulse Coun Control: Low Output Life: Output Del	ounter A		High-High High Low	Limit: 0 Limit: 0	d d	Timer 0: Timer 1:	ALarm L-H Output = [Alarm LL_HH Output = [Alarm LL_HH Output = [Alarm LL_HH Output = [VIO Outs = DIO O VIO Outs = DIO O
	(* 1-Timer-1 MAQ20-10 MAQ20-1TC MAQ20-1SN MAQ20-01CH MAQ20-01CH	000000000000000000000000000000000000000	G	neral Select Pulse/Frequency Alarm: Pulse Coun- tentis: Low Output Lit Output Lit	ounter A	erm .	High-High High Low	Limit: 0 Limit: 0 Limit: 0	d d d	Timer 0: Timer 1:	ALarm L-H Output = (Alarm LL_HH Output = Alarm LL_HH Output = Alarm LL_HH Output =)IO Out; = DIO O)IO Out; = DIO O
	0/ 1-Timer-1 MAQ20-10 MAQ20-17C MAQ20-15N MAQ20-55N MAQ20-010H MAQ20-010H	000000000000000000000000000000000000000	G	Alorm: Rules //requency Alorm: Rules Count Alorm: Rules Count Alorm: Low Output LH: Output De Output LH: Regular	ounter A		High-High High Low Low-Low	Limit: 0 Limit: 0 Limit: 0 Limit: 0	d d d	Timer 0: Timer 1:	ALarm L-H Output = C Alarm LL_HH Output = ALarm LH Output = Alarm LL_HH Output =	310 Out; = DIO O 310 Out; = DIO O
	(% 1-Timer-1 MAQ20-10 MAQ20-1TC MAQ20-1SN MAQ20-01CH MAQ20-01CH	000000000000000000000000000000000000000	G	neral Select Pulse/Prequency Aam: Pulse Coun Output UPR: Output De Output UPR: Registe Type: Trading	ounter A		High-High High Low Low-Low HHLL Dead	Limit: 0 Limit: 0 Limit: 0 Limit: 0 band: 0	d d d d	Timer 0: Timer 1:	ALarm L-H Output = [Alarm LL_HH Output = [Alarm LL_HH Output = [Alarm LL_HH Output =	XIO Out = DIO O XIO Out = DIO O

Automatically the digital output channel DO-0 is set to an input channel. The **Output** flag in the **Format** tab of the channel is unchecked.

For a detailed description of the usage of output channels for alarm signals, see $\underline{\mathsf{MA1043}}$ MAQ20-DIOL Hardware User Manual.

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File Project Signals Acquisition	View Data m	anager Analy	sis Re	porting	Scripting	Info				①
System Components Functions Import Export Che	kk Adjust Detect	Access	Details							
V01.01.03.0006 RC	Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate	
Name S	9									
	1-DIN-0				0	1	0	1	1 Hz	
# D MAQ20-1-COM4 0	1-DIN-1				0	1	0	1	1 Hz	
MAQ20-VSN 0	1-DIN-2				0	1	0	1	1 Hz	
MAQ20-RTD31 0	1-DIN-3				0	1	0	1	1 Hz	
MAQ20-DIOL 0	1-01N-4				0	1	0	1	1 Hz	
f(x) 1-Timer-0	I-DOUT-0				0	1	0	1	1 Hz	
7(2) 1-Timer-1	10007-1				0	1	0	1	1 Hz	
MAQ20-10 0	1-DOUT-2				0	1	0	1	1 Hz	
MAQ20-ISN 0	1-001/7-3				n	1	n	1	1 H7	
MAQ20-DIOH 0	General Format	Scaling Display	Default							
MAQ20-DIOH 0	Data type									
	Type:				Task: D	efault		*		
	NoValue / DefaultVa	lue								
	Value:	+FullScale		•	Deactivate No	Value and use	Default Value			
	Channel type		-	~						
	Input:	¥	Out	ut: 🗌						
1% Messages 🕾 Status 🖓 Storing 🕅 Output										

When starting an acquisition, the plug-in checks if the limit values for an alarm are plausible. The plug-in has two rules.

