

# ProcessDefender™

PROCESS LOAD MONITOR



Operating Manual (EN)



**IMPORTANT NOTE:** For the most up-to-date version of this manual, please visit [www.h2flow.net/product-literature](http://www.h2flow.net/product-literature)

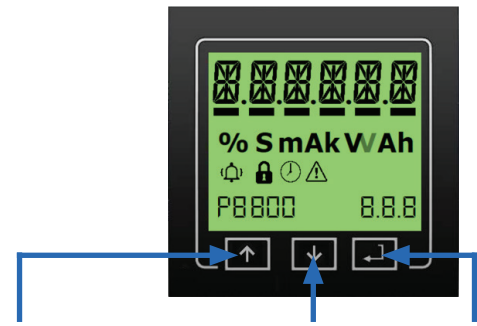


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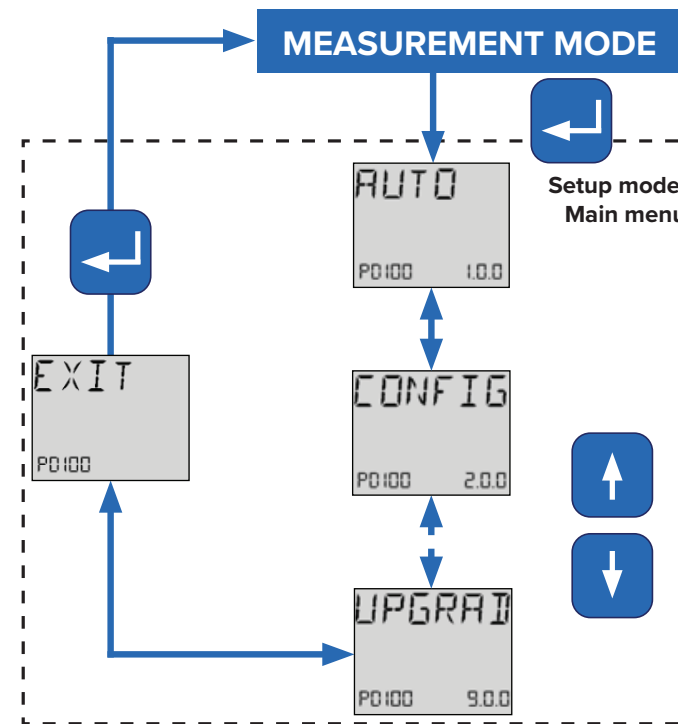
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## 1. button functions



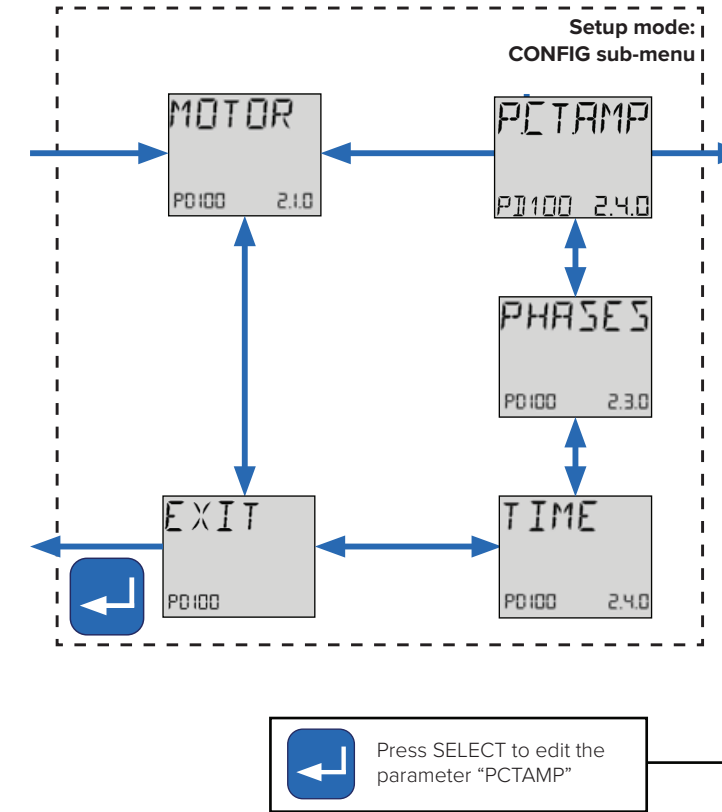
- |  |  |   |
|--|--|---|
| <p>Up navigation button</p> <ul style="list-style-type: none"> <li>Navigation of menus.</li> <li>Adjustment of configurable item.</li> </ul> | <p>Down navigation button</p> <ul style="list-style-type: none"> <li>Navigation of menus.</li> <li>Adjustment of configurable item.</li> </ul> | <p>Select button</p> <ul style="list-style-type: none"> <li>Hold for 3 seconds to enter setup menu.</li> <li>Press to enter/confirm menu item.</li> </ul> |
|--|--|---|

