

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

This document lists and briefly describes the Modbus registers available on Futera III, Futera XLF, Futera Fusion, Futera Fusion XLF, FlexCore, Torus, and Encore Series Boilers with a HeatNet V3 control board.

Some registers reference a specific boiler. The following substitutions should be used:

Boiler01 = The Modbus connected boiler (master or standalone)

Boiler02 = Member 2

Boiler03 = Member 3

...

Boiler16 = Member 16

## Input/Output Variables (Read/Write)

| Address | Name          | Raw Data Type   | Scale | Description  | Valid Values/Range   |
|---------|---------------|-----------------|-------|--|--|
| 40001   | HeatDemand    | 1 bit unsigned  | ---   | Heat Demand/Request. Setting the state member of this variable will put the boiler in heating mode.  | 0 = no heat demand<br>1 = heat demand                              |
| 40002   | SetpointTimer | 16 bit unsigned | ---   | System Setpoint Timer<br><br>The system setpoint timer is a BMS failsafe feature. This countdown timer should be periodically reloaded with a timeout value (in seconds). If the timer reaches zero, the control assumes that the BMS is no longer operating and the local setpoint (saved on the control) is reloaded. This is a failsafe feature used to help safeguard the system in case of BMS failure.<br><br>When any (1) Read/Write variable is timer is written, if the SetpointTimer is less than 60, it is automatically reloaded with 60.<br><br>(1) In Firmware Versions < 3.38, the BMS has to write the SystemSetpoint to automatically reload the SetpointTimer. | 0 – 65535 seconds  |
| 40003   | Setpoint      | 8 bit unsigned  | 1.0   | System Setpoint (see <i>SetpointTimer</i> )  | 40 - 195 °F *<br><br>*Higher Temperatures allowed in some products |
| 40004   | OAResetEnable | 1 bit unsigned  | ---   | Enables/Disables outdoor air reset mode.   | 0 = disabled<br>1 = enabled  |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name             | Raw Data Type   | Scale | Description   | Valid Values/Range   |
|---------|------------------|-----------------|-------|---|--|
| 40005   | OARSetpoint      | 16 bit signed   | 1.0   | Outdoor air reset setpoint. Temperature at which boiler shuts down.   | 40 – 100 °F  |
| 40006   | OARHighWaterTemp | 16 bit signed   | 1.0   | Boiler water temperature setpoint when outdoor air temperature is at the high outdoor air temperature setpoint (OARHiAirTemp).  | 60 – 190 °F  |
| 40007   | OARHighAirTemp   | 16 bit signed   | 1.0   | High outdoor air temperature setpoint.  | 50 – 90 °F   |
| 40008   | OARLowWaterTemp  | 16 bit signed   | 1.0   | Header/Supply temperature setpoint when outdoor air temperature is at the low outdoor air temperature setpoint (OARLoAirTemp).  | 70 – 195 °F *<br><br>*Higher Temperatures allowed in some products |
| 40009   | OARLowAirTemp    | 16 bit signed   | 1.0   | Low outdoor air temperature setpoint.   | -35 – 40 °F  |
| 40010   | SetMonth         | 8 bit unsigned  | ---   | Set real time clock – month ( <i>see SetClock</i> )   | 0 (January) - 11 (December)  |
| 40011   | SetDay           | 8 bit unsigned  | ---   | Set real time clock – day ( <i>see SetClock</i> )   | 1 – 31   |
| 40012   | SetYear          | 8 bit unsigned  | ---   | Set real time clock – year ( <i>see SetClock</i> )  | 0 – 99   |
| 40013   | SetHour          | 8 bit unsigned  | ---   | Set real time clock – hour ( <i>see SetClock</i> )  | 0 – 23   |
| 40014   | SetMinute        | 8 bit unsigned  | ---   | Set real time clock – minute ( <i>see SetClock</i> )  | 0 – 59   |
| 40015   | SetSecond        | 8 bit unsigned  | ---   | Set real time clock – second ( <i>see SetClock</i> )  | 0 – 59   |
| 40016   | SetWeekday       | 8 bit unsigned  | ---   | Set real time clock – weekday ( <i>see SetClock</i> )   | 1 (Monday) - 7 (Sunday)  |
| 40017   | SetClock         | 1 bit unsigned  | ---   | Set (write) the real time clock.<br><br>To write the real time clock, the system variables (SetMonth, SetMonth, SetDay, SetYear, SetHour, SetMinute, SetSecond, SetWeekday) must first be loaded with the correct date and time. Then, a 1 must be written to the state portion of this system variable to write the new date and time to the system clock. | 0 = no action<br>1 = set/write the clock                           |
| 40018   | DHWSetpoint      | 16 bit signed   | 1.0   | DHW Setpoint  | 40 - 200 °F  |
| 40019   | BMSFlowRateGPM   | 16 bit unsigned | 1.0   | Sets the flow rate (in GPM) that is measured by the BMS system. Please see "Flow Limited Control" in the firmware revision sheet for a complete description.  | 0 – 1500 GPM   |
| 40020   | BMSLimitBoilers  | 16 bit unsigned | ---   | Sets that number of boilers that HeatNet can control. Please see "Boilers Limited Control" in the firmware revision sheet for a complete description.   | 0 – 16   |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

