

User Manual
D.I.I.O. Analogue Input Module (8 Points)
DIIO-AI-A-8

Specifications, Wiring Diagrams and Modbus Register Addresses

Revision: 1

Revision Date: Oct 2008

Publisher: DoZeener Controls

Document Code: DZC-DIO-08013EM-1

TABLE OF CONTENTS

TABLE OF CONTENTS **2**

INTRODUCTION..... **3**

DEVICE SCHEMATIC AND IO CONNECTIONS..... **4**

 TOP CONNECTIONS: 4

 BOTTOM CONNECTIONS AND INDICATIONS 4

 WIRING DIAGRAMS..... 5

DEVICE SETUP (DIIO SYSTEM PROGRAMMER SETUP PARAMETERS)..... **7**

 LOCKS AND DEFAULTS..... 9

 SCALING AND ALARM SETPOINTS..... 9

SPECIFICATIONS **10**

MODBUS ADDRESSES **11**

 STANDARD REGISTER SET 11

Read Only Registers 11

Read/Write Registers..... 12

 EXTENDED REGISTER SET..... 14

Read Only Registers..... 14

Read/Write Registers..... 16

INTRODUCTION



The DIIO-AI-A-08 is part of the D.I.I.O. (Distributed Intelligent I/O) family. These devices are built up with various cards:

- Power Supply Cards (24VDC or 12VDC amongst others)
- Input/Output Cards (Digital Input, Digital Output, Analogue Input, Analogue Output)
- Microprocessor Cards (Various CPUs depending on the function)
- Communications Cards (Modbus Non Isolated RS232 or RS485 and Isolated RS485)
- Auxiliary Power Supply Cards (Isolated 5V or +/- 15V)

These units are pre-assembled and programmed by the manufacturer (DoZeener Controls) according to the customer's specifications. There are also standard modules such as the DIIO-DI-A-8.

The D.I.I.O. family of products can either be used in a stand-alone system, having a network controller (Example: DIIO-Netcon1) to negotiate information across the system or the individual modules forming part of a third party system comprising of PLCs, BMS Controllers, monitoring systems etc.

When ordering this unit the jumper settings on the IO cards must be specified. Below is a breakdown of the part number of the DIIO-AI-A-08.

Part Number:	DIIO-AI-A-8 (12VDC/MI485/A)
Part Number Description:	Device Code (Power Supply/Comms Card/IO Card Configuration)
Power Supply Options:	12VDC: 12VDC Power Supply 24VDC: 24VDC Power Supply
Comms Card Options:	MI485: Isolated RS485 MN485: Non Isolated RS485 MN232: Non Isolated RS232
IO Card Options:	A: (Config. Type A: Non-Isolated 0-10VDC Analogue Inputs) B: (Config Type B: Non-Isolated 0-5VDC Analogue Inputs)

The IO Card Options are the jumper configurations on the IO cards. These can be changed by DoZeener Controls at manufacturing stage, but are not meant to be modified by the user. Opening the module casing will void the warranty of the product.

The digital input statuses are mapped into Modbus registers (Function 03). Appendix A shows a memory map of the Modbus registers.

Apart from the digital input statuses some statistics of the digital inputs are available. These are also shown in Appendix A.

This module as all the others in the DIIO family of products is configurable via the DIIO System Programmer. Please refer to the DIIO System Programmer Manual for more information (Document Code: DZC-DIO-08005EM-1).

DEVICE SCHEMATIC AND IO CONNECTIONS

TOP CONNECTIONS:

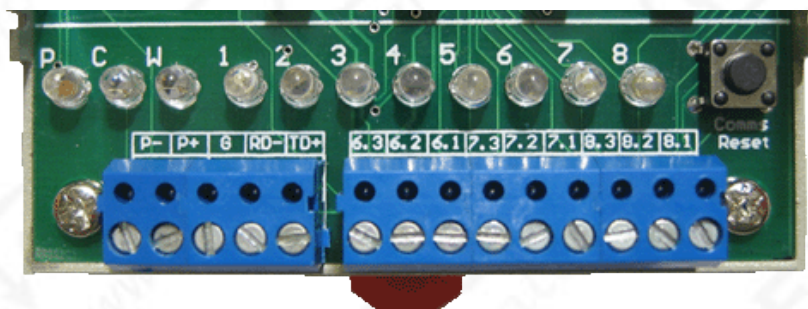


The Top Connections are for digital outputs 1 to 5

The Device Reset button resets the microcontroller. This is particularly useful when a new configuration has been downloaded to the device and needs to be restarted.

When new communication parameters such as baud rate, parity and Modbus address have been downloaded the device must be reset so that it acquires and starts using the new settings.

BOTTOM CONNECTIONS AND INDICATIONS



The bottom connections are for the power supply, communications and inputs 6 to 8.