## 2. how to use the menu



### NOTES:

- Press and hold SELECT to enter the Setup menu.
- Navigate menu using UP and DOWN.



## 3. annunciators table

Percentage	<b>%</b>	Seconds	<b>S</b>	Milli Amps	<b>mA</b>
Kilowatts	<b>kW</b>	Volt Amps	<b>VA</b>	Kilo Volt Amps	<b>k VA</b>
Voltage	<b>V</b>	Current	<b>A</b>	Parameter Lock	<b>🔒</b>
Frequency	<b>Hz</b>	Horsepower	<b>HP</b>	Warning	<b>⚠️</b>
Timer Active	<b>🕒</b>	Alarm Symbol	<b>🔔</b>	Hours	<b>h</b>

**IMPORTANT PROGRAMMING NOTE:** When programming or re-programming any parameters of the ProcessDefender unit, the alarms are temporarily disabled until exiting the configuration menu.

## 4. quick start configuration

If your application doesn't require highly customized settings of your ProcessDefender, you may choose to configure only the parameters below in order to setup and begin using your ProcessDefender more quickly.

Item to configure	Display I.D.	Default settings
Rated motor power unit	2.2.1	KW
Rated motor power	2.2.2	2.2
Rated CT	2.4.0	5 A
CT Turns	2.5.1	1
Number of phases	2.6.1	3

## 5. menu index

Display I.D.	Function	Display text	Range	Default	Symbol
1	2	3			
		Measured power in % of rated power	0-125		<b>%</b>
		Measured power in KW	0-745		<b>kW</b>
		Measured power HP	0-999		<b>HP</b>
		Measured line voltage	90-760		<b>V</b>
		Measured current	0.00-999		<b>A</b>
1.0.0		Autoset	"AUTO"		
	1.1.0	Choose auto setup setting	"A.SET"		
		1.1.1	Select auto set mode	"BOTH", "OVER" or "UNDER"	"BOTH"

Display I.D.	Function	Display text	Range	Default	Symbol
	1.1.2	Apply Autoset	"YES" or "NO"	"NO"	
2.0.0		Configuration	"CONFIG"		
	2.1.0	Parameter lock/unlock	"PAR. LOK"		
	2.1.1	Parameter lock/unlock code	000-999	369	<b>🔒</b>
	2.2.0	Rated motor power	"MOTOR"		
	2.2.1	Choose KW or HP	"KW" or "HP"	"KW"	<b>kW HP</b>
	2.2.2	Configure Rated motor power		0.1-745	<b>kW</b>
	2.3.0	Rated motor Amps	"R.M AMP"		
	2.3.1	Configure rated motor amps		0.1-999	<b>A</b>
	2.4.0	Primary CT current	"P.CT. AMP"		
	2.4.1	Configure primary CT current		5-1000	<b>A</b>
	2.4.2	Under current CT alarm disable	"YES" or "NO"	"NO"	
	2.5.0	Number of turns of the primary wire through the CT	"T.P CT"		
	2.5.1	Turns value		1-1255	1
	2.6.0	Number of phases	"PHASES"		
	2.6.1	Configure number of phases	"1" or "3"	"1" or "3"	3
	2.6.2	Number of CT's	"1" or "3"	"1" or "3"	1
	2.7.0	Set time and date	"TIME"		