Rule 1: No value greater than the maximum channel value is allowed

If an alarm limit exceeds the maximum allowed channel value, an acquisition start with the data equipment. For example: If special function 1 is selected and the alarm for frequency, no limit greater than 10000 Hz is allowed. If such a value is set and acquisition started, an error will occur with notification as shown below:

1 🗅 🔒 🗄 🖻 🦛 🛢 🗶 🕩 👘	Ê 4	B X X 0 0	n (🔊 ? 🗖				IPEmotion		X
Datei Projekt Signale Messung	Ar	nzeige Datenverwaltun	g	Analyse	Reporting	Skriptin	g Info			(7
📭 🔋 🕂 🗘 🖡		A 🅸 🤇	\triangleright							
System Komponenten Import Export Prüfen Abg	leichen	Erkennen Initialisieren Dars	stellung	Details						
Konfiguration		Zugriff		Ansicht						
01.01.01.0001 RC		Name	Aktiv	Einheit	Phys Min	Phys Max	Sensor Min	Sensor Max	Abtastrate	
lame S	٩									
		1-Timer-0-Frequency	~	Hz	0	10000	0	10000	1 Hz	
MAQ20-1-COM4	2	1-Timer-0-Pulses			0	10000000	0	10000000	1 Hz	
MAQ20-ISN	0	1-Timer-0-RPM		rpm	0	65535	0	65535	1 Hz	
MAQ20-DIOL	2 +	1-Timer-0-Alarm	~		0	3	0	3	1 Hz	
f(x) 1-Timer-1	0									
MAQ20-IO	0									
MAQ20-KTC	0									
		loomain Salact Dulca/Era	auency (Counter A	larm					
	~	genein select Puse/Te	quency c	Jounter						
		Alarm: Freq	Jency	Ŧ		High-High Limit	: 11000	d		
		Limits: High,	High-Hig	gh ▼		High Limit	: 8000	d		
		Output LH: Regis	ster	Ψ.		Low Limit	: 0	d		
		Output LL/HH: Regis	ter	*		Low-Low Limit	: 0	d		
		Timer 0: ALarm L-H O	utput = i	DIO Output 0	1	HLL Deadband	: 0	d		
		Alarm LL_HH O	utput = l	DIO Output 1		HI Deadband	· 0	d		
		Timer 1: ALarm L-H O Alarm II HH O	utput = utput =	DIO Output 2 DIO Output 3		The Decouborno		4		
		Hamilto	aupur – I	bio oupur s		Туре	: Tracking	*		
feldungen										2
ymbol Zeit - Typ	Qu	elle Meldung								
· · · · · · · · · · · · · · · · · · ·										
		Times 0		alarma barba		and the second		0.11-		
0 17.09.2014 13.44.33,673 ERROR	1-	filler-o Elfoi, Olle (n more	didi i i i i i i i i i i i i i i i i i	exceed the	maximal nequ	lency of 1000			
Chabun II Maldungen III Conidaren III (lucasha									
in status in Melaungen in speicherung im A	NUSYADE									
1 von 2 ausgewählt 1 Timer -0: Error: O	ne or mo	re alarm limits exceed the maxin	nal frequ	ency of 1000	0 Hz					
				,	-					

DATAFORTH *

Rule 2: High-High limit > High limit > Low limit > Low-Low limit

Depending on the limits chosen, there are up to 4 limit values to configure: High-High limit, High limit, Low limit and Low-Low limit. The ranges of the limits must be plausible. For example: a High-High limit cannot be lower than a High limit. The following table shows the rule for every limit setting

Limits	Rule
Low	Cannot exceed minimum channel value
High	Cannot exceed maximum channel value
Low/High	Low limit < high limit
Low, Low-Low	Low-Low limit < Low limit
High, High-High	High limit < High-High limit
All	Low-Low limit < Low limit < High limit < High-High limit