Also on this side are indications for the following

- P:** Power Supply ON
- C:** Communication activity. Flashes when responding to a request.
- W:** Watchdog. Indicates the unit is healthy
- 1-8:** Input Statuses 1 to 8

The Comms Reset button should be used to reset the unit to default communication setting. When the unit is powered up while holding the button in the depressed position the following default settings are loaded:

Baud Rate: 9600

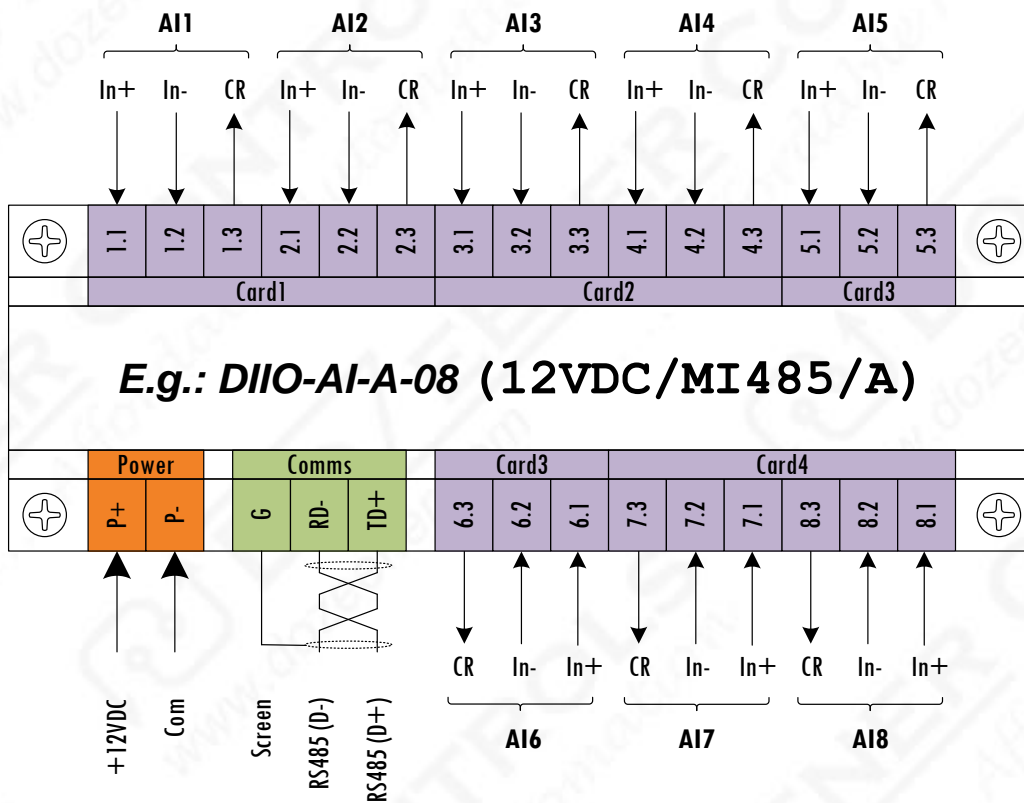
Parity: None

Modbus Address: 1

Stop bits is set to 1 and data bits to 8. These are not configurable

WIRING DIAGRAMS

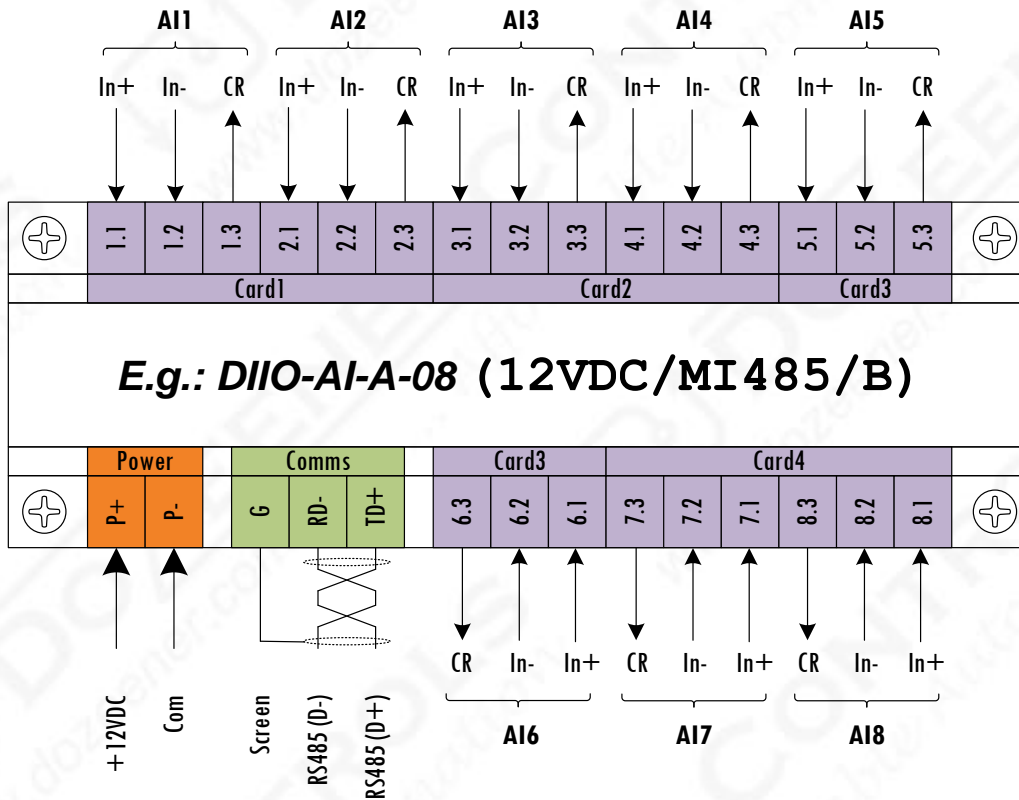
Option A: 0-10VDC Analogue Input



E.g.: DIIO-AI-A-08 (12VDC/MI485/A)

CR = Calibration Reference (5V Input to Microprocessor)

Option B: 0-5VDC Analogue Input



CR = Calibration Reference (5V Input to Microprocessor)

