Boiler Sequence Control
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I1 (Master Thermostat Switch)

Boilers ON Seq Timers

Boilers OFF Seq Timers

Requirements:

Ensure that four boilers do not start up simultaneously.
The start-up control for the boilers is enabled via a master thermostat switch.

LOGO! Solution:

- Each of the four boilers has two power settings.
- Each power setting is assigned to an output (Q1 to Q8).
- The master thermostat is connected to I1.
- The thermostat is used to set the temperature at which the boiler is to be switched on and off.
- If the temperature falls below 70°C, the first power setting of boiler 1 (Q1) is activated for heating via I1.
- Five seconds later, power setting 2 of boiler 1 (Q2) is activated.
- Provided that the final temperature has not been reached, a further power setting (Q3 to Q8) is enabled for reheating at intervals of 5 seconds.
- When the final temperature of 80°C is reached, the boilers are switched off in sequence starting with power setting 1 and 2 of boiler 1, then after 5 seconds boiler 2, etc.
- When the temperature falls, the boilers are activated again, starting with Q1.

Note:

All timers changed from minutes to seconds for testing purposes - change back to minutes for production.

Components used:

- LOGO! 230RC
- LOGO! DM8 230R
- I1 Master thermostat

- Q1 Power setting 1, Boiler 1
- Q2 Power setting 2, Boiler 1

- Q3 Power setting 1, Boiler 2
- Q4 Power setting 2, Boiler 2

- Q5 Power setting 1, Boiler 3
- Q6 Power setting 2, Boiler 3

- Q7 Power setting 1, Boiler 4
- Q8 Power setting 2, Boiler 4

Advantages:

- The intervals can be adjusted in accordance with performance and operation.
- Existing installations are easily modified or adapted.
- Fewer components are required than in the case of previous solutions.

Q1 — Boiler 1; Power setting 1
Q2 — Boiler 1; Power setting 2
Q3 — Boiler 2; Power setting 1
Q4 — Boiler 2; Power setting 2
Q5 — Boiler 3; Power setting 1
Q6 — Boiler 3; Power setting 2
Q7 — Boiler 4; Power setting 1
Q8 — Boiler 4; Power setting 2

B002 (Latching Relay) RS — Rem = off
B004 (Latching Relay) RS — Rem = off
B006 (Latching Relay) RS — Rem = off
B008 (Latching Relay) RS — Rem = off
B010 (Latching Relay) RS — Rem = off
B012 (Latching Relay) RS — Rem = off
B015 (Latching Relay) RS — Rem = off

B003 (ON-Delay Timer) — Rem = off 05:00s+
B005 (ON-Delay Timer) — Rem = off 10:00s+
B007 (ON-Delay Timer) — Rem = off 15:00s+
B009 (ON-Delay Timer) — Rem = off 20:00s+
B011 (ON-Delay Timer) — Rem = off 25:00s+
B013 (ON-Delay Timer) — Rem = off 30:00s+
B016 (ON-Delay Timer) — Rem = off 35:00s+

B017 (ON-Delay Timer) — Rem = off 05:00s+
B018 (ON-Delay Timer) — Rem = off 10:00s+
B019 (ON-Delay Timer) — Rem = off 15:00s+

Creator:	wm2432	Project:	Heizkesselfolgesteuerung	Customer:	SIEMENS AG
Checked:	Witschel		Beispiel 15	Diagram No.:	13015
Date:	7/19/04 1:30 PM/8/28/25 10:01 AM	File:	boiler_sequence_control_FBD.lsc	Page:	1/4

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Block Number (Type)	Parameter
B002(Latching Relay) : (Latching Relay)	Rem = off
B003(On-Delay) : (ON-Delay Timer)	Rem = off 05:00s+
B004(Latching Relay) : (Latching Relay)	Rem = off
B005(On-Delay) : (ON-Delay Timer)	Rem = off 10:00s+
B006(Latching Relay) : (Latching Relay)	Rem = off
B007(On-Delay) : (ON-Delay Timer)	Rem = off 15:00s+
B008(Latching Relay) : (Latching Relay)	Rem = off
B009(On-Delay) : (ON-Delay Timer)	Rem = off 20:00s+
B010(Latching Relay) : (Latching Relay)	Rem = off
B011(On-Delay) : (ON-Delay Timer)	Rem = off 25:00s+
B012(Latching Relay) : (Latching Relay)	Rem = off
B013(On-Delay) : (ON-Delay Timer)	Rem = off 30:00s+
B015(Latching Relay) : (Latching Relay)	Rem = off
B016(On-Delay) : (ON-Delay Timer)	Rem = off 35:00s+
B017(On-Delay) : (ON-Delay Timer)	Rem = off 05:00s+
B018(On-Delay) : (ON-Delay Timer)	Rem = off 10:00s+

