

ABB TotalFlow Enhanced v3.00+ Communications Drivers

Information Sheet for Crimson v3.0+

Compatible Devices

ABB TotalFlow devices equipped with a serial or Ethernet port supporting ABB's TotalFlow Protocol Specification.

Verified Device

RMC-100-01 XRC G4 2104446-005

Overview

Red Lion's Enhanced v3.0 communication drivers provides ABB TotalFlow data access with the ability to use data arrays.

Serial Port Configuration

Using ABB's PCCU32 software connect to the ABB TotalFlow device and click on the Entry Setup button. Select the Communications item in the tree then click on the desired Port in the Communication Setup tab. Choose the Totalflow Remote protocol as shown below.

E PCCU32 - [Entry]	1.00	-	-	
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1 🖾 🗖 🕑	🌃 🚳 🛄 Aug	🧇		
- TOTALFLOW Communications Totalflow/TCP	Communication Setup Network			
Totalflow/USB	Port	Description	Port description: Generic Com App	Serial port settings
Totalflow/COM0:	COM0:	Totalflow/COM0:		Baud: 9600 •
Generic Com App	COM1:	Generic Com App	Protocol: Totalflow Remote	Parity: None
ABBService	COM2: (Not Detected)	(Unused)	RBAC: Disable	▼ Data bits: 8 ▼
i I/O System	USB1:	Totalflow/USB		
Flow Measurement	Ethernet	Totalflow/TCP	Port used by: Unknown	Stop bits: 1
			Listen cycle:	■ Interface: RS422 ▼
				Bus Termination
🗈 - Display			Timeouts 8	Delays
Holding Registers-1			Ack timeout (s): 10	Xmit key delay (ms): 420
Holding Registers-2				Anie key delay (ins).
			Response delay (ms): 40	Unkey delay (ms): 40
	<	•		Power up delay (ms): 80

In Crimson's Communications category select the desired serial port in the Communications tree and click on the Pick... button.

Navigation Pane	×	Communications - RS-485 Comms P	ort A	Port 2 🕚 🕢	Resource Pane
Communications Communications	Â	Driver Selection Driver: No Driver Selected Port Commands Clear Port Settings		Pick	Resolute Plane Pare Perices Modules Not Mapped
Protocol 1 Protocol 2 Protocol 3 Protocol 4 Memory Stick Keyboard Services Services Filme Manager QC OPC Proxy FIP Server Born Manager	Driver Pick Manufa <syste AC Tec Adam Allen-i Alpha Alstom Anima Applie</syste 	Add Additional Device er for Serial Port cturer m> h Bradley Gear Lics d Motion	Driver No Driver Selected COMLI Master TotalFlow Enhanced Master TotalFlow Master	Version 1. Version 2. r3.0 Version 3. Version 1.	53 00 ^ 12 10
Mail Manager SQL Sync Comms Modules Slot 1 Slot 2 Slot 3	B&R BACne	t Cancel	Total of 172 Drivers Available.		•

Find the ABB TotalFlow Enhanced Serial Master 3.0 communications driver as shown above and click OK.

Navigation Pane	Communication	s - RS-485 Comms Port A	Port 2 🕐 🕜	Resource Pane	×
🔏 New 🗸 📉	Driver Selection	ı ———		P	
n Communications	_			🛃 Devices	
RS-232 Program Port	Driver: AE	B TotalFlow Enhanced Serial Master 3.0	Pick	METER1	
RS-485 Comms Port A - TotalFlow 3.0				🗉 🏢 Modules	
III METER1	Port Settings			Not Mapped	
RS-232 Comms Port					
RS-485 Comms Port B	Baud Rate:	9600 -			
Network	Data Bite	Fight			
🍞 Protocol 1	Data Dits.	Light			
Protocol 2	Stop Bits:	One 👻			
🌾 Protocol 3					
🚏 Protocol 4	Parity:	None 👻			
🖃 🏟 USB Host Ports	Port Mode	4 Mire BC485 or BC422			
💷 Memory Stick 🗏	Port Mode.	4-WITE K3485 01 K3422			
E Keyboard					
Mouse 🖏	Port Sharing -				
🖃 🎇 Services	Share Port:	No TCP Port: 0			
Time Manager	5				
OPC Proxy	Dest Commond	-			
ETP Server	Port Command	3			
🚇 Sync Manager	Clear Port 9	iettings			
Mail Manager	Add Additi	onal Device			

Modify the Baud Rate, Data Bits, Stop Bits, Parity and Port Mode settings such that it mirrors the port settings in the PCCU32 software.

