INDUS-COMM

I/O System

Overview

System Overview

The system consists of several parts:

- A primary server
- A "Modbus Over Ethernet" interface
- Up to 6 Communication Channels*
- I/O boxes (boards)
- TADA HMI Software

Primary Server

Primary Server Functions :

- Communicate to and scan I/O boxes
- Configure I/O boxes
- Provide the Modbus interface
- Perform tasks within the "Block Processor"
- Provide testing and diagnostic information
- Simulation (offline)
- Connects to "Secondary" servers

Modbus Interface

The Modbus interface allows TADA and other external devices access to the internal memory map which represents the state of the I/O boxes.

Reading the contents of particular registers will give a representation of the current state of a particular I/O box.

Changing the contents of any particular register can affect the related I/O box and/or it's outputs.

Other devices like PLC's, other SCADA systems, HMI's, or other types of interfaces (like OPC) etc. can connect to the system through this mechanism.

Modbus

- Industry standard Modbus over IP (Network)
- Custom memory map
- Up to 10 Client network connections available

Communication Channels

Communication channel functions :

- Up to 6 Communication Channels*
- You can seamlessly mix and match any of these modes :
 - 1. Radio VHF / UHF / 900 Mhz
 - 2. Serial
 - 3. Network
- They provide access to the I/O boxes over many possible types of media and in some cases can be of combined types.
- Simple and easy setup of additional I/O boxes

I/O Boxes

Current offerings include :

- FC (Fan control) in either serial or several radio based formats
 Can be used to control any 1* device (fan, pump, door, lights, etc.)
 Consists of 4 contact inputs, 2 contact outputs, 1 analog input*, and 1 analog output
- 4AI (4 analog input) in either serial or several radio based formats
 Can be used to monitor u to 4 analog devices like gas detectors etc.
 Consists of 4 analog inputs and 4 digital inputs

TADA

Thin Automation and Data Access :

- A simple HMI built specifically for the I/O system
- Built in pre-configured faceplates designed to represent a single field device (I/O box)
- Scaled for small areas of control and monitoring

TADA

- Quick and Easy Setup and Configuration
- Multiple Stations
- Multiple Screens
- Configuration can be setup in a centrally available storage location
- Alarm Sub-System
- Control or View Only
- Single, Group and broadcast based controls

I/O Scanner

- Connection type is "Transparent"
- Can run independently on Primary and Secondary servers
- Allows access of up to 197 remote devices
- Adjustable scan speeds
- Priority based I/O processing algorithm

Configuration, Diagnostics and Simulation

- Test and Check individual I/O boxes
- Collects statistics to help diagnose intermittent communication Issues
- Capture per-unit performance
- System can be run offline with simulated I/O boxes to allow development of systems, block processor schemes, I/O verification etc.

Block Processor

- Basic PLC functionality
- Works directly with Modbus memory map
- Enables great flexibility handling and piping data
- Move and manipulate input and output information
- Time based functions

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Configuration and Setup Examples :

- 1) System Configuration and Communications Channel Setup
- 2) Scanner Setup and Diagnostics
- 3) I/O Box Configuration
- 4) Secondary Server Setup
- 5) Modbus Map and Interface information
- 6) Block Processor Example
- 7) OPC Interface Configuration

1. System Configuration and Communication Channel Setup

- Define Communication Channels
- Define Scanning and Timeout Parameters

Communications And System Overview

Menu

		Stop Scanner			Start Scanner]
Please Enter A Unit Number And Then	Address 2	Last Heard	A IN 0	DIGITAL	STATE On-Line	Alias Radio Board 1
Select A Function Below :	3		0		On-Line	
	4		0		On-Line	
Unit# 11 Max. 199	11		0		On-Line	
		Łż	Ū		OTTENIO	
Alias :						
Query This ID: Auto Repeat ID Query						
Put On-Line						
Take Off-Line						
-System Alarms And Status						
System Alarms And Status Scanning : Stopped Current Unit : Cycle Time : Unknown Channel 1 : OK Channel 2 : Disabled Channel 3 : Disabled Channel 4 : Disabled Channel 5 : Disabled Channel 6 : Disabled						
Last Heard Info Source ID: Analog IN: Analog OUT: Input # 1 Input # 2 Input # 3 Input # 4 Packet Type / Info : Input # 4 Relay # 1 Relay # 2 Relay # 2						
			F	Reset Status (ârid	

Server main system overview.



Menu Selections

🚵 System Configuration

I/O Scan Delay Time: 2 2 - 600 Seconds This is the time to pause between each complete scan of the I/O in the system. Prioritized writes will still occur during this time.	Primary Channel Com # I Port Enabled Baud 1 © Radio Port © 9600 © 1200 Secondary Channel
Between Board Delay: 0 0 - 600 Seconds Keep in mind that these values will affect the response time of the system. i.e. If you have 10 boards being scanned at 2 seconds per board and 5 minutes between scans, then you	Com # Image: Port Enabled Baud 2 ○ Radio Port ○ 9600 ○ Serial Port ○ 1200
will only see data updated from each board every 5 minutes + 2 Seconds x the number of boards = 5 min 20 seconds total scan time (approximately).	Secondary Channel Com # Port Enabled Baud 8 © Radio Port © 9600 C Serial Port © 1200
Modbus Map Display 2 Seconds Update Interval :	Secondary Channel Com # Port Enabled Baud
Comm Fail Time : 2.00 Seconds	4 Serial Port C 1200
Comm Fail Time is calculated by taking typical round trip time and adding 0.2 seconds. For example, 1/2 Secound out + 1/2 Second back + 0 seconds turnaround delay + 0.2 = 1.2 Seconds (Default setting)	Secondary Channel Com # Port Enabled Baud 5 © Radio Port © 9600 © 1200
Block Processor Scan 2 2 - 600 Seconds.	Secondary Channel Com # Port Enabled Baud 6 C Badio Port © 9600 6 C Serial Port C 1200
🦳 Modbus Compatibility Mode	Save / Done

System Configuration and Com Channel Setup

Some Channel Connection Possibilities :





Windows Device Manager

🚵 System Configuration

I/O Scan Delay Time: 2 2 - 600 Seconds This is the time to pause between each complete scan of the I/O in the system. Prioritized writes will still occur during this	Com # Image: Port Enabled Baud 1 Image: Com and the second secon
time. Between Board Delay: 0 0 - 600 Seconds Keep in mind that these values will affect the response time of the system. i.e. If you have 10 boards being scanned at 2	Secondary Channel Com # I Port Enabled Baud 2 C Radio Port © 9600 0 Serial Port © 1200
will only see data updated from each board every 5 minutes + 2 Seconds x the number of boards = 5 min 20 seconds total scan time (approximately).	Secondary Channel Com # Port Enabled Baud 8 © Radio Port 0 1999
Modbus Map Display 2 Seconds Update Interval :	Secondary Channel
Comm Fail Time : 2.00 Seconds	4 C Radio Port C 9600 C 1200
Comm Fail Time is calculated by taking typical round trip time and adding 0.2 seconds. For example, 1/2 Secound out + 1/2 Second back + 0 seconds turnaround delay + 0.2 = 1.2 Seconds (Default setting)	Secondary Channel Com # Port Enabled Baud 5 © Radio Port © Serial Port 1200
Block Processor Scan 2 2 - 600 Seconds. Delay Time :	Secondary Channel Com # Port Enabled Baud 6 C Badio Port 6 C Social Batt
Modbus Compatibility Mode	

Save / Done

Menu

Please Enter A Unit Number And Then Select A Function Below :

Unit # 2 Max. 199	
Alias : Radio Board 1	
Query This ID: Duery	
Put On-Line	
Take Off-Line	
System Alarms And Status Scanning : Stopped Current Unit : Cycle Time : Unknown Channel 1 : OK Channel 2 : Port Bad Channel 3 : Disabled Channel 5 : Disabled Channel 6 : Disabled	
Last Heard Info Source ID: Analog IN: Analog OUT: Packet Type / Info :	Input # 1 Input # 2 Input # 3 Input # 4 Relay # 1 Relay # 2

	Stop Scanner			Start Scanner	
Address	Last Heard	AIN	DIGITAL	STATE	Alias
2		0		On-Line	Radio Board 1
3		0		On-Line	
4		0		On-Line	
5		0		On-Line	

Reset Status Grid

Scanning System Setup

- Put I/O Boxes On-line
- Start / Stop Scanner
- Look at Diagnostics and Diagnostic Files



- 1. Select box (unit) number
- 2. Select "Put On-Line"
- 3. Select the communications channel the box is connected to
- 4. Select "Done"

Note: To change a connection point (the channel a box is connected to) just follow the same procedure and put it on-line on the new channel.

