LX Series Free Programmable Controllers

Product Bulletin
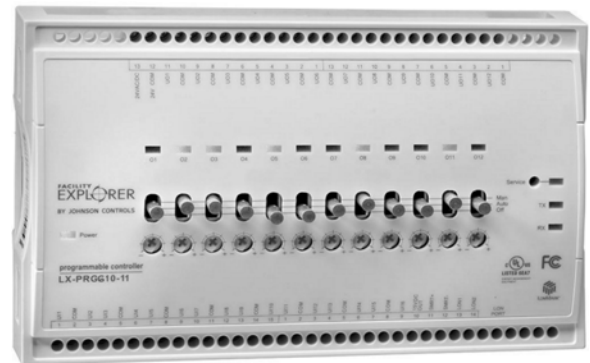
LX-PRG203-1, LX-PRG300-1, LX-PRG4x0-1, LX-PRG5x0-1
LX-PRG203-11, LX-PRG300-11, LX-PRG6x0-11, LX-VAVCF-11

Refer to the QuickLIT website for the most up-to-date version of this document.

The LX Series Free Programmable Controllers are microprocessor-based free and designed to control various HVAC applications.

The LX Series Free Programmable Controllers product family meets rigorous quality standards. The complete family of LX Series controllers is designed for use with any LONWORKS® network open and interoperable system.

Figure 1: LX-PRG610-11 Controller

Table 1:   Features and Benefits

Features	Benefits
Configurable Software	Features FX Workbench compatible wizards that provide the ability to easily configure inputs, outputs, and sequence options. The software is LONMARK® certified according to the Interoperability Guidelines Version 3.4, and features more than 60 network variables.
Robust Hardware	Features a fire-retardant plastic enclosure, a status indicator on each output, and 1 MB flash memory (for the -11 models) or 128k flash memory (for the -1 models) for the configuration and trending of up to 12,000 events.
Powerful Control Options	Allow you to easily configure all features, including input types, output types, heating and cooling stages, variable airflow, and Proportional plus Integral plus Derivative (PID) loops. The controllers support four input types: space temperature; setpoint adjustment; duct temperature; and occupancy bypass, or window contacts.

LX Series Free Programmable Controllers Overview

With an LX Series Free Programmable Controller, you can control equipment such as roof top units, fan coils, heat pumps, ventilator units, and terminal units. You can program the LX Series Free Programmable Controller line using the LX-Free Programming Wizard (for the -1 models) or the LX Graphical Programming Interface (GPI) Wizard (for the -11 models) with Facility Explorer (FX) Workbench software.

LX-Free Programming Wizard

The LX-Free Programming Wizard tool is unique in the controls industry because it combines a user-friendly interface with the power and flexibility of a code editor and compiler. The LX-Free Programming Wizard tool uses a simplified version of the Basic programming language that is customized to suit control requirements.

LX Graphical Programming Interface (GPI) Wizard

The LX Graphical Programming Interface Wizard programming tool lets you build control sequences by dragging and dropping block objects and then linking the objects with a simple click, select, and release. With a user-friendly interface and intuitive programming environment, GPI makes HVAC programming easier than ever.

LX-Scheduler Wizard

The LX-Scheduler Wizard allows you to easily configure a weekly-based schedule and a special day schedule for holidays. Add and remove the special day event into the calendar by a simple click of the mouse.

Dimensions

Figure 2 shows the dimensions for the LX-PRG203-1, LX-PRG203-11, LX-PRG300-1, and LX-PRG300-11 controllers.
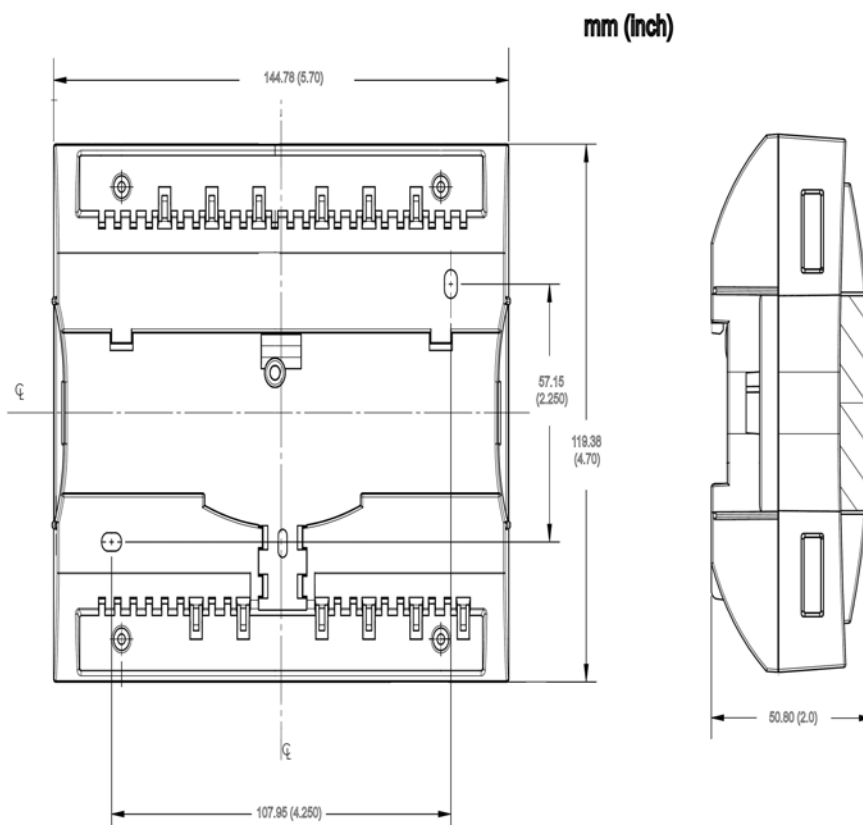
Figure 2: LX-PRG203-1, LX-PRG203-11, LX-PRG300-1, and LX-PRG300-11 Dimensions

Figure 3 shows the dimensions for the LX-PRG4x0-1, LX-PRG4x0-11, LX-PRG5x1-1, and LX-PRG6x0-11 controllers.
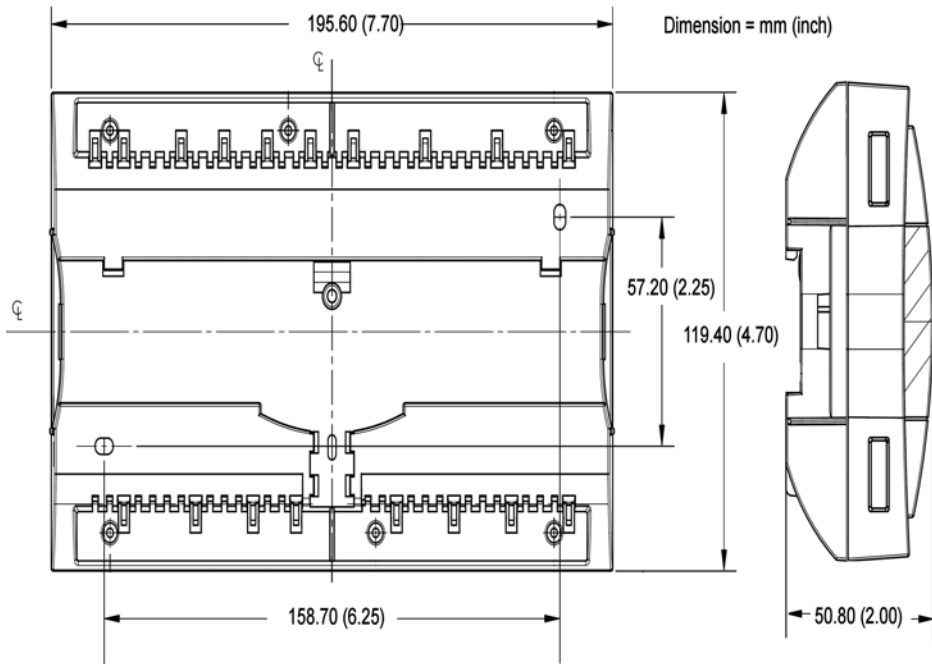
Figure 3: LX-PRG4x0-1, LX-PRG4x0-11, LX-PRG5x0-1, and LX-PRG6x0-11 Dimensions

Figure 4 shows the dimensions for the LX-VAVCF-11
controllers.
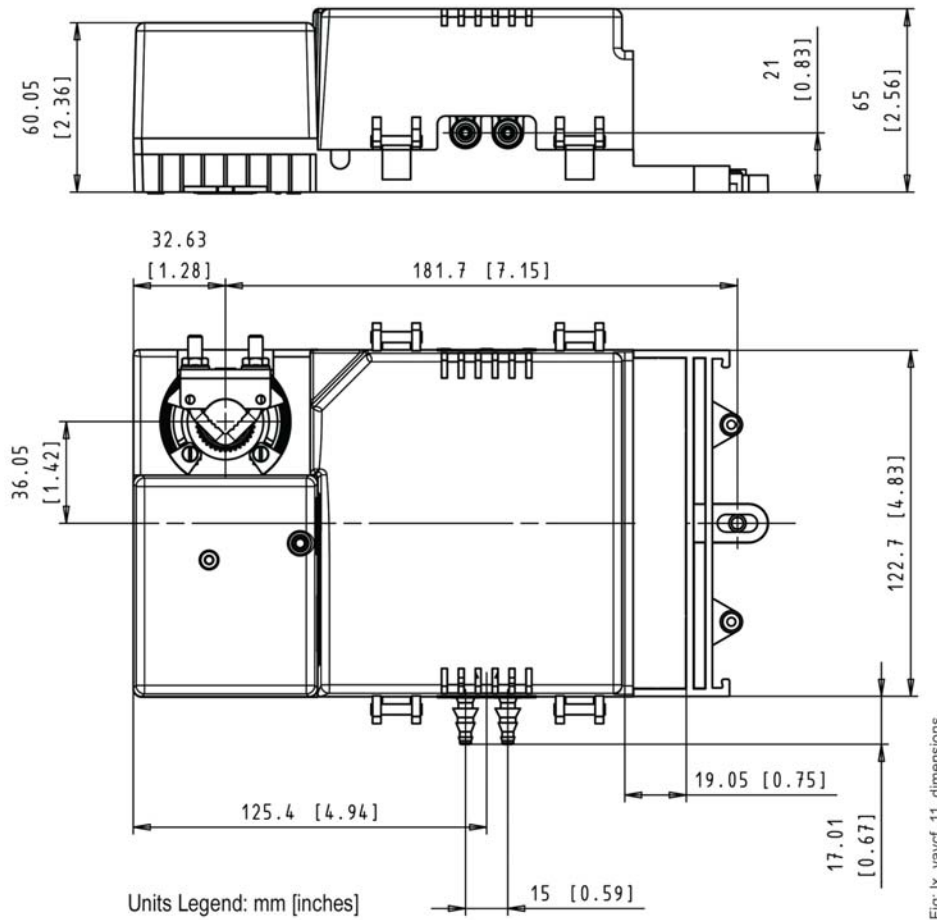
Figure 4: LX-VAVCF-11 Dimensions

Selection Chart

Table 2:   LX Series Programmable Controllers Selection Chart (Part 1 of 2)

Code Number	Description
LX-PRG203-1	LONMARK certified Programmable Controller with 6 Universal Inputs (UI), 5 Digital Outputs (DO), 3 Universal Outputs (UO), and LNS plug-in, 24 VAC
LX-PRG300-1	LONMARK certified Programmable Controller with 10 UI, 8 UO, and LNS plug-in, 24 VAC
LX-PRG400-1	LONMARK certified Programmable Controller with 12 UI, 12 UO, and LNS plug-in, 24 VAC
LX-PRG410-1	LONMARK certified Programmable Controller with 12 UI, 12 UO, Hands-Off-Auto (HOA) Switches, and LNS plug-in, 24 VAC
LX-PRG500-1	LONMARK certified Programmable Controller with 16 UI, 12 UO, and LNS plug-in, 24 VAC
LX-PRG510-1	LONMARK certified Programmable Controller with 16 UI, 12 UO, HOA Switches, and LNS plug-in, 24 VAC
LX-PRG203-11	LONMARK® Certified Programmable Controller with 6 Universal Inputs (UI), 3 Universal Outputs (UO), 5 Digital Outputs (DO), 24 VAC
LX-PRG300-11	LONMARK® Certified Programmable Controller with 10 Universal Inputs (UI), 8 Universal Outputs (UO), 24 VAC

Table 2: LX Series Programmable Controllers Selection Chart (Part 2 of 2)

Code Number	Description
LX-PRG400-11	LONMARK® Certified Programmable Controller with 12 Universal Inputs (UI), 12 Universal Outputs (UO), 24 VAC
LX-PRG410-11	LONMARK® Certified Programmable Controller with 12 Universal Inputs (UI), 12 Universal Outputs (UO), Hands-off-Auto (HOA) Switches, 24 VAC
LX-PRG600-11	LONMARK® Certified Programmable Controller with 16 Universal Inputs (UI), 12 Universal Outputs (UO) 24 VAC
LX-PRG610-11	LONMARK Certified Programmable Controller with 16 UI, 12 UO, Hands-off-Auto (HOA) Switches, 24 VAC
LX-VAVCF-11	LONMARK® Certified Programmable Controller with 4 Universal Inputs (UI), 2 Universal Outputs (UO), 4 Digital Outputs (DO), 24 VAC

Repair Information

If the LX Series Free Programmable controllers fail to operate within their specifications, replace the unit. For a replacement, contact the nearest Johnson Controls® representative.

LONMARK Objects and Network Variables

LX-Free Programming Wizard

The following figures show the LONMARK Objects and Network Variables for the LX Free Programmable Controllers when you use the LX-Free Programming Wizard.

Figure 5: LX-Free Programming Wizard LONMARK Objects and Network Variables – LX-PRG203-1

Figure 6: LX-Free Programming Wizard LONMARK Objects and Network Variables – LX-PRG300-1

Figure 7: LX-Free Programming Wizard LONMARK Objects and Network Variables – LX-PRG4x0-1

LX-PRG5x0-1 Node
Object Type # 0

Mandatory Network Variables
- nviObjRequest SNVT_obj_request
- nvoObjStatus SNVT_obj_status

Optional Network Variables
- nviFileReq SNVT_file_req
- nvoFileStat SNVT_file_status
- nviFilePos SNVT_file_pos
- nviTimeSet SNVT_time_stamp

Configuration Properties
- Location (optional)
- Device Major Version (optional)
- Device Minor Version (optional)

Manufacturer Configuration Properties
- Maximum Send Time

12 HW Output Objects

LX-PRG5x0-1 Hardware Output
Object Type #3

Mandatory Network Variables
- nviFP_xx(xx=01-12) SNVT_count_nc changeable type

Configuration Properties
- NvType

16 HW Input Objects

LX-PRG5x0-1 Hardware Input
Object Type #1

Mandatory Network Variables
- nvoFP_xx(xx=01-16) SNVT_count_inc (changeable type)

Configuration Properties
- NvType
- Maximum Send Time
- Minimum Send Time

4 Scheduler Objects

4 x LX-PRG5x0-1 Scheduler
Object Type # 20020

Manufacturer Network Variables
- nvoScheduler (x=1-4) SNVT_tod_event (changeable type)

Configuration Properties
- Update Rate
- NvType
- DefOutput

Manufacturer Configuration Properties
- Object Major Version
- Object Minor Version
- Associated File Index

LX-PRG5x0-1 RTC
Object Type #3300

Mandatory Network Variables
- nvoTimeDate SNVT

Configuration Properties (nvo)
- Update Rate

Manufacturer Configuration Properties
- Object Major Version
- Object Minor Version
- Daylight Saving Time

LX-PRG5x0-1 FreeProg
Object Type # 20100

Manufacturer Network Variables
- nviFP_x(xx=13-16) SNVT_count_inc (changeable type)
- nvoFP_xx(xx=17-18) SNVT_count_inc (changeable type)

Configuration Properties (for nvi's & nvo's)
- NvType

- nviFP_xx(xx=17-18) SNVT_count_inc (changeable type)

Fan In Support

Configuration Properties for nviFP_17, nviFP_18
- Nv Type
- Maximum Receive Scan Time
- Weight Average Parameter
- Weight Average Maximum In Offset

Free Programmable Internal Points
- nviModify UNVT_modify_internal_val
- nvoMode UNVT_mode_internal_val
- nvoV1_15 UNVT_internal_var_1to15
- nvoV16_30 UNVT_internal_var_16to30
- nvoV31_45 UNVT_internal_var_31to45
- nvoV46_50_C1_10 UNVTinteral_var_46to50_const_1to10
- nvoC11_25 UNVT_const_11to25
- nvoC26_40 UNVT_const_26to40
- nvoC41_50 UNVT_const_41to50
- nvoI1_12 UNVT_input
- nvoOI_12 SNVT_output
- nvoCOI_10_OS1_4 UNVT_CO_1to10_OS_1to4
- nvoT1_15 UNVT_timer_1to15

Manufacturer Configuration Properties
- Object Major Version
- Object Minor Version
- Associated File Index
- Maximum Send Time
- Minimum Send Time
- fp Valid IO Type
- Object Options

Figure 8: LX-Free Programming Wizard LONMARK Objects and Network Variables – LX-PRG5x0-1

LX GPI

The following figures show the LONMARK Objects and Network Variables for the LX Free Programmable Controllers when you use GPI.

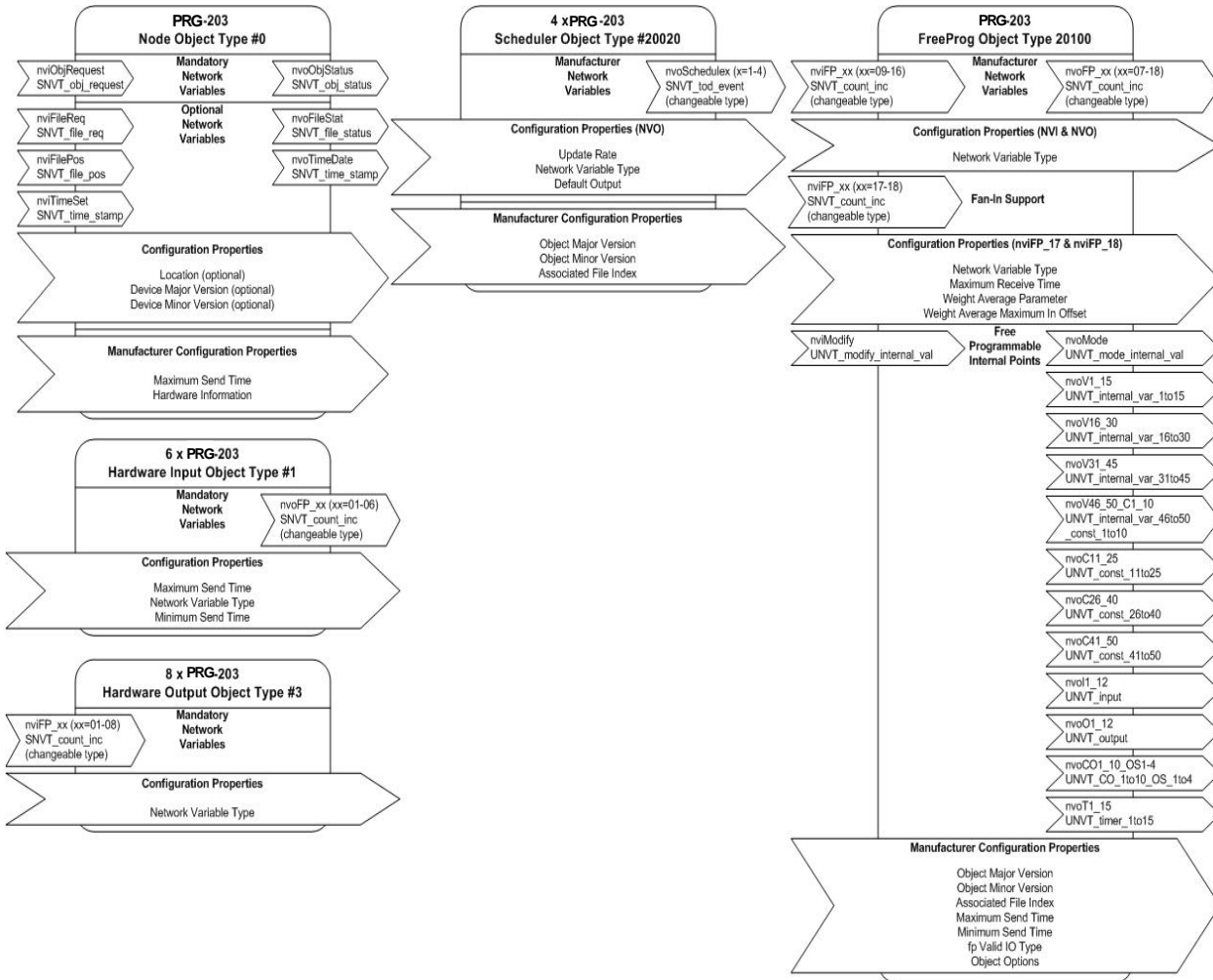**Figure 9: GPI LONMARK Objects and Network Variables – LX-PRG203-1**

Figure 10: GPI LONMARK Objects and Network Variables – LX-PRG203-11

Figure 11: GPI LONMARK Objects and Network Variables – LX-PRG300-1

Node
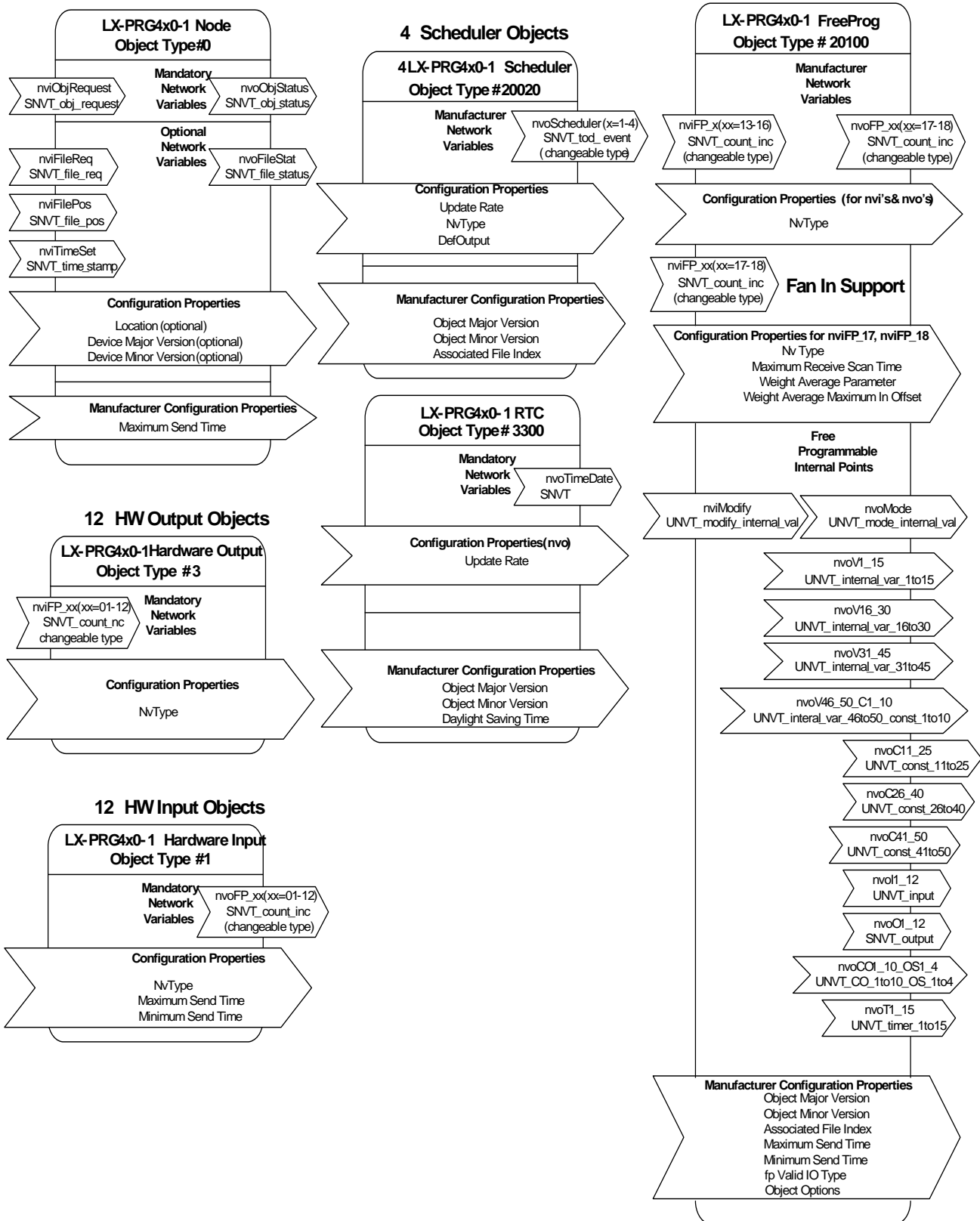**Object Type #0**

Mandatory Network Variables

nviRequest
SNVT_obj_request

nvoStatus
SNVT_obj_status

Optional Network Variables

nviFileReq
SNVT_file_req

nvoFileStat
SNVT_file_status

nviFilePos
SNVT_file_pos

Optional Configuration Properties

Device Major Version (SCPTdevMajVer)
Device Minor Version (SCPTdevMinVer)
Location (SCPTlocation)

Manufacturer Configuration Properties

Bootloader Version (UCPTbootloaderVersion)
Firmware Version (UCPTfirmwareVersion)
Network Stack Version (UCPTnetStackVersion)
UCPTvendorId
UCPTvendorName

Real Time Keeper
Object Type #3300

Mandatory Network Variables

nvoTimeDate
SNVT_time_stamp

Optional Network Variables

nviTimeSet
SNVT_time_stamp

Optional Configuration Properties

nvoTimeDate Configuration Properties:
Maximum Send Time (SCPTmaxSendTime)
Minimum Send Time (SCPTminSendTime)

Real Time Keeper Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Manufacturer Configuration Properties

Daylight Saving Time (UCPTdst)

Static Programmable Device
Object Type #410

Mandatory Network Variables

nvoProgramStatus
SNVT_prog_status

35 x Optional Network Variables **35 x**

nviFP_# (# = 1 to 35)
SNVT_count_inc_f
(changeable type)

nvoFP_# (# = 1 to 35)
SNVT_count_inc_f
(changeable type)

Manufacturer Network Variables

nviModify
UNVT_modify_val2

nvoHwIn01_07
UNVT_hardware_inputf_1to7

nvoHwIn08_10
UNVT_hardware_inputf_8to10

nvoHwOut01_08
UNVT_hardware_output_1to8

nvoVb01_124
UNVT_variable_bool_1to124

nvoVe01_27
UNVT_variable_enum_1to27

nvoVe28_54
UNVT_variable_enum_28to54

nvoVn01_07
UNVT_variable_numf_1to7

nvoVn08_14
UNVT_variable_numf_8to14

nvoVn15_21
UNVT_variable_numf_15to21

nvoVn22_28
UNVT_variable_numf_22to28

nvoVn29_35
UNVT_variable_numf_29to35

nvoVn36_42
UNVT_variable_numf_36to42

nvoVn43_49
UNVT_variable_numf_43to49

nvoVn50_56
UNVT_variable_numf_50to56

nvoStatus_# (# = 1 to 12)
SNVT_str_asc
(changeable type)

nvoComSensr01_04
UNVT_comsensor_1to4

nvoComSensr05_08
UNVT_comsensor_5to8

nvoComSensr09_12
UNVT_comsensor_9to12

nvoWrIn01_07
UNVT_wireless_input_1to7

nvoWrIn08_14
UNVT_wireless_input_8to14

nvoWrIn15_21
UNVT_wireless_input_15to21

nvoWrIn22_28
UNVT_wireless_input_22to28

nvoWrOut01_07
UNVT_wireless_output_1to7

nvoWrOut08_14
UNVT_wireless_Output_8to14

nvoWrOut15_21
UNVT_wireless_Output_15to21

nvoWrOut22_28
UNVT_wireless_Output_22to28

nvoStatus_# (# = 1 to 12)
SNVT_str_asc
(changeable type)

Optional Configuration Properties

nviFP Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
Default Output Value (SCPTdefOutput)
SCPTnvUsage

nvoFP Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
SCPTnvUsage

Static Programmable Device Object Configuration
Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Minimum Send Time (SCPTminSendTime)
Maximum Send Time (SCPTmaxSendTime)
SCPTprogCmdHistory
SCPTprogStateHistory
SCPTprogErrorHistory
SCPTprogFileIndexes
SCPTprogName
SCPTprogRevision

Manufacturer Configuration Properties

Manufacturer Configuration Properties:
nciSetPoints (SCPTsetPnts#SI)
nciCb01_124 (UCPT_constant_bool_1to124)
nciCe01_31 (UCPT_constant_enum_1to31)
nciCe32_62 (UCPT_constant_enum_32to62)
nciCn01_07 (UCPT_constant_numf_1to7)
nciCn08_14 (UCPT_constant_numf_8to14)
nciCn15_21 (UCPT_constant_numf_15to21)
nciCn22_28 (UCPT_constant_numf_22to28)
nciCn29_35 (UCPT_constant_numf_29to35)
nciCn36_42 (UCPT_constant_numf_36to42)
nciCn43_49 (UCPT_constant_numf_43to49)
nciCn50_56 (UCPT_constant_numf_50to56)
UCPT_reason_for_halt
UCPTpidParameters# (# = 01 to 30)

---

10 x **Hardware Input**
Open-Loop Sensor Object Type #1

Mandatory Network Variables

nvoHwInput_# (# = 1 to 10)
SNVT_count_inc_f
(changeable type)

Optional Configuration Properties

nvoHwInput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

---

8 x **Scheduler**
Object Type #20020

Manufacturer Network Variables

nviSchedule_# (# = 1 to 8)
SNVT_tod_event
(changeable type)

nvoSchedule_# (# = 1 to 8)
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nviSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Scheduler Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

---

8 x **Hardware Output**
Open-Loop Actuator Object Type #3

Mandatory Network Variables

nviHwOutput_# (# = 01 to 08)
SNVT_switch
(changeable type)

nvoHwOutput_# (# = 01 to 08)
SNVT_switch
(changeable type)

Optional Configuration Properties

nviHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

---

2 x **Calendar**
Object Type #20030

Manufacturer Network Variables

nvoCalendar_# (# = 1 to 2)
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nvoCalendar Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Manufacturer Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Figure 12: GPI LONMARK Objects and Network Variables – LX-PRG300-11

Figure 13: GPI LONMARK Objects and Network Variables – LX-PRG4x0-1

Node
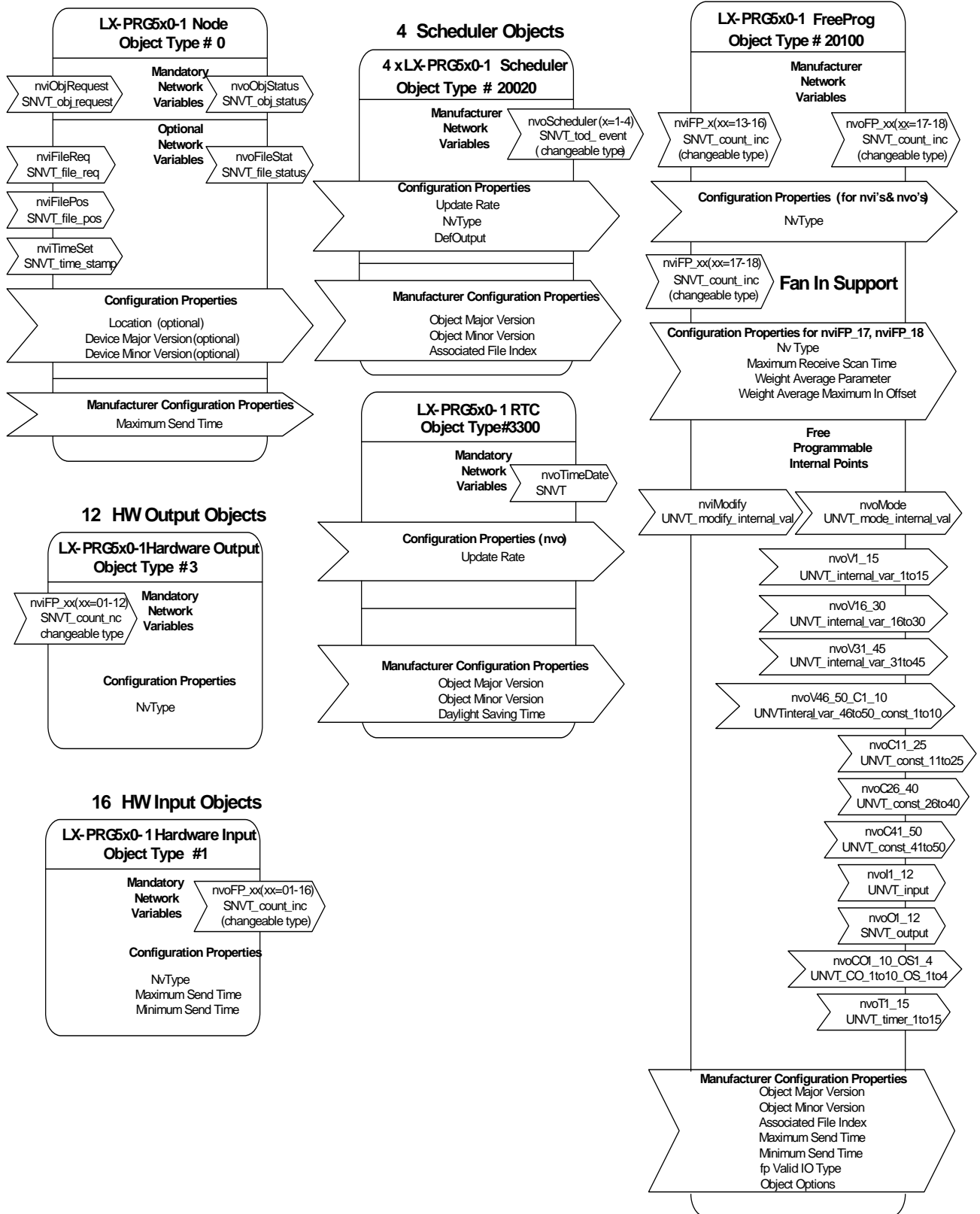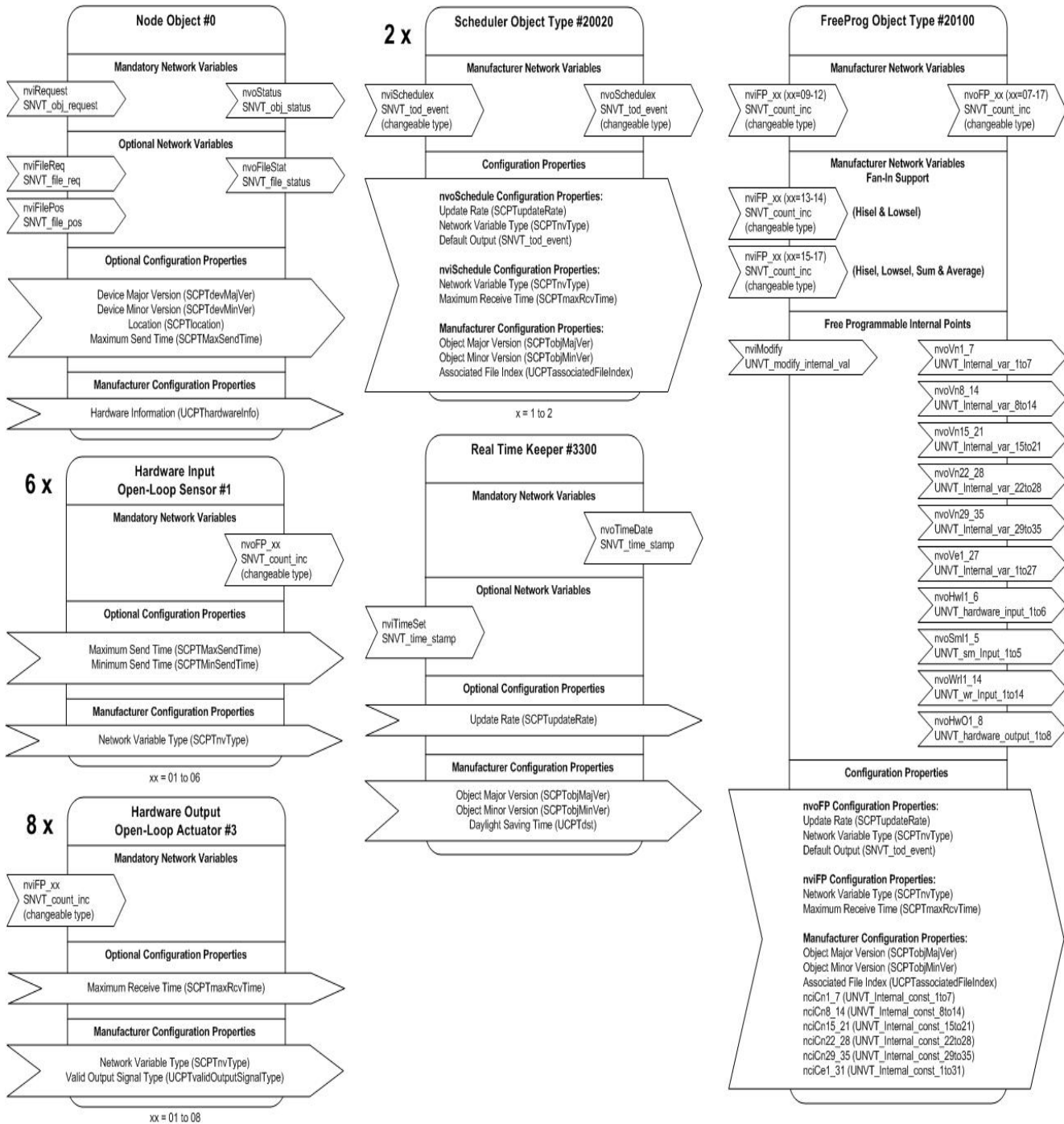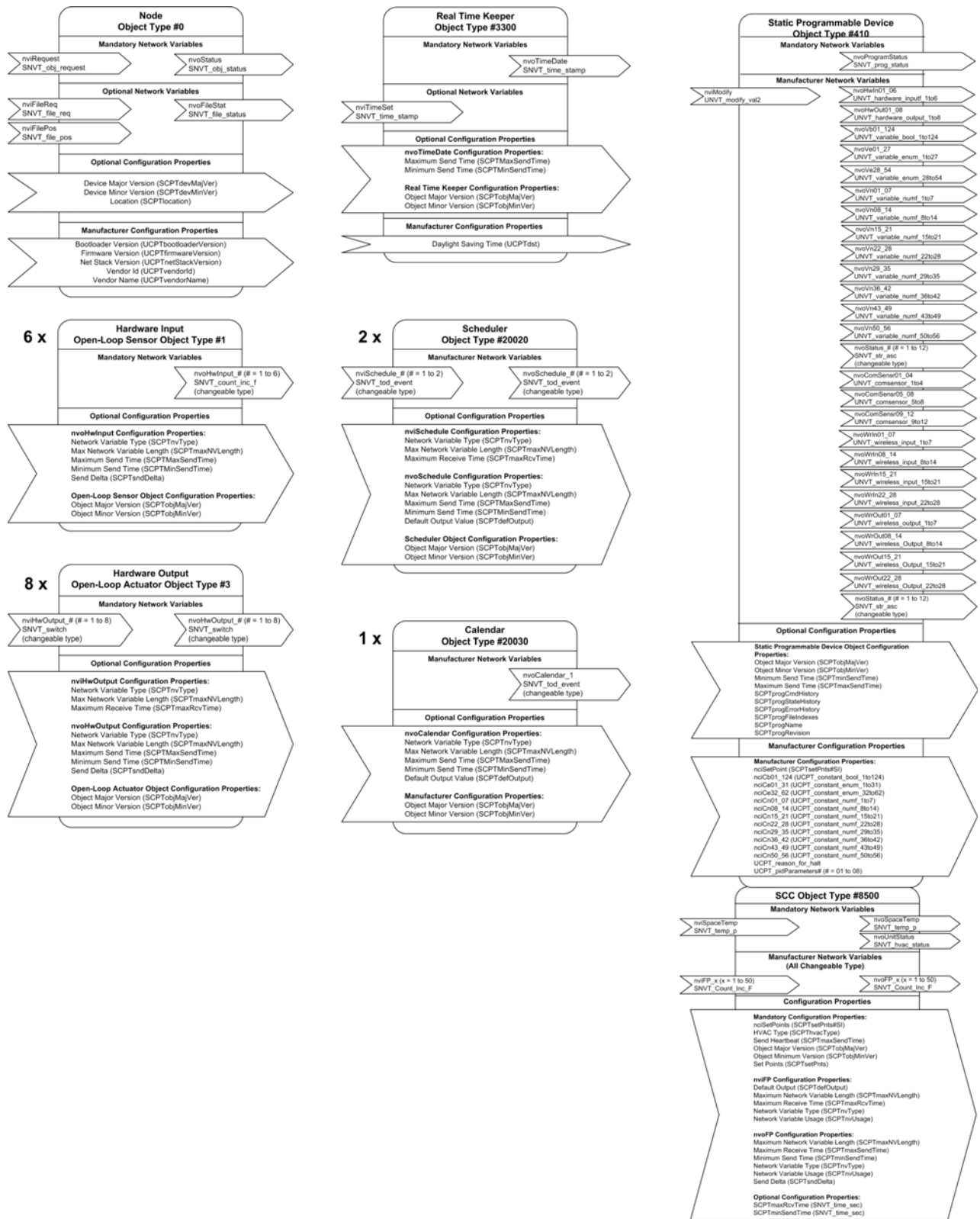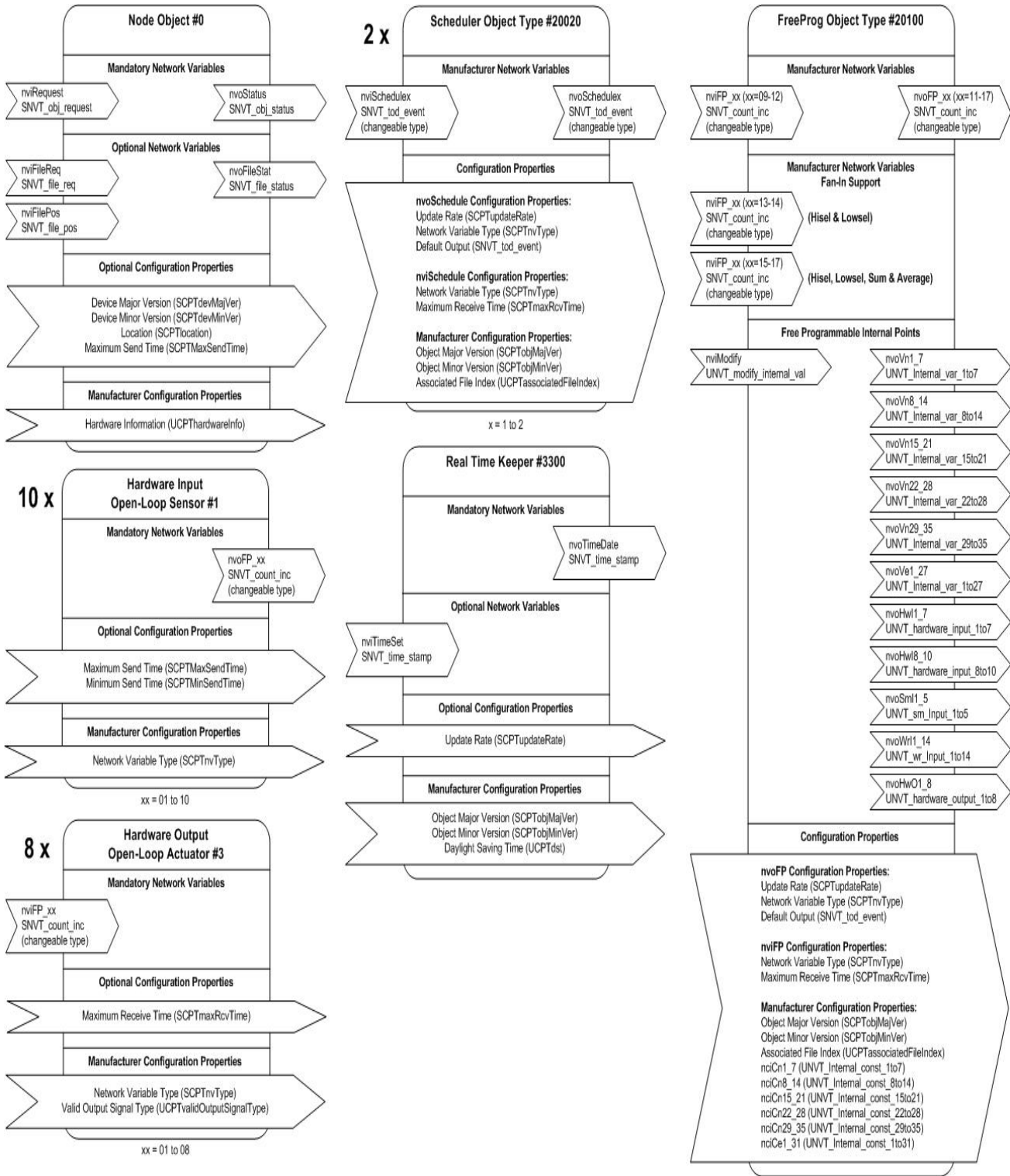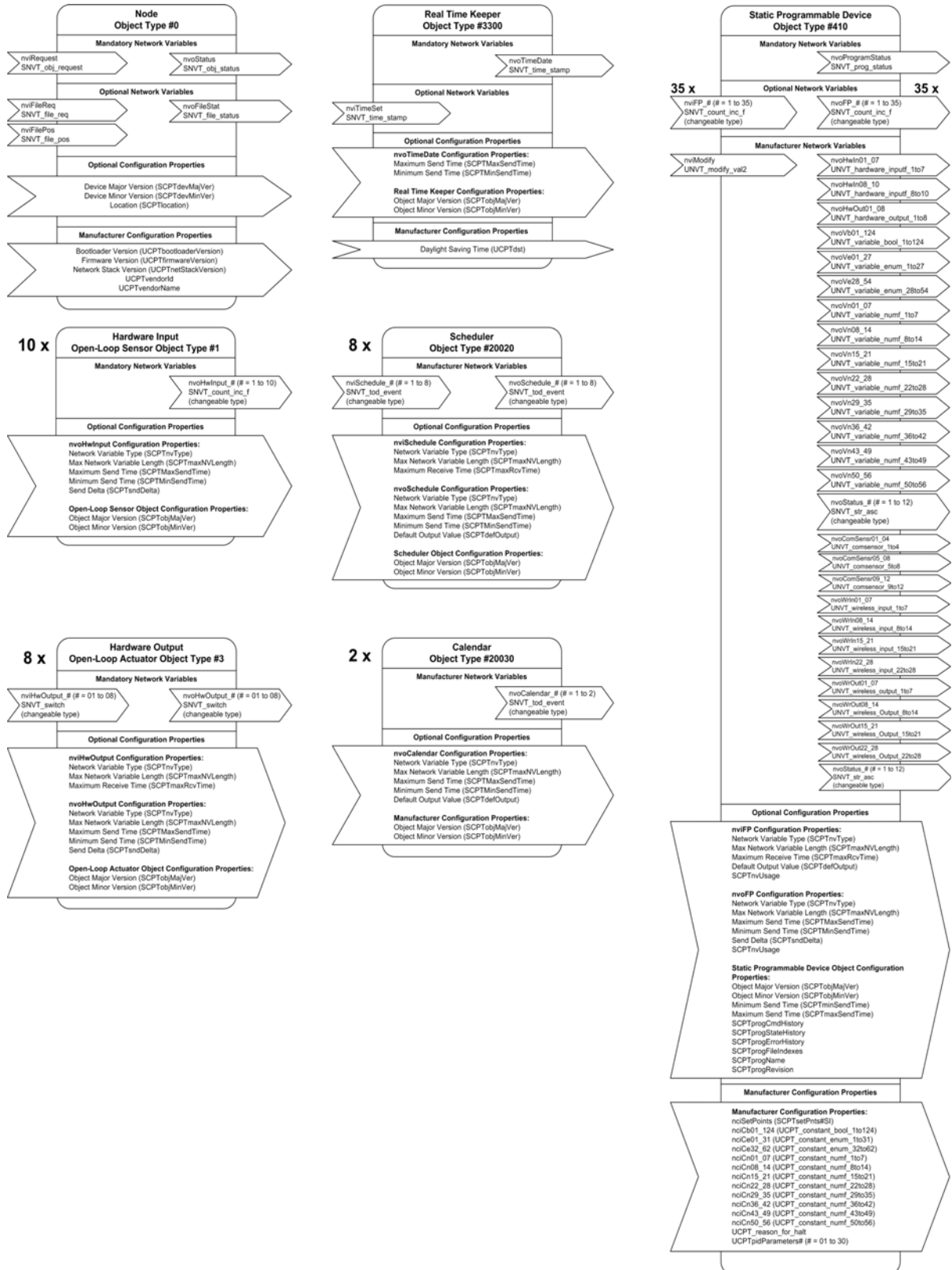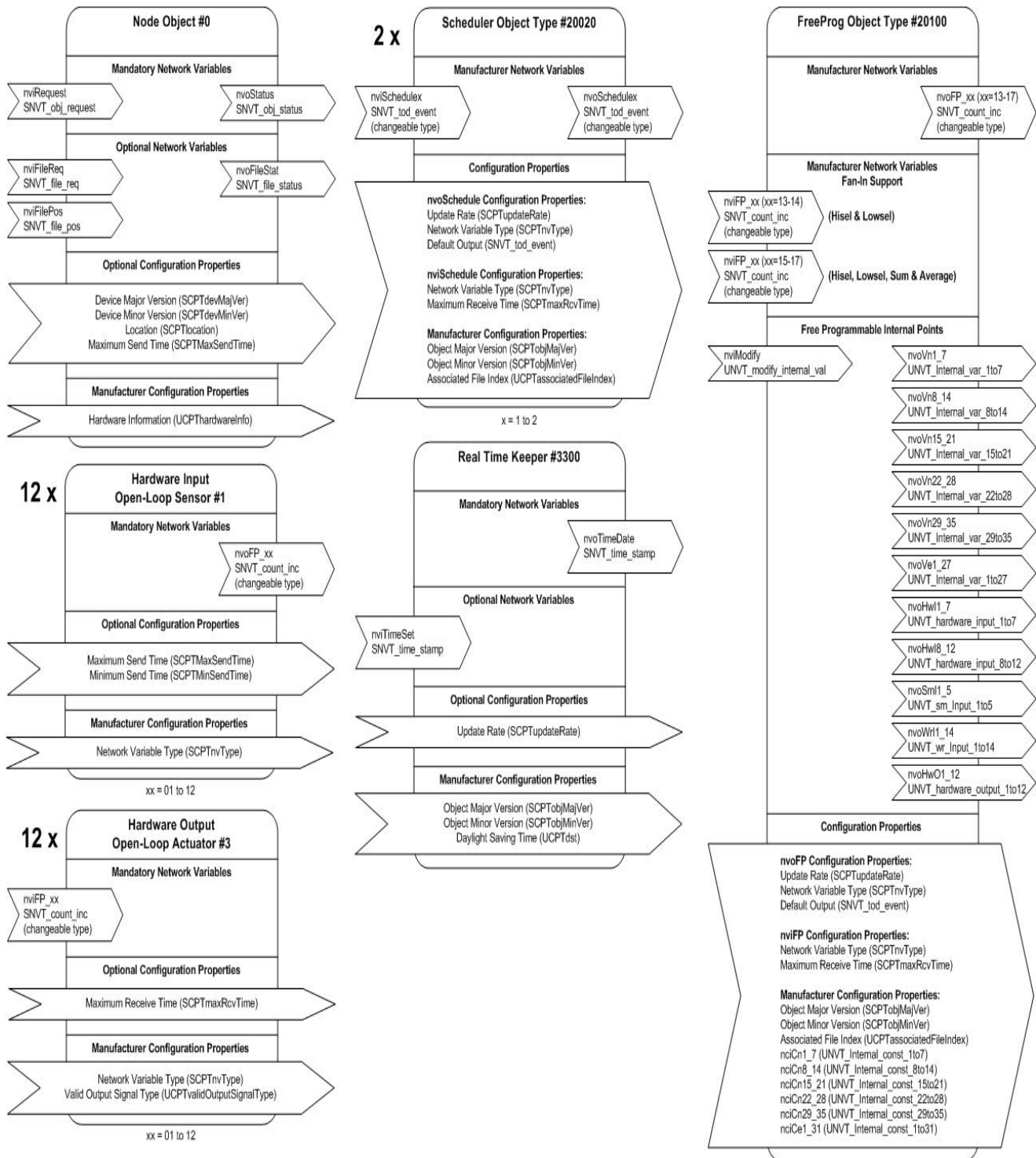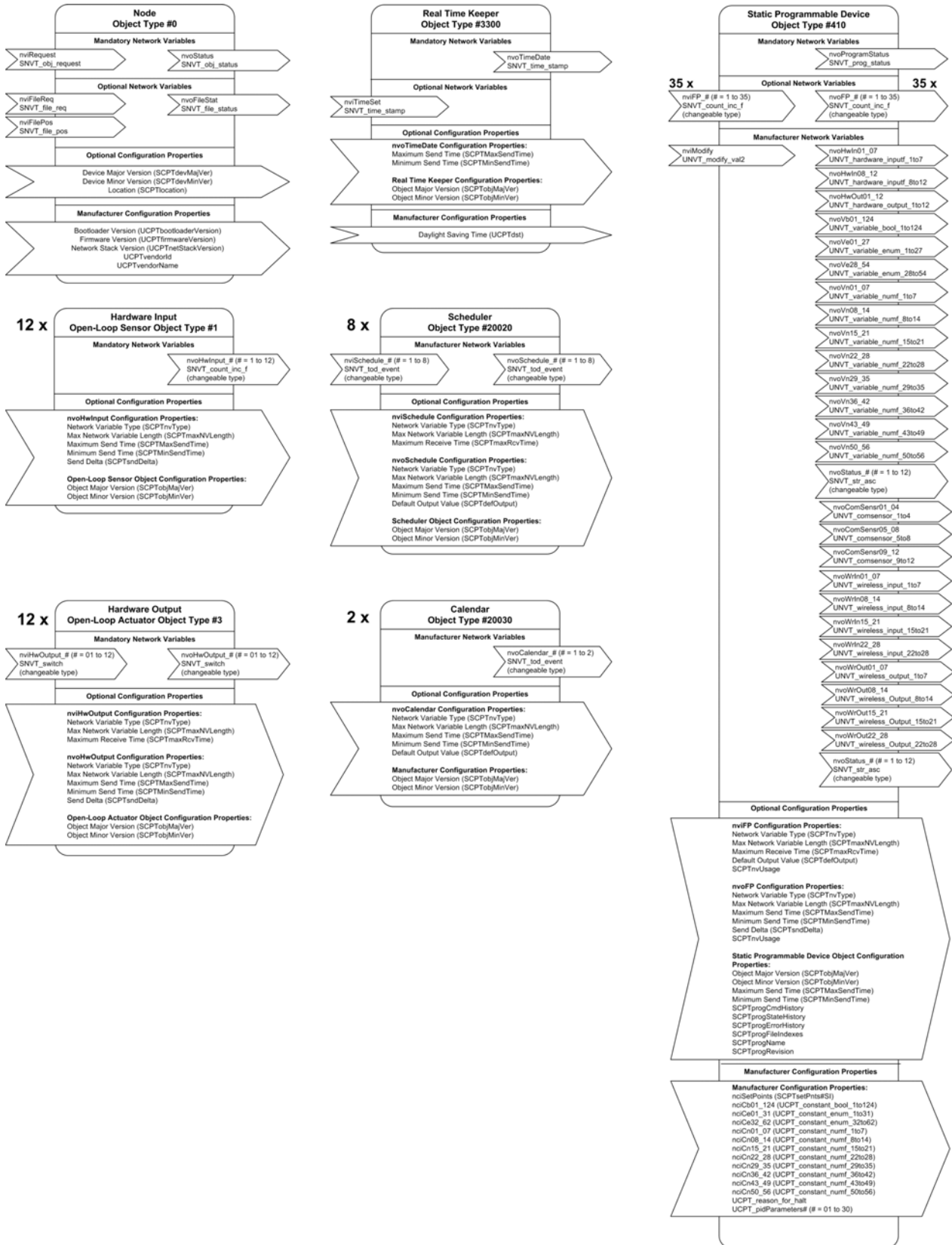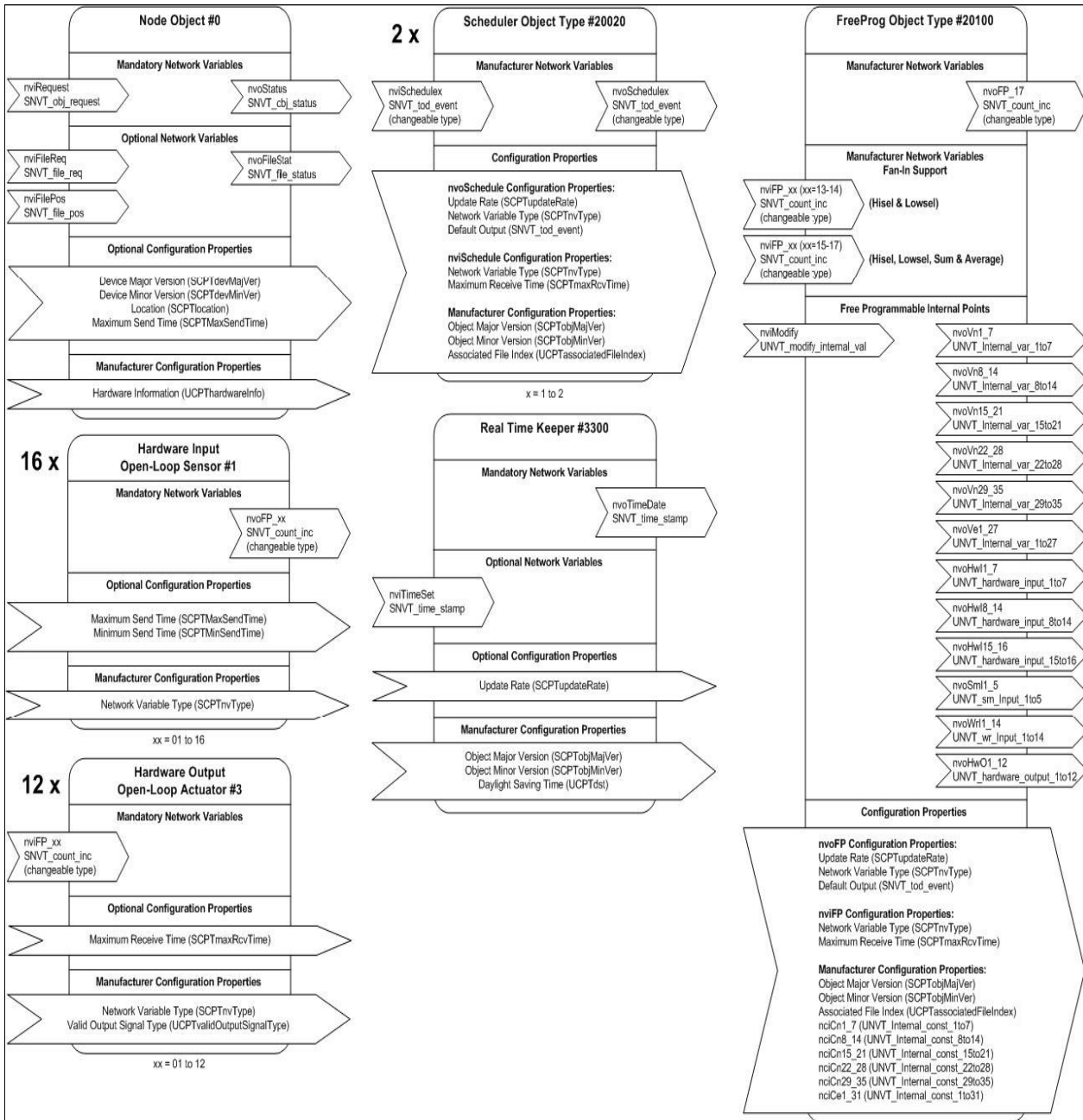**Object Type #0**

Mandatory Network Variables

nviRequest
SNVT_obj_request

nvoStatus
SNVT_obj_status

Optional Network Variables

nviFileReq
SNVT_file_req

nvoFileStat
SNVT_file_status

nviFilePos
SNVT_file_pos

Optional Configuration Properties

Device Major Version (SCPTdevMajVer)
Device Minor Version (SCPTdevMinVer)
Location (SCPTlocation)

Manufacturer Configuration Properties

Bootloader Version (UCPTbootloaderVersion)
Firmware Version (UCPTfirmwareVersion)
Network Stack Version (UCPTnetStackVersion)
UCPTvendorId
UCPTvendorName

12 x **Hardware Input**
Open-Loop Sensor Object Type #1

Mandatory Network Variables

nvoHwInput_# (# = 1 to 12)
SNVT_count_inc_f
(changeable type)

Optional Configuration Properties

nvoHwInput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

12 x **Hardware Output**
Open-Loop Actuator Object Type #3

Mandatory Network Variables

nviHwOutput_# (# = 01 to 12)
SNVT_switch
(changeable type)

nvoHwOutput_# (# = 01 to 12)
SNVT_switch
(changeable type)

Optional Configuration Properties

nviHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Real Time Keeper
Object Type #3300

Mandatory Network Variables

nvoTimeDate
SNVT_time_stamp

Optional Network Variables

nviTimeSet
SNVT_time_stamp

Optional Configuration Properties

nvoTimeDate Configuration Properties:
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)

Real Time Keeper Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Manufacturer Configuration Properties

Daylight Saving Time (UCPTdst)

8 x **Scheduler**
Object Type #20020

Manufacturer Network Variables

nviSchedule_# (# = 1 to 8)
SNVT_tod_event
(changeable type)

nvoSchedule_# (# = 1 to 8)
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nviSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Scheduler Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

2 x **Calendar**
Object Type #20030

Manufacturer Network Variables

nvoCalendar_# (# = 1 to 2)
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nvoCalendar Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Manufacturer Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Static Programmable Device
Object Type #410

Mandatory Network Variables

nvoProgramStatus
SNVT_prog_status

35 x Optional Network Variables **35 x**

nviFP_# (# = 1 to 35)
SNVT_count_inc_f
(changeable type)

nvoFP_# (# = 1 to 35)
SNVT_count_inc_f
(changeable type)

Manufacturer Network Variables

nviModify
UNVT_modify_val2

nvoHwIn01_07
UNVT_hardware_inputf_1to7

nvoHwIn08_12
UNVT_hardware_inputf_8to12

nvoHwOut01_12
UNVT_hardware_output_1to12

nvoVb01_124
UNVT_variable_bool_1to124

nvoVe01_27
UNVT_variable_enum_1to27

nvoVe28_54
UNVT_variable_enum_28to54

nvoVn01_07
UNVT_variable_numf_1to7

nvoVn08_14
UNVT_variable_numf_8to14

nvoVn15_21
UNVT_variable_numf_15to21

nvoVn22_28
UNVT_variable_numf_22to28

nvoVn29_35
UNVT_variable_numf_29to35

nvoVn36_42
UNVT_variable_numf_36to42

nvoVn43_49
UNVT_variable_numf_43to49

nvoVn50_56
UNVT_variable_numf_50to56

nvoStatus_# (# = 1 to 12)
SNVT_str_asc
(changeable type)

nvoComSensr01_04
UNVT_comsensor_1to4

nvoComSensr05_08
UNVT_comsensor_5to8

nvoComSensr09_12
UNVT_comsensor_9to12

nvoWrIn01_07
UNVT_wireless_input_1to7

nvoWrIn08_14
UNVT_wireless_input_8to14

nvoWrIn15_21
UNVT_wireless_input_15to21

nvoWrIn22_28
UNVT_wireless_input_22to28

nvoWrOut01_07
UNVT_wireless_output_1to7

nvoWrOut08_14
UNVT_wireless_Output_8to14

nvoWrOut15_21
UNVT_wireless_Output_15to21

nvoWrOut22_28
UNVT_wireless_Output_22to28

nvoStatus_# (# = 1 to 12)
SNVT_str_asc
(changeable type)

Optional Configuration Properties

nviFP Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
Default Output Value (SCPTdefOutput)
SCPTnvUsage

nvoFP Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
SCPTnvUsage

Static Programmable Device Object Configuration
Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
SCPTprogCmdHistory
SCPTprogStateHistory
SCPTprogErrorHistory
SCPTprogFileIndexes
SCPTprogName
SCPTprogRevision

Manufacturer Configuration Properties

Manufacturer Configuration Properties:
nciSetPoints (SCPTsetPnts#SI)
nciCb01_124 (UCPT_constant_bool_1to124)
nciCe01_31 (UCPT_constant_enum_1to31)
nciCe32_62 (UCPT_constant_enum_32to62)
nciCn01_07 (UCPT_constant_numf_1to7)
nciCn08_14 (UCPT_constant_numf_8to14)
nciCn15_21 (UCPT_constant_numf_15to21)
nciCn22_28 (UCPT_constant_numf_22to28)
nciCn29_35 (UCPT_constant_numf_29to35)
nciCn36_42 (UCPT_constant_numf_36to42)
nciCn43_49 (UCPT_constant_numf_43to49)
nciCn50_56 (UCPT_constant_numf_50to56)
UCPT_reason_for_halt
UCPT_pidParameters# (# = 01 to 30)

Figure 14: GPI LONMARK Objects and Network Variables – LX-PRG400-11 and LX-PRG410-11

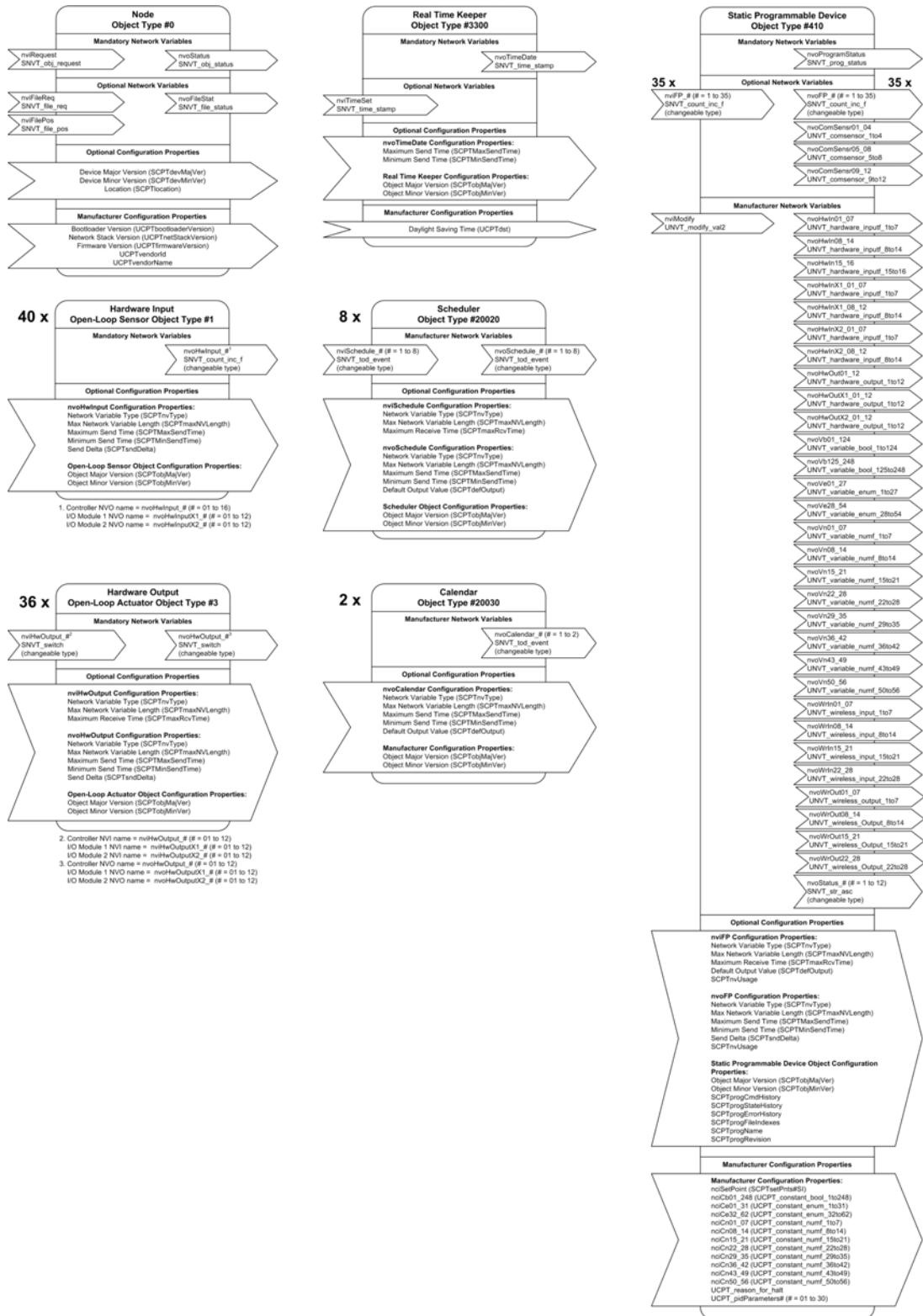