Getting Started with Allen-Bradley Remote IO on Uticor HMI

Allen-Bradley's Remote I/O network is used for distributed I/O control. Its architecture is similar to client server. In every remote station there is a RIO adapter which has unique node number and it is scanned by RIO Scanner in main controller. Uticor HMIs are capable of reading/writing to any rack that is defined in the system.

Required:

- Uticor HMI with DH+/Remote IO connectivity card
- uWin ToughPanel Edit v 2.3 or greater

When you create your project, please select Allen-Bradley as your PLC and Remote I/O as your protocol.

Project Information		×
	WWN Programming Software for Uticor Panels Version 2.3.14 Uticor : Phone: 1-800-711-5109 www.uticor.net	
SELECT ACTION	Selected Action : Edit OFF-LINE Write Later ENTER PROJECT INFORMATION	
Edit Program OFF-LINE (Write to Panel Later)	Project Location : C:\Users\vaidya\Desktop\ Project Name : RI0.ppp Firmware Revision Start Editing Screen	Browse
Read Program from Panel and Edit OFF-LINE	Number 1 ▼ Name New Screen Select Tough Panel Panel Family Size	
Edit Program ON-LINE	Iough Panel 4" 5.1" 6" 8" 10" Select Model All 15" (UTP-15TC-x-x)	 15"
PC to Panel Connection	PLC 1 PLC Manufacturer : PLC Model and Protocol : Allen-Bradley ▼ Remote I/O - Rev i / c ▼ View/Edit PLC Com	Setup
 Local Host (127.0.0.1 / 10001) Ethernet Ethernet (EzEther) Modem 	PLC 2 PLC Manufacturer : PLC Model and Protocol : View/Edit PLC Com	Setup
	Ok Help License Setup Clear Exi	t

Click on "View/Edit PLC Com setup". Select the Baud Rate and PLC Model you want to connect to. Then double click on the Rack number you want to define.

PLC Revision Nu	mber:	i		
Ba	ud Bate 57.6	•		
PL	CModel PLC3_	5 🔻		
Character Orde	r in Registers			
) Char 2, Ch	ar 1 (Default)			
🔘 Char 1, Ch	ar2			
Rack Definitions	;			
Rack Number	Rack Status			
	11 1 6 1			
00	Undefined			
00 01	Undefined Undefined		Ξ	
00 01 02	Undefined Undefined Undefined		=	
00 01 02 03	Undefined Undefined Undefined Undefined		Ξ	Define
00 01 02 03 04	Undefined Undefined Undefined Undefined Undefined		Ξ	Define
00 01 02 03 04 05	Undefined Undefined Undefined Undefined Undefined		Ξ	Define
00 01 02 03 04 05 06	Undefined Undefined Undefined Undefined Undefined Undefined		E	Define
00 01 02 03 04 05 06 07	Undefined Undefined Undefined Undefined Undefined Undefined Undefined		Ξ	Define
00 01 02 03 04 05 06 07 10	Undefined Undefined Undefined Undefined Undefined Undefined Undefined Undefined		Ξ	Define
00 01 02 03 04 05 06 07 10 11	Undefined Undefined Undefined Undefined Undefined Undefined Undefined Undefined		E	Define
00 01 02 03 04 05 06 07 10 11 12	Undefined Undefined Undefined Undefined Undefined Undefined Undefined Undefined Undefined		H	Define

The following window will appear:

Version 2.3.7 or less



Version 2.3.8 or greater

To turn a quarter Active click on the box in front of Active. Do this only if the Uticor HMI is to be the only I/O to respond on that quarter. If selected, the Tough Panel will simulate the quarter. Note that the Uticor HMI must be the only one to respond to information for that quarter. If anything else responds the results could be in error. Do not enable if the Uticor HMI is to monitor only that quarter. This is to be done if there is a real quarter or maybe another Uticor HMI active on that quarter. This allows for reading only that quarter — any writes will not be returned to the PLC.