Ethernet Port Configuration

Using ABB's PCCU32 software connect to the ABB TotalFlow device and click on the Entry Setup button. Select the Communications item in the tree then click on the Network tab. Configure the Network parameters as needed for the application.

<u>►</u> PCCU32 - [Entry]								
I Operate View Window	🗈 Operate View Window Help 📃 🖉 🛪							
10 🖾 🖪 💽	3 🖼 🚳 🛄 🐊							
- TOTALFLOW			n a l Naturala		1			
- Communications		.ommunica	ation Setup Network					
Totalflow/TCP								
Totalflow/USB			Description	Value	Ш			
Totalflow/COM0:		0.0.15	Network ID	RMC-100				
Generic Com App		0.9.7	Enable DHCP	llo				
ABBService		0.0.42	ID Address	40.0.2.400				
i I/O System		0.0.12	IP Address	10.0.3.100	Ш			
Flow Measurement		0.0.13 DNS Server 0.0.0.0						
⊕ SULIQ-1	E-SULIQ-1 0.0.17 Default Gateway 0.0.0.0							
⊕- SUCOR-1 ⊕- Display		0.0.16	Subnet Mask	255.255.255.0				
T								

Next click on the Totalflow/TCP item in the Communications tree. Take note of the Port setting. This setting may be modified dependent of the application.

E. PCCU32 - [Entry]			the figs to the state					
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TOTALFLOW		otun						
- Communications	3	etup						
Totalflow/TCP	LI C							
Totalflow/USB			Description	Value				
- Totalflow/COM0:		0.4.2	Port Name	Totalflow/TCP				
Generic Com App		1.0.6	Protocol	Totalflow/TCP				
ABBService		133	Port	9999				
E-I/O System								
Flow Measurement		1.1.10	Response Delay	0				
B- SULIQ-1		1.0.8	Ack Timeout (seconds)	15				

In Crimson's Communications category select an available protocol in the Network element of the Communications tree and click on the Pick... button.

Navigation Pane	×	Communications - Network - Proto	ocol 1	Port 6 🕚 🕜	Resource Pane X
Communications Communications Communications RS-232 Program Port RS-485 Comms Port A RS-485 Comms Port B RS-485 Comms Port B		Driver Selection Driver: No Driver Selected Port Commands		Pick	Devices Modules Not Mapped
Vetwork Protocol1 Protocol2 Protocol3 Protocol4 USB Host Ports Memory Stick Keyboard Mouse Services Time Manager Qc OPC Proxy Protocol Sync Manager Sync Manager	Driver Picke Manufac <syster ABB AC Tech Acroma Adenus Allen-B Alstom Automa BACnet Banner Beckho</syster 	re for Ethernet Port	Driver No Driver Selected TotalFlow Enhanced Master TotalFlow Enhanced TCP/IP Master 3.0 TotalFlow Master	Version 2.1 Version 3.0 Version 1.1	
SQL Sync Comms Modules	ОК	Cancel	Total of 100 Drivers Available.		

Find the ABB TotalFlow Enhanced TCP/IP Master 3.0 communications driver as shown above and click OK.

Next select the METER device and configure the IP Address and the TCP Port such that it matches the IP Address and the Port number in PCCU32 configuration respectively.

