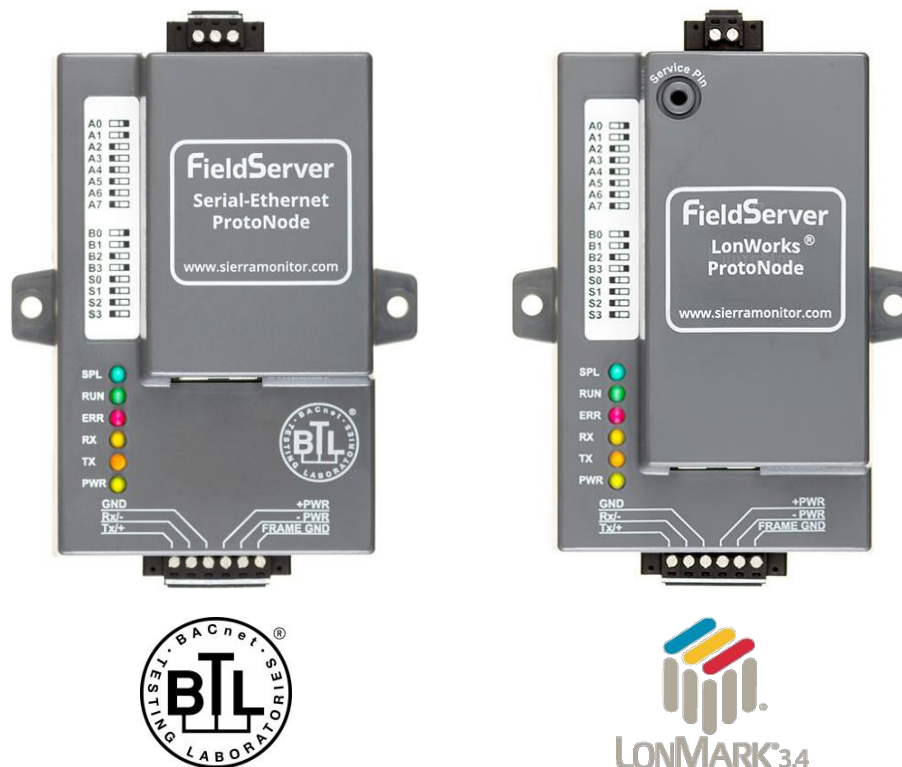




## fieldserver

# Vendor Protocol Mapping



Document Revision: 14.B

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## Vendor Information – LAARS

## Sola Modbus RTU Mappings to Modbus TCP/IP, BACnet, Metasys N2 and LonWorks

| Point Name                      | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name          | LonWorks SNVT    |
|---------------------------------|-----------------|--------------------|------------------|--------------|------------|------------------------|------------------|
| Demand source                   | 40007           | AI                 | 1                | AI           | 1          | nvoDemSrc_XXX          | SNVT_count_inc_f |
| Outlet sensor                   | 40008           | AI                 | 2                | AI           | 2          | nvoOutSen_XXX          | SNVT_temp_p      |
| Firing rate                     | 40009           | AI                 | 3                | AI           | 3          | nvoFirRt_XXX           | SNVT_count_inc_f |
| Fan speed                       | 40010           | AI                 | 4                | AI           | 4          | nvoFanSpd_XXX          | SNVT_count_inc_f |
| Flame signal                    | 40011           | AI                 | 5                | AI           | 5          | nvoFlameSig_XXX        | SNVT_count_inc_f |
| Inlet sensor                    | 40012           | AI                 | 6                | AI           | 6          | nvoInletSen_XXX        | SNVT_temp_p      |
| DHW sensor                      | 40013           | AI                 | 7                | AI           | 7          | nvoDHWSen_XXX          | SNVT_temp_p      |
| S5 sensor                       | 40014           | AI                 | 8                | AI           | 8          | nvoS5Sen_XXX           | SNVT_temp_p      |
| Stack sensor                    | 40015           | AI                 | 9                | AI           | 9          | nvoStackSen_XXX        | SNVT_temp_p      |
| 4 - 20 mA remote ctl input      | 40016           | AI                 | 10               | AI           | 10         | nvo4_20RmCl_XXX        | SNVT_count_inc_f |
| Active CH setpoint              | 40017           | AI                 | 11               | AI           | 11         | nvoActCHSP_XXX         | SNVT_temp_p      |
| Active DHW setpoint             | 40018           | AI                 | 12               | AI           | 12         | nvoActDHWSP_XXX        | SNVT_temp_p      |
| Active LL setpoint              | 40019           | AI                 | 13               | AI           | 13         | nvoActLLSP_XXX         | SNVT_temp_p      |
| Analog modulation input         | 40022           | AI                 | 14               | AI           | 14         | nvoAnaModInp_XXX       | SNVT_count_inc_f |
| Burner control status           | 40033           | AI                 | 15               | AI           | 15         | nvoBrnCntrlSt_XXX      | SNVT_count_inc_f |
| Lockout code                    | 40035           | AI                 | 16               | AI           | 16         | nvoLkocCode_XXX        | SNVT_count_inc_f |
| Alarm reason                    | 40036           | AI                 | 17               | AI           | 17         | nvoAlmReason_XXX       | SNVT_count_inc_f |
| Hold code                       | 40041           | AI                 | 18               | AI           | 18         | nvoHoldCode_XXX        | SNVT_count_inc_f |
| CH status                       | 40065           | AI                 | 19               | AI           | 19         | nvoCHSt_XXX            | SNVT_count_inc_f |
| CH setpoint source              | 40066           | AI                 | 20               | AI           | 20         | nvoCHSPSrc_XXX         | SNVT_count_inc_f |
| CH heat demand                  | 40067           | AI                 | 21               | AI           | 21         | nvoCHHtDem_XXX         | SNVT_count_inc_f |
| CH burner demand                | 40068           | AI                 | 22               | AI           | 22         | nvoCHBrnDem_XXX        | SNVT_count_inc_f |
| CH requested rate               | 40069           | AI                 | 23               | AI           | 23         | nvoCHRqRt_XXX          | SNVT_count_inc_f |
| DHW status                      | 40081           | AI                 | 24               | AI           | 24         | nvoDHWSt_XXX           | SNVT_count_inc_f |
| DHW Priority Count              | 40083           | AI                 | 25               | AI           | 25         | nvoDHWPrCnt_XXX        | SNVT_count_inc_f |
| DHW heat demand                 | 40084           | AI                 | 26               | AI           | 26         | nvoDHWHtDem_XXX        | SNVT_count_inc_f |
| DHW burner demand               | 40085           | AI                 | 27               | AI           | 27         | nvoDHWBrnDem_XXX       | SNVT_count_inc_f |
| DHW requested rate              | 40086           | AI                 | 28               | AI           | 28         | nvoDHWRqRt_XXX         | SNVT_count_inc_f |
| DHW pump status                 | 40101           | AI                 | 29               | AI           | 29         | nvoDHWPPmpSt_XXX       | SNVT_count_inc_f |
| DHW Pump Idle Days Count        | 40105           | AI                 | 30               | AI           | 30         | nvoDHWPIIDyCt_XXX      | SNVT_count_inc_f |
| System pump status              | 40106           | AI                 | 31               | AI           | 31         | nvoSysPmpSt_XXX        | SNVT_count_inc_f |
| System Pump Idle Days Count     | 40108           | AI                 | 32               | AI           | 32         | nvoSysPIIDyCt_XXX      | SNVT_count_inc_f |
| Boiler pump status              | 40109           | AI                 | 33               | AI           | 33         | nvoBlrPmpSt_XXX        | SNVT_count_inc_f |
| Boiler Pump Idle Days Count     | 40111           | AI                 | 34               | AI           | 34         | nvoBlrPIIDyCt_XXX      | SNVT_count_inc_f |
| Burner run time                 | 40131/40132     | AV                 | 35               | AO           | 35         | nvi/nvoBrnRunTme_XXX   | SNVT_time_hour   |
| DHW pump cycle count            | 40135/40136     | AV                 | 36               | AO           | 36         | nvi/nvoDHWPPmCycCt_XXX | SNVT_count_inc_f |
| System pump cycle count         | 40137/40138     | AV                 | 37               | AO           | 37         | nvi/nvoSysPmCycCt_XXX  | SNVT_count_inc_f |
| Boiler pump cycle count         | 40139/40140     | AV                 | 38               | AO           | 38         | nvi/nvoBlrPmCycCt_XXX  | SNVT_count_inc_f |
| Controller Cycle Count          | 40143/40144     | AI                 | 39               | AI           | 39         | nvoCntrlCycCnt_XXX     | SNVT_count_inc_f |
| Controller run time             | 40145/40146     | AI                 | 40               | AI           | 40         | nvoCntrlRunTme_XXX     | SNVT_count_inc_f |
| Lead lag master status          | 40161           | AI                 | 41               | AI           | 41         | nvoLLMstSt_XXX         | SNVT_count_inc_f |
| Lead lag slave status           | 40162           | AI                 | 42               | AI           | 42         | nvoLLSlvSt_XXX         | SNVT_count_inc_f |
| Lead Lag Master Setpoint Source | 40163           | AI                 | 43               | AI           | 43         | nvoLLMstSPSr_XXX       | SNVT_count_inc_f |

LAARS Vendor Mappings

|                                  |             |    |    |    |    |                       |                  |
|----------------------------------|-------------|----|----|----|----|-----------------------|------------------|
| Lead Lag Master Pump Demand      | 40164       | AI | 44 | AI | 44 | nvoLLMstPmDm_XXX      | SNVT_count_inc_f |
| Outdoor temperature              | 40171       | AI | 45 | AI | 45 | nvoOutdrTmp_XXX       | SNVT_temp_p      |
| CH setpoint                      | 40212       | AV | 46 | AO | 46 | nvi/nvoCHSP_XXX       | SNVT_temp_p      |
| CH TOD setpoint                  | 40213       | AV | 47 | AO | 47 | nvi/nvoCHTodSP_XXX    | SNVT_temp_p      |
| DHW Demand Switch                | 40449       | AV | 48 | AO | 48 | nvi/nvoDHWDemSw_XXX   | SNVT_count_inc_f |
| Outlet high limit setpoint       | 40465       | AV | 49 | AO | 49 | nvi/nvoOutHilLmSP_XXX | SNVT_temp_p      |
| Lead Lag setpoint                | 40547       | AV | 50 | AO | 50 | nvi/nvoLLSP_XXX       | SNVT_temp_p      |
| Leadlag modulation sensor        | 40559       | AV | 51 | AO | 51 | nvi/nvoLLModSen_XXX   | SNVT_count_inc_f |
| Warm weather shutdown setpoint   | 40629       | AV | 52 | AO | 52 | nvi/nvoWrmWShSP_XXX   | SNVT_temp_p      |
| Lead Lag active service          | 40769       | AI | 53 | AI | 53 | nvoLLActSrv_XXX       | SNVT_count_inc_f |
| Slave 1 State                    | 40771       | AI | 54 | AI | 54 | nvoSlv1State_XXX      | SNVT_count_inc_f |
| Slave 1 firing rate              | 40773       | AI | 55 | AI | 55 | nvoSlv1FrRt_XXX       | SNVT_count_inc_f |
| Slave 2 State                    | 40775       | AI | 56 | AI | 56 | nvoSlv2State_XXX      | SNVT_count_inc_f |
| Slave 2 firing rate              | 40777       | AI | 57 | AI | 57 | nvoSlv2FrRt_XXX       | SNVT_count_inc_f |
| Slave 3 State                    | 40779       | AI | 58 | AI | 58 | nvoSlv3State_XXX      | SNVT_count_inc_f |
| Slave 3 firing rate              | 40781       | AI | 59 | AI | 59 | nvoSlv3FrRt_XXX       | SNVT_count_inc_f |
| Slave 4 State                    | 40783       | AI | 60 | AI | 60 | nvoSlv4State_XXX      | SNVT_count_inc_f |
| Slave 4 firing rate              | 40785       | AI | 61 | AI | 61 | nvoSlv4FrRt_XXX       | SNVT_count_inc_f |
| Slave 5 State                    | 40787       | AI | 62 | AI | 62 | nvoSlv5State_XXX      | SNVT_count_inc_f |
| Slave 5 firing rate              | 40789       | AI | 63 | AI | 63 | nvoSlv5FrRt_XXX       | SNVT_count_inc_f |
| Slave 6 State                    | 40791       | AI | 64 | AI | 64 | nvoSlv6State_XXX      | SNVT_count_inc_f |
| Slave 6 firing rate              | 40793       | AI | 65 | AI | 65 | nvoSlv6FrRt_XXX       | SNVT_count_inc_f |
| Slave 7 State                    | 40795       | AI | 66 | AI | 66 | nvoSlv7State_XXX      | SNVT_count_inc_f |
| Slave 7 firing rate              | 40797       | AI | 67 | AI | 67 | nvoSlv7FrRt_XXX       | SNVT_count_inc_f |
| Slave 8 State                    | 40799       | AI | 68 | AI | 68 | nvoSlv8State_XXX      | SNVT_count_inc_f |
| Slave 8 firing rate              | 40801       | AI | 69 | AI | 69 | nvoSlv8FrRt_XXX       | SNVT_count_inc_f |
| Master firing rate               | 40803       | AI | 70 | AI | 70 | nvoMstrFrRt_XXX       | SNVT_count_inc_f |
| Burner Control Sequence          | 40034       | AI | 71 | AI | 71 | nvoBmCtRSeq_XXX       | SNVT_count_inc_f |
| Active Rate Limiter              | 40057       | AI | 72 | AI | 72 | nvoActRtLim_XXX       | SNVT_count_inc_f |
| Burner Cycle Count               | 40129/40130 | AV | 73 | AO | 73 | nvi/nvoBmCycCnt_XXX   | SNVT_count_inc_f |
| Lead Lag Slave Demand            | 40165       | AI | 74 | AI | 74 | nvoLLSlvDem_XXX       | SNVT_count_inc_f |
| Lead Lag Slave Requested Rate    | 40166       | AI | 75 | AI | 75 | nvoLLSlvRqRt_XXX      | SNVT_count_inc_f |
| CH Enable                        | 40209       | AV | 76 | AO | 76 | nvi/nvoChEnable_XXX   | SNVT_count_inc_f |
| DHW Setpoint                     | 40454       | AV | 77 | AO | 77 | nvi/nvoDHWSP_XXX      | SNVT_temp_p      |
| DHW Time Of Day Setpoint         | 40455       | AV | 78 | AO | 78 | nvi/nvoDHWTDSP_XXX    | SNVT_temp_p      |
| Lead Lag Slave Enable            | 40545       | AV | 79 | AO | 79 | nvi/nvoLLSlvEnbl_XXX  | SNVT_count_inc_f |
| Lead Lag Time Of Day Setpoint    | 40548       | AV | 80 | AO | 80 | nvi/nvoLLTmDySP_XXX   | SNVT_temp_p      |
| Lead Lag Operation Switch        | 40556       | AV | 81 | AO | 81 | nvi/nvoLLOpSw_XXX     | SNVT_count_inc_f |
| Warm Weather Shutdown Enbl/Disbl | 40628       | AV | 82 | AO | 82 | nvi/nvoWrmWShEn_XXX   | SNVT_count_inc_f |
| Lead Lag DHW Setpoint            | 40706       | AV | 83 | AO | 83 | nvi/nvoLLDHWSP_XXX    | SNVT_temp_p      |
| Lead Lag DHW Time Of Day SP      | 40736       | AV | 84 | AO | 84 | nvi/nvoLLDHWTDSP_XXX  | SNVT_temp_p      |
| Password Reg 1                   | 40178       | AV | 85 | AO | 85 | nvi/nvoPsswdReg1_XXX  | SNVT_count_inc_f |
| Password Reg 2                   | 40179       | AV | 86 | AO | 86 | nvi/nvoPsswdReg2_XXX  | SNVT_count_inc_f |
| Burner Switch                    | 40204       | AV | 87 | AO | 87 | nvi/nvoBmSw_XXX       | SNVT_count_inc_f |
| S10 Sensor Reading               | 40175       | AI | 88 | AI | 88 | nvoR10SenRd_XXX       | SNVT_temp_p      |