		Mo	dule 0 🔶	Modu	ıle 1	
Quarter 0	Group 0 🗸	BTR	BTW	BTR	BTW	To decide which modul and group number sho
Active	Group 1	BTR	BTW	BTR	BTW	be selected refer to the following page. Only
Quarter 1	Group 2	BTR	BTW	BTR	BTW	modules and groups th correspond to the corr
Active	Group 3	BTR	BTW	BTR	BTW	BTR and BTW in the All Bradley PLC software
Quarter 2	Group 4	BTR	BTW	BTR	BTW	should be activated. The is based off of the Bloc
Active	Group 5	BTR	BTW	BTR	BTW	
Quarter 3	Group 6	BTR	BTW	BTR	BTW	
Active	Group 7	BTR	BTW	BTR	BTW	

To ensure that a block transfer is handled by the Uticor HMI, all modules that are to have a block transfer monitored must be selected from this screen. If data is to be transferred by a BTR from the Tough Panel to the PLC it must be in an active quarter. The BTW and BTR instructions must still be executed in the PLC logic. To select BTRs or BTWs for a quarter simply click on all that are to be used.

Based on information from the Allen-Bradley Block Editor or equivalent you need to activate and turn on the BTR and BTW in the correct quarters and modules. Information and equivalency is below and examples are on the following pages.

BLOCK TRANSFER FILE PanelBuilder 1400e (c)						
File Number	Pack Number	Word	Byto	lleago	Eilo Sizo	Access
	Rack Number	woru	Byte	Usage	File Size	Access
B1	3	5	Low	Read	32	Full
B10	3	7	High	Write	32	Full
B2	3	6	High	Read	32	Full
B3	3	6	Low	Read	32	Full
B4	3	7	High	Read	32	Full
B7	3	5	Low	Write	32	Full
B8	3	6	High	Write	32	Full
B 9	3	6	Low	Write	32	Full

Below is how Uticor HMI represent the RIO addressing as compared to PanelView.

AB		Uticor
Rack Number	=	Rack
Word	=	Group
Byte: Low	=	Module 0
Byte: High	=	Module 1
Usage	=	Read or Write

Below are the memory types which we support in our panel programming software.

MEMORY TYPE	RACK ADDRESS	GROUP ADDRESS	IO_TYPE	VALUE_TYPE	MAPPING EXAMPLES
O - Output	0-37	0-7	READ_ONLY	WORD	0:377
l - Input	0-37	0-7	READ_WRITE	WORD	I:010
			READ_WRITE	DISCRETE	I:010/17

MEMORY TYPE	RACK ADDRESS	GROUP ADDRESS	MODULE ADDRESS	BT WORD NUMBER	IO_TYPE	VALUE_TYPE	MAP STRING EXAMPLES
BTR - Block							
Transfer Read	0-37	0-7	0-1	0-63	READ_WRITE	WORD	BTR3771-0
BTW - Block							
Transfer Write	0-37	0-7	0-1	0-63	READ_WRITE	WORD	BTW0150-63
					READ_WRITE	DISCRETE	BTR3771-0/15
					READ_WRITE	DISCRETE	BTW0150-63/4

Examples

Block Transfer Read (BTR)

Examining the first two Block Transfer Writes from the Block Transfer File Table on page 4.

File Number	Rack Number	Word	Byte	Usage	File Size	Access
B1	3	5	Low	Read	32	Full
B2	3	6	High	Read	32	Full

To setup the Uticor HMI to process these two BTR, follow the directions below:

1. First the correct Rack Number needs to be selected for the Uticor HMI to interact with the correct Rack. In the Allen-Bradley Remote IO menu select the Rack 3, then click the Define button.

