***Extract from Samsung EHS Wiki, downloaded 16th April 2025***

**NASA Protocol**

**General**

The indoor and outdoor unit of the EHS heat pump communicate via a protocol called "NASA".

**Physical layer**

The data is transmitted via a RS-485 link with 9600 baud, even parity and one stop bit.

Connection to the physical layer via the F1/F2 connector.

Another means to access and interact with the outdoor unit/controller is to use the F3/F4 connector. The difference with F1/F2 connector lies in the fact the line is not transporting RS-485, but an On-Off-Keyed (OOK) data line over a DC transmission line. This F3/F4 pair enables to power remote controllers.

Using a chip like THVD8000 (Texas Instruments) and especially an evaluation board THVD8000EVM, it is possible to plug a regular UART 9600 8E1 to send and receive data from the F3/F4 pair.

**Protocol details**

The indoor and outdoor units both regularly transmit their current status and sensor readings via so called "packets". Each packet contains metadata, like the sender and receiver address as well as the actual payload data, which is structured into "messages". Every packet can contain one or more messages.

**Packet structure**

| **Byte #**  | **Description**  | **Value**  | **Note** |
| --- | --- | --- | --- |
| 0  | Packet Start  | 0x32  |  |
| 1, 2  | Packet Size  | 16bit  | (int)data[2]; size + 2 == data.size(); |
| 3  | Source Adress Class  | Address Class Enum  | Outdoor = 0x10, HTU = 0x11, Indoor = 0x20, ERV = 0x30, Diffuser = 0x35, MCU = 0x38, RMC = 0x40, WiredRemote = 0x50, PIM = 0x58, SIM = 0x59, Peak = 0x5A, PowerDivider = 0x5B, OnOffController = 0x60, WiFiKit = 0x62, CentralController = 0x65, DMS = 0x6A, JIGTester = 0x80, BroadcastSelfLayer = 0xB0, BroadcastControlLayer = 0xB1, BroadcastSetLayer = 0xB2, BoradcastCS = 0xB3, BroadcastControlAndSetLayer = 0xB3, BroadcastModuleLayer = 0xB4, BoradcastCSM = 0xB7, BroadcastLocalLayer = 0xB8, BroadcastCSML = 0xBF, Undefiend = 0xFF |
| 4  | Source Channel  | 8bit  |  |
| 5  | Source Address  | 8bit  |  |
| 6  | Destination Address Class  | Address Class Enum  | See source Address class |
| 7  | Destination Channel  | 8bit  |  |
| 8  | Destination Address  | 8bit  |  |
| 9  | Packet Information  | packetInformation = ((int)data[index] & 128) >> 7 == 1  |  |
| 9  | Protocol Version  | protocolVersion = (uint8\_t)(((int)data[index] & 96) >> 5);  |  |
| 9  | Retry Count  | retryCount = (uint8\_t)(((int)data[index] & 24) >> 3);  |  |
| 10  | Packet Type  | packetType = (PacketType)(((int)data[index + 1] & 240) >> 4);  | StandBy = 0 Normal = 1, Gathering = 2, Install = 3, Download = 4 |
| 10  | Data Type  | dataType = (DataType)((int)data[index + 1] & 15);  | Undefined = 0, Read = 1, Write = 2, Request = 3, Notification = 4, Response = 5, Ack = 6, Nack = 7 |
| 11  | Packet Number  | 8bit  | Increasing packet number |
| 12  | Capacity (Number of Messages)  | 8bit  |  |
| 13, 14  | Message Number  | messageNumber = (uint32\_t)data[index] \* 256U + (uint32\_t)data[index + 1]; type = (MessageSetType)(((uint32\_t)messageNumber & 1536) >> 9);  | messageNumber as seen in the S-NET NASA.ptc file; type: Enum = 0 (1 byte payload), Variable = 1 (2 bytes payload), LongVariable = 2 (4 bytes payload), Structure = 3 (all following bytes until the end of the packet, minus 3 end bytes; when a packet contains a structure, it does not contain any other messages. Therefore the capacity will be 1.) |
| 14 + 1, 14 + 2, …  | Message Payload  | (size as derived from the Message Number)  |  |
| …  | Iterate over Capacity to retrieve all messages  |  |  |
| -3, -2  | CRC16 CCITT (XModem)  | 16bit  | uint16\_t crc\_actual = crc16(data, 3, size - 4); uint16\_t crc\_expected = (int)data[data.size() - 3] << 8 \ (int)data[data.size() - 2]; |
| -1  | Packet End  | 0x34  |  |

Thank you to lanwin, who implemented esphome\_samsung\_ac and was the first to understand the structure of the NASA Messages.

**Message Numbers**

A complete overview of all NASA message numbers does not seem to be available. Some information can be found in file NASA.prc, which is part of the SNET Pro service software (https://s3.amazonaws.com/samsung-files/Tech\_Files/SNET+Pro+and+SNET+Pro+2+Service+Software/Snet+Pro+v1.5.3.zip). Additional information is available in file NasaConst.java, which is part of the WiFiKit\_Source.zip (https:// opensource.samsung.com/uploadList? menuItem=home\_appliances&classification1=airconditioners&classification2=control\_solutions).

Below tables show the available information from these files in a concise layout:

| **MsgNr**  | **Label (NASA.prc)**  | **Label (NasaConst.java)**  | **Description**  | **Remarks** |
| --- | --- | --- | --- | --- |
| 0x0000  |  | NASA\_IM\_MASTER\_NOTIFY  |  |  |
| 0x0004  |  | NASA\_INSPECTION\_MODE  |  |  |
| 0x0007  |  | NASA\_GATHER\_INFORMATION  |  |  |
| 0x0008  |  | NASA\_GATHER\_INFORMATION\_COUNT  |  |  |
| 0x000A  |  | NASA\_ENABLEDOWNLOAD  |  |  |
| 0x000D  |  | NASA\_DETECTION\_TYPE  |  |  |
| 0x000E  |  | NASA\_PEAK\_LEVEL  |  |  |
| 0x000F  |  | NASA\_PEAK\_MODE  |  |  |
| 0x0010  |  | NASA\_PEAK\_CONTROL\_PERIOD  |  |  |
| 0x0011  |  | NASA\_POWER\_MANUFACTURE  |  |  |
| 0x0012  |  | NASA\_POWER\_CHANNEL1\_TYPE  |  |  |
| 0x0013  |  | NASA\_POWER\_CHANNEL2\_TYPE  |  |  |
| 0x0014  |  | NASA\_POWER\_CHANNEL3\_TYPE  |  |  |
| 0x0015  |  | NASA\_POWER\_CHANNEL4\_TYPE  |  |  |
| 0x0016  |  | NASA\_POWER\_CHANNEL5\_TYPE  |  |  |
| 0x0017  |  | NASA\_POWER\_CHANNEL6\_TYPE  |  |  |
| 0x0018  |  | NASA\_POWER\_CHANNEL7\_TYPE  |  |  |
| 0x0019  |  | NASA\_POWER\_CHANNEL8\_TYPE  |  |  |
| 0x001A  |  | NASA\_POWER\_CHANNEL1\_USED  |  |  |
| 0x001B  |  | NASA\_POWER\_CHANNEL2\_USED  |  |  |
| 0x001C  |  | NASA\_POWER\_CHANNEL3\_USED  |  |  |
| 0x001D  |  | NASA\_POWER\_CHANNEL4\_USED  |  |  |
| 0x001E  |  | NASA\_POWER\_CHANNEL5\_USED  |  |  |
| 0x001F  |  | NASA\_POWER\_CHANNEL6\_USED  |  |  |
| 0x0020  |  | NASA\_POWER\_CHANNEL7\_USED  |  |  |
| 0x0021  |  | NASA\_POWER\_CHANNEL8\_USED  |  |  |
| 0x0023  |  | NASA\_STANDBY\_MODE  |  |  |
| 0x0025 | ENUM\_AD\_MULTI\_TENANT\_NO  |  | WiFi Kit Multi Tenant No.  |  |
| 0x0202 | VAR\_AD\_ERROR\_CODE1  | NASA\_ERROR\_CODE1  | Error code  |  |
| 0x0203  |  | NASA\_ERROR\_CODE2  |  |  |
| 0x0204  |  | NASA\_ERROR\_CODE3  |  |  |
| 0x0205  |  | NASA\_ERROR\_CODE4  |  |  |
| 0x0206  |  | NASA\_ERROR\_CODE5  |  |  |
| 0x0207  | VAR\_AD\_INSTALL\_NUMBER\_INDOOR  | NASA\_OUTDOOR\_INDOORCOUNT  | Number of indoor units connected  |  |
| 0x0208  |  | NASA\_OUTDOOR\_ERVCOUNT  |  |  |
| 0x0209  |  | NASA\_OUTDOOR\_EHSCOUNT  |  |  |
| 0x0210  |  | NASA\_NET\_ADDRESS  |  |  |
| 0x0211  | VAR\_AD\_INSTALL\_NUMBER\_MCU  | NASA\_OUTDOOR\_MCUCOUNT  | Number of connected MCUs  |  |
| 0x0213  |  | NASA\_DEMAND\_SYNC\_TIME  |  |  |
| 0x0214  |  | NASA\_PEAK\_TARGET\_DEMAND  |  |  |
| 0x0217  |  | NASA\_PNP\_NET\_ADDRESS  | PNP only  |  |
| 0x0401  | LVAR\_AD\_ADDRESS\_MAIN  | NASA\_CONFIRM\_ADDRESS  |  |  |
| 0x0402  | LVAR\_AD\_ADDRESS\_RMC  | NASA\_RMCADDRESS  |  | LogicalAnd 0xFF |
| 0x0403  |  | NASA\_RANDOM\_ADDRESS  |  |  |
| 0x0406  |  | NASA\_ALL\_POWER\_CONSUMPTION\_SET  | Total instantaneous power consumption  |  |
| 0x0407  |  | NASA\_ALL\_POWER\_CONSUMPTION\_CUMULATIVE  | Total cumulative power consumption  |  |
| 0x0408  | LVAR\_AD\_ADDRESS\_SETUP  | NASA\_SETUP\_ADDRESS  |  |  |
| 0x0409  | LVAR\_AD\_INSTALL\_LEVEL\_ALL  | NASA\_ALL\_REMOTE\_LEVEL  |  |  |
| 0x040A  | LVAR\_AD\_INSTALL\_LEVEL\_OPERATION\_POWER  | NASA\_LEVEL\_POWER  |  |  |
| 0x040B  | LVAR\_AD\_INSTALL\_LEVEL\_OPERATION\_MODE  | NASA\_LEVEL\_OPMODE  |  |  |
| 0x040C  | LVAR\_AD\_INSTALL\_LEVEL\_FAN\_MODE  | NASA\_LEVEL\_FANSPEED  |  |  |
| 0x040D  | LVAR\_AD\_INSTALL\_LEVEL\_FAN\_DIRECTION  | NASA\_LEVEL\_AIRSWING  |  |  |
| 0x040E  | LVAR\_AD\_INSTALL\_LEVEL\_TEMP\_TARGET  | NASA\_LEVEL\_SETTEMP  |  |  |
| 0x040F  | LVAR\_AD\_INSTALL\_LEVEL\_KEEP\_INDIVIDUAL\_CONTROL  | NASA\_LEVEL\_KEEP\_ALTERNATIVE\_MODE  |  |  |
| 0x0410  | LVAR\_AD\_INSTALL\_LEVEL\_OPERATION\_MODE\_ONLY  | NASA\_LEVEL\_OPMODE\_LIMIT  |  |  |
| 0x0411  | LVAR\_AD\_INSTALL\_LEVEL\_COOL\_MODE\_UPPER  | NASA\_LEVEL\_COOL\_HIGH\_TEMP\_LIMIT  |  |  |
| 0x0412  | LVAR\_AD\_INSTALL\_LEVEL\_COOL\_MODE\_LOWER  | NASA\_LEVEL\_COOL\_LOW\_TEMP\_LIMIT  |  |  |
| 0x0413  | LVAR\_AD\_INSTALL\_LEVEL\_HEAT\_MODE\_UPPER  | NASA\_LEVEL\_HEAT\_HIGH\_TEMP\_LIMIT  |  |  |
| 0x0414  | LVAR\_AD\_INSTALL\_LEVEL\_HEAT\_MODE\_LOWER  | NASA\_LEVEL\_HEAT\_LOW\_TEMP\_LIMIT  |  |  |
| 0x0415  | LVAR\_AD\_INSTALL\_LEVEL\_CONTACT\_CONTROL  | NASA\_LEVEL\_OUT\_POINT\_INPUT  |  |  |
| 0x0416  | LVAR\_AD\_INSTALL\_LEVEL\_KEY\_OPERATION\_INPUT  | NASA\_LEVEL\_KEY\_INPUT  |  |  |
| 0x0417  | LVAR\_AD\_??  | NASA\_PNP\_CONFIRM\_ADDRESS  | PNP only  |  |
| 0x0418  | LVAR\_AD\_??  | NASA\_PNP\_RANDOM\_ADDRESS  | PNP only  |  |
| 0x0419  | LVAR\_AD\_??  | NASA\_PNP\_SETUP\_ADDRESS  | PNP only  |  |
| 0x041B  | LVAR\_AD\_??  |  |  |  |
| 0x041C  |  | NASA\_POWER\_CHANNEL1\_ELECTRIC\_VALUE  |  |  |
| 0x041D  |  | NASA\_POWER\_CHANNEL2\_ELECTRIC\_VALUE  |  |  |
| 0x041E  |  | NASA\_POWER\_CHANNEL3\_ELECTRIC\_VALUE  |  |  |
| 0x041F  |  | NASA\_POWER\_CHANNEL4\_ELECTRIC\_VALUE  |  |  |
| 0x0420  |  | NASA\_POWER\_CHANNEL5\_ELECTRIC\_VALUE  |  |  |
| 0x0421  |  | NASA\_POWER\_CHANNEL6\_ELECTRIC\_VALUE  |  |  |
| 0x0422  |  | NASA\_POWER\_CHANNEL7\_ELECTRIC\_VALUE  |  |  |
| 0x0423  |  | NASA\_POWER\_CHANNEL8\_ELECTRIC\_VALUE  |  |  |
| 0x0434  |  | NASA\_PEAK\_RATIO\_CURRENT  |  |  |
| 0x0435  |  | NASA\_PEAK\_RATIO\_POTENTIAL  |  |  |
| 0x0436  |  | NASA\_PEAK\_TOTAL\_POWER  |  |  |
| 0x0437  |  | NASA\_PEAK\_CURRENT\_TARGET\_DEMAND  |  |  |
| 0x0438  |  | NASA\_PEAK\_FORCAST\_DEMAND  |  |  |
| 0x0439  |  | NASA\_PEAK\_TOP\_DEMAND  |  |  |
| 0x043A  |  | NASA\_PEAK\_TARGET\_POWER  |  |  |
| 0x043B  |  | NASA\_POWER\_CHANNEL1\_PULSEVALUE  |  |  |
| 0x043C  |  | NASA\_POWER\_CHANNEL2\_PULSEVALUE  |  |  |
| 0x043D  |  | NASA\_POWER\_CHANNEL3\_PULSEVALUE  |  |  |
| 0x043E  |  | NASA\_POWER\_CHANNEL4\_PULSEVALUE  |  |  |
| 0x043F  |  | NASA\_POWER\_CHANNEL5\_PULSEVALUE  |  |  |
| 0x0440  |  | NASA\_POWER\_CHANNEL6\_PULSEVALUE  |  |  |
| 0x0441  |  | NASA\_POWER\_CHANNEL7\_PULSEVALUE  |  |  |
| 0x0442  |  | NASA\_POWER\_CHANNEL8\_PULSEVALUE  |  |  |
| 0x0443  |  | NASA\_PEAK\_SYNC\_TIME  |  |  |
| 0x0444  |  | NASA\_PEAK\_CURRENT\_DEMAND  |  |  |
| 0x0445  |  | NASA\_PEAK\_REAL\_VALUE  |  |  |
| 0x0448  | LVAR\_AD\_MCU\_PORT\_SETUP  |  |  |  |
| 0x0600  | STR\_AD\_OPTION\_BASIC  | NASA\_PRODUCT\_OPTION  |  |  |
| 0x0601  | STR\_AD\_OPTION\_INSTALL  | NASA\_INSTALL\_OPTION  |  |  |
| 0x0602  | STR\_AD\_OPTION\_INSTALL\_2  | NASA\_INSTALLOPTION2  |  |  |
| 0x0603  | STR\_AD\_OPTION\_CYCLE  | NASA\_CYCLEOPTION  |  |  |
| 0x0604  |  | NASA\_PBAOPTION  |  |  |
| 0x0605  | STR\_AD\_INFO\_EQUIP\_POSITION  | NASA\_NAME  |  | appears when using S-NET pro 2 software |
| 0x0607  | STR\_AD\_ID\_SERIAL\_NUMBER  | NASA\_SERIAL\_NO  | OutdoorTableSerialNumber  |  |
| 0x0608  | STR\_AD\_DBCODE\_MICOM\_MAIN  | NASA\_MICOM\_CODE  | OutdoorUnitMainDBCodeVersion  | VariableAssign Identifier="dbCode" |
| 0x060C  | STR\_AD\_DBCODE\_EEPROM  | NASA\_EEPROM\_CODE  | OutdoorTableEEPROMDBCodeVersion  |  |
| 0x0613  |  | NASA\_SIMPIM\_SYNC\_DATETIME  |  |  |
| 0x0619  |  | NASA\_SIMPIM\_PASSWORD  |  |  |
| 0x061A  | STR\_AD\_PRODUCT\_MODEL\_NAME  | NASA\_PRODUCT\_MODEL\_NAME  |  | appears when using S-NET pro 2 software |
| 0x061C  | STR\_AD\_PRODUCT\_MAC\_ADDRESS  |  | WiFi Kit MAC Address  |  |
| 0x061F  | STR\_AD\_ID\_MODEL\_NAME  |  | Model Name  | appears when using S-NET pro 2 software |
| 0x2000  |  | NASA\_IM\_MASTER  |  |  |
| 0x2001  |  | NASA\_CHANGE\_POLAR  |  |  |
| 0x2002  |  | NASA\_ADDRESSING\_ASSIGN\_CONFIRM\_ADDRESS  |  |  |
| 0x2003  |  | NASA\_ADDRESSING  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x2004  | ENUM\_NM\_?  | NASA\_PNP  |  |  |
| 0x2006  |  | NASA\_CHANGE\_CONTROL\_NETWORK\_STATUS  |  |  |
| 0x2007  |  | NASA\_CHANGE\_SET\_NETWORK\_STATUS  |  |  |
| 0x2008  |  | NASA\_CHANGE\_LOCAL\_NETWORK\_STATUS  |  |  |
| 0x2009  |  | NASA\_CHANGE\_MODULE\_NETWORK\_STATUS  |  |  |
| 0x200A  |  | NASA\_CHANGE\_ALL\_NETWORK\_STATUS  |  |  |
| 0x200F  | ENUM\_NM\_NETWORK\_POSITINON\_LAYER  | NASA\_LAYER  | Enumeration Type  |  |
| 0x2010  | ENUM\_NM\_NETWORK\_TRACKING\_STATE  | NASA\_TRACKING\_RESULT  |  |  |
| 0x2012  | ENUM\_NM\_?  |  |  | seen in NASA data from EHS Mono HT Quiet, following 0x2003 |
| 0x2015  | ENUM\_NM\_?  |  |  | seen in NASA data from EHS Mono HT Quiet, following 0x2012 |
| 0x2017  |  | NASA\_COMMU\_MICOM\_LED  |  |  |
| 0x2018  |  | NASA\_COMMU\_MICOM\_BUTTON  |  |  |
| 0x20FF  | ENUM\_NM\_?  |  |  |  |
| 0x22F7  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x22F8  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet, following 0x0401 and 0x0403 |
| 0x22F9  | VAR\_NM\_??  |  |  |  |
| 0x22FA  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x22FB  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x22FC  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x22FD  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x22FE  | VAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x22FF  | VAR\_NM\_??  |  |  |  |
| 0x2400  | LVAR\_NM\_??  | NASA\_ALL\_LAYER\_DEVICE\_COUNT  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x2401  | LVAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x24FB  | LVAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x24FC  | LVAR\_NM\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4000  | ENUM\_IN\_OPERATION\_POWER  | NASA\_POWER  | Indoor unit power on/off  | 0 Off, 1 On, 2 On |
| 0x4001  | ENUM\_IN\_OPERATION\_MODE  | NASA\_INDOOR\_OPMODE  | Indoor unit control mode  | 0 Auto, 1 Cool, 2 Dry, 3 Fan, 4 Heat, 21 Cool Storage, 24 Hot water |
| 0x4002  | ENUM\_IN\_OPERATION\_MODE\_REAL  | NASA\_INDOOR\_REAL\_OPMODE  | Indoor unit current operation mode  | 0 Auto, 1 Cool, 2 Dry, 3 Fan, 4 Heat, 11 Auto Cool, 12 Auto Dry, 13 Auto Fan, 14 Auto Heat, 21 Cool Storage, 24 Hot water, 255 NULL mode |
| 0x4003  | ENUM\_IN\_OPERATION\_VENT\_POWER  | NASA\_ERV\_POWER  | Ventilation operation mode  |  |
| 0x4004  | ENUM\_IN\_OPERATION\_VENT\_MODE  | NASA\_ERV\_OPMODE  |  |  |
| 0x4006  | ENUM\_IN\_??  | NASA\_FANSPEED  |  |  |
| 0x4007  | ENUM\_IN\_FAN\_MODE\_REAL  |  | Indoor unit current air volume  |  |
| 0x4008  | ENUM\_IN\_FAN\_VENT\_MODE  | NASA\_ERV\_FANSPEED  | Indoor unit current air volume  |  |
| 0x400F  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4010  | ENUM\_IN\_??  |  |  |  |
| 0x4011  | ENUM\_IN\_LOUVER\_HL\_SWING  | NASA\_AIRFLOW\_UPDOWN  | Up and down wind direction setting/status  |  |
| 0x4012  | ENUM\_IN\_LOUVER\_HL\_PART\_SWING  |  | Up and down wind direction setting/status  |  |
| 0x4015  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4018  | ENUM\_IN\_??  | NASA\_USE\_WIREDREMOTE  |  |  |
| 0x4019  | ENUM\_IN\_??  | NASA\_USE\_DISCHARGE\_TEMP  | This value is a value that cannot be controlled by the upper controller.  |  |
| 0x401B  | ENUM\_IN\_??  | NASA\_USE\_CENTUAL\_CONTROL  | Income from InstallOption information.  |  |
| 0x4023  | ENUM\_IN\_??  | NASA\_USE\_SPI  |  |  |
| 0x4024  | ENUM\_IN\_??  | NASA\_USE\_FILTER\_WARNING\_TIME  |  |  |
| 0x4025  |  | NASA\_FILTER\_CLEAN  |  |  |
| 0x4027  | ENUM\_IN\_??  | NASA\_FILTER\_WARNING  |  |  |
| 0x4028  | ENUM\_IN\_STATE\_THERMO  |  | Thermo On/Off  | 0 Off, 1 On |
| 0x4029  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x402A  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x402B  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x402D  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x402E  | ENUM\_IN\_STATE\_DEFROST\_MODE  | NASA\_INDOOR\_DEFROST\_STATUS  | Defrost mode  | 0 Off, 1 On |
| 0x402F  | ENUM\_IN\_MTFC  |  |  |  |
