Aphena Pharma Solutions
ULTRA-FLOW 110
SMI# 107657

OpCodes
7/28/2020

OPCODE CHART

The chart consists of repeated sections. Each section is keyed by OPCODE NUMBER and contains a DESTINATION WORD (four hex digits) labeled OpCode_Word[n,x] / OpCode_Pin[n]. The bit-column headers for each section are:

- Section 1 bits (OpCode_Word[1,x], bits 15→0): LOW LEVEL DISABLE, FILL HOLD, TEMPERATURE HOLD, WASH CONDUCTIVITY HOLD, RINSE CONDUCTIVITY HOLD, EMPTY HOLD, RETURN TO DRAIN, PUMP CASING DRAIN, MODULATION DRAIN VALVE, PAUSE, PW FILL ON
- Section 2 bits (OpCode_Word[2,x]): SUPPLY PUMP, FLOW CONTROL ENABLE, TEMP 1 (PRE-RINSE), TEMP 2 (RINSE), TEMP 3 (ALKALINE WASH), TEMP 4 (ACID WASH), TEMP 5 (FINAL RINSE), PRE-HEAT, ALKALINE CONDUCTIVITY, ACID CONDUCTIVITY
- Section 3 bits (OpCode_Word[3,x]): DRAIN COOLING, DRAIN TO TOTE, DRAIN BY CONDUCTIVITY, CIP SUPPLY ZONE 1, CIP SUPPLY ZONE 2, PRINT ALKALINE CYCLE, PRINT ACID CYCLE, PRINT FINAL RINSE CYCLE
- Section 4 bits (OpCode_Word[4,x]): (unused)

OPCODE	DESCRIPTION	Word[1,x]	Word[2,x]	Word[3,x]	Word[4,x]
1	RECIPE END	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
2	GRAVITY DRAIN - TO DRAIN	8 2 7 0	2 0 0 0	8 0 0 0	0 0 0 0
3	GRAVITY DRAIN - TO TOTE	8 2 7 0	2 0 0 0	4 0 0 0	0 0 0 0
4	FILL SEPARATOR	A 0 0 2	0 0 0 0	0 0 0 0	0 0 0 0
5	PUMP SYSTEM - TO DRAIN	8 2 1 0	8 0 0 0	8 0 0 0	0 0 0 0
6	PUMP SYSTEM - TO TOTE	8 2 1 0	8 0 0 0	4 0 0 0	0 0 0 0
7	PRE-HEAT	1 0 0 0	8 0 1 0	0 0 0 0	0 0 0 0
8		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
9	PRE-RINSE TO TOTE - ZONE 1	0 0 1 2	A 8 0 0	4 8 0 0	0 0 0 0
10	PRE-RINSE TO TOTE - ZONE 2	0 0 1 2	A 8 0 0	4 4 0 0	0 0 0 0
11	RECIRCULATED PRE-RINSE - ZONE 1	1 0 0 2	A 8 0 0	0 8 0 0	0 0 0 0
12	RECIRCULATED PRE-RINSE - ZONE 2	1 0 0 2	A 8 0 0	0 4 0 0	0 0 0 0
13	ALKALINE WASH - ZONE 1	1 8 0 2	A 2 0 2	0 9 0 0	0 0 0 0
14	ALKALINE WASH - ZONE 2	1 8 0 2	A 2 0 2	0 5 0 0	0 0 0 0
15	ACID WASH - ZONE 1	1 8 0 2	A 1 0 1	0 8 8 0	0 0 0 0
16	ACID WASH - ZONE 2	1 8 0 2	A 1 0 1	0 4 8 0	0 0 0 0
17	RINSE TO DRAIN - ZONE 1	0 0 1 2	A 4 0 0	2 8 0 0	0 0 0 0
18	RINSE TO DRAIN - ZONE 2	0 0 1 2	A 4 0 0	2 4 0 0	0 0 0 0
19	RECIRCULATED RINSE - ZONE 1	1 0 0 2	A 4 0 0	0 8 0 0	0 0 0 0
20	RECIRCULATED RINSE - ZONE 2	1 0 0 2	A 4 0 0	0 4 0 0	0 0 0 0
21	FINAL RINSE TO DRAIN - ZONE 1	0 4 1 2	A 0 8 0	2 8 4 0	0 0 0 0
22	FINAL RINSE TO DRAIN - ZONE 2	0 4 1 2	A 0 8 0	2 4 4 0	0 0 0 0
23		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
24		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
25	PAUSE	0 0 0 8	0 0 0 0	0 0 0 0	0 0 0 0
26–64		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0

OPCODE CHART

Block 1 — bit columns (15–0): LOW LEVEL DISABLE (15), FILL HOLD (14), TEMPERATURE HOLD (13), WASH CONDUCTIVITY HOLD (12), RINSE CONDUCTIVITY HOLD (11), EMPTY HOLD (10), (9), (8), RETURN TO DRAIN (7), PUMP CASING DRAIN (6), MODULATION DRAIN VALVE (5), PAUSE (4), (3), (2), PW FILL ON (1), (0) — STORAGE FILE / OpCode_Word[1,x] / DESTINATION WORD / OpCode_Pint[1]

Block 2 — bit columns (15–0): SUPPLY PUMP (15), FLOW CONTROL ENABLE (14), (13), TEMP 1 (PRE-RINSE) (12), TEMP 2 (RINSE) (11), TEMP 3 (ALKALINE WASH) (10), TEMP 4 (ACID WASH) (9), TEMP 5 (FINAL RINSE) (8), (7), PRE-HEAT (6), (5), (4), ALKALINE CONDUCTIVITY (3), ACID CONDUCTIVITY (2), (1), (0) — STORAGE FILE / OpCode_Word[2,x] / DESTINATION WORD / OpCode_Pint[2]

Block 3 — bit columns (15–0): DRAIN COOLING (15), DRAIN TO TOTE (14), DRAIN BY CONDUCTIVITY (13), (12), CIP SUPPLY ZONE 1 (11), CIP SUPPLY ZONE 2 (10), (9), PRINT ALKALINE CYCLE (8), PRINT ACID CYCLE (7), PRINT FINAL RINSE CYCLE (6), (5), (4), (3), (2), (1), (0) — STORAGE FILE / OpCode_Word[3,x] / DESTINATION WORD / OpCode_Pint[3]

Block 4 — bit columns (15–0): (15–0 blank) — STORAGE FILE / OpCode_Word[4,x] / DESTINATION WORD / OpCode_Pint[4]

OPCODE NUMBER	DESCRIPTION	Block 1 OpCode_Pint[1]	Block 2 OpCode_Pint[2]	Block 3 OpCode_Pint[3]	Block 4 OpCode_Pint[4]
65		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
66		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
67		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
68		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
69		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
70		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
71		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
72		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
73		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
74		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
75		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
76		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
77		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
78		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
79		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
80		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
81		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
82		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
83		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
84		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
85		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
86		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
87		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
88		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
89		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
90		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
91		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
92		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
93		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
94		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
95		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
96		0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0