## Input Variables (Read Only)

| Address | Name            | Raw Data Type   | Scale | Description   | Valid Values/Range   |
|---------|-----------------|-----------------|-------|---|--|
| 30001   | BoilersOn       | 8 bit unsigned  | ---   | The number of boilers currently running.  | 0 – 16   |
| 30002   | Modulation      | 8 bit unsigned  | 0.01  | Current system (target) modulation level. This is the modulation level that the system is trying to run at to meet the heating demand.  | 0 – 100 %  |
| 30003   | HeaderTemp      | 16 bit signed   | 0.01  | Header / System temperature.  | 32 – 250 °F  |
| 30004   | SupplyTemp      | 16 bit signed   | 0.01  | Supply temperature.   | 32 – 250 °F  |
| 30005   | ReturnTemp      | 16 bit signed   | 0.01  | Return temperature.   | 32 – 250 °F  |
| 30006   | OutsideTemp     | 16 bit signed   | 0.01  | Outside air temperature.  | -40 – 250 °F   |
| 30007   | Spare1          | 16 bit signed   | ---   | Raw A/D value from spare 1 input.   | -32768 to 32767  |
|         | DHWTemp         | 16 bit signed   | 0.01  | DHW temperature   | 32 – 250 °F  |
| 30008   | Spare2          | 16 bit signed   | ---   | Raw A/D value from spare 2 input.   | -32768 to 32767  |
|         | StackTemp       | 16 bit signed   | 0.01  | Stack temperature.<br>Currently available in PVC version of firmware only.  | -51 - 271 °F   |
| 30009   | Month           | 8 bit unsigned  | ---   | Real time clock month.  | 0 (January) - 11 (December)  |
| 30010   | Day             | 8 bit unsigned  | ---   | Real time clock day.  | 1 – 31   |
| 30011   | Year            | 8 bit unsigned  | ---   | Real time clock year.   | 0 – 99   |
| 30012   | Hour            | 8 bit unsigned  | ---   | Real time clock hour.   | 0 – 23   |
| 30013   | Minute          | 8 bit unsigned  | ---   | Real time clock minute.   | 0 – 59   |
| 30014   | Second          | 8 bit unsigned  | ---   | Real time clock second.   | 0 – 59   |
| 30015   | Weekday         | 8 bit unsigned  | ---   | Real time clock weekday.  | 1 (Monday) – 7 (Sunday)  |
| 30016   | Boiler01Status1 | 16 bit unsigned | ---   | Boiler (1 – 16) status1 and status 2 flags. These bits indicate the state of various boiler statuses.<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | See the BoilerStatus1 Flags and BoilerStatus2 Flags in Appendix A. |
| 30017   | Boiler01Status2 |                 |       |   |  |
| 30018   | Boiler02Status1 |                 |       |   |  |
| 30019   | Boiler02Status2 |                 |       |   |  |
| 30020   | Boiler03Status1 |                 |       |   |  |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name            | Raw Data Type | Scale | Description | Valid Values/Range |
|---------|-----------------|---------------|-------|-------------|--------------------|
| 30021   | Boiler03Status2 |               |       |             |                    |
| 30022   | Boiler04Status1 |               |       |             |                    |
| 30023   | Boiler04Status2 |               |       |             |                    |
| 30024   | Boiler05Status1 |               |       |             |                    |
| 30025   | Boiler05Status2 |               |       |             |                    |
| 30026   | Boiler06Status1 |               |       |             |                    |
| 30027   | Boiler06Status2 |               |       |             |                    |
| 30028   | Boiler07Status1 |               |       |             |                    |
| 30029   | Boiler07Status2 |               |       |             |                    |
| 30030   | Boiler08Status1 |               |       |             |                    |
| 30031   | Boiler08Status2 |               |       |             |                    |
| 30032   | Boiler09Status1 |               |       |             |                    |
| 30033   | Boiler09Status2 |               |       |             |                    |
| 30034   | Boiler10Status1 |               |       |             |                    |
| 30035   | Boiler10Status2 |               |       |             |                    |
| 30036   | Boiler11Status1 |               |       |             |                    |
| 30037   | Boiler11Status2 |               |       |             |                    |
| 30038   | Boiler12Status1 |               |       |             |                    |
| 30039   | Boiler12Status2 |               |       |             |                    |
| 30040   | Boiler13Status1 |               |       |             |                    |
| 30041   | Boiler13Status2 |               |       |             |                    |
| 30042   | Boiler14Status1 |               |       |             |                    |
| 30043   | Boiler14Status2 |               |       |             |                    |
| 30044   | Boiler15Status1 |               |       |             |                    |
| 30045   | Boiler15Status2 |               |       |             |                    |
| 30046   | Boiler16Status1 |               |       |             |                    |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name                  | Raw Data Type   | Scale | Description  | Valid Values/Range     |