| 0x4031  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4035  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4038  | ENUM\_IN\_STATE\_HUMIDITY\_PERCENT  | NASA\_HUMIDITY\_PERCENT  |  |  |
| 0x403D  |  | NASA\_CONTROL\_OAINTAKE  |  |  |
| 0x403E  |  | NASA\_USE\_MDS  |  |  |
| 0x403F  |  | NASA\_CONTROL\_MDS  |  |  |
| 0x4040  |  | NASA\_USE\_HUMIDIFICATION  |  |  |
| 0x4041  |  | NASA\_CONTROL\_HUMIDIFICATION  |  |  |
| 0x4042  |  | NASA\_CONTROL\_AUTO\_CLEAN  |  |  |
| 0x4043  | ENUM\_IN\_??  | NASA\_CONTROL\_SPI  |  |  |
| 0x4045  |  | NASA\_USE\_SILENCE  |  |  |
| 0x4046  | ENUM\_IN\_SILENCE  | NASA\_CONTROL\_SILENCE  | Silence mode  | 0 Off, 1 On |
| 0x4047  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4048  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x404F  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4050  |  | NASA\_CONTROL\_SILENCT  |  |  |
| 0x4051  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4059  | ENUM\_IN\_??  |  |  |  |
| 0x405B  |  | NASA\_USE\_OUTER\_COOL  |  |  |
| 0x405C  |  | NASA\_CONTROL\_OUTER\_COOL  |  |  |
| 0x405D  |  | NASA\_USE\_DESIRED\_HUMIDITY  |  |  |
| 0x405E  |  | NASA\_CONTROL\_DESIRED\_HUMIDITY  |  |  |
| 0x405F  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4060  | ENUM\_IN\_ALTERNATIVE\_MODE  | NASA\_ALTERNATIVE\_MODE  |  | 0 Off, 9 On |
| 0x4063  |  | NASA\_EHS\_INDOOR\_POWER  |  |  |
| 0x4064  |  | NASA\_EHS\_INDOOR\_OPMODE  |  |  |
| 0x4065  | ENUM\_IN\_WATER\_HEATER\_POWER  | NASA\_DHW\_POWER  | Water heater power  | 0 Off, 1 On |
| 0x4066  | ENUM\_IN\_WATER\_HEATER\_MODE  | NASA\_DHW\_OPMODE  | Water heater mode  | 0 Eco, 1 Standard, 2 Power, 3 Force |
| 0x4067  | ENUM\_IN\_3WAY\_VALVE  | NASA\_DHW\_VALVE  | Hydro\_3Way  | 0 Room, 1 Tank |
| 0x4068  | ENUM\_IN\_SOLAR\_PUMP  | NASA\_SOLAR\_PUMP  | Hydro\_SolarPump  |  |
| 0x4069  | ENUM\_IN\_THERMOSTAT1  |  | Hydro\_ExternalThermostat  | 0 Off, 1 Cool, 2 Heat |
| 0x406A  | ENUM\_IN\_THERMOSTAT2  |  | Hydro\_ExternalThermostat2  | 0 Off, 1 Cool, 2 Heat |
| 0x406B  | ENUM\_IN\_??  | NASA\_SMART\_GRID  |  |  |
| 0x406C  | ENUM\_IN\_BACKUP\_HEATER  |  | Backup heater mode  | 0 Off, 1 Step 1, 2 Step 2 |
| 0x406D  | ENUM\_IN\_OUTING\_MODE  | NASA\_INDOOR\_OUT\_GOING  | Outing mode  | 0 Off, 1 On |
| 0x406E  | ENUM\_IN\_QUIET\_MODE  |  |  |  |
| 0x406F  | ENUM\_IN\_REFERENCE\_EHS\_TEMP  | NASA\_DHW\_REFERENCE\_TEMP  | Hydro\_ControlChoice\_RoomTemp  | 0 Room, 1 Water out. Variable isEhsSetTempWaterOut. See 0x4201 and 0x4247. |
| 0x4070  | ENUM\_IN\_DISCHAGE\_TEMP\_CONTROL  | NASA\_DISCHARGE\_TEMP\_ENABLE  |  | 0 Off, 1 On (rem: "DISCHAGE" is typo in NASA.ptc) |
| 0x4073  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4074  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4076  | ENUM\_IN\_ROOM\_TEMP\_SENSOR  |  |  | It tells the room sensor is present for zone #1 (EHS Mono R290 AE050CXYBEK). |
| 0x4077  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x407B  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x407D  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x407E  | ENUM\_IN\_LOUVER\_LR\_SWING  | NASA\_AIRFLOW\_LEFTRIGHT  | Left and right wind direction settings/status  | 0 Off, 1 On |
| 0x4085  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4086  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4087  | ENUM\_IN\_BOOSTER\_HEATER  |  | Booster heater  | 0 Off, 1 On |
| 0x4089  | ENUM\_IN\_STATE\_WATER\_PUMP  |  | Water pump  | 0 Off, 1 On |
| 0x408A  | ENUM\_IN\_2WAY\_VALVE  |  |  | 0 Off, 2 CV, 3 Boiler |
| 0x4093  | ENUM\_IN\_FSV\_2041  |  | FSV Water Law Type Heating  | 1 Floor, 2 FCU |
| 0x4094  | ENUM\_IN\_FSV\_2081  |  | FSV Water Law Type Cooling  | 1 Floor, 2 FCU |
| 0x4095  | ENUM\_IN\_FSV\_2091  | NASA\_USE\_THERMOSTAT1  |  | values 0="No" up to 4="4" |
| 0x4096  | ENUM\_IN\_FSV\_2092  | NASA\_USE\_THERMOSTAT2  |  | values 0="No" up to 4="4" |
| 0x4097  | ENUM\_IN\_FSV\_3011  | NASA\_ENABLE\_DHW  |  | values 0="No" up to 2="2" |
| 0x4098  | ENUM\_IN\_FSV\_3031  | NASA\_USE\_BOOSTER\_HEATER  |  | 0 Off, 1 On |
| 0x4099  | ENUM\_IN\_FSV\_3041  |  |  | 0 No, 1 Yes |
| 0x409A  | ENUM\_IN\_FSV\_3042  |  |  | Sunday=0, Monday=1 .. up to 7=Everyday |
| 0x409B  | ENUM\_IN\_FSV\_3051  |  |  | 0 No, 1 Yes |
| 0x409C  | ENUM\_IN\_FSV\_3061  | NASA\_USE\_DHW\_THERMOSTAT  |  |  |
| 0x409D  | ENUM\_IN\_FSV\_3071  |  |  |  |
| 0x409E  | ENUM\_IN\_FSV\_4011  |  |  |  |
| 0x409F  | ENUM\_IN\_FSV\_4021  |  |  |  |
| 0x40A0  | ENUM\_IN\_FSV\_4022  |  |  |  |
| 0x40A1  | ENUM\_IN\_FSV\_4023  |  |  |  |
| 0x40A2  | ENUM\_IN\_FSV\_4031  |  |  |  |
| 0x40A3  | ENUM\_IN\_FSV\_4032  |  |  |  |
| 0x40A4  | ENUM\_IN\_FSV\_5041  |  |  |  |
| 0x40A5  | ENUM\_IN\_FSV\_5042  |  |  |  |
| 0x40A6  | ENUM\_IN\_FSV\_5043  |  |  |  |
| 0x40A7  | ENUM\_IN\_FSV\_5051  |  |  |  |
| 0x40B1  |  | NASA\_DHW\_OPMODE\_SUPPORT  |  |  |
| 0x40B4  | ENUM\_IN\_FSV\_5061  |  |  |  |
| 0x40B5  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x40BB  | ENUM\_IN\_STATE\_AUTO\_STATIC\_PRESSURE\_RUNNING  |  |  |  |
| 0x40BC  | ENUM\_IN\_STATE\_KEY\_TAG  | NASA\_VACANCY\_STATUS  | Vacancy control  |  |
| 0x40BD  | ENUM\_IN\_EMPTY\_ROOM\_CONTROL\_USED  | NASA\_USE\_VACANCY\_STATUS  |  |  |
| 0x40C0  | ENUM\_IN\_FSV\_4041  |  |  |  |
| 0x40C1  | ENUM\_IN\_FSV\_4044  |  |  |  |
| 0x40C2  | ENUM\_IN\_FSV\_4051  |  |  |  |
| 0x40C3  | ENUM\_IN\_FSV\_4053  |  |  |  |
| 0x40C4  | ENUM\_IN\_WATERPUMP\_PWM\_VALUE  |  | Water pump speed  | unit % |
| 0x40C5  | ENUM\_IN\_THERMOSTAT\_WATER\_HEATER  |  | Hydro\_WaterHeaterThermostat  |  |
| 0x40C6  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x40C7  |  | NASA\_AHUPANEL\_ENTHALPY\_CONTROL  |  |  |
| 0x40C8  |  | NASA\_AHUPANEL\_DUTY\_CONTROL  |  |  |
| 0x40C9  |  | NASA\_AHUPANEL\_SUMMERNIGHT\_CONTROL  |  |  |
| 0x40CA  |  | NASA\_AHUPANEL\_CO2\_CONTROL  |  |  |
| 0x40CB  |  | NASA\_AHUPANEL\_ENERGYMANAGE\_CONTROL  |  |  |
| 0x40CC  |  | NASA\_AHUPANEL\_RA\_SMOKE\_DECTION\_STATUS  |  |  |
| 0x40CD  |  | NASA\_AHUPANEL\_SA\_FAN\_STATUS  |  |  |
| 0x40CE  |  | NASA\_AHUPANEL\_RA\_FAN\_ONOFF\_STATUS  |  |  |
| 0x40CF  |  | NASA\_AHUPANEL\_ERROR\_STATUS  |  |  |
| 0x40D0  |  | NASA\_AHUPANEL\_HEATER\_ONOFF\_STATUS  |  |  |
| 0x40D1  |  | NASA\_AHUPANEL\_SA\_FAN\_ONOFF\_STATUS  |  |  |
| 0x40D2  |  | NASA\_AHUPANEL\_SMOKE\_DECTION\_CONTROL  |  |  |
| 0x40D5  | ENUM\_IN\_ENTER\_ROOM\_CONTROL\_USED  |  |  |  |
| 0x40D6  | ENUM\_IN\_ERROR\_HISTORY\_CLEAR\_FOR\_HASS  |  |  |  |
| 0x40E3  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x40E7  | ENUM\_IN\_CHILLER\_WATERLAW\_SENSOR  |  | DMV Chiller Option  |  |
| 0x40F7  | ENUM\_IN\_CHILLER\_WATERLAW\_ON\_OFF  |  |  |  |
| 0x40FB  | ENUM\_IN\_CHILLLER\_SETTING\_SILENT\_LEVEL  |  |  |  |
| 0x40FC  | ENUM\_IN\_CHILLER\_SETTING\_DEMAND\_LEVEL  |  |  |  |
| 0x4101  | ENUM\_IN\_CHILLER\_EXT\_WATER\_OUT\_INPUT  |  |  |  |
| 0x4102  | ENUM\_IN\_STATE\_FLOW\_CHECK  |  |  |  |
| 0x4103  | ENUM\_IN\_WATER\_VALVE\_1\_ON\_OFF  |  | FCU Kit  |  |
| 0x4104  | ENUM\_IN\_WATER\_VALVE\_2\_ON\_OFF  |  |  |  |
| 0x4105  | ENUM\_IN\_ENTHALPY\_CONTROL\_STATE  |  |  |  |
| 0x4107  | ENUM\_IN\_FSV\_5033  |  |  |  |
| 0x4108  | ENUM\_IN\_TDM\_INDOOR\_TYPE  |  |  |  |
| 0x410D  | ENUM\_IN\_FREE\_COOLING\_STATE  |  |  |  |
| 0x4113  | ENUM\_IN\_3WAY\_VALVE\_2  |  |  |  |
| 0x4117  | ENUM\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4118  | ENUM\_IN\_ROOM\_TEMP\_SENSOR\_ZONE2  |  |  | It tells the room sensor is present for zone #2 (EHS Mono R290 AE050CXYBEK). |
| 0x4119  | ENUM\_IN\_OPERATION\_POWER\_ZONE1  |  |  |  |
| 0x411A  | ENUM\_IN\_FSV\_4061  |  |  |  |
| 0x411B  | ENUM\_IN\_FSV\_5081  |  |  |  |
| 0x411C  | ENUM\_IN\_FSV\_5091  |  |  |  |
| 0x411D  | ENUM\_IN\_FSV\_5094  |  |  |  |
| 0x411E  | ENUM\_IN\_OPERATION\_POWER\_ZONE2  |  | Zone2 Normal Power  | Min = 0 Max = 1 |
| 0x4123  | ENUM\_IN\_PV\_CONTACT\_STATE  |  | PV Control  |  |
| 0x4124  | ENUM\_IN\_SG\_READY\_MODE\_STATE  |  | Smart Grid  |  |
| 0x4125  | ENUM\_IN\_FSV\_LOAD\_SAVE  |  |  | Min = 0 Max = 1, similar name as 0x412D in NASA.ptc |
| 0x4127  | ENUM\_IN\_FSV\_2093  |  |  | Min = 1 Max = 4 |
| 0x4128  | ENUM\_IN\_FSV\_5022  |  |  | Min = 0 Max = 1 |
| 0x412A  | ENUM\_IN\_FSV\_2094  |  |  | values 0="No" up to 4="4" |
| 0x412D  | ENUM\_IN\_FSV\_LOAD\_SAVE  |  |  | Min = 0 Max = 1, similar name as 0x4125 in NASA.ptc |
| 0x4147  | ENUM\_IN\_GAS\_LEVEL  |  |  |  |
| 0x4149  | ENUM\_IN\_DIFFUSER\_OPERATION\_POWER  |  |  |  |
| 0x4201  | VAR\_IN\_TEMP\_TARGET\_F  | NASA\_SET\_TEMP  | Indoor unit set temperature  | if isEhsSetTempWaterOut (406F) ==1 , use value of variable waterOutSetTemp = 4247 |
| 0x4202  | VAR\_IN\_??  |  |  |  |
| 0x4203  | VAR\_IN\_TEMP\_ROOM\_F  | NASA\_CURRENT\_TEMP  | Room Temperature  | Room temperature for zone #1 |
| 0x4204  | VAR\_IN\_??  | NASA\_MODIFIED\_CURRENT\_TEMP  | Temperature  |  |
| 0x4205  | VAR\_IN\_TEMP\_EVA\_IN\_F  | NASA\_EVA\_IN\_TEMP  | Indoor Eva In Temperature  |  |
| 0x4206  | VAR\_IN\_TEMP\_EVA\_OUT\_F  | NASA\_EVA\_OUT\_TEMP  | Indoor Eva Out Temperature  |  |
| 0x4207  | VAR\_IN\_TEMP\_ELECTRIC\_HEATER\_F  |  | Electric heater temperature value  |  |
| 0x4208  |  | NASA\_EVA\_INHOLE\_TEMP  |  |  |
| 0x4209  | VAR\_IN\_??  | NASA\_SET\_DISCHARGE  |  |  |
| 0x420B  | VAR\_IN\_TEMP\_DISCHARGE  | NASA\_CURRENT\_DISCHARGE  | Indoor Discharge Temp(Duct, AHU)  |  |
| 0x420C  | VAR\_IN\_??  | NASA\_INDOOR\_OUTER\_TEMP  |  | same value as 0x8204 (sensor\_airout) ? |
| 0x4211  | VAR\_IN\_CAPACITY\_REQUEST  | NASA\_INDOOR\_CAPACITY  | Capacity  |  |
| 0x4212  | VAR\_IN\_CAPACITY\_ABSOLUTE  | NASA\_INDOOR\_ABSOLUTE\_CAPACITY  |  |  |
| 0x4213  | VAR\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4217  | VAR\_IN\_EEV\_VALUE\_REAL\_1  | NASA\_INODDR\_CURRENT\_EEV1  | Current EEV development level  |  |
| 0x4218  | VAR\_IN\_EEV\_VALUE\_REAL\_2  | NASA\_INDOOR\_CURRENT\_EEV2  | Current EEV2 development level  |  |
| 0x4219  | VAR\_IN\_??  | NASA\_INDOOR\_CURRENT\_EEV3  |  |  |
| 0x421A  |  | NASA\_INDOOR\_CURRENT\_EEV4  |  |  |
| 0x421B  | VAR\_IN\_SENSOR\_CO2\_PPM  |  | CO2 sensor detection ppm  |  |
| 0x4220  |  | NASA\_INDOOR\_AIRCLEANFAN\_CURRENT\_RPM  |  |  |
| 0x4229  | VAR\_IN\_MODEL\_INFORMATION  | NASA\_INDOOR\_MODEL\_INFORMATION  | Indoor unit model information  |  |
| 0x422A  | VAR\_IN\_TEMP\_DISCHARGE\_COOL\_TARGET\_F  | NASA\_COOL\_SET\_DISCHARGE  | User limitation - Water Cooling Temperature Max.  |  |
| 0x422B  | VAR\_IN\_TEMP\_DISCHARGE\_HEAT\_TARGET\_F  | NASA\_HEAT\_SET\_DISCHARGE  |  |  |
| 0x4235  | VAR\_IN\_TEMP\_WATER\_HEATER\_TARGET\_F  | NASA\_INDOOR\_DHW\_SET\_TEMP  | DHW target temperature  |  |
| 0x4236  | VAR\_IN\_TEMP\_WATER\_IN\_F  | NASA\_INDOOR\_WATER\_IN\_TEMP  | Hydro\_WaterIn  |  |
| 0x4237  | VAR\_IN\_TEMP\_WATER\_TANK\_F  | NASA\_INDOOR\_DHW\_CURRENT\_TEMP  | DHW tank current temperature  |  |
| 0x4238  | VAR\_IN\_TEMP\_WATER\_OUT\_F  | NASA\_INDOOR\_WATER\_OUT\_TEMP  | Hydro\_WaterOut  |  |
| 0x4239  | VAR\_IN\_TEMP\_WATER\_OUT2\_F  |  | Hydro\_HeaterOut  |  |
| 0x423E  | VAR\_IN\_??  |  |  |  |
| 0x4247  | VAR\_IN\_TEMP\_WATER\_OUTLET\_TARGET\_F  | NASA\_INDOOR\_SETTEMP\_WATEROUT  | Hydro\_WaterOutletTargetF  | variable waterOutSetTemp |
