

# MICROFUSION PARAMETER LIST



MicroFUSION controllers contain nonvolatile EEPROMs, and writing too frequently to an individual parameter may wear out the EEPROM and cause the controller to fail.

Control Concepts recommends allowing an average of five minutes between consecutive writes to an individual parameter within the range of 1-199, with the exception of digital setpoint commands 100-107 and the digital system command 129. Digital setpoints and digital system command may be written continually.

## SP 1 Feedback Type

Units: N/A  
 Minimum: 1  
 Maximum: 7  
 Default: 1 (2 for High Performance)

Selections:

- 1 = Voltage feedforward
- 2 = RMS Voltage
- 3 = AVG Voltage
- 4 = RMS Current
- 5 = AVG Current
- 6 = Real Power
- 7 = Apparent Power

## SP 2 Firing Mode

Units: N/A  
 Minimum: 1  
 Maximum: 3  
 Default: 2

Selections:

- 1 = Zero Cross
- 2 = Phase Angle
- 3 = Zero Cross Transformer (ZCT) Mode

## SP 3 Control Loop

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 1

Selections:

- 0 = Open Loop
- 1 = Closed Loop

## SP 4 Ramp Time

Units: Seconds  
 Decimal Places: 0  
 Minimum: 0  
 Maximum: 300  
 Default: 0

## SP 5 Slew Rate (Control Response)

Units: N/A  
 Minimum: 1  
 Maximum: 100  
 Default: 10

## SP 6 Reserved

## SP 7 ZCT Phase Angle to ZC Switch Threshold

Units: AC Line Cycles  
 Minimum: 5  
 Maximum: 20  
 Default: 20

## SP 8 Full Scale Voltage

Units: Volts  
 Minimum: 5.0  
 Maximum: 600.0  
 Default: 480.0

## SP 9 Full Scale Current

Units: Amps  
 Minimum: 1.0  
 Maximum: 80.0  
 Default: 80.0 (Set to Amp size)

## SP 10 Full Scale Power

Units: kW  
 Minimum: 0.1  
 Maximum: 158.4  
 Default: 115.2 (Set according to Amp size and default voltage)

## SP 11 Voltage Limit

Units: Volts (RMS or AVG)  
 Minimum: 4.0  
 Maximum: 660.0  
 Default: 600.0

### SP 12 Current Limit Zone 1

Units: Amps (RMS or AVG)  
 Minimum: 1.0  
 Maximum: 84.0  
 Default: 84.0 (Set according to 105% Amp size)

### SP 13 Current Limit Type

Units: N/A  
 Minimum: 1  
 Maximum: 2  
 Default: 1

Selections: 1 = RMS  
 2 = AVG

### SP 14 Current Trip

Units: Amps RMS  
 Minimum: 1  
 Maximum: 360  
 Default: 140 (Set according to 175% Amp size, 400% for zero cross)

### SP 15 Power Limit

Units: kW  
 Minimum: 0.1  
 Maximum: 166.4  
 Default: 76.9 (Set 105% according to Amp size and default voltage)

### SP 16 Relay Alarm Mask 1

Units: N/A  
 Minimum: 0000\_0000\_0000\_0000  
 Maximum: 1111\_1111\_1111\_1111  
 Default: 24576 = 6000<sub>hex</sub> (0110\_0000\_0000\_0000)

Representation:

- Bit: 15 = TBD
- 14 = Heatsink Over Temp
- 13 = Current Trip
- 12 = Heatsink High Temp Warning
- 11 = AC Line Phase Loss
- 10 = Shorted SCR
- 9 = Power Limit
- 8 = Current Limit
- 7 = Voltage Limit
- 6 = Digital RUN Enable (RUN State Request)
- 5 = TBD
- 4 = 3 Phase Load Imbalance
- 3 = Low Output
- 2 = Deviation Alarm
- 1 = Output% High or Tap Change Up
- 0 = Output% Low or Tap Change Down

### SP 17 Reserved

### SP 18 Deviation Band

Units: Percent  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 100.00

### SP 19 Feedback Source

Units: N/A  
 Minimum: 1  
 Maximum: 4  
 Default: 1

Selections: 1 = Internal Feedback Signal (V, I, P)  
 2 = Analog Setpoint 1  
 3 = Analog Setpoint 2  
 4 = Transducer Card