Navigation Pane X	Communications - Network - Protocol 1 - METER1 Device 2 🕐 🕜 Resource Pane	×
🙈 New 🗸 📉	Device Settings	
🚽 Communications 🔹	Devices	
RS-232 Program Port	Enable Device: Yes 👻 🛄 METER1	
RS-485 Comms Port A	🕀 🌆 Modules	
RS-232 Comms Port	Device Identification 2 Not Mapp	ed
RS-485 Comms Port B	10.4.4	
🖃 🐢 Network	IP Address: 10.0.3.100	
🖃 🍞 Protocol 1 - TotalFlow 3.0	TCP Port: 9999	
METER1		
🎸 Protocol 2	Identifier: TOTALFLOW	
Frotocol 3 Protocol 4	Passcode: 0000	

Also ensure that the Red Lion device's Ethernet Port Settings are configured – please refer to the **NETWORK CONFIGURATION** section within the Crimson manual.

Device Identification Settings

In Crimson select the METER device in the Communications tree.

	Navigation Pane 🗙	ommunications - Network - Protocol 1 - METER1 Device 3 🔘	0	Resource Pane X
	🙈 New 🗸 📉	Device Settings	-	<i>P</i>
	🛋 RS-485 Comms Port A			Devices
I	RS-232 Comms Port	Enable Device: Yes 👻		METER1
I	📢 RS-485 Comms Port B			🗄 🌆 Modules
	🖃 📌 Network	Device Identification		? Not Mapped
	🖃 🍞 Protocol 1 - TotalFlow 3.0			
	METER1	IP Address: 10.0.3.100		
I	🍞 Protocol 2	TCP Port: 9999		
I	🚏 Protocol 3		=	
L	👸 Protocol 4	Identifier: TOTALFLOW	-	
	🖃 🖨 USB Host Ports	Passrode: 0000		
	Memory Stick			
	iiii Keyboard			

Modify the Identifier field equivalent to the setting in PCCU32 shown as the Station ID.

The Passcode corresponds to Security Code Level 1 and 2 in PCCU32, where Level 1 is read only and Level 2 is read/write access. Note, a Passcode of "0000" in Crimson corresponds to a non-configured setting in both Security Code Level 1 and 2.

PCCU32 - [Entry]				23				
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1 🖾 🖪 💌	1 📅 🔁 🔁 🖼 🗇 🛄 🎿 🧇							
TOTALFLOW Communications Totalflow/TCP	ation Set	Application/License Management Selectable L	Jnits Setup Battery Information Resources System Log Security Log Registry					
- Totalflow/USB		Description	Value					
Totalflow/COM0:	0.0.4	Station ID	TOTALFLOW					
Generic Com App	0.0.5	Location	ABB Totalflow					
ABBService	0.9.0	Date/Time	12/21/2017 10:41:20					
■ Flow Measurement	0.9.0	Set Device with PCCU Date/Time	No	_				
		Security		-				
SUCOR-1 Display	0.0.6	Security Code Level 1						
- Holding Registers-1	0.0.7	Security Code Level 2						
Holding Registers-2	0.7.3	Security Switch Status	Off					
i Trend System		Sleep Mode						
	0.10.2	Remote Comm Cutoff Voltage	11.90					
	0.10.3	Sleep Mode Entry Voltage	10.90					
Ready			#Polls: 130 #Errors: 0 Connected to 10.0.3.100 Login: user	н				

Meter Configuration

Select the appropriate settings for the Data Update Period, Data Timeout and XRC String Size as explained below. The default settings are shown in the image below.

Data Update Period – This setting determines the polling interval (in milliseconds) the Red Lion device will request all required data in the most efficient manner from the target device. This period may be tuned for each application, decreasing for faster data acquisition and increasing to reduce CPU load of the ABB device.

Data Timeout – Indicate the amount of time in milliseconds that data will be considered valid after an update. This setting should be set to a value less than the Data Update Period.

XRC String Size – Indicate the string size used in the ABB target device. If not using an XRC G3 select the 65 Characters (XRC G4) setting.