| 0x4248  | VAR\_IN\_TEMP\_WATER\_LAW\_TARGET\_F  |  |  |  |
| 0x424A  | VAR\_IN\_FSV\_1011  | NASA\_INDOOR\_COOL\_MAX\_SETTEMP\_WATEROUT  | User limitation - Water Cooling Temperature Max.  |  |
| 0x424B  | VAR\_IN\_FSV\_1012  | NASA\_INDOOR\_COOL\_MIN\_SETTEMP\_WATEROUT  |  |  |
| 0x424C  | VAR\_IN\_FSV\_1021  | NASA\_INDOOR\_COOL\_MAX\_SETTEMP\_ROOM  | User limitation - Room Cooling Temperature Max.  |  |
| 0x424D  | VAR\_IN\_FSV\_1022  | NASA\_INDOOR\_COOL\_MIN\_SETTEMP\_ROOM  |  |  |
| 0x424E  | VAR\_IN\_FSV\_1031  | NASA\_INDOOR\_HEAT\_MAX\_SETTEMP\_WATEROUT  | User limitation - Water Heating Temperature Max.  |  |
| 0x424F  | VAR\_IN\_FSV\_1032  | NASA\_INDOOR\_HEAT\_MIN\_SETTEMP\_WATEROUT  |  |  |
| 0x4250  | VAR\_IN\_FSV\_1041  | NASA\_INDOOR\_HEAT\_MAX\_SETTEMP\_ROOM  | User limitation - Room heating Temperature Max.  |  |
| 0x4251  | VAR\_IN\_FSV\_1042  | NASA\_INDOOR\_HEAT\_MIN\_SETTEMP\_ROOM  |  |  |
| 0x4252  | VAR\_IN\_FSV\_1051  | NASA\_DHW\_MAX\_SETTEMPLIMIT  | User limitation - Hot Water Temperature Max.  |  |
| 0x4253  | VAR\_IN\_FSV\_1052  | NASA\_DHW\_MIN\_SETTEMPLIMIT  |  |  |
| 0x4254  | VAR\_IN\_FSV\_2011  |  | Water Law Auto heating ambient temperature - Max.  |  |
| 0x4255  | VAR\_IN\_FSV\_2012  |  |  |  |
| 0x4256  | VAR\_IN\_FSV\_2021  |  | Water Law (WL1-Floor) Temperature auto heating - Max.  |  |
| 0x4257  | VAR\_IN\_FSV\_2022  |  |  |  |
| 0x4258  | VAR\_IN\_FSV\_2031  |  | Water Law (WL2-FCU) Temperature auto heating - Max.  |  |
| 0x4259  | VAR\_IN\_FSV\_2032  |  |  |  |
| 0x425A  | VAR\_IN\_FSV\_2051  |  |  |  |
| 0x425B  | VAR\_IN\_FSV\_2052  |  |  |  |
| 0x425C  | VAR\_IN\_FSV\_2061  |  |  |  |
| 0x425D  | VAR\_IN\_FSV\_2062  |  |  |  |
| 0x425E  | VAR\_IN\_FSV\_2071  |  |  |  |
| 0x425F  | VAR\_IN\_FSV\_2072  |  |  |  |
| 0x4260  | VAR\_IN\_FSV\_3021  |  | DHW Heating mode - Max.  |  |
| 0x4261  | VAR\_IN\_FSV\_3022  |  |  |  |
| 0x4262  | VAR\_IN\_FSV\_3023  |  | DHW Heating mode - Start  |  |
| 0x4263  | VAR\_IN\_FSV\_3024  |  |  |  |
| 0x4264  | VAR\_IN\_FSV\_3025  |  | DHW Heating mode - DHW operation time  |  |
| 0x4265  | VAR\_IN\_FSV\_3026  |  |  |  |
| 0x4266  | VAR\_IN\_FSV\_3032  |  | DHW Booster heater - Delayed time  |  |
| 0x4267  | VAR\_IN\_FSV\_3033  |  |  |  |
| 0x4268  | VAR\_IN\_FSV\_3034  |  |  | not for EHS Mono HT Quiet |
| 0x4269  | VAR\_IN\_FSV\_3043  |  |  |  |
| 0x426A  | VAR\_IN\_FSV\_3044  |  | Desinfection - Target temp.  |  |
| 0x426B  | VAR\_IN\_FSV\_3045  |  |  |  |
| 0x426C  | VAR\_IN\_FSV\_3052  |  |  |  |
| 0x426D  | VAR\_IN\_FSV\_4012  |  |  |  |
| 0x426E  | VAR\_IN\_FSV\_4013  |  | Heating mode - Heating Off  |  |
| 0x426F  | VAR\_IN\_FSV\_4014  |  |  |  |
| 0x4270  | VAR\_IN\_FSV\_4024  |  |  |  |
| 0x4271  | VAR\_IN\_FSV\_4025  |  |  |  |
| 0x4272  | VAR\_IN\_FSV\_4033  |  |  |  |
| 0x4273  | VAR\_IN\_FSV\_5011  |  |  |  |
| 0x4274  | VAR\_IN\_FSV\_5012  |  | Outing mode - Room Temperature of cooling Mode  |  |
| 0x4275  | VAR\_IN\_FSV\_5013  |  |  |  |
| 0x4276  | VAR\_IN\_FSV\_5014  |  | Outing mode- Indoor heating temperature  |  |
| 0x4277  | VAR\_IN\_FSV\_5015  |  |  |  |
| 0x4278  | VAR\_IN\_FSV\_5016  |  |  |  |
| 0x4279  | VAR\_IN\_FSV\_5017  |  |  |  |
| 0x427A  | VAR\_IN\_FSV\_5018  |  | Outing mode - Temperature of auto heating WL2 water  |  |
| 0x427B  | VAR\_IN\_FSV\_5019  |  |  |  |
| 0x427C  | VAR\_IN\_FSV\_5021  |  | Economic DHW mode - Temperature of hot water Tank  |  |
| 0x427D  | VAR\_IN\_FSV\_5031  |  |  |  |
| 0x427E  | VAR\_IN\_FSV\_5032  |  |  |  |
| 0x427F  | VAR\_IN\_TEMP\_WATER\_LAW\_F  |  | Hydro\_WaterLawTargetF  |  |
| 0x4284  | VAR\_IN\_??  | NASA\_INDOOR\_POWER\_CONSUMPTION  | Indoor unit power consumption  |  |
| 0x4286  | VAR\_IN\_FSV\_4042  |  |  |  |
| 0x4287  | VAR\_IN\_FSV\_4043  |  |  |  |
| 0x4288  | VAR\_IN\_FSV\_4045  |  |  |  |
| 0x4289  | VAR\_IN\_FSV\_4046  |  |  |  |
| 0x428A  | VAR\_IN\_FSV\_4052  |  |  |  |
| 0x428C  | VAR\_IN\_TEMP\_MIXING\_VALVE\_F  |  | Hydro\_MixingValve  |  |
| 0x428D  | VAR\_IN\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x4290  | VAR\_IN\_??  | NASA\_AHUPANEL\_TARGET\_HUMIDITY  |  |  |
| 0x4291  |  | NASA\_AHUPANEL\_OA\_DAMPER\_TARGET\_RATE  |  |  |
| 0x4292  | VAR\_IN\_??  | NASA\_AHUPANEL\_RA\_TEMP  |  |  |
| 0x4293  |  | NASA\_AHUPANEL\_RA\_HUMIDITY  |  |  |
| 0x4294  | VAR\_IN\_??  | NASA\_AHUPANEL\_EA\_RATE  |  |  |
| 0x4295  |  | NASA\_AHUPANEL\_OA\_TEMP  |  |  |
| 0x4296  | VAR\_IN\_??  | NASA\_AHUPANEL\_OA\_HUMIDITY  |  |  |
| 0x4297  | VAR\_AHU\_PANEL\_SA\_TEMP  | NASA\_AHUPANEL\_SA\_TEMP  |  |  |
| 0x4298  | VAR\_AHU\_PANEL\_SA\_HUMIDITY  | NASA\_AHUPANEL\_SA\_HUMIDITY  |  |  |
| 0x4299  |  | NASA\_AHUPANEL\_STATIC\_PRESSURE  |  |  |
| 0x429A  | VAR\_IN\_??  | NASA\_AHUPANEL\_MIXING\_TEMP  |  |  |
| 0x429B  |  | NASA\_AHUPANEL\_MIXING\_RATE  |  |  |
| 0x429C  | VAR\_IN\_??  | NASA\_AHUPANEL\_POINT\_STATUS  |  |  |
| 0x429F  | VAR\_IN\_FAN\_CURRENT\_RPM\_SUCTION1  |  |  |  |
| 0x42A1  | VAR\_IN\_FAN\_CURRENT\_RPM\_SUCTION2  |  |  |  |
| 0x42A3  | VAR\_IN\_FAN\_CURRENT\_RPM\_SUCTION3  |  |  |  |
| 0x42A5  | VAR\_IN\_TEMP\_PANEL\_AIR\_COOL1\_F  |  |  |  |
| 0x42A6  | VAR\_IN\_TEMP\_PANEL\_AIR\_COOL2\_F  |  |  |  |
| 0x42A7  | VAR\_IN\_TEMP\_PANEL\_ROOM\_COOL1\_F  |  |  |  |
| 0x42A8  | VAR\_IN\_TEMP\_PANEL\_ROOM\_COOL2\_F  |  |  |  |
| 0x42A9  | VAR\_IN\_TEMP\_PANEL\_TARGET\_COOL1\_F  |  |  |  |
| 0x42AA  | VAR\_IN\_TEMP\_PANEL\_TARGET\_COOL2\_F  |  |  |  |
| 0x42AB  | VAR\_IN\_TEMP\_PANEL\_AIR\_HEAT1\_F  |  |  |  |
| 0x42AC  | VAR\_IN\_TEMP\_PANEL\_AIR\_HEAT2\_F  |  |  |  |
| 0x42AD  | VAR\_IN\_TEMP\_PANEL\_ROOM\_HEAT1\_F  |  |  |  |
| 0x42AE  | VAR\_IN\_TEMP\_PANEL\_ROOM\_HEAT2\_F  |  |  |  |
| 0x42AF  | VAR\_IN\_TEMP\_PANEL\_TARGET\_HEAT1\_F  |  |  |  |
| 0x42B0  | VAR\_IN\_TEMP\_PANEL\_TARGET\_HEAT2\_F  |  |  |  |
| 0x42B1  | VAR\_IN\_MCC\_GROUP\_MODULE\_ADDRESS  |  |  |  |
| 0x42B2  | VAR\_IN\_MCC\_GROUP\_MAIN  |  |  |  |
| 0x42B3  | VAR\_IN\_MCC\_MODULE\_MAIN  |  |  |  |
| 0x42C2  | VAR\_IN\_TEMP\_EVA2\_IN\_F  |  | Indoor Eva2 In temperature  |  |
| 0x42C3  | VAR\_IN\_TEMP\_EVA2\_OUT\_F  |  | Indoor Eva2 Out Temperature  |  |
| 0x42C4  | VAR\_IN\_CHILLER\_PHE\_IN\_P  |  | Inlet pressure  |  |
| 0x42C5  | VAR\_IN\_CHILLER\_PHE\_OUT\_P  |  | Outlet pressure  |  |
| 0x42C9  | VAR\_IN\_CHILLER\_EXTERNAL\_TEMPERATURE  |  | External sensor-Room temperature  |  |
| 0x42CA  | VAR\_IN\_MODULATING\_VALVE\_1  |  |  |  |
| 0x42CB  | VAR\_IN\_MODULATING\_VALVE\_2  |  |  |  |
| 0x42CC  | VAR\_IN\_MODULATING\_FAN  |  |  |  |
| 0x42CD  | VAR\_IN\_TEMP\_WATER\_IN2\_F  |  |  |  |
| 0x42CE  | VAR\_IN\_FSV\_3046  |  | DHW Desinfection - Max. operation time  | NASA Value is [minutes], not [hours] |
| 0x42CF  | VAR\_IN\_ENTHALPY\_SENSOR\_OUTPUT  |  |  |  |
| 0x42D0  | VAR\_IN\_EXT\_VARIABLE\_DAMPER\_OUTPUT  |  |  |  |
| 0x42D1  | VAR\_IN\_DUST\_SENSOR\_PM10\_0\_VALUE  |  |  |  |
| 0x42D2  | VAR\_IN\_DUST\_SENSOR\_PM2\_5\_VALUE  |  |  |  |
| 0x42D3  | VAR\_IN\_DUST\_SENSOR\_PM1\_0\_VALUE  |  |  |  |
| 0x42D4  | VAR\_IN\_TEMP\_ZONE2\_F  |  | Idiom\_RoomTemp\_Zone2  | Room temperature for zone #2 |
| 0x42D6  | VAR\_IN\_TEMP\_TARGET\_ZONE2\_F  |  | Zone2 Room Set Temp.  |  |
| 0x42D7  | VAR\_IN\_TEMP\_WATER\_OUTLET\_TARGET\_ZONE2\_F  |  | Water Outlet2 Set Temp.  |  |
| 0x42D8  | VAR\_IN\_TEMP\_WATER\_OUTLET\_ZONE1\_F  |  | Zone1 WaterOut Temp  |  |
| 0x42D9  | VAR\_IN\_TEMP\_WATER\_OUTLET\_ZONE2\_F  |  | Zone2 WaterOut Temp  |  |
| 0x42DB  | VAR\_IN\_FSV\_5082  |  |  |  |
| 0x42DC  | VAR\_IN\_FSV\_5083  |  |  |  |
| 0x42DD  | VAR\_IN\_FSV\_5092  |  |  |  |
| 0x42DE  | VAR\_IN\_FSV\_5093  |  |  |  |
| 0x42E8  | VAR\_IN\_FLOW\_SENSOR\_VOLTAGE  |  |  |  |
| 0x42E9  | VAR\_IN\_FLOW\_SENSOR\_CALC  |  | Flow Sensor  | value appears about every 90 seconds |
| 0x42ED  | VAR\_IN\_FSV\_3081  |  |  |  |
| 0x42EE  | VAR\_IN\_FSV\_3082  |  |  |  |
| 0x42EF  | VAR\_IN\_FSV\_3083  |  |  |  |
| 0x42F0  | VAR\_IN\_FSV\_5023  |  |  |  |
| 0x42F1  | VAR\_OUT\_COMP\_FREQ\_RATE\_CONTROL  |  |  | undocumented, taken from Pyton code |
| 0x4301  | VAR\_IN\_??  |  |  |  |
| 0x4302  | VAR\_IN\_CAPACITY\_VENTILATION\_REQUEST  |  |  |  |
| 0x4401  | LVAR\_IN\_??  |  |  |  |
| 0x4405  |  | NASA\_GROUPCONTROL\_BIT1  |  |  |
| 0x4406  |  | NASA\_GROUPCONTROL\_BIT2  |  |  |
| 0x4407  |  | NASA\_GROUPCONTROL\_BIT3  |  |  |
| 0x440A  | LVAR\_IN\_DEVICE\_STAUS\_HEATPUMP\_BOILER  |  | Switch\_HyrdoFlow  |  |
| 0x440E  | LVAR\_IN\_??  |  |  |  |
| 0x440F  | LVAR\_IN\_??  | NASA\_ERROR\_INOUT  |  |  |
| 0x4415  | LVAR\_IN\_AUTO\_STATIC\_PRESSURE  |  |  |  |
| 0x4418  | LVAR\_IN\_EMPTY\_ROOM\_CONTROL\_DATA  | NASA\_VACANCY\_SETTING  |  |  |
| 0x441B  | LVAR\_IN\_ENTER\_ROOM\_CONTROL\_DATA  |  |  |  |
| 0x441F  | LVAR\_IN\_ETO\_COOL\_CONTROL\_DATA  |  |  |  |
| 0x4420  | LVAR\_IN\_ETO\_HEAT\_CONTROL\_DATA  |  |  |  |
| 0x4423  | LVAR\_IN\_??  |  | Minutes since installation  | seen in NASA data from EHS Mono HT Quiet |
| 0x4424  | LVAR\_IN\_??  |  | Minutes active  | seen in NASA data from EHS Mono HT Quiet |
| 0x4426  | LVAR\_IN\_??  |  | Generated power last minute  |  |
| 0x4427  | LVAR\_IN\_??  |  | Total generated power  |  |
| 0x4604  | STR\_IN\_INSTALL\_INDOOR\_SETUP\_INFO  | NASA\_INDOOR\_ABLE\_FUNCTION  |  |  |
| 0x4608  |  | NASA\_INDOOR\_SETTING\_MIN\_MAX\_TEMP  |  |  |
| 0x4612  | STR\_IN\_??  | NASA\_??  | Source\_Adress\_Class: WiFiKit  | seen in NASA data from EHS Mono HT Quiet |
| 0x4619  |  | NASA\_EHS\_SETTING\_MIN\_MAX\_TEMP  |  |  |
| 0x461A  |  | NASA\_EHS\_FSV\_SETTING\_MIN\_MAX\_TEMP  |  |  |
| 0x461C  |  | NASA\_AHUPANEL\_AHUKIT\_ADDRESS  |  |  |
| 0x461D  |  | NASA\_AHUPANEL\_PANEL\_OPTION  |  |  |
| 0x461E  | STR\_IN\_ERROR\_HISTORY\_FOR\_HASS  |  | Structure Type  |  |
| 0x8000  | ENUM\_OUT\_OPERATION\_SERVICE\_OP  |  | Indoor unit defrost operation steps  | 2 Heating test run, 3 Pump out, 13 Cooling test run, 14 Pump down |
| 0x8001  | ENUM\_OUT\_OPERATION\_ODU\_MODE  | NASA\_OUTDOOR\_OPERATION\_STATUS  | Outdoor Driving Mode  | 0 OP\_STOP, 1 OP\_SAFETY, 2 OP\_NORMAL, 3 OP\_BALANCE, 4 OP\_RECOVERY, 5 OP\_DEICE, 6 OP\_COMPDOWN, 7 OP\_PROHIBIT, 8 OP\_LINEJIG, 9 OP\_PCBJIG, 10 OP\_TEST, 11 OP\_CHARGE, 12 OP\_PUMPDOWN, 13 OP\_PUMPOUT, 14 OP\_VACCUM, 15 OP\_CALORYJIG, 16 OP\_PUMPDOWNSTOP, 17 OP\_SUBSTOP, 18 OP\_CHECKPIPE, 19 OP\_CHECKREF, 20 OP\_FPTJIG, 21 OP\_NONSTOP\_HEAT\_COOL\_CHANGE, 22 OP\_AUTO\_INSPECT, 23 OP\_ELECTRIC\_DISCHARGE, 24 OP\_SPLIT\_DEICE, 25 OP\_INVETER\_CHECK, 26 OP\_NONSTOP\_DEICE, 27 OP\_REM\_TEST, 28 OP\_RATING, 29 OP\_PC\_TEST, 30 OP\_PUMPDOWN\_THERMOOFF, 31 OP\_3PHASE\_TEST, 32 OP\_SMARTINSTALL\_TEST, 33 OP\_DEICE\_PERFORMANCE\_TEST, 34 OP\_INVERTER\_FAN\_PBA\_CHECK, 35 OP\_AUTO\_PIPE\_PAIRING, 36 OP\_AUTO\_CHARGE |
| 0x8002  | ENUM\_OUT\_??  |  |  |  |
| 0x8003  | ENUM\_OUT\_OPERATION\_HEATCOOL  | NASA\_OUTDOOR\_OPERATION\_MODE  | Outdoor unit cooling/heating mode  | 1 Cool, 2 Heat, 3 CoolMain, 4 HeatMain |
| 0x8005  | ENUM\_OUT\_??  |  |  |  |
| 0x800D  | ENUM\_OUT\_??  |  |  |  |
| 0x8010  | ENUM\_OUT\_LOAD\_COMP1  | NASA\_OUTDOOR\_COMP1\_STATUS  | Comp#1 On/Off  |  |
| 0x8011  | ENUM\_OUT\_LOAD\_COMP2  | NASA\_OUTDOOR\_COMP2\_STATUS  | Comp#2 On/Off  |  |
| 0x8012  | ENUM\_OUT\_LOAD\_COMP3  | NASA\_OUTDOOR\_COMP3\_STATUS  | Comp#3 On/Off  |  |
| 0x8013  | ENUM\_OUT\_LOAD\_CCH1  | NASA\_OUTDOOR\_CCH1\_STATUS  | CCH1 On/Off  |  |