DEVICE SETUP (DIIO SYSTEM PROGRAMMER SETUP PARAMETERS)

The following parameters can be setup for the DIIO-AI-A-08:

The following table shows the parameters as displayed in the DIIO System Programmer:

DIIO-AI-A-08: 8 Analogue Inputs, No RTC				
Device Parameters				
No	Description	Range (From)	Range (To)	Default Value
1	Lock for Register 11 - Latched Alarms for AI1&2 (0 = Unlocked \ 1 = Locked)	0	1	0
2	Lock for Register 12 - Latched Alarms for AI3&4 (0 = Unlocked \ 1 = Locked)	0	1	0
3	Lock for Register 13 - Latched Alarms for AI5&6 (0 = Unlocked \ 1 = Locked)	0	1	0
4	Lock for Register 14 - Latched Alarms for AI7&8 (0 = Unlocked \ 1 = Locked)	0	1	0
5	Lock for Register 15 - Reset for Latched Alarms (0 = Unlocked \ 1 = Locked)	0	1	0
6	Lock for Register 101 - Reset All Statistics (0 = Unlocked \ 1 = Locked)	0	1	0
7	Default for Register 11 - Latched Alarms for AI1&2	0	65535	0
8	Default for Register 12 - Latched Alarms for AI3&4	0	65535	0
9	Default for Register 13 - Latched Alarms for AI5&6	0	65535	0
10	Default for Register 14 - Latched Alarms for AI7&8	0	65535	0
11	Default for Register 15 - Reset for Latched Alarms	0	255	0
12	Default for Register 101 - Reset All Statistics	0	255	0
13	Analogue Input 1 - Raw Value - Low	0	1024	0
14	Analogue Input 1 - Raw Value - High	0	1024	1024
15	Analogue Input 1 - EU Value - Low	-16300	16300	0
16	Analogue Input 1 - EU Value - High	-16300	16300	10000
17	Analogue Input 1 - EU Alarm Limit - Low Low	-16300	16300	1000
18	Analogue Input 1 - EU Alarm Limit - Low	-16300	16300	2000
19	Analogue Input 1 - EU Alarm Limit - High	-16300	16300	8000
20	Analogue Input 1 - EU Alarm Limit - High High	-16300	16300	9000
21	Analogue Input 2 - Raw Value - Low	0	1024	0
22	Analogue Input 2 - Raw Value - High	0	1024	1024
23	Analogue Input 2 - EU Value - Low	-16300	16300	0
24	Analogue Input 2 - EU Value - High	-16300	16300	10000
25	Analogue Input 2 - EU Alarm Limit - Low Low	-16300	16300	1000
26	Analogue Input 2 - EU Alarm Limit - Low	-16300	16300	2000
27	Analogue Input 2 - EU Alarm Limit - High	-16300	16300	8000
28	Analogue Input 2 - EU Alarm Limit - High High	-16300	16300	9000
29	Analogue Input 3 - Raw Value - Low	0	1024	0
30	Analogue Input 3 - Raw Value - High	0	1024	1024
31	Analogue Input 3 - EU Value - Low	-16300	16300	0
32	Analogue Input 3 - EU Value - High	-16300	16300	10000
33	Analogue Input 3 - EU Alarm Limit - Low Low	-16300	16300	1000
34	Analogue Input 3 - EU Alarm Limit - Low	-16300	16300	2000
35	Analogue Input 3 - EU Alarm Limit - High	-16300	16300	8000

DIIO-AI-A-08: 8 Analogue Inputs, No RTC

Device Parameters

No	Description	Range (From)	Range (To)	Default Value
36	Analogue Input 3 - EU Alarm Limit - High High	-16300	16300	9000
37	Analogue Input 4 - Raw Value - Low	0	1024	0
38	Analogue Input 4 - Raw Value - High	0	1024	1024
39	Analogue Input 4 - EU Value - Low	-16300	16300	0
40	Analogue Input 4 - EU Value - High	-16300	16300	10000
41	Analogue Input 4 - EU Alarm Limit - Low Low	-16300	16300	1000
42	Analogue Input 4 - EU Alarm Limit - Low	-16300	16300	2000
43	Analogue Input 4 - EU Alarm Limit - High	-16300	16300	8000
44	Analogue Input 4 - EU Alarm Limit - High High	-16300	16300	9000
45	Analogue Input 5 - Raw Value - Low	0	1024	0
46	Analogue Input 5 - Raw Value - High	0	1024	1024
47	Analogue Input 5 - EU Value - Low	-16300	16300	0
48	Analogue Input 5 - EU Value - High	-16300	16300	10000
49	Analogue Input 5 - EU Alarm Limit - Low Low	-16300	16300	1000
50	Analogue Input 5 - EU Alarm Limit - Low	-16300	16300	2000
51	Analogue Input 5 - EU Alarm Limit - High	-16300	16300	8000
52	Analogue Input 5 - EU Alarm Limit - High High	-16300	16300	9000
53	Analogue Input 6 - Raw Value - Low	0	1024	0
54	Analogue Input 6 - Raw Value - High	0	1024	1024
55	Analogue Input 6 - EU Value - Low	-16300	16300	0
56	Analogue Input 6 - EU Value - High	-16300	16300	10000
57	Analogue Input 6 - EU Alarm Limit - Low Low	-16300	16300	1000
58	Analogue Input 6 - EU Alarm Limit - Low	-16300	16300	2000
59	Analogue Input 6 - EU Alarm Limit - High	-16300	16300	8000
60	Analogue Input 6 - EU Alarm Limit - High High	-16300	16300	9000
61	Analogue Input 7 - Raw Value - Low	0	1024	0
62	Analogue Input 7 - Raw Value - High	0	1024	1024
63	Analogue Input 7 - EU Value - Low	-16300	16300	0
64	Analogue Input 7 - EU Value - High	-16300	16300	10000
65	Analogue Input 7 - EU Alarm Limit - Low Low	-16300	16300	1000
66	Analogue Input 7 - EU Alarm Limit - Low	-16300	16300	2000
67	Analogue Input 7 - EU Alarm Limit - High	-16300	16300	8000
68	Analogue Input 7 - EU Alarm Limit - High High	-16300	16300	9000
69	Analogue Input 8 - Raw Value - Low	0	1024	0
70	Analogue Input 8 - Raw Value - High	0	1024	1024
71	Analogue Input 8 - EU Value - Low	-16300	16300	0
72	Analogue Input 8 - EU Value - High	-16300	16300	10000
73	Analogue Input 8 - EU Alarm Limit - Low Low	-16300	16300	1000
74	Analogue Input 8 - EU Alarm Limit - Low	-16300	16300	2000
75	Analogue Input 8 - EU Alarm Limit - High	-16300	16300	8000
76	Analogue Input 8 - EU Alarm Limit - High High	-16300	16300	9000

