Honeywell

Technical Information

Series 8 Controller and I/O Specification

S803-150-530

Release 530

May 2024, Version 1.0

3.2. Model Numbers

The Model Numbers of C300 controller are shown as below:

Model Number	Description
8C-PCNT03	Series 8 C300 Controller, Coated [1,3,4]
8C-PCNT05	Series 8 C300 Controller, V5, Coated [5,6]
8C-TCNTA1	Series 8 C300 Controller I/O Termination Assembly(IOTA), Coated [1]
51305980-836	Cable, Redundant C300 Controller [2]

Note 1 – Conformal coating applied on the module and the IOTA

Note 2 – Redundancy is implemented with two modules/IOTAs and a redundancy cable (51305980-836)

Note 3 – Optional rechargeable battery pack for C300 Memory Backup is available, details are provided in section 5.4

Note 4 – 8C-PCNT02 part number is replaced by 8C-PCNT03. The new controller (8C-PCNT03) is compatible with all current and previous PC/LX releases.

Note 5 – 8C-PCNT05 is the new S8 C300 controller, and only supports Experion R520 and later releases. Both 8C-PCNT03 and 8C-PCNT05 supports Experion R520 releases. While 8C-PCNT03 also supports all previous Experion releases. 8C-PCNT05 is not interoperable with 8C-PCNT03 controller.

Note 5 – 8C-PCNT05 uses the same S8 C300 IOTA, i.e. 8C-TCNTA1 and controller redundancy cable.

3.3. C300 Controller Specifications

3.3.1. C300 Control Execution Environment (CEE)

The C300 CEE provides an execution and scheduling environment in which Control Modules (CMs) and Sequential Control Modules (SCMs) execute user-configured control strategies. The CEE also support peer to peer communications with other C300 controllers and communication modules like Foundation Fieldbus and Profibus. The C300 CEE is configured using the Control Builder Engineering environment. The Control builder provides a graphical engineering environment where engineers can configure the Experion system and create control strategies by using the various function blocks available in the Library. The C300 CEE based control strategies can be configured with minimum execution rates of 50 msec.

3.3.2. C300 Hardware Specifications

Specifications	8C-PCNT03	8C-PCNT05
Power requirement	24 V (provided through cables by the Series 8 power system)	
IOTA Dimension	220 mm (9 “) height, 120 mm (4,75 “) width	
Program Memory	16MB	32MB
Processor core	Single	Dual
Supported Releases	Experion R110, 120, R500, R51x and R520	Experion R520 and onwards

Specifications	8C-PCNT03	8C-PCNT05
Features		
Module Removal and Insertion Under Power	Supported	
Conformal Coated	Yes, G3 level of Harsh Environment (ANSI/ISAS71.04-1985 corrosion standard)	
Redundancy	IOTA based design, no single point of failure for IOM, Termination, and Communication links (Downlink and Uplink)	
RAM Retention	50 hour through rechargeable battery backup pack (Optional)	
Switchover	Bump less, Internal parameters, variables and outputs are maintained during transition	
Programing Language	Function Block Design (FBD) via Experion Control Builder	
Supported I/Os and Uplink Communication		
Supported I/O type	Series 8	
Supported I/O Links	2 I/O Links, each I/O Link configurable for Series 8 I/Os	
Supported I/O Link Speed	750 kbps	
Supported number of I/O Modules per Controller	80 I/O Units (Redundant or Non-Redundant IOMs)	
Supported number of I/O Modules per I/O Link	40 I/O Units (Redundant or Non-Redundant IOMs)	
Maximum number of I/Os per Controller	2560 [1]	
Number of Uplink (FTE) Connection	Dual uplink FTE ports, 100Mbps speed	
Control Capacity		
Execution Units	5500 Execution Units (single or redundant)	9000 Execution Units (single or redundant)
Tagged Objects	4095 objects	
Memory Units	16384 Memory Units	32768 Memory Units
Execution Period	50 msec – 60000 msec (adjustable per control strategy, configurable)	
Minimum Reserved CPU to be maintained During Runtime	20% for each CPU	
Controller Communication		
CEE-based Platforms	Native peer to peer with other Series 8 C300s, C200 and ControlEdge UOC controllers [2]	
Supervisory Control Network	Fault Tolerant Ethernet (FTE)	