### SP 20 Over-Current Trip Retry Setting

Units: Retry count  
 Minimum: 0  
 Maximum: 3  
 Default: 0

### SP 21-83 Reserved

### SP 84 Hero Mode Enable

Units: N/A (\*\*Voids MFG Warranty when enabled\*\*)  
 Minimum: 0  
 Maximum: 1 (Ignore temperature alarms)  
 Default: 0

Selections: 0 = OFF  
 1 = ON

### SP 85 System Relay Mask

Units: N/A  
Minimum: 0000\_0000\_0000\_0000  
Maximum: 1111\_1111\_1111\_1111  
Default: 0 (0000\_0000\_0000\_0000)

#### Representation:

Bit: 15 = TBD  
14 = TBD  
13 = TBD  
12 = TBD  
11 = TBD  
10 = TBD  
9 = TBD  
8 = TBD  
7 = TBD  
6 = RUN Enable (Switch terminals OPEN)  
5 = Controller is in RUN State  
4 = PLL Lock Loss  
3 = Watchdog Timeout  
2 = Memory Error  
1 = Communications Error  
0 = Processor Error Trap

### SP 86 Reserved

### SP 87 3 Phase Load Current Imbalance Threshold

Units: %  
Minimum: 0  
Maximum: 200  
Default: 0 [Disabled]

### SP 88-89 Reserved

### SP 90 Analog Setpoint 1 Type

Units: N/A  
Minimum: 1  
Maximum: 2  
Default: 2 (Current)

Selections: 1 = Voltage Input  
2 = Current Input

### SP 91 Analog Setpoint 1 Lo Command

Units: V, mA  
Minimum: -5.00  
Maximum: 25.00  
Default: 4.00

### SP 92 Analog Input 1 Lo Output

Units: % (Based on full scale value)  
Minimum: 0.00  
Maximum: 100.00  
Default: 0.00

### SP 93 Analog Input 1 Hi Command

Units: V, mA  
Minimum: -5.00  
Maximum: 25.00  
Default: 20.00

### SP 94 Analog Input 1 Hi Output

Units: & (Based on full scale value)  
Minimum: 0.00  
Maximum: 100.00  
Default: 100.00

### SP 95 Analog Input 2 Type

Units: N/A  
Minimum: 1  
Maximum: 2  
Default: 1 [Voltage]

Selections: 1 = Voltage Input  
2 = Current Input

### SP 96 Analog Input 2 Lo Command

Units: V, mA  
Minimum: -5.00  
Maximum: 25.00  
Default: 0.00

### SP 97 Analog Input 2 Lo Output

Units: % (Based on full scale value)  
Minimum: 0.00  
Maximum: 100.00  
Default: 0.00

### SP 98 Analog Input 2 Hi Command

Units: V, mA  
Minimum: -5.00  
Maximum: 25.00  
Default: 5.00

### SP 99 Analog Input 2 Hi Output

Units: % (Based on full scale value)  
Minimum: 0.00  
Maximum: 100.00  
Default: 100.00

### SP 100 Fieldbus Setpoint [RAM]

Units: NONE (counts)  
Minimum: 0  
Maximum: 64000 (see SP-115 Setpoint Resolution Select)  
Default: 0

**SP 101 Keypad Setpoint [RAM]**

Units: NONE (counts)  
 Minimum: 0  
 Maximum: 64000 (see SP-115 Setpoint Resolution Select)  
 Default: 0

**SP 102 Setpoint 1 Source**

Units: N/A  
 Minimum: 1  
 Maximum: 5  
 Default: 1  
 NOTE: Default = 3 when digital fieldbus option is Modbus TCP, EtherNet/IP, or PROFINET  
 Selections: 1 = Analog Input 1  
 2 = Analog Input 2  
 3 = Fieldbus Setpoint  
 4 = Keypad Setpoint  
 5 = PWM Setpoint

**SP 103 Setpoint 2 Source**

Units: N/A  
 Minimum: 1  
 Maximum: 5  
 Default: 1  
 NOTE: Default = 1 when digital fieldbus option is Modbus TCP, EtherNet/IP, or PROFINET.  
 Default = 4 if Analog Setpoint 2 feature is not enabled  
 Selections: 1 = Analog Input 1  
 2 = Analog Input 2  
 3 = Fieldbus Setpoint  
 4 = Keypad Setpoint  
 5 = PWM Setpoint