Allen-Bradley Ren	note I/O			X	
PLC Revision Nu	mber:	i			
Ba	ud Rate 57.6	•			
PL	CModel PLC3_	5 🔻			
Character Orde	r in Registers				
💿 Char 2, Ch	ar 1 (Default)				
	. ,				
Char I, Ch	ar 2				
Rack Definitions	:				
Rack Number	Rack Status				
00	Undefined				
01	Undefined		≡		
02	Undefined				
03	Undefined			Define	
04	Undefined				
05	Undefined				
06	Undefined			Delete	
07	Undefined				
10	Undefined				
11	Undefined				
12	Undefined		-		
OK Cancel Help					

2. Next in the following screen that pops up we need to select the Group (Quarter), Module and Usage.

Note: Any quarter that is	Rack Number 03	-			×	
active can only be monitored by 1 Uticor HMI. If more than 1 Uticor HMI attempt to monitor the same quarter then there will be errors.	Quarter 0 G Active G	roup 0 BTR	odule 0 BTW	Module 1	The B select modu	TR selection is ed in either lle 0 or module 1
Quarter 2 and Quarter 3 are active based on the Word number (Uticor equivalent is Group	Quarter 1 G Active G	roup 2 BTR roup 3 BTR	BTW	BTR BTW	basec Inforr B1	l on Byte nation.
number). B1 Word 5 - Group 5	Quarter 2 Quarter 3	roup 4 BTR roup 5 BTR	BTW	BTR BTW	Low = B2 High :	Module 0 Module 1
B2 Word 6 = Group 6	We select both B1 a	roup 7 BTR t Block Tran and B2 Usag	sfer Read	d (BTR) since	Cancel	
File Number	Rac Wo Byt Byt Usa Rack Number	AB R Number rd e: Low e: High age Word	= F = C = N = F Byte	Uticor Rack Group Module 0 Module 1 Read or Write Usage	File Size	Access
B1 B2	3	5	Low	Read	32	Full

Uticor equivalent values from AB Block Transfer Table

AB File Number	AB Rack Number	AB Word	AB Byte	AB Usage
B1	3	5	Low	Read
B2	3	6	High	Read
(Not used in UT)	UT Rack	UT Group	UT Module	UT Usage
B1	3	5	Module 0	BTR
B2	3	6	Module 1	BTR

(Not used in UT)UT RackUT GroupUT ModuleUT UsageB135Module 0BTRB236Module 1BTR

Uticor equivalent values from AB Block Transfer Table (Needed for Uticor Tag Addressing)

 After the correct options are selected in Rack screen. Click OK till you get into the uWin ToughPanel Editor screen. Then go to Setup > Tag Database and click on Add/Edit. This is where the actual tag address will be added. The Uticor Tag Address is again based on the AB tags address.

TAG NAME	Allen-Bradley Tag Address	Uticor Tag Address	
Motor Speed (File Number B1)	B01 02/00 – 02/15	BTR0350-2	
Motor On (File Number B2)	B02 04/13	BTR0361-4/13	

	Ac	ld New Tag Detail	s		X		
		Select Tag Typ PLC 1 : Al PLC 2 : Internal T Expression	be Ilen-Bradley Remot ag on	e I/O - Rev i Define Exp	ression		
Tag Name: Motor Speed					Tag Name: M	lotor On	
AB Tag: B01 02/00 – 02/2	15	Tag Name			AB Tag: B02 (04/13	
Tag Address: BTR0350-2		Address String	Depends On D	ata Type 🔹	Tag Address:	BTR0361-4/13	
BTR 03 5 () -2	# of Characters			BTR 03	_6 _1	-4 /13
		Add New Tag	PRetentive Flag	lose	Help	Bi	it Number
	RACK	GROUP	MODULE	BT WORD			MAP STRING
MEMORY TYPE	ADDRESS	ADDRESS	ADDRESS	NUMBER	IO_TYPE	VALUE_TYPE	EXAMPLES
BTR - Block							
Transfer Read	0-37	0-7	0-1	0-63	READ_WRITE	WORD	BTR3771-0
					READ_WRITE	DISCRETE	BTR3771-0/15

4. You have now added the correct tag addressing for BTR tags.

Examples Cont.

Block Transfer Write (BTW)

Examining the first two Block Transfer Writes from the Block Transfer File Table on page 4.

