

ENTRON

INTRODUCING THE SINGLE PHASE AC CASCADE RESISTANCE WELDING CONTROL

EN6041

ENLINK 6041

Standard with every control



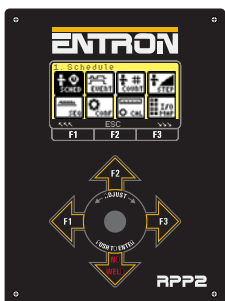
**USB and ETHERNET
INTERFACES**

USB FLASH MEMORY



For STORAGE and BACKUP of
SCHEDULE DATA and WELD LOG

**INTUITIVE OPERATOR
INTERFACE**

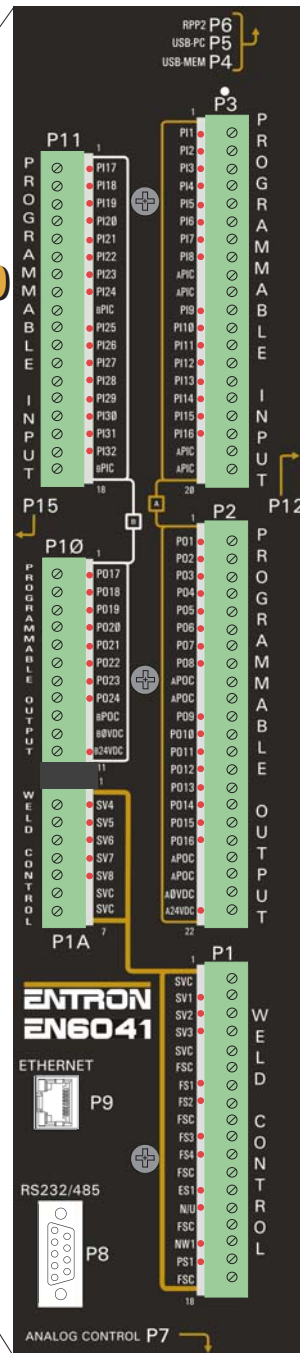
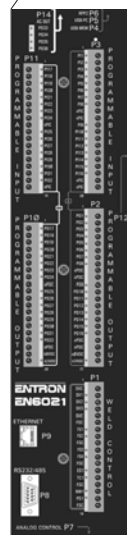


RPP2

128 x 64 Dots Graphic
Display with 8 lines of text
Joy Stick Data Entry
Simple Programming
Detachable/Hand Held

EN6041 is part of
the EN6000 Series family
(EN6001....EN6041)

The
EN6000
Series
is
EXPANDING



FEATURES

- 100 Programs
- 2-8 Welding Contactors
- 300A, 1200A, 1800A, 2200A, 3200A and External Contactor firing
- Windows: Current High, Low and Pre limits
- Advanced Error Outputs
- Weld Log / Error Log
- Hardware status indicators
- Force control and force sensing
- Current and Force Stepper with Presets
- Event Outputs
- Integrated Sequencer with diverse instruction set
- Shorted contactor detection

I/O

- 8) inputs and 8) outputs dedicated to weld control
- 24 VDC flexible I/O (40 in/24 out); some mapable between weld functions, events, simple I/O sequences and remote PLC I/O; 32 inputs and 24 outputs available to sequencer
- 24V Outputs have current limited outputs with short circuit protection
- 2) each 4-20 mA or 0-10V Analog inputs and outputs for sequencer and force control

PLC Compatibility

- PLC compatible via EtherNet/IP or MODBUS Function Code 04, 16 and 43 through low-cost serial (RS232 and RS485) or ethernet interfaces
- Use weld control I/O for remote PLC I/O
- Map weld control functions for PLC control
- Design custom operator interfaces
- Read and write Schedule and Control data
- Interface to other force systems
- Read weld logs remotely

**DESIGNED, BUILT,
SUPPORTED IN THE USA**

INTRODUCING ENLINK 6041

SINGLE USER (USB) and NETWORK (ETHERNET)
PROGRAMMING SOFTWARE

Standard with every control

SCHEDULE

The SCHEDULE interface displays three weld schedules with adjustable parameters:

- Weld 0:** Repetition Mode, Phase shift heat, Constant Current, Current1, Pulse width1, Current2, Pulse width2, Forward/Reverse, Current offset.
- Weld 1:** Repetition Mode, Phase shift heat, Constant Current, Current1, Pulse width1, Current2, Pulse width2, Forward/Reverse, Current offset.
- Weld 2:** Repetition Mode, Phase shift heat, Constant Current, Current1, Pulse width1, Current2, Pulse width2, Forward/Reverse, Current offset.