Display I.D.	Function	Display text	Range	Default	Symbol
	2.7.1	Time		0-24Hr	00.00.00
	2.7.2	Date		Day, Mo., Yr.	01.01.20
	2.8.0	Motor overload protection I2t Settings	"M.O.I2C"		
	2.8.1	I2t over current value		0-999	5.6 <b>A</b>
	2.8.2	I2t time set		0-60	1 <b>S</b>
	2.9.0	Display scroll items	"LCD.VAL"		
	2.9.1	Autoscroll of all values	"YES" or "NO"	"YES"	
	2.9.2	Show measured value only: measured power in % or rated power, measured power in KVA, measured power HP, measured line voltage or measured current	"P PCT", "P KW", "P HP", "VOLT" or "AMPT"		"P PCT"
3.0.0		Alarm 1 settings	"ALARM.1"		
	3.1.0	Monitor function	"M.FUNC"		
	3.1.1	Configure	"OVER", "UNDER", "BOTH" or "OFF"	"OVER"	
	3.2.0	Monitor source	"SOURCE"		
	3.2.1	Configure source as percent of motor rated input power, measure input power in KW, measured input power HP.	"P PCT", "P KW", "P HP" or "VOLT"		"P PCT"
	3.3.0	Max main alarm	"MAX AI"		
	3.3.1	Configure max trigger point, as percent of motor rated input power.	"MAX T"	0-125	100 <b>%</b>

Display I.D.	Function	Display text	Range	Default	Symbol
3.3.1	Configure max trigger point, as measured input power in KW.		0-745	2	<b>kW</b>
3.3.1	Configure max trigger point, as measured input power HP.		0-999	3	<b>HP</b>
3.3.1	Configure max trigger point, as voltage		0-600		<b>V</b>
3.3.2	Configure alarm MAX margin %		0-20	16	<b>%</b>
3.4.0	Min trigger point	"MIN A1"			
3.4.1	Configure min trigger point, as percent of motor rated input power.	"MIN T"	0-125	0	<b>%</b>
3.4.1	Configure min trigger point, as measured input power in KW.		0-745	0	<b>kW</b>
3.4.1	Configure min trigger point, as measured input power HP.		0-20	0	<b>HP</b>
3.4.1	Configure min trigger point voltage		0-600		<b>V</b>
3.4.2	Configure alarm MIN margin %		0-100	16	<b>%</b>
3.5.0	Start delay	"ST DEL"			
3.5.1	Configure start delay		1-500	2	<b>S</b>
3.6.0	Response delay	"RES.DEL"			
3.6.1	Configure response delay overload	"OVER"	0.1-999	0.5	<b>S</b>
3.6.2	Configure response delay underload	"UNDER"	0.1-999	0.5	<b>S</b>
3.7.0	Alarm 1 latch	"LAT.RES"			

Display I.D.	Function	Display text	Range	Default	Symbol
3.7.1	Configure latch reset	"ON" or "OFF"		"OFF"	
3.8.0	Relay assignment for Alarm 1	"A1 RLY"			
3.8.1	Assign relay 1	"YES" or "NO"		"YES"	
3.8.2	Assign relay 2	"YES" or "NO"		"NO"	
3.8.3	Assign relay 3	"YES" or "NO"		"NO"	
4.0.0	Alarm 2 settings	"ALARM.2"			
4.1.0	Monitor function	"M.FUNC"			
4.1.1	Configure	"OVER", "UNDER", "BOTH" or "OFF"		"UNDER"	
4.2.0	Monitor source	"SOURCE"			
4.2.1	Configure source as percent of motor rated input power, measured input power in KW, measured input power HP.	"P PCT", "P KW", "P HP" or "VOLT"		"P PCT"	
4.3.0	Max main alarm	"MAX A2"			
4.3.1	Configure max trigger point, as percent of motor rated input power.	"MAX T"	0-125	100	<b>%</b>
4.3.1	Configure max trigger point, as measured input power in KW.	"MAX T"	0-745	2	<b>kW</b>
4.3.1	Configure max trigger point, as measured input power in HP.	"MAX T"	0-999	3	<b>HP</b>
4.3.1	Configure max trigger point as voltage.	"MAX T"	0-600		<b>V</b>
4.3.1	Configure max alarm margin %.	"MAX T"	0-20	8	<b>%</b>
4.4.0	Min trigger point	"MIN A2"			