**SP 104 Control Setpoint Select**

Units: N/A  
 Minimum: 1  
 Maximum: 2  
 Default: 1  
 Selections: 1 = Setpoint 1 Source  
 2 = Setpoint 2 Source

**SP 105-107 Reserved**

**SP 108 Network Timeout Setpoint**

Units: NONE (counts)  
 Minimum: 0.00  
 Maximum: 64000 (see SP-115 Setpoint Resolution Select)  
 Default: 0

**SP 109 Clear Error Latch [RAM]**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 0  
 Selections: 0 = Do Not Clear  
 1 = Clear the Latch Bits to 0

**SP 110 Clear Fault [RAM]**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 0  
 Selections: 0 = Do Not Clear  
 1 = Clear the Fault State

**SP 111-114: Reserved**

**SP 115 Setpoint Resolution Select**

\*\*\*NOTE: Locked out during RUN state  
 Units: N/A  
 Minimum: 1  
 Maximum: 2  
 Default: 1  
 Selections: 1 = Low = 10000  
 2 = High = 64000

**SP 116 Display Auto Scroll Enable**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 1  
 Selections: 0 = Disabled  
 1 = Enabled

**SP 117 Reserved**

**SP 118 MAC ID (CCI Bus)**

Units: N/A  
 Minimum: 0  
 Maximum: 63  
 Default: 63

**SP 119 Auto Configuration**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 0  
 Selections: 0 = Disabled  
 1 = Enabled

**SP 120-124 Reserved****SP 125 Communications Heartbeat Time**

Units: Seconds  
 Minimum: 0  
 Maximum: 65535  
 Default: 0

**SP 126 IP Address HI**

Units: N/A  
 Minimum: 0  
 Maximum: 65535  
 Default: 65535 [255.255]

**SP 127 IP Address LO**

Units: N/A  
 Minimum: 0  
 Maximum: 65535  
 Default: 65535 [255.255]

**SP 128 Network Timeout Action**

Units: N/A  
 Minimum: 0  
 Maximum: 2  
 Default: 0

## Selections

- 0 = NONE, Continue
- 1 = STOP, Fault Shutdown
- 2 = Use network timeout setpoint (SP-108)

**SP 129 Digital RUN/STOP [RAM]**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: See XP-3401

## Selections

- 0 = STOP
- 1 = RUN

**SP 130 Relay Normal State**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 0

## Selections

- 0 = OFF (De-energized)
- 1 = ON (Energized)

**SP 131 Sync Guard Enable**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 0 (1 if SYNC-GUARD feature is enabled)

## Selections

- 0 = OFF
- 1 = ON

**SP 132 Shorted SCR Check Enable**

Units: N/A  
 Minimum: 0  
 Maximum: 1  
 Default: 1 [0 for Three Phase]

## Selections:

- 0 = OFF
- 1 = ON

**SP 133 GP Digital Input Function**

Units: N/A  
 Minimum: 0  
 Maximum: 2  
 Default: 0

## Selections:

- 0 = NONE
- 1 = SP-104 Control Setpoint Select
- 2 = SP-3 Control Loop

**SP 134-135 Reserved****SP 136 Analog Input 1 Monitor Full Scale Value**

Units: N/A  
 Minimum: 0.0  
 Maximum: 3200.0  
 Default: 1000.0

**SP 137 Analog Input 2 Monitor Full Scale Value**

Units: N/A  
 Minimum: 0.0  
 Maximum: 3200.0  
 Default: 1000.0

**SP 138-139 Reserved****SP 140 Meter 1 Output Type**

Units: N/A  
 Minimum: 1  
 Maximum: 2  
 Default: 1

## Selections:

- 1 = Voltage Output
- 2 = Current Output

**SP 141 Meter 1 Signal Select**

Units: N/A  
 Minimum: 1  
 Maximum: 12  
 Default: 1

- Selection:
- 1 = Load Voltage A
  - 2 = Load Current A
  - 3 = Load Voltage B
  - 4 = Load Current B
  - 5 = Load Voltage C
  - 6 = Load Current C
  - 7 = Load Power
  - 8 = 3 Phase Load Power
  - 9 = Direct Out [SP-146]
  - 10 = Load Resistance A
  - 11 = Load Resistance B
  - 12 = Load Resistance C

**SP 142 Meter 1 Command Lo Value**

Units: %, Based on full scale values  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 0.00