EVENT

The EVENT interface shows a table of events:

Event	Output Channel	State	Interval	Delay(cycles)
1	POB	On	Sequence	0
2	POB	Off	Hold	30
3	Disable	Off	Sequence	0
4	Disable	Off	Sequence	0

COUNTER

The COUNTER interface includes:

- Part Counter (PCTR):** Part count done, Max part count (60000).
- Weld Counter (WCTR):** Weld count done, Welds per part (1).
- Counter enable checkbox.

STEPPER

The STEPPER interface features a table of stepper steps and a graph:

Step	Count	Heat (%)	Current (mA)	Force (%)
1	100	7	0.24	0
2	100	4	0.48	0
3	100	11	0.72	0
4	100	14	0.94	0
5	100	17	1.16	0
6	100	20	1.34	0
7	100	23	1.52	0
8	100	26	1.68	0
9	100	28	1.84	0
10	100	30	2.00	0

Graph: Heat (%) vs. Count (0-100). Shows a linear increase in heat from 7% to 30%.

CONFIG

The CONFIG interface includes settings for:

- User schedule, Max. current offset, AC line voltage monitor, AC line voltage monitor, Max voltage, Min voltage, Analog units, Pressure control, RF degree delay, Half cycle mode, Blanking, Cylinders inside diameter, Background pressure, Water server delay, Control ID number, Pendant display return.

I/O MAP

The I/O MAP interface shows:

- Function Source:** List of functions like PCTR RST, Error Reset, T11, etc.
- Expansion Source:** List of expansion functions like PCTR RST, WCTR RST, etc.
- Programmable Output (PO) function:** List of PO functions like EOS, Not ready, Trip stress, etc.

ERROR MAP

The ERROR MAP interface displays a table of error codes:

Error	Output port	Error	Output port
1. Calibration error	No output	2. Calibration error	No output
3. Sequence error	No output	4. Sequence error	No output
5. Event error	No output	6. Counter error	No output
7. Stepper error	No output	8. CPU error	No output
9. E stop error	No output	10. TCU(Contact) error	No output
11. P1-NM error	No output	12. P2 error	No output
13. CPU reset	No output	14. 2nd stage error	No output
15. P sensor error	No output	16. Interlock error	No output
17. High force	No output	18. Low force	No output
19. High current 1	No output	20. Low current 1	No output
21. High current 2	No output	22. Low current 2	No output
23. High line voltage	No output	24. Low line voltage	No output
25. PCTR counter end	No output	26. WCTR counter end	No output
27. High pulse width 1	No output	28. Low pulse width 1	No output
29. High pulse width 2	No output	30. Low pulse width 2	No output
31. Trip stress Pre-warm	No output	32. AWC error	No output
33. Power on with START's closed	No output	34. 2-PAL error	No output
35. PWR(Pendant too walt)	No output	36. T11 Transformer error	No output
37. Safety relay error	No output	38. No 24V for CPU (E) error	No output
39. No 24V for expansion board	No output	40. Reserved	No output
41. Reserved	No output	42. Reserved	No output
43. Reserved	No output	44. Reserved	No output
45. Reserved	No output	46. Reserved	No output
47. Reserved	No output	48. Reserved	No output
49. Reserved	No output	50. Low force pre-warm	No output

SEQUENCER

The SEQUENCER interface shows a sequence of steps:

Line	Statement	Value	Statement	Value	Status	OF
1	Output	POB	On	0	Prog-0	0
2	Spot-weld with Schedule	0	0	0	Prog-1	0
3	Output	POB	Off	0	Prog-2	0
4	Output	PO10	On	0	Prog-3	0
5	Spot-weld with Schedule	0	0	0	Prog-4	0
6	Output	PO10	Off	0	Prog-5	0
7	Output	PO11	On	0	Prog-6	0
8	Spot-weld with Schedule	0	0	0	Prog-7	0
9	Output	PO11	Off	0	Prog-8	0
10	Output	PO12	On	0	Prog-9	0
11	Spot-weld with Schedule	0	0	0	Prog-10	0
12	Output	PO12	Off	0	Prog-11	0
13					Prog-12	0
14					Prog-13	0
15					Prog-14	0
16					Prog-15	0
17					Prog-16	0
18					Prog-17	0
19					Prog-18	0
20					Prog-19	0
21					Prog-20	0
22					Prog-21	0
23					Prog-22	0
24					Prog-23	0
25					Prog-24	0
26					Prog-25	0
27					Prog-26	0
28					Prog-27	0
29					Prog-28	0
30					Prog-29	0
31					Prog-30	0
32					Prog-31	0
33					Prog-32	0
34					Prog-33	0
35					Prog-34	0
36					Prog-35	0
37					Prog-36	0
38					Prog-37	0
39					Prog-38	0
40					Prog-39	0
41					Prog-40	0
42					Prog-41	0
43					Prog-42	0
44					Prog-43	0
45					Prog-44	0
46					Prog-45	0
47					Prog-46	0
48					Prog-47	0
49					Prog-48	0
50					Prog-49	0
51					Prog-50	0