Communications And System Overview							
Menu							4
			Stop Scanner			Start Scanner	
Please Enter A Unit Number And Then	Address	Last Heard		AIN	DIGITAL	STATE	Alias Radio Roard 1
Select A Function Below :	3			0		On-Line	naulo boalu i
	4			0		On-Line	
Unit # 2 Max 199	10			0		On-Line	
	11	Comm Fail		0	-T/OUT-		
Alias Badio Board 1							
Alug. Alug bould l							
Auto Bepeat							
Query This ID:							
Put On-Line							
T-b- Off Line							
I ake off-line							
-System Alarms And Status							
Soonning Active							
Current Unit : Waiting D							
Cycle Time : 70 Seconds							
Channel 1 : OK							
Channel 2 : OK							
Channel 3 : Disabled							
Channel 5 : Disabled							
Channel 6 : Disabled							
Last Heard Info							
Source ID: Analog IN: Analog OUT: Input # 1							
Input # 2							
Packet Type / Info : Input # 4							
Relay # 1							
Relay # 2							
					Beset Statu	s Grid	

- 1. Scanner Start and Stop controls
- 2. Status Indications -

Green = Currently being queried Orange = Comm Failed Cyan = Priority Scan in Progress Grey = OK / normal Grey all across = Box heard but not set "on scan"



Note: These settings may need to be adjusted if you are seeing failures.



Select "Diagnostics" from the main menu

Communic	ations Debug - IOSystem	
IN:	Board # 4 Timed Out / No Answer	
OUT:	10 0 1 0 0 0 0 0 1 0 0 0 202 15	
Packet	:Counts: Sent: 4 / Good: 0 / Bad: 4 hulatorEnable Board Sim	CReset Counts

Diagnostic Detail Window :

1. Shows the raw data and status of communications going to and from the current box being scanned.

2. Selecting "Reset Counts" will zero the packet counts AND historical statistics.

3. Selecting "Dump Counters" will generate a file showing the statistics of ALL boxes.

4. The count shown is the OVERALL count for all boxes



Sample "Diagnostic Dump" file

Notes:

1. By default, the file is stored in the program installation folder.

2. The dump also occurs anytime the software is closed.

3. Daily dumps (at midnight) will occur automatically occur if the "Modbus Diagnostics" window is left open.

I/O Box Configuration

- Configure I/O boxes
- Test all I/O box functions
- Diagnose I/O box issues

Communications And System Overview			
Menu			
	Stop Scanner		Start Scanner
Please Enter & Unit Number And Then	Address Last Heard	A IN DIGITAL	STATE Alias
Select A Function Below :	2	0	On-Line Radio Board 1
	4	0	On-Line
Upit # May 100	10	0	On-Line
Offic# 2 Max. 199	11	0	On-Line
Alias : Radio Board 1			
Query This ID: Auto Repeat ID Query			
Put On-Line			
Take Off-Line			
System Alarms And Status			
Scanning : Active			
Current Unit : 10			
Cycle Time : Unknown Channel 1 : OK			
Channel 2 : OK			
Channel 3 : Disabled			
Channel 4 : Disabled			
Channel 5 : Disabled Channel 6 : Disabled			
Last Heard Info			
Source ID: Analog IN: Analog OUT: Input # 1			
Input # 2			
Packet Type / Info : Input # 4			
Relay # 1			
Relay # 2			
		Reset Status G	

Select "Stop Scanner"



Select "Configuration Tool" from the main menu

🚣 Configure a Unit		
Options		5 J J 5 J
Please Enter A Unit # And Then Select A Function Below	Firmware 11 (Not Configurable) Revision	Enhanced Parameters : NOTE: These Features Are Only Available On Units With Firmware Version 10 0F Higher
Query Config Unlock EEprom	Address: 2 2 - 199 RX to TX 0.1 Seconds	Comfail 30 (099)
Write Config	Turnaround: 0-27 TX Warmup 4.0 Time : × 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
(S) ID Query Response	COS 128 Raw Counts Hysteresis (0 - 4095)	Revert State: ☐ Relay #1
Last Heard I/U Information : Source ID: Read I/O 2	Clear Boxes	Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Belau # 1 0255	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups:	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay # 2	Test Functions : CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	Legend: Relay ON
Send Factory Reset	Raw Analog 0 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	Relay #1 Write Outputs Relay #2	
Xmit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to work.	
Unit To Transmit For Several Seconds To Allow Calibration	Broadcast Group : 2 Broadcast	Done

To examine and configure a box:

- 1. Enter the box number in the "Unit #" field
- 2. Select "Query Config"
- 3. Make any necessary changes
- 4. Select "Unlock Eeprom"
- 5. Select "Write Config"

🎍 Configure a Unit		
Options	- Configuration Information -	- Enknood Baranatara
Please Enter A Unit # And Then Select A Function Below	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware
Query Config Unlock EEprom	Address: 2 2 - 199 RX to TX 0.1 Seconds	Comfail 30 Seconds
Write Config Messages :	Turnaround: 0.27 TX Warmup 4.0 Time : x 25 (0.100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
(S) ID Query Response	LOS Hysteresis 128 (0 - 4095)	Revert State:
Last Heard I/O Information : Source ID: Read I/O 2	Options: 🔽 Ignore Busy Channel	Relay #1 Relay #2 Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Relay # 1 255	NUTE: The Broadcast Feature Is Unly Available Un Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups:	NUTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay # 2	Test Functions :	Legend:
Re-Boot	CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	I Relay ON ■ Relay OFF
Send Factory Reset	Raw Analog 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs ☐ Relay #2	
Xmit Test This Function Will Cause The	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to work.	
Unit To Transmit For Several Seconds To Allow Calibration	Broadcast Group : 2 Broadcast	Done

To adjust the Enhanced parameters you should do the following:

- 1. Query the config
- 2. Read EP
- 3. Make any necessary changes
- 4. Save EP
- 5. Unlock Eeprom
- 6. Within 5 seconds, Write EEprom

🖌 Configure a Unit		
Options		
Please Enter A Unit # And Then Select A Function Below	Configuration Information : Firmware 11 (Not Configurable) Revision	Enhanced Parameters : NOTE: These Features Are Only Available On Units With Firmware
Unit # 2	Address: 2 - 199	Version 10 Or Higher.
	RX to TX Turnaround: 0.1 Seconds 0-27	Time 30 Seconds (0-99)
Messages :	IX warmup 4.0 Milliseconds Time : 4.0 x 25 (0-100) COS 1.00 Baw Counts	A Setting of U Seconds Disables The Comfail And Revert Functions.
(S) ID Query Response	Hysteresis (0 - 4095)	Revert State: Relay #1
Read I/O Source ID:	Clear Boxes	Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Relay # 1 255	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups:	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay # 2	Test Functions : CAUTION! This Function Will Write This Output	Legend: IV Relavion
Re-Boot	Information To the Board (For Test Purposes Only) Raw Analog 0 0 - 65535	Relay OFF
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	Relay #1 Write Outputs Relay #2	Battery Voltage = 9.38 V
Xmit Test This Function Will Cause The	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to work.	
Unit To Transmit For Several Seconds To Allow Calibration	Broadcast Group : 2 Broadcast	Done

Notes:

1. Only the applicable parameters for the box you are examining will show up

2. If you don't know the number of the box you wish to query, use the "Advanced Mode" (See the manual) to find out the current box number

3. Firmware revision determines the available features

Selice a Offic		
Options	- Configuration Information :	
Please Enter A Unit # And Then	Conliguration motionation .	Enhanceu Parameters .
Select A Function Below	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware
	Address: 2 2 . 199	version to of higher.
Query Config Unlock EEprom	RX to TX 0.1 Seconds Turnaround: 0.1 0-27	Comfail 30 Seconds Time (0 -99)
Write Config	TX Warmup 4.0 Milliseconds x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
Messages :	COS 128 Raw Counts	
(S) ID Query Response	Hysteresis (0 - 4095)	Revert State:
Last Heard I/O Information :	Options: 🔽 Japore Busy Channel	Elay #1
Source ID:	Clear Boyer	
Read 1/0 2	COS Mode	Read EP Save EP
Input #1 Analog IN: Input #2 327 Input #3 Input #4 Analog OUT:	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups:	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay # 255	Test Functions :	-
	CALITIONI This Euroction Will Write This Output	Legend:
Re-Boot	Information To the Board (For Test Purposes Only)	Relay OFF
Send Factory Reset	Raw Analog 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs ☐ Relay #2	
Xmit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to	
This Function Will Cause The Unit To Transmit For Several	Work.	
Seconds To Allow Calibration	broadcast droup. Z Broadcast	Done

Notes:

4. The EEprom MUST be unlocked in order to write a new configuration or setting a unit back to factory defaults

5. The factory default box number is 2

6. Most units (with recent firmware) can also be configured with a programming cable and a dumb terminal program
| Configure a Unit | | | |
|--|--|--|--|
| Options | Configuration Information : | Enhanced Parameters : | |
| Select A Function Below | Firmware 11 (Not Configurable)
Revision | NOTE: These Features Are Only
Available On Units With Firmware
Version 10 Or Higher | |
| Query Config Unlock EEprom | Address: 2 2 - 199 | Comfail 30 Seconds | |
| Write Config | Turnaround: 0.1 Seconds | Time (0 -99) | |
| Messages : | Time: 4.0 x 25 (0-100) | Comfail And Revert Functions. | |
| (S) ID Query Response | LUS 128 Haw Counts
Hysteresis (0 - 4095) | Revert State: | |
| Last Heard I/O Information :
Source ID:
Read I/O
2 | Options: 🔽 Ignore Busy Channel | Relay #2 | |
| Input # 1 Analog IN:
Input # 2 327
Input # 3
Input # 4 Analog OUT:
Belay # 1 255 | NOTE: The Broadcast Feature Is Only Available On Units
With Firmware Version 10 Or Higher.
Broadcast 0 0 0
Groups: | NOTE: In Order To Write These
Parameters To EEPROM, You Need
To Perform A "Write Config" After
Saving Them. | |
| Relay # 2 | Test Functions :
CAUTION! This Function Will Write This Output | Legend: | |
| Re-Boot | Information To the Board (For Test Purposes Only) | E Relay OFF | |
| Send Factory Reset | Value: | Battery Voltage = 9.38 V | |
| This Function Will Re-Program The
Unit To Factory Preset Timing And
Unit Number 2 | ☐ Relay #1 Write Outputs
☐ Relay #2 | 2 | |
| Xmit Test | CAUTION! This Function Will Write The Above RELAY
Output Information ONLY To All Boards In The Group.
NOTE: The Scanner MUST be running for this function to | | |
| This Function Will Cause The
Unit To Transmit For Several | work.
Broadcast Group: 2 Broadcast | | |

 In order to test a box, enter the Unit number and select "Read I/O". The current I/O states should show up. On boxes that support the function, the battery voltage (supply voltage) will also show up.
 If you wish to test the outputs, enter and select the output states you wish and select "Write Outputs"

Configure a Unit		
Options Please Enter A Unit # And Then	Configuration Information :	Enhanced Parameters :
Select A Function Below	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware Version 10 0r Higher
Oueru Confin	Address: 2 - 199	
Guery corning Onlock EEpioin	RX to TX 0.1 Seconds Turnaround: 0.27	Time 30 (0.99)
Write Config	TX Warmup 4.0 Milliseconds Time : x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
(S) ID Query Response	COS 128 Raw Counts Hysteresis (0 - 4095)	Revert State:
Last Heard I/O Information :	Options: 🔽 Ignore Busy Channel	Relay #2
Read 1/0 2	COS Mode	Read EP Save EP
Input # 1 Analog IN: Input # 2 327	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher.	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A ''Write Config'' After
Input # 3 Input # 4 Analog OUT:	Groups:	Saving Them.
Relay # 1 255	Test Functions :	Legend:
Re-Boot	CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	✓ Relay ON ✓ Relay OFF
Send Factory Reset	Haw Analog 0 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs ☐ Relay #2	2
×mit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group.	
This Function Will Cause The Unit To Transmit For Several	work. Broadcast Group: 2 Broadcast	
Seconds To Allow Calibration	bioadcast dioup.	Done

Note: Caution should always be taken when working on a live system so as not to inadvertently turn on or off outputs, of configure a different (incorrectly specified) box on the system. i.e. One with a duplicate number.

Please Enter A Unit # And Then	Configuration Information :	Enhanced Parameters :
Select A Function Below	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware
	Address: 2 2 - 199	Version TU Ur Higher.
Query Config Unlock EEprom	RX to TX 0.1 Seconds Turnaround: 0.27	Comfail 30 Seconds Time (0 -99)
Write Config	TX Warmup 4.0 Milliseconds Time : 4.0 x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
Messages : (S) ID Query Response	COS 128 Raw Counts Hysteresis (0 - 4095)	Revert State:
Last Heard I/O Information :	Options: 🔽 Ignore Busy Channel	∏ Helay #1 ☐ Relay #2
Read 1/0 2	Clear Bo	Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Belau # 1 055	NOTE: The Broadcast Feature Is Only Available O With Firmware Version 10 Or Higher. Broadcast 0 0 0	n Units NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay #2	Test Functions : CAUTION! This Function Will Write This Output	Legend:
	Raw Analog 0 0 - 65535	E Relay OFF
Send Factory Heset		Battery Voltage = 9.38 V
Unit To Factory Preset Timing And Unit Number 2	☐ Helay #1 Write Outp	
Xmit Test	CAUTION! This Function Will Write The Above RE Output Information ONLY To All Boards In The Gro NOTE: The Scanner MUST be running for this fun	ELAY pup. ction to
This Function Will Cause The Unit To Transmit For Several Casenda To Allow Collision	work. Broadcast Group: 2 Broadca	ast

Practical example: Change a box number from factory default

- 1. Connect the box to the system
- 2. Enter 2 in the Unit # field
- 3. Select Query Config (Watch the box to make sure the box you want to change is responding)
- 4. Change the Address in the Configuration Information area

Configure a Unit		
ptions		
Please Enter A Unit # And Then	Configuration Information :	Enhanced Parameters :
Select A Function Below	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware
Unit #] 2	Address: 2 2 - 199	Version 10 Ur Higher.
Query Config Unlock EEprom	BX to TX 0.1 Seconds Turnaround: 0.27	Comfail 30 Seconds Time (0 -99)
Write Config	TX Warmup 4.0 Milliseconds Time : x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
Messages :	COS 128 Raw Counts	Devest Chater
(S) ID Query Response	Hysteresis (0 - 4095)	Revent State:
Last Heard I/O Information :	Options: 🔽 Ignore Busy Channel	□ Relay #1
Source ID:	Clear Boxes	
Read 1/0 2	COS Mode	Read EP Save EP
Input # 1 Analog IN: Input # 2 327	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher.	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After
Input # 3 Input # 4 Analog OUT:		Saving Them.
Relay # 1 255	Test Functions :	Legend:
Re-Boot	CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	Relay ON
Send Factory Reset	Raw Analog 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	Relay #1 Write Outputs Relay #2	
Xmit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group.	
This Function Will Cause The	work.	,
Unit To Transmit For Several Seconds To Allow Calibration	Broadcast Group : 2 Broadcast	
Seconds TO Allow Calibration		Done

Practical example: Change a box number from factory default (Cont'd)

- 5. Select Unlock Eeprom
- 6. Within 5 seconds, select Write Config
- 7. Enter the new number in the Unit # field
- 8. Select Read I/O and verify the box is responding correctly to the new address

🛃 Configure a Unit		
Options	- Configuration Information -	- Enknowed Decemeters
Please Enter A Unit # And Then Select A Function Below	Firmware 11 (Not Configurable)	NOTE: These Features Are Only Available On Units With Firmware
Unit # 2		Version 10 Or Higher.
Query Config Unlock EEprom	RX to TX 0.1 Seconds 0.27	Comfail 30 Seconds Time (0 -99)
Write Config	TX Warmup 4.0 Xilliseconds Time : 4.0 X 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
Messages : (S) ID Query Response	COS 128 Raw Counts Hysteresis (0 - 4095)	Revert State:
Last Heard I/O Information :	Options: 🔽 Ignore Busy Channel	Relay #2
Read 1/0 2	COS Mode	Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0	 NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Input # 4 Analog OUT: Relay # 1 255 Relay # 2	Test Functions :	
Re-Boot	CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	Legend: Relay ON Relay OFF
Send Factory Reset	Raw Analog 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs ☐ Relay #2	
Xmit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to	
This Function Will Cause The Unit To Transmit For Several Seconds To Allow Calibration	work. Broadcast Group : 2 Broadcast	Dava

Practical example: Change a box number from factory default (Cont'd) Notes:

1. All Configuration commands are sent as broadcasts (on every communications channel)

2. The scanner MUST be stopped before attempting to configure a box

3. The only test function that requires the scanner to be running is the "Broadcast" function

Configure a Unit Options		
Please Enter A Unit # And Then	Configuration Information :	Enhanced Parameters :
Select A Function Below	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware Version 10 Or Higher.
	Address: 2 2 - 199	
	RX to TX 0.1 Seconds Turnaround: 0-27	Comfail 30 Seconds Time (0 -99)
Write Config	TX Warmup 4.0 Milliseconds Time : x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
Messages : (S) ID Query Response	COS 128 Raw Counts Hysteresis (0 - 4095)	Revert State:
Last Heard I/O Information :	Options: 🔽 Ignore Busy Channel	Relay #2
Read I/O 2	Clear Boxes	Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Belay # 1 255	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups: 0 0	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay # 2	Test Functions :	Legend:
Re-Boot	CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	✓ Relay ON ✓ Relay OFF
Send Factory Reset	Raw Analog 0 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs ☐ Relay #2	
Xmit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to work.	
This Function Will Cause The Unit To Transmit For Several	Broadcast Group : 2 Broadcast	

Diagnostic Notes:

Some communication issues can be diagnosed by using the features shown. Note that the Xmit (transmit) test only works on radio based I/O (excluding 900 Mhz versions). It is used to make a box transmit test tones that can help determine the quality of the radio path. You can use a portable radio to listen to the audio sound of the output frequency to determine if the signal is reasonable.