**SP 143 Meter 1 Signal Lo Output**

Units: V, mA  
 Minimum: 0.00  
 Maximum: 20.00  
 Default: 0.00

**SP 144 Meter 1 Command Hi Value**

Units: N/A, Based on Full Scale Values  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 100.00

**SP 145 Meter 1 Signal HI Output**

Units: V, mA  
 Minimum: 0.00  
 Maximum: 20.00  
 Default: 5.00

**SP 146 Meter 1 Out Direct**

Units: V, mA  
 Minimum: 0.00  
 Maximum: 20.00  
 Default: 0.00

**SP 147 Meter 2 Output Type**

Units: N/A  
 Minimum: 1  
 Maximum: 2  
 Default: 1

- Selections:
- 1 = Voltage Output
  - 2 = Current Output

**SP 148 Meter 2 Signal Select**

Units: N/A  
 Minimum: 1  
 Maximum: 12  
 Default: 2

- Selection:
- 1 = Load Voltage A
  - 2 = Load Current A
  - 3 = Load Voltage B
  - 4 = Load Current B
  - 5 = Load Voltage C
  - 6 = Load Current C
  - 7 = Load Power
  - 8 = 3 Phase Load Power
  - 9 = Direct Out [SP-153]
  - 10 = Load Resistance A
  - 11 = Load Resistance B
  - 12 = Load Resistance C

**SP 149 Meter 2 Command Lo Value**

Units: N/A, Based on Full Scale Values  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 0.00

**SP 150 Meter 2 Signal Lo Output**

Units: V, mA  
 Minimum: 0.00  
 Maximum: 20.00  
 Default: 0.00

**SP 151 Meter 2 Command HI Value**

Units: N/A, Based on Full Scale Values  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 100.00

**SP 152 Meter 2 Signal HI Output**

Units: V, mA  
 Minimum: 0.00  
 Maximum: 20.00  
 Default: 5.00

**SP 153 Meter 2 Out Direct**

Units: V, mA  
 Minimum: 0.00  
 Maximum: 20.00  
 Default: 0.00

**SP 154 Load Resistance Maximum  
(for Retransmit scaling)**

Units: Ohm  
 Minimum: 0.00  
 Maximum: 650.00  
 Default: 50.00

**SP 155 PWM Input LO Duty Cycle**

Units: %  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 0.00

**SP 156 PWM Input LO Command Output**

Units: %  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 0.00

**SP 157 PWM Input HI Duty Cycle**

Units: %  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 100.00

**SP 158 PWM Input HI Command Output**

Units: %  
 Minimum: 0.00  
 Maximum: 100.00  
 Default: 100.00

**SP 159 Reserved****SP 160 Transducer MAC ID (CCI Link Server Node)**

Units: N/A  
 Minimum: 0  
 Maximum: 63  
 Default: 0

**SP 161 Transducer Feedback Select**

Units: N/A  
 Minimum: 1  
 Maximum: 10  
 Default: 1

Selection: 1 = V1  
 2 = I1  
 3 = V2  
 4 = I2  
 5 = V3  
 6 = I3  
 7 = P1  
 8 = P2  
 9 = P3  
 10 = 3ph Power

**SP 162-199 Reserved**

# MONITOR PARAMETERS

User List, Range: 200 to 389

## MP 200 Setpoint Selected

Units: N/A  
 Minimum: 1  
 Maximum: 10

Note: S1 = Setpoint 1 source, S2 = Setpoint 2 source

- Representation:
- 1 = S1 Analog Input 1
  - 2 = S1 Analog Input 2
  - 3 = S1 Fieldbus Setpoint
  - 4 = S1 Keypad Setpoint
  - 5 = S1 PWM Setpoint
  - 6 = S2 Analog Input 1
  - 7 = S2 Analog Input 2
  - 8 = S2 Fieldbus Setpoint
  - 9 = S2 Keypad Setpoint
  - 10 = S2 PWM Setpoint