Display I.D.	Function	Display text	Range	Default	Symbol
4.4.1	Configure min trigger point, as percent of motor rated input power.	"MIN T"	0-125	0	<b>%</b>
4.4.1	Configure min trigger point, as measured input power in KW.	"MIN T"	0-745	0	<b>kW</b>
4.4.1	Configure min trigger point, as measured input power HP.	"MIN T"	0-999	0	<b>HP</b>
4.4.1	Configure min trigger point voltage.	"MIN T"	0-600		<b>V</b>
4.4.2	Configure min alarm margin	"MIN T"	0-20	8	<b>%</b>
4.5.0	Start delay	"ST.DEL"			
4.5.1	Configure start delay		1-500	2	<b>S</b>
4.6.0	Response delay	"RES.DEL"			
4.6.1	Configure response delay overload		0.1-999	0.5	<b>S</b>
4.6.2	Configure response delay underload		0.1-999	0.5	<b>S</b>
4.7.0	Alarm 2 latch	"LAT.RES"			
4.7.1	Configure latch reset	"ON" or "OFF"		"OFF"	<b>S</b>
4.8.0	Relay assignment for Alarm 2	"A2 RLY"			
4.8.1	Assign relay 1	"YES" or "NO"		"NO"	
4.8.2	Assign relay 2	"YES" or "NO"		"YES"	
4.8.3	Assign relay 3	"YES" or "NO"		"NO"	
5.0.0	Alarm 3 setting	"ALARM.3"			
5.1.0	Monitor function	"M.FUNC"			
5.1.1	Configure	"OVER", "UNDER", "BOTH" or "OFF"		"OFF"	
5.2.0	Monitor source	"SOURCE"			

Display I.D.	Function	Display text	Range	Default	Symbol
5.2.1	Configure source as percent of motor rated input power, measured input power in KW, measured input power HP.	"P PCT", "P KW", "P HP" or "VOLT"		"P PCT"	
5.3.0	Max main alarm	"MAX.A3"			
5.3.1	Configure max trigger point, as percent of motor rated input power.		0-125	100	<b>%</b>
5.3.1	Configure max trigger point, as measured input power in KW.		0-745	2	<b>kW</b>
5.3.1	Configure max trigger point, as measured input power HP.		0-999	3	<b>HP</b>
5.3.1	Configure max trigger point as voltage.		0-600		<b>V</b>
5.3.2	Configure max alarm margin %.		0-100	16	<b>%</b>
5.3.3	Load amps multiplier		6-12	6	
5.4.0	Min trigger point	"MIN.A3"			
5.4.1	Configure min trigger point, as percent of motor rated input power.		0-125	0	<b>%</b>
5.4.1	Configure min trigger point, as measured input power in KW.		0-745	0	<b>kW</b>
5.4.1	Configure min trigger point as measured input power HP.		0-999	0	<b>HP</b>
5.4.1	Configure min trigger point voltage.		0-600		<b>V</b>
5.4.2	Configure min alarm margin		0-100	8	<b>%</b>
5.5.0	Start delay	"ST.DEL"			
5.5.1	Configure start delay		1-500	2	<b>S</b>
5.6.0	Response delay	"RES.DEL"			
5.6.1	Configure response delay overload		0.1-999	0.5	<b>S</b>

Display I.D.	Function	Display text	Range	Default	Symbol
5.6.2	Configure response delay underload		0.1-999	0.5	<b>S</b>
5.6.3	Configure response delay phase asymmetry		10-900	10	<b>S</b>
5.6.4	Configure response delay locked motor protection		1-10	2	<b>S</b>
5.7.0	Alarm 3 latch	"LAT.RES"			
5.7.1	Configure latch reset	"ON" or "OFF"		"OFF"	
5.8.0	Relay assignment for Alarm 3	"A3.RLY"			
5.8.1	Assign relay 1	"YES" or "NO"		"NO"	
5.8.2	Assign relay 2	"YES" or "NO"		"NO"	
5.8.3	Assign relay 3	"YES" or "NO"		"YES"	
6.0.0	Inputs / outputs	"IN/OUT"			
6.1.0	Digital input	"DIG IN"			
6.1.1	External reset ON/OFF auto set (setting as auto set will disable alarm resets).	"ON" or "OFF"		"OFF"	
6.1.2	External reset ON/OFF Alarm 1.	"ON" or "OFF"		"OFF"	
6.1.3	External reset ON/OFF Alarm 2.	"ON" or "OFF"		"OFF"	
6.1.4	External reset ON/OFF Alarm 3.	"ON" or "OFF"		"OFF"	
6.2.0	Analog output	"A OUTS"			
6.2.1	Configure Analog output source (measured power in percent of rated power, measured power in KW, measured power in HP, measured line voltage or measured current).	"P PCT", "P KVA", "P HP"		"P PCT"	
6.2.2	Configure range 4mA		0-999	0	<b>%</b>