🖌 Configure a Unit		
Options	- Configuration Information :	- Enhanced Parameters :
Please Enter A Unit # And Then Select A Function Below	Firmware 11 (Not Configurable)	NOTE: These Features Are Only Available On Units With Firmware
Unit# 2	2 0.400	Version 10 Or Higher.
Query Config Unlock EEprom	Address: 2 - 199 RX to TX 0.1 Seconds 0.27	Comfail 30 Seconds Time (0 -99)
Write Config	TX Warmup 4.0 Milliseconds Time : x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
Messages : (S) ID Query Response	COS Hysteresis 128 (0 - 4095)	Revert State:
Last Heard I/O Information :	Options: 🔽 Ignore Busy Channel	Elay #1
Read I/O 2	Clear Boxes	Read EP Save EP
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Belay # 1 0 555	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups:	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Relay # 2	Test Functions :	Legend:
Re-Boot	CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	☑ Relay ON ☑ Relay OFF
Send Factory Reset	Raw Analog 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs ☐ Relay #2	
Xmit Test	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to	N
This Function Will Cause The Unit To Transmit For Several Seconds To Allow Calibration	work. Broadcast Group : 2 Broadcast	

Diagnostics Notes:

You can use the Read I/O and Write Outputs functions to allow full testing of every feature that is supported by the box being examined. By selecting "Advanced Mode" from the "Options" menu, you may query any (and every

connected) box (simultaneously) by entering Unit # 65535. *** Caution should be used in order to avoid undesired ramifications when using this function. ***

🖌 Configure a Unit		
Options	- Configuration Information :	– Enhanced Parameters ; –––––––––––––––––––––––––––––––––––
Please Enter A Unit # And Then Select A Function Below Unit # 2	Firmware 11 (Not Configurable) Revision	NOTE: These Features Are Only Available On Units With Firmware Version 10 Or Higher.
Query Config Unlock EEprom	Address: 2 2 - 199 BX to TX 0.1 Seconds	Comfail 30 Seconds Time (0-99)
Write Config Messages :	Turnaround: 0-27 TX Warmup 4.0 Time : x 25 (0-100)	A Setting of 0 Seconds Disables The Comfail And Revert Functions.
(S) ID Query Response	COS Hysteresis 128 (0 - 4095)	Revert State:
Last Heard I/O Information : Source ID: 2	Options: 🔽 Ignore Busy Channel	Relay #1
Input # 1 Analog IN: Input # 2 327 Input # 3 Input # 4 Analog OUT: Relay # 1 255	NOTE: The Broadcast Feature Is Only Available On Units With Firmware Version 10 Or Higher. Broadcast 0 0 0 Groups: 0 0	NOTE: In Order To Write These Parameters To EEPROM, You Need To Perform A "Write Config" After Saving Them.
Be-Boot	Test Functions : CAUTION! This Function Will Write This Output Information To the Board (For Test Purposes Only)	Legend: Relay ON
Send Factory Reset	Raw Analog 0 0 - 65535 Value:	Battery Voltage = 9.38 V
This Function Will Re-Program The Unit To Factory Preset Timing And Unit Number 2	☐ Relay #1 Write Outputs Relay #2	
Xmit Test This Function Will Cause The	CAUTION! This Function Will Write The Above RELAY Output Information ONLY To All Boards In The Group. NOTE: The Scanner MUST be running for this function to work.	
Unit To Transmit For Several Seconds To Allow Calibration	Broadcast Group : 2 Broadcast	Done

Diagnostics Notes:

You should always use box # 3 or higher in your system

- Box # 0 represents internal flags in the software and cannot be used
- Box # 1 represents the radio head-end
- Box # 2 is the factory default
- Box # 199 is the maximum usable box number

Secondary Server Configuration

- Secondary servers allow different scan groups
- No box number may be duplicated anywhere in the system
- Only 1 Primary server (and therefore 1 Modbus interface) is allowed
- Up to 3 Secondary servers allowed
- Secondary servers are allowed on the same computer as the primary server

Multi Server Configuration



You can run the Primary and Secondary server(s) on a single computer



You can run the Primary and Secondary server(s) or on separate computers on the same network

Server Int	erlink Setup		
	-		
IN:			
OUT:			
	ruar 'a Pala:		
This Se	 Primaru Server 	Enable Remote Server Access	
	C Secondary Server	Port # 0	
Challens -	Connecting	,	
	-		
Second	lary Server 1 Setup		
Address	× 127.0.0.1	Port # 24825 Connecting	
	an Contor 2 Colum		
Address	ε <u> </u> 0.0.0.0	Port # 24825 Closed	
Second	lary Server 3 Setup		
Address	× 0.0.0.0	Port # 24824 Closed	
	,		
			Done

Primary Configuration: The connection information for Secondary Servers is specified and remote services can be enabled in this window.

Server Int	erlink Setup		
IN:			
OUT:			
This Se	erver 's Role:		
	C Primary Server	🔲 Enable Remote Server Access	
	 Secondary Server 	Port # 24824	
Status :			Done

Secondary Configuration: The connection information for Primary Server is specified and remote services can be enabled in this window.

Modbus Interface

- Allows access to functions and settings of the system
- Allows access to box I/O
- Custom memory map
- Up to 10 devices can connect *
- Allows TADA to connect and control I/O