LAARS Vendor Mappings

## Multiburner Modbus RTU Mappings to Modbus TCP/IP, BACnet, Metasys N2 and LonWorks

| Point Name                | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name     | LonWorks SNVT    |
|---------------------------|-----------------|--------------------|------------------|--------------|------------|-------------------|------------------|
| Inlet Temp                | 40000           | AI                 | 0                | AI           | 1          | invohletTemp_XXX  | SNVT_temp_p      |
| Outlet Temp               | 40001           | AI                 | 1                | AI           | 2          | invOurtTemp_XXX   | SNVT_temp_p      |
| DHW Temp                  | 40003           | AI                 | 3                | AI           | 3          | invDHWTemp_XXX    | SNVT_temp_p      |
| System Inlet Temp         | 40004           | AI                 | 4                | AI           | 4          | invSysInlTmp_XXX  | SNVT_temp_p      |
| System Outlet Temp        | 40005           | AI                 | 5                | AI           | 5          | invSysOutTmp_XXX  | SNVT_temp_p      |
| Outdoor Temp              | 40006           | AI                 | 6                | AI           | 6          | invOutdirTemp_XXX | SNVT_temp_p      |
| Aux1 Temp                 | 40007           | AI                 | 7                | AI           | 7          | invAux1Temp_XXX   | SNVT_temp_p      |
| Aux2 Temp                 | 40008           | AI                 | 8                | AI           | 8          | invAux2Temp_XXX   | SNVT_temp_p      |
| Aux3 Temp                 | 40009           | AI                 | 9                | AI           | 9          | invAux3Temp_XXX   | SNVT_temp_p      |
| Aux4 Temp                 | 40010           | AI                 | 10               | AI           | 10         | invAux4Temp_XXX   | SNVT_temp_p      |
| Aux5 Temp                 | 40011           | AI                 | 11               | AI           | 11         | invAux5Temp_XXX   | SNVT_temp_p      |
| Flame signal 1            | 40012           | AI                 | 12               | AI           | 12         | invFlameSig1_XXX  | SNVT_count_inc_f |
| Flame signal 2            | 40013           | AI                 | 13               | AI           | 13         | invFlameSig2_XXX  | SNVT_count_inc_f |
| Analogue input 1          | 40014           | AI                 | 14               | AI           | 14         | invAnalnp1_XXX    | SNVT_count_inc_f |
| Analogue input 2          | 40015           | AI                 | 15               | AI           | 15         | invAnalnp2_XXX    | SNVT_count_inc_f |
| Analogue input 3          | 40016           | AI                 | 16               | AI           | 16         | invAnalnp3_XXX    | SNVT_count_inc_f |
| Analogue input 4          | 40017           | AI                 | 17               | AI           | 17         | invAnalnp4_XXX    | SNVT_count_inc_f |
| Flow Switch               | 40018 b0        | BI                 | 1800             | DI           | 18         | invFlwSw_XXX      | SNVT_switch      |
| Low Water Cut Off         | 40018 b1        | BI                 | 1801             | DI           | 19         | invLoWtCtOff_XXX  | SNVT_switch      |
| Man Reset High Limit      | 40018 b2        | BI                 | 1802             | DI           | 20         | invMnRsHlIm_XXX   | SNVT_switch      |
| Pressure Switch           | 40018 b3        | BI                 | 1803             | DI           | 21         | invPrsSw_XXX      | SNVT_switch      |
| High Gas Pressure Switch  | 40018 b4        | BI                 | 1804             | DI           | 22         | invHiGsPrsSw_XXX  | SNVT_switch      |
| Low Gas Pressure Switch   | 40018 b5        | BI                 | 1805             | DI           | 23         | invLoGsPrsSw_XXX  | SNVT_switch      |
| Field Interlock Switch    | 40018 b6        | BI                 | 1806             | DI           | 24         | invFldInlkSw_XXX  | SNVT_switch      |
| Spare Safety Chain Switch | 40018 b7        | BI                 | 1807             | DI           | 25         | invSpSttChSw_XXX  | SNVT_switch      |
| Damper Interlock Switch   | 40019 b0        | BI                 | 1900             | DI           | 26         | invDpIntlkSw_XXX  | SNVT_switch      |
| Spare1 Switch             | 40019 b1        | BI                 | 1901             | DI           | 27         | invSpr1Sw_XXX     | SNVT_switch      |
| Current demand source     | 40020           | AI                 | 20               | AI           | 28         | invCurrDmSrc_XXX  | SNVT_count_inc_f |
| Boiler Run Contact        | 40021 b0        | BI                 | 2100             | DI           | 29         | invBlrRunCnt_XXX  | SNVT_switch      |
| Alarm Contact             | 40021 b1        | BI                 | 2101             | DI           | 30         | invAlmCnt_XXX     | SNVT_switch      |
| DHW Pump                  | 40021 b2        | BI                 | 2102             | DI           | 31         | invDHWpmp_XXX     | SNVT_switch      |
| System Pump               | 40021 b3        | BI                 | 2103             | DI           | 32         | invSysPmp_XXX     | SNVT_switch      |
| Louver Contact            | 40021 b4        | BI                 | 2104             | DI           | 33         | invLouverCnt_XXX  | SNVT_switch      |
| Spare1 Contact            | 40021 b5        | BI                 | 2105             | DI           | 34         | invSpr1Cnt_XXX    | SNVT_switch      |
| Spare2 Contact            | 40021 b6        | BI                 | 2106             | DI           | 35         | invSpr2Cnt_XXX    | SNVT_switch      |
| Boiler Pump               | 40021 b7        | BI                 | 2107             | DI           | 36         | invBlrPmp_XXX     | SNVT_switch      |
| Spare Output              | 40021 b8        | BI                 | 2108             | DI           | 37         | invSprOut_XXX     | SNVT_switch      |
| Pilot Valve Stage 1       | 40022 b0        | BI                 | 2200             | DI           | 38         | invPilVlvSt1_XXX  | SNVT_switch      |
| Valve 1 Stage 1           | 40022 b1        | BI                 | 2201             | DI           | 39         | invVlv1Stg1_XXX   | SNVT_switch      |
| Valve 2 Stage 1           | 40022 b2        | BI                 | 2202             | DI           | 40         | invVlv2Stg1_XXX   | SNVT_switch      |
| Pilot valve stage 2       | 40022 b3        | BI                 | 2203             | DI           | 41         | invPilVlvSt2_XXX  | SNVT_switch      |
| Valve 1 Stage 2           | 40022 b4        | BI                 | 2204             | DI           | 42         | invVlv1Stg2_XXX   | SNVT_switch      |
| Valve 2 Stage 2           | 40022 b5        | BI                 | 2205             | DI           | 43         | invVlv2Stg2_XXX   | SNVT_switch      |
| Analogue output 1         | 40023           | AI                 | 23               | AI           | 44         | invAnaOut1_XXX    | SNVT_count_inc_f |

|                            |       |    |    |    |    |                   |                  |
|----------------------------|-------|----|----|----|----|-------------------|------------------|
| Analogue output 2          | 40024 | AI | 24 | AI | 45 | nvoAnaOut2_XXX    | SNVT_count_inc_f |
| Analogue output 3          | 40025 | AI | 25 | AI | 46 | nvoAnaOut3_XXX    | SNVT_count_inc_f |
| Analogue output 4          | 40026 | AI | 26 | AI | 47 | nvoAnaOut4_XXX    | SNVT_count_inc_f |
| Fan1 Speed                 | 40027 | AI | 27 | AI | 48 | nvoFan1Spd_XXX    | SNVT_count_inc_f |
| Fan2Speed                  | 40028 | AI | 28 | AI | 49 | nvoFan2Spd_XXX    | SNVT_count_inc_f |
| Blower 1 speed             | 40029 | AI | 29 | AI | 50 | nvoBlw1Spd_XXX    | SNVT_count_inc_f |
| Blower 2 speed             | 40030 | AI | 30 | AI | 51 | nvoBlw2Spd_XXX    | SNVT_count_inc_f |
| HS11 current               | 40031 | AI | 31 | AI | 52 | nvoHS11Curr_XXX   | SNVT_count_inc_f |
| HS12 current               | 40032 | AI | 32 | AI | 53 | nvoHS12Curr_XXX   | SNVT_count_inc_f |
| Burner 1 power rating      | 40033 | AI | 33 | AI | 54 | nvoBn1PwrRtg_XXX  | SNVT_lev_percent |
| Burner 2 power rating      | 40034 | AI | 34 | AI | 55 | nvoBn2PwrRtg_XXX  | SNVT_lev_percent |
| Lockout Code               | 40035 | AI | 35 | AI | 56 | nvoLkotCode_XXX   | SNVT_count_inc_f |
| Blocking Code              | 40036 | AI | 36 | AI | 57 | nvoBlkCode_XXX    | SNVT_count_inc_f |
| DHW Call for Heat / 10     | 40038 | AI | 38 | AI | 58 | nvoDHWCallHt_XXX  | SNVT_count_f     |
| CH1 Call For Heat / 10     | 40039 | AI | 39 | AI | 59 | nvoCH1CallHt_XXX  | SNVT_count_f     |
| CH2 Call For Heat / 10     | 40040 | AI | 40 | AI | 60 | nvoCH2CallHt_XXX  | SNVT_count_f     |
| CH3 Call For Heat / 10     | 40041 | AI | 41 | AI | 61 | nvoCH3CallHt_XXX  | SNVT_count_f     |
| CH4 Call For Heat / 10     | 40042 | AI | 42 | AI | 62 | nvoCH4CallHt_XXX  | SNVT_count_f     |
| Cascade Call For Heat / 10 | 40043 | AI | 43 | AI | 63 | nvoCscCallHt_XXX  | SNVT_count_f     |
| Valve 1 Stage1 Cycles / 10 | 40044 | AI | 44 | AI | 64 | nvoV1St1Cyc_XXX   | SNVT_count_f     |
| Valve 2 Stage1 Cycles / 10 | 40045 | AI | 45 | AI | 65 | nvoV2St1Cyc_XXX   | SNVT_count_f     |
| Valve 1 Stage2 Cycles / 10 | 40046 | AI | 46 | AI | 66 | nvoV1St2Cyc_XXX   | SNVT_count_f     |
| Valve 2 Stage2 Cycles / 10 | 40047 | AI | 47 | AI | 67 | nvoV2St2Cyc_XXX   | SNVT_count_f     |
| Boiler pump cycles / 10    | 40048 | AI | 48 | AI | 68 | nvoBlrPmpCyc_XXX  | SNVT_count_f     |
| DHW pump Cycles / 10       | 40049 | AI | 49 | AI | 69 | nvoDHWpmpCyc_XXX  | SNVT_count_f     |
| System pump Cycles / 10    | 40050 | AI | 50 | AI | 70 | nvoSysPmpCyc_XXX  | SNVT_count_f     |
| Average outlet temp        | 40051 | AI | 51 | AI | 71 | nvoAvgOutTmp_XXX  | SNVT_temp_p      |
| Max outlet temp            | 40052 | AI | 52 | AI | 72 | nvoMaxOutTmp_XXX  | SNVT_temp_p      |
| Min outlet temp            | 40053 | AI | 53 | AI | 73 | nvoMinOutTmp_XXX  | SNVT_temp_p      |
| Average firing time        | 40054 | AI | 54 | AI | 74 | nvoAvgFirTime_XXX | SNVT_time_hour   |
| Max firing time            | 40055 | AI | 55 | AI | 75 | nvoMaxFirTime_XXX | SNVT_time_hour   |
| Min firing time            | 40056 | AI | 56 | AI | 76 | nvoMinFirTime_XXX | SNVT_time_hour   |
| Modulation probe           | 40064 | AI | 64 | AI | 77 | nvoModprobe_XXX   | SNVT_count_inc_f |
| Activate service           | 40065 | AI | 65 | AI | 78 | nvoActSrv_XXX     | SNVT_count_f     |
| Slave 1 state              | 40066 | AI | 66 | AI | 79 | nvoSlv1State_XXX  | SNVT_count_f     |
| Slave 1 firing rate        | 40067 | AI | 67 | AI | 80 | nvoSlv1FirRt_XXX  | SNVT_count_f     |
| Slave 2 state              | 40068 | AI | 68 | AI | 81 | nvoSlv2State_XXX  | SNVT_count_f     |
| Slave 2 firing rate        | 40069 | AI | 69 | AI | 82 | nvoSlv2FirRt_XXX  | SNVT_count_f     |
| Slave 3 state              | 40070 | AI | 70 | AI | 83 | nvoSlv3State_XXX  | SNVT_count_f     |
| Slave 3 firing rate        | 40071 | AI | 71 | AI | 84 | nvoSlv3FirRt_XXX  | SNVT_count_f     |
| Slave 4 state              | 40072 | AI | 72 | AI | 85 | nvoSlv4State_XXX  | SNVT_count_f     |
| Slave 4 firing rate        | 40073 | AI | 73 | AI | 86 | nvoSlv4FirRt_XXX  | SNVT_count_f     |
| Slave 5 state              | 40074 | AI | 74 | AI | 87 | nvoSlv5State_XXX  | SNVT_count_f     |
| Slave 5 firing rate        | 40075 | AI | 75 | AI | 88 | nvoSlv5FirRt_XXX  | SNVT_count_f     |
| Slave 6 state              | 40076 | AI | 76 | AI | 89 | nvoSlv6State_XXX  | SNVT_count_f     |
| Slave 6 firing rate        | 40077 | AI | 77 | AI | 90 | nvoSlv6FirRt_XXX  | SNVT_count_f     |
| Slave 7 state              | 40078 | AI | 78 | AI | 91 | nvoSlv7State_XXX  | SNVT_count_f     |
| Slave 7 firing rate        | 40079 | AI | 79 | AI | 92 | nvoSlv7FirRt_XXX  | SNVT_count_f     |