Specifications	8C-PCNT03	8C-PCNT05
Third party devices	Modbus Master	
Modbus TCP devices	PCDI function block	
Modbus RTU or ASCII	Via Modbus TCP/IP conversion gateway	
Ethernet/IP	Native peer to peer	
Foundation Fieldbus	Via Fieldbus Interface Module (FIM) gateway	
Profibus DP	Via Profibus Gateway Module (PGM)	
Max number of PGM connections per C300	4	8
Optional C300 Memory Backup		
RAM Charger Module [3]	51454475-100	50182539-001
Cable, Battery RAM charger	30 inches, 51202330-300 84 inches, 51202330-200	
Note 1 – When using full capacity with 32 channel digital IO module Note 2 – C200 and ControlEdge UOC support available from Experion LX/PlantCruise R510 and onwards. Note 3 – The RAM charger (Battery backup module) is different for 8C-PCNT03 and 8C-PCNT05 controllers.		

3.3.3. C300 Supported Function Blocks

Function Block
General Purpose (Utility)
Alarm Window
Annpanel
Dig Acq
EXECTIMER
First Out
Flag
Flag Array
Operator Message
Numeric
Numeric Array
Push
Text Array

Function Block
Timer
Type Convert
PV Algorithms (Auxiliary)
PV Calculator
Summer
Counter
Dead Time
Enhanced PV Calculator
Enhanced General Linearization
Flow Compensation
General Linearlization

Function Block
Lead / Lag
Rate of Change
Signal Selector
Totalizer
PV Handling
Data Acquisition
Regulatory Control
Auto Manual
Regulatory Calculator
Enhanced Regulatory Calculator
Fan Out (1 input / up to 8 outputs)

Function Block
Override Selector (4 inputs)
PID (Proportional, Integral, Derivative)
PID with External Reset
PID with Feed Forward
Profit Loop
Positional Proportional
Pulse Count
Pulse Length
Ramp / Soak
Ratio Bias

5.4. C300 Controller memory backup

A RAM charger assembly provides memory backup power for S8 C300 controller module. RAM charger is used to back up the program memory of the S8 C300 controller. It supports connecting up to 4 physical S8 C300 controllers. Multiple units can be considered based on system cabinet design and number of controllers required.

Ram Charger Assembly, Part# 51454475-100

5.4.1. Notable Features

- Support up to 4 C300 controllers in one module
- Supports redundant power supply inputs through combo cable
- Supports Experion soft failure alarm for RAM charger battery status
- Typically mounted adjacent to its associated C300 IOTA(s)

5.4.2. Model Number

Description	Model or Part Number
RAM Charger Assembly (8C-PCNT03)	51454475-100
RAM Charger Assembly (8C-PCNT05)	50182539-001
Cable, MBA to one C300 Controller, 30 inches (0.7 m) long	51202330-300
Cable, MBA to one C300 Controller, 84 inches (2 m) long	51202330-200

5.4.3. Detailed Specification – RAM Charger Assembly

RAM Charger Assembly Parameter	Specifications
Form Factor	3 inch IOTA
Combo Cable Connector	1 pair, 6 pins
Standby Power Output	4
Memory Backup Hold-up Times	110 Hours (4.58 Days) for 1 C300 55 Hours (2.23 Days) for 2 C300s 36.6 Hours (1.52 Days) for 3 C300s 27.5 Hours (1.14 Days) for 4 C300s

Fuse on RAM Charger Assembly (50182539-001) is 51506438-001, 1A Fast acting, 5×20mm.

Use for Division 2/Zone 2 Hazardous Location Installation

⚠ WARNING - DO NOT REMOVE OR REPLACE FUSE WHEN ENERGIZED;
WARNING - DO NOT CONNECT OR DISCONNECT WHEN ENERGIZED;
AVERTISSEMENT – NE PAS RETIRER OU REMPLACER LE FUSIBLE SOUS TENSION;
AVERTISSEMENT – NE PAS CONNECTER OU DECONNECTER SOUS TENSION