	(Writable)	(Read Only)	(Read Only)	(Writable)	
Register #	Coils	Discrete INPUT	Input Registers	Holding Registers	NOTES:
Function	Digital OUT (0xxxx)	Digital IN (1xxxx)	Analog IN (3xxxx)	Analog OUT (4xxxx)	
0					Registers 1 to 19 are for System Statistics/Diagnostics/Options
1	Scan ON/OFF		Head End HB	Diag Dest IO	Box Address x 10 = Base Address For I/O
	Server Hidden/Not		Current Board #	Diag Dest HI	Current Board # is the hoard that is being read/written pow
	TBP Scap Op/Off		Head End RSSI	Diag CMD (Beast Group	carrent board in to board that to boing read written now
<u> </u>	Server Bri Sec		Lest Heard Board #	Block Processor Delay	Currently MAX Board # is 100 Limited in Head End Software
	Barrete Server Epobled		Last field Doard #	Soop Devied	currentity MAX board #15 135, Einited in riedd End Software
	Compatibility Made		L.H. Packed I/O	Scan Period	
<u> </u>	Compatibility wode		L.H. Analog In		DO NOT write any values Diag Registers
7			L.H. Type Code	CommFail Time (x100)	
8			LH Update HB	Between Board Delay	Comport(X) Bad = 1 means Comm port is unavailable, 0 = OK
9			Last Comm Fail BD#	<u>Bcast</u> Data	Comport Port # (X) = 3 means Com 3 etc.
10					Comport type (X) > 0 = Radio, 1 = TCPIP, 2 = Serial, (+ Baud rate, e.g. 9601)
11	Broadcast Go / Done				IP ADDR 1 / Board port> 1-255 = IP Board, 1000 + = (Port x 1000)
12	Comport (0) Enabled	Comport (0) Bad	Comport type (0)	Comport Port # (0)	
13	Comport (1) Enabled	Comport (1) Bad	Comport type (1)	Comport Port # (1)	L.H. = Last Heard
14	Comport (2) Enabled	Comport (2) Bad	Comport type (2)	Comport Port # (2)	
15	Comport (3) Enabled	Comport (3) Bad	Comport type (3)	Comport Port # (3)	Block Processor Delay is in sec
16	Comport (4) Enabled	Comport (4) Bad	Comport type (0)	Comport Port # (4)	Between Board Delay is in Seconds
17	Comport (5) Enabled	Comport (5) Bad	Comport type (4)	Comport Port # (5)	Comp fail is in seconds x 100 (hundredths of a second)
10	Comport (5) Enabled	Comport (5) Dad	Comport type (5)	Comport Fort # (3)	committains in seconds x too (numureatris of a second)
10					Addresses is the 20 years are to used by the fastery.
19					Addresses in the 20 range can be used but the factory
20					default board number is 2 so this is not suggested.
21					
					A-Out is 0-65535 - scale to be set
(Box <u>Addr</u> 3) 30	ON-Line	Comm Fail	Board HB	Broadcast Group 1	A-IN is 0 4095 - scale to be set (0-20 Volts approx)
31	Relay 1 Output	D-IN 1	A-IN 1 / RSSI	A-OUT 1	A-IN 2 is not supported on all boards
32	Relay 2 Output	D-IN 2	Comm Fail Count	Broadcast Group 2	Broadcast Groups are 1 - 250
33		D-IN 3	A-IN 2	Broadcast Group 3	
34		D-IN 4	Last Read Year	Remote Server #	HB = Heartbeat
35		Relay 1 Status	Last Read Month	IP Port	All heartbeats count from 0 to 255 then cycle around.
36		Relay 2 Status	Last Read Day	IP ADDR 1 / Board port	
37		· · · ·	Last Read Hour	IP ADDR 2	Head End HB counts every transmission attempt
38	Remote Server Flag		Last Read Minute	IP ADDR 3	
39	Don't Scan	SW Board Ind	Last Read Second	IP ADDR 4	Board HB counts every time board is accessed successfully
(Box Addr 4) 40	ON-Line	Comm Fail	Board HB	Broadcast Group 1	Comm Fail =1 means no contact: 0 = OK
41	Relay 1 Output	D IN 1			On Line 1 – Scan this board 0 – Skin it
40	Relay 2 Output	D-IN 2	Comm Fail Count	Broadcast Group 2	on-Eine . T = Scantins board, 6 = Skip it
42	Relay 2 Output	D-IN 2		Broadcast Group 2	Seen Devied in Secondo Dev VO Recyd
43		D-IN 3	A-IN Z	Broadcast Group 3	Scall Period is Seconds Period Board
44		D-IN 4	Last Read Year	Remote Server #	Scan On/On = 1 means Scanning is enabled, 0 = Scan Stopped
45		Relay 1 Status	Last Read Month	IP Port	
46		Relay 2 Status	Last Read Day	IP ADDR 1 / Board port	Packed I/O Byte Map:
47			Last Read Hour	IP ADDR 2	
48	Remote Server Flag		Last Read Minute	IP ADDR 3	I/O Bit 6
49	Don't Scan	SW Board Ind	Last Read Second	IP ADDR 4	1/0 Bit 5 – IN 4
					I/O Bit 4 – IN 3
(Box <u>Addr</u> 5) 50	ON-Line	Comm Fail	Board HB	Broadcast Group 1	I/O Bit 3 – Relay # 2
51	Relay 1 Output	D-IN 1	A-IN 1 / RSSI	A-OUT 1	I/O Bit 2 – Relay #1
52	Relay 2 Output	D-IN 2	Comm Fail Count	Broadcast Group 2	I/O Bit 1 – IN 2
53	· · · · · · · · · · · · · · · · · · ·	D-IN 3	A-IN 2	Broadcast Group 3	1/0 Bit 0 – IN 1
54		D-IN 4	Last Read Year	Remote Server #	
55		Relay 1 Status	Last Read Month	IP Port	SW Board Ind = Software Board Indicator
56		Relay 2 Status	Last Read Day	IP ADDR 1 / Board port	Allows Other devices to fill in TADA's I/O man
57		riolaj 2 otatao	Last Read Hour		1= SIA(0=Normal (hasically chooses whether hardware evicts or pot)
5.9	Remote Server Floor		Last Read Minute		* SiX(boards should not be scapped (Don't Scap turned on)
50	Dopt Scen	SIA/ Board Ind	Last Read Second		es there is no herdware to connect to
- 33	Dom Scan	Svy Doard Ind	Lust Reau Second		4 - Dopt Scen 0 - Scen
· · · · · · · · · · · · · · · · · · ·					r = Dunt Scan, 0 = Scan t Dee# Ceep Reside are not pressed in second state of subtlets
· · ·					 Dont Scan Boards are not processed in any way and data should be
· · · · · · · · · · · · · · · · · · ·					populated from the block processor or other software.
					Normally for use in TADA or for COS only boards.

Modbus Custom Map

	(Writable)	(Read Only)	(Read Only)	(Writable)
Register#	Coils	Discrete INPUT	Input Registers	Holding Registers
Function	Digital OUT (0xxxx)	Digital IN (1xxx)	Analog IN (3xxxx)	Analog OUT (4xxxx)
(Box Addr 3) 30	ON-Line	Comm Fail	Board HB	Broadcast Group 1
31	Relay 1 Output	D-IN 1	A-IN 1 / RSSI	A-OUT 1
32	Relay 2 Output	D-IN 2	Comm Fail Count	Broadcast Group 2
33		D-IN 3	A-IN 2	Broadcast Group 3
34		D-IN 4	Last Read Year	Remote Server #
35		Relay 1 Status	Last Read Month	IP Port
36		Relay 2 Status	Last Read Day	IP ADDR 1 / Board port
37			Last Read Hour	IP ADDR 2
38	Remote Server Flag		Last Read Minute	IP ADDR 3
39	Don't Scan	SW Board Ind	Last Read Second	IP ADDR 4

Modbus Custom Map – Single Box Detail

🙀 Modbus Server Debug - IOSystem

REG #	Coil Values (0xxxx)	Discrete Inputs (1xxxx)	Input Registers (3xxxx)	Holding Registers (4xxxx)	Di
0	0	1	0	0	l la
1	0	0	221	0	
2	0	0	4	0	
3	1	0	0	0	Use
4	0	0	2	2	I IP
5	0	0	0	0	
6	0	0	328	0	Use
7	0	0	0	200	I IP
8	0	0	67	2	
9	0	0	2	0	Use
10	0	1	0	0	IP
11	0	0	0	0	
12	1	0	9600	1	Use
13	1	0	1202	2	IP
14	0	0	9600	8	
15	0	0	9602	4	Use
16	0	0	9602	5	IP
17	0	0	9602	6	
18	0	0	10	0	Use
19	0	0	65535	0	IP
20	1	1	16	0	
21	0	0	328	0	Use
22	0	0	1	0	IP
23	0	0	1766	0	
24	0	0	2019	0	Use
25	0	0	4	22001	IP
26	0	0	7	1000	
27	0	0	22	168	Use
28	0	0	43	0	IP
29	0	0	28	13	
30	1	1	237	0	Use
31	0	0	20	2222	IP
32	0	0	10	0	
33	0	1	0	0	
34	0	0	2019	0	
35	0	0	4	22001	
36	0	0	8	192	
37	0	0	12	168	
38	0	0	39	0	
39	1	1	54	13	

Display	Start Register:
User1: IP :	No Connection
User 2: IP :	No Connection
User3: IP :	No Connection
User4: IP :	No Connection
User5: IP :	No Connection
User6: IP :	No Connection
User7: IP :	No Connection
User8: IP :	No Connection
User9: IP :	No Connection
User10: IP :	No Connection
Er Er	nable Manual Writes nable Writes To "Inputs"
	Done

Modbus Debug screen

👫 Modbus Server Debug - IOSystem

REG #	Coil Values (0xxxx)	Discrete Inputs (1xxxx)	Input Registers (3xxxx)	Holding Registers (4xxxx)	Disp
0	0	1	0	0	a
1	0	0	221	0	19
2	0	0	4	0	
3	1	0	0	0	User
4	0	0	2	2	Ч
5	0	0	0	0	
6	0	0	328	0	User
7	0	0	0	200	IP IP
8	0	0	67	2	
9	0	0	2	0	User
10	0	1	0	0	Ч
11	0	0	0	0	
12	1	0	9600	1	User
13	1	0	1202	2	ч
14	0	0	9600	8	
15	0	0	9602	4	User
16	0	0	9602	5	Ч
17	0	0	9602	6	
18	0	0	10	0	User
19	0	0	65535	0	Ч
20	1	1	16	0	
21	0	0	328	0	User
22	0	0	1	0	Ч
23	0	0	1766	0	
24	0	0	2019	0	User
25	0	0	4	22001	Ч
26	0	0	7	1000	
27	0	0	22	168	User
28	0	0	43	0	ч
29	0	0	28	13	
30	1	1	237	0	User
31	0	0	20	2222	IP
32	0	0	10	0	
33	0	1	0	0	
34	0	0	2019	0	
35	0	0	4	22001	
36	0	0	8	192	
37	0	0	12	168	
38	0	0	39	0	
39	1	1	54	13	

Display St	art Register:
q	ОК
User1: IP : N	o Connection
User2: IP : N	o Connection
User3: IP : N	o Connection
User4: IP : N	o Connection
User5: IP : N	o Connection
User6: IP : N	o Connection
User7: IP : N	o Connection
User8: IP : N	o Connection
User9: IP : N	o Connection
User10: IP : N	o Connection
🗖 Enat	ole Manual Writes ole Writes To "Inputs"

Done

Notes:

2

Do not adjust registers 0 – 19 ! (Advanced users only)
 Blocks of 10 registers represent a single box