LAARS Vendor Mappings

|                             |       |    |    |    |     |                        |                  |
|-----------------------------|-------|----|----|----|-----|------------------------|------------------|
| Master state                | 40080 | AI | 80 | AI | 93  | nvoMstrState_XXX       | SNVT_count_f     |
| Master firing rate          | 40081 | AI | 81 | AI | 94  | nvoMstrFirRt_XXX       | SNVT_count_f     |
| Active CH setpoint          | 40083 | AI | 83 | AI | 95  | nvoActCHSP_XXX         | SNVT_count_f     |
| Burner 1 status             | 40084 | AI | 84 | AI | 96  | nvoBrn1St_XXX          | SNVT_count_f     |
| Burner 2 status             | 40085 | AI | 85 | AI | 97  | nvoBrn2St_XXX          | SNVT_count_f     |
| Boiler pump status          | 40089 | AI | 89 | AI | 98  | nvoBlrPmpSt_XXX        | SNVT_count_f     |
| Master demand               | 40090 | AI | 90 | AI | 99  | nvoMstrDem_XXX         | SNVT_count_f     |
| Burner 1 run time           | 40091 | AI | 91 | AI | 100 | nvoBrn1RunTime_XXX     | SNVT_time_hour   |
| Burner 2 run time           | 40092 | AI | 92 | AI | 101 | nvoBrn2RunTime_XXX     | SNVT_time_hour   |
| CH1 enable/disable          | 40128 | AV | 0  | AO | 102 | nvi/nvoCH1EnDs_XXX     | SNVT_count_inc_f |
| CH1 setpoint                | 40129 | AV | 1  | AO | 103 | nvi/nvoCH1SP_XXX       | SNVT_temp_p      |
| CH1 P                       | 40130 | AV | 2  | AO | 104 | nvi/nvoCH1P_XXX        | SNVT_count_inc_f |
| CH1 I                       | 40131 | AV | 3  | AO | 105 | nvi/nvoCH1I_XXX        | SNVT_count_inc_f |
| CH1 D                       | 40132 | AV | 4  | AO | 106 | nvi/nvoCH1D_XXX        | SNVT_count_inc_f |
| CH2 enable/disable          | 40133 | AV | 5  | AO | 107 | nvi/nvoCH2EnDs_XXX     | SNVT_count_inc_f |
| CH2 setpoint                | 40134 | AV | 6  | AO | 108 | nvi/nvoCH2SP_XXX       | SNVT_temp_p      |
| CH2 P                       | 40135 | AV | 7  | AO | 109 | nvi/nvoCH2P_XXX        | SNVT_count_inc_f |
| CH2 I                       | 40136 | AV | 8  | AO | 110 | nvi/nvoCH2I_XXX        | SNVT_count_inc_f |
| CH2 D                       | 40137 | AV | 9  | AO | 111 | nvi/nvoCH2D_XXX        | SNVT_count_inc_f |
| CH3 enable/disable          | 40138 | AV | 10 | AO | 112 | nvi/nvoCH3EnDs_XXX     | SNVT_count_inc_f |
| CH3 setpoint                | 40139 | AV | 11 | AO | 113 | nvi/nvoCH3SP_XXX       | SNVT_temp_p      |
| CH3 P                       | 40140 | AV | 12 | AO | 114 | nvi/nvoCH3P_XXX        | SNVT_count_inc_f |
| CH3 I                       | 40141 | AV | 13 | AO | 115 | nvi/nvoCH3I_XXX        | SNVT_count_inc_f |
| CH3 D                       | 40142 | AV | 14 | AO | 116 | nvi/nvoCH3D_XXX        | SNVT_count_inc_f |
| CH4 enable/disable          | 40143 | AV | 15 | AO | 117 | nvi/nvoCH4EnDs_XXX     | SNVT_count_inc_f |
| CH4 setpoint                | 40144 | AV | 16 | AO | 118 | nvi/nvoCH4SP_XXX       | SNVT_temp_p      |
| CH4 P                       | 40145 | AV | 17 | AO | 119 | nvi/nvoCH4P_XXX        | SNVT_count_inc_f |
| CH4 I                       | 40146 | AV | 18 | AO | 120 | nvi/nvoCH4I_XXX        | SNVT_count_inc_f |
| CH4 D                       | 40147 | AV | 19 | AO | 121 | nvi/nvoCH4D_XXX        | SNVT_count_inc_f |
| DHW enable/disable          | 40148 | AV | 20 | AO | 122 | nvi/nvoDHWEnDs_XXX     | SNVT_count_inc_f |
| DHW setpoint                | 40149 | AV | 21 | AO | 123 | nvi/nvoDHWSP_XXX       | SNVT_temp_p      |
| DHW P                       | 40150 | AV | 22 | AO | 124 | nvi/nvoDHW P_XXX       | SNVT_count_inc_f |
| DHW I                       | 40151 | AV | 23 | AO | 125 | nvi/nvoDHWI_XXX        | SNVT_count_inc_f |
| DHW D                       | 40152 | AV | 24 | AO | 126 | nvi/nvoDHW D_XXX       | SNVT_count_inc_f |
| DHW recirculation enable    | 40153 | AV | 25 | AO | 127 | nvi/nvoDHWRecircEn_XXX | SNVT_count_inc_f |
| DHW recirculation Set point | 40154 | AV | 26 | AO | 128 | nvi/nvoDHWRecircSP_XXX | SNVT_temp_p      |
| Cascade setpoint            | 40155 | AV | 27 | AO | 129 | nvi/nvoCascSP_XXX      | SNVT_temp_p      |
| Cascade P                   | 40156 | AV | 28 | AO | 130 | nvi/nvoCascP_XXX       | SNVT_count_inc_f |
| Cascade I                   | 40157 | AV | 29 | AO | 131 | nvi/nvoCascI_XXX       | SNVT_count_inc_f |
| Cascade D                   | 40158 | AV | 30 | AO | 132 | nvi/nvoCascD_XXX       | SNVT_count_inc_f |
| Hybrid setpoint             | 40163 | AV | 35 | AO | 133 | nvi/nvoHybridSP_XXX    | SNVT_temp_p      |
| Hybrid differential temp    | 40164 | AV | 36 | AO | 134 | nvi/nvoHybDiffTemp_XXX | SNVT_temp_p      |
| VariPrime P                 | 40165 | AV | 37 | AO | 135 | nvi/nvoVariPmP_XXX     | SNVT_count_inc_f |
| VariPrime I                 | 40166 | AV | 38 | AO | 136 | nvi/nvoVariPmI_XXX     | SNVT_count_inc_f |
| VariPrime D                 | 40167 | AV | 39 | AO | 137 | nvi/nvoVariPmD_XXX     | SNVT_count_inc_f |
| VariPrime delta T           | 40168 | AV | 40 | AO | 138 | nvi/nvoVariPmDIT_XXX   | SNVT_temp_p      |
| AntiCondens Enable          | 40169 | AV | 41 | AO | 139 | nvi/nvoAntiCndEn_XXX   | SNVT_count_f     |
| AntiCondens Temp            | 40170 | AV | 42 | AO | 140 | nvi/nvoAntiCndTp_XXX   | SNVT_temp_p      |

|                   |       |    |    |    |     |                     |                  |
|-------------------|-------|----|----|----|-----|---------------------|------------------|
| AntiCondens P     | 40171 | AV | 43 | AO | 141 | nvi/nvoAntiCndP_XXX | SNVT_count_inc_f |
| AntiCondens I     | 40172 | AV | 44 | AO | 142 | nvi/nvoAntiCndI_XXX | SNVT_count_inc_f |
| AntiCondens D     | 40173 | AV | 45 | AO | 143 | nvi/nvoAntiCndD_XXX | SNVT_count_inc_f |
| DHW demand        | 40174 | BV | 0  | DO | 144 | nvi/nvoDHWDem_XXX   | SNVT_switch      |
| CH1 demand        | 40175 | BV | 1  | DO | 145 | nvi/nvoCH1Dem_XXX   | SNVT_switch      |
| CH2 demand        | 40176 | BV | 2  | DO | 146 | nvi/nvoCH2Dem_XXX   | SNVT_switch      |
| CH3 demand        | 40177 | BV | 3  | DO | 147 | nvi/nvoCH3Dem_XXX   | SNVT_switch      |
| CH4 demand        | 40178 | BV | 4  | DO | 148 | nvi/nvoCH4Dem_XXX   | SNVT_switch      |
| Parameters enable | 40179 | BV | 5  | DO | 149 | nvi/nvoParamEn_XXX  | SNVT_switch      |

### SV2 Modbus RTU Mappings to Modbus TCP/IP, BACnet, Metasys N2 and LonWorks

| Point Name                            | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name        | LonWorks SNVT    |
|---------------------------------------|-----------------|--------------------|------------------|--------------|------------|----------------------|------------------|
| Selectable Units for Temperature      | 40073           | BV                 | 1                | DO           | 1          | nvi/nvoSelTmpUnt_XXX | SNVT_switch      |
| Selectable Units for Pressure         | 40074           | MV                 | 2                | AO           | 2          | nvi/nvoSePrsUnt_XXX  | SNVT_count       |
| Selectable Units for Volumetric Flow  | 40075           | MV                 | 3                | AO           | 3          | nvi/nvoSelVfIU_XXX   | SNVT_count       |
| Selectable Volumetric Units           | 40078           | BV                 | 4                | DO           | 4          | nvi/nvoSelVolUnt_XXX | SNVT_switch      |
| Remote Reset Command                  | 40079           | AI                 | 5                | AI           | 5          | nvoRemResCmd_XXX     | SNVT_count_inc_f |
| Pressure Module Factory Data          | 40107-40137     | AI                 | 6                | AI           | 6          | nvoPrsMdFcDt_XXX     | SNVT_count_inc_f |
| Valve MV1/MV2 LED                     | 40148           | BI                 | 7                | DI           | 7          | nvoVMV12LED_XXX      | SNVT_switch      |
| Body Size of Attached Valve           | 40149           | MI                 | 8                | AI           | 8          | nvoAttVIBdSz_XXX     | SNVT_count       |
| VPS Disable/Enable Status             | 40150           | BI                 | 9                | DI           | 9          | nvoVPSDsEnSt_XXX     | SNVT_switch      |
| Max Allowed Leakage in User Units     | 40151           | AI                 | 10               | AI           | 10         | nvoMxAILkUstr_XXX    | SNVT_count_inc_f |
| Space Between Valves Volume           | 40152           | AI                 | 11               | AI           | 11         | nvoSpBVVVol_XXX      | SNVT_count_inc_f |
| Ext Chmbr Space for Ext Pip btwn V1/V | 40153           | AI                 | 12               | AI           | 12         | nvoExtChmSpc_XXX     | SNVT_count_inc_f |
| VPS Relay Polarity                    | 40154           | BI                 | 13               | DI           | 13         | nvoVPSRelPol_XXX     | SNVT_switch      |
| LGP Limit Lockout Type                | 40156           | MI                 | 14               | AI           | 14         | nvoLGPLmLTy_XXX      | SNVT_count       |
| HGP Limit Lockout Type                | 40157           | MI                 | 15               | AI           | 15         | nvoHGPLmLTy_XXX      | SNVT_count       |
| Max HGP Lim Per Deviation             | 40159           | AI                 | 16               | AI           | 16         | nvoMxHGPLmDv_XXX     | SNVT_lev_percent |
| Max LGP Lim Per Deviation             | 40160           | AI                 | 17               | AI           | 17         | nvoMxLGPLmDv_XXX     | SNVT_lev_percent |
| LGP and HGP Setup Indication          | 40161           | MI                 | 18               | AI           | 18         | nvoLGPHGPSet_XXX     | SNVT_count       |
| Calc LGP Lim SP                       | 40162           | AI                 | 19               | AI           | 19         | nvoCILGPLmSP_XXX     | SNVT_count_inc_f |
| Calc HGP Lim SP                       | 40164           | AI                 | 20               | AI           | 20         | nvoCIHGPLmSP_XXX     | SNVT_count_inc_f |
| User Entered Valve Name               | 40255-40259     | AI                 | 21               | AI           | 21         | nvoUsEntVINm_XXX     | SNVT_count_inc_f |
| Date Stamp                            | 40285           | AI                 | 22               | AI           | 22         | nvoDateStamp_XXX     | SNVT_count_inc_f |
| Valve Electronic SW Rev               | 30002           | AI                 | 23               | AI           | 23         | nvoVIEISWRev_XXX     | SNVT_count_inc_f |
| Num of Currently Active Alarms        | 30005           | AI                 | 24               | AI           | 24         | nvoNmCurAcAl_XXX     | SNVT_count_inc_f |
| Reset Button                          | 30006 b0        | BI                 | 25               | DI           | 25         | nvoResetBtn_XXX      | SNVT_switch      |
| MV1 Open                              | 30006 b1        | BI                 | 26               | DI           | 26         | nvoMV1Open_XXX       | SNVT_switch      |
| MV2 Open                              | 30006 b2        | BI                 | 27               | DI           | 27         | nvoMV2Open_XXX       | SNVT_switch      |
| Fuel/Air Module Comm OK               | 30006 b3        | BI                 | 28               | DI           | 28         | nvoFarMdCmOk_XXX     | SNVT_switch      |
| Pressure Module Comm OK               | 30006 b4        | BI                 | 29               | DI           | 29         | nvoPrsMdCmOk_XXX     | SNVT_switch      |
| Fuel/Air Module Check Valve           | 30006 b5        | BI                 | 30               | DI           | 30         | nvoFarMdChVl_XXX     | SNVT_switch      |
| Safety Param Verification Req         | 30006 b6        | BI                 | 31               | DI           | 31         | nvoStfPrVrRq_XXX     | SNVT_switch      |
| Lockout                               | 30006 b7        | BI                 | 32               | DI           | 32         | nvoLkOt_XXX          | SNVT_switch      |
| Valve Cycle Counter Lim Reached       | 30006 b8        | BI                 | 33               | DI           | 33         | nvoVICyClLRc_XXX     | SNVT_switch      |
| Min Applicable Pressure               | 30024           | AI                 | 34               | AI           | 34         | nvoMinAppPrs_XXX     | SNVT_count_inc_f |

LAARS Vendor Mappings

|                                      |              |    |    |    |    |                   |                  |
|--------------------------------------|--------------|----|----|----|----|-------------------|------------------|
| Max Applicable Pressure              | 30025        | AI | 35 | AI | 35 | nvoMaxAppPrs_XXX  | SNVT_count_inc_f |
| Current Pressure Mod Press Reading   | 30032        | AI | 36 | AI | 36 | nvoCrPMdPrRd_XXX  | SNVT_count_inc_f |
| Pressure Module Status               | 30033        | MI | 37 | AI | 37 | nvoPrsModSt_XXX   | SNVT_count       |
| Pressure Module Sensor 1 Status      | 30036        | MI | 38 | AI | 38 | nvoPrMdSn1St_XXX  | SNVT_count       |
| Pressure Module Sensor 2 Status      | 30037        | MI | 39 | AI | 39 | nvoPrMdSn2St_XXX  | SNVT_count       |
| Pressure Module Sensor 3 Status      | 30038        | MI | 40 | AI | 40 | nvoPrMdSn3St_XXX  | SNVT_count       |
| Pressure Module Sensor 1 Ser Num     | 30041        | AI | 41 | AI | 41 | nvoPrMdSn1SN_XXX  | SNVT_count_inc_f |
| Pressure Module Sensor 2 Ser Num     | 30043        | AI | 42 | AI | 42 | nvoPrMdSn2SN_XXX  | SNVT_count_inc_f |
| Pressure Module Sensor 3 Ser Num     | 30045        | AI | 43 | AI | 43 | nvoPrMdSn3SN_XXX  | SNVT_count_inc_f |
| Valve Test Mode State                | 30054        | AI | 44 | AI | 44 | nvoVITstMdSt_XXX  | SNVT_count_inc_f |
| VPS Min Calc Vlv Pwr Tim Req         | 30055        | AI | 45 | AI | 45 | nvoVPSMCIPTTR_XXX | SNVT_time_sec    |
| VPS Valve 1 Status                   | 30056        | MI | 46 | AI | 46 | nvoVPSVlv1St_XXX  | SNVT_count       |
| VPS Valve 2 Status                   | 30057        | MI | 47 | AI | 47 | nvoVPSVlv2St_XXX  | SNVT_count       |
| Valve 1 Max Leak Det dur Lst VPS Seq | 30060        | AI | 48 | AI | 48 | nvoV1MxLkDtl_XXX  | SNVT_count_inc_f |
| Valve 2 Max Leak Det dur Lst VPS Seq | 30061        | AI | 49 | AI | 49 | nvoV2MxLkDtl_XXX  | SNVT_count_inc_f |
| VPS Min Test Time Req                | 30062        | AI | 50 | AI | 50 | nvoVPSMntTsTR_XXX | SNVT_time_sec    |
| Hi/Lo Gas Pressure Function Status   | 30063        | MI | 51 | AI | 51 | nvoHilLoGsPFS_XXX | SNVT_count       |
| Op Prs Val for LGP Lim SP            | 30064        | AI | 52 | AI | 52 | nvoOPVLGPLSP_XXX  | SNVT_count_inc_f |
| Op Prs Val for HGP Lim SP            | 30065        | AI | 53 | AI | 53 | nvoOPVHGPLSP_XXX  | SNVT_count_inc_f |
| Valve System States                  | 30078        | MI | 54 | AI | 54 | nvoVlvSysSt_XXX   | SNVT_count       |
| Valve 1 Demand                       | 30095 b0/1   | MI | 55 | AI | 55 | nvoVlv1Dem_XXX    | SNVT_count       |
| Valve 2 Demand                       | 30095 b2/3   | MI | 56 | AI | 56 | nvoVlv2Dem_XXX    | SNVT_count       |
| Interlock String                     | 30095 b4/5   | MI | 57 | AI | 57 | nvoIntrikStg_XXX  | SNVT_count       |
| Proof of Closure Feedback            | 30095 b6/7   | MI | 58 | AI | 58 | nvoPrfClfIdbk_XXX | SNVT_count       |
| Sol 1 Feedback – Full Power Mode     | 30095 b8/9   | MI | 59 | AI | 59 | nvoS1FbFlPwM_XXX  | SNVT_count       |
| Sol 2 Feedback – Full Power Mode     | 30095 b10/11 | MI | 60 | AI | 60 | nvoS2FbFlPwM_XXX  | SNVT_count       |
| Sol 1 Feedback – Power Save Mode     | 30095 b12/13 | MI | 61 | AI | 61 | nvoS1FbFlSwM_XXX  | SNVT_count       |
| Sol 2 Feedback – Power Save Mode     | 30095 b14/15 | MI | 62 | AI | 62 | nvoS2FbFlSwM_XXX  | SNVT_count       |
| Sol 1 Fb for MV1 Rel Test – Full Pwr | 30096 b0/1   | MI | 63 | AI | 63 | nvoS1FbM1RTF_XXX  | SNVT_count       |
| Fault Code Of Most Recent Fault      | 30139        | AI | 64 | AI | 64 | nvoFltCdRec_XXX   | SNVT_count_inc_f |
| Time Stamp Of Most Recent Fault      | 30140/30141  | AI | 65 | AI | 65 | nvoTmStRecFt_XXX  | SNVT_count_inc_f |
| Cycle Count Of Most Recent Fault     | 30142/30143  | AI | 66 | AI | 66 | nvoCyCtRecFt_XXX  | SNVT_count_inc_f |
| Fault Code Of Previous Fault         | 30144        | AI | 67 | AI | 67 | nvoFltCdPrv_XXX   | SNVT_count_inc_f |
| Time Stamp Of Previous Fault         | 30145/30146  | AI | 68 | AI | 68 | nvoTmStPrvFt_XXX  | SNVT_count_inc_f |
| Cycle Count Of Previous Fault        | 30147/30148  | AI | 69 | AI | 69 | nvoCyCtPrvFt_XXX  | SNVT_count_inc_f |
| Valve Accumulated Op Time            | 30214/30215  | AI | 70 | AI | 70 | nvoVIAccOpTm_XXX  | SNVT_time_hour   |
| Valve Accumulated Number of Cycles   | 30216/30217  | AI | 71 | AI | 71 | nvoVIAccNmCy_XXX  | SNVT_count_inc_f |
| Valve 1 Accum Hours during last VPS  | 30270/30271  | AI | 72 | AI | 72 | nvoV1AchVPS_XXX   | SNVT_time_hour   |
| Valve 1 Accum Cycles during last VPS | 30272/30273  | AI | 73 | AI | 73 | nvoV1AccCVPS_XXX  | SNVT_count_inc_f |
| Valve 2 Accum Hours during last VPS  | 30274/30275  | AI | 74 | AI | 74 | nvoV2AchVPS_XXX   | SNVT_time_hour   |
| Valve 2 Accum Cycles during last VPS | 30276/30277  | AI | 75 | AI | 75 | nvoV2AccCVPS_XXX  | SNVT_count_inc_f |
| Safety Param Verification Status     | 30288        | MI | 76 | AI | 76 | nvoSFPrVerSt_XXX  | SNVT_count       |
| Preignition Calibration S1           | 30100        | AI | 77 | AI | 77 | nvoPrIgCalS1_XXX  | SNVT_count_inc_f |
| Preignition Test S1                  | 30101        | AI | 78 | AI | 78 | nvoPrIgTstS1_XXX  | SNVT_count_inc_f |
| Preignition Calibration Gain S2A     | 30102        | AI | 79 | AI | 79 | nvoPrIgClS2A_XXX  | SNVT_count_inc_f |
| Preignition Calibration Gain S2B     | 30103        | AI | 80 | AI | 80 | nvoPrIgClS2B_XXX  | SNVT_count_inc_f |
| Preignition Test Gain S2A            | 30104        | AI | 81 | AI | 81 | nvoPrIgTsS2A_XXX  | SNVT_count_inc_f |
| Preignition Test Gain S2B            | 30107        | AI | 82 | AI | 82 | nvoPrIgTsS2B_XXX  | SNVT_count_inc_f |