| 0x8014  | ENUM\_OUT\_LOAD\_CCH2  | NASA\_OUTDOOR\_CCH2\_STATUS  | CCH2 On/Off  |  |
| 0x8015  |  | NASA\_OUTDOOR\_CCH3\_STATUS  |  |  |
| 0x8016  |  | NASA\_OUTDOOR\_ACCUMULATOR\_CCH  |  |  |
| 0x8017  | ENUM\_OUT\_LOAD\_HOTGAS  | NASA\_OUTDOOR\_HOTGAS1  | HotGas1 On/Off  |  |
| 0x8018  | ENUM\_OUT\_LOAD\_HOTGAS2  | NASA\_OUTDOOR\_HOTGAS2  | HotGas2 On/Off  |  |
| 0x8019  | ENUM\_OUT\_LOAD\_LIQUID  | NASA\_OUTDOOR\_LIQUID\_BYPASS\_VALVE  | Liquid On/Off  |  |
| 0x801A  | ENUM\_OUT\_LOAD\_4WAY  | NASA\_OUTDOOR\_4WAY\_VALVE  | 4Way On/Off  |  |
| 0x801F  | ENUM\_OUT\_LOAD\_MAINCOOL  | NASA\_OUTDOOR\_MAIN\_COOL\_VALVE  |  |  |
| 0x8020  | ENUM\_OUT\_LOAD\_OUTEEV  | NASA\_OUTDOOR\_OD\_EEV\_VALVE  |  |  |
| 0x8021  | ENUM\_OUT\_LOAD\_EVI\_BYPASS  | NASA\_OUTDOOR\_EVI\_BYPASS\_VALVE  | EVI ByPass On/Off  |  |
| 0x8022  | ENUM\_OUT\_LOAD\_EVI\_SOL1  | NASA\_OUTDOOR\_EVI\_SOL1\_VALVE  | EVI Sol1 On/Off  |  |
| 0x8023  | ENUM\_OUT\_LOAD\_EVI\_SOL2  | NASA\_OUTDOOR\_EVI\_SOL2\_VALVE  | EVI Sol2 On/Off  |  |
| 0x8024  |  | NASA\_OUTDOOR\_EVI\_SOL3\_VALVE  |  |  |
| 0x8025  | ENUM\_OUT\_LOAD\_GASCHARGE  | NASA\_OUTDOOR\_GAS\_CHARGE  | Hot Gas Charging  |  |
| 0x8026  | ENUM\_OUT\_LOAD\_WATER  | NASA\_OUTDOOR\_WATER\_VALVE  | 2Way Valve  |  |
| 0x8027  | ENUM\_OUT\_LOAD\_PUMPOUT  | NASA\_OUTDOOR\_PUMPOUT\_VALVE  | Pump Out  |  |
| 0x802A  | ENUM\_OUT\_LOAD\_4WAY2  | NASA\_OUTDOOR\_4WAY2\_VALVE  |  |  |
| 0x8031  | ENUM\_OUT\_??  |  |  |  |
| 0x8032  | ENUM\_OUT\_??  |  |  |  |
| 0x8033  | ENUM\_OUT\_??  |  |  |  |
| 0x8034  | ENUM\_OUT\_LOAD\_LIQUIDTUBE  | NASA\_OUTDOOR\_LIQUID\_TUBE\_VALVE  | Liquid tube  |  |
| 0x8037  | ENUM\_OUT\_LOAD\_ACCRETURN  | NASA\_OUTDOOR\_ACCUM\_RETURN\_VALVE  | ARV On/Off  |  |
| 0x803B  | ENUM\_OUT\_LOAD\_FLOW\_SWITCH  | NASA\_OUTDOOR\_FLOW\_SWITCH  | Flow Switch  |  |
| 0x803C  | ENUM\_OUT\_OPERATION\_AUTO\_INSPECT\_STEP  |  | Automatic check step  |  |
| 0x803F  | ENUM\_OUT\_??  |  |  |  |
| 0x8043  | ENUM\_OUT\_??  |  |  |  |
| 0x8045  | ENUM\_OUT\_??  |  |  |  |
| 0x8046  | ENUM\_OUT\_OP\_TEST\_OP\_COMPLETE  | NASA\_OUTDOOR\_TEST\_OP\_COMPLETE  |  |  |
| 0x8047  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_SERVICEOPERATION  |  |  |
| 0x8048  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8049  | ENUM\_OUT\_MCU\_LOAD\_COOL\_A  |  | MCU  |  |
| 0x804A  | ENUM\_OUT\_MCU\_LOAD\_HEAT\_A  |  |  |  |
| 0x804B  | ENUM\_OUT\_MCU\_LOAD\_COOL\_B  |  |  |  |
| 0x804C  | ENUM\_OUT\_MCU\_LOAD\_HEAT\_B  |  |  |  |
| 0x804D  | ENUM\_OUT\_MCU\_LOAD\_COOL\_C  |  |  |  |
| 0x804E  | ENUM\_OUT\_MCU\_LOAD\_HEAT\_C  |  |  |  |
| 0x804F  | ENUM\_OUT\_MCU\_LOAD\_COOL\_D  |  |  |  |
| 0x8050  | ENUM\_OUT\_MCU\_LOAD\_HEAT\_D  |  |  |  |
| 0x8051  | ENUM\_OUT\_MCU\_LOAD\_COOL\_E  |  |  |  |
| 0x8052  | ENUM\_OUT\_MCU\_LOAD\_HEAT\_E  |  |  |  |
| 0x8053  | ENUM\_OUT\_MCU\_LOAD\_COOL\_F  |  |  |  |
| 0x8054  | ENUM\_OUT\_MCU\_LOAD\_HEAT\_F  |  |  |  |
| 0x8055  | ENUM\_OUT\_MCU\_LOAD\_LIQUID  |  |  |  |
| 0x8058  | ENUM\_OUT\_MCU\_PORT0\_INDOOR\_ADDR  |  |  |  |
| 0x8059  | ENUM\_OUT\_MCU\_PORT1\_INDOOR\_ADDR  |  |  |  |
| 0x805A  | ENUM\_OUT\_MCU\_PORT2\_INDOOR\_ADDR  |  |  |  |
| 0x805B  | ENUM\_OUT\_MCU\_PORT3\_INDOOR\_ADDR  |  |  |  |
| 0x805C  | ENUM\_OUT\_MCU\_PORT4\_INDOOR\_ADDR  |  |  |  |
| 0x805D  | ENUM\_OUT\_MCU\_PORT5\_INDOOR\_ADDR  |  |  |  |
| 0x805E  | ENUM\_OUT\_??  |  |  |  |
| 0x8061  | ENUM\_OUT\_DEICE\_STEP\_INDOOR  | NASA\_OUTDOOR\_INDOOR\_DEFROST\_STEP  | Indoor unit defrost operation steps  | 1 Defrost stage 1, 2 Defrost stage 2, 3 Defrost stage 3, 7 Defrost operation end stage, 255 No defrost operation |
| 0x8062  |  | NASA\_OUTDOOR\_LOGICAL\_DEFROST\_STEP  |  |  |
| 0x8063  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8065  |  | NASA\_OUTDOOR\_SYSTEM\_RESET  |  |  |
| 0x8066  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_OPMODELIMIT  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8077  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8078  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8079  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x807A  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x807B  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x807C  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x807D  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x807E  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x807F  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8081  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_EXT\_CMD\_OPERATION  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8083  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x808C  | ENUM\_OUT\_??  |  |  |  |
| 0x808D  | ENUM\_OUT\_??  |  |  |  |
| 0x808E  | ENUM\_OUT\_OP\_CHECK\_REF\_STEP  |  | Refrigerant amount level  | This is Enum in definition. But we need operation, so just consider this as variable. Min = 0, Max = 8 |
| 0x808F  | ENUM\_OUT\_??  |  |  |  |
| 0x8092  | ENUM\_OUT\_INSTALL\_ODU\_COUNT  |  |  |  |
| 0x8099  | ENUM\_OUT\_CONTROL\_FAN\_NUM  |  | Number of outdoor fans  |  |
| 0x809C  | ENUM\_OUT\_CHECK\_REF\_RESULT  |  | Refrigerant amount determination result  |  |
| 0x809D  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_COOLONLY\_MODEL  |  | seen in NASA data from EHS Mono HT Quiet (value always = 0) |
| 0x809E  | ENUM\_OUT\_LOAD\_CBOX\_COOLING\_FAN  | NASA\_OUTDOOR\_CBOX\_COOLING\_FAN  | DC Fan  |  |
| 0x80A5  | ENUM\_OUT\_STATE\_BACKUP\_OPER  | NASA\_OUTDOOR\_BACKUP\_OPERATION  | Backup operation operation status On/Off  |  |
| 0x80A6  | ENUM\_OUT\_STATE\_COMP\_PROTECT\_OPER  | NASA\_OUTDOOR\_COM\_PROTECT\_OPERATIOIN  | Compressor protection control operation status On/Off  | 0 Off, 1 On |
| 0x80A7  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_DRED\_LEVEL  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80A8  | ENUM\_OUT\_??  |  |  |  |
| 0x80A9  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80AA  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80AB  | ENUM\_OUT\_??  |  |  |  |
| 0x80AC  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_ACCUM\_RETURN2\_VALVE  |  |  |
| 0x80AE  | ENUM\_OUT\_??  |  |  |  |
| 0x80AF  | ENUM\_OUT\_LOAD\_BASEHEATER  | NASA\_OUTDOOR\_BASE\_HEATER  | Base heater On/Off state for EHS  | 0 Off, 1 On |
| 0x80B1  | ENUM\_OUT\_??  |  |  |  |
| 0x80B2  | ENUM\_OUT\_??  | NASA\_OUTDOOR\_CH\_SWITCH\_VALUE  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80B4  | ENUM\_OUT\_STATE\_ACCUM\_VALVE\_ONOFF  |  |  |  |
| 0x80B6  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80B8  | ENUM\_OUT\_LOAD\_OIL\_BYPASS1  |  |  |  |
| 0x80B9  | ENUM\_OUT\_LOAD\_OIL\_BYPASS2  |  |  |  |
| 0x80BC  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80BE  | ENUM\_OUT\_OP\_A2\_CURRENTMODE  |  |  |  |
| 0x80C1  | ENUM\_OUT\_LOAD\_A2A\_VALVE  |  |  |  |
| 0x80CE  | ENUM\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x80D7  | ENUM\_OUT\_LOAD\_PHEHEATER  |  |  |  |
| 0x80D8  | ENUM\_OUT\_EHS\_WATEROUT\_TYPE  |  |  | 0 Default, 1 70°C |
| 0x8200  | VAR\_OUT\_??  | NASA\_OUTDOOR\_OPMODE\_OPTION  |  |  |
| 0x8201  | VAR\_OUT\_??  |  |  |  |
| 0x8202  | VAR\_OUT\_INSTALL\_COMP\_NUM  |  | Number of outdoor unit compressors  |  |
| 0x8204  | VAR\_OUT\_SENSOR\_AIROUT  | NASA\_OUTDOOR\_OUT\_TEMP  | Outdoor temperature  |  |
| 0x8206  | VAR\_OUT\_SENSOR\_HIGHPRESS  | NASA\_OUTDOOR\_HIGH\_PRESS  | High pressure  |  |
| 0x8208  | VAR\_OUT\_SENSOR\_LOWPRESS  | NASA\_OUTDOOR\_LOW\_PRESS  | low pressure  |  |
| 0x820A  | VAR\_OUT\_SENSOR\_DISCHARGE1  | NASA\_OUTDOOR\_DISCHARGE\_TEMP1  | Discharge1  | The discharge temperature in a heat pump refers to the temperature of the refrigerant as it exits the compressor and enters the condenser. |
| 0x820C  | VAR\_OUT\_SENSOR\_DISCHARGE2  | NASA\_OUTDOOR\_DISCHARGE\_TEMP2  | Discharge2  |  |
| 0x820E  | VAR\_OUT\_SENSOR\_DISCHARGE3  | NASA\_OUTDOOR\_DISCHARGE\_TEMP3  | Discharge3  |  |
| 0x8210  |  | NASA\_OUTDOOR\_SUMPTEMP  |  |  |
| 0x8217  | VAR\_OUT\_SENSOR\_CT1  | NASA\_OUTDOOR\_CT1  | Compressor 1 current  | very unprecise, just 1 fractional digit |
| 0x8218  | VAR\_OUT\_SENSOR\_CONDOUT  | NASA\_OUTDOOR\_COND\_OUT1  | Main heat exchanger outlet temperature  |  |
| 0x821A  | VAR\_OUT\_SENSOR\_SUCTION  | NASA\_OUTDOOR\_SUCTION1\_TEMP  | Suction temperature  |  |
| 0x821C  | VAR\_OUT\_SENSOR\_DOUBLETUBE  | NASA\_OUTDOOR\_DOUBLE\_TUBE  | Liquid pipe temperature  |  |
| 0x821E  | VAR\_OUTCD\_\_SENSOR\_EVIIN  | NASA\_OUTDOOR\_EVI\_IN  | EVI IN  |  |
| 0x8220  | VAR\_OUT\_SENSOR\_EVIOUT  | NASA\_OUTDOOR\_EVI\_OUT  | EVI OUT  |  |
| 0x8222  | VAR\_OUT\_??  | NASA\_OUTDOOR\_OLP\_TEMP  |  |  |
| 0x8223  | VAR\_OUT\_CONTROL\_TARGET\_DISCHARGE  | NASA\_OUTDOOR\_TARGET\_DISCHARGE  | Target discharge temperature  |  |
| 0x8224  | VAR\_OUT\_??  |  | Temperature  | seen in NASA data from EHS Mono HT Quiet |
| 0x8225  | VAR\_OUT\_??  |  | Temperature  | seen in NASA data from EHS Mono HT Quiet |
| 0x8226  | VAR\_OUT\_LOAD\_FANSTEP1  | NASA\_OUTDOOR\_FAN\_STEP1  | Outdoor Fan Step  | Min 0, Max 10000 |
| 0x8227  | VAR\_OUT\_??  | NASA\_OUTDOOR\_FAN\_STEP2  |  |  |
| 0x8228  |  | NASA\_OUTDOOR\_LOADINGTIME  |  |  |
| 0x8229  | VAR\_OUT\_LOAD\_OUTEEV1  | NASA\_OUTDOOR\_MAINEEV1  | Main EEV1  | An Electronic Expansion Valve, or EEV for short, is installed before the evaporator in an air handler/coil and after the condenser in a heat pump. It regulates the refrigerant flow rate to control superheat at the evaporator outlet by opening and closing. |
| 0x822A  | VAR\_OUT\_LOAD\_OUTEEV2  | NASA\_OUTDOOR\_MAINEEV2  | Main EEV2  |  |
| 0x822B  | VAR\_OUT\_LOAD\_OUTEEV3  | NASA\_OUTDOOR\_MAINEEV3  | Main EEV3  |  |
| 0x822C  | VAR\_OUT\_LOAD\_OUTEEV4  | NASA\_OUTDOOR\_MAINEEV4  | Main EEV4  |  |
| 0x822D  | VAR\_OUT\_LOAD\_OUTEEV5  | NASA\_OUTDOOR\_MAINEEV5  | Main EEV5  |  |
| 0x822E  | VAR\_OUT\_LOAD\_EVIEEV  | NASA\_OUTDOOR\_EVIEEV  | EVI EEV  |  |
| 0x822F  |  | NASA\_OUTDOOR\_HREEV  |  |  |
| 0x8230  | VAR\_OUT\_??  | NASA\_OUTDOOR\_RUNNING\_SUM\_CAPA  |  |  |
| 0x8231  | VAR\_OUT\_??  | NASA\_OUTDOOR\_HEATING\_PERCENT  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8233  | VAR\_OUT\_??  | NASA\_OUTDOOR\_OPERATION\_CAPA\_SUM  |  | division by 8.6 (better 8.5 ?). Does NOT show nominal Power Capacity, instead shows current ACTIVE Power Capacity |
| 0x8234  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8235  | VAR\_OUT\_ERROR\_CODE  |  | HTU error code  |  |
| 0x8236  | VAR\_OUT\_CONTROL\_ORDER\_CFREQ\_COMP1  | NASA\_OUTDOOR\_COMP1\_ORDER\_HZ  | Instruction frequency 1  |  |
| 0x8237  | VAR\_OUT\_CONTROL\_TARGET\_CFREQ\_COMP1  | NASA\_OUTDOOR\_COMP1\_TARGET\_HZ  | Target frequency 1  |  |
| 0x8238  | VAR\_OUT\_CONTROL\_CFREQ\_COMP1  | NASA\_OUTDOOR\_COMP1\_RUN\_HZ  | Current frequency 1  |  |
| 0x8239  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x823B  | VAR\_OUT\_SENSOR\_DCLINK\_VOLTAGE  | NASA\_OUTDOOR\_DCLINK1\_VOLT  | DC Link1 (Inverter DC voltage input)  | Min 0, Max 1000 |
| 0x823C  |  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x823D  | VAR\_OUT\_LOAD\_FANRPM1  | NASA\_OUTDOOR\_FAN\_RPM1  | Outdoor Fan1 RPM  |  |
| 0x823E  | VAR\_OUT\_LOAD\_FANRPM2  | NASA\_OUTDOOR\_FAN\_RPM2  | Outdoor Fan2 RPM  |  |