Modbus Server Debug - IOSystem

REG #	Coil Values (0xxxx)	Discrete Inputs (1xxxx)	Input Registers (3xxxx)	Holding Registers (4xxxx)
0	0	1	0	0
1	0	0	221	0
2	0	0	4	0
3	1	0	0	0
4	0	0	2	2
5	0	0	0	0
6	0	0	328	0
7	0	0	0	200
8	0	0	67	2
9	0	0	2	0
10	0	1	0	0
11	0	0	0	0
12	1	0	9600	1
13	1	0	1202	2
14	0	0	9600	8
15	0	0	9602	4
16	0	0	9602	5
17	0	0	9602	6
18	0	0	10	0
19	0	0	65535	0
20	1	1	16	0
21	0	0	328	0
22	0	0	1	0
23	0	0	1766	0
24	0	0	2019	0
25	0	0	4	22001
26	0	0	7	1000
27	0	0	22	168
28	0	0	43	0
29	0	0	28	13
30	1	1	238	0
31	0	0	20	2222
32	0	0	10	0
33	0	1	0	0
34	0	0	2019	0
35	0	0	4	22001
36	0	0	8	192
37	0	0	13	168
38	0	0	13	0
39	1	1	34	13

Display Start Register: 0 OK -User 1: Connected IP. : 127.0.0.1 User 2: IP : No Connection User 3: IP : No Connection User 4: IP : No Connection User 5: IP : No Connection User 6: IP : No Connection User 7: IP : No Connection User 8: IP. : No Connection User 9: IP. : No Connection User 10: IP : No Connection Enable Manual Writes Enable Writes To "Inputs"

4

- 🗆 ×

Notes:

3. No changes can be made unless Enabled

4. Connected Devices (Including TADA) are shown

5. Hovering over a cell will give details on it's use

3

Done

Block Processor

- Allows rudimentary calculations and functions
- Allows propagation of Data or I/O from one box to another
- Works by stepping through commands sequentially to achieve more complex results

🗮 Tag List Maintenance			_	
			Waiting 1	
# Type Tag Name 1 B Read DI#1 from	n Box #3	alue Source 0 10031	Status OK	
2 W Write AO to Box	(#3 22	222 2222	OK	4
Add New Block	Move UP	Move DOWN	Delete Blog	*
Stop Processor	Start Processor	Rung View	Done	3

Notes:

- 1. Commands are listed in the order of execution
- 2. Output Values, Source info and Status from the last scan are shown.
- 3. Editing and Control options

1

4. Double Clicking a row will bring up the editor for that block

🌮 Block Profile Defir	nition:				×
Pulse	Time Of Day	Trigger Day Of Wee	ek Trigger	Comment	Undefined
Math	AND	OR		Clamp	Alarm
Help	Read Registe	r Write Regis	iter	Scale	Memory Location
Tag Name					
Source / T			•		
Last Access Status					
	Board Inputs	Board Outputs			
	🗅 Analog Input	C Anaolg Output		<u> </u>	nly Write On Change
	Digital Input #1 Digital Input #2 Digital Input #3 Digital Input #4			$[] = \begin{bmatrix} E_{Add} \\ Add \end{bmatrix}$	nable Write Priority Bus ress
	◯ Relay #1 Status ◯ Relay #2 Status	 Relay #1 Output Relay #2 Output 			
	Board # 2				Help
Add New Block		Save Changes	Edit		Exit

Notes:

- 1. Tabs indicate which blocks are available
- 2. Every Block has a source and generates an output "Tag"
- 3. Any tag or real number can be a source
- 4. Click Help for details on any individual block

Block Processor Tutorial:

Adding An Alarm And Sending It To An Output Relay

Prerequisites / Assumptions:

- 1 Fan Control Box, #35 (or simulator mode may be used)
- The analog input #1 of Box 35 would be connected to a 0-500 PPM gas sensor generating a 4-20 mA input signal
- Output relay #1 on the same board would be used as the alarm output contact.
- Alarm limit would be at 50 PPM
- Analog range (Raw counts) 191-949 represent 0-500 PPM

This is the order of events that will occur in this demonstration:

The remote unit will be read, the block processor will run through its program and set the alarm output, then the system will need to send the updated information back to the remote board to turn the relay on. Each step could take up to 2 seconds, thus, the time to turn on or off the alarm relay could be as long as 6 seconds.

Steps:

1. Make sure the box #35 is online and functioning properly

2. On the main screen select "Menu" and then "System Settings". Careful setting of the timing factors on this screen will minimize the wait time that it takes the output relay to turn on.



For optimum results setup the system as indicated below, only the "I/O Scan Delay Time", "Between Board Delay", and "Block Processor Scan Delay Time" are relevant to this procedure, DO NOT adjust the other settings. Click on Save/Done when complete

🧮 Tag List Maintenance	:		
			Scan Stopped
# Type Tag Name	V	alue Source	Status
Add New Block	Move UP	Move DOWN	Delete Block
Stop Processor	Start Processor	Rung View	Done

3. From the main screen select "Menu" then "Block Processor". The screen should look like the screen shown above. We will be adding 3 blocks to achieve our goal. First we need to read the analog input (PPM reading) into a tag. Then we set an alarm bit tag accordingly (Alarm Output). We then need to move that alarm indication back to the remote unit's memory in order to set the relay's state (Relay 1 Output). You may need to adjust these settings slightly to match your configuration.



4. Click on "Add New Block", the above screen should appear:



5. Select the "Read Register" tab:

Note: At any time you can select the "HELP" button for further info in the screen that is currently showing.

Ø	Block Profile D	efinition:								×
	Puls	ie	Time Of Day T	rigger	Day Of Week	Trigger	Comment		Undefined	
_	Math	L	AND	$-\bot$	OR		Clamp	$-\bot$	Alarm	_] [
	Help Tag Name	PPM Re	Read Register ading	<u> </u>	Write Register	<u> </u>	Scale	<u> </u>	Memory Location	
	Last Access Status	Board Analo Digita Digita Digita Relay Board ‡	Inputs g Input I Input #1 I Input #2 I Input #3 I Input #4 #1 Status #2 Status # 035	Board (C Anaol <u>c</u> C Relay : C Relay :	Outputs g Output #1 Output #2 Output			ModBus Address	30351 Help	
/	Add New Block			Save Ch	hanges		Edit		Exi	it

- 6. Configure the screen as follows:
- In the "Tag Name" enter "PPM Reading".
- Select "Analog Input".
- Enter 035 for "Board #"
- Click "Calculate" (30351 should appear in the "Modbus Address Box")
- Select "Save Changes

🌮 B	lock Profile D	efinition:								×
	Puls	e	Time Of Day	Trigger	Day Of We	ek Trigger	Comr	nent	Undefined	
ſ	Math	Τ	AND	Y	OR	Τ	Clamp	, <u> </u>	Alarm	
	Help	ľ	Read Regist	er 🎽	Write Regist	er Y	Scale	۲ I	demory Location	
	Tag Name Last Access Status	PPM R	eading							
		Board Anal Digit Digit Digit Digit Rela Board	d Inputs og Input al Input #1 al Input #2 al Input #3 al Input #4 y #1 Status y #2 Status # 035	Boar C Ana C Rela	d Outputs olg Output ay #1 Output ay #2 Output		Calculate –	→ ModBus Address	30351 Help	
Ac	dd New Block			Save	Changes		Edit		Ex	it

We have just asked the Block Processor to read the analog input of the remote unit (#35) and place the result in a tag called "PPM Reading"

Ø	Block Profile D	efinition:								×
	Pul	se	Time Of Day	Trigger	Day Of W	eek Trigger	Com	ment Y	Undefined	
Ĺ	Math	Υ	AND	Τ	OR		Clarr	np 1	Alarm	
	Help	ĭ	Read Regist	er 🎽	Write Regi	ster 🍸	Scale	Ĭ	Memory Location	
	Tag Name Last Access Status	PPM Re	ading							
		Board	Inputs	Boar	d Outputs					
		💿 Analo	og Input	C Ana	olg Output					
		C Digita C Digita C Digita C Digita C Digita	al Input #1 al Input #2 al Input #3 al Input #4 y #1 Status	O Rela	w #1 Output	\rightarrow	Calculate -	→ ModBus Address	30351	
		O Relay	y #2 Status	C Rela	y #2 Output					
		Board ‡	# 035						Help	
A	Add New Block			Save	Changes		Edit		E	Exit

7. Select "Add New Block" on the bottom left of the above screen and then select the "Alarm" tab.



Configure the screen as follows:

- In the "Tag Name" enter "Alarm Output".
- In the "Source / Value" box, Select the down arrow and pick "PPM Reading" from the list
- In the "High Limit" box, enter the calculated high limit (in raw counts)

For 50 PPM on a 0 - 500 PPM scale, that would be: 267 Raw Counts (typically the raw count range is approximately 191 - 949: it changes by a few counts board to board due to component tolerances)



- Leave the "Low Limit" as 0
- Enter a number of raw counts you wish to use as a deadband in the "Deadband" box
- I suggest 2 for a deadband (about 1.3% of scale)
- Select "Save Changes"



We have just asked the Block Processor to take the PPM reading (in raw counts), generate an alarm bit based on our calculated limit, and store it in the tag called "Alarm Output"

