

Process Cache / Process Cache Plus

Datasheet

A-PCM

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1. PREFACE

1.1. ABOUT THIS DOCUMENT

This document contains the technical data for the Process Cache Module and Process Cache Plus.



NOTE: Only the Process Cache Plus provides the user with the functionality to connect to the Aparian service which allows the stored data to be uploaded to an historian or SQL database. The Process Cache provides exactly the same logging functionality as the Process Cache Plus, but records can only be exported to CSV files.

1.2. FEATURES

The Process Cache module can read and store data from Logix Controllers, DF1 Serial Interfaces, or Modbus devices which can later be uploaded to an historian or SQL database. The module has the capacity to store over 16 million records in its solid-state non-volatile memory. Each stored record includes a Date Time stamp with a 50ms resolution, the Tag Name, Data Type, and Value.

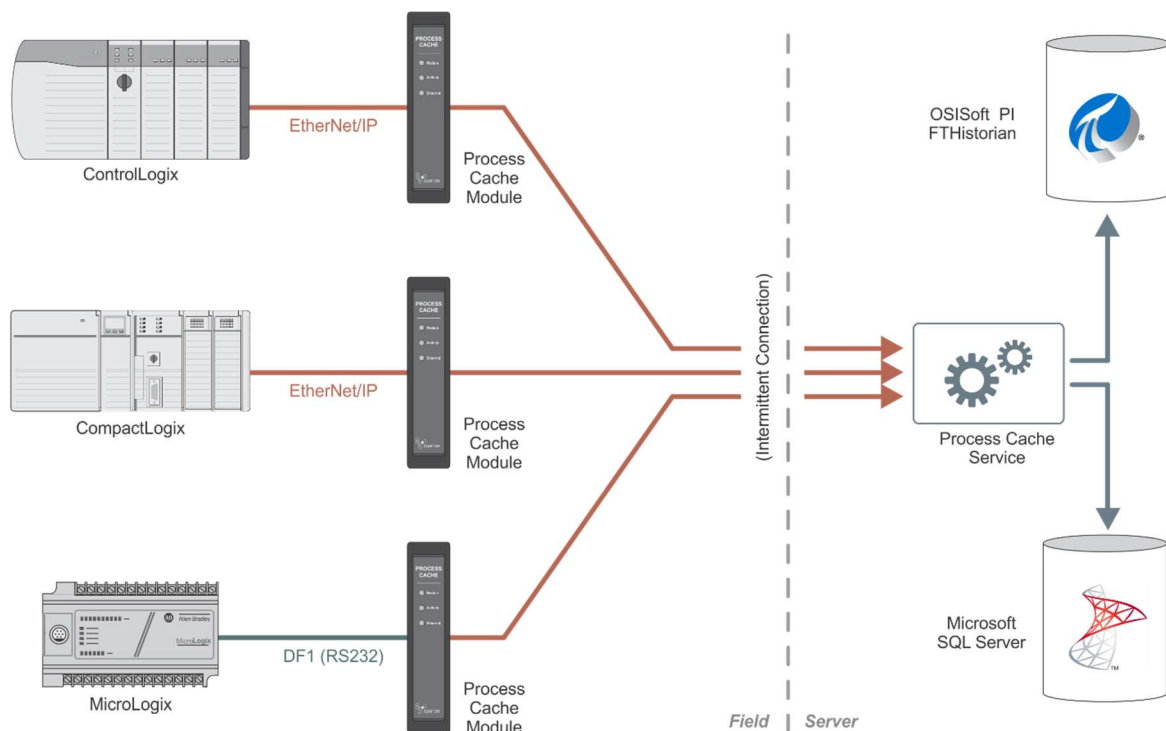


Figure 1 – Rockwell Controller Source Options

The process Cache could be used to log data at a remote site with limited communication with its base.