|---------|-----------------------|-----------------|-------|--|------------------------|
| 30047   | Boiler16Status2       |                 |       |  |                        |
| 30048   | Boiler01RuntimeHigh16 | 16 bit unsigned | ---   | Boiler (1 – 16) Runtime seconds High (Upper) and Low (Lower) 16 bit counters. To get the actual runtime for any given boiler (##), the high and low 16 bit counters must be combined (concatenated) into a single 32 bit counter as:<br><br>Boiler##RuntimeHigh16:Boiler##RuntimeLow16<br><br><u>Example</u><br>Boiler01Runtime = (Boiler01RuntimeHigh16 * 65536) + Boiler01RuntimeLow16<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | 0 – 4294967295 seconds |
| 30049   | Boiler01RuntimeLow16  |                 |       |  |                        |
| 30050   | Boiler02RuntimeHigh16 |                 |       |  |                        |
| 30051   | Boiler02RuntimeLow16  |                 |       |  |                        |
| 30052   | Boiler03RuntimeHigh16 |                 |       |  |                        |
| 30053   | Boiler03RuntimeLow16  |                 |       |  |                        |
| 30054   | Boiler04RuntimeHigh16 |                 |       |  |                        |
| 30055   | Boiler04RuntimeLow16  |                 |       |  |                        |
| 30056   | Boiler05RuntimeHigh16 |                 |       |  |                        |
| 30057   | Boiler05RuntimeLow16  |                 |       |  |                        |
| 30058   | Boiler06RuntimeHigh16 |                 |       |  |                        |
| 30059   | Boiler06RuntimeLow16  |                 |       |  |                        |
| 30060   | Boiler07RuntimeHigh16 |                 |       |  |                        |
| 30061   | Boiler07RuntimeLow16  |                 |       |  |                        |
| 30062   | Boiler08RuntimeHigh16 |                 |       |  |                        |
| 30063   | Boiler08RuntimeLow16  |                 |       |  |                        |
| 30064   | Boiler09RuntimeHigh16 |                 |       |  |                        |
| 30065   | Boiler09RuntimeLow16  |                 |       |  |                        |
| 30066   | Boiler10RuntimeHigh16 |                 |       |  |                        |
| 30067   | Boiler10RuntimeLow16  |                 |       |  |                        |
| 30068   | Boiler11RuntimeHigh16 |                 |       |  |                        |
| 30069   | Boiler11RuntimeLow16  |                 |       |  |                        |
| 30070   | Boiler12RuntimeHigh16 |                 |       |  |                        |
| 30071   | Boiler12RuntimeLow16  |                 |       |  |                        |
| 30072   | Boiler13RuntimeHigh16 |                 |       |  |                        |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name                  | Raw Data Type   | Scale | Description  | Valid Values/Range                         |
|---------|-----------------------|-----------------|-------|--|--|
| 30073   | Boiler13RuntimeLow16  |                 |       |  |  |
| 30074   | Boiler14RuntimeHigh16 |                 |       |  |  |
| 30075   | Boiler14RuntimeLow16  |                 |       |  |  |
| 30076   | Boiler15RuntimeHigh16 |                 |       |  |  |
| 30077   | Boiler15RuntimeLow16  |                 |       |  |  |
| 30078   | Boiler16RuntimeHigh16 |                 |       |  |  |
| 30079   | Boiler16RuntimeLow16  |                 |       |  |  |
| 30080   | Boiler01Status3       | 16 bit unsigned | ---   | Boiler (1 – 16) status3 flags. These bits indicate the state of various boiler statuses.<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | See the BoilerStatus3 Flags in Appendix A. |
| 30081   | Boiler02Status3       |                 |       |  |  |
| 30082   | Boiler03Status3       |                 |       |  |  |
| 30083   | Boiler04Status3       |                 |       |  |  |
| 30084   | Boiler05Status3       |                 |       |  |  |
| 30085   | Boiler06Status3       |                 |       |  |  |
| 30086   | Boiler07Status3       |                 |       |  |  |
| 30087   | Boiler08Status3       |                 |       |  |  |
| 30088   | Boiler09Status3       |                 |       |  |  |
| 30089   | Boiler10Status3       |                 |       |  |  |
| 30090   | Boiler11Status3       |                 |       |  |  |
| 30091   | Boiler12Status3       |                 |       |  |  |
| 30092   | Boiler13Status3       |                 |       |  |  |
| 30093   | Boiler14Status3       |                 |       |  |  |
| 30094   | Boiler15Status3       |                 |       |  |  |
| 30095   | Boiler16Status3       |                 |       |  |  |
| 30096   | Boiler01SupplyTemp    | 16 bit signed   | 0.01  | Boiler (1 – 16) supply temperature (if available). See BoilerStatus2 to determine if the sensor is present.<br><br>Boiler01 = Master or “Connected Boiler”                                   | 32 – 250 °F                                |
| 30097   | Boiler02SupplyTemp    |                 |       |  |  |
| 30098   | Boiler03SupplyTemp    |                 |       |  |  |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