LOCKS AND DEFAULTS

As standard on all DIIO Devices, the writable registers can be locked so that they cannot be changed by the user or the network controller. When a lock is enabled the register will become read only. A default value can be assigned when a lock is enabled.

Items 1 to 3 are locks for the Latched Alarms of AI1 to AI8. Items 7 to 10 are default values for the latched alarms.

Items 4 and 5 are locks for the resets for the latched alarms and reset for the statistics. Items 11 and 12 are the defaults when the locks are enabled. If the locks are enabled and the default value is 0, then the user or network controller cannot reset the statistics.

SCALING AND ALARM SETPOINTS

Items 13 to 76 are the scaling parameters and alarm setpoints.

Considering items 13 to 20 which are the scaling parameters and alarm setpoints of AI 1

No	Description	Range (From)	Range (To)	Value
13	Analogue Input 1 - Raw Value - Low	0	1024	0
14	Analogue Input 1 - Raw Value - High	0	1024	1024
15	Analogue Input 1 - EU Value - Low	-16300	16300	0
16	Analogue Input 1 - EU Value - High	-16300	16300	10000
17	Analogue Input 1 - EU Alarm Limit - Low Low	-16300	16300	1000
18	Analogue Input 1 - EU Alarm Limit - Low	-16300	16300	2000
19	Analogue Input 1 - EU Alarm Limit - High	-16300	16300	8000
20	Analogue Input 1 - EU Alarm Limit - High High	-16300	16300	9000

Items 13 and 14 are the maximum and minimum raw values of the physical input. This model of analogue input device has a 10 bit analogue to digital converter, therefore the maximum raw value is $2^{10} = 1024$.

Items 15 and 16 are the maximum and minimum EU values. If the 0-10V input represents a temperature ranging from 0 – 100DegC the max and min EU values must be set to 100 and 0 consecutively, or 1000 to 0 and considering the unit values as one decimal point.

Example: If the physical input is a 0-10VDC representing a temperature of -20 to 80DegC, the following values for the raw and EU values must be set:

Raw Value Low = 0

EU Value Low = -20

Raw Value High = 1024

EU Value High = 80

High High, High, Low and Low Low Alarm limits can be set for each analogue input. The values in items 17 to 20 determine when the current and latched alarms are set.

SPECIFICATIONS

- Electrical:** 0-5VDC or 0-10VDC inputs (10 Bit Inputs, 1024 Steps)
Power Supply 12VDC to 30VDC *
- Comms:** RS232 or RS485, Isolated or Non Isolated *
Modbus RTU Protocol, Baud: 9600-38400, Parity: None/Odd/Even/Mark/Space
Configurable Modbus Address via software
- Hardware:** Removable Plug-in Terminals. Wire Connection from 28 to 16 AWG (1.5mm²)
DIN Rail Mounted Metal Enclosure
Push Buttons for Communication Parameters Reset and Device Reset
Plug In Card Internal Configuration. Inputs paired in two channels per card.
Separate Comms Card, Power Supply and IO Cards.
- Software:** Communication parameters are configured via windows based software.