🌮 Block Profile I	Definition:					×
Pu	lse Time Of D	ay Trigger Day Ol	Week Trigger	Comment	Undefined	וו
Math		<u>, </u>	OR Y	Clamp	Alarm	
Help	Y Read Regi	ster Write R	egister 📋	Scale	Memory Location	
Tag Name	Relay 1 Output					
Source / Value	Alarm Output			•		
Last Access Status						
	Board Inputs	Board Outputs	_			
	C Analog Input	C Anaolg Output		D 0	nly Write On Change	
	C Digital Input #1 C Digital Input #2 C Digital Input #3 C Digital Input #4		\rightarrow	$\square E$ Calculate $\longrightarrow Moo$ Add	nable Write Priority IBus	
	○ Relay #1 Status ○ Relay #2 Status	C Relay #1 Outp C Relay #2 Outp	ut ut			
	Board # 2				Help	
	1		1	1	F	
Add New Block		Save Changes		Edit	Exit	

8. Select "Add New Block" on the bottom left of the above screen and then select the "Write Register" tab. Configure the screen as follows:

- In the "Tag Name" enter "Relay 1 Output".
- In the "Source / Value" box, Select the down arrow and pick "Alarm Output" from the list
| 🌮 B | Block Profile Definition: | | | | | | | | | × |
|-----|---------------------------|--|--|----------------|------------------------------|---------------|-------------|-----------------------------|--------------------------------|------|
| | Puls | e | Time Of Day | Trigger | Day Of Wee | k Trigger | Com | ment | Undef | ined |
| ſ | Math AND | | OR | | Y | Clam | ip) | Alarm | | |
| | Help |) (| Read Register | | Write Regist | ter | Scale | <u> </u> | Memory Loca | tion |
| | Tag Name | Relay 1 (| Dutput | | | | | | | |
| | Source /
Value | Alarm (| Dutput | | | | • | | | |
| | Last Access
Status | | | | | | | | | |
| | | Board | Inputs | Boa | rd Outputs | | | | | |
| | | 🔿 Analo | g Input | O Ana | aolg Output | | | 🔽 Only | Write On Chang | |
| | | C Digita
C Digita
C Digita
C Digita | Hnput #1
Hnput #2
Hnput #3
Hnput #4 | | | \rightarrow | Calculate - | ♥ Enat
→ ModBu
Addres | ole Write Priority
Is 00351 | |
| | | C Relay
C Relay | #1 Status
#2 Status | ● Rel
○ Rel | ay #1 Output
ay #2 Output | | | | | |
| | | Board # | 35 | | | | | | Help | |
| A | dd New Block | | | Save | Changes | | Edit | | | Exit |

- Select "Relay 1 Output"
- Enter board # 035
- Select "Calculate"

- Select "Enable Write Priority" – This will force the system to write this board as soon as a change is detected

- Select "Only Write On Change" – This will tell the system only to write when necessary instead of every scan, this setting is used to make sure scans are not overloaded with unnecessary writes to remote boards.

- Select "Save Changes"

🌮 Block Profile D	efinition:						×
Puls	æ	Time Of Day Trigger	y Trigger 🔰 Day Of Week Trigger		Comment	Undefined	ר
Math	Math		OR T		Clamp	Alarm	וור
Help		Read Register	Write Registe	r [Scale	Memory Location	
Tag Name	Relay 1 (Dutput					
Source / Value	Alarm (Dutput			•		
Last Access Status							
	Board	Inputs B	oard Outputs]			
	C Analo	g Input 🔿 A	naolg Output		🔽 Only	Write On Change	
	C Digita C Digita C Digita C Digita	Input #1 Input #2 Input #3 Input #4		\mapsto	Calculate Addres	us 00351	
	C Relay C Relay	#1 Status 💿 F #2 Status 💿 F	ielay #1 Output ielay #2 Output				
	Board #	35				Help	
							5
Add New Block		Sa	ve Changes		Edit	Exit	

We have just asked the Block Processor to write the alarm state back to the memory location that corresponds to relay 1 on board #35. This data will be written next time the board is scanned. We have forced a scan to occur immediately upon change by selecting "Write Priority."

🧮 Ta	ig List	Maintenance					
						W	aiting 2
#	Туре	Tag Name		Value	Source		Status
1	R	PPM Reading		0	30351		ОК
2	Α	Alarm Output		1	PPM Reading		OK
3	W	Relay 1 Output		1	Alarm Output		OK
Ad	d New	Block	Move UP	M	ove DOWN		Delete Block
Ste	op Proc	essor	Start Process	or	Rung View		Done

9. Select "Exit on the "Block Profile Definition" screen, we're finished making blocks.

10. Look back at the "Tag List Maintenance" screen, there should now be 3 entries. You may need to put them in the correct order. Select a row on the chart and using the "Move UP" and "Move Down" buttons, arrange the steps as shown. If everything is correct and your system is running (scanning), you should be seeing live information in the "Value" column. You can select "Done" when everything looks OK. Double clicking on a row will bring up the configuration for that row and allow you to make changes if necessary.

🚞 Ta	g List	Maintenance					
						Waiting	J 2
# 2 3	Type R A W	Tag Name PPM Reading Alarm Output Relay 1 Output		Value 0 1	Source 30351 PPM Reading Alarm Output		Status OK OK OK
Ad	d New	Block	Move UP		Move DOWN	Del	ete Block
Ste	op Proc	essor	Start Process	or	Rung View		Done

You may need to select "Start Processor" if it is not running – indicated by the count changing in the top right corner of this screen.

The programming is now complete, testing / commissioning should now follow.

OPC Interface Configuration Example:

In this example we use KEPWare's OPC server software

Software and some images and information may be (c) KEPWare



KEPWare Server Recommended configurations: Please follow these recommended settings when installing your KEPWare server. If you are attaching to an existing server, please verify the property pages match the settings shown. All settings are recommendations and can be adjusted in most cases to suit the customer's needs. Critical settings are noted and you should avoid changes to these settings.



Steps: 1. Add a Channel

New Channel - Identification		×
	A channel name can be from 1 to 256 characters in length. Names can not contain periods, double quotations or start with an underscore. Channel name: IndusCommServer	
	< <u>Back</u> <u>N</u> ext > Cancel Help	

2. Name the Channel

New Channel - Device Driver		×
	Select the device driver you want to assign to the channel. The drop-down list below contains the names of all the drivers that are installed on your system. Device driver: Modbus TCP/IP Ethernet	
	< <u>B</u> ack <u>N</u> ext > Cancel Help	

3. Select the Modbus driver as shown You can enable the diagnostics if needed.

New Channel - Communication Serialization	×
This driver is capable of limiting data transmissions to one channel at a time. To enable, assign this channel to a Virtual Network. All channels in a network will be granted permission to communicate in a round-robin manner. Select None to disable. You may specify how many transactions the channel should perform when it is given permission to communicate by entering a number in the edit field below. Virtual Network: None Virtual Network: None Iransactions per cycle: 1	le
< <u>B</u> ack <u>N</u> ext > Cancel	Help

4. Select configuration options as shown

New Channel - Network Interfa	ice	×
	This channel is configured to communicate over a network. You can select the network adapter that the driver should use from the list below. Select 'Default' if you want the operating system to choose the network adapter for you.	
	< Back Next > Cancel He	elp

4. Select configuration options as shown (cont'd)

New Channel - Write Optimizations	×
You can control how the server processes writes on this channel. Set the optimization method and write-to-read duty cycle below. Note: Writing only the latest value can affect batch processing or the equivalent. Optimization Method Write all values for all tags Write only latest value for non-boolean tags Write only latest value for all tags Duty Cycle Perform 10 Image: Imag	
< <u>B</u> ack <u>N</u> ext > Cancel	Help

4. Select configuration options as shown (cont'd)

New Channel - Non-Normalized Float Handling	×
<image/> <image/> <text><text><text><text></text></text></text></text>	
< <u>B</u> ack <u>N</u> ext > Cancel Help	

4. Select configuration options as shown (cont'd)

New Channel - Ethernet	×
Select whether all devices on this channel share a single socket (MBE to RTU Gateway) or if each device has 1 or more of their own sockets. Select the Port and Protocol to use when acting as a slave device. Socket Usage Share a single socket across all devices on this channel Max sockets per device: Unsolicited Settings Port Number: IP Protocol: 502 TCP/IP	
< <u>B</u> ack <u>N</u> ext > Cancel Help	

4. Select configuration options as shown (cont'd)
* This one is critical, if you use more sockets, there may be less connections available for other clients like the TADA package.



5. Add a device using the settings shown



5. Add a device using the settings shown



The Device ID is the IP address and Device number, Please edit the address as necessary. The device number MUST be 1. So your address will look something like this:

<192.168.0.22>.1

New Device - Scan Mode



New Device - Timing		×
	The device you are defining has communications timing parameters that you can configure.	
	Connect timeout: 3 seconds	
	<u>R</u> equest timeout: 1000 📑 milliseconds	
	Eail after 3 successive timeouts	
	Inter-request delay: 100 📑 milliseconds	
	< <u>Back</u> <u>N</u> ext> Cancel Help	

These settings are recommended for Indus-comm's I/O system, Making them faster won't make any difference as the system usually scans one I/O box every 3 seconds, so speed is not critical. This also helps to keep network and scanning loads down to make the system run better.