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|---------|--------------------|---------------|-------|---|--------------------|
| 30099   | Boiler04SupplyTemp |               |       | Boiler02 = Member01<br>...<br>Boiler16 = Member15   |                    |
| 30100   | Boiler05SupplyTemp |               |       |   |                    |
| 30101   | Boiler06SupplyTemp |               |       |   |                    |
| 30102   | Boiler07SupplyTemp |               |       |   |                    |
| 30103   | Boiler08SupplyTemp |               |       |   |                    |
| 30104   | Boiler09SupplyTemp |               |       |   |                    |
| 30105   | Boiler10SupplyTemp |               |       |   |                    |
| 30106   | Boiler11SupplyTemp |               |       |   |                    |
| 30107   | Boiler12SupplyTemp |               |       |   |                    |
| 30108   | Boiler13SupplyTemp |               |       |   |                    |
| 30109   | Boiler14SupplyTemp |               |       |   |                    |
| 30110   | Boiler15SupplyTemp |               |       |   |                    |
| 30111   | Boiler16SupplyTemp |               |       |   |                    |
| 30112   | Boiler01ReturnTemp | 16 bit signed | 0.01  | Boiler (1 – 16) return temperature (if available). See BoilerStatus2 to determine if the sensor is present.<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | 32 – 250 °F        |
| 30113   | Boiler02ReturnTemp |               |       |   |                    |
| 30114   | Boiler03ReturnTemp |               |       |   |                    |
| 30115   | Boiler04ReturnTemp |               |       |   |                    |
| 30116   | Boiler05ReturnTemp |               |       |   |                    |
| 30117   | Boiler06ReturnTemp |               |       |   |                    |
| 30118   | Boiler07ReturnTemp |               |       |   |                    |
| 30119   | Boiler08ReturnTemp |               |       |   |                    |
| 30120   | Boiler09ReturnTemp |               |       |   |                    |
| 30121   | Boiler10ReturnTemp |               |       |   |                    |
| 30122   | Boiler11ReturnTemp |               |       |   |                    |
| 30123   | Boiler12ReturnTemp |               |       |   |                    |
| 30124   | Boiler13ReturnTemp |               |       |   |                    |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name                 | Raw Data Type   | Scale | Description  | Valid Values/Range |
|---------|----------------------|-----------------|-------|--|--------------------|
| 30125   | Boiler14ReturnTemp   |                 |       |  |                    |
| 30126   | Boiler15ReturnTemp   |                 |       |  |                    |
| 30127   | Boiler16ReturnTemp   |                 |       |  |                    |
| 30128   | Boiler01CyclesHigh16 | 16 bit unsigned | ---   | Boiler (1 – 16) Cycles High (Upper) and Low (Lower) 16 bit counters. To get the actual cycle count for any given boiler (##), the high and low 16 bit counters must be combined (concatenated) into a single 32 bit counter as:<br><br>Boiler##CyclesHigh16:Boiler##CyclesLow16<br><br><u>Example</u><br>Boiler01Cycles = (Boiler01CyclesHigh16 * 65536) + Boiler01CyclesLow16<br><br>Boiler01 = Master or "Connected Boiler"<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | 0 – 4294967295     |
| 30129   | Boiler01CyclesLow16  |                 |       |  |                    |
| 30130   | Boiler02CyclesHigh16 |                 |       |  |                    |
| 30131   | Boiler02CyclesLow16  |                 |       |  |                    |
| 30132   | Boiler03CyclesHigh16 |                 |       |  |                    |
| 30133   | Boiler03CyclesLow16  |                 |       |  |                    |
| 30134   | Boiler04CyclesHigh16 |                 |       |  |                    |
| 30135   | Boiler04CyclesLow16  |                 |       |  |                    |
| 30136   | Boiler05CyclesHigh16 |                 |       |  |                    |
| 30137   | Boiler05CyclesLow16  |                 |       |  |                    |
| 30138   | Boiler06CyclesHigh16 |                 |       |  |                    |
| 30139   | Boiler06CyclesLow16  |                 |       |  |                    |
| 30140   | Boiler07CyclesHigh16 |                 |       |  |                    |
| 30141   | Boiler07CyclesLow16  |                 |       |  |                    |
| 30142   | Boiler08CyclesHigh16 |                 |       |  |                    |
| 30143   | Boiler08CyclesLow16  |                 |       |  |                    |
| 30144   | Boiler09CyclesHigh16 |                 |       |  |                    |
| 30145   | Boiler09CyclesLow16  |                 |       |  |                    |
| 30146   | Boiler10CyclesHigh16 |                 |       |  |                    |
| 30147   | Boiler10CyclesLow16  |                 |       |  |                    |
| 30148   | Boiler11CyclesHigh16 |                 |       |  |                    |
| 30149   | Boiler11CyclesLow16  |                 |       |  |                    |
| 30150   | Boiler12CyclesHigh16 |                 |       |  |                    |



# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name                 | Raw Data Type   | Scale | Description  | Valid Values/Range                         |
|---------|----------------------|-----------------|-------|--|--|
| 30151   | Boiler12CyclesLow16  |                 |       |  |  |
| 30152   | Boiler13CyclesHigh16 |                 |       |  |  |
| 30153   | Boiler13CyclesLow16  |                 |       |  |  |
| 30154   | Boiler14CyclesHigh16 |                 |       |  |  |
| 30155   | Boiler14CyclesLow16  |                 |       |  |  |
| 30156   | Boiler15CyclesHigh16 |                 |       |  |  |
| 30157   | Boiler15CyclesLow16  |                 |       |  |  |
| 30158   | Boiler16CyclesHigh16 |                 |       |  |  |
| 30159   | Boiler16CyclesLow16  |                 |       |  |  |
| 30160   | Boiler01Status4      | 16 bit unsigned | ---   | Boiler (1 – 16) status4 flags. These bits indicate the state of various boiler statuses.<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | See the BoilerStatus4 Flags in Appendix A. |
| 30161   | Boiler02Status4      |                 |       |  |  |
| 30162   | Boiler03Status4      |                 |       |  |  |
| 30163   | Boiler04Status4      |                 |       |  |  |
| 30164   | Boiler05Status4      |                 |       |  |  |
| 30165   | Boiler06Status4      |                 |       |  |  |
| 30166   | Boiler07Status4      |                 |       |  |  |
| 30167   | Boiler08Status4      |                 |       |  |  |
| 30168   | Boiler09Status4      |                 |       |  |  |
| 30169   | Boiler10Status4      |                 |       |  |  |
| 30170   | Boiler11Status4      |                 |       |  |  |
| 30171   | Boiler12Status4      |                 |       |  |  |
| 30172   | Boiler13Status4      |                 |       |  |  |
| 30173   | Boiler14Status4      |                 |       |  |  |
| 30174   | Boiler15Status4      |                 |       |  |  |
| 30175   | Boiler16Status4      |                 |       |  |  |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address               | Name               | Raw Data Type | Scale | Description  | Valid Values/Range |
|-----------------------|--------------------|---------------|-------|--|--------------------|
| 30176<br>...<br>30207 | RESERVED           | ---           | ---   | ---  | ---                |
| 30208                 | Boiler01DHWTemp    | 16 bit signed | ---   | Boiler (1 – 16) DHW temperature (if available). See BoilerStatus4 to determine if the sensor is present.<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15   | 32 – 250 °F        |
| 30209                 | Boiler02DHWTemp    |               |       |  |                    |
| 30210                 | Boiler03DHWTemp    |               |       |  |                    |
| 30211                 | Boiler04DHWTemp    |               |       |  |                    |
| 30212                 | Boiler05DHWTemp    |               |       |  |                    |
| 30213                 | Boiler06DHWTemp    |               |       |  |                    |
| 30214                 | Boiler07DHWTemp    |               |       |  |                    |
| 30215                 | Boiler08DHWTemp    |               |       |  |                    |
| 30216                 | Boiler09DHWTemp    |               |       |  |                    |
| 30217                 | Boiler10DHWTemp    |               |       |  |                    |
| 30218                 | Boiler11DHWTemp    |               |       |  |                    |
| 30219                 | Boiler12DHWTemp    |               |       |  |                    |
| 30220                 | Boiler13DHWTemp    |               |       |  |                    |
| 30221                 | Boiler14DHWTemp    |               |       |  |                    |
| 30222                 | Boiler15DHWTemp    |               |       |  |                    |
| 30223                 | Boiler16DHWTemp    |               |       |  |                    |
| 30224                 | Boiler01Modulation | 16 bit signed | ---   | The running (“display”) modulation. This is typically the actual running modulation except under special circumstances when the boiler is running in a self-protection mode (Op. Limit, ½ Fire Rate, etc.)<br><br>Boiler01 = Master or “Connected Boiler”<br>Boiler02 = Member01<br>...<br>Boiler16 = Member15 | 0 - 100            |
| 30225                 | Boiler02Modulation |               |       |  |                    |
| 30226                 | Boiler03Modulation |               |       |  |                    |
| 30227                 | Boiler04Modulation |               |       |  |                    |
| 30228                 | Boiler05Modulation |               |       |  |                    |
| 30229                 | Boiler06Modulation |               |       |  |                    |
| 30230                 | Boiler07Modulation |               |       |  |                    |
| 30231                 | Boiler08Modulation |               |       |  |                    |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address  | Name                 | Raw Data Type   | Scale | Description  | Valid Values/Range                    |
|--|----------------------|-----------------|-------|--|---------------------------------------|
| 30232  | Boiler09Modulation   |                 |       |  |                                       |
| 30233  | Boiler10Modulation   |                 |       |  |                                       |
| 30234  | Boiler11Modulation   |                 |       |  |                                       |
| 30235  | Boiler12Modulation   |                 |       |  |                                       |
| 30236  | Boiler13Modulation   |                 |       |  |                                       |
| 30237  | Boiler14Modulation   |                 |       |  |                                       |
| 30238  | Boiler15Modulation   |                 |       |  |                                       |
| 30239  | Boiler16Modulation   |                 |       |  |                                       |
| 30240  | OperatingSetpoint    | 16 bit signed   | ---   | This is the current operating or active setpoint. It may be:<br>1) The normal heating setpoint.<br>2) The DHW setpoint if running in DHW mode.<br>3) A calculated setpoint if running in Outdoor Air Reset Mode<br>4) The 4-20ma (0-10V) setpoint.   | 40 - 220 °F                           |
| 30241  | AvailableBoilers     | 16 bit unsigned | ---   | The maximum number of boilers available to fire.   | 0 – 16                                |
| <b>--- The following values are available on firmware versions 2.00+ ---</b> |                      |                 |       |  |                                       |
| 30242  | SystemBTUHHigh16     | 32 bit unsigned | ---   | System BTUH High (Upper) and Low (Lower) 16 bit registers. To get the actual BTUH, the high and low 16 bit registers must be combined (concatenated) into a single 32 bit counter as:<br><br>BTUHHigh16: BTUHLow16<br><br><u>Example</u><br>BTUH = (BTUHHigh16 * 65536) + BTUHLow16<br><br>NOTE: This is only an estimated value due to sensor tolerances (temperature, flow) and the actual BTU content in 1 cubic foot of gas. | 0 – 100,000,000 BTUH<br>0 – 100 MBTUH |
| 30243  | SystemBTUHLow16      |                 |       |  |                                       |
| 30247  | SystemReturnTemp     | 16 bit signed   | ---   | The system return temperature (if available). See BoilerStatus4 to determine if the sensor is present.   | 32 – 250 °F                           |
| 30261  | AddBoilerDelayTimer  | 16 bit signed   | ---   | The Add Boiler Delay timer – number of seconds left before another boiler is started (if available and needed).  | 0 – 3600 seconds                      |
| 30262  | ShedBoilerDelayTimer | 16 bit signed   | ---   | The Shed Boiler Delay timer – number of seconds left before another boiler is stopped (if needed).   | 0 – 900 seconds                       |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