File Number	Rack Number	Word	Byte	Usage	File Size	Access
B10	3	7	High	Write	32	Full
B7	3	5	Low	Write	32	Full

To setup the Uticor HMI to process these two BTW, follow the directions below:

1. First the correct Rack Number needs to be selected for the Uticor HMI to interact with the correct Rack. In the Allen-Bradley Remote IO menu select the Rack 3, then click the Define button.

Allen-Bradley Ren	note I/O			X
PLC Revision Nu	mber:	i		
Ba	ud Rate 57.6	•		
PLO	Model PLC3_	5 🔻		
Character Orde	r in Registers			
Char 2. Ch	ar 1 (Default)			
	(····)			
Char 1, Ch	ar 2			
Rack Definitions				
Rack Number	Rack Status			
00	Undefined			
01	Undefined		Ξ	
02	Undefined			
03	Undefined			Define
04	Undefined			
05	Undefined			
06	Undefined			Delete
07	Undefined			
10	Undefined			
11	Undefined			
12	Undefined		-	
ок		Cancel		Help

2. Next in the following screen that pops up we need to select the Group (Quarter), Module and Usage.



Uticor equivalent values from AB Block Transfer Table

AB File Number	AB Rack Number	AB Word	AB Byte	AB Usage
B10	3	7	High	Write
B7	3	5	Low	Write
(Not used in UT)	UT Rack	UT Group	UT Module	UT Usage
B10	3	7	Module 1	BTW
B7	3	5	Module 0	BTW

Uticor equivalent values from AB Block Transfer Table (Needed for Uticor Tag Addressing)

(Not used in UT)	Rack Number	Group	Module	Usage
B10	3	7	Module 1	BTW
Β7	3	5	Module 0	BTW

 After the correct options are selected in Rack screen. Click OK till you get into the Tough Panel Editor screen. Then go to Setup > Tag Database and click on Add/Edit. This is where the actual tag address will be added. The Uticor Tag Address is again based on the AB tags address.

TAG NAME	Allen-Bradley Tag Address	Uticor Tag Address
Motor Offset (File Number B10)	B10 08/00 – 08/15	BTW0371-8
Motor E STOP (File Number B7)	B07 5/10	BTW0350-5/10

	Ac	ld New Tag Detail	S		X		
		Select Tag Typ PLC 1 : Al PLC 2 : Internal T Expression	be len-Bradley Remot ag on	e I/O - Rev i Define Exp	ression		
Tag Name: Motor Offset					Tag Name: M	lotor E STOP	
AB Tag: B10 08/00 – 08/1	15	Tag Name			AB Tag: B07 S	5/10	
Tag Address: BTW0371-8		Address String	Depends On D	vata Type 🔹	Tag Address:	BTW0350-5/10	
BTW 03 7 1	-8	# of Characters			_BTW _03	5 0	5 /10
		Add New Tag	v/Retentive Flag	lose	Help	Bi	t Number
	RACK	GROUP	MODULE	BT WORD			MAP STRING
MEMORY TYPE	ADDRESS	ADDRESS	ADDRESS	NUMBER	IO_TYPE	VALUE_TYPE	EXAMPLES
BTW - Block Transfer Write	0-37	0-7	0-1	0-63	RFAD WRITE		BTW0150-63
					READ_WRITE	DISCRETE	BTW0150-63/4

4. You have now added the correct tag addressing for BTW tags.

Examples Cont.

Input/ Output Addressing

Examining the two Input and two Outputs in the following tables.

	Tag Name	Data Type	Array Size	Description	Node Name	Address	Initial Value
60	select_manual	Bit	0		BUFFER	1:247/03	0
61	select_bypass	Bit	0		BUFFER	1:247/04	0
	Tag Name	Data Type	Array Size	Description	Node Name	Address	Initial Value
246	Tag Name xy_slide_ready	Data Type Bit	Array Size 0	Description	Node Name BUFFER	Address O:245/00	Initial Value

To setup the Uticor HMI to process these two Inputs and two Outputs, follow the directions below:

1. First the correct Rack Number needs to be selected for the Uticor HMI to interact with the correct Rack. In the Allen-Bradley Remote IO menu select the Rack 24 (since the Inputs and Outputs are addressed to Rack 24), then click the Define button.