New Device - Auto-Demotion

	You can demote a device for a specific period upon communications failures. During this time no read request (writes if applicable) will be sent to the device. Demoting a failed device will prevent stalling communications with other devices on the channel.					
2	Enable auto device demotion on communication failures Demote after					
	Demote for 10000 📻 milliseconds					

хI

New Device - Database Creation						
	The device you are defining has the ability to automatically generate a tag database. Determine if the device should create a database on startup, what action should be performed on previously generated tags, group to add tags to, and allowing subgroups. <u>Startup:</u> Do not generate on startup <u>Action:</u> Delete on create Add to group: Allow automatically generated subgroups					
	(<u>B</u> ack <u>N</u> ext > Cancel H	elp				
	The device you are defining has the ability to automatically generate a tag database. Determine if the device should create a database on startup, what action should be performed on previously generated tags, group to add tags to, and allowing subgroups. Startup: Do not generate on startup Action: Delete on create Add to group: Image: Add to group: Add to group:	elp				



Do not choose to close the socket on timeout, this may cause long time delays in re-establishing communications due to bad or unanswered requests.

New Device - Data Access Settings	×
New Device - Data Access Settings The driver can be configured with different settings for each device. Refer to the help file for assistance. Use zero based addressing Use zero based bit addressing within register Use holding register bit mask writes Use Modbus function 06 for single register w Use Modbus function 05 for single coil writes Mailbox Settings	rites
Client Privileges: Read Only	
< <u>B</u> ack <u>N</u> ext > Cancel H	łelp

Please deselect zero based addressing options on order to make sure the included spreadsheet and tool-tips in the server software give you correct and matching Modbus addresses.

New Device - Data Encoding Settings Image: Setting in the driver can be configured with different settings for each device. Refer to the help file for assistance. Image: Setting in the driver can be configured with different settings for each device. Refer to the help file for assistance. Image: Setting in the driver can be configured with different settings for each device. Refer to the help file for assistance. Image: Setting in the driver can be configured with different settings for each device. Refer to the help file for assistance. Image: Setting in the driver can be configured with different settings for each device. Refer to the help file for assistance. Image: Setting in the driver can be configured with different settings for each device. Refer to the help file for assistance. Image: Setting in the driver can be configured with different settings for each device. Image: Setting in the driver can be configured with different settings for each device. Image: Setting in the driver can be device. Image: Seting in the driver can be device. <

New Device - Block Sizes		×				
	Specify the maximum block sizes when reading data from this device. Refer to the help file for assistance. Coils (8-2000 in multiples of 8) Output: Internat: Registers (1-120) Internal: 32 ÷ Holding: 32 ÷					
< <u>B</u> ack <u>N</u> ext > Cancel Help						

New Device - Unsolicited		×
	Control the OPC quality of items for this unsolicited device. Select good initial quality or bad until first write. Specify how long the quality of all tags should remain good, 0 for indefinitely or 1 - 64,800 seconds (18 hours) since last read or write. OPC Quality OPC guality bad until write Communications timeout:	
	< <u>B</u> ack <u>N</u> ext > Cancel Help	

New Device - Variable Import Settings	x
Set the location of the variable import file to be used in tag database creation. Select whether descriptions should be displayed if provided. Variable import file: *.txt Include descriptions?	
< <u>B</u> ack <u>N</u> ext > Cancel Help	

New Device - Error Handling						
	Select option to deactivate tags on illegal address exception (code 2 or 3) from device.					
	Deactivate tags on illegal address exception					
		_				
•	< <u>B</u> ack <u>N</u> ext > Cancel Help					



Tag Properties	×
General Scaling	
Identification Name: Pump 1234 Run Status Address: 100031 Description: I/O Box address 003, Input #1	
Data properties	
Data type: Boolean 💌	
Client access: Read Only	
<u>S</u> can rate: 3000 <u>→</u> milliseconds	
Note: The scan rate is only used for client applications that do not specify a rate when referencing this tag (e.g., non-OPC clients)	
OK Cancel <u>Appl</u>	y Help

6. Recommended Tag configuration

You can build other tags as necessary by following the example above and using the following table for reference. Please make sure data types (only the 2 types below are compatible with the I/O system) and addresses are checked carefully.

🏀 KEPServerEX - Runtime [C:\Documents and Settings\mcilvk\My Documents\Kepware\KEPServerEX\V5\test1.opf] (Demo Expires 01:50:05)										×			
<u>Eile E</u> dit <u>V</u> iew	<u>T</u> ools <u>R</u> untime	<u>H</u> elp											
່ 🗋 🐸 🗟	🖣 🛅 🚰 (2 🕾 🗠 👗	i 🖻 🖻 🕽										
🖃 🧬 Modbus TC	P/IP Ethernet	Tag	g Name		Addr 🛆	Data Type	Scan Rate	Scaling	Description				
🖻 🖣 IndusC	ommServer		Pump 1234 S	art Pulse	000031	Boolean	3000	None	I/O Box address 0	03, Output #	¥1		
IO	Server1		Pump 1234 S	op Pulse	000032	Boolean	3000	None	I/O Box address 0	03, Output #	# 2		
			Pump 1234 R	un Status	100031	Boolean	3000	None	I/O Box address 0	03, Input #1	L		
			Pump 1234 C	ontrol Power Status	100032	Boolean	3000	None	I/O Box address 0	03, Input #2	2		
		0	Pump 1234 C	urrent Feedback	300031	Word	3000	None	I/O Box address 0	03, Analog Iı	nput		
		0	Pump 1234 S	peed Setpoint	400031	Word	3000	None	I/O Box address 0	03, Analog C)utput		
ि 🖉 🖉													Ы
	1												╡
Date V		Source	Event				1.0.1.000						
1 3/18/2015	9:18:56 AM	Modbus TCP()	(IP Starti	ng Unsolicited Communi	cation using TC	P protocol thr	ough Port 502	5 	lyepe euluel	a			
1 3/18/2015	9:18:56 AM	KEPServerEX	ηc Runti No. o i	me project replaced from	n 'C:\Documeni	ts and Setting	s(mcilvk(My Do	ocuments\Kepwar	reikenserverexivsi	test1.opr			
1 3/18/2015	9:19:10 AM	KEPServerEX	ilikuu kunti Kali kunti	ne reinitialization starte	a								
03/18/2015	9:19:10 AM		ик Stopp Ир. Бына	ing Modbus TCP/IP Ethe	ernet device dr	iver.							
03/18/2015	9:19:10 AM	Modbus TCP/.	AD MARTIN	net Manager Stopped									
03/18/2015	9:19:10 AM	KEPServerEX	NR MOOD	us TCP/IP Ethernet dev	ice driver ioade	a successrully	<i>'</i> .						
03/18/2015	9:19:10 AM	KEPServerEX	ηκ Starti Iro sul	ng Modbus TCP/IP Ethe	rnet device driv	ver.							
03/18/2015	9:19:10 AM	Modbus ICP/	(IP Ether	net Manager Started									
1 3/18/2015	9:19:10 AM	Modbus TCP()	(IP Modb	us TCP/IP Ethernet Dev	ice Driver V5.1	3.191.0							
3/18/2015	9:19:10 AM	KEPServerEX	NR Conn	ection Sharing Plug-in V	5.13.191.0								
3/18/2015	9:19:10 AM	Modbus TCP/	(IP Starti	ng Unsolicited Communi	cation using TC	P protocol thr	ough Port 502						
3/18/2015	9:19:10 AM	KEPServerEX)	NR Runti	me reinitialization comple	eted								Ŧ
•												E E	
Ready									Default User	Clients: 1	Active tags: 77	of 77	//

Sample Tag Configurations

Notes:

Modbus addresses in KEPware have an extra zero and follow this format:

D0BBBI

D = Data type as shown at the top of the spreadsheet

- Where D is One of the following:
- 0 = Digital Outputs (Relay 1 and Relay 2 outputs and Special Function Bits)
- 1 = Digital Inputs (Inputs 1-4, Relay status feedback, Status Bits) Read Only
- 3 = Analog Inputs/Registers (Analog Input and Status Registers) Read Only
- 4 = Analog Outputs (Analog output, and Special Function Registers)
- 0 = Extra zero added here
- BBB = Board (Box) number

I = Parameter number for the specific data on that box you are reading or writing.

- The KEPWare server will not begin actual scanning until a client is connected and requesting data

- You CANNOT run KEPWare and I/O server on the same PC as they will not share the Ethernet port 502, this can be adjusted but you may cause other issues if not done carefully.

INDUS-COMM

I/O System

Overview