Navigation Pane	Communications - Network - Protocol 1 - METER1 Device 2 🕐 🕡 Resource Pane	;
🔏 New - 📉	Device Settings	
 Comms Port A RS-232 Comms Port RS-485 Comms Port B 	Enable Device: Yes Enable Device: Yes Multiple Modules	
E 🕈 Network	Device Identification 2 Not Mapped	
Yrotocol 1 - TotalFlow 3.0 METER1	IP Address: 10.0.3.100	
Protocol 2	TCP Port: 9999	
Protocol 4	Identifier: TOTALFLOW	
George USB Host Ports Memory Stick	Passcode: 0000	
📖 Keyboard	Meter Configuration	
E Services	Data Update Period: 2500 ms	
OPC Proxy	Data Timeout: 2000 ms	
FTP Server	XRC String Size: 65 Characters (XRC G4)	

Application Management

An application manager is provided for each meter configuration as a means to associate an application name with an application number for ease of database configuration and readability.

The TotalFlow applications available can be viewed. In ABB's PCCU32 software connect to the ABB TotalFlow device and click on the Entry Setup button. Select the top level of the tree and click on the Applications/License Management tab.

TOTAL FLOW			-			
- Communications	Station Setup Application/License	Management	Selectable Un	its Setup Batte	ry Informatio	on Resources SystemLog SecurityLog Registry
- Totalflow/TCP	Key Credits		Transfer to	Device	Device Credi	its
Totalflow/USB			Transfer to	Kev	Cred	lit Type Used Surplus/Deficit
Totalflow/COM0:	Credit Type /	mount	-		General(nor	n-removable) 2 2
- Generic Com App	creat type 7	inount	Туре	*	General(ren	movable) 0 4
ABBService			Amount	-	IEC	0 0
⊞- I/O System					CO2(NIST)	0 0
Flow Measurement					L	
i SULIQ-1	, beal		Tran	ofer		
SUCOR-1			Tran	Sici -		
	App# Type	Pevision	Station	Directory	Destart	Delete App
Holding Kegisters-1		2405252.002	Station	Dia	Restart	
Trend System	0 System	2105252-002		Dir = \		
i enu system	1 Communications	2101348-005		Dir = \Comm-1		
	2 Communications	2101340-005		Dir = \Comm-2		
	3 Communications	2101340-005		Dir = \Comm-3		
	4 Communications	2101341-005		Dir = \Comm-4		
	7 I/O Interface XSeries	2105253-001		Dir = \TFIO-A		
	8 Display XSeries	2103137-002		Dir = \Display		
	9 Holding Registers	2101312-002		Dir = \Holding		
	11 API Liquid SU	2104609-005		Dir = \SULIQ-1		
	12 Coriolis SU	2103980-006		Dir = \SUCOR-1		
	71 I/O Interface XSeries	2105253-001		Dir = \TFIO-B		
	80 Holding Registers	2101312-002		Dir = \Hold-4		
	251 Operations	2101320-005	ABBService	Dir = \XOper		
	252 Trend System	2101309-001		Dir = \Trend		
	253 Alarm System	2101310-007	ABBService	Dir = \XAlarms		

In Crimson select the METER device in the Communications tree then activate the Use Device Configured Application Numbers check box.

Navigation Pane X	Communications - Network - Protocol 1 - METER1	Device 2 🕐 🕢 Resource Pane
💰 New 🗸 📉	TCP Port: 9999	▲ <i>P</i>
New	TCP Port: 9999 📻 Identifier: TOTALFLOW Passcode: 0000 Meter Configuration Data Update Period: 2500 💮 ms Data Timeout: 2000 🐨 ms XRC String Size: 65 Characters (XRC G4) V Application Management	Devices Metteri Bin Modules Not Mapped
Services Services Services Time Manager Group CP Proxy FP Server Sync Manager Mail Manager	Use Device Configured Application Numbers Configure Applications Import Applications Export Applications	

Application associations can be entered by clicking on the Configure Applications link which will show the following dialog.

pplication Name	Application Number	Application Name	Application Number
	0 🖨 Add		11 Add
Application Name	Number	Application Name	Number
		System	0
		Comms_1	1
		Comms_2	2
		Display/Series	8
		HoldingRegisters	9
		API_Liquid_SU	11
Remove Edit	OK Cancel	Remove	OK Cancel

Simply enter an Application Name and Application Number then click the Add button to add the association to the list. Application associations may be edited or removed by highlighting the association in the list and clicking on the appropriate button.