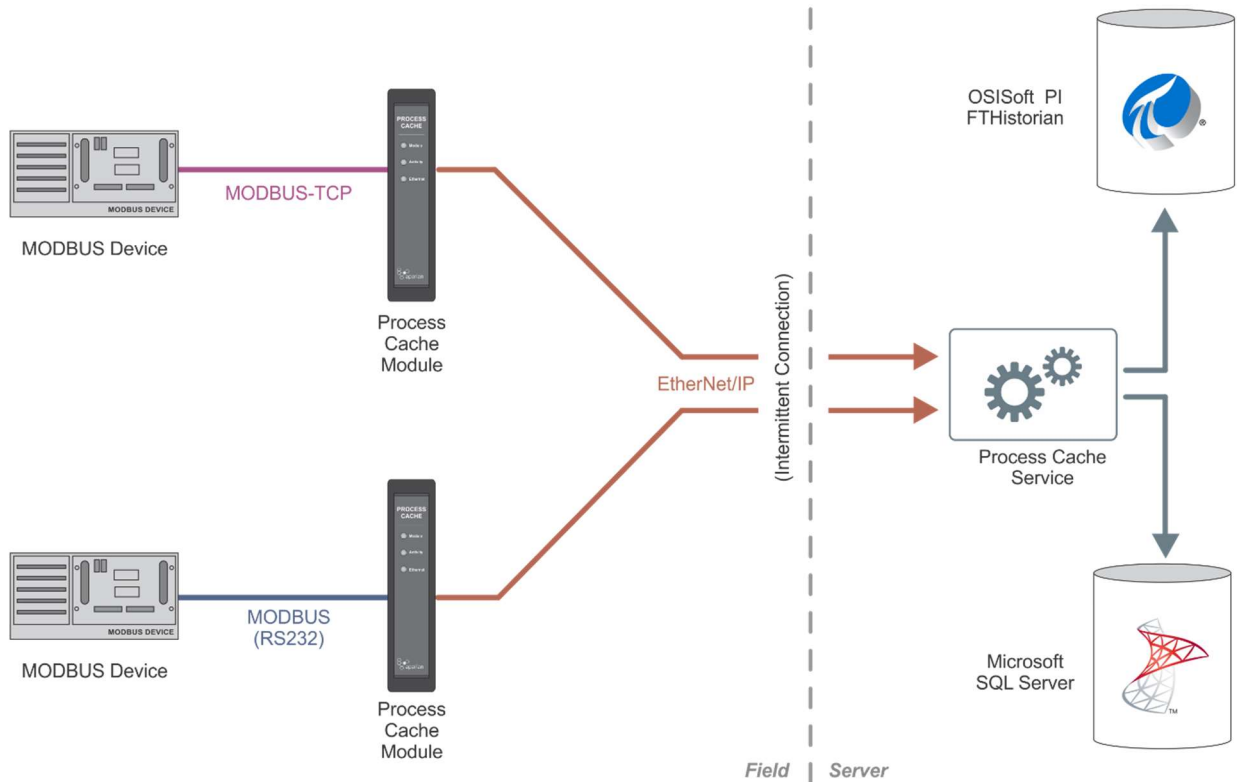


Figure 2 – Modbus Source Options

The Process Cache module could also be used to store records on mobile equipment such as trucks, drilling rigs, or snow ploughs. Once the equipment returns back to its base, the historical data can be uploaded and transferred to a more permanent storage. The module could also be configured to collect data and the data is only downloaded and examined if a fault occurs, otherwise the data is overwritten.