## HTD Modbus RTU Mappings to Modbus TCP/IP, BACnet, Metasys N2 and LonWorks

| Point Name                              | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name    | LonWorks SNVT    | Notes                                                                                                                                                              |
|-----------------------------------------|-----------------|--------------------|------------------|--------------|------------|------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inlet sensor                            | 40000           | AI                 | 0                | AI           | 1          | nvoInletSen_XXX  | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Outlet sensor                           | 40001           | AI                 | 1                | AI           | 2          | nvoOutSen_XXX    | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Stack Sensor                            | 40002           | AI                 | 2                | AI           | 3          | nvoStackSen_XXX  | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| DHW sensor                              | 40003           | AI                 | 3                | AI           | 4          | nvoDHWSen_XXX    | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| System Return Sensor                    | 40004           | AI                 | 4                | AI           | 5          | nvoSysRetSen_XXX | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| System Supply Sensor                    | 40005           | AI                 | 5                | AI           | 6          | nvoSysSupSen_XXX | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Outdoor Sensor                          | 40006           | AI                 | 6                | AI           | 7          | nvoOutdrSen_XXX  | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Auxiliary Sensor 1                      | 40007           | AI                 | 7                | AI           | 8          | nvoAuxSen1_XXX   | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Auxiliary Sensor 2                      | 40008           | AI                 | 8                | AI           | 9          | nvoAuxSen2_XXX   | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Auxiliary Sensor 3                      | 40009           | AI                 | 9                | AI           | 10         | nvoAuxSen3_XXX   | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Auxiliary Sensor 4                      | 40010           | AI                 | 10               | AI           | 11         | nvoAuxSen4_XXX   | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Auxiliary Sensor 5                      | 40011           | AI                 | 11               | AI           | 12         | nvoAuxSen5_XXX   | SNVT_count_inc_f | °C/°F                                                                                                                                                              |
| Flame Signal                            | 40012           | AI                 | 12               | AI           | 13         | nvoFlameSig_XXX  | SNVT_count_inc_f | uA                                                                                                                                                                 |
| Not used                                | 40013           | AI                 | 13               | AI           | 14         | nvoReg40013_XXX  | SNVT_count_inc_f | uA                                                                                                                                                                 |
| 0-10VDC (4-20mA) Input for BAS          | 40014           | AI                 | 14               | AI           | 15         | nvo0_10VIBAS_XXX | SNVT_count_inc_f | mV                                                                                                                                                                 |
| 0-10VDC (4-20mA) Input for Pump         | 40015           | AI                 | 15               | AI           | 16         | nvo0_10VIPmp_XXX | SNVT_count_inc_f | mV                                                                                                                                                                 |
| 0-10VDC (4-20mA) Input for Mixing Valve | 40016           | AI                 | 16               | AI           | 17         | nvo0_10VIMxV_XXX | SNVT_count_inc_f | mV                                                                                                                                                                 |
| 0-10VDC (4-20mA) Input for Auxiliary    | 40017           | AI                 | 17               | AI           | 18         | nvo0_10VIAux_XXX | SNVT_count_inc_f | mV                                                                                                                                                                 |
| Safety Chain Status                     | 40018           | BI                 | 1                | DI           | 1          | nvoFlow_XXX      | SNVT_switch      | Bit 0 = flow                                                                                                                                                       |
|                                         |                 | BI                 | 2                | DI           | 2          | nvoLWCO_XXX      | SNVT_switch      | Bit 1 = Low Water Cut-off                                                                                                                                          |
|                                         |                 | BI                 | 3                | DI           | 3          | nvoManReHiLm_XXX | SNVT_switch      | Bit 2 = Manual Reset High Limit                                                                                                                                    |
|                                         |                 | BI                 | 4                | DI           | 4          | nvoArPrvSw_XXX   | SNVT_switch      | Bit 3 = Air Proving Switch                                                                                                                                         |
|                                         |                 | BI                 | 5                | DI           | 5          | nvoHiGsPrsSw_XXX | SNVT_switch      | Bit 4 = High Gas Pressure Switch                                                                                                                                   |
|                                         |                 | BI                 | 6                | DI           | 6          | nvoLoGsPrsSw_XXX | SNVT_switch      | Bit 5 = Low Gas Pressure Switch                                                                                                                                    |
|                                         |                 | BI                 | 7                | DI           | 7          | nvoAutReHiLm_XXX | SNVT_switch      | Bit 6 = Auto Reset High Limit                                                                                                                                      |
|                                         |                 | BI                 | 8                | DI           | 8          | nvoFldIntlck_XXX | SNVT_switch      | Bit 7 = Field Interlock                                                                                                                                            |
|                                         |                 | BI                 | 9                | DI           | 9          | nvoIntlck1_XXX   | SNVT_switch      | Bit 0 = Interlock 1                                                                                                                                                |
|                                         |                 | BI                 | 10               | DI           | 10         | nvoIntlck2_XXX   | SNVT_switch      | Bit 1 = Interlock 2                                                                                                                                                |
| Non-Safety Chain Status                 | 40019           |                    |                  |              |            |                  |                  | 0 = No demand<br>1 = Anti Short Cycle<br>2 = Service<br>3 = DHW<br>4 = Slave Cascade<br>5 = External<br>6 = CH1<br>7 = CH2<br>8 = CH3<br>9 = CH4<br>10 = Antifrost |
| Current demand source                   | 40020           | AI                 | 20               | AI           | 21         | nvoCurDemSrc_XXX | SNVT_count_inc_f |                                                                                                                                                                    |

LAARS Vendor Mappings

|                                |       |    |    |    |    |                  |                  |                                |
|--------------------------------|-------|----|----|----|----|------------------|------------------|--------------------------------|
| Digital Output Status          | 40021 | BI | 11 | DI | 11 | nvoRunCont_XXX   | SNVT_switch      | Bit 0 = Run Contact            |
|                                |       | BI | 12 | DI | 12 | nvoAlmCont_XXX   | SNVT_switch      | Bit 1 = Alarm Contact          |
|                                |       | BI | 13 | DI | 13 | nvoDHW_Pump_XXX  | SNVT_switch      | Bit 2 = DHW Pump               |
|                                |       | BI | 14 | DI | 14 | nvoSysPump_XXX   | SNVT_switch      | Bit 3 = System Pump            |
|                                |       | BI | 15 | DI | 15 | nvoAux4_XXX      | SNVT_switch      | Bit 4 = Auxiliary              |
|                                |       | BI | 16 | DI | 16 | nvoAux5_XXX      | SNVT_switch      | Bit 5 = Auxiliary              |
|                                |       | BI | 17 | DI | 17 | nvoAux6_XXX      | SNVT_switch      | Bit 6 = Auxiliary              |
|                                |       | BI | 18 | DI | 18 | nvoBltPump_XXX   | SNVT_switch      | Bit 7 = Boiler Pump            |
|                                |       | BI | 19 | DI | 19 | nvoAux8_XXX      | SNVT_switch      | Bit 8 = Auxiliary              |
|                                |       | BI | 20 | DI | 20 | nvoPitVlv1_XXX   | SNVT_switch      | Bit 0 = Pilot Valve 1          |
| Gas Valve Status               | 40022 | BI | 21 | DI | 21 | nvoStg1Vlv1_XXX  | SNVT_switch      | Bit 1 = Stage 1/Valve 1        |
|                                |       | AI | 23 | AI | 24 | nvo0_10VOPmp_XXX | SNVT_count_inc_f | mV                             |
|                                |       | AI | 24 | AI | 25 | nvo0_10VDOFS_XXX | SNVT_count_inc_f | mV                             |
|                                |       | AI | 25 | AI | 26 | nvo0_10VDOmV_XXX | SNVT_count_inc_f | mV                             |
|                                |       | AI | 26 | AI | 27 | nvo0_10VDOA1_XXX | SNVT_count_inc_f | mV                             |
|                                |       | AI | 27 | AI | 28 | nvoModFan1Sp_XXX | SNVT_count_inc_f | RPM                            |
|                                |       | AI | 28 | AI | 29 | nvoO2_XXX        | SNVT_lev_percent | %                              |
|                                |       | AI | 29 | AI | 30 | nvoHiLoBl1St_XXX | SNVT_count_inc_f | 0 = Off<br>1 = Low<br>2 = High |
|                                |       | AI | 30 | AI | 31 | nvoCO2_XXX       | SNVT_lev_percent | %                              |
|                                |       | AI | 31 | AI | 32 | nvoPrs1_XXX      | SNVT_count_inc_f | "W.C.                          |
| Modulating Burner1 Firing rate | 40032 | AI | 32 | AI | 33 | nvoPrs2_XXX      | SNVT_count_inc_f | "W.C.                          |
|                                |       | AI | 33 | AI | 34 | nvoMdBr1FrRt_XXX | SNVT_lev_percent | %                              |
|                                |       | AI | 34 | AI | 35 | nvoMdBr2FrRt_XXX | SNVT_lev_percent | %                              |
|                                |       | AI | 35 | AI |    |                  |                  |                                |

|              |       |    |    |    |    |                  |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|-------|----|----|----|----|------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lockout code | 40035 | AI | 35 | AI | 36 | nvoLkocode_XXX   | SNVT_count_inc_f | LOW FLOW ERROR = 0<br>LOW WATER CUT OFF ERROR = 1<br>MANUAL RESET HIGH LIMIT ERROR = 2<br>BLOCKED FLUE ERROR = 3<br>HIGH GAS PRESSURE ERROR = 4<br>LOW GAS PRESSURE ERROR = 5<br>AUTO RESET HIGH LIMIT ERROR = 6<br>SPARE SAFETY CHAIN ERROR = 7<br>OUTLET PROBE ERROR = 8<br>OUTLET PROBE DRIFT ERROR = 9<br>OUTLET PROBE HIGH LIMIT ERROR = 10<br>FLUE PROBE ERROR = 11<br>CONDENSING SHUTDOWN ERROR = 12<br>FLUE PROBE DRIFT ERROR = 13<br>FLUE PROBE HIGH LIMIT ERROR = 14<br>INLET PROBE ERROR = 15<br>DELTA T ERROR = 16<br>GENERIC LOCKOUT = 17<br>BURNER1 APS SWITCH ERROR = 18<br>BURNER2 APS SWITCH ERROR = 19<br>BURNER1 HSI FLAME ERROR = 20<br>BURNER2 HSI FLAME ERROR = 21<br>BURNER1 MAX TRIALS ERROR = 22<br>BURNER2 MAX TRIALS ERROR = 23<br>BURNER1 MAX FLAME LOST ERROR = 24<br>BURNER2 MAX FLAME LOST ERROR = 25<br>BURNER1 PROVEN HSI ERROR = 26<br>BURNER2 PROVEN HSI ERROR = 27<br>BURNER1 FAN SPEED ERROR = 28<br>BURNER2 FAN SPEED ERROR = 29<br>24VDC ERROR = 30<br>24VAC ERROR = 31<br>DHW PROBE ERROR = 32<br>SYSTEM SUPPLY PROBE ERROR = 33<br>SYSTEM RETURN PROBE ERROR = 34<br>OUTDOOR PROBE ERROR = 35<br>SPARE1 PROBE ERROR = 36<br>SPARE2 PROBE ERROR = 37<br>SPARE3 PROBE ERROR = 38<br>SPARE4 PROBE ERROR = 39<br>SPARE5 PROBE ERROR = 40<br>HIGH LIMIT AUTO ERROR = 41<br>HIGH DELTA T ERROR = 42<br>FAN SPEED ERROR = 43<br>CONDENSING ALARM = 44 |
| Alarm reason | 40036 | AI | 36 | AI | 37 | nvoAlmreason_XXX | SNVT_count_inc_f | 24VDC ERROR = 30<br>24VAC ERROR = 31<br>DHW PROBE ERROR = 32<br>SYSTEM SUPPLY PROBE ERROR = 33<br>SYSTEM RETURN PROBE ERROR = 34<br>OUTDOOR PROBE ERROR = 35<br>SPARE1 PROBE ERROR = 36<br>SPARE2 PROBE ERROR = 37<br>SPARE3 PROBE ERROR = 38<br>SPARE4 PROBE ERROR = 39<br>SPARE5 PROBE ERROR = 40<br>HIGH LIMIT AUTO ERROR = 41<br>HIGH DELTA T ERROR = 42<br>FAN SPEED ERROR = 43<br>CONDENSING ALARM = 44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