Application association lists may also be exported/imported via a CSV file for fast configuration of TotalFlow devices in Crimson.

Data Access

The "Select Register" dialog box can be found by selecting the device representing the TotalFlow METER device in the Source drop down box of a Tag created in the Data Tag category in Crimson.

Navigation Pane 🗙	Data Tags - Tag1						
🥶 New 👻 🛱 🗙 🏭 🔎	Data	Format	Colors	Alarms	Triggers	Plot	Security
🔩 Data Tags 🔀 Reboot	Data Sou	ırce —					
Tag1	Sour	ce:	- I	nternal			
E D Proc	Exter	nt:	~	Internal			
	Man	ipulation		General		-	
IOSystem IOSystem BatteryVoltage	Treat	As:		Complex Tag		•]
77 SystemVoltage	Acce	\$\$;		New Tag		-]
	Read	Mode:		Next		-]
⊞ HoldingRegs ⊕ Setup	Store	age:		Master			
	Data Sca	ling —		METER1			
	Scali	ng:	Do N	ot Scale		•	
	Data	From:	v G	eneral			

Here the Application, Array, Register and data type can be selected as according to the data in the TotalFlow device.

Select Register						_ XX
_ <u>R</u> egister						
App Name		Арр	Array	Register	Туре	
Unnamed Application	-	0	· 0	• 0	Word	•
OK Cancel						

When using application associations in Crimson (see Application Management section above) the Application name will be selectable via the App Name drop down box.

Select Register				Σ	3
Register App Name System	Арр 0 .	Array 0	Register 0	Type Word ▼	
OK Cancel					

The following ranges are supported:

Data Field	Selection Range
Application Number	0 - 255
Array Number	0 – 255
Register Number	0 – 65535
Data Type	Byte, Word, Long, Real, String

A string tag should be configured for a length of 64 unless the target device is a XRC G3 device. XRC G3 device strings should be configured for 32 characters. The packing field should always be set to ASCII Little-Endian.

Navigation Pane X	Data Tags - ABB.D	escription.PortName	Tag 3 🕐 🕥	Resource Pane X
🥶 New 🗸 🛱 🔀 🔎	Data Format	Colors Security		P B
Data Tags Reboot	Data Source			Data Tags
	Source:	VETER1 System.4.2.S.0 Pick		agi ⊕ Call ABB
😢 🧰 Proc 🗄 🛅 Floats	Extent:	v One Item		
Logic Gystem	Length:	64 characters		
77 BatteryVoltage	Packing:	ASCII Little-Endian		
Systemvoltage ExternalVoltage	Access:	Read and Write 🔻		
Description PortName	Read Mode:	Entire Array v		
AB Protcol	Storage:	Non-Retentive 👻		

NOTE: During the evolution of a database as tags are added, manipulated and/or deleted, the internal tag list may need to be purged to provide the best optimization. This operation will be performed during the Rebuild Comms Block command which may be found in the Utilities submenu on the File menu in Crimson 3.0+.

Serial Cable Information

RS232

Red Lion RS232 RJ12 Port	ABB COM Port
Pin 2 - Rx	Pin 7 - TX
Pin 5 - Tx	Pin 8 - RX
Pin 3 - COMM	Pin 2 - GND

4-Wire RS485 or RS422

Red Lion RS485 RJ45 Port	ABB COM Port
Pin 1 - TxB	Pin 8 – RBUS+
Pin 2 - TxA	Pin 9 – RBUS-
Pin 3 - RxA	Pin 7 - TBUS-
Pin 4 - RxB	Pin 6 – TBUS+
Pin 6 - COMM	Pin 2 - GND

2-Wire RS485

Red Lion RS485 RJ45 Port	ABB COM Port
Pin 1 - TxB	Pin 6 – BUS+
Pin 2 - TxA	Pin 7 – BUS-
Pin 6 - COMM	Pin 2 - GND

Ethernet Cable Information

Standard Ethernet Cable

Revision History

01/05/18 - Created.