* Different Part Numbers have to be used for the various configurations

MODBUS ADDRESSES

STANDARD REGISTER SET

READ ONLY REGISTERS

Register Name	Modbus Address	Description	Type
ScaIAI01	40001	Analogue Input Scaled Value 1	Register
ScaIAI02	40002	Analogue Input Scaled Value 2	Register
ScaIAI03	40003	Analogue Input Scaled Value 3	Register
ScaIAI04	40004	Analogue Input Scaled Value 4	Register
ScaIAI05	40005	Analogue Input Scaled Value 5	Register
ScaIAI06	40006	Analogue Input Scaled Value 6	Register
ScaIAI07	40007	Analogue Input Scaled Value 7	Register
ScaIAI08	40008	Analogue Input Scaled Value 8	Register
LoAlmA1	40009:00	AI 1 - Current Alarm - Lo	Bit
HiAlmA1	40009:01	AI 1 - Current Alarm - Hi	Bit
HSAlmA1	40009:02	AI 1 - Current Alarm - Input Out of High Scale	Bit
LSAlmA1	40009:03	AI 1 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA2	40009:04	AI 2 - Current Alarm - Lo	Bit
HiAlmA2	40009:05	AI 2 - Current Alarm - Hi	Bit
HSAlmA2	40009:06	AI 2 - Current Alarm - Input Out of High Scale	Bit
LSAlmA2	40009:07	AI 2 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA3	40009:08	AI 3 - Current Alarm - Lo	Bit
HiAlmA3	40009:09	AI 3 - Current Alarm - Hi	Bit
HSAlmA3	40009:10	AI 3 - Current Alarm - Input Out of High Scale	Bit
LSAlmA3	40009:11	AI 3 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA4	40009:12	AI 4 - Current Alarm - Lo	Bit
HiAlmA4	40009:13	AI 4 - Current Alarm - Hi	Bit
HSAlmA4	40009:14	AI 4 - Current Alarm - Input Out of High Scale	Bit
LSAlmA4	40009:15	AI 4 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA5	40010:00	AI 5 - Current Alarm - Lo	Bit
HiAlmA5	40010:01	AI 5 - Current Alarm - Hi	Bit
HSAlmA5	40010:02	AI 5 - Current Alarm - Input Out of High Scale	Bit
LSAlmA5	40010:03	AI 5 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA6	40010:04	AI 6 - Current Alarm - Lo	Bit
HiAlmA6	40010:05	AI 6 - Current Alarm - Hi	Bit
HSAlmA6	40010:06	AI 6 - Current Alarm - Input Out of High Scale	Bit
LSAlmA6	40010:07	AI 6 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA7	40010:08	AI 7 - Current Alarm - Lo	Bit
HiAlmA7	40010:09	AI 7 - Current Alarm - Hi	Bit
HSAlmA7	40010:10	AI 7 - Current Alarm - Input Out of High Scale	Bit
LSAlmA7	40010:11	AI 7 - Current Alarm - Input Out of Low Scale	Bit
LoAlmA8	40010:12	AI 8 - Current Alarm - Lo	Bit
HiAlmA8	40010:13	AI 8 - Current Alarm - Hi	Bit
HSAlmA8	40010:14	AI 8 - Current Alarm - Input Out of High Scale	Bit
LSAlmA8	40010:15	AI 8 - Current Alarm - Input Out of Low Scale	Bit

READ/WRITE REGISTERS

Register Name	Modbus Address	Description	Type
LLLAImA1	40011:00	AI1 - Latched Alarm - Lo Lo	Bits
LLAImA1	40011:01	AI1 - Latched Alarm - Lo	Bits
HLLAImA1	40011:02	AI1 - Latched Alarm - Hi	Bits
HHLAImA1	40011:03	AI1 - Latched Alarm - Hi Hi	Bits
HSLAImA1	40011:04	AI1 - Latched Alarm - Input Out of High Scale	Bits
LSLAImA1	40011:05	AI1 - Latched Alarm - Input Out of Low Scale	Bits
OSLAImA1	40011:06	AI1 - Latched Alarm - Input Out of Scale	Bits
GALAImA1	40011:07	AI1 - Latched Alarm - General Alarm	Bits
LLLAImA2	40011:08	AI2 - Latched Alarm - Lo Lo	Bits
LLAImA2	40011:09	AI2 - Latched Alarm - Lo	Bits
HLLAImA2	40011:10	AI2 - Latched Alarm - Hi	Bits
HHLAImA2	40011:11	AI2 - Latched Alarm - Hi Hi	Bits
HSLAImA2	40011:12	AI2 - Latched Alarm - Input Out of High Scale	Bits
LSLAImA2	40011:13	AI2 - Latched Alarm - Input Out of Low Scale	Bits
OSLAImA2	40011:14	AI2 - Latched Alarm - Input Out of Scale	Bits
GALAImA2	40011:15	AI2 - Latched Alarm - General Alarm	Bits
LLLAImA3	40012:00	AI3 - Latched Alarm - Lo Lo	Bits
LLAImA3	40012:01	AI3 - Latched Alarm - Lo	Bits
HLLAImA3	40012:02	AI3 - Latched Alarm - Hi	Bits
HHLAImA3	40012:03	AI3 - Latched Alarm - Hi Hi	Bits
HSLAImA3	40012:04	AI3 - Latched Alarm - Input Out of High Scale	Bits
LSLAImA3	40012:05	AI3 - Latched Alarm - Input Out of Low Scale	Bits
OSLAImA3	40012:06	AI3 - Latched Alarm - Input Out of Scale	Bits
GALAImA3	40012:07	AI3 - Latched Alarm - General Alarm	Bits
LLLAImA4	40012:08	AI4 - Latched Alarm - Lo Lo	Bits
LLAImA4	40012:09	AI4 - Latched Alarm - Lo	Bits
HLLAImA4	40012:10	AI4 - Latched Alarm - Hi	Bits
HHLAImA4	40012:11	AI4 - Latched Alarm - Hi Hi	Bits
HSLAImA4	40012:12	AI4 - Latched Alarm - Input Out of High Scale	Bits
LSLAImA4	40012:13	AI4 - Latched Alarm - Input Out of Low Scale	Bits
OSLAImA4	40012:14	AI4 - Latched Alarm - Input Out of Scale	Bits
GALAImA4	40012:15	AI4 - Latched Alarm - General Alarm	Bits
LLLAImA5	40013:00	AI5 - Latched Alarm - Lo Lo	Bits
LLAImA5	40013:01	AI5 - Latched Alarm - Lo	Bits
HLLAImA5	40013:02	AI5 - Latched Alarm - Hi	Bits
HHLAImA5	40013:03	AI5 - Latched Alarm - Hi Hi	Bits
HSLAImA5	40013:04	AI5 - Latched Alarm - Input Out of High Scale	Bits
LSLAImA5	40013:05	AI5 - Latched Alarm - Input Out of Low Scale	Bits
OSLAImA5	40013:06	AI5 - Latched Alarm - Input Out of Scale	Bits
GALAImA5	40013:07	AI5 - Latched Alarm - General Alarm	Bits
LLLAImA6	40013:08	AI6 - Latched Alarm - Lo Lo	Bits
LLAImA6	40013:09	AI6 - Latched Alarm - Lo	Bits
HLLAImA6	40013:10	AI6 - Latched Alarm - Hi	Bits
HHLAImA6	40013:11	AI6 - Latched Alarm - Hi Hi	Bits
HSLAImA6	40013:12	AI6 - Latched Alarm - Input Out of High Scale	Bits