If the set limits break any of these rules, the acquisition fails with an error message notification as shown below:

8 1	🔒 🗄 🗄 🛲 🛔 📈	(in in	Ê) 🔓 🗡	× 0	n 🔅 S	? 👔	÷			IPEmotion		
Datei	Projekt Signale	Messung	An	zeige	Datenverw	altung	Analyse	Reporting	Skriptin	g Info			(*)
		Ö.		15	171								
	Veneration Veneration	The Alian	···	0.0	*	Devetellung	Deteile						
System		Prulen Abg	Ť	Erkennen	Initialisieren	Darstellung	Details						
	Konfiguration				Zugriff		Ansicht						
V01.01.0	1.0001 RC			Name		Aktiv	Einheit	Phys Min	Phys Max	Sensor Min	Sensor Max	Abtastrate	
Name		Σ	٩										
				1-Timer-0-F	Frequency	~	Hz	0	10000	0	10000	1 Hz	
	MAQ20-1-COM4		2	1-Timer-0-f	Pulses			0	10000000	0	10000000	1 Hz	
	MAQ20-ISN		0	1-Timer-0-f	RPM		rpm	0	65535	0	65535	1 Hz	
	MAQ20-DIOL		2 🕨	1-Timer-0-/	Alarm	~		0	3	0	3	1 Hz	
	f(x) 1-Timer-1		0										
D	MAQ20-IO		0										
D	MAQ20-KTC		0										
				aemein (Select Puls	e/Frequency C	ounter A	larm					
				gener	Alarmi	Frequency	-		High High Limit	7000	d		
					Aldrin;	rrequency	•		nigri-nigri Limit	7000	u		
					Limits:	High, High-Hig	h ₹		High Limit	: 8000	d		
					Output LH:	Register	*		Low Limit	: 0	d		
				0	utput LL/HH:	Register	*		Low-Low Limit	: 0	d		
				Time	er 0: ALarm I	L-H Output = D	IO Output 0	i i	HLL Deadband	: 0	d		
				Time	Alarm LL_	HH Output = D	IO Output 1		HL Deadband	: 0	d		
				Time	Alarm LL	HH Output = D	IO Output 2		Turne	Tracking	-		
									турс	. Induking	•		
Meldunge	en												×
Symbol	Zeit 👻	Тур	Qu	elle	Meldung								*
\odot	17.09.2014 15:35:24.303	ERROR	1.1	Timer-0	Error: L	imits do not	correspond	to the rule:	Limit HH > L	imit H			
ŏ	17.09.2014 15:34:30.888	ERROR	1.1		Error: I	imits do not		to the rule:	Limit HH > L	imit H			
õ	17.09.2014 15:32:21.876	FRROR	1.1		Error	One or more	alarm limite	exceed the		iency of 1990			
Ő	17 09 2014 15:28:09 478	ERROR	1.1	Timer-0	Error: I	imits do not		to the rule:	Limit H > Lin	nit I			
õ	17 09 2014 15:27:34 128	ERROR			Error	imits do not		to the rule:	Limit H S Lin	nit I			· · · · · · · · · · · · · · · · · · ·
🖽 Stati	us 🕫 Meldungen 🛛 🖼 Speid	herung 🔳 🖉	usgabe			and all the	con copone	CO CHE TURA					
🔳 1 V	on 2 ausgewählt 🕟 🚫 1-Tir	mer-0: Error: Lir	nits do n	ot correspor	nd to the rule:	Limit HH > Limi	tH						

19.0 MAQ20-DIOH

This section describes the interface to the MAQ20-DIOH high voltage discrete I/O module. For a detailed description of module functions and operation, see <u>MA1058</u> MAQ20-DIOH Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

Gene	eral Device	
	Device:	MAQ20-DIOL
	Serial Number:	0074048-06
	Date Code:	D0112
1	Firmware Rev.:	F1.04
	Slot:	4 -

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Input channel

There are no special configurations for MAQ20-DIOH input channels. All configurations for digital channels are typical IPEmotion functionalities. For further information see <u>MA1066</u> IPEmotion Software User Manual.