Block Number (Type)	Parameter
B019(On-Delay) : (ON-Delay Timer)	Rem = off 15:00s+
I1(Input) : (Master Thermostat Switch)	
Q1(Output) : Boiler 1; Power setting 1	
Q2(Output) : Boiler 1; Power setting 2	
Q3(Output) : Boiler 2; Power setting 1	
Q4(Output) : Boiler 2; Power setting 2	
Q5(Output) : Boiler 3; Power setting 1	
Q6(Output) : Boiler 3; Power setting 2	
Q7(Output) : Boiler 4; Power setting 1	
Q8(Output) : Boiler 4; Power setting 2	
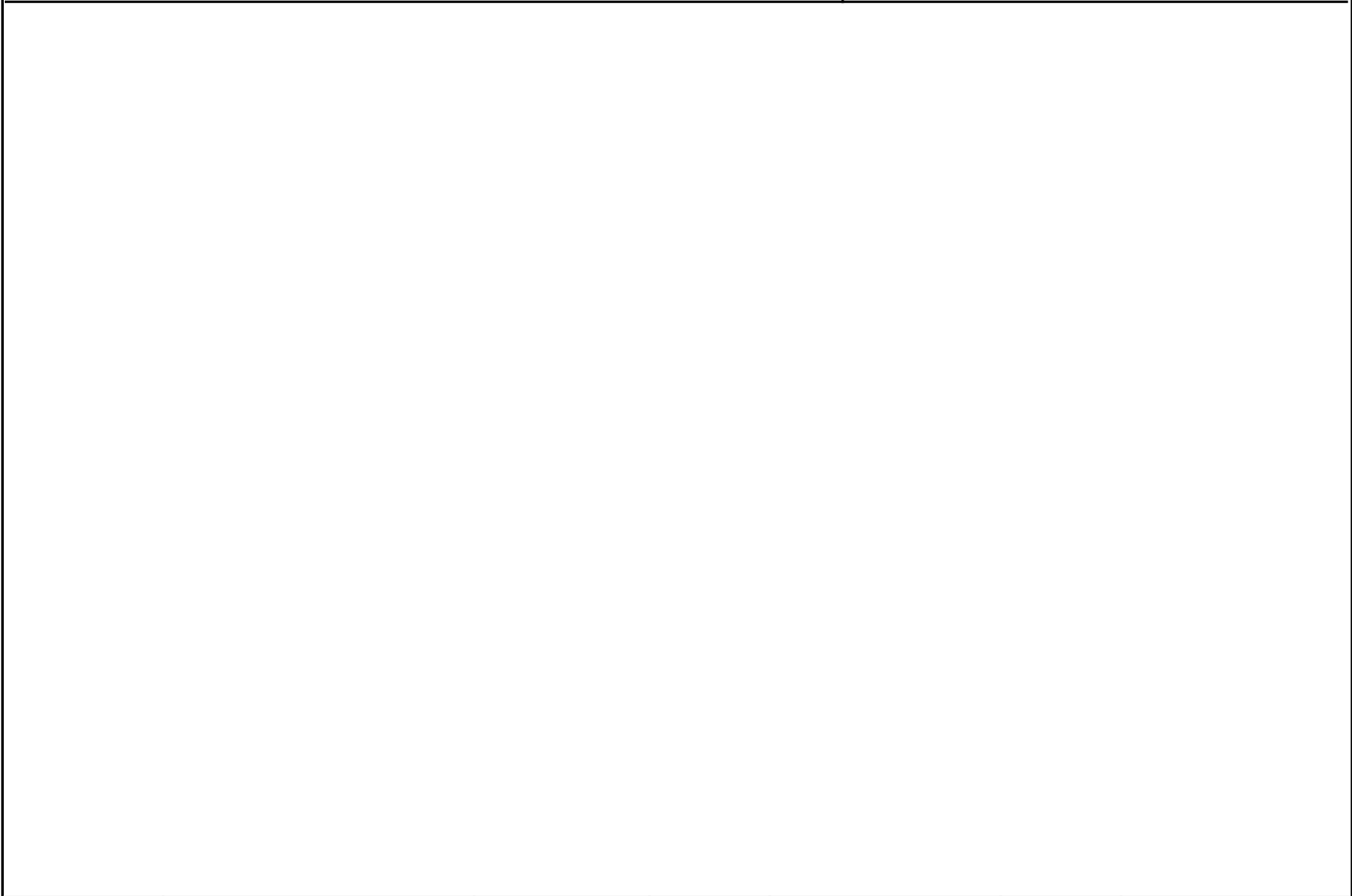
Connection	Label
I1	
Q1	
Q2	
Q3	
Q4	
Q5	
Q6	
Q7	
Q8	