Register Name	Modbus Address	Description	Type
LSLAlmA6	40013:13	AI6 - Latched Alarm - Input Out of Low Scale	Bits
OSLAlmA6	40013:14	AI6 - Latched Alarm - Input Out of Scale	Bits
GALAlmA6	40013:15	AI6 - Latched Alarm - General Alarm	Bits
LLAlmA7	40014:00	AI7 - Latched Alarm - Lo Lo	Bits
LLAlmA7	40014:01	AI7 - Latched Alarm - Lo	Bits
HLAlmA7	40014:02	AI7 - Latched Alarm - Hi	Bits
HHLAlmA7	40014:03	AI7 - Latched Alarm - Hi Hi	Bits
HSLAlmA7	40014:04	AI7 - Latched Alarm - Input Out of High Scale	Bits
LSLAlmA7	40014:05	AI7 - Latched Alarm - Input Out of Low Scale	Bits
OSLAlmA7	40014:06	AI7 - Latched Alarm - Input Out of Scale	Bits
GALAlmA7	40014:07	AI7 - Latched Alarm - General Alarm	Bits
LLAlmA8	40014:08	AI8 - Latched Alarm - Lo Lo	Bits
LLAlmA8	40014:09	AI8 - Latched Alarm - Lo	Bits
HLAlmA8	40014:10	AI8 - Latched Alarm - Hi	Bits
HHLAlmA8	40014:11	AI8 - Latched Alarm - Hi Hi	Bits
HSLAlmA8	40014:12	AI8 - Latched Alarm - Input Out of High Scale	Bits
LSLAlmA8	40014:13	AI8 - Latched Alarm - Input Out of Low Scale	Bits
OSLAlmA8	40014:14	AI8 - Latched Alarm - Input Out of Scale	Bits
GALAlmA8	40014:15	AI8 - Latched Alarm - General Alarm	Bits
RstLALA1	40015:00	Reset Latched Alarms - AI1	Bit
RstLALA2	40015:01	Reset Latched Alarms - AI2	Bit
RstLALA3	40015:02	Reset Latched Alarms - AI3	Bit
RstLALA4	40015:03	Reset Latched Alarms - AI4	Bit
RstLALA5	40015:04	Reset Latched Alarms - AI5	Bit
RstLALA6	40015:05	Reset Latched Alarms - AI6	Bit
RstLALA7	40015:06	Reset Latched Alarms - AI7	Bit
RstLALA8	40015:07	Reset Latched Alarms - AI8	Bit

EXTENDED REGISTER SET

READ ONLY REGISTERS

Register Name	Modbus Address	Description	Type
AlmLLAI1	40021:00	AI 2 - Current Alarm - Lo Lo	Bit
AlmLAI1	40021:01	AI 2 - Current Alarm - Lo	Bit
AlmHAI1	40021:02	AI 2 - Current Alarm - Hi	Bit
AlmHHA1	40021:03	AI 2 - Current Alarm - Hi Hi	Bit
AlmHSAI1	40021:04	AI 2 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI1	40021:05	AI 2 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI1	40021:06	AI 2 - Current Alarm - Input Out of Scale	Bit
AlmGnAI1	40021:07	AI 2 - Current Alarm - General	Bit
AlmLLAI2	40021:08	AI 1 - Current Alarm - Lo Lo	Bit
AlmLAI2	40021:09	AI 1 - Current Alarm - Lo	Bit
AlmHAI2	40021:10	AI 1 - Current Alarm - Hi	Bit
AlmHHA2	40021:11	AI 1 - Current Alarm - Hi Hi	Bit
AlmHSAI2	40021:12	AI 1 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI2	40021:13	AI 1 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI2	40021:14	AI 1 - Current Alarm - Input Out of Scale	Bit
AlmGnAI2	40021:15	AI 1 - Current Alarm - General	Bit
AlmLLAI3	40022:00	AI 4 - Current Alarm - Lo Lo	Bit
AlmLAI3	40022:01	AI 4 - Current Alarm - Lo	Bit
AlmHAI3	40022:02	AI 4 - Current Alarm - Hi	Bit
AlmHHA3	40022:03	AI 4 - Current Alarm - Hi Hi	Bit
AlmHSAI3	40022:04	AI 4 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI3	40022:05	AI 4 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI3	40022:06	AI 4 - Current Alarm - Input Out of Scale	Bit
AlmGnAI3	40022:07	AI 4 - Current Alarm - General	Bit
AlmLLAI4	40022:08	AI 3 - Current Alarm - Lo Lo	Bit
AlmLAI4	40022:09	AI 3 - Current Alarm - Lo	Bit
AlmHAI4	40022:10	AI 3 - Current Alarm - Hi	Bit
AlmHHA4	40022:11	AI 3 - Current Alarm - Hi Hi	Bit
AlmHSAI4	40022:12	AI 3 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI4	40022:13	AI 3 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI4	40022:14	AI 3 - Current Alarm - Input Out of Scale	Bit
AlmGnAI4	40022:15	AI 3 - Current Alarm - General	Bit
AlmLLAI5	40023:00	AI 6 - Current Alarm - Lo Lo	Bit
AlmLAI5	40023:01	AI 6 - Current Alarm - Lo	Bit
AlmHAI5	40023:02	AI 6 - Current Alarm - Hi	Bit
AlmHHA5	40023:03	AI 6 - Current Alarm - Hi Hi	Bit
AlmHSAI5	40023:04	AI 6 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI5	40023:05	AI 6 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI5	40023:06	AI 6 - Current Alarm - Input Out of Scale	Bit
AlmGnAI5	40023:07	AI 6 - Current Alarm - General	Bit
AlmLLAI6	40023:08	AI 5 - Current Alarm - Lo Lo	Bit
AlmLAI6	40023:09	AI 5 - Current Alarm - Lo	Bit