Output channel

Among the usual configurations for digital output, default output values are defined in the Tab **Default**.

NOTE: The Default output value will be configured in the MAQ20-DIOH. Before starting and after stopping an acquisition in IPEmotion the default value will be set in the module.

General Format Scaling Output Display	Default
Default Output Value: 0 -	

20.0 MAQ20-DIV20

This section describes the interface to the MAQ20-DIV20 discrete input module. For a detailed description of module functions and operation, see <u>MA1059</u> MAQ20-DIV20/MAQ20-DIVC20 Hardware User Manual.

Device

After hardware detection or after initialization the tab **Device** contains the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

General	Device	
	Device:	MAQ20-DIV20
Serial 1	Number:	0116848-02
Dat	te Code:	D0317
Firmwa	re Rev.:	F1.02
	Slot:	6 -
	5,64	

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

21.0 MAQ20-DIVC20

This section describes the interface to the MAQ20-DIVC20 discrete input with compliance voltage module. For a detailed description of module functions and operation, see <u>MA1059</u> MAQ20-DIV20/MAQ20-DIVC20 Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

Genera	al Device	
	Device:	MAQ20-DIVC20
Ser	ial Number:	0101474-05
	Date Code:	D0317
Firm	ware Rev.:	F1.02
	Slot:	4

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

22.0 MAQ20-DODC20SK

This section describes the interface to the MAQ20-DODC20SK discrete output module. For a detailed description of module functions and operation, see <u>MA1061</u> MAQ20-DODC20SK Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

DC20SK
DC20SK
-

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Output channel

Among the usual configurations for digital output, default output values are defined in the Tab **Default**.

NOTE: The Default output value will be configured in the MAQ20-DODC20SK. Before starting and after stopping an acquisition in IPEmotion the default value will be set in the module.



23.0 MAQ20-DORLY20

This section describes the interface to the MAQ20-DORLY20 discrete relay output module. For a detailed description of module functions and operation, see <u>MA1063</u> MAQ20-DORLY20 Hardware User Manual.

Device

After hardware detection or initialization the tab **Device** contains shows the following module information:

- Device (name)
- Serial Number
- Date Code
- Firmware Rev. (Firmware Revision)
- Slot

The fields for device, serial number, date code and firmware revision are read only.

The field **Slot** defines the position of the module in the MAQ20 system. The slot number corresponds to the Modbus address range of the module. When manual configuration is used, the slot number must be defined in the field **Slot**.

Output channel

In the Tab **Default** default output values for a given channel can be configured. These are used to put a system or application in a known safe state at standard startup, at standard shut down, upon power loss or other non-standard operating condition, or by using the reset commands.

General Scaling Output Display Default	Settings				
Default Output Value: 0 -					

In the tab **Settings**, Default Relay State at Power Up and Relay State at Power Down can be turned on/off.

neral Scaling Output Display Default Settings	
Default Relay State at Power Up: On 🔹	
ay State at Power Down: Off	

NOTE: The Default output value will be configured in the MAQ20-DORLY20. Before starting and after stopping an acquisition in IPEmotion the default value will be set in the module.

Standard Terms and Conditions of Sale Applying to Products Sold by Dataforth Corporation

Full details on Terms and Conditions of Sale, including Warranty, are found on the Dataforth website at <u>Dataforth Terms and Conditions of Sale</u>

Application Support

Dataforth provides timely, high-quality product support.

Contact Method	Contact Information
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Returns/Repair Policy

All warranty and repair requests should be directed to the Dataforth Customer Service Department.

Return Material Authorization instructions and form are found on the Dataforth website at <u>RMA Instructions and Form</u>.

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