AI	len-Bradley Ren	note I/O			×
	PLC Revision Nu	mber:	i		
	Ba	ud Rate 115.2	•		
	PLC	Model PLC3_	5 🔻		
	- Character Order	r in Registers			
) Char 2, Ch	ar 1 (Default)			
	Char 1. Ch	ar2			
	C ondri , on				
	Back Definitions				
	Deelablandeen	De als Chatsa			
	Rack Number	Rack Status			
	12	Undefined		-	
	13	Undefined			
	14	Undefined			
	15	Undefined			Define
	15	Undefined		Ξ	
	17	Undefined			Delete
	20	Undefined			
	21	Undefined		-	
	22	Undefined		-	
	23	Undefined		-	
	24	Undefined		Ψ.	
			Canaal		
	UK		Jancel		Неір

	Tag Name	Data Type	Array Size	Description	Node Name	Address	Initial Value
60	select_manual	Bit	0		BUFFER	1:247/03	0
61	select_bypass	Bit	0		BUFFER	1:247/04	0
	Tag Name	Data Type	Array Size	Description	Node Name	Address	Initial Value
246	xy_slide_ready	Bit	0		BUFFER	O:245/00	0
247	xy_slide_in_position	Bit	0		BUFFER	O:245/01	0

2. Next in the following screen that pops up we need to make the correct Quarter active. The addressing is the same as the Allen-Bradley addressing.

Rac	k Number 24						Since Allen-Bradley addressing
Note: Any quarter that is		-					same as Uticor Addressing.
active can only be monitored	Quarter 0		Mod	lule 0	Modu	le 1	Outputs are:
Uticor HMI attempt to monitor	Quarter 0	Group 0	BTR	BTW	BTR	BTW	1:247/03
the same quarter then there will be errors.	Active	Group 1	BTR	BTW	BTR	BTW	Rack 24 Word 7 Bit 3
	Quarter 1						
The Uticor panel needs to	Active	Group 2	BTR	BTW	BTR	BTW	1:247/04
where the Inputs and Outputs		Group 3	BTR	BTW	BTR	BTW	Rack 24 Word 7 Bit 3
are. Therefore for the 2 Inputs and 2 Outputs the quarters	Quarter 2	Group 4	BTR	BTW	BTR	BTW	0:245/00
which contain the Group (Word) number need to be	Active	Group 5	BTR	BTW	BTR	BTW	Rack 24 Word 5 Bit 0
Active.	Quarter 3	Group 6	BTR	BTW	BTR	BTW	0:245/01
1:247/04 1:247/03	Active	Group 7	BTR	BTW	BTR	BTW	Rack 24 Word 5 Bit 1
Group 7 (Word 7)-> Quarter 3							
O:245/00 I:245/01			He	elp	ОК		Cancel
Group 5 (Word 5)-> Quarter 2				-			Note: For Inputs/Outputs no BTR or
		АВ			Uticor		functions are not being used.
					<u></u>		
		Rack I	Number	=	Kack		
		Word		=	Group		

MEMORY TYPE	RACK ADDRESS	GROUP ADDRESS	IO_TYPE	VALUE_TYPE	MAPPING EXAMPLES
O - Output	0-37	0-7	READ_ONLY	WORD	0:377
I - Input	0-37	0-7	READ_WRITE	WORD	I:010
			READ_WRITE	DISCRETE	1:010/17

Uticor Input / Output Table

Tag Name	Rack Number	Group	Data Type	Usage
select_manual	24	7	Discrete	Input
select_bypass	24	7	Discrete	Input
xy_slide_ready	24	5	Discrete	Output
xy_slide_in_position	24	5	Discrete	Output

 After the correct options are selected in Rack screen. Click OK till you get into the Tough Panel Editor screen. Then go to Setup > Tag Database and click on Add/Edit. This is where the actual tag address will be added. The Uticor Tag Address is the same as AB tags address.