LAARS Vendor Mappings

| Point Name  | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name    | LonWorks SNVT    | Note Type               | Notes                                                                                                                                                                                                                                                                                                                                              |
|-------------|-----------------|--------------------|------------------|--------------|------------|------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LMV - Phase | 40037           | AI                 | 37               | AI           | 38         | nvoLMV_Phase_XXX | SNVT_count_inc_f | Lockout<br>Standby      | 0 = Lockout<br>2 = Safety<br>10 = Home Run Position<br>12 = Burner Standby                                                                                                                                                                                                                                                                         |
|             |                 |                    |                  |              |            |                  |                  | Start-up                | 22 = Combustion Fan, SV On<br>24 = Drive to Prepurge Position<br>30 = Prepurge<br>35 = VSD Drive to Ignition Position<br>36 = Drive to Ignition Position<br>38 = Preignition (Spark) On<br>40 = Pilot Valve On<br>42 = Ignition (Spark) Off<br>44 = Interval 1 (Pilot Stabilization)<br>50 = Safety Time 2<br>52 = Interval 2 (Main Stabilization) |
|             |                 |                    |                  |              |            |                  |                  | Running                 | 60 = Operation 1 (Normal Operation)<br>62 = Operation 2 (Driving to Low Fire)                                                                                                                                                                                                                                                                      |
|             |                 |                    |                  |              |            |                  |                  | Interpurgel<br>Ignition | 64 = Drive to Ignition Position<br>65 = Interval 2<br>66 = Ignition (Spark) + Pilot Valve On<br>67 = Main Valve Off<br>68 = Pilot Waiting Time<br>69 = Pilot Waiting Time - Startup (Interval 1)                                                                                                                                                   |
|             |                 |                    |                  |              |            |                  |                  | Shutdown                | 70 = Afterburn Time<br>72 = Drive to Postpurge Position<br>74 = Mandatory Postpurge<br>78 = Optional Postpurge                                                                                                                                                                                                                                     |
|             |                 |                    |                  |              |            |                  |                  | Gas Valve<br>Proving    | 80 = Evacuate<br>81 = Atmospheric Test<br>82 = Fill<br>83 = Pressure Test<br>90 = Gas Shortage                                                                                                                                                                                                                                                     |
|             |                 |                    |                  |              |            |                  |                  |                         |                                                                                                                                                                                                                                                                                                                                                    |
|             |                 |                    |                  |              |            |                  |                  |                         |                                                                                                                                                                                                                                                                                                                                                    |
|             |                 |                    |                  |              |            |                  |                  |                         |                                                                                                                                                                                                                                                                                                                                                    |
|             |                 |                    |                  |              |            |                  |                  |                         |                                                                                                                                                                                                                                                                                                                                                    |

| Point Name                           | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name    | LonWorks SNVT    | Notes        |
|--------------------------------------|-----------------|--------------------|------------------|--------------|------------|------------------|------------------|--------------|
| History - DHW Heat Demand Cycles     | 40038           | AI                 | 38               | AI           | 39         | nvoHsDHWHDcy_XXX | SNVT_count_inc_f | Cycles       |
| History - CH1 Heat Demand Cycles     | 40039           | AI                 | 39               | AI           | 40         | nvoHsCH1HtDC_XXX | SNVT_count_inc_f | Cycles       |
| History - CH2 Heat Demand Cycles     | 40040           | AI                 | 40               | AI           | 41         | nvoHsCH2HtDC_XXX | SNVT_count_inc_f | Cycles       |
| History - CH3 Heat Demand Cycles     | 40041           | AI                 | 41               | AI           | 42         | nvoHsCH3HtDC_XXX | SNVT_count_inc_f | Cycles       |
| History - CH4 Heat Demand Cycles     | 40042           | AI                 | 42               | AI           | 43         | nvoHsCH4HtDC_XXX | SNVT_count_inc_f | Cycles       |
| History - Cascade Heat Demand Cycles | 40043           | AI                 | 43               | AI           | 44         | nvoHsCscHtDC_XXX | SNVT_count_inc_f | Cycles       |
| History - Burner Stage 1 Cycles      | 40044           | AI                 | 44               | AI           | 45         | nvoHsBrSt1Cy_XXX | SNVT_count_inc_f | Cycles       |
| LMV - Fuel Actuator Position         | 40045           | AI                 | 45               | AI           | 46         | nvoLMVFIAPs_XXX  | SNVT_count_inc_f | -50° to 150° |

|                                             |       |    |    |    |    |    |    |                  |                   |                                         |
|---------------------------------------------|-------|----|----|----|----|----|----|------------------|-------------------|-----------------------------------------|
| LMV - Air Actuator Position                 | 40046 | AI | 46 | AI | 47 | AI | 47 | nvLMVArAPs_XXX   | SNVT_count_inc_f  | -50° to 150°                            |
| LMV - VSD Setting                           | 40047 | AI | 47 | AI | 48 | AI | 48 | nvLMVSDSt_XXX    | SNVT_leve_percent | 0 to 100%                               |
| History - Boiler Pump Cycles                | 40048 | AI | 48 | AI | 49 | AI | 49 | nvHsBlrPmCy_XXX  | SNVT_count_inc_f  | Cycles                                  |
| History - DHW Pump Cycles                   | 40049 | AI | 49 | AI | 50 | AI | 50 | nvHsDHWpMcy_XXX  | SNVT_count_inc_f  | Cycles                                  |
| History - System Pump Cycles                | 40050 | AI | 50 | AI | 51 | AI | 51 | nvHsSysPmCy_XXX  | SNVT_count_inc_f  | Cycles                                  |
| History - Average Boiler Outlet Temperature | 40051 | AI | 51 | AI | 52 | AI | 52 | nvHsAvBlOTp_XXX  | SNVT_count_inc_f  | °C/°F                                   |
| History - Maximum Boiler Outlet Temperature | 40052 | AI | 52 | AI | 53 | AI | 53 | nvHsMxBOtTp_XXX  | SNVT_count_inc_f  | °C/°F                                   |
| History - Minimum Boiler Outlet Temperature | 40053 | AI | 53 | AI | 54 | AI | 54 | nvHsMnBOtTp_XXX  | SNVT_count_inc_f  | °C/°F                                   |
| History - Boiler Average Firing Temperature | 40054 | AI | 54 | AI | 55 | AI | 55 | nvHsBlAVfTp_XXX  | SNVT_count_inc_f  | °C/°F                                   |
| History - Boiler Maximum Firing Time        | 40055 | AI | 55 | AI | 56 | AI | 56 | nvHsBlMxFTm_XXX  | SNVT_time_hour    | Hours                                   |
| History - Boiler Minimum Firing Time        | 40056 | AI | 56 | AI | 57 | AI | 57 | nvHsBlMnFTm_XXX  | SNVT_time_hour    | Hours                                   |
| LMV - Modulation Rate                       | 40057 | AI | 57 | AI | 58 | AI | 58 | nvLMV_ModRt_XXX  | SNVT_leve_percent | %                                       |
| LMV - Flame Signal                          | 40058 | AI | 58 | AI | 59 | AI | 59 | nvLMVFImSg_XXX   | SNVT_leve_percent | %                                       |
| LMV - Error Code                            | 40059 | AI | 59 | AI | 60 | AI | 60 | nvLMVErrCd_XXX   | SNVT_count_inc_f  | 0 to 255                                |
| LMV - Diagnostic Code                       | 40060 | AI | 60 | AI | 61 | AI | 61 | nvLMVDiagCd_XXX  | SNVT_count_inc_f  | 0 to 255                                |
| LMV - Inputs                                | 40061 | BI | 22 | DI | 22 | DI | 22 | nvCntrOnOff_XXX  | SNVT_switch       | Bit 0 = Controller On/Off               |
|                                             |       | BI | 23 | DI | 23 | DI | 23 | nvFanCntrCnc_XXX | SNVT_switch       | Bit 1 = Fan contactor contact           |
|                                             |       | BI | 24 | DI | 24 | DI | 24 | nvFiSelOil_XXX   | SNVT_switch       | Bit 2 = Fuel selection oil              |
|                                             |       | BI | 25 | DI | 25 | DI | 25 | nvFiSelGas_XXX   | SNVT_switch       | Bit 3 = Fuel selection gas              |
|                                             |       | BI | 26 | DI | 26 | DI | 26 | nvPrsSwMxOl_XXX  | SNVT_switch       | Bit 5 = Pressure switch-max-oil         |
|                                             |       | BI | 27 | DI | 27 | DI | 27 | nvPrsSwMnOl_XXX  | SNVT_switch       | Bit 6 = Pressure switch-min-oil         |
|                                             |       | BI | 28 | DI | 28 | DI | 28 | nvPrsSwVlPr_XXX  | SNVT_switch       | Bit 7 = Pressure switch - valve proving |
|                                             |       | BI | 29 | DI | 29 | DI | 29 | nvStfyLoop_XXX   | SNVT_switch       | Bit 8 = Safety loop                     |
|                                             |       | BI | 30 | DI | 30 | DI | 30 | nvPrsSwMnGs_XXX  | SNVT_switch       | Bit 10 = Pressure switch-min-gas        |
|                                             |       | BI | 31 | DI | 31 | DI | 31 | nvPrsSwVlGs_XXX  | SNVT_switch       | Bit 11 = Pressure switch-max-gas        |
|                                             |       | BI | 32 | DI | 32 | DI | 32 | nvLP_XXX         | SNVT_switch       | Bit 13 = LP                             |
|                                             |       | BI | 33 | DI | 33 | DI | 33 | nvStRelOil_XXX   | SNVT_switch       | Bit 14 = Start release oil              |
|                                             |       | BI | 34 | DI | 34 | DI | 34 | nvHyOllmSt_XXX   | SNVT_switch       | Bit 15 = Heavy oil immediate start      |
|                                             |       | BI | 35 | DI | 35 | DI | 35 | nvAlarm_XXX      | SNVT_switch       | Bit 0 = Alarm                           |
|                                             |       | BI | 36 | DI | 36 | DI | 36 | nvIgnition_XXX   | SNVT_switch       | Bit 4 = Ignition                        |
|                                             |       | BI | 37 | DI | 37 | DI | 37 | nvStSigDWI_XXX   | SNVT_switch       | Bit 5 = Start signal/DW valve           |
| LMV - Outputs                               | 40062 | BI | 38 | DI | 38 | DI | 38 | nvFan_XXX        | SNVT_switch       | Bit 6 = Fan                             |
|                                             |       | BI | 39 | DI | 39 | DI | 39 | nvOilPmMgCp_XXX  | SNVT_switch       | Bit 7 = Oil pump/magnetic coupling      |
|                                             |       | BI | 40 | DI | 40 | DI | 40 | nvFIVSVOl_XXX    | SNVT_switch       | Bit 8 = Fuel valve SV oil               |
|                                             |       | BI | 41 | DI | 41 | DI | 41 | nvFIVV1Ol_XXX    | SNVT_switch       | Bit 9 = Fuel valve V1 oil               |
|                                             |       | BI | 42 | DI | 42 | DI | 42 | nvFIVV2Ol_XXX    | SNVT_switch       | Bit 10 = Fuel valve V2 oil              |
|                                             |       | BI | 43 | DI | 43 | DI | 43 | nvFIVV3Ol_XXX    | SNVT_switch       | Bit 11 = Fuel valve V3 oil              |
|                                             |       | BI | 44 | DI | 44 | DI | 44 | nvFIVSVGs_XXX    | SNVT_switch       | Bit 12 = Fuel valve SV gas              |
|                                             |       | BI | 45 | DI | 45 | DI | 45 | nvFIVV1Gs_XXX    | SNVT_switch       | Bit 13 = Fuel valve V1 gas              |
|                                             |       | BI | 46 | DI | 46 | DI | 46 | nvFIVV2Gs_XXX    | SNVT_switch       | Bit 14 = Fuel valve V2 gas              |
|                                             |       | BI | 47 | DI | 47 | DI | 47 | nvFIVPVGs_XXX    | SNVT_switch       | Bit 15 = Fuel valve PV gas              |
|                                             |       | AI | 63 | AI | 64 | AI | 64 | nvLMV_BrnID_XXX  | SNVT_count_inc_f  | See LMV Manual                          |
|                                             |       |    |    |    |    |    |    |                  |                   | 0 = None                                |
|                                             |       |    |    |    |    |    |    |                  |                   | 1 = Outlet                              |
|                                             |       |    |    |    |    |    |    |                  |                   | 2 = DHW                                 |
|                                             |       |    |    |    |    |    |    |                  |                   | 3 = System Supply                       |
|                                             |       |    |    |    |    |    |    |                  |                   | 4 = Inlet                               |
|                                             |       |    |    |    |    |    |    |                  |                   | 5 = Flue                                |
|                                             |       |    |    |    |    |    |    |                  |                   | 6 = System Return                       |
| LMV - Burner ID                             | 40063 | AI | 63 | AI | 64 | AI | 64 | nvLMV_BrnID_XXX  | SNVT_count_inc_f  | See LMV Manual                          |
| Modulating probe                            | 40064 | AI | 64 | AI | 65 | AI | 65 | nvModprobe_XXX   | SNVT_count_inc_f  | 0 = None                                |
|                                             |       |    |    |    |    |    |    |                  |                   | 1 = Outlet                              |

LAARS Vendor Mappings

|                        |       |    |    |    |    |                  |                  |   |                                                                                        |
|------------------------|-------|----|----|----|----|------------------|------------------|---|----------------------------------------------------------------------------------------|
| Service active         | 40065 | AI | 65 | AI | 66 | nvoSrvAct_XXX    | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 1 State            | 40066 | AI | 66 | AI | 67 | nvoLag1State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 1 Firing Rate      | 40067 | AI | 67 | AI | 68 | nvoLag1FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 2 State            | 40068 | AI | 68 | AI | 69 | nvoLag2State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 2 Firing Rate      | 40069 | AI | 69 | AI | 70 | nvoLag2FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 3 State            | 40070 | AI | 70 | AI | 71 | nvoLag3State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 3 Firing Rate      | 40071 | AI | 71 | AI | 72 | nvoLag3FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 4 State            | 40072 | AI | 72 | AI | 73 | nvoLag4State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 4 Firing Rate      | 40073 | AI | 73 | AI | 74 | nvoLag4FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 5 State            | 40074 | AI | 74 | AI | 75 | nvoLag5State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 5 Firing Rate      | 40075 | AI | 75 | AI | 76 | nvoLag5FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 6 State            | 40076 | AI | 76 | AI | 77 | nvoLag6State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 6 Firing Rate      | 40077 | AI | 77 | AI | 78 | nvoLag6FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lag 7 State            | 40078 | AI | 78 | AI | 79 | nvoLag7State_XXX | SNVT_count_inc_f |   |                                                                                        |
| Lag 7 Firing Rate      | 40079 | AI | 79 | AI | 80 | nvoLag7FirRt_XXX | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Lead 0 State           | 40080 | AI | 80 | AI | 81 | nvoLd0State_XXX  | SNVT_count_inc_f |   |                                                                                        |
| Lead 0 Firing Rate     | 40081 | AI | 81 | AI | 82 | nvoLd0FirRt_XXX  | SNVT_lev_percent | % | 0 = Not Present<br>1 = Not Available<br>2 = Available<br>3 = Running<br>4 = Locked out |
| Active CH setpoint     | 40083 | AI | 83 | AI | 84 | nvoActCHSP_XXX   | SNVT_count_inc_f |   |                                                                                        |
| Burner Status 1        | 40084 | AI | 84 | AI | 85 | nvoBrnSt1_XXX    | SNVT_count_inc_f |   | 0 = Off<br>1 = On                                                                      |
| LMV - Lower Trim Limit | 40085 | AI | 85 | AI | 86 | nvoLMVlWTrLm_XXX | SNVT_count_inc_f |   | See LMV Manual                                                                         |