| 0x823F  | VAR\_OUT\_??  | NASA\_OUTDOOR\_CONTROL\_PRIME\_UNIT  |  |  |
| 0x8240  |  | NASA\_OUTDOOR\_ODU\_CAPA1  | current electric capacity of outdoor unit  | value in percent, appears about every 140 seconds, not a reliable number |
| 0x8241  |  | NASA\_OUTDOOR\_ODU\_CAPA2  |  |  |
| 0x8243  | VAR\_OUT\_??  |  |  |  |
| 0x8244  |  | NASA\_OUTDOOR\_OIL\_RECOVERY\_STEP  |  |  |
| 0x8245  |  | NASA\_OUTDOOR\_OIL\_BALANCE\_STEP  |  |  |
| 0x8247  | VAR\_OUT\_??  | NASA\_OUTDOOR\_DEFROST\_STEP  |  |  |
| 0x8248  | VAR\_OUT\_??  | NASA\_OUTDOOR\_SAFETY\_START  |  |  |
| 0x8249  | VAR\_OUT\_??  |  |  |  |
| 0x824B  | VAR\_OUT\_??  |  |  |  |
| 0x824C  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x824F  | VAR\_OUT\_CONTROL\_REFRIGERANTS\_VOLUME  |  | Refrigerant amount  |  |
| 0x8254  | VAR\_OUT\_SENSOR\_IPM1  | NASA\_OUTDOOR\_IPM\_TEMP1  | IPM1 Temperature  | Min -41, Max 150. The IPM is a component within the inverter system. It is responsible for converting the incoming direct current (DC) power from the power supply into alternating current (AC) power that drives the compressor motor. The term "intelligent" is often used because the IPM includes sophisticated electronics and control algorithms that optimize the motor's performance. |
| 0x8255  | VAR\_OUT\_SENSOR\_IPM2  | NASA\_OUTDOOR\_IPM\_TEMP2  | IPM2 Temperature  |  |
| 0x825A  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x825B  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x825C  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x825D  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x825E  | VAR\_OUT\_SENSOR\_TEMP\_WATER  | NASA\_OUTDOOR\_WATER\_TEMP  | Water Temperature  |  |
| 0x825F  | VAR\_OUT\_SENSOR\_PIPEIN1  |  |  |  |
| 0x8260  | VAR\_OUT\_SENSOR\_PIPEIN2  |  |  |  |
| 0x8261  | VAR\_OUT\_SENSOR\_PIPEIN3  |  |  |  |
| 0x8262  | VAR\_OUT\_SENSOR\_PIPEIN4  |  |  |  |
| 0x8263  | VAR\_OUT\_SENSOR\_PIPEIN5  |  |  |  |
| 0x8264  | VAR\_OUT\_SENSOR\_PIPEOUT1  |  |  |  |
| 0x8265  | VAR\_OUT\_SENSOR\_PIPEOUT2  |  |  |  |
| 0x8266  | VAR\_OUT\_SENSOR\_PIPEOUT3  |  |  |  |
| 0x8267  | VAR\_OUT\_SENSOR\_PIPEOUT4  |  |  |  |
| 0x8268  | VAR\_OUT\_SENSOR\_PIPEOUT5  |  |  |  |
| 0x826B  | VAR\_OUT\_MCU\_SENSOR\_SUBCOOLER\_IN  |  |  |  |
| 0x826C  | VAR\_OUT\_MCU\_SENSOR\_SUBCOOLER\_OUT  |  |  |  |
| 0x826D  | VAR\_OUT\_MCU\_SUBCOOLER\_EEV  |  |  |  |
| 0x826E  | VAR\_OUT\_MCU\_CHANGE\_OVER\_EEV1  |  |  |  |
| 0x826F  | VAR\_OUT\_MCU\_CHANGE\_OVER\_EEV2  |  |  |  |
| 0x8270  | VAR\_OUT\_MCU\_CHANGE\_OVER\_EEV3  |  |  |  |
| 0x8271  | VAR\_OUT\_MCU\_CHANGE\_OVER\_EEV4  |  |  |  |
| 0x8272  | VAR\_OUT\_MCU\_CHANGE\_OVER\_EEV5  |  |  |  |
| 0x8273  | VAR\_OUT\_MCU\_CHANGE\_OVER\_EEV6  |  |  |  |
| 0x8274  | VAR\_OUT\_CONTROL\_ORDER\_CFREQ\_COMP2  | NASA\_OUTDOOR\_COMP2\_ORDER\_HZ  | Instruction frequency 2  |  |
| 0x8275  | VAR\_OUT\_CONTROL\_TARGET\_CFREQ\_COMP2  | NASA\_OUTDOOR\_COMP2\_TARGET\_HZ  | Target frequency 2  |  |
| 0x8276  | VAR\_OUT\_CONTROL\_CFREQ\_COMP2  | NASA\_OUTDOOR\_COMP2\_RUN\_HZ  | Current frequency 2  |  |
| 0x8277  | VAR\_OUT\_SENSOR\_CT2  | NASA\_OUTDOOR\_CT2  | Compressor 2 current  |  |
| 0x8278  | VAR\_OUT\_SENSOR\_OCT1  | NASA\_OUTDOOR\_OCT1  | Compressor OCT1  |  |
| 0x8279  |  | NASA\_OUTDOOR\_OCT2  |  |  |
| 0x827A  | VAR\_OUT\_CONTROL\_DSH1  |  | Just for EHS HTU  |  |
| 0x827E  |  | NASA\_OUTDOOR\_ODU\_CAPA3  |  |  |
| 0x827F  |  | NASA\_OUTDOOR\_ODU\_CAPA4  |  |  |
| 0x8280  | VAR\_OUT\_SENSOR\_TOP1  | NASA\_OUTDOOR\_TOP\_SENSOR\_TEMP1  | Top1  |  |
| 0x8281  | VAR\_OUT\_SENSOR\_TOP2  | NASA\_OUTDOOR\_TOP\_SENSOR\_TEMP2  | Top2  |  |
| 0x8282  |  | NASA\_OUTDOOR\_TOP\_SENSOR\_TEMP3  |  |  |
| 0x8287  | VAR\_OUT\_INSTALL\_CAPA  | NASA\_OUTDOOR\_HP  | Outdoor unit horsepower  | unknown UNIT "HP" |
| 0x8298  |  | NASA\_OUTDOOR\_COOL\_SUM\_CAPA  |  |  |
| 0x829A  | VAR\_OUT\_SENSOR\_SUCTION2\_1SEC  | NASA\_OUTDOOR\_SUCTION2\_TEMP  |  |  |
| 0x829B  |  | NASA\_OUTDOOR\_CT\_RESTRICT\_OPTION  |  |  |
| 0x829C  |  | NASA\_OUTDOOR\_COMPENSATE\_COOL\_CAPA  |  |  |
| 0x829D  |  | NASA\_OUTDOOR\_COMPENSATE\_HEAT\_CAPA  |  |  |
| 0x829F  | VAR\_OUT\_SENSOR\_SAT\_TEMP\_HIGH\_PRESSURE  | NASA\_OUTDOOR\_HIGH\_PRESS\_TEMP  | High pressure saturation temperature  |  |
| 0x82A0  | VAR\_OUT\_SENSOR\_SAT\_TEMP\_LOW\_PRESSURE  | NASA\_OUTDOOR\_LOW\_PRESS\_TEMP  | Low pressure saturation temperature  |  |
| 0x82A2  | VAR\_OUT\_??  |  |  |  |
| 0x82A3  |  | NASA\_OUTDOOR\_CT3  |  |  |
| 0x82A4  |  | NASA\_OUTDOOR\_OCT3  |  |  |
| 0x82A6  |  | NASA\_OUTDOOR\_FAN\_IPM1\_TEMP  |  |  |
| 0x82A7  |  | NASA\_OUTDOOR\_FAN\_IPM2\_TEMP  |  |  |
| 0x82A8  | VAR\_OUT\_CONTROL\_IDU\_TOTAL\_ABSCAPA  |  |  |  |
| 0x82A9  | undefined  |  |  | same value as 0x82A8 |
| 0x82AF  | VAR\_OUT\_INSTALL\_COND\_SIZE  |  |  |  |
| 0x82B2  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x82B3  |  | NASA\_OUTDOOR\_DCLINK2\_VOLT  |  |  |
| 0x82B5  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x82B6  | VAR\_OUT\_??  |  |  |  |
| 0x82B8  | VAR\_OUT\_SENSOR\_MIDPRESS  | NASA\_OUTDOOR\_MID\_PRESS  | medium pressure  |  |
| 0x82B9  |  | NASA\_OUTDOOR\_FAN\_CT1  |  |  |
| 0x82BA  |  | NASA\_OUTDOOR\_FAN\_CT2  |  |  |
| 0x82BC  | VAR\_OUT\_PROJECT\_CODE  | NASA\_OUTDOOR\_PROJECT\_CODE  | Project code  |  |
| 0x82BD  | VAR\_OUT\_LOAD\_FLUX\_VARIABLE\_VALVE  | NASA\_OUTDOOR\_FLUX\_VARIABLE\_VALVE  | Flow Control  |  |
| 0x82BE  | VAR\_OUT\_SENSOR\_CONTROL\_BOX  | NASA\_OUTDOOR\_CBOX\_TEMP  | Contor Box Temp  |  |
| 0x82BF  | VAR\_OUT\_SENSOR\_CONDOUT2  | NASA\_OUTDOOR\_COND\_OUT2  | Sub heat exchanger outlet temperature  |  |
| 0x82C0  |  | NASA\_OUTDOOR\_COMP3\_ORDER\_HZ  |  |  |
| 0x82C1  |  | NASA\_OUTDOOR\_COMP3\_TARGET\_HZ  |  |  |
| 0x82C2  |  | NASA\_OUTDOOR\_COMP3\_RUN\_HZ  |  |  |
| 0x82C3  |  | NASA\_OUTDOOR\_DCLINK3\_VOLT  |  |  |
| 0x82C4  |  | NASA\_OUTDOOR\_IPM\_TEMP3  |  |  |
| 0x82C8  | VAR\_OUT\_SENSOR\_ACCUM\_TEMP  | NASA\_OUTDOOR\_ACCUM\_TEMP  | Accumulator outlet temperature  |  |
| 0x82C9  | VAR\_OUT\_SENSOR\_ENGINE\_WATER\_TEMP  | NASA\_OUTDOOR\_ENGINE\_WATER\_TEMP  | Engine water temperature  |  |
| 0x82CA  | VAR\_OUT\_OIL\_BYPASS\_VALVE  | NASA\_OUTDOOR\_OIL\_BYPASS\_VALVE  | Oil Bypass Valve  |  |
| 0x82CB  | VAR\_OUT\_SUCTION\_OVER\_HEAT  | NASA\_OUTDOOR\_SUCTION\_OVER\_HEAT  | Suction superheat  |  |
| 0x82CC  | VAR\_OUT\_SUB\_COND\_OVER\_HEAT  | NASA\_OUTDOOR\_SUB\_COND\_OVER\_HEAT  | Sub heat exchanger outlet superheat  |  |
| 0x82CD  | VAR\_OUT\_OVER\_COOL  | NASA\_OUTDOOR\_OVER\_COOL  | Outdoor unit supercooling  |  |
| 0x82CE  | VAR\_OUT\_COND\_OVER\_COOL  | NASA\_OUTDOOR\_COND\_OVER\_COOL  | Outdoor heat exchanger subcooling degree  |  |
| 0x82CF  | VAR\_OUT\_ENGINE\_RPM  | NASA\_OUTDOOR\_ENGINE\_RPM  | Engine RPM  |  |
| 0x82D0  | VAR\_OUT\_APPEARANCE\_RPM  | NASA\_OUTDOOR\_APPEARANCE\_RPM  | Appearance RPM  |  |
| 0x82D1  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x82D2  | VAR\_OUT\_SUB\_COND\_EEV\_STEP  | NASA\_OUTDOOR\_SUB\_COND\_EEV\_STEP  | Sub EEV  |  |
| 0x82D3  |  | NASA\_OUTDOOR\_SNOW\_LEVEL  |  |  |
| 0x82D4  | VAR\_OUT\_??  |  |  |  |
| 0x82D5  |  | NASA\_OUTDOOR\_UPL\_TP\_COOL  |  |  |
| 0x82D6  |  | NASA\_OUTDOOR\_UPL\_TP\_HEAT  |  |  |
| 0x82D9  | VAR\_OUT\_??  |  |  |  |
| 0x82DA  | VAR\_OUT\_??  |  |  |  |
| 0x82DB  | VAR\_OUT\_PHASE\_CURRENT  | NASA\_OUTDOOR\_PHASE\_CURRENT  | Phase current value  |  |
| 0x82DC  | VAR\_OUT\_??  |  |  |  |
| 0x82DD  | VAR\_OUT\_??  |  |  |  |
| 0x82DE  | VAR\_OUT\_SENSOR\_EVAIN  | NASA\_OUTDOOR\_EVA\_IN  | Eva In for EHS  |  |
| 0x82DF  | VAR\_OUT\_SENSOR\_TW1  | NASA\_OUTDOOR\_TW1\_TEMP  | Water In 1 for EHS  |  |
| 0x82E0  | VAR\_OUT\_SENSOR\_TW2  | NASA\_OUTDOOR\_TW2\_TEMP  | Water In 2 for EHS  |  |
| 0x82E1  | VAR\_OUT\_??  |  |  |  |
| 0x82E3  | VAR\_OUT\_PRODUCT\_OPTION\_CAPA  |  | Outdoor unit product option capacity (based on 0.1Kw) for EHS  |  |
| 0x82E7  | VAR\_OUT\_SENSOR\_TOTAL\_SUCTION  |  | Total Suction Sensor  | Min -41, Max 150 |
| 0x82E8  | VAR\_OUT\_LOAD\_MCU\_HR\_BYPASS\_EEV  |  | MCU HR Bypass EEV opening diagram  |  |
| 0x82E9  | VAR\_OUT\_SENSOR\_PFCM1  |  | PFCM#1 element temperature  | Min -54, Max 3000 |
| 0x82ED  | VAR\_OUT\_??  |  |  |  |
| 0x82F5  | VAR\_OUT\_HIGH\_OVERLOAD\_DETECT  |  | PFCM#1 element temperature  |  |
| 0x82F6  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x82F9  | VAR\_OUT\_SENSOR\_SUCTION3\_1SEC  |  | Suction3 temperature  |  |
| 0x82FC  | VAR\_OUT\_LOAD\_EVI\_SOL\_EEV  |  | EVI SOL EEV  |  |
| 0x82FD  | VAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8401  | LVAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8404  | LVAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8405  | LVAR\_OUT\_LOAD\_COMP1\_RUNNING\_TIME  | NASA\_OUTDOOR\_COMP1\_RUNNING\_TIME  | OutdoorTableCompressorRunningTime 1  | hours |
| 0x8406  | LVAR\_OUT\_??  | NASA\_OUTDOOR\_COMP2\_RUNNING\_TIME  | OutdoorTableCompressorRunningTime 2  |  |
| 0x8408  | LVAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8409  | LVAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x840B  | LVAR\_OUT\_AUTO\_INSPECT\_RESULT0  |  |  |  |
| 0x840C  | LVAR\_OUT\_AUTO\_INSPECT\_RESULT1  |  |  |  |
| 0x840E  |  | NASA\_OUTDOOR\_COMP3\_RUNNING\_TIME  |  |  |
| 0x8411  | LVAR\_OUT\_??  | NASA\_OUTDOOR\_CONTROL\_WATTMETER\_1UNIT  | Instantaneous power consumption of outdoor unit. One outdoor unit. Not used by the controller.  | appears about every 135 seconds, so less often than 0x8413 |
| 0x8412  |  | NASA\_OUTDOOR\_CONTROL\_WATTMETER\_1UNIT\_ACCUM  | Cumulative power consumption of outdoor unit. One outdoor unit. Not used by the controller.  | never seen in NASA data from EHS Mono HT Quiet |
| 0x8413  | LVAR\_OUT\_CONTROL\_WATTMETER\_1W\_1MIN\_SUM  | NASA\_OUTDOOR\_CONTROL\_WATTMETER\_ALL\_UNIT  | Outdoor unit instantaneous power consumption. Sum of modules  | appears about every 30 seconds, not once in a minute |
| 0x8414  | LVAR\_OUT\_??  | NASA\_OUTDOOR\_CONTROL\_WATTMETER\_ALL\_UNIT\_ACCUM  | Outdoor unit cumulative power consumption. Sum of modules  | value is Wh, so do div 1000 |
| 0x8415  | LVAR\_OUT\_??  | NASA\_OUTDOOR\_CONTROL\_WATTMETER\_TOTAL\_SUM  | Total (indoor + outdoor) instantaneous power consumption  | never seen in NASA data from EHS Mono HT Quiet |
| 0x8416  | LVAR\_OUT\_??  | NASA\_OUTDOOR\_CONTROL\_WATTMETER\_TOTAL\_SUM\_ACCUM  | Total (indoor + outdoor) cumulative power consumption  | never seen in NASA data from EHS Mono HT Quiet |
| 0x8417  | LVAR\_OUT\_??  | NASA\_OUTDOOR\_VARIABLE\_SETUP\_INFO  |  |  |
| 0x841A  | LVAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x841F  | LVAR\_OUT\_??  |  |  | seen in NASA data from EHS Mono HT Quiet |
| 0x8601  | STR\_OUT\_INSTALL\_INVERTER\_AND\_BOOTLOADER\_INFO  | NASA\_OUTDOOR\_SUBMICOM  | Structure Type  |  |
| 0x8608  | STR\_OUT\_??  |  | Structure Type  | seen in NASA data from EHS Mono HT Quiet |
| 0x860A  | STR\_OUT\_BASE\_OPTION  |  | Structure Type  |  |
| 0x860C  | STR\_OUT\_??  |  | Structure Type  |  |
| 0x860D  | STR\_OUT\_INSTALL\_MODEL\_INFO  | NASA\_OUTDOOR\_MODELINFORMATION  | Structure Type  |  |
| 0x860F  | STR\_OUT\_INSTALL\_OUTDOOR\_SETUP\_INFO  | NASA\_OUTDOOR\_SETUP\_INFO  | Structure Type  |  |
| 0x8613  | STR\_OUT\_REF\_CHECK\_INFO  |  | Structure Type  |  |