CALIBRATION

The CALIBRATION interface includes:

- Torque Sensitivity: 150 mV/A
- Max secondary current: 36 mA
- Turns ratio: 30:1
- AC Line Voltage Setting: 480 V
- FT1 force calibration:** 4.0 mA → 0.0 LB, 30.0 mA → 7650.0 LB, Zero= 4 mA, Max= 7650 LB.
- FT2 force calibration:** 4.0 mA → 0.0 LB, 30.0 mA → 7650.0 LB, Zero= 4 mA, Max= 7650 LB.

WELD LOG

The WELD LOG interface shows a table of weld records:

Record	Seq.	Counter	Force	Current1	Heat1	Current2	Heat2	Time	Date	Container
3043	40	76	0	0	0	2.26	25	13:56:39	2/26/2013	1
3042	61	76	0	0	2.39	26	13:56:36	2/26/2013	1	
3041	60	74	0	0	2.16	23	13:56:26	2/26/2013	1	
3040	40	74	0	0	2.28	25	13:56:28	2/26/2013	1	
3039	21	73	0	0	2.79	30	13:56:26	2/26/2013	1	
3038	20	72	0	0	2.29	26	13:56:25	2/26/2013	1	
3037	40	72	0	0	2.27	26	13:56:18	2/26/2013	1	
3036	40	71	0	0	2.27	26	13:56:16	2/26/2013	1	
3035	40	70	0	0	2.27	26	13:56:15	2/26/2013	1	
3034	40	69	0	0	2.28	26	13:56:11	2/26/2013	1	
3033	12	68	0	1.39	15	3.12	33	13:55:52	2/26/2013	4
3032	12	67	0	1.38	15	3.12	33	13:55:50	2/26/2013	4
3031	12	66	0	1.39	15	3.12	33	13:55:49	2/26/2013	4
3030	12	65	0	1.4	15	3.13	33	13:55:24	2/26/2013	4
3029	11	64	0	0	4.23	44	13:54:53	2/26/2013	3	
3028	11	63	0	0	4.23	44	13:54:52	2/26/2013	3	
3027	11	62	0	0	4.24	44	13:54:49	2/26/2013	3	
3026	10	61	0	0	3.9	41	13:54	2/26/2013	2	
3025	10	60	0	0	3.9	41	13:54:6	2/26/2013	2	
3024	10	59	0	0	3.88	41	13:53:57	2/26/2013	2	

ERROR LOG

The ERROR LOG interface shows a table of error records:

Record	Counter	Error	Time	Date
21	78	Low current 2	14:5:48	2/26/2013
20	77	High current 2	14:3:48	2/26/2013
19	76	E stop error	14:1:35	2/26/2013
18	76	P1-NM error	14:1:30	2/26/2013
17	76	P1-NM error	14:1:24	2/26/2013
16	76	E stop error	14:1:18	2/26/2013
15	76	T11 Transformer error	14:1:13	2/26/2013
14	68	PWR(Pendant No-weld)	13:56:5	2/26/2013
13	68	PWR(Pendant No-weld)	13:56:22	2/26/2013

HARDWARE

The HARDWARE interface shows:

- Main Control Input: P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50.
- Expansion Input (PI): P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50.
- Output Port (PO): P01, P02, P03, P04, P05, P06, P07, P08, P09, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50.
- Expansion Output (EO): P01, P02, P03, P04, P05, P06, P07, P08, P09, P10, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P37, P38, P39, P40, P41, P42, P43, P44, P45, P46, P47, P48, P49, P50.
- Values Output: Analog Input (0-5.0 mA), Analog Output (0-5.0 mA), AC Line Voltage (480 V).