TAG NAME	Allen-Bradley Tag Address	Uticor Tag Address		
select_manual	1:247/03	I:247/03		
select_bypass	1:247/04	I:247/04		
xy_slide_ready	O:245/00	O:245/00		
xy slide in position	0:245/01	0:245/01		

	And New T	ag Details	×							
Tag Name: select_manu	al									
AB Tag = Uticor Tag	Sele	ct Tag Type PLC1 : Allen-Bradley Remote I/O - Rev PLC2 :	ag Name: xy_silde B Tag = Uticor Tag	g_ready						
I: 24 7	/03	Internal Tag								
		Expression	efine Expression 0	: 24 5	/00					
Tag Name: select_bypas	S Tag N	ane			v slide in position					
AB Tag = Uticor Tag	Tag	Depends On Data Typ	e 🗸		y_slide_in_position					
	Addres	ss String	•	AB Tag = Uticor Tag						
l: 24 7	/04 # of Ch	aracters 0		0. 24	F /01					
		nitial Value/Retentive Flag Value ntive		0. 24	5 /01					
	Add	lew Tag Close	Help							
MEMORY TYPE	RACK ADDRESS	GROUP ADDRESS	IO_TYPE	VALUE_TYPE	MAPPING EXAMPLES					
O - Output	0-37	0-7	READ_ONLY	WORD	0:377					
l - Input	0-37	0-7	READ_WRITE	WORD	I:010					
		READ_WRITE		DISCRETE	1:010/17					

4. You have now added the correct tag addressing for Input and Output tags.

Inputs/Outputs on different Racks

Note as mentioned before any quarter that is active can only be monitored by 1 Uticor HMI. If more than 1 Uticor HMI attempt to monitor the same quarter then there will be errors. Therefore to work with inputs and outputs on different racks either the needed quarter with the inputs/outputs cannot already be monitored by an Uticor HMI or the need input/output needs to be mirrored on the main PLC for the HMI. To understand better see examples below.

Monitoring different quarters

Setup:

- 2 Uticor HMIs with Remote IO
- 2 Allen-Bradley PLCs with Remote IO (Rack 1 and 2)



We have setup these HMIs and PLC with the following setup:

- HMI 1 has BTR and BTW communication with PLC 1 Quarters 0, 1, 2, 3 (AB Words [UT Groups] 0, 1, 2, 3, 4, 5, 6, 7).
- HMI 2 has BTR and BTW communication with PLC 2 Quarters 0, 1, 2 (AB Words [UT Groups] 0, 1, 2, 3, 4, 5).

Now suppose that PLC 2 (Rack 2) has some inputs and outputs that HMI 1 needs to display. Since in this setup HMI 2 does not need monitor Quarter 3. Therefore Inputs and Outputs can be setup to use AB Word [UT Group] 6 or 7. Example address is I:026 or O:027.