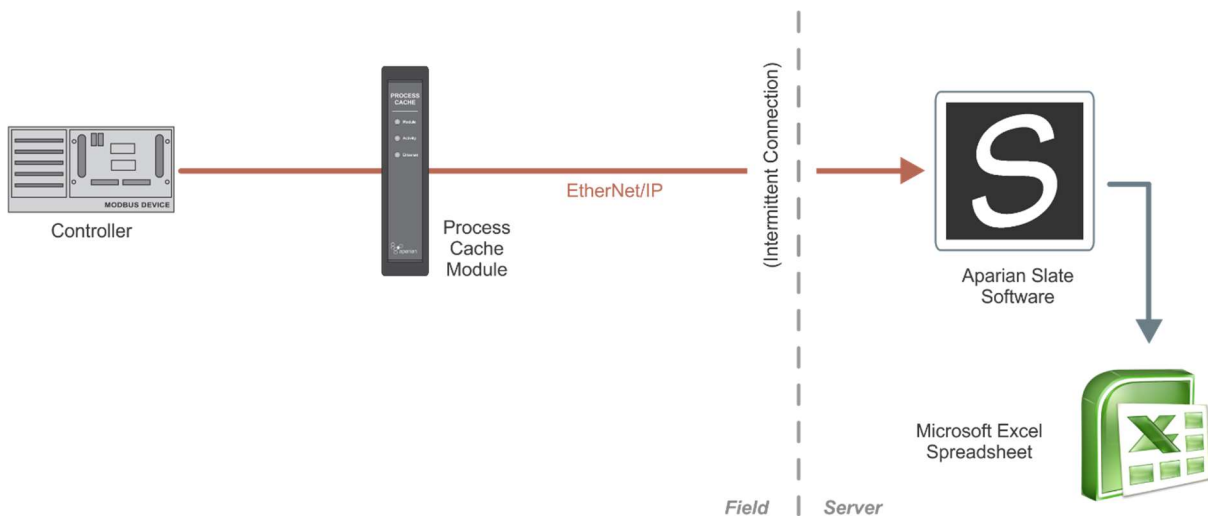


Figure 3 – Non-Historian Option

The Process Cache Module provides an extensive temporary on-board storage capability for storing process tags. A total of 16,777,216 records can be stored in the non-volatile memory.

Each record consists of the following data:

Parameter	Link
Date Time	UTC Time includes: Year, Month, Day, Hour, Minute, Second, Milliseconds. Time has a resolution of 50 milliseconds.
Tag Name	As defined in Controller for Logix or in Slate for other sources
Data Type	BOOL, SINT, INT, DINT, or REAL
Value	Tag value

Table 1 – Components of a Record

The log index is managed by the module and incremented each time a new record is stored. The unload index is managed externally by the unload service and only incremented after a record was been logged successfully to the SQL Database, FT Historian, or text file. Both the Log Index and Unload Indices will loop around reaching the end of the cache. The cache becomes 100% full when the log index loops around and catches up with the unload index. In this situation, either older records are overwritten (Log Mode = Overwrite) or newer records are not logged (Log Mode = Hold).

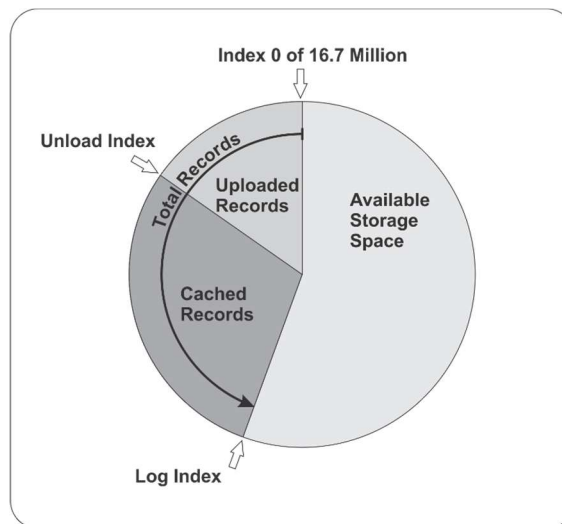


Figure 4 - Memory Schematic

The Process Cache module is configured using the Aparian Slate application. This program can be downloaded from www.aparian.com free of charge. Slate offers various configuration methods, including a controller tag browser. Slate can also be used to monitor the modules status and used to download the historical data to a local file.