| Address | Name             | Raw Data Type   | Scale | Description   | Valid Values/Range |
|---------|------------------|-----------------|-------|---|--------------------|
| 30265   | SystemFlowHigh16 | 32 bit unsigned | 0.01  | Boiler SystemFlow High (Upper) and Low (Lower) 16 bit registers. To get the actual SystemFlow, the high and low 16 bit registers must be combined (concatenated) into a single 32 bit counter as:<br><br>SystemFlowHigh16: SystemFlowLow16<br><br><u>Example</u><br>$\text{SystemFlow} = ((\text{SystemFlowHigh16} * 65536) + \text{SystemFlowLow16}) * 0.01$<br><br>This value is either the system flow meter reading or the value written to the BMSFlowRateGPM register by the BMS. | 0-1500 GPM         |
| 30266   | SystemFlowLow16  |                 |       |   |                    |
| 30269   | HeatingBoilersOn | 8 bit unsigned  | ---   | The number of boilers currently running for heating.  | 0 – 16             |
| 30270   | DHWBoilersOn     | 8 bit unsigned  | ---   | The number of boilers currently running for DHW.  | 0 – 16             |
| 30271   | ManualBoilersOn  | 8 bit unsigned  | ---   | The number of boilers currently running due to a local override, T1, T2, AA/High Fire, etc.   | 0 – 16             |