llen-B	radley Remo	te I/O				A	Allen-Bradley R	lemote I/O				X
PLC P	Revision Numb	per:	i				PLC Revision I	Number :		i		
Baud Rate 115.2 💌							1	Baud Rate	115.2	•		
	PLCN	/lodel PLC	3_5 👻				F	PLC Model	PLC3_5	•		
- Char	racter Order in	Registers				Character Order in Registers						
۲) Char 2, Char	1 (Default)) Char 2,	Char 1 (Defa	ult)			
C) Char 1, Char	2					🔘 Char 1,	Char 2				
Rack	< Definitions						Rack Definitio	ons				
Rack	k Number	Rack Status	в	•			Rack Numbe	er Rack S	tatus			
00		Undefined Defined	-	=			00	Undefi	ned ned	-		
02		Defined			Define		02	Defin	ed			
03		Undefined			Deline		03	Undefi Undefi	ned ned		Def	ine
05		Undefined Undefined			Delete		05	Undefi	ned		Del	ete
07		Undefined					07	Undefi	ned			
11		Undefined	Since				3 Thon I		an not	_		
					γ ήγας ήγις πηγημιγ	r ()IIarter			ωπποι			
12		Undefined	only		2 does not monito	r Quarter	monitor (2 of	~		
12	ОК	Undefined	only	have R	ack 1 defined but	can also r	monitor (Quarter	· 3 of	-		Help
12	ОК	Undefined	only Rack	have R 2. This	ack 1 defined but s is useful if there	r Quarter can also r are inputs	monitor (s/outputs	Quarter that n	3 of eed to	-		Help
12	ОК	Undefined	only Rack be d	have R 2. This isplaye	ack 1 defined but is is useful if there d on HMI 1 but ar	r Quarter can also r are inputs e on PLC 2	monitor (s/outputs 2.	Quarter that n	3 of eed to	~		Help
	ок	Undefined	only Rack be d	have R 2. This isplaye	ack 1 defined but is useful if there d on HMI 1 but ar tivate the same Q	r Quarter can also r are inputs e on PLC 2 uarter on	monitor (s/outputs 2. more the	Quarter that n an 1 HN	3 of eed to Al. This			
	ок	Undefined	only Rack be d DO N will d	have R 2. This isplaye NOT Ac cause e	ack 1 defined but is is useful if there d on HMI 1 but ar tivate the same Q prors.	r Quarter can also r are inputs e on PLC 2 uarter on	monitor (s/outputs 2. more the	Quarter s that n an 1 HN	⁻ 3 of eed to ИІ. This	-	ŀ	
12	ОК	Undefined	only Rack be d DO N will d	have R 2. This isplaye NOT Ac cause e	ack 1 defined but ack 1 defined but is useful if there d on HMI 1 but ar tivate the same Q prors.	r Quarter can also r are inputs e on PLC 2 uarter on Rac	monitor (s/outputs 2. more the	Quarter s that n an 1 HN	⁻ 3 of eed to ИІ. This	5	ŀ	
12 mber 02	ок	Undefined	only Rack be d DO N will d	have R 2. This isplaye NOT Ac cause e	ack 1 defined but is useful if there d on HMI 1 but ar tivate the same Q	r Quarter can also r are inputs e on PLC 2 uarter on	monitor (s/outputs 2. more the	Quarter 5 that n an 1 HN	⁻ 3 of eed to ИІ. This	5	•	
mber 02	ок	Undefined	dule 0	have R 2. This isplaye NOT Ac cause e	ack 1 defined but ack 1 defined but is is useful if there d on HMI 1 but ar tivate the same Q errors.	r Quarter can also r are inputs e on PLC 2 uarter on	Monitor (s/outputs 2. more the ck Number 02	Quarter s that n an 1 HN	• 3 of eed to Al. This	tule 0	Modu	Help HR ule 1
mber 02	OK	Undefined	dule 0	have R 2. This isplaye NOT Ac cause e Modu	ack 1 defined but ack 1 defined but is is useful if there d on HMI 1 but ar tivate the same Q errors.	r Quarter can also r are inputs e on PLC 2 uarter on	Quarter 0	Quarter s that n an 1 HN g Group 0	• 3 of eed to /II. This Mod	dule 0	Modu	Help
nter 0	OK	Undefined	dule 0	have R 2. This isplaye NOT Ac cause e Modu	ack 1 defined but ack 1 defined but is useful if there d on HMI 1 but ar tivate the same Q errors.	r Quarter can also r are inputs e on PLC 2 uarter on	Quarter 0	Quarter s that n an 1 HN g Group 0 Group 1	 ✓ 3 of eed to ✓ All. This Mon ■ BTR ✓ BTR 	dule 0	Modu BRR	Help
nter 0 Active	OK	Undefined	dule 0	have R 2. This isplaye NOT Ac cause e Modu	ack 1 defined but ack 1 defined but is useful if there d on HMI 1 but ar tivate the same Q errors.	r Quarter can also r are inputs e on PLC 2 uarter on	Quarter 0 Quarter 1 Quarter 1	Quarter s that n an 1 HN 2 Group 0 Group 1	 ✓ 3 of eed to ✓ All. This Mon BTR ✓ BTR 	dule 0	Modu BTR	Help
nter 0 Active	OK	Undefined	dule 0 BTW BTW	have R 2. This isplaye NOT Ac cause e Modu BTR BTR	ack 1 defined but ack 1 defined but is useful if there d on HMI 1 but ar tivate the same Q errors.	r Quarter can also r are inputs e on PLC 2 uarter on	Quarter 0 Quarter 1 Quarter 1 Quarter 1	Quarter s that n an 1 HN c Group 0 Group 1 Group 2	Al. This Mon BTR ♥BTR	dule 0	Modu BTR ØBTR	Help
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Mirroring an Input/Output