Register Name	Modbus Address	Description	Type
AlmHAI6	40023:10	AI 5 - Current Alarm - Hi	Bit
AlmHHA16	40023:11	AI 5 - Current Alarm - Hi Hi	Bit
AlmHSAI6	40023:12	AI 5 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI6	40023:13	AI 5 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI6	40023:14	AI 5 - Current Alarm - Input Out of Scale	Bit
AlmGnAI6	40023:15	AI 5 - Current Alarm - General	Bit
AlmLLAI7	40024:00	AI 8 - Current Alarm - Lo Lo	Bit
AlmLAI7	40024:01	AI 8 - Current Alarm - Lo	Bit
AlmHAI7	40024:02	AI 8 - Current Alarm - Hi	Bit
AlmHHA17	40024:03	AI 8 - Current Alarm - Hi Hi	Bit
AlmHSAI7	40024:04	AI 8 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI7	40024:05	AI 8 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI7	40024:06	AI 8 - Current Alarm - Input Out of Scale	Bit
AlmGnAI7	40024:07	AI 8 - Current Alarm - General	Bit
AlmLLAI8	40024:08	AI 7 - Current Alarm - Lo Lo	Bit
AlmLAI8	40024:09	AI 7 - Current Alarm - Lo	Bit
AlmHAI8	40024:10	AI 7 - Current Alarm - Hi	Bit
AlmHHA18	40024:11	AI 7 - Current Alarm - Hi Hi	Bit
AlmHSAI8	40024:12	AI 7 - Current Alarm - Input Out of High Scale	Bit
AlmLSAI8	40024:13	AI 7 - Current Alarm - Input Out of Low Scale	Bit
AlmOSAI8	40024:14	AI 7 - Current Alarm - Input Out of Scale	Bit
AlmGnAI8	40024:15	AI 7 - Current Alarm - General	Bit
MinAI1	40025	Maximum Value After Last Reset - AI1	Register
MaxAI1	40026	Minimum Value After Last Reset - AI1	Register
MinAI2	40027	Maximum Value After Last Reset - AI2	Register
MaxAI2	40028	Minimum Value After Last Reset - AI2	Register
MinAI3	40029	Maximum Value After Last Reset - AI3	Register
MaxAI3	40030	Minimum Value After Last Reset - AI3	Register
MinAI4	40031	Maximum Value After Last Reset - AI4	Register
MaxAI4	40032	Minimum Value After Last Reset - AI4	Register
MinAI5	40033	Maximum Value After Last Reset - AI5	Register
MaxAI5	40034	Minimum Value After Last Reset - AI5	Register
MinAI6	40035	Maximum Value After Last Reset - AI6	Register
MaxAI6	40036	Minimum Value After Last Reset - AI6	Register
MinAI7	40037	Maximum Value After Last Reset - AI7	Register
MaxAI7	40038	Minimum Value After Last Reset - AI7	Register
MinAI8	40039	Maximum Value After Last Reset - AI8	Register
MaxAI8	40040	Minimum Value After Last Reset - AI8	Register
EULLAI1	40041	Analogue Input 1 - EU Alarm Limit - Low Low	Register
EULAI1	40042	Analogue Input 1 - EU Alarm Limit - Low	Register
EUHAI1	40043	Analogue Input 1 - EU Alarm Limit - High	Register
EUHHA11	40044	Analogue Input 1 - EU Alarm Limit - High High	Register
EULLAI2	40045	Analogue Input 2 - EU Alarm Limit - Low Low	Register
EULAI2	40046	Analogue Input 2 - EU Alarm Limit - Low	Register
EUHAI2	40047	Analogue Input 2 - EU Alarm Limit - High	Register
EUHHA12	40048	Analogue Input 2 - EU Alarm Limit - High High	Register
EULLAI3	40049	Analogue Input 3 - EU Alarm Limit - Low Low	Register