## APPENDIX A – Status Flags

### BoilerStatus1 Flags

| Bit | Description  | Valid Values/Range             |
|-----|--|--------------------------------|
| 0   | Pilot Valve  | 0 = closed, 1 = open           |
| 1   | Blower Running   | 0 = off, 1 = on (running)      |
| 2   | Ignition Alarm   | 0 = ok, 1 = alarm              |
| 3   | IRI Alarm  | 0 = ok, 1 = alarm              |
| 4   | High Limit   | 0 = ok, 1 = tripped            |
| 5   | Air Prove Switch   | 0 = proven, 1 = not proven     |
| 6   | ---  | ---                            |
| 7   | Software Operator Tripped  | 0 = not tripped, 1 = tripped   |
| 8   | Header Sensor not detected   | 0 = detected, 1 = not detected |
| 9   | Supply Sensor not detected   | 0 = detected, 1 = not detected |
| 10  | Return Sensor not detected   | 0 = detected, 1 = not detected |
| 11  | Outside Sensor not detected  | 0 = detected, 1 = not detected |
| 12  | System Pump Running  | 0 = off, 1 = on (running)      |
| 13  | Combustion Air Damper Prove<br>Obsolete – Available only on revision 1.x controls. | 0 = not proven, 1 = proven     |
| 14  | Master Boiler  | 0 = member, 1 = master         |
| 15  | Boiler Detected<br>A boiler was detected at this address.                          | 0 = not detected, 1 = detected |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