Setup:

- 2 Uticor HMIs with Remote IO
- 2 Allen-Bradley PLCs with Remote IO (Rack 1 and 2)

Both HMIs are monitoring all the quarters on their respective PLC. Therefore in the PLC ladder logic instead of the HMIs monitoring the input/output of the other PLC. Instead PLC 1 needs to monitor PLC 2 input/output and map it to one of its own inputs/outputs. Thereby being able to display it on HMI 1 if the input/output changes on PLC 2.

More detailed instructions on following pages.



	H		Λ	1							H	M		2
Rack Number 01	_					×		Ra	ack Number 02	2				
Quarter 0		Mod	dule 0	Modu	ile 1				Ouarter 0		Mo	dule 0	Modu	ule 1
T Anthun	Group 0	BTR	BTW	BTR	B TW					Group 0	BTR	B TW	BTR	BTW
Active	Group 1	BTR	B TW	BTR	B TW				Active	Group 1	BTR	BTW	V BTR	B TW
Quarter 1									Quarter 1					
Active	Group 2	BTR	B TW	BTR	BTW				🔽 A atitua	Group 2	BTR	BTW	BTR	B TW
Active	Group 3	BTR	BTW	BTR	B TW				Active	Group 3	BTR	BTW	V BTR	BTW
Quarter 2									Quarter 2					
	Group 4	BTR	BTW	BTR	BTW					Group 4	BTR	B TW	BTR	BTW
Active	Group 5	BTR	B TW	BTR	B TW				Active	Group 5	B TR	BTW	BTR	BTW
Quarter 3									Quarter 3					
The state of the s	Group 6	BTR	BTW	BTR	B TW				_	Group 6	BTR	BTW	V BTR	BTW
Active	Group 7	BTR	B TW	BTR	B TW				Active	Group 7	BTR	BTW	BTR	B TW
		H	elp	ОК		Cancel					Н	elp	OK	

Since both HMI 1 and HMI 2 are using all 4 quarters (0, 1, 2, 3) therefore neither HMI can monitor the other PLC (Rack) at all. Therefore what needs to happen is the inputs/outputs that HMI 1 is supposed to display from PLC 2 (Rack 2) need to be first mapped to PLC 1 (Rack 1).

Example:

1. Start with the current setup for PLCs.





2. Since all the Quarters on PLC 2 are monitored by HMI 2. None of the example inputs/outputs could be monitored currently by HMI 1. Therefore PLC 1 needs to monitor PLC 2 and the inputs/outputs need to map to some of its own inputs/outputs.

Inputs/Outputs		I:026/5	->	I:016/5		Inputs/Outputs
1:016/5, 1:015/4		I:027/8	->	I:015/4	-	1.026/5 1.027/8
0.012/5 0.014/4		0:023/10	->	0:012/5		1.020/3, 1.027/8
0.012/3, 0.011/1	,	O:024/4	->	0:014/4		0:023/10, 0:024/4

3. Now the current inputs/outputs on PLC 1 can be monitored by HMI 1. And since they mirror PLC 2 they are really the inputs/outputs of PLC 2.