## MP 201 PWM Setpoint

Units: %  
 Minimum: -100.00  
 Maximum: 100.00

## MP 202 Analog Input 1

Units: %, Based on full scale values  
 Minimum: -100.00  
 Maximum: 100.00

## MP 203 Analog Input 1 Command Value

Units: N/A  
 Minimum: -99999.9  
 Maximum: 99999.9

## MP 204 Analog Input 1 Signal

Units: V, mA  
 Minimum: -99.99  
 Maximum: 99.99

## MP 205 Analog Input 2

Units: %, Based on Full Scale Values  
 Minimum: -100.00  
 Maximum: 100.00

## MP 206 Analog Input 2 Command Value

Units: N/A  
 Minimum: -99999.9  
 Maximum: 99999.9

## MP 207 Analog Input 2 Signal

Units: V, mA  
 Minimum: -99.99  
 Maximum: 99.99

## MP 208 Analog Input 1 Monitor Value

Units: N/A  
 Minimum: -9999.9  
 Maximum: 9999.9

## MP 209 Analog Input 2 Monitor Value

Units: N/A  
 Minimum: -9999.9  
 Maximum: 9999.9

## MP 210 Inhibit Alarm Status

Units: N/A  
 Minimum: 0000\_0000  
 Maximum: 1111\_1111

Representation

- Bit:
- MSB 7 = Watchdog Timeout
  - 6 = Memory Error (Not Active)
  - 5 = Not Used
  - 4 = Not Used
  - 3 = Line Phase Loss
  - 2 = PLL Lock Loss
  - 1 = Heatsink Over-Temp
  - LSB 0 = Current Trip

## MP 211 Controller Status

Units: N/A  
 Minimum: 0  
 Maximum: 4

- Representation:
- 0 = Disabled
  - 1 = Enabled
  - 2 = Diagnostic
  - 3 = Calibration
  - 4 = Program Mode

## MP 212: Reserved



**MP 213 Digital I/O Status**

Units: N/A  
 Minimum: 0000\_0000  
 Maximum: 1111\_1111  
 Representation: 0 = open/not active, 1 = closed/active

Bit:

- MSB 7 = Not Used
- 6 = Not Used
- 5 = Not Used
- 4 = Relay
- 3 = Not Used
- 2 = Not Used
- 1 = GP I/O
- LSB 0 = Run/Stop-Reset

**MP 214-217 Reserved****MP 218 AC Line Phase**

Units: Coded: AC Line Phasing for Phases C, B  
 Minimum: 00 = Not Determined  
 Maximum: EE

Phase	Positive	Negative
0 Degrees	1	9
30 Degrees	2	A
60 Degrees	3	B
90 Degrees	4	C
120 Degrees	5	D
150 Degrees	6	E