## BoilerStatus2 Flags

| Bit | Description   | Valid Values/Range            |
|-----|---|-------------------------------|
| 0   | Disabled<br>The boiler is disabled. For instance, when minimum off time has not been met.   | 0 = enabled, 1 = disabled     |
| 1   | Local Override (member boilers only)<br>State of the local override (Heat Demand) input on member boilers.                            | 0 = no override, 1 = override |
| 2   | Alarm<br>An alarm or warning condition has occurred. An attempt(s) will automatically be made to recover and resume normal operation. | 0 = ok, 1 = alarm             |
| 3   | Failed<br>A condition has occurred under which the boiler can no longer run.  | 0 = ok, 1 = failed            |
| 4   | Member Error<br>An "Alarm" or "Failed" condition has occurred on one (or more) of the member boilers.                                 | 0 = ok, 1 = error             |
| 5   | Boiler Running  | 0 = off, 1 = running          |
| 6   | Local Pump Running  | 0 = off, 1 = running          |
| 7   | System Water Prove (Flow) Interlock.<br>This input was previously called "Spare 3".   | 0 = open, 1 = closed          |
| 8   | LWCO Interlock (Low Water Cut Off)  | 0 = open, 1 = closed          |
| 9   | VFD Interlock (Variable Frequency Drive)  | 0 = open, 1 = closed          |
| 10  | Gas Prove Interlock   | 0 = open, 1 = closed          |
| 11  | Spare 4 (User) Interlock  | 0 = open, 1 = closed          |
| 12  | Operator Interlock  | 0 = open, 1 = closed          |
| 13  | Local Water Prove (Flow) Interlock  | 0 = open, 1 = closed          |
| 14  | ---   | ---                           |
| 15  | Main Valve  | 0 = closed, 1 = open          |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

## BoilerStatus3 Flags

| Bit | Description                        | Valid Values/Range  |
|-----|------------------------------------|---------------------|
| 0   | AA High Fire Input                 | 0 = off, 1 = on     |
| 1   | Heat Demand Input (Local Override) | 0 = off, 1 = on (1) |
| 2   | 4-20ma Remote Enable Input         | 0 = off, 1 = on     |
| 3   | Outdoor Air Reset Override Input   | 0 = off, 1 = on     |
| 4   | T1 Input                           | 0 = off, 1 = on     |
| 5   | T2 Input                           | 0 = off, 1 = on     |
| 6   | T3 Input                           | 0 = off, 1 = on     |
| 7   | T4 Input                           | 0 = off, 1 = on     |
| 8   | ---                                | ---                 |
| 9   | ---                                | ---                 |
| 10  | ---                                | ---                 |
| 11  | ---                                | ---                 |
| 12  | ---                                | ---                 |
| 13  | ---                                | ---                 |
| 14  | ---                                | ---                 |
| 15  | ---                                | ---                 |

# RBI Futera FIII/Fusion/XLF, FlexCore, Torus, and Encore HeatNet V3 Modbus Registers

v1.30

## BoilerStatus4 Flags

| Bit | Description   | Valid Values/Range               |
|-----|---|----------------------------------|
| 0   | DHW Enabled (1)<br>DHW Mode had been enabled in the menus.  | 0 = off, 1 = on (menu)           |
| 1   | Combustion Air Damper Prove (1)<br>Status of Combustion Air Damper Prove Input J12B                             | 0 = not proven, 1 = proven       |
| 2   | Call Service Fault (1)  | 0 = off, 1 = on                  |
| 3   | Air Switch (Blower) Fault (1)   | 0 = off, 1 = on                  |
| 4   | ---   | ---                              |
| 5   | ---   | ---                              |
| 6   | ---   | ---                              |
| 7   | ---   | ---                              |
| 8   | ---   | ---                              |
| 9   | DHW Sensor not detected (1)   | 0 = detected, 1 = not detected   |
| 10  | DHW Boiler (1)<br>This control board has been designated a DHW boiler by cutting the DHW jumper (JPS1).         | 0 = no, 1 = yes (DHW jumper cut) |
| 11  | Operating Limit Clamp (1)<br>Boiler input is being limited (clamped) due to a high supply (outlet) temperature. | 0 = off, 1 = clamped             |
| 12  | Firing boilers limited by value in BMS Flow Rate Register   | 0 = not limited, 1 = limited     |
| 13  | Firing boilers limited by value in BMS Limit Boilers Register   | 0 = not limited, 1 = limited     |
| 14  | Stack Sensor not detected (1)   | 0 = detected, 1 = not detected   |
| 15  | System Return Sensor not detected (1)   | 0 = detected, 1 = not detected   |

(1) Available in Firmware Version 2.00+.