**NASA Message Numbers, detailed info**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MsgNr  | Type  | Signed  | Unit  | Arithmetic |
| 0x0000  |  |  |  |  |
| 0x0004  |  |  |  |  |
| 0x0007  |  |  |  |  |
| 0x0008  |  |  |  |  |
| 0x000A  |  |  |  |  |
| 0x000D  |  |  |  |  |
| 0x000E  |  |  |  |  |
| 0x000F  |  |  |  |  |
| 0x0010  |  |  |  |  |
| 0x0011  |  |  |  |  |
| 0x0012  |  |  |  |  |
| 0x0013  |  |  |  |  |
| 0x0014  |  |  |  |  |
| 0x0015  |  |  |  |  |
| 0x0016  |  |  |  |  |
| 0x0017  |  |  |  |  |
| 0x0018  |  |  |  |  |
| 0x0019  |  |  |  |  |
| 0x001A  |  |  |  |  |
| 0x001B  |  |  |  |  |
| 0x001C  |  |  |  |  |
| 0x001D  |  |  |  |  |
| 0x001E  |  |  |  |  |
| 0x001F  |  |  |  |  |
| 0x0020  |  |  |  |  |
| 0x0021  |  |  |  |  |
| 0x0023  |  |  |  |  |
| 0x0025  | ENUM  |  |  |  |
| 0x0202  | VAR  | false  |  |  |
| 0x0203  |  |  |  |  |
| 0x0204  |  |  |  |  |
| 0x0205  |  |  |  |  |
| 0x0206  |  |  |  |  |
| 0x0207  | VAR  | false  |  |  |
| 0x0208  |  |  |  |  |
| 0x0209  |  |  |  |  |
| 0x0210  |  |  |  |  |
| 0x0211  | VAR  | false  |  |  |
| 0x0213  |  |  |  |  |
| 0x0214  |  |  |  |  |
| 0x0217  |  |  |  |  |
| 0x0401  | LVAR  | false  |  |  |
| 0x0402  | LVAR  | false  |  |  |
| 0x0403  |  |  |  |  |
| 0x0406  |  |  |  |  |
| 0x0407  |  |  |  |  |
| 0x0408  | LVAR  | false  |  |  |
| 0x0409  | LVAR  | false  |  |  |
| 0x040A  | LVAR  | false  |  |  |
| 0x040B  | LVAR  | false  |  | LogicalAnd 0xFF |
| 0x040C  | LVAR  | false  |  |  |
| 0x040D  | LVAR  | false  |  |  |
| 0x040E  | LVAR  | false  |  |  |
| 0x040F  | LVAR  | false  |  |  |
| 0x0410  | LVAR  | false  |  |  |
| 0x0411  | LVAR  | false  | Celsius  | (value & 0xFFFF0000u) >> 16) / 10.0; |
| 0x0412  | LVAR  | false  | Celsius  | (value & 0xFFFF0000u) >> 16) / 10.0; |
| 0x0413  | LVAR  | false  | Celsius  | (value & 0xFFFF0000u) >> 16) / 10.0; |
| 0x0414  | LVAR  | false  | Celsius  | (value & 0xFFFF0000u) >> 16) / 10.0; |
| 0x0415  | LVAR  | false  |  |  |
| 0x0416  | LVAR  | false  |  |  |
| 0x0417  | LVAR  |  |  |  |
| 0x0418  | LVAR  |  |  |  |
| 0x0419  | LVAR  |  |  |  |
| 0x041B  | LVAR  |  |  |  |
| 0x041C  |  |  |  |  |
| 0x041D  |  |  |  |  |
| 0x041E  |  |  |  |  |
| 0x041F  |  |  |  |  |
| 0x0420  |  |  |  |  |
| 0x0421  |  |  |  |  |
| 0x0422  |  |  |  |  |
| 0x0423  |  |  |  |  |
| 0x0434  |  |  |  |  |
| 0x0435  |  |  |  |  |
| 0x0436  |  |  |  |  |
| 0x0437  |  |  |  |  |
| 0x0438  |  |  |  |  |
| 0x0439  |  |  |  |  |
| 0x043A  |  |  |  |  |
| 0x043B  |  |  |  |  |
| 0x043C  |  |  |  |  |
| 0x043D  |  |  |  |  |
| 0x043E  |  |  |  |  |
| 0x043F  |  |  |  |  |
| 0x0440  |  |  |  |  |
| 0x0441  |  |  |  |  |
| 0x0442  |  |  |  |  |
| 0x0443  |  |  |  |  |
| 0x0444  |  |  |  |  |
| 0x0445  |  |  |  |  |
| 0x0448  | LVAR  | false  |  |  |
| 0x0600  | STR  |  |  |  |
| 0x0601  | STR  |  |  |  |
| 0x0602  | STR  |  |  |  |
| 0x0603  | STR  |  |  |  |
| 0x0604  |  |  |  |  |
| 0x0605  | STR  |  |  |  |
| 0x0607  | STR  |  |  | null terminated string, first byte is = first Char |
| 0x0608  | STR  |  |  |  |
| 0x060C  | STR  |  |  |  |
| 0x0613  |  |  |  |  |
| 0x0619  |  |  |  |  |
| 0x061A  | STR  |  |  | null terminated string, first byte is = byte( length of string) |
| 0x061C  | STR  |  |  |  |
| 0x061F  | STR  |  |  |  |
| 0x2000  |  |  |  |  |
| 0x2001  |  |  |  |  |
| 0x2002  |  |  |  |  |
| 0x2003  |  |  |  |  |
| 0x2004  | ENUM  |  |  |  |
| 0x2006  |  |  |  |  |
| 0x2007  |  |  |  |  |
| 0x2008  |  |  |  |  |
| 0x2009  |  |  |  |  |
| 0x200A  |  |  |  |  |
| 0x200F  | ENUM  |  |  |  |
| 0x2010  | ENUM  |  |  |  |
| 0x2012  | ENUM  |  |  |  |
| 0x2017  |  |  |  |  |
| 0x2018  |  |  |  |  |
| 0x22F7  | VAR  |  |  |  |
| 0x22F9  | VAR  |  |  |  |
| 0x22FA  | VAR  |  |  |  |
| 0x22FB  | VAR  |  |  |  |
| 0x22FC  | VAR  |  |  |  |
| 0x22FD  | VAR  |  |  |  |
| 0x22FE  | VAR  |  |  |  |
| 0x22FF  | VAR  |  |  |  |
| 0x2400  | LVAR  |  |  |  |
| 0x2401  | LVAR  |  |  |  |
| 0x24FB  | LVAR  |  |  |  |
| 0x24FC  | LVAR  |  |  |  |
| 0x4000  | ENUM  |  |  |  |
| 0x4001  | ENUM  |  |  |  |
| 0x4002  | ENUM  |  |  |  |
| 0x4003  | ENUM  |  |  |  |
| 0x4004  | ENUM  |  |  |  |
| 0x4006  | ENUM  |  |  |  |
| 0x4007  | ENUM  |  |  |  |
| 0x4008  | ENUM  |  |  |  |
| 0x400F  | ENUM  |  |  |  |
| 0x4010  | ENUM  |  |  |  |
| 0x4011  | ENUM  |  |  |  |
| 0x4012  | ENUM  |  |  |  |
| 0x4015  | ENUM  |  |  |  |
| 0x4018  | ENUM  |  |  |  |
| 0x4019  | ENUM  |  |  |  |
| 0x401B  | ENUM  |  |  |  |
| 0x4023  | ENUM  |  |  |  |
| 0x4024  | ENUM  |  |  |  |
| 0x4025  |  |  |  |  |
| 0x4027  | ENUM  |  |  |  |
| 0x4028  | ENUM  |  |  |  |
| 0x4029  | ENUM  |  |  |  |
| 0x402A  | ENUM  |  |  |  |
| 0x402B  | ENUM  |  |  |  |
| 0x402D  | ENUM  |  |  |  |
| 0x402E  | ENUM  |  |  |  |
| 0x402F  | ENUM  |  |  |  |
| 0x4031  | ENUM  |  |  |  |
| 0x4035  | ENUM  |  |  |  |
| 0x4038  | ENUM  |  |  |  |
| 0x403D  |  |  |  |  |
| 0x403E  |  |  |  |  |
| 0x403F  |  |  |  |  |
| 0x4040  |  |  |  |  |
| 0x4041  |  |  |  |  |
| 0x4042  |  |  |  |  |
| 0x4043  | ENUM  |  |  |  |
| 0x4045  |  |  |  |  |
| 0x4046  | ENUM  |  |  |  |
| 0x4047  | ENUM  |  |  |  |
| 0x4048  | ENUM  |  |  |  |
| 0x404F  | ENUM  |  |  |  |
| 0x4050  |  |  |  |  |
| 0x4051  | ENUM  |  |  |  |
| 0x4059  | ENUM  |  |  |  |
| 0x405B  |  |  |  |  |
| 0x405C  |  |  |  |  |
| 0x405D  |  |  |  |  |
| 0x405E  |  |  |  |  |
| 0x405F  | ENUM  |  |  |  |
| 0x4060  | ENUM  |  |  |  |
| 0x4063  |  |  |  |  |
| 0x4064  |  |  |  |  |
| 0x4065  | ENUM  |  |  |  |
| 0x4066  | ENUM  |  |  |  |
| 0x4067  | ENUM  |  |  |  |
| 0x4068  | ENUM  |  |  |  |
| 0x4069  | ENUM  |  |  |  |
| 0x406A  | ENUM  |  |  |  |
| 0x406B  | ENUM  |  |  |  |
| 0x406C  | ENUM  |  |  |  |
| 0x406D  | ENUM  |  |  |  |
| 0x406E  | ENUM  |  |  |  |
| 0x406F  | ENUM  |  |  |  |
| 0x4070  | ENUM  |  |  |  |
| 0x4073  | ENUM  |  |  |  |
| 0x4074  | ENUM  |  |  |  |
| 0x4076  | ENUM  |  |  | 0 means no temp sensor, 1 means temp sensor present. |
| 0x4077  | ENUM  |  |  |  |
| 0x407B  | ENUM  |  |  |  |
| 0x407D  | ENUM  |  |  |  |
| 0x407E  | ENUM  |  |  |  |
| 0x4085  | ENUM  |  |  |  |
| 0x4086  | ENUM  |  |  |  |
| 0x4087  | ENUM  |  |  |  |
| 0x4089  | ENUM  |  |  |  |
| 0x408A  | ENUM  |  |  |  |
| 0x4093  | ENUM  |  |  |  |
| 0x4094  | ENUM  |  |  |  |
| 0x4095  | ENUM  |  |  |  |
| 0x4096  | ENUM  |  |  |  |
| 0x4097  | ENUM  |  |  |  |
| 0x4098  | ENUM  |  |  |  |
| 0x4099  | ENUM  |  |  |  |
| 0x409A  | ENUM  |  |  |  |
| 0x409B  | ENUM  |  |  |  |
| 0x409C  | ENUM  |  |  |  |
| 0x409D  | ENUM  |  |  |  |
| 0x409E  | ENUM  |  |  |  |
| 0x409F  | ENUM  |  |  |  |
| 0x40A0  | ENUM  |  |  |  |
| 0x40A1  | ENUM  |  |  |  |
| 0x40A2  | ENUM  |  |  |  |
| 0x40A3  | ENUM  |  |  |  |
| 0x40A4  | ENUM  |  |  |  |
| 0x40A5  | ENUM  |  |  |  |
| 0x40A6  | ENUM  |  |  |  |
| 0x40A7  | ENUM  |  |  |  |
| 0x40B1  |  |  |  |  |
| 0x40B4  | ENUM  |  |  |  |
| 0x40B5  | ENUM  |  |  |  |
| 0x40BB  | ENUM  |  |  |  |
| 0x40BC  | ENUM  |  |  |  |
| 0x40BD  | ENUM  |  |  |  |
| 0x40C0  | ENUM  |  |  |  |
| 0x40C1  | ENUM  |  |  |  |
| 0x40C2  | ENUM  |  |  |  |
| 0x40C3  | ENUM  |  |  |  |
| 0x40C4  | ENUM  |  | [%]  |  |
| 0x40C5  | ENUM  |  |  |  |
| 0x40C6  | ENUM  |  |  |  |
| 0x40C7  |  |  |  |  |
| 0x40C8  |  |  |  |  |
| 0x40C9  |  |  |  |  |
| 0x40CA  |  |  |  |  |
| 0x40CB  |  |  |  |  |
| 0x40CC  |  |  |  |  |
| 0x40CD  |  |  |  |  |
| 0x40CE  |  |  |  |  |
| 0x40CF  |  |  |  |  |
| 0x40D0  |  |  |  |  |
| 0x40D1  |  |  |  |  |
| 0x40D2  |  |  |  |  |
| 0x40D5  | ENUM  |  |  |  |
| 0x40D6  | ENUM  |  |  |  |
| 0x40E3  | ENUM  |  |  |  |
| 0x40E7  | ENUM  |  |  |  |
| 0x40F7  | ENUM  |  |  |  |
| 0x40FB  | ENUM  |  |  |  |
| 0x40FC  | ENUM  |  |  |  |
| 0x4101  | ENUM  |  |  |  |
| 0x4102  | ENUM  |  |  |  |
| 0x4103  | ENUM  |  |  |  |
| 0x4104  | ENUM  |  |  |  |
| 0x4105  | ENUM  |  |  |  |
| 0x4107  | ENUM  |  |  |  |
| 0x4108  | ENUM  |  |  |  |
| 0x410D  | ENUM  |  |  |  |
| 0x4113  | ENUM  |  |  |  |
| 0x4117  | ENUM  |  |  |  |
| 0x4118  | ENUM  |  |  | 0 means no temp sensor, 1 means temp sensor present. |
| 0x4119  | ENUM  |  |  |  |
| 0x411A  | ENUM  |  |  |  |
| 0x411B  | ENUM  |  |  |  |
| 0x411C  | ENUM  |  |  |  |
| 0x411D  | ENUM  |  |  |  |
| 0x411E  | ENUM  |  |  |  |
| 0x4123  | ENUM  |  |  |  |
| 0x4124  | ENUM  |  |  |  |
| 0x4125  | ENUM  |  |  |  |
| 0x4127  | ENUM  |  |  |  |
| 0x4128  | ENUM  |  |  |  |
| 0x412A  | ENUM  |  |  |  |
| 0x412D  | ENUM  |  |  |  |
| 0x4147  | ENUM  |  |  |  |
| 0x4149  | ENUM  |  |  |  |
| 0x4201  | VAR  | true  | Celsius  | division by 10 |
| 0x4202  | VAR  | true  | Celsius  | division by 10 |
| 0x4203  | VAR  | true  | Celsius  | division by 10 |
| 0x4204  | VAR  | true  | Celsius  | division by 10 |
| 0x4205  | VAR  | true  | Celsius  | division by 10 |
| 0x4206  | VAR  | true  | Celsius  | division by 10 |
| 0x4207  | VAR  | true  | Celsius  | subtract 55 |
| 0x4208  |  |  |  |  |
| 0x4209  |  |  |  |  |
| 0x420B  | VAR  | true  | Celsius  | division by 10 |
| 0x420C  | VAR  | true  | Celsius  | division by 10 |
| 0x4211  | VAR  | false  | kW  | division by 8.6 |
| 0x4212  | VAR  | false  | kW  | division by 8.6 |
| 0x4213  | VAR  |  |  |  |
| 0x4217  | VAR  | false  |  |  |
| 0x4218  | VAR  | false  |  |  |
| 0x4219  |  |  |  |  |
| 0x421A  |  |  |  |  |
| 0x421B  | VAR  | false  |  |  |
| 0x4220  |  |  |  |  |
| 0x4229  | VAR  |  |  |  |
| 0x422A  | VAR  | true  | Celsius  | division by 10 |
| 0x422B  | VAR  | true  | Celsius  | division by 10 |
| 0x4235  | VAR  | true  | Celsius  | division by 10 |
| 0x4236  | VAR  | true  | Celsius  | division by 10 |
| 0x4237  | VAR  | true  | Celsius  | division by 10 |
| 0x4238  | VAR  | true  | Celsius  | division by 10 |
| 0x4239  | VAR  | true  | Celsius  | division by 10 |
| 0x423E  | VAR  |  |  |  |
| 0x4247  | VAR  | true  | Celsius  | division by 10 |
| 0x4248  | VAR  | true  | Celsius  | division by 10 |
| 0x424A  | VAR  | true  | Celsius  | division by 10 |
| 0x424B  | VAR  | true  | Celsius  | division by 10 |
| 0x424C  | VAR  | true  | Celsius  | division by 10 |
| 0x424D  | VAR  | true  | Celsius  | division by 10 |
| 0x424E  | VAR  | true  | Celsius  | division by 10 |
| 0x424F  | VAR  | true  | Celsius  | division by 10 |
| 0x4250  | VAR  | true  | Celsius  | division by 10 |
| 0x4251  | VAR  | true  | Celsius  | division by 10 |
| 0x4252  | VAR  | true  | Celsius  | division by 10 |
| 0x4253  | VAR  | true  | Celsius  | division by 10 |
| 0x4254  | VAR  | true  | Celsius  | division by 10 |
| 0x4255  | VAR  | true  | Celsius  | division by 10 |
| 0x4256  | VAR  | true  | Celsius  | division by 10 |
| 0x4257  | VAR  | true  | Celsius  | division by 10 |
| 0x4258  | VAR  | true  | Celsius  | division by 10 |
| 0x4259  | VAR  | true  | Celsius  | division by 10 |
| 0x425A  | VAR  | true  | Celsius  | division by 10 |
| 0x425B  | VAR  | true  | Celsius  | division by 10 |
| 0x425C  | VAR  | true  | Celsius  | division by 10 |
| 0x425D  | VAR  | true  | Celsius  | division by 10 |
| 0x425E  | VAR  | true  | Celsius  | division by 10 |
| 0x425F  | VAR  | true  | Celsius  | division by 10 |
| 0x4260  | VAR  | true  | Celsius  | division by 10 |
| 0x4261  | VAR  | true  | Celsius  | division by 10 |
| 0x4262  | VAR  | true  | Celsius  | division by 10 |
| 0x4263  | VAR  | false  |  |  |
| 0x4264  | VAR  | false  |  |  |
| 0x4265  | VAR  | false  |  |  |
| 0x4266  | VAR  | false  |  |  |
| 0x4267  | VAR  | true  | Celsius  | division by 10 |
| 0x4268  | VAR  | true  | Celsius  | division by 10 |
| 0x4269  | VAR  | false  |  |  |
| 0x426A  | VAR  | true  | Celsius  | division by 10 |
| 0x426B  | VAR  | true  |  |  |
| 0x426C  | VAR  | true  |  | division by 0.1 |
| 0x426D  | VAR  | true  | Celsius  | division by 10 |
| 0x426E  | VAR  | true  | Celsius  | division by 10 |
| 0x426F  | VAR  | true  | Celsius  | division by 10 |
| 0x4270  | VAR  | true  | Celsius  | division by 10 |
| 0x4271  | VAR  | true  | Celsius  | division by 10 |
| 0x4272  | VAR  | true  | Celsius  | division by 10 |
| 0x4273  | VAR  | true  | Celsius  | division by 10 |
| 0x4274  | VAR  | true  | Celsius  | division by 10 |
| 0x4275  | VAR  | true  | Celsius  | division by 10 |
| 0x4276  | VAR  | true  | Celsius  | division by 10 |
| 0x4277  | VAR  | true  | Celsius  | division by 10 |
| 0x4278  | VAR  | true  | Celsius  | division by 10 |
| 0x4279  | VAR  | true  | Celsius  | division by 10 |
| 0x427A  | VAR  | true  | Celsius  | division by 10 |
| 0x427B  | VAR  | true  | Celsius  | division by 10 |
| 0x427C  | VAR  | true  | Celsius  | division by 10 |
| 0x427D  | VAR  | false  |  |  |
| 0x427E  | VAR  | false  |  |  |
| 0x427F  | VAR  | true  | Celsius  | division by 10 |
| 0x4284  |  |  |  |  |
| 0x4286  | VAR  | false  | Celsius  | division by 10 |
| 0x4287  | VAR  | false  | Celsius  | division by 10 |
| 0x4288  | VAR  | false  |  |  |
| 0x4289  | VAR  | false  |  | division by 0.1 |
| 0x428A  | VAR  | false  | Celsius  | division by 10 |
| 0x428C  | VAR  | true  | Celsius  | division by 10 |
| 0x428D  | VAR  |  |  |  |
| 0x4290  |  |  |  |  |
| 0x4291  |  |  |  |  |
| 0x4292  |  |  |  |  |
| 0x4293  |  |  |  |  |
| 0x4294  |  |  |  |  |
| 0x4295  |  |  |  |  |
| 0x4296  |  |  |  |  |
| 0x4297  | VAR  | true  |  |  |
| 0x4298  | VAR  | true  |  |  |
| 0x4299  |  |  |  |  |
| 0x429A  |  |  |  |  |
| 0x429B  |  |  |  |  |
| 0x429C  |  |  |  |  |
| 0x429F  | VAR  | false  |  |  |
| 0x42A1  | VAR  | false  |  |  |
| 0x42A3  | VAR  | false  |  |  |
| 0x42A5  | VAR  | true  | Celsius  | division by 10 |
| 0x42A6  | VAR  | true  | Celsius  | division by 10 |
| 0x42A7  | VAR  | true  | Celsius  | division by 10 |
| 0x42A8  | VAR  | true  | Celsius  | division by 10 |
| 0x42A9  | VAR  | true  | Celsius  | division by 10 |
| 0x42AA  | VAR  | true  | Celsius  | division by 10 |
| 0x42AB  | VAR  | true  | Celsius  | division by 10 |
| 0x42AC  | VAR  | true  | Celsius  | division by 10 |
| 0x42AD  | VAR  | true  | Celsius  | division by 10 |
| 0x42AE  | VAR  | true  | Celsius  | division by 10 |
| 0x42AF  | VAR  | true  | Celsius  | division by 10 |
| 0x42B0  | VAR  | true  | Celsius  | division by 10 |
| 0x42B1  | VAR  | false  |  |  |
| 0x42B2  | VAR  | false  |  |  |
| 0x42B3  | VAR  | false  |  |  |
| 0x42C2  | VAR  | true  | Celsius  | division by 10 |
| 0x42C3  | VAR  | true  | Celsius  | division by 10 |
| 0x42C4  | VAR  | true  | kgfcm2  | division by 100 |
| 0x42C5  | VAR  | true  | kgfcm2  | division by 100 |
| 0x42C9  | VAR  | true  | Celsius  | division by 10 |
| 0x42CA  | VAR  | false  |  |  |
| 0x42CB  | VAR  | false  |  |  |
| 0x42CC  | VAR  | false  |  |  |
| 0x42CD  | VAR  | true  | Celsius  | division by 10 |
| 0x42CE  | VAR  | false  |  | division by 60 (not documented in NASA.ptc) |
| 0x42CF  | VAR  | false  | Enthalpy  | division by 10 |
| 0x42D0  | VAR  | false  |  |  |
| 0x42D1  | VAR  | false  |  |  |
| 0x42D2  | VAR  | false  |  |  |
| 0x42D3  | VAR  | false  |  |  |
| 0x42D4  | VAR  | true  | Celsius  | division by 10 |
| 0x42D6  | VAR  | true  | Celsius  | division by 10 |
| 0x42D7  | VAR  | true  | Celsius  | division by 10 |
| 0x42D8  | VAR  | true  | Celsius  | division by 10 |
| 0x42D9  | VAR  | true  | Celsius  | division by 10 |
| 0x42DB  | VAR  | false  | Celsius  | division by 10 |
| 0x42DC  | VAR  | false  | Celsius  | division by 10 |
| 0x42DD  | VAR  | false  | Celsius  | division by 10 |
| 0x42DE  | VAR  | false  | Celsius  | division by 10 |
| 0x42E8  | VAR  | false  |  | division by 10 |
| 0x42E9  | VAR  | true  |  | division by 10 |
| 0x42ED  | VAR  | true  |  |  |
| 0x42EE  | VAR  | true  |  |  |
| 0x42EF  | VAR  | true  |  |  |
| 0x42F0  | VAR  | true  | Celsius  | division by 10 |
| 0x42F1  | VAR  |  |  |  |
| 0x4301  | VAR  |  |  |  |
| 0x4302  | VAR  | false  | kW  | division by 8.6 |
| 0x4401  | LVAR  |  |  |  |
| 0x4405  |  |  |  |  |
| 0x4406  |  |  |  |  |
| 0x4407  |  |  |  |  |
| 0x440A  | LVAR  | false  |  | LogicalAnd 0x00000002 + division by 2 |
| 0x440E  | LVAR  |  |  |  |
| 0x440F  | LVAR  |  |  |  |
| 0x4415  | LVAR  | false  |  |  |
| 0x4418  | LVAR  | false  |  |  |
| 0x441B  | LVAR  | false  |  |  |
| 0x441F  | LVAR  | false  |  |  |
| 0x4420  | LVAR  | false  |  |  |
| 0x4423  | LVAR  |  |  |  |
| 0x4424  | LVAR  |  |  |  |
| 0x4426  | LVAR  | false  | kW  | division by 1000 |
| 0x4427  | LVAR  | false  | kW  | division by 1000 |
| 0x4604  | STR  |  |  |  |
| 0x4608  | STR  |  |  |  |
| 0x4612  | STR  |  |  |  |
| 0x4619  | STR  |  |  |  |
| 0x461A  | STR  |  |  |  |
| 0x461C  | STR  |  |  |  |
| 0x461D  | STR  |  |  |  |
| 0x461E  | STR  |  |  |  |
| 0x8000  | ENUM  |  |  |  |
| 0x8001  | ENUM  |  |  |  |
| 0x8002  | ENUM  |  |  |  |
| 0x8003  | ENUM  |  |  |  |
| 0x8005  | ENUM  |  |  |  |
| 0x800D  | ENUM  |  |  |  |
| 0x8010  | ENUM  |  |  |  |
| 0x8011  | ENUM  |  |  |  |
| 0x8012  | ENUM  |  |  |  |
| 0x8013  | ENUM  |  |  |  |
| 0x8014  | ENUM  |  |  |  |
| 0x8015  |  |  |  |  |
| 0x8016  |  |  |  |  |
| 0x8017  | ENUM  |  |  |  |
| 0x8018  | ENUM  |  |  |  |
| 0x8019  | ENUM  |  |  |  |
| 0x801A  | ENUM  |  |  |  |
| 0x801F  | ENUM  |  |  |  |
| 0x8020  | ENUM  |  |  |  |
| 0x8021  | ENUM  |  |  |  |
| 0x8022  | ENUM  |  |  |  |
| 0x8023  | ENUM  |  |  |  |
| 0x8024  |  |  |  |  |
| 0x8025  | ENUM  |  |  |  |
| 0x8026  | ENUM  |  |  |  |
| 0x8027  | ENUM  |  |  |  |
| 0x802A  | ENUM  |  |  |  |
| 0x8031  | ENUM  |  |  |  |
| 0x8032  | ENUM  |  |  |  |
| 0x8033  | ENUM  |  |  |  |
| 0x8034  | ENUM  |  |  |  |
| 0x8037  | ENUM  |  |  |  |
| 0x803B  | ENUM  |  |  |  |
| 0x803C  | ENUM  |  |  |  |
| 0x803F  | ENUM  |  |  |  |
| 0x8043  | ENUM  |  |  |  |
| 0x8045  | ENUM  |  |  |  |
| 0x8046  | ENUM  |  |  |  |
| 0x8047  | ENUM  |  |  |  |
| 0x8048  | ENUM  |  |  |  |
| 0x8049  | ENUM  |  |  |  |
| 0x804A  | ENUM  |  |  |  |
| 0x804B  | ENUM  |  |  |  |
| 0x804C  | ENUM  |  |  |  |
| 0x804D  | ENUM  |  |  |  |
| 0x804E  | ENUM  |  |  |  |
| 0x804F  | ENUM  |  |  |  |
| 0x8050  | ENUM  |  |  |  |
| 0x8051  | ENUM  |  |  |  |
| 0x8052  | ENUM  |  |  |  |
| 0x8053  | ENUM  |  |  |  |
| 0x8054  | ENUM  |  |  |  |
| 0x8055  | ENUM  |  |  |  |
| 0x8058  | ENUM  |  |  |  |
| 0x8059  | ENUM  |  |  |  |
| 0x805A  | ENUM  |  |  |  |
| 0x805B  | ENUM  |  |  |  |
| 0x805C  | ENUM  |  |  |  |
| 0x805D  | ENUM  |  |  |  |
| 0x805E  | ENUM  |  |  |  |
| 0x8061  | ENUM  |  |  |  |
| 0x8062  |  |  |  |  |
| 0x8063  | ENUM  |  |  |  |
| 0x8065  | ENUM  |  |  |  |
| 0x8066  | ENUM  |  |  |  |
| 0x8077  | ENUM  |  |  |  |
| 0x8078  | ENUM  |  |  |  |
| 0x8079  | ENUM  |  |  |  |
| 0x807A  | ENUM  |  |  |  |
| 0x807B  | ENUM  |  |  |  |
| 0x807C  | ENUM  |  |  |  |
| 0x807D  | ENUM  |  |  |  |
| 0x807E  | ENUM  |  |  |  |
| 0x807F  | ENUM  |  |  |  |
| 0x8081  | ENUM  |  |  |  |
| 0x8083  | ENUM  |  |  |  |
| 0x808C  | ENUM  |  |  |  |
| 0x808D  | ENUM  |  |  |  |
| 0x808E  | ENUM  | false  |  | LogicalAnd 0x0F |
| 0x808F  | ENUM  |  |  |  |
| 0x8092  | ENUM  | false  |  |  |
| 0x8099  | ENUM  | false  |  |  |
| 0x809C  | ENUM  |  |  |  |
| 0x809D  | ENUM  |  |  |  |
| 0x809E  | ENUM  |  |  |  |
| 0x80A5  | ENUM  |  |  |  |
| 0x80A6  | ENUM  |  |  |  |
| 0x80A7  | ENUM  |  |  |  |
| 0x80A8  | ENUM  |  |  |  |
| 0x80A9  | ENUM  |  |  |  |
| 0x80AA  | ENUM  |  |  |  |
| 0x80AB  | ENUM  |  |  |  |
| 0x80AC  |  |  |  |  |
| 0x80AE  | ENUM  |  |  |  |
| 0x80AF  | ENUM  |  |  |  |
| 0x80B1  | ENUM  |  |  |  |
| 0x80B2  | ENUM  |  |  |  |
| 0x80B4  | ENUM  |  |  |  |
| 0x80B6  | ENUM  |  |  |  |
| 0x80B8  | ENUM  |  |  |  |
| 0x80B9  | ENUM  |  |  |  |
| 0x80BC  | ENUM  |  |  |  |
| 0x80BE  | ENUM  |  |  |  |
| 0x80C1  | ENUM  |  |  |  |
| 0x80CE  | ENUM  |  |  |  |
| 0x80D7  | ENUM  |  |  |  |
| 0x80D8  | ENUM  |  |  |  |
| 0x8200  | VAR  |  |  |  |
| 0x8201  | VAR  |  |  |  |
| 0x8202  | VAR  | false  |  |  |
| 0x8204  | VAR  | true  | Celsius  | division by 10 |
| 0x8206  | VAR  | true  | kgfcm2  | division by 10 |
| 0x8208  | VAR  | true  | kgfcm2  | division by 10 |
| 0x820A  | VAR  | true  | Celsius  | division by 10 |
| 0x820C  | VAR  | true  | Celsius  | division by 10 |
| 0x820E  | VAR  | true  | Celsius  | division by 10 |
| 0x8210  |  |  |  |  |
| 0x8217  | VAR  | false  |  | division by 10 |
| 0x8218  | VAR  | true  | Celsius  | division by 10 |
| 0x821A  | VAR  | true  | Celsius  | division by 10 |
| 0x821C  | VAR  | true  | Celsius  | division by 10 |
| 0x821E  | VAR  | true  | Celsius  | division by 10 |
| 0x8220  | VAR  | true  | Celsius  | division by 10 |
| 0x8222  | VAR  |  |  |  |
| 0x8223  | VAR  | true  | Celsius  | division by 10 |
| 0x8224  | VAR  | true  | Celsius  | division by 10 |
| 0x8225  | VAR  | true  | Celsius  | division by 10 |
| 0x8226  | VAR  | false  |  |  |
| 0x8227  | VAR  |  |  |  |
| 0x8228  |  |  |  |  |
| 0x8229  | VAR  | false  |  |  |
| 0x822A  | VAR  | false  |  |  |
| 0x822B  | VAR  | false  |  |  |
| 0x822C  | VAR  | false  |  |  |
| 0x822D  | VAR  | false  |  |  |
| 0x822E  | VAR  | false  |  |  |
| 0x822F  |  |  |  |  |
| 0x8230  | VAR  |  |  |  |
| 0x8231  | VAR  |  |  |  |
| 0x8233  | VAR  |  |  | division by 8.6 (better 8.5 ?) |
| 0x8234  | VAR  |  |  |  |
| 0x8235  | VAR  | false  |  |  |
| 0x8236  | VAR  | false  |  |  |
| 0x8237  | VAR  | false  |  |  |
| 0x8238  | VAR  | false  |  |  |
| 0x8239  | VAR  |  |  |  |
| 0x823B  | VAR  | false  |  |  |
| 0x823C  | VAR  | false  |  |  |
| 0x823D  | VAR  | false  |  |  |
| 0x823E  | VAR  | false  |  |  |
| 0x823F  | VAR  | false  |  | appears when using S-NET pro 2 software |
| 0x8240  |  |  |  |  |
| 0x8241  |  |  |  |  |
| 0x8243  | VAR  |  |  |  |
| 0x8244  |  |  |  |  |
| 0x8245  |  |  |  |  |
| 0x8247  | VAR  |  |  |  |
| 0x8248  | VAR  |  |  |  |
| 0x8249  | VAR  |  |  |  |
| 0x824B  | VAR  |  |  |  |
| 0x824C  | VAR  |  |  |  |
| 0x824F  | VAR  | false  |  | division by 10 |
| 0x8254  | VAR  | true  | Celsius  | division by 10 |
| 0x8255  | VAR  | true  | Celsius  | division by 10 |
| 0x825A  | VAR  | true  | Celsius  | division by 10 |
| 0x825B  | VAR  | true  | Celsius  | division by 10 |
| 0x825C  | VAR  | true  | Celsius  | division by 10 |
| 0x825D  | VAR  | true  | Celsius  | division by 10 |
| 0x825E  | VAR  | true  | Celsius  | division by 10 |
| 0x825F  | VAR  | true  | Celsius  | division by 10 |
| 0x8260  | VAR  | true  | Celsius  | division by 10 |
| 0x8261  | VAR  | true  | Celsius  | division by 10 |
| 0x8262  | VAR  | true  | Celsius  | division by 10 |
| 0x8263  | VAR  | true  | Celsius  | division by 10 |
| 0x8264  | VAR  | true  | Celsius  | division by 10 |
| 0x8265  | VAR  | true  | Celsius  | division by 10 |
| 0x8266  | VAR  | true  | Celsius  | division by 10 |
| 0x8267  | VAR  | true  | Celsius  | division by 10 |
| 0x8268  | VAR  | true  | Celsius  | division by 10 |
| 0x826B  | VAR  | true  | Celsius  | division by 10 |
| 0x826C  | VAR  | true  | Celsius  | division by 10 |
| 0x826D  | VAR  | false  |  |  |
| 0x826E  | VAR  | false  |  |  |
| 0x826F  | VAR  | false  |  |  |
| 0x8270  | VAR  | false  |  |  |
| 0x8271  | VAR  | false  |  |  |
| 0x8272  | VAR  | false  |  |  |
| 0x8273  | VAR  | false  |  |  |
| 0x8274  | VAR  | false  |  |  |
| 0x8275  | VAR  | false  |  |  |
| 0x8276  | VAR  | false  |  |  |
| 0x8277  | VAR  | false  |  |  |
| 0x8278  | VAR  | false  |  |  |
| 0x8279  |  |  |  |  |
| 0x827A  | VAR  | true  | Celsius  | division by 10 |
| 0x827E  |  |  |  |  |
| 0x827F  |  |  |  |  |
| 0x8280  | VAR  | true  | Celsius  | division by 10 |
| 0x8281  | VAR  | true  | Celsius  | division by 10 |
| 0x8282  |  |  |  |  |
| 0x8287  | VAR  | false  | HP  |  |
| 0x8298  |  |  |  |  |
| 0x829A  | VAR  | true  | Celsius  | division by 10 |
| 0x829B  |  |  |  |  |
| 0x829C  |  |  |  |  |
| 0x829D  |  |  |  |  |
| 0x829F  | VAR  | true  | Celsius  | division by 10 |
| 0x82A0  | VAR  | true  | Celsius  | division by 10 |
| 0x82A2  | VAR  |  |  |  |
| 0x82A3  |  |  |  |  |
| 0x82A4  |  |  |  |  |
| 0x82A6  |  |  |  |  |
| 0x82A7  |  |  |  |  |
| 0x82A8  | VAR  | true  |  | division by 8.6 = kW |
| 0x82A9  | VAR  | true  |  |  |
| 0x82AF  | VAR  | false  |  |  |
| 0x82B2  | VAR  |  |  |  |
| 0x82B3  |  |  |  |  |
| 0x82B5  | VAR  |  |  |  |
| 0x82B6  | VAR  |  |  |  |
| 0x82B8  | VAR  | true  | kgfcm2  | division by 10 |
| 0x82B9  |  |  |  |  |
| 0x82BA  |  |  |  |  |
| 0x82BC  | VAR  | true  |  |  |
| 0x82BD  | VAR  | true  |  |  |
| 0x82BE  | VAR  | true  | Celsius  | division by 10 |
| 0x82BF  | VAR  | true  | Celsius  | division by 10 |
| 0x82C0  |  |  |  |  |
| 0x82C1  |  |  |  |  |
| 0x82C2  |  |  |  |  |
| 0x82C3  |  |  |  |  |
| 0x82C4  |  |  |  |  |
| 0x82C8  | VAR  | true  | Celsius  | division by 10 |
| 0x82C9  | VAR  | true  | Celsius  | division by 10 |
| 0x82CA  | VAR  | false  |  |  |
| 0x82CB  | VAR  | false  |  | division by 10 |
| 0x82CC  | VAR  | false  |  | division by 10 |
| 0x82CD  | VAR  | false  |  |  |
| 0x82CE  | VAR  | false  |  | division by 10 |
| 0x82CF  | VAR  | false  |  |  |
| 0x82D0  | VAR  | false  | RPM  | division by 10 |
| 0x82D1  | VAR  |  |  |  |
| 0x82D2  | VAR  | false  |  |  |
| 0x82D3  |  |  |  |  |
| 0x82D4  | VAR  |  |  |  |
| 0x82D5  |  |  |  |  |
| 0x82D6  |  |  |  |  |
| 0x82D9  | VAR  |  |  |  |
| 0x82DA  | VAR  |  |  |  |
| 0x82DB  | VAR  | false  |  |  |
| 0x82DC  | VAR  |  |  |  |
| 0x82DD  | VAR  |  |  |  |
| 0x82DE  | VAR  | true  | Celsius  | division by 10 |
| 0x82DF  | VAR  | true  | Celsius  | division by 10 |
| 0x82E0  | VAR  | true  | Celsius  | division by 10 |
| 0x82E1  | VAR  |  |  |  |
| 0x82E3  | VAR  | false  | kW  | division by 10.0 |
| 0x82E7  | VAR  | true  | Celsius  | division by 10.0 |
| 0x82E8  | VAR  | false  |  |  |
| 0x82E9  | VAR  | true  | Celsius  | division by 10 |
| 0x82ED  | VAR  |  |  |  |
| 0x82F5  | VAR  | false  |  |  |
| 0x82F6  | VAR  |  |  |  |
| 0x82F9  | VAR  | true  | Celsius  | division by 10 |
| 0x82FC  | VAR  | true  |  | -32767 up to 32767 |
| 0x82FD  | VAR  |  |  |  |
| 0x8401  | LVAR  |  |  |  |
| 0x8404  | LVAR  |  |  |  |
| 0x8405  | LVAR  | false  |  |  |
| 0x8406  | LVAR  | false  |  |  |
| 0x8408  | LVAR  |  |  |  |
| 0x8409  | LVAR  |  |  |  |
| 0x840B  | LVAR  | false  |  |  |
| 0x840C  | LVAR  | false  |  |  |
| 0x840E  |  |  |  |  |
| 0x8411  | LVAR  |  |  |  |
| 0x8412  |  |  |  |  |
| 0x8413  | LVAR  | false  | kW  | division by 1000 |
| 0x8414  | LVAR  | false  | kW  | division by 1000 |
| 0x8415  | LVAR  |  |  |  |
| 0x8416  | LVAR  |  |  |  |
| 0x8417  | LVAR  |  |  |  |
| 0x841A  | LVAR  |  |  |  |
| 0x841F  | LVAR  |  |  |  |
| 0x8601  | STR  |  |  |  |
| 0x8608  | STR  |  |  |  |
| 0x860A  | STR  |  |  |  |
| 0x860C  | STR  |  |  |  |
| 0x860D  | STR  |  |  |  |
| 0x860F  | STR  |  |  |  |
| 0x8613  | STR  |  |  |  |

**Implementations**

There are multiple open source implementations of the encoding and decoding of the NASA bitstream. Here is a list of such known implementations.

 C++: esphome\_samsung\_ac (GitHub)

 Swift: NASAKit (GitHub)

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