Display I.D.	Function	Display text	Range	Default	Symbol
6.2.3	Configure range 20mA		0-999	100	<b>%</b>
6.3.0	Modbus	"MODBUS"			
6.3.1	Configure Modbus baud rate	"4800", "9600", "14400", "19200", "24000", "28800", "33600", "38400", "43200", "48000", "52800", "57600", "62400", "67200", "72000", "76800", "81600", "86400", "91200", "96000", "100800", "105600", "110400", "115200", "120000", "124800", "129600", "134400", "139200", "144000", "148800", "153600", "158400", "163200", "168000", "172800", "177600", "182400", "187200", "192000"		"9600"	
6.3.2	Configure Modbus parity, 2 stop - no parity, 1 stop - even parity or 1 stop - odd parity	"2S-NP", "1S-EP" or "1S-OP"		"2S-NP"	
6.3.3	Configure Modbus I.D.	0-255		10	
6.4.0	Relay 1	"RELAY.1"			
6.4.1	Configure as normally closed or normally open	"NC" or "NO"		"NC"	
6.5.0	Relay 2	"RELAY.2"			
6.5.1	Configure as normally closed or normally open	"NC" or "NO"		"NO"	
6.6.0	Relay 3	"RELAY.3"			
6.6.1	Configure as normally closed or normally open	"NC" or "NO"		"NC"	
7.0.0	Advanced settings	"ADV. SET"			

Display I.D.	Function	Display text	Range	Default	Symbol
7.1.0	Stall reverse	"STALL.R"			
7.1.1	Set stall reverse (overrides relay 1 & 2 function).	"ON" or "OFF"		"OFF"	
7.2.0	Pause/reverse time	"P.R.TIME"			
7.2.1	Pause time configure		0-999s	5	<b>S</b>
7.3.0	Limit motor starts per hour	"L.M.S"			
7.3.1	Limit motor starts per hour enable	"ON" or "OFF"		"OFF"	
7.3.2	Limit motor starts per hour value		0-60	"10"	
7.3.3	Number of starts per hour		0-60		
7.6.0	Motor runtime	"M.RUN.T"			
7.6.1	Total motor runtime		0-999999		<b>h</b>
7.6.2	Reset motor runtime	"RUN" or "RESET"		"RUN"	
8.0.0	System settings	"SYSTEM"			
8.1.0	Factory reset	"F RESET"			
8.1.1	Select user or reset	"USER" or "DEF"		"DEF"	
8.2.0	HMI firmware	"HMI.INF"			
8.2.1	Displays HMI firmware REV	"R04"			
8.2.2	Displays HMI COMMS API REV	"1"			
8.3.0	Sensor serial number	"SEN.INF"			
8.3.1	Sensor serial number	"yyyy"			
8.3.2	Sensor key I.D.	"xx"			
9.0.0	Upgrade	"UPGRAD"			

Display I.D.	Function	Display text	Range	Default	Symbol
9.1.0	Enter passcode	"ENT.KEY"			
9.1.1	Upgrade code part 1	"yyyy"			
9.1.2	Upgrade code part 2	"yyyy"			
9.1.3	Upgrade code part 3	"yyyy"			
9.1.4	Upgrade code part 4	"yyyy"			
9.1.5	Upgrade code feature index	"xx"			6 number and letter combination
EXIT	EXIT	EXIT	Exit screen	"EXIT"	
ALARM Screen			Under voltage, switch off the supply	"UNDER"	

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