Register Name	Modbus Address	Description	Type
EULAI3	40050	Analogue Input 3 - EU Alarm Limit - Low	Register
EUHAI3	40051	Analogue Input 3 - EU Alarm Limit - High	Register
EUHHA13	40052	Analogue Input 3 - EU Alarm Limit - High High	Register
EULLAI4	40053	Analogue Input 4 - EU Alarm Limit - Low Low	Register
EULAI4	40054	Analogue Input 4 - EU Alarm Limit - Low	Register
EUHAI4	40055	Analogue Input 4 - EU Alarm Limit - High	Register
EUHHA14	40056	Analogue Input 4 - EU Alarm Limit - High High	Register
EULLAI5	40057	Analogue Input 5 - EU Alarm Limit - Low Low	Register
EULAI5	40058	Analogue Input 5 - EU Alarm Limit - Low	Register
EUHAI5	40059	Analogue Input 5 - EU Alarm Limit - High	Register
EUHHA15	40060	Analogue Input 5 - EU Alarm Limit - High High	Register
EULLAI6	40061	Analogue Input 6 - EU Alarm Limit - Low Low	Register
EULAI6	40062	Analogue Input 6 - EU Alarm Limit - Low	Register
EUHAI6	40063	Analogue Input 6 - EU Alarm Limit - High	Register
EUHHA16	40064	Analogue Input 6 - EU Alarm Limit - High High	Register
EULLAI7	40065	Analogue Input 7 - EU Alarm Limit - Low Low	Register
EULAI7	40066	Analogue Input 7 - EU Alarm Limit - Low	Register
EUHAI7	40067	Analogue Input 7 - EU Alarm Limit - High	Register
EUHHA17	40068	Analogue Input 7 - EU Alarm Limit - High High	Register
EULLAI8	40069	Analogue Input 8 - EU Alarm Limit - Low Low	Register
EULAI8	40070	Analogue Input 8 - EU Alarm Limit - Low	Register
EUHAI8	40071	Analogue Input 8 - EU Alarm Limit - High	Register
EUHHA18	40072	Analogue Input 8 - EU Alarm Limit - High High	Register
GAlmLL	40073:00	General - Lo Lo Alarm	Bit
GAlmLL	40073:01	General - Lo Alarm	Bit
GAlmH	40073:02	General - Hi Alarm	Bit
GAlmHH	40073:03	General - Hi Hi Alarm	Bit
GAlmHS	40073:04	General - Input Out of High Scale	Bit
GAlmLS	40073:05	General - Input Out of Low Scale	Bit
GAlmOS	40073:06	General - Input Out of Scale	Bit
GAlm	40073:07	General	Bit

READ/WRITE REGISTERS

Register Name	Modbus Address	Description	Type
RsStDO01	40101:00	Reset Statistics - AI1	Register
RsStDO02	40101:01	Reset Statistics - AI2	Register
RsStDO03	40101:02	Reset Statistics - AI3	Register
RsStDO04	40101:03	Reset Statistics - AI4	Register
RsStDO05	40101:04	Reset Statistics - AI5	Register
RsStDO06	40101:05	Reset Statistics - AI6	Register
RsStDO07	40101:06	Reset Statistics - AI7	Register
RsStDO08	40101:07	Reset Statistics - AI8	Register
RwMinAI1	40102	Analogue Input 1 - Raw Value Min	Register

Register Name	Modbus Address	Description	Type
RwMaxAI1	40103	Analogue Input 1 - Raw Value Max	Register
EUMinAI1	40104	Analogue Input 1 - EU Value Min	Register
EUMaxAI1	40105	Analogue Input 1 - EU Value Max	Register
RwMinAI2	40106	Analogue Input 2 - Raw Value Min	Register
RwMaxAI2	40107	Analogue Input 2 - Raw Value Max	Register
EUMinAI2	40108	Analogue Input 2 - EU Value Min	Register
EUMaxAI2	40109	Analogue Input 2 - EU Value Max	Register
RwMinAI3	40110	Analogue Input 3 - Raw Value Min	Register
RwMaxAI3	40111	Analogue Input 3 - Raw Value Max	Register
EUMinAI3	40112	Analogue Input 3 - EU Value Min	Register
EUMaxAI3	40113	Analogue Input 3 - EU Value Max	Register
RwMinAI4	40114	Analogue Input 4 - Raw Value Min	Register
RwMaxAI4	40115	Analogue Input 4 - Raw Value Max	Register
EUMinAI4	40116	Analogue Input 4 - EU Value Min	Register
EUMaxAI4	40117	Analogue Input 4 - EU Value Max	Register
RwMinAI5	40118	Analogue Input 5 - Raw Value Min	Register
RwMaxAI5	40119	Analogue Input 5 - Raw Value Max	Register
EUMinAI5	40120	Analogue Input 5 - EU Value Min	Register
EUMaxAI5	40121	Analogue Input 5 - EU Value Max	Register
RwMinAI6	40122	Analogue Input 6 - Raw Value Min	Register
RwMaxAI6	40123	Analogue Input 6 - Raw Value Max	Register
EUMinAI6	40124	Analogue Input 6 - EU Value Min	Register
EUMaxAI6	40125	Analogue Input 6 - EU Value Max	Register
RwMinAI7	40126	Analogue Input 7 - Raw Value Min	Register
RwMaxAI7	40127	Analogue Input 7 - Raw Value Max	Register
EUMinAI7	40128	Analogue Input 7 - EU Value Min	Register
EUMaxAI7	40129	Analogue Input 7 - EU Value Max	Register
RwMinAI8	40130	Analogue Input 8 - Raw Value Min	Register
RwMaxAI8	40131	Analogue Input 8 - Raw Value Max	Register
EUMinAI8	40132	Analogue Input 8 - EU Value Min	Register
EUMaxAI8	40133	Analogue Input 8 - EU Value Max	Register