LAARS Vendor Mappings

|                             |       |    |    |    |    |    |    |                     |                   |                           |
|-----------------------------|-------|----|----|----|----|----|----|---------------------|-------------------|---------------------------|
| LMV - Upper Trim Limit      | 40086 | AI | 86 | AI | 87 | AI | 87 | nvLMVUpTrLm_XXX     | SNVT_count_inc_f  | See LMV Manual            |
| LMV - Current Trim          | 40087 | AI | 87 | AI | 88 | AI | 88 | nvLMVCurTrm_XXX     | SNVT_count_inc_f  | See LMV Manual            |
| LMV - Fan Speed             | 40088 | AI | 88 | AI | 89 | AI | 89 | nvLMVFanSpd_XXX     | SNVT_leve_percent | %                         |
| Boiler Pump Status          | 40089 | AI | 89 | AI | 90 | AI | 90 | nvBlrPmpSt_XXX      | SNVT_count_inc_f  | 0 = Off<br>1 = On         |
| Cascade Lead Heat Demand    | 40090 | AI | 90 | AI | 91 | AI | 91 | nvCscldHdM_XXX      | SNVT_count_inc_f  | 0 = Off<br>1 = On         |
| Burner 1 Run Time           | 40091 | AI | 91 | AI | 92 | AI | 92 | nvBrn1RunTm_XXX     | SNVT_time_hour    | Hours                     |
| Burner 2 Run Time           | 40092 | AI | 92 | AI | 93 | AI | 93 | nvBrn2RunTm_XXX     | SNVT_time_hour    | Hours                     |
| CH1 enable/disable          | 40128 | AV | 0  | AO | 1  | AO | 1  | nvIhvoCH1EnDs_XXX   | SNVT_count_inc_f  | 0 = Disable<br>1 = Enable |
| CH1 setpoint                | 40129 | AV | 1  | AO | 2  | AO | 2  | nvIhvoCH1SP_XXX     | SNVT_count_inc_f  | °C/°F                     |
| CH1 P                       | 40130 | AV | 2  | AO | 3  | AO | 3  | nvIhvoCH1P_XXX      | SNVT_count_inc_f  | Unitless                  |
| CH1 I                       | 40131 | AV | 3  | AO | 4  | AO | 4  | nvIhvoCH1I_XXX      | SNVT_time_sec     | Seconds                   |
| CH1 D                       | 40132 | AV | 4  | AO | 5  | AO | 5  | nvIhvoCH1D_XXX      | SNVT_time_sec     | Seconds                   |
| CH2 enable/disable          | 40133 | AV | 5  | AO | 6  | AO | 6  | nvIhvoCH2EnDs_XXX   | SNVT_count_inc_f  | 0 = Disable<br>1 = Enable |
| CH2 setpoint                | 40134 | AV | 6  | AO | 7  | AO | 7  | nvIhvoCH2SP_XXX     | SNVT_count_inc_f  | °C/°F                     |
| CH2 P                       | 40135 | AV | 7  | AO | 8  | AO | 8  | nvIhvoCH2P_XXX      | SNVT_count_inc_f  | Unitless                  |
| CH2 I                       | 40136 | AV | 8  | AO | 9  | AO | 9  | nvIhvoCH2I_XXX      | SNVT_time_sec     | Seconds                   |
| CH2 D                       | 40137 | AV | 9  | AO | 10 | AO | 10 | nvIhvoCH2D_XXX      | SNVT_time_sec     | Seconds                   |
| CH3 enable/disable          | 40138 | AV | 10 | AO | 11 | AO | 11 | nvIhvoCH3EnDs_XXX   | SNVT_count_inc_f  | 0 = Disable<br>1 = Enable |
| CH3 setpoint                | 40139 | AV | 11 | AO | 12 | AO | 12 | nvIhvoCH3SP_XXX     | SNVT_count_inc_f  | °C/°F                     |
| CH3 P                       | 40140 | AV | 12 | AO | 13 | AO | 13 | nvIhvoCH3P_XXX      | SNVT_count_inc_f  | Unitless                  |
| CH3 I                       | 40141 | AV | 13 | AO | 14 | AO | 14 | nvIhvoCH3I_XXX      | SNVT_time_sec     | Seconds                   |
| CH3 D                       | 40142 | AV | 14 | AO | 15 | AO | 15 | nvIhvoCH3D_XXX      | SNVT_time_sec     | Seconds                   |
| CH4 enable/disable          | 40143 | AV | 15 | AO | 16 | AO | 16 | nvIhvoCH4EnDs_XXX   | SNVT_count_inc_f  | 0 = Disable<br>1 = Enable |
| CH4 setpoint                | 40144 | AV | 16 | AO | 17 | AO | 17 | nvIhvoCH4SP_XXX     | SNVT_count_inc_f  | °C/°F                     |
| CH4 P                       | 40145 | AV | 17 | AO | 18 | AO | 18 | nvIhvoCH4P_XXX      | SNVT_count_inc_f  | Unitless                  |
| CH4 I                       | 40146 | AV | 18 | AO | 19 | AO | 19 | nvIhvoCH4I_XXX      | SNVT_time_sec     | Seconds                   |
| CH4 D                       | 40147 | AV | 19 | AO | 20 | AO | 20 | nvIhvoCH4D_XXX      | SNVT_time_sec     | Seconds                   |
| DHW enable/disable          | 40148 | AV | 20 | AO | 21 | AO | 21 | nvIhvoDHWEnDs_XXX   | SNVT_count_inc_f  | 0 = Disable<br>1 = Enable |
| DHW setpoint                | 40149 | AV | 21 | AO | 22 | AO | 22 | nvIhvoDHWSP_XXX     | SNVT_count_inc_f  | °C/°F                     |
| DHW P                       | 40150 | AV | 22 | AO | 23 | AO | 23 | nvIhvoDHWHP_XXX     | SNVT_count_inc_f  | Unitless                  |
| DHW I                       | 40151 | AV | 23 | AO | 24 | AO | 24 | nvIhvoDHWI_XXX      | SNVT_time_sec     | Seconds                   |
| DHW D                       | 40152 | AV | 24 | AO | 25 | AO | 25 | nvIhvoDHW D_XXX     | SNVT_time_sec     | Seconds                   |
| DHW recirculation enable    | 40153 | AV | 25 | AO | 26 | AO | 26 | nvIhvoDHWRecEn_XXX  | SNVT_count_inc_f  | 0 = Disable<br>1 = Enable |
| DHW recirculation Set point | 40154 | AV | 26 | AO | 27 | AO | 27 | nvIhvoDHWRecrSP_XXX | SNVT_count_inc_f  | °C/°F                     |
| Cascade setpoint            | 40155 | AV | 27 | AO | 28 | AO | 28 | nvIhvoCascSP_XXX    | SNVT_count_inc_f  | °C/°F                     |
| Cascade P                   | 40156 | AV | 28 | AO | 29 | AO | 29 | nvIhvoCascP_XXX     | SNVT_count_inc_f  | Unitless                  |
| Cascade I                   | 40157 | AV | 29 | AO | 30 | AO | 30 | nvIhvoCascI_XXX     | SNVT_time_sec     | Seconds                   |
| Cascade D                   | 40158 | AV | 30 | AO | 31 | AO | 31 | nvIhvoCascD_XXX     | SNVT_time_sec     | Seconds                   |
| Hybrid setpoint             | 40163 | AV | 35 | AO | 36 | AO | 36 | nvIhvoHybridSP_XXX  | SNVT_count_inc_f  | °C/°F                     |
| Hybrid differential temp    | 40164 | AV | 36 | AO | 37 | AO | 37 | nvIhvoHybDiTemp_XXX | SNVT_count_inc_f  | °C/°F                     |
| VariPrime P                 | 40165 | AV | 37 | AO | 38 | AO | 38 | nvIhvoVariPmP_XXX   | SNVT_count_inc_f  | Unitless                  |
| VariPrime I                 | 40166 | AV | 38 | AO | 39 | AO | 39 | nvIhvoVariPmI_XXX   | SNVT_time_sec     | Seconds                   |

LAARS Vendor Mappings

|                    |       |    |    |    |    |                      |                  |                             |
|--------------------|-------|----|----|----|----|----------------------|------------------|-----------------------------|
| VariPrime D        | 40167 | AV | 39 | AO | 40 | nvi/nvoVanPmD_XXX    | SNVT_time_sec    | Seconds                     |
| VariPrime delta T  | 40168 | AV | 40 | AO | 41 | nvi/nvoVariPrDIT_XXX | SNVT_count_inc_f | °C/°F                       |
| AntiCondens Enable | 40169 | AV | 41 | AO | 42 | nvi/nvoAntiCndEn_XXX | SNVT_count_inc_f | 0 = Disable<br>1 = Enable   |
| AntiCondens Temp   | 40170 | AV | 42 | AO | 43 | nvi/nvoAntiCndTp_XXX | SNVT_count_inc_f | °C/°F                       |
| AntiCondens P      | 40171 | AV | 43 | AO | 44 | nvi/nvoAntiCndP_XXX  | SNVT_count_inc_f | Unitless                    |
| AntiCondens I      | 40172 | AV | 44 | AO | 45 | nvi/nvoAntiCndI_XXX  | SNVT_time_sec    | Seconds                     |
| AntiCondens D      | 40173 | AV | 45 | AO | 46 | nvi/nvoAntiCndD_XXX  | SNVT_time_sec    | Seconds                     |
| DHW demand         | 40174 | BV | 0  | DO | 1  | nvi/nvoDHWDem_XXX    | SNVT_switch      | 0 = Disable<br>1 = Enable   |
| CH1 demand         | 40175 | BV | 1  | DO | 2  | nvi/nvoCH1Dem_XXX    | SNVT_switch      | 0 = No Demand<br>1 = Demand |
| CH2 demand         | 40176 | BV | 2  | DO | 3  | nvi/nvoCH2Dem_XXX    | SNVT_switch      | 0 = No Demand<br>1 = Demand |
| CH3 demand         | 40177 | BV | 3  | DO | 4  | nvi/nvoCH3Dem_XXX    | SNVT_switch      | 0 = No Demand<br>1 = Demand |
| CH4 demand         | 40178 | BV | 4  | DO | 5  | nvi/nvoCH4Dem_XXX    | SNVT_switch      | 0 = No Demand<br>1 = Demand |

## OmniTherm Modbus RTU Mappings to Modbus TCP/IP, BACnet, Metasys N2 and LonWorks

| Point Name                              | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name    | LonWorks SNVT    | Notes                    |
|-----------------------------------------|-----------------|--------------------|------------------|--------------|------------|------------------|------------------|--------------------------|
| Inlet sensor                            | 0               | AI                 | 0                | AI           | 1          | nvoInletSen_XXX  | SNVT_count_inc_f |                          |
| Outlet sensor                           | 1               | AI                 | 1                | AI           | 2          | nvoOutSen_XXX    | SNVT_count_inc_f |                          |
| Stack sensor                            | 2               | AI                 | 2                | AI           | 3          | nvoStackSen_XXX  | SNVT_count_inc_f |                          |
| DHW sensor                              | 3               | AI                 | 3                | AI           | 4          | nvoDHWSen_XXX    | SNVT_count_inc_f |                          |
| System Inlet Sensor                     | 4               | AI                 | 4                | AI           | 5          | nvoSysInSen_XXX  | SNVT_count_inc_f |                          |
| System Outlet Sensor                    | 5               | AI                 | 5                | AI           | 6          | nvoSysOutSen_XXX | SNVT_count_inc_f |                          |
| Outdoor Sensor                          | 6               | AI                 | 6                | AI           | 7          | nvoOutdrSen_XXX  | SNVT_count_inc_f |                          |
| Flame Signal 1                          | 12              | AI                 | 12               | AI           | 13         | nvoFlameSig1_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for BAS          | 14              | AI                 | 14               | AI           | 15         | nvo0_10VIBAS_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for Pump         | 15              | AI                 | 15               | AI           | 16         | nvo0_10VIPmp_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for Mixing Valve | 16              | AI                 | 16               | AI           | 17         | nvo0_10VIMxV_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for Auxiliary    | 17              | AI                 | 17               | AI           | 18         | nvo0_10VIAux_XXX | SNVT_count_inc_f |                          |
| Safety Chain Status                     | 18              | BI                 | 1                | DI           | 1          | nvoFlowSw_XXX    | SNVT_switch      | bit0 = Flow Switch       |
|                                         |                 | BI                 | 2                | DI           | 2          | nvoLWCO_XXX      | SNVT_switch      | bit1 = LWCO              |
|                                         |                 | BI                 | 3                | DI           | 3          | nvoMRHL_XXX      | SNVT_switch      | bit2 = MRHL              |
|                                         |                 | BI                 | 4                | DI           | 4          | nvoBikFlue_XXX   | SNVT_switch      | bit3 = Blocked Flue      |
|                                         |                 | BI                 | 5                | DI           | 5          | nvoHiGsPrs_XXX   | SNVT_switch      | bit4 = High Gas Pressure |
|                                         |                 | BI                 | 6                | DI           | 6          | nvoLoGsPrs_XXX   | SNVT_switch      | bit5 = Low Gas Pressure  |
|                                         |                 | BI                 | 7                | DI           | 7          | nvoFldIntlck_XXX | SNVT_switch      | bit6 = Field Interlock   |
|                                         |                 | BI                 | 8                | DI           | 8          | nvoARHL_XXX      | SNVT_switch      | bit7 = ARHL              |
| Non-safety Chain Status                 | 19              | BI                 | 9                | DI           | 9          | nvoFldIn1_XXX    | SNVT_switch      | bit0 = Field Input 1     |
|                                         |                 | BI                 | 10               | DI           | 10         | nvoFldIn2_XXX    | SNVT_switch      | bit1 = Field Input 2     |

|                                          |    |    |    |    |    |                  |                  |                                                                                                                                                                |
|------------------------------------------|----|----|----|----|----|------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Demand source                            | 20 | AI | 20 | AI | 21 | nvoDemSrc_XXX    | SNVT_count_inc_f | 0=None<br>1=Anti-Short Cycle<br>2=Service<br>3=DHW<br>4=Cascade<br>5=External<br>6=CH1<br>7=CH2<br>8=CH3<br>9=CH4<br>10=Anti-Frost<br>11=Warm weather shutdown |
| Digital Output Status                    | 21 | BI | 11 | DI | 11 | nvoRunCnt_XXX    | SNVT_switch      | bit0 = Run contact                                                                                                                                             |
|                                          |    | BI | 12 | DI | 12 | nvoAlmCnt_XXX    | SNVT_switch      | bit1 = Alarm Contact                                                                                                                                           |
|                                          |    | BI | 13 | DI | 13 | nvoDHWpump_XXX   | SNVT_switch      | bit2 = DHW Pump                                                                                                                                                |
|                                          |    | BI | 14 | DI | 14 | nvoSysPump_XXX   | SNVT_switch      | bit3 = System Pump                                                                                                                                             |
|                                          |    | BI | 15 | DI | 15 | nvoLouverCnt_XXX | SNVT_switch      | bit4 = Louver contact                                                                                                                                          |
|                                          |    | BI | 16 | DI | 16 | nvoAxDryCnt1_XXX | SNVT_switch      | bit5 = Aux dry contact 1                                                                                                                                       |
|                                          |    | BI | 17 | DI | 17 | nvoAxDryCnt2_XXX | SNVT_switch      | bit6 = Aux dry contact 2                                                                                                                                       |
|                                          |    | BI | 18 | DI | 18 | nvoBlrPump_XXX   | SNVT_switch      | bit7 = Boiler pump                                                                                                                                             |
|                                          |    | BI | 19 | DI | 19 | nvoAuxPwrCnt_XXX | SNVT_switch      | bit8 = Aux powered contact                                                                                                                                     |
|                                          |    | BI | 20 | DI | 20 | nvoB1PitGsVl_XXX | SNVT_switch      | bit 0 = Burner 1 Pilot Gas valve                                                                                                                               |
| Gas and Pilot Valve Status               | 22 | BI | 21 | DI | 21 | nvoB1GsVlV1_XXX  | SNVT_switch      | bit 1 = Burner 1 Gas valve 1                                                                                                                                   |
| 0-10VDC (4-20mA) Output for Pump Speed   | 23 | AI | 23 | AI | 24 | nvo0_10VOPmp_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| 0-10VDC (4-20mA) Output for Fan Speed    | 24 | AI | 24 | AI | 25 | nvo0_10VDOFS_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| 0-10VDC (4-20mA) Output for Mixing Valve | 25 | AI | 25 | AI | 26 | nvo0_10VDOMV_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| 0-10VDC (4-20mA) Output for Auxiliary 1  | 26 | AI | 26 | AI | 27 | nvo0_10VDOA1_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| Modulating Fan 1 - Speed                 | 27 | AI | 27 | AI | 28 | nvoModFan1Sp_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| Modulating Burner1 Firing rate           | 33 | AI | 33 | AI | 34 | nvoMdBr1FrRt_XXX | SNVT_count_inc_f |                                                                                                                                                                |

LAARS Vendor Mappings

|                                 |    |    |    |    |    |                  |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----|----|----|----|----|------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lockout code                    | 35 | AI | 35 | AI | 36 | nvoLkocode_XXX   | SNVT_count_inc_f | LOW FLOW ERROR = 0<br>LOW WATER CUT OFF ERROR = 1<br>MANUAL RESET HIGH LIMIT ERROR = 2<br>BLOCKED FLUE ERROR = 3<br>HIGH GAS PRESSURE ERROR = 4<br>LOW GAS PRESSURE ERROR = 5<br>AUTO RESET HIGH LIMIT ERROR = 6<br>SPARE SAFETY CHAIN ERROR = 7<br>OUTLET PROBE ERROR = 8<br>OUTLET PROBE DRIFT ERROR = 9<br>OUTLET PROBE HIGH LIMIT ERROR = 10<br>FLUE PROBE ERROR = 11<br>CONDENSING SHUTDOWN ERROR = 12<br>FLUE PROBE DRIFT ERROR = 13<br>FLUE PROBE HIGH LIMIT ERROR = 14<br>INLET PROBE ERROR = 15<br>DELTA T ERROR = 16<br>GENERIC LOCKOUT = 17<br>BURNER1 APS SWITCH ERROR = 18<br>BURNER2 APS SWITCH ERROR = 19<br>BURNER1 HSI FLAME ERROR = 20<br>BURNER2 HSI FLAME ERROR = 21<br>BURNER1 MAX TRIALS ERROR = 22<br>BURNER2 MAX TRIALS ERROR = 23<br>BURNER1 MAX FLAME LOST ERROR = 24<br>BURNER2 MAX FLAME LOST ERROR = 25<br>BURNER1 PROVEN HSI ERROR = 26<br>BURNER2 PROVEN HSI ERROR = 27<br>BURNER1 FAN SPEED ERROR = 28<br>BURNER2 FAN SPEED ERROR = 29 |
| Alarm reason                    | 36 | AI | 36 | AI | 37 | nvoAlmreason_XXX | SNVT_count_inc_f | 24VDC ERROR = 30<br>24VAC ERROR = 31<br>DHW PROBE ERROR = 32<br>SYSTEM SUPPLY PROBE ERROR = 33<br>SYSTEM RETURN PROBE ERROR = 34<br>OUTDOOR PROBE ERROR = 35<br>SPARE1 PROBE ERROR = 36<br>SPARE2 PROBE ERROR = 37<br>SPARE3 PROBE ERROR = 38<br>SPARE4 PROBE ERROR = 39<br>SPARE5 PROBE ERROR = 40<br>HIGH LIMIT AUTO ERROR = 41<br>HIGH DELTA T ERROR = 42<br>FAN SPEED ERROR = 43<br>CONDENSING ALARM = 44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Hold code                       | 37 | AI | 37 | AI | 38 | nvoHoldcode_XXX  | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - DHW Demand Cycles     | 38 | AI | 38 | AI | 39 | nvoHsDHWdMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - CH1 Demand Cycles     | 39 | AI | 39 | AI | 40 | nvoHsCH1dMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - CH2 Demand Cycles     | 40 | AI | 40 | AI | 41 | nvoHsCH2dMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - Cascade Demand Cycles | 43 | AI | 43 | AI | 44 | nvoHsCscdMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - Burner Stage 1 Cycles | 44 | AI | 44 | AI | 45 | nvoHsBrSt1Cy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - Boiler Pump Cycles    | 48 | AI | 48 | AI | 49 | nvoHsBlrPmcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - DHW Pump Cycles       | 49 | AI | 49 | AI | 50 | nvoHsDHWpMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - System Pump Cycles    | 50 | AI | 50 | AI | 51 | nvoHsSyspMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