The module can operate in both a Logix “owned” and standalone mode. With a Logix connection the input and output assemblies will provide additional diagnostics information which will be available in the Logix controller environment.

The module uses isolated RS232 for DF1 communication providing better noise immunity. The RS232 port also uses a terminal block for convenient installation.

A built-in webserver provides detailed diagnostics of system configuration and operation, including the display of received DF1 communication packets, without the need for any additional software.

1.3. ADDITIONAL INFORMATION

The following documents contain additional information that can assist the user with the module installation and operation.

Resource	Link
Slate Installation	http://www.aparian.com/software/slate
Process Cache Service Installation	http://www.aparian.com/products/processcache
User Manual Datasheet Example Code & UDTs	http://www.aparian.com/products/processcache
Ethernet wiring standard	www.cisco.com/c/en/us/td/docs/video/cds/cde/cde205_220_420/installation/guide/cde205_220_420_hig/Connectors.html
Slate User Manual	www.aparian.com/slate/D104-001_Slate_User_Manual.pdf
CIP Routing	The CIP Networks Library, Volume 1, Appendix C:Data Management

Table 2 - Additional Information

1.4. SUPPORT

Technical support is provided via the Web (in the form of user manuals, FAQ, datasheets etc.) to assist with installation, operation, and diagnostics.

For additional support the user can use either of the following:

Resource	Link
Contact Us web link	www.aparian.com/contact-us
Support email	support@aparian.com

Table 3 – Support Details

2. ETHERNET/IP NETWORK

Specification	Rating
Connector	RJ45
Conductors	CAT5 STP/UTP
ARP connections	Max 20
TCP connections	Max 20
CIP connections	Max 10
Communication rate	10/100Mbps
Duplex mode	Full / Half
Auto-MDIX support	Yes

Table 4 - Ethernet specification

3. DATA CACHE

Specification	Rating
Max Record Count	16,777,216
Maximum tag count	200
Log criteria supported	Delta change Heart beat Tag Triggers
Minimum Log Interval	50ms
Data Types Supported	Bool, SInt, Int, DInt, Real
Cached Records Non-Volatile	Yes
Log triggers supported	Yes
Data Sources	Logix Tags DF1 Files Modbus (RTU and TCP) registers

Table 5 – Data Cache specification

4. SERIAL PORT

Specification	Rating
RS232 Connector	4-way terminal
RS232 Conductor	24 – 18 AWG
RS232 Isolation voltage	2.5 kV
BAUD	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Parity	None, Even, Odd

Table 6 – Serial port specification

5. DF1

Specification	Rating
Duplex	Full/Half
Error detection	CRC, BCC
Embedded response	Auto, On

Table 7 – DF1 specification

6. MODBUS

Specification	Rating
Supported Ports	Modbus RTU Modbus TCP
Functions Supported	Read Discrete Inputs Read Coils Read Input Register Read Holding Register




Table 8 – DNP3 Security

7. ELECTRICAL SPECIFICATIONS

Specification	Rating
Power requirements	Input: 10 – 28V DC, (70mA @ 24VDC)
Power consumption	1.7 W
Connector	3-way terminal
Conductors	24 – 18 AWG
Enclosure rating	IP20, NEMA/UL Open Type
Temperature	-20 – 70 °C
Earth connection	Yes, terminal based
Emissions	IEC61000-6-4
ESD Immunity	EN 61000-4-2
Radiated RF Immunity	IEC 61000-4-3
EFT/B Immunity	EFT: IEC 61000-4-4
Surge Immunity	Surge:IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

Table 9 - Electrical specification

8. CERTIFICATIONS

Specification	Rating
CE Mark	
UL Mark File: E494895	 CLASS 1, DIV 2, GROUPS A, B, C, D
ODVA Conformance	


	* F/W 1.004
RoHS2 Compliant	RoHS2
RCM	

Table 10 - Certifications

9. DIMENSIONS

Below are the enclosure dimensions as well as the required DIN rail dimensions.