**MP 219 AC Line Frequency**

Units: Hz  
 Minimum: 0.0  
 Maximum: 99.9

**MP 220 Line Voltage A**

Units: RMS Volts  
 Minimum: 0.0  
 Maximum: 999.9

**MP 221 Load Voltage A**

Units: Volts RMS or AVG  
 Minimum: 0.0  
 Maximum: 999.9

**MP 222 Load Current A**

Units: Amps RMS or AVG  
 Minimum: 0.0  
 Maximum: 9999.9

**MP 223 Load Resistance A**

Units: Ohm  
 Minimum: 0.00  
 Maximum: 999.99

**MP 224 Heatsink Temp A**

Units: °C  
 Minimum: 0.0  
 Maximum: 999.9

**MP 225 Line Voltage B**

Units: RMS Volts  
 Minimum: 0.0  
 Maximum: 999.9

**MP 226 Load Voltage B**

Units: Volts RMS or AVG  
 Minimum: 0.0  
 Maximum: 999.9

**MP 227 Load Current B**

Units: Amps RMS or AVG  
 Minimum: 0.0  
 Maximum: 9999.9

**MP 228 Load Resistance B**

Units: Ohm  
 Minimum: 0.00  
 Maximum: 999.99

**MP 229 Reserved****MP 230 Line Voltage C**

Units: RMS Volts  
 Minimum: 0.0  
 Maximum: 999.9

**MP 231 Load Voltage C**

Units: Volts RMS or AVG  
 Minimum: 0.0  
 Maximum: 999.9

**MP 232 Load Current C**

Units: Amps RMS or Average  
 Minimum: 0.0  
 Maximum: 9999.9

**MP 233 Load Resistance C**

Units: Ohm  
 Minimum: 0.00  
 Maximum: 999.99

**MP 234-244 Reserved****MP 245 Load Power HI (MSW)**

Units: Watts or VA  
 Minimum: 0  
 Maximum: 32767

**MP 246 Load Power LO (LSW)**

Units: Watts or VA  
 Minimum: 0  
 Maximum: 65535

**MP 247 Line Power Factor**

Units: N/A  
 Minimum: 0.00  
 Maximum: 9.99

**MP 248 Controller State**

Units: N/A  
 Minimum: 0  
 Maximum: 3

Representation: 0 = STOP  
 1 = RUN  
 2 = FAULT  
 3 = FAULT RESET

**MP 249 Output Duty Cycle %**

Units: % of Full ON  
 Minimum: 0.0  
 Maximum: 999.9

**MP 250 Setpoint Reference HI (MSW)**

Units: V, A, W  
 Minimum: -99  
 Maximum: 99

**MP 251 Setpoint Reference LO (LSW)**

Units: V, A, W  
 Minimum: 0  
 Maximum: 65535

**MP 252 Feedback HI (MSW)**

Units: V, A, W  
 Minimum: -99  
 Maximum: 99

**MP 253 Feedback LO (LSW)**

Units: V, A, W  
 Minimum: 0  
 Maximum: 65535

**MP 254 Control Loop Error HI (MSW)**

Units: V, A, W  
 Minimum: -99  
 Maximum: 99

**MP 255 Control Loop Error LO (LSW)**

Units: V, A, W  
 Minimum: 0  
 Maximum: 65535

**MP 256 Warning Alarm Status**

Units: N/A  
 Minimum: 0000000000 = 0  
 Maximum: 1111111111 = 1023  
 Representation:

- Bit:
- MSB 9 = Deviation
  - 8 = Output% High or Tap Change Up
  - 7 = Output% Low or Tap Change Down
  - 6 = Low Output
  - 5 = Load Imbalance
  - 4 = Shorted SCR
  - 3 = Heatsink Tmp
  - 2 = Power Limit
  - 1 = Current Limit
  - LSB 0 = Voltage Limit

**MP 257 Load Power Factor**

Units: N/A  
 Minimum: 0.00  
 Maximum: 9.99

**MP 258-304: Reserved**

**MP 305 KWh Consumption HI (MSW) (Not yet activated)**

Units: KWH  
 Minimum: 0  
 Maximum: 32767

**MP 306 KWh Consumption LO (LSW) (Not yet activated)**

Units: KWH  
 Minimum: 0  
 Maximum: 65535

**MP 307 Power-up Count**

Units: Counts  
 Minimum: 0  
 Maximum: 65535

**MP 308 Low Power Count**

Units: Counts  
 Minimum: 0  
 Maximum: 65535

**MP 309 In Service Time HI (MSW)**

Units: Hour  
 Minimum: 0  
 Maximum: 32767

**MP 310 In Service Time LO (LSW)**

Units: Hour  
 Minimum: 0  
 Maximum: 65535

### MP 311-321 Reserved

### MP 322 USB Status

Units: N/A  
Minimum: 0000\_0000  
Maximum: 1111\_1111  
Representation  
Bit:  
MSB 7 = CRC or LRC Error  
6 = Not Used  
5 = Not Used  
4 = Not Used  
3 = Parity Error  
2 = Framing Error  
1 = Receive Buffer Overrun  
LSB 0 = Address received, Message Error encountered

### MP 323 Network Status (CCI Link)

Units: N/A  
Minimum: 0000\_0000  
Maximum: 1111\_1111  
Representation  
Bit:  
MSB 7 = Bus OFF State  
6 = Bus Passive State  
5 = Duplicate MAC ID Detected  
4 = Connection Timeout  
3 = Cyclic Connection Established  
2 = Reserved  
1 = Explicit Connection Established  
LSB 0 = ON Line

### MP 324 Slave Connection Status (CCI Link)

Units: N/A  
Minimum: 0000\_0000  
Maximum: 1111\_1111  
Representation  
Bit:  
MSB 7 = Connection 2 Timeout  
6 = Connection 2 Cyclic or Poll  
5 = Connection 2 Explicit  
4 = Connection 2 Allocated/Connected  
3 = Connection 1 Timeout  
2 = Connection 1 Cyclic or Poll  
1 = Connection 1 Explicit  
LSB 0 = Connection 1 Allocated/Connected

### MP 325 Master Connection Status (CCI Link)

Units: N/A  
Minimum: 0000\_0000  
Maximum: 0000\_1111  
Representation  
Bit:  
MSB 7 = Not used  
6 = Not used  
5 = Not used  
4 = Not used  
3 = Connection 1 Timeout  
2 = Connection 1 Cyclic or Poll  
1 = Connection 1 Explicit  
LSB 0 = Connection 1 Allocated/Connected

### MP 326 Comm Status (Communications Module)

Units: N/A  
Minimum: 0000\_0000  
Maximum: 1111\_1111  
Representation  
Bit:  
MSB 7 = Heartbeat Timer Timeout  
6 = Module Not Responding = Timeout  
5 = Module Reset  
4 = IP Address Query  
3 = Configuration Error  
2 = Configuration Mode  
1 = IP Address Is Set Correctly  
LSB 0 = Communicating (Active)

### MP 327 EE Calibration Bits, Stored HI (MSW)

Units: ADC Bits  
Minimum: -32768  
Maximum: 32767

### MP 328 EE Calibration Bits, Stored LO (LSW)

Units: ADC Bits  
Minimum: 0  
Maximum: 65535

### MP 329 Live Calibration Bits In HI (MSW)

Units: ADC Bits  
Minimum: -32768  
Maximum: 32767

### MP 330 Live Calibration Bits In LO (LSW)

Units: ADC Bits  
Minimum: 0  
Maximum: 65535

### MP 331 Firmware ID

Units: N/A  
Minimum: 0  
Maximum: 32767

**MP 332 Firmware Version**

Units: N/A  
 Minimum: 0.00.01  
 Maximum: 99.99.99

**MP 333 Minor Revision (Appended to Firmware Version)**

Units: N/A  
 Minimum: 01  
 Maximum: 99

**MP 334 Reserved**

**MP 335 Misc Status**

Units: N/A  
 Minimum: 0000\_0000\_0000\_0000  
 Maximum: 1111\_1111\_1111\_1111  
 Representation:

- Bit:
- MSB 15 = Not Used
  - 14 = Not Used
  - 13 = Not Used
  - 12 = Not Used
  - 11 = Not Used
  - 10 = Not Used
  - 9 = Not Used
  - 8 = Not Used
  - 7 = Load Trace is ON, Collecting Data
  - 6 = AC Line Trace is ON, Collecting Data
  - 5 = Load Trace is Enabled, Waiting for Trigger
  - 4 = AC Line Trace is Enabled, Waiting for Trigger
  - 3 = Waiting for the Enter Key during Initialization
  - 2 = USER Unlock, Access Code Successfully Entered
  - 1 = Not Used
  - MSB 0 = MFG Unlock, Access Code Successfully Entered

**MP 336 EEPROM Status**

Units: N/A  
 Minimum: 0000\_0000\_0000\_0000  
 Maximum: 1111\_1111\_1111\_1111  
 Representation:

- Bit:
- MSB 15 = Not Used
  - 14 = Not Used
  - 13 = EEPROM SP Definition Table update required
  - 12 = EEPROM is write-protected
  - 11 = Backup User SP V-table checksum failure
  - 10 = Not Used
  - 9 = Not Used
  - 8 = Repair record checksum failure
  - 7 = Error Code Record checksum failure
  - 6 = MFG Data Table checksum failure
  - 5 = Calibration Data Table checksum failure
  - 4 = CAL Parameter V-Table checksum failure
  - 3 = MFG SP V-Table checksum failure
  - 2 = User SP V-Table checksum failure
  - 1 = Blank, Initialization required
  - LSB 0 = Read/Write failure

**MP 337-341 Reserved**

**MP 342 AC Line Status**

Units: N/A  
 Minimum: 0000\_0000  
 Maximum: 1111\_1111  
 Representation:

- Bit:
- MSB 7 = Feedback ADC Timing OK
  - 6 = Control Loop Timing OK
  - 5 = Phase Rotation 3-2-1 (0 = Phase Rotation 1-2-3)
  - 4 = Phase Rotation Determined (Three Phase)
  - 3 = Not Used
  - 2 = Line Voltage C Present
  - 1 = Line Voltage B Present
  - LSB 0 = Line Voltage A Present

### MP 343 Load Status

Units: N/A  
Minimum: 0000\_0000  
Maximum: 1111\_1111

Representation:

Bit:  
MSB 7 = Not Used  
6 = Open Load C  
5 = Open Load B  
4 = Open Load A  
3 = Not Used  
2 = Shorted SCR C  
1 = Shorted SCR B  
LSB 0 = Shorted SCR A

### MP 344 Zone Status

Units: N/A  
Minimum: 0000\_0000\_0000  
Maximum: 0000\_0001\_0000

Representation:

Bit:  
MSB 15 = Not Used  
14 = Not Used  
13 = Not Used  
12 = Not Used  
11 = Not Used  
10 = Not Used  
9 = Not Used  
8 = Not Used  
7 = Not Used  
6 = Not Used  
5 = Not Used  
4 = Zone 1: (0 = Not at Setpoint,  
1 = at Setpoint)  
3 = Not Used  
2 = Not Used  
1 = Not Used  
LSB 0 = Zone 1: (0 = Normal, 1 = FAULT)

### MP 345 Error Latch

Units: N/A  
Minimum: 0000\_0000\_0000\_0000  
Maximum: 1111\_1111\_1111\_1111

Representation:

Bit:  
MSB 15 = (0) Reserved  
14 = (0) Reserved  
13 = (0) Reserved  
12 = (0) Reserved  
11 = (0) Reserved  
10 = (0) Reserved  
9 = (0) Reserved  
8 = (0) Reserved  
7 = (0) Reserved  
6 = (0) Reserved  
5 = (0) Reserved  
4 = ADC/DMA Feedback "Re-Sync"  
performed  
3 = AC Line "Re-Sync" performed  
2 = AC Line Frequency check failure  
1 = Phase Loss or Missing AC Line  
cycle detected  
LSB 0 = AC Line Phase Lock Loss

### MP 346 Alarms

Units: N/A  
Minimum: 0000\_0000\_0000\_0000  
Maximum: 0111\_1111\_1111\_1111 = 32767

Representation:

Bit:  
MSB 15 = Not Used  
14 = Watchdog Timeout  
13 = Output% High or Tap Change Up  
12 = Output% Low or Tap Change  
Down  
11 = Line Phase Loss  
10 = PLL Lock Loss  
9 = Heatsink Overtemp  
8 = Current Trip  
7 = Deviation  
6 = Low Output (at MAX Output)  
5 = Load Imbalance  
4 = Shorted SCR  
3 = Heatsink Close to Overtemp  
2 = Power Limiting  
1 = Current Limiting  
LSB 0 = Voltage Limiting

### MP 347 Reserved

### MP 348 Network Message Error Count (CCI Link)

Units: Counts  
Minimum: 0  
Maximum: 65535

**MP 349 Firmware Update Code**

Units: N/A  
Minimum: 0  
Maximum: 65535

**MP 350-369 Reserved****MP 370 Network Heartbeat Timer**

Units: Seconds  
Minimum: 0  
Maximum: 65535

**MP 371-378: Reserved****MP 379 Bootloader Version**

Units: N/A  
Minimum: 1.00  
Maximum: 99.99

**MP 380 PGA Gain AC Line**

Units: N/A  
Minimum: 1  
Maximum: 32

**MP 381 PGA Gain Load Voltage**

Units: N/A  
Minimum: 1  
Maximum: 32

**MP 382 Load Voltage Range**

Units: N/A  
Minimum: 1  
Maximum: 3

**MP 383-384 Reserved****MP 385 PGA Gain Load Current**

Units: N/A  
Minimum: 1  
Maximum: 32

**MP 386-388 Reserved****MP 389 PGA Gain Message Count**

Units: PGA Gain Update Message Count per  
AC Line 1/2 Cycle  
Minimum: 0  
Maximum: 65535

# SPECIAL PARAMETERS

User List, Range: 3400 to 3401

## XP 3400 Digital RUN/STOP Configuration

Units: N/A  
Minimum: 0  
Maximum: 2  
Default: 1

Selections: 0 = Never use Digital RUN/Stop, use switch  
1 = Analog use switch only, Digital use Dig Sys RUN/Stop and switch  
2 = Always use Digital RUN/Stop and switch

## XP 3401 Digital RUN/Stop Power-Up Default

Units: N/A  
Minimum: 0  
Maximum: 1  
Default: 0

Selections: 0 = STOP  
1 = RUN

## XP 3402 Output% High Alarm Threshold

Units: %  
Minimum: 0.00  
Maximum: 100.00  
Default: 100.00

## XP 3403 Output% Low Alarm Threshold

Units: %  
Minimum: 0.00  
Maximum: 100.00  
Default: 0.00

## XP 3410 High/Low Out% Alarm Display Text Select

Units: N/A  
Minimum: 1 "Out% HIGH" / "OUT% LOW"  
Maximum: 2 "TAP CHANGE UP" / "TAP CHANGE DOWN"  
Default: 100.00