LAARS Vendor Mappings

## LAARS Vendor Mappings

|                    |    |    |    |    |    |                  |                   |                                                                                                                                             |
|--------------------|----|----|----|----|----|------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Lag 4 State        | 72 | AI | 72 | AI | 73 | nvoLag4State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering     |
| Lag 4 Firing Rate  | 73 | AI | 73 | AI | 74 | nvoLag4FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lag 5 State        | 74 | AI | 74 | AI | 75 | nvoLag5State_XXX | SNVT_count_inc_f  | Slave state:<br>0=Slave is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering |
| Lag 5 Firing Rate  | 75 | AI | 75 | AI | 76 | nvoLag5FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lag 6 State        | 76 | AI | 76 | AI | 77 | nvoLag6State_XXX |                   | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering     |
| Lag 6 Firing Rate  | 77 | AI | 77 | AI | 78 | nvoLag6FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lag 7 State        | 78 | AI | 78 | AI | 79 | nvoLag7State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering     |
| Lag 7 Firing Rate  | 79 | AI | 79 | AI | 80 | nvoLag7FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lead 0 State       | 80 | AI | 80 | AI | 81 | nvoLd0State_XXX  | SNVT_count_inc_f  | Lead state:<br>0=Lead is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering   |
| Lead 0 Firing Rate | 81 | AI | 81 | AI | 82 | nvoLd0FirRt_XXX  | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lead Firing Rate   | 82 | AI | 82 | AI | 83 | nvoLeadFirRt_XXX | SNVT_leve_percent | Current firing rate of the Cascade Lead (0-100%)                                                                                            |
| Active CH Setpoint | 83 | AI | 83 | AI | 84 | nvoActCHSP_XXX   | SNVT_count_inc_f  | Pauls note:changes with witch ch1 or ch2 is calling not with dhw                                                                            |

LAARS Vendor Mappings

|                            |     |    |    |    |    |                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-----|----|----|----|----|--------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Burner Status 1            | 84  | AI | 84 | AI | 85 | nvoBrnSt1_XXX      | SNVT_count_inc_f | 0=None<br>5 = Start<br>24 = Error Block<br>160 = Standby<br>165 = Check Safety Switch<br>166 = Run<br>177 = Prepurge Open<br>181 = Parameter Block<br>183 = Lockout<br>188 = Testmode<br>194 = Prepurge Closed<br>195 = Wait for HIS Free<br>196 = HIS Preheat/Prespark<br>200 = Verify Primary SF<br>217 = interpurge<br>241 = Postpurge<br>245 = Trial for Ignition<br>250 = Trial for Ignition Main<br>52=Post Purge |
| Burner Status 2            | 85  | AI | 85 | AI | 86 | nvoBrnSt2_XXX      | SNVT_count_inc_f | 0=Disabled<br>1=Locked out<br>2-3=Reserved<br>4=Anti-short cycle<br>34=Standby Hold<br>35=Standby Delay<br>change<br>48=Normal Standby<br>49=Preparing<br>50=Ignition<br>51=Firing<br>52=Post Purge                                                                                                                                                                                                                     |
| CH Set Point Source        | 86  | AI | 86 | AI | 87 | nvoCHSPSrc_XXX     | SNVT_count_inc_f | 0 = no CH source<br>1 = CH1<br>2 = CH2<br>3 = CH3<br>4 = CH4<br>5 = External Demand                                                                                                                                                                                                                                                                                                                                     |
| CH Requested Rate          | 87  | AI | 87 | AI | 88 | nvoCHRqRL_XXX      | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| DHW Requested Rate         | 88  | AI | 88 | AI | 89 | nvoDHWIRqRt_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Boiler Pump Status         | 89  | AI | 89 | AI | 90 | nvoBlrPmpSt_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Cascade Master Heat Demand | 90  | AI | 90 | AI | 91 | nvoCscMstHtDm_XXX  | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Burner 1 Run Time          | 91  | AI | 91 | AI | 92 | nvoBrn1RunTm_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Burner 2 Run Time          | 92  | AI | 92 | AI | 93 | nvoBrn2RunTm_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 Enable/Disable         | 128 | AV | 0  | AO | 1  | nvi/nvoCH1EnDs_XXX | SNVT_count_inc_f | 0 = Disable; 1 = Enable                                                                                                                                                                                                                                                                                                                                                                                                 |
| CH1 Set Point              | 129 | AV | 1  | AO | 2  | nvi/nvoCH1SP_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 P                      | 130 | AV | 2  | AO | 3  | nvi/nvoCH1P_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 I                      | 131 | AV | 3  | AO | 4  | nvi/nvoCH1I_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 D                      | 132 | AV | 4  | AO | 5  | nvi/nvoCH1D_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 Enable/Disable         | 133 | AV | 5  | AO | 6  | nvi/nvoCH2EnDs_XXX | SNVT_count_inc_f | 0 = Disable; 1 = Enable                                                                                                                                                                                                                                                                                                                                                                                                 |
| CH2 Set Point              | 134 | AV | 6  | AO | 7  | nvi/nvoCH2SP_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 P                      | 135 | AV | 7  | AO | 8  | nvi/nvoCH2P_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 I                      | 136 | AV | 8  | AO | 9  | nvi/nvoCH2I_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 D                      | 137 | AV | 9  | AO | 10 | nvi/nvoCH2D_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |

LAARS Vendor Mappings

|                                  |     |    |    |    |    |                       |                  |                                     |
|----------------------------------|-----|----|----|----|----|-----------------------|------------------|-------------------------------------|
| DHW Enable/Disable               | 148 | AV | 20 | AO | 21 | nvi/nvoDHWEnDs_XXX    | SNVT_count_inc_f | 0 = Disable; 1 = Enable             |
| DHW Set Point                    | 149 | AV | 21 | AO | 22 | nvi/nvoDHWSP_XXX      | SNVT_count_inc_f |                                     |
| DHW P                            | 150 | AV | 22 | AO | 23 | nvi/nvoDHWHP_XXX      | SNVT_count_inc_f |                                     |
| DHW I                            | 151 | AV | 23 | AO | 24 | nvi/nvoDHWI_XXX       | SNVT_count_inc_f |                                     |
| DHW D                            | 152 | AV | 24 | AO | 25 | nvi/nvoDHWd_XXX       | SNVT_count_inc_f |                                     |
| Cascade CH Set Point             | 155 | AV | 27 | AO | 28 | nvi/nvoCascCHSP_XXX   | SNVT_count_inc_f |                                     |
| Cascade CH P                     | 156 | AV | 28 | AO | 29 | nvi/nvoCascCHP_XXX    | SNVT_count_inc_f |                                     |
| Cascade CH I                     | 157 | AV | 29 | AO | 30 | nvi/nvoCascCHI_XXX    | SNVT_count_inc_f |                                     |
| Cascade CH D                     | 158 | AV | 30 | AO | 31 | nvi/nvoCascCHD_XXX    | SNVT_count_inc_f |                                     |
| Hybrid Set Point                 | 163 | AV | 35 | AO | 36 | nvi/nvoHybridSP_XXX   | SNVT_count_inc_f |                                     |
| Hybrid Differential Temperature  | 164 | AV | 36 | AO | 37 | nvi/nvoHybDiffTmp_XXX | SNVT_count_inc_f |                                     |
| Vari-Prime P - Proportional Term | 165 | AV | 37 | AO | 38 | nvi/nvoVrPrPrTm_XXX   | SNVT_count_inc_f |                                     |
| Vari-Prime I - Integral Term     | 166 | AV | 38 | AO | 39 | nvi/nvoVrPrITm_XXX    | SNVT_count_inc_f |                                     |
| Vari-Prime D - Derivative Term   | 167 | AV | 39 | AO | 40 | nvi/nvoVrPrDrTm_XXX   | SNVT_count_inc_f |                                     |
| Vari-Prime Delta T               | 168 | AV | 40 | AO | 41 | nvi/nvoVrPrDIT_XXX    | SNVT_count_inc_f |                                     |
| DHW Demand switch                | 174 | BV | 0  | DO | 1  | nvi/nvoDHWDDemSw_XXX  | SNVT_switch      | 0 = No Heat Demand; 1 = Heat Demand |
| CH 1 Demand switch               | 175 | BV | 1  | DO | 2  | nvi/nvoCH1DemSw_XXX   | SNVT_switch      | 0 = No Heat Demand; 1 = Heat Demand |
| CH 2 Demand switch               | 176 | BV | 2  | DO | 3  | nvi/nvoCH2DemSw_XXX   | SNVT_switch      | 0 = No Heat Demand; 1 = Heat Demand |

## MagnaTherm Modbus RTU Mappings to Modbus TCP/IP, BACnet, Metasys N2 and LonWorks

| Point Name                              | Modbus Register | BACnet Object Type | BACnet Object ID | N2 Data Type | N2 Address | LonWorks Name    | LonWorks SNVT    | Notes                    |
|-----------------------------------------|-----------------|--------------------|------------------|--------------|------------|------------------|------------------|--------------------------|
| Inlet sensor                            | 0               | AI                 | 0                | AI           | 1          | nvoInletSen_XXX  | SNVT_count_inc_f |                          |
| Outlet sensor                           | 1               | AI                 | 1                | AI           | 2          | nvoOutletSen_XXX | SNVT_count_inc_f |                          |
| Stack sensor                            | 2               | AI                 | 2                | AI           | 3          | nvoStackSen_XXX  | SNVT_count_inc_f |                          |
| DHW sensor                              | 3               | AI                 | 3                | AI           | 4          | nvoDHWSen_XXX    | SNVT_count_inc_f |                          |
| System Inlet Sensor                     | 4               | AI                 | 4                | AI           | 5          | nvoSysInSen_XXX  | SNVT_count_inc_f |                          |
| System Outlet Sensor                    | 5               | AI                 | 5                | AI           | 6          | nvoSysOutSen_XXX | SNVT_count_inc_f |                          |
| Outdoor Sensor                          | 6               | AI                 | 6                | AI           | 7          | nvoOutdrSen_XXX  | SNVT_count_inc_f |                          |
| Flame Signal 1                          | 12              | AI                 | 12               | AI           | 13         | nvoFlameSig1_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for BAS          | 14              | AI                 | 14               | AI           | 15         | nvo0_10VIBAS_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for Pump         | 15              | AI                 | 15               | AI           | 16         | nvo0_10VIPmp_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for Mixing Valve | 16              | AI                 | 16               | AI           | 17         | nvo0_10VIMxV_XXX | SNVT_count_inc_f |                          |
| 0-10VDC (4-20mA) Input for Auxiliary    | 17              | AI                 | 17               | AI           | 18         | nvo0_10VIAux_XXX | SNVT_count_inc_f |                          |
| Safety Chain Status                     | 18              | BI                 | 1                | DI           | 1          | nvoFlowSw_XXX    | SNVT_switch      | bit0 = Flow Switch       |
|                                         |                 | BI                 | 2                | DI           | 2          | nvoLWCO_XXX      | SNVT_switch      | bit1 = LWCO              |
|                                         |                 | BI                 | 3                | DI           | 3          | nvoMRHL_XXX      | SNVT_switch      | bit2 = MRHL              |
|                                         |                 | BI                 | 4                | DI           | 4          | nvoBikFlue_XXX   | SNVT_switch      | bit3 = Blocked Flue      |
|                                         |                 | BI                 | 5                | DI           | 5          | nvoHiGsPrs_XXX   | SNVT_switch      | bit4 = High Gas Pressure |
|                                         |                 | BI                 | 6                | DI           | 6          | nvoLoGsPrs_XXX   | SNVT_switch      | bit5 = Low Gas Pressure  |
|                                         |                 | BI                 | 7                | DI           | 7          | nvoFldIntlck_XXX | SNVT_switch      | bit6 = Field Interlock   |
|                                         |                 | BI                 | 8                | DI           | 8          | nvoARHL_XXX      | SNVT_switch      | bit7 = ARHL              |
| Non-safety Chain Status                 | 19              | BI                 | 9                | DI           | 9          | nvoFldIn1_XXX    | SNVT_switch      | bit0 = Field Input 1     |
|                                         |                 | BI                 | 10               | DI           | 10         | nvoFldIn2_XXX    | SNVT_switch      | bit1 = Field Input 2     |

|                                          |    |    |    |    |    |                  |                  |                                                                                                                                                                |
|------------------------------------------|----|----|----|----|----|------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Demand source                            | 20 | AI | 20 | AI | 21 | nvoDemSrc_XXX    | SNVT_count_inc_f | 0=None<br>1=Anti-Short Cycle<br>2=Service<br>3=DHW<br>4=Cascade<br>5=External<br>6=CH1<br>7=CH2<br>8=CH3<br>9=CH4<br>10=Anti-Frost<br>11=Warm weather shutdown |
|                                          |    |    |    |    |    |                  |                  |                                                                                                                                                                |
| Digital Output Status                    | 21 | BI | 11 | DI | 11 | nvoRunCnt_XXX    | SNVT_switch      | bit0 = Run contact                                                                                                                                             |
|                                          |    | BI | 12 | DI | 12 | nvoAlmCnt_XXX    | SNVT_switch      | bit1 = Alarm Contact                                                                                                                                           |
|                                          |    | BI | 13 | DI | 13 | nvoDHWpump_XXX   | SNVT_switch      | bit2 = DHW Pump                                                                                                                                                |
|                                          |    | BI | 14 | DI | 14 | nvoSysPump_XXX   | SNVT_switch      | bit3 = System Pump                                                                                                                                             |
|                                          |    | BI | 15 | DI | 15 | nvoLouverCnt_XXX | SNVT_switch      | bit4 = Louver contact                                                                                                                                          |
|                                          |    | BI | 16 | DI | 16 | nvoAxDryCnt1_XXX | SNVT_switch      | bit5 = Aux dry contact 1                                                                                                                                       |
|                                          |    | BI | 17 | DI | 17 | nvoAxDryCnt2_XXX | SNVT_switch      | bit6 = Aux dry contact 2                                                                                                                                       |
|                                          |    | BI | 18 | DI | 18 | nvoBlrPump_XXX   | SNVT_switch      | bit7 = Boiler pump                                                                                                                                             |
|                                          |    | BI | 19 | DI | 19 | nvoAuxPwrCnt_XXX | SNVT_switch      | bit8 = Aux powered contact                                                                                                                                     |
|                                          |    | BI | 20 | DI | 20 | nvoB1PitGsvI_XXX | SNVT_switch      | bit 0 = Burner 1 Pilot Gas valve                                                                                                                               |
|                                          |    | BI | 21 | DI | 21 | nvoB1GsViv1_XXX  | SNVT_switch      | bit 1 = Burner 1 Gas valve 1                                                                                                                                   |
| Gas and Pilot Valve Status               | 22 |    |    |    |    |                  |                  |                                                                                                                                                                |
| 0-10VDC (4-20mA) Output for Pump Speed   | 23 | AI | 23 | AI | 24 | nvo0_10VOPmp_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| 0-10VDC (4-20mA) Output for Fan Speed    | 24 | AI | 24 | AI | 25 | nvo0_10VOFns_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| 0-10VDC (4-20mA) Output for Mixing Valve | 25 | AI | 25 | AI | 26 | nvo0_10VOMxV_XXX | SNVT_count_inc_f |                                                                                                                                                                |
| Modulating Burner1 Firing rate           | 33 | AI | 33 | AI | 34 | nvoModB1FrRt_XXX | SNVT_count_inc_f |                                                                                                                                                                |