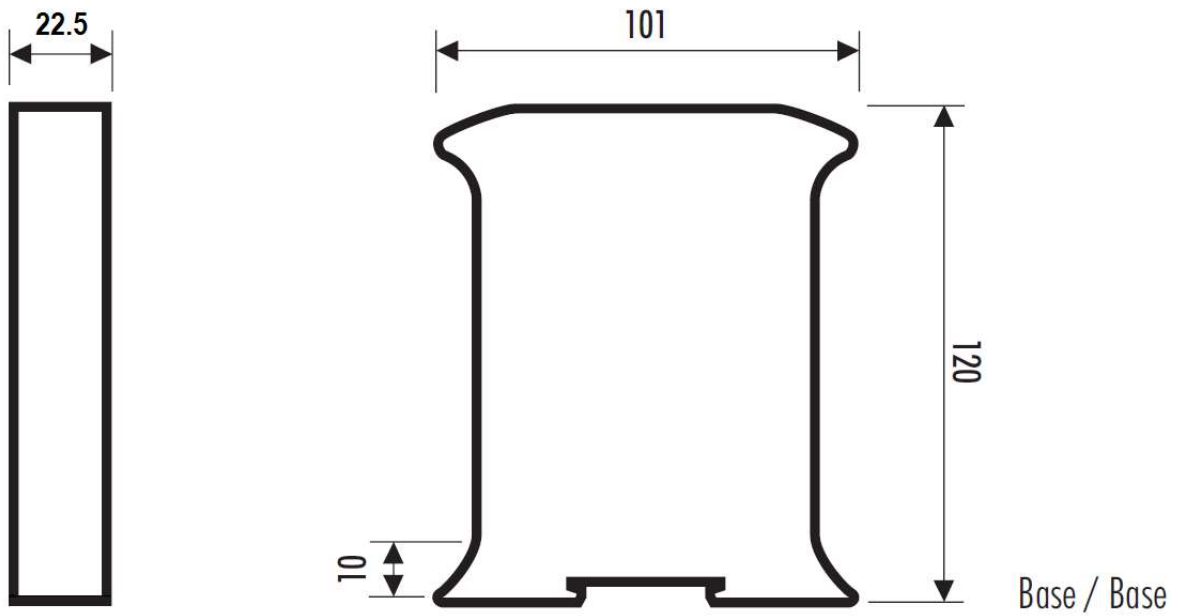


Figure 5 – Module enclosure dimensions

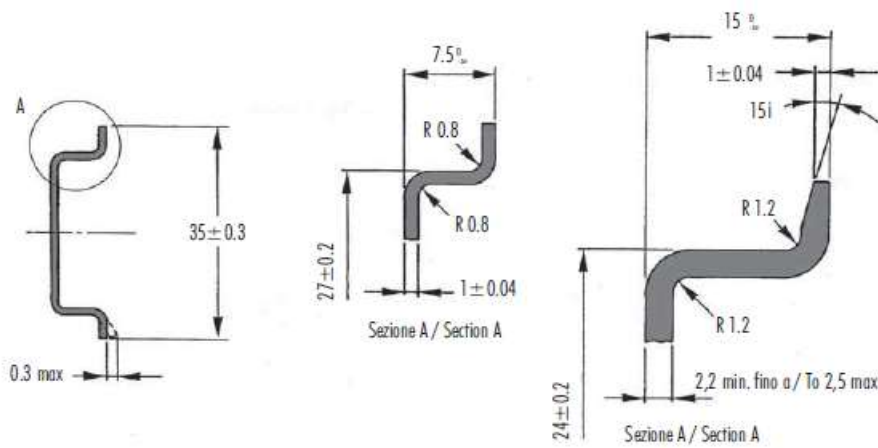


Figure 6 - Required DIN dimensions