LAARS Vendor Mappings

|                                 |    |    |    |    |    |                  |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----|----|----|----|----|------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lockout code                    | 35 | AI | 35 | AI | 36 | nvoLkocode_XXX   | SNVT_count_inc_f | LOW FLOW ERROR = 0<br>LOW WATER CUT OFF ERROR = 1<br>MANUAL RESET HIGH LIMIT ERROR = 2<br>BLOCKED FLUE ERROR = 3<br>HIGH GAS PRESSURE ERROR = 4<br>LOW GAS PRESSURE ERROR = 5<br>AUTO RESET HIGH LIMIT ERROR = 6<br>SPARE SAFETY CHAIN ERROR = 7<br>OUTLET PROBE ERROR = 8<br>OUTLET PROBE DRIFT ERROR = 9<br>OUTLET PROBE HIGH LIMIT ERROR = 10<br>FLUE PROBE ERROR = 11<br>CONDENSING SHUTDOWN ERROR = 12<br>FLUE PROBE DRIFT ERROR = 13<br>FLUE PROBE HIGH LIMIT ERROR = 14<br>INLET PROBE ERROR = 15<br>DELTA T ERROR = 16<br>GENERIC LOCKOUT = 17<br>BURNER1 APS SWITCH ERROR = 18<br>BURNER2 APS SWITCH ERROR = 19<br>BURNER1 HSI FLAME ERROR = 20<br>BURNER2 HSI FLAME ERROR = 21<br>BURNER1 MAX TRIALS ERROR = 22<br>BURNER2 MAX TRIALS ERROR = 23<br>BURNER1 MAX FLAME LOST ERROR = 24<br>BURNER2 MAX FLAME LOST ERROR = 25<br>BURNER1 PROVEN HSI ERROR = 26<br>BURNER2 PROVEN HSI ERROR = 27<br>BURNER1 FAN SPEED ERROR = 28<br>BURNER2 FAN SPEED ERROR = 29 |
| Alarm reason                    | 36 | AI | 36 | AI | 37 | nvoAlmreason_XXX | SNVT_count_inc_f | 24VDC ERROR = 30<br>24VAC ERROR = 31<br>DHW PROBE ERROR = 32<br>SYSTEM SUPPLY PROBE ERROR = 33<br>SYSTEM RETURN PROBE ERROR = 34<br>OUTDOOR PROBE ERROR = 35<br>SPARE1 PROBE ERROR = 36<br>SPARE2 PROBE ERROR = 37<br>SPARE3 PROBE ERROR = 38<br>SPARE4 PROBE ERROR = 39<br>SPARE5 PROBE ERROR = 40<br>HIGH LIMIT AUTO ERROR = 41<br>HIGH DELTA T ERROR = 42<br>FAN SPEED ERROR = 43<br>CONDENSING ALARM = 44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Hold code                       | 37 | AI | 37 | AI | 38 | nvoHoldcode_XXX  | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - DHW Demand Cycles     | 38 | AI | 38 | AI | 39 | nvoHsDHWdMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - CH1 Demand Cycles     | 39 | AI | 39 | AI | 40 | nvoHsCH1dMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - CH2 Demand Cycles     | 40 | AI | 40 | AI | 41 | nvoHsCH2dMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - Cascade Demand Cycles | 43 | AI | 43 | AI | 44 | nvoHsCscdMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - Burner Stage 1 Cycles | 44 | AI | 44 | AI | 45 | nvoHsBrSt1Cy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - Boiler Pump Cycles    | 48 | AI | 48 | AI | 49 | nvoHsBlrPmCy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - DHW Pump Cycles       | 49 | AI | 49 | AI | 50 | nvoHsDHWpMcy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| History - System Pump Cycles    | 50 | AI | 50 | AI | 51 | nvoHsSysPmCy_XXX | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

LAARS Vendor Mappings

|                                             |    |    |  |    |    |    |    |    |    |                  |                   |                                                                                                                                         |
|---------------------------------------------|----|----|--|----|----|----|----|----|----|------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| History - Average Boiler Outlet Temperature | 51 | AI |  | 51 | AI | 52 | AI | 52 | AI | nvoHsAvBIOTp_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| History - Maximum Boiler Outlet Temperature | 52 | AI |  | 52 | AI | 53 | AI | 53 | AI | nvoHsMxBOtTp_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| History - Minimum Boiler Outlet Temperature | 53 | AI |  | 53 | AI | 54 | AI | 54 | AI | nvoHsMnBOtTp_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| History - Boiler Average Firing Temperature | 54 | AI |  | 54 | AI | 55 | AI | 55 | AI | nvoHsBlAVfTp_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| History - Boiler Maximum Firing Time        | 55 | AI |  | 55 | AI | 56 | AI | 56 | AI | nvoHsBlMxFtm_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| History - Boiler Minimum Firing Time        | 56 | AI |  | 56 | AI | 57 | AI | 57 | AI | nvoHsBlMnFTm_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Controller Cycle Count                      | 57 | AI |  | 57 | AI | 58 | AI | 58 | AI | nvoCntrCyCnt_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Controller run time                         | 58 | AI |  | 58 | AI | 59 | AI | 59 | AI | nvoCntrRunTm_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) lead status              | 59 | AI |  | 59 | AI | 60 | AI | 60 | AI | nvoLLCsLdSt_XXX  | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) lag status               | 60 | AI |  | 60 | AI | 61 | AI | 61 | AI | nvoLLCsLagSt_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) lead Setpoint Source     | 61 | AI |  | 61 | AI | 62 | AI | 62 | AI | nvoLLCLdSPSr_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) lead Pump Demand         | 62 | AI |  | 62 | AI | 63 | AI | 63 | AI | nvoLLCLdPmDm_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) setpoint                 | 63 | AI |  | 63 | AI | 64 | AI | 64 | AI | nvoLLCsSP_XXX    | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) modulation sensor        | 64 | AI |  | 64 | AI | 65 | AI | 65 | AI | nvoLLCsModSn_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Lead Lag (Cascade) active service           | 65 | AI |  | 65 | AI | 66 | AI | 66 | AI | nvoLLCsAcSrv_XXX | SNVT_count_inc_f  |                                                                                                                                         |
| Lag 1 State                                 | 66 | AI |  | 66 | AI | 67 | AI | 67 | AI | nvoLag1State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering |
| Lag 1 Firing Rate                           | 67 | AI |  | 67 | AI | 68 | AI | 68 | AI | nvoLag1FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                            |
| Lag 2 State                                 | 68 | AI |  | 68 | AI | 69 | AI | 69 | AI | nvoLag2State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering |
| Lag 2 Firing Rate                           | 69 | AI |  | 69 | AI | 70 | AI | 70 | AI | nvoLag2FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                            |
| Lag 3 State                                 | 70 | AI |  | 70 | AI | 71 | AI | 71 | AI | nvoLag3State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering |
| Lag 3 Firing Rate                           | 71 | AI |  | 71 | AI | 72 | AI | 72 | AI | nvoLag3FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                            |

LAARS Vendor Mappings

|                    |    |    |    |    |    |                  |                   |                                                                                                                                             |
|--------------------|----|----|----|----|----|------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Lag 4 State        | 72 | AI | 72 | AI | 73 | nvoLag4State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering     |
| Lag 4 Firing Rate  | 73 | AI | 73 | AI | 74 | nvoLag4FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lag 5 State        | 74 | AI | 74 | AI | 75 | nvoLag5State_XXX | SNVT_count_inc_f  | Slave state:<br>0=Slave is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering |
| Lag 5 Firing Rate  | 75 | AI | 75 | AI | 76 | nvoLag5FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lag 6 State        | 76 | AI | 76 | AI | 77 | nvoLag6State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering     |
| Lag 6 Firing Rate  | 77 | AI | 77 | AI | 78 | nvoLag6FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lag 7 State        | 78 | AI | 78 | AI | 79 | nvoLag7State_XXX | SNVT_count_inc_f  | Lag state:<br>0=Lag is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering     |
| Lag 7 Firing Rate  | 79 | AI | 79 | AI | 80 | nvoLag7FirRt_XXX | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lead 0 State       | 80 | AI | 80 | AI | 81 | nvoLd0State_XXX  | SNVT_count_inc_f  | Lead state:<br>0=Lead is unknown<br>1=Available<br>2=Add stage<br>3=Suspend stage<br>4=Firing<br>5=On leave<br>6=Disabled<br>7=Recovering   |
| Lead 0 Firing Rate | 81 | AI | 81 | AI | 82 | nvoLd0FirRt_XXX  | SNVT_leve_percent | Current firing rate (0-100%)                                                                                                                |
| Lead Firing Rate   | 82 | AI | 82 | AI | 83 | nvoLeadFirRt_XXX | SNVT_leve_percent | Current firing rate of the Cascade Lead (0-100%)                                                                                            |
| Active CH Setpoint | 83 | AI | 83 | AI | 84 | nvoActCHSP_XXX   | SNVT_count_inc_f  | Pauls note:changes with witch ch1 or ch2 is calling not with dhw                                                                            |

LAARS Vendor Mappings

|                            |     |    |    |    |    |                    |                  |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-----|----|----|----|----|--------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Burner Status 1            | 84  | AI | 84 | AI | 85 | nvoBrnSt1_XXX      | SNVT_count_inc_f | 0=None<br>5 = Start<br>24 = Error Block<br>160 = Standby<br>165 = Check Safety Switch<br>166 = Run<br>177 = Prepurge Open<br>181 = Parameter Block<br>183 = Lockout<br>188 = Testmode<br>194 = Prepurge Closed<br>195 = Wait for HIS Free<br>196 = HIS Preheat/Prespark<br>200 = Verify Primary SF<br>217 = interpurge<br>241 = Postpurge<br>245 = Trial for Ignition<br>250 = Trial for Ignition Main<br>52=Post Purge |
| Burner Status 2            | 85  | AI | 85 | AI | 86 | nvoBrnSt2_XXX      | SNVT_count_inc_f | 0=Disabled<br>1=Locked out<br>2-3=Reserved<br>4=Anti-short cycle<br>34=Standby Hold<br>35=Standby Delay<br>48=Normal Standby<br>49=Preparing<br>50=Ignition<br>51=Firing<br>52=Post Purge<br>Pauls note:no change                                                                                                                                                                                                       |
| CH Set Point Source        | 86  | AI | 86 | AI | 87 | nvoCHSPSrc_XXX     | SNVT_count_inc_f | 0 = no CH source<br>1 = CH1<br>2 = CH2<br>3 = CH3<br>4 = CH4<br>5 = External Demand                                                                                                                                                                                                                                                                                                                                     |
| CH Requested Rate          | 87  | AI | 87 | AI | 88 | nvoCHRqRt_XXX      | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| DHW Requested Rate         | 88  | AI | 88 | AI | 89 | nvoDHW/RqRt_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Boiler Pump Status         | 89  | AI | 89 | AI | 90 | nvoBlrPmpSt_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Cascade Master Heat Demand | 90  | AI | 90 | AI | 91 | nvoCscMsHtDm_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Burner 1 Run Time          | 91  | AI | 91 | AI | 92 | nvoBrn1RunTm_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Burner 2 Run Time          | 92  | AI | 92 | AI | 93 | nvoBrn2RunTm_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 Enable/Disable         | 128 | AV | 0  | AO | 1  | nvi/nvoCH1EnDs_XXX | SNVT_count_inc_f | 0 = Disable; 1 = Enable                                                                                                                                                                                                                                                                                                                                                                                                 |
| CH1 Set Point              | 129 | AV | 1  | AO | 2  | nvi/nvoCH1SP_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 P                      | 130 | AV | 2  | AO | 3  | nvi/nvoCH1P_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 I                      | 131 | AV | 3  | AO | 4  | nvi/nvoCH1I_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH1 D                      | 132 | AV | 4  | AO | 5  | nvi/nvoCH1D_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 Enable/Disable         | 133 | AV | 5  | AO | 6  | nvi/nvoCH2EnDs_XXX | SNVT_count_inc_f | 0 = Disable; 1 = Enable                                                                                                                                                                                                                                                                                                                                                                                                 |
| CH2 Set Point              | 134 | AV | 6  | AO | 7  | nvi/nvoCH2SP_XXX   | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 P                      | 135 | AV | 7  | AO | 8  | nvi/nvoCH2P_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 I                      | 136 | AV | 8  | AO | 9  | nvi/nvoCH2I_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CH2 D                      | 137 | AV | 9  | AO | 10 | nvi/nvoCH2D_XXX    | SNVT_count_inc_f |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| DHW Enable/Disable         | 148 | AV | 20 | AO | 21 | nvi/nvoDHWEnDs_XXX | SNVT_count_inc_f | 0 = Disable; 1 = Enable                                                                                                                                                                                                                                                                                                                                                                                                 |

LAARS Vendor Mappings

|                                  |     |    |    |    |    |                      |                  |                                     |
|----------------------------------|-----|----|----|----|----|----------------------|------------------|-------------------------------------|
| DHW Set Point                    | 149 | AV | 21 | AO | 22 | nvi/nvoDHWSP_XXX     | SNVT_count_inc_f |                                     |
| DHW P                            | 150 | AV | 22 | AO | 23 | nvi/nvoDHPW_XXX      | SNVT_count_inc_f |                                     |
| DHW I                            | 151 | AV | 23 | AO | 24 | nvi/nvoDHWI_XXX      | SNVT_count_inc_f |                                     |
| DHW D                            | 152 | AV | 24 | AO | 25 | nvi/nvoDHWd_XXX      | SNVT_count_inc_f |                                     |
| DHW Recirculation Enable         | 153 | AV | 25 | AO | 26 | nvi/nvoDHWRecrEn_XXX | SNVT_count_inc_f | 0 = Disable; 1 = Enable             |
| DHW Recirculation Set Point      | 154 | AV | 26 | AO | 27 | nvi/nvoDHWRecrSP_XXX | SNVT_count_inc_f |                                     |
| Cascade CH Set Point             | 155 | AV | 27 | AO | 28 | nvi/nvoCascCHSP_XXX  | SNVT_count_inc_f |                                     |
| Cascade CH P                     | 156 | AV | 28 | AO | 29 | nvi/nvoCascCHP_XXX   | SNVT_count_inc_f |                                     |
| Cascade CH I                     | 157 | AV | 29 | AO | 30 | nvi/nvoCascCHI_XXX   | SNVT_count_inc_f |                                     |
| Cascade CH D                     | 158 | AV | 30 | AO | 31 | nvi/nvoCascCHD_XXX   | SNVT_count_inc_f |                                     |
| Hybrid Set Point                 | 163 | AV | 35 | AO | 36 | nvi/nvoHybridSP_XXX  | SNVT_count_inc_f |                                     |
| Hybrid Differential Temperature  | 164 | AV | 36 | AO | 37 | nvi/nvoHybDifTmP_XXX | SNVT_count_inc_f |                                     |
| Vari-Prime P - Proportional Term | 165 | AV | 37 | AO | 38 | nvi/nvoVrPrPtTm_XXX  | SNVT_count_inc_f |                                     |
| Vari-Prime I - Integral Term     | 166 | AV | 38 | AO | 39 | nvi/nvoVrPrItTm_XXX  | SNVT_count_inc_f |                                     |
| Vari-Prime D - Derivative Term   | 167 | AV | 39 | AO | 40 | nvi/nvoVrPrDrTm_XXX  | SNVT_count_inc_f |                                     |
| Vari-Prime Delta T               | 168 | AV | 40 | AO | 41 | nvi/nvoVrPrDltT_XXX  | SNVT_count_inc_f |                                     |
| DHW Demand switch                | 174 | BV | 0  | DO | 1  | nvi/nvoDHWDemSw_XXX  | SNVT_switch      | 0 = No Heat Demand; 1 = Heat Demand |
| CH 1 Demand switch               | 175 | BV | 1  | DO | 2  | nvi/nvoCH1DemSw_XXX  | SNVT_switch      | 0 = No Heat Demand; 1 = Heat Demand |
| CH 2 Demand switch               | 176 | BV | 2  | DO | 3  | nvi/nvoCH2DemSw_XXX  | SNVT_switch      | 0 = No Heat Demand; 1 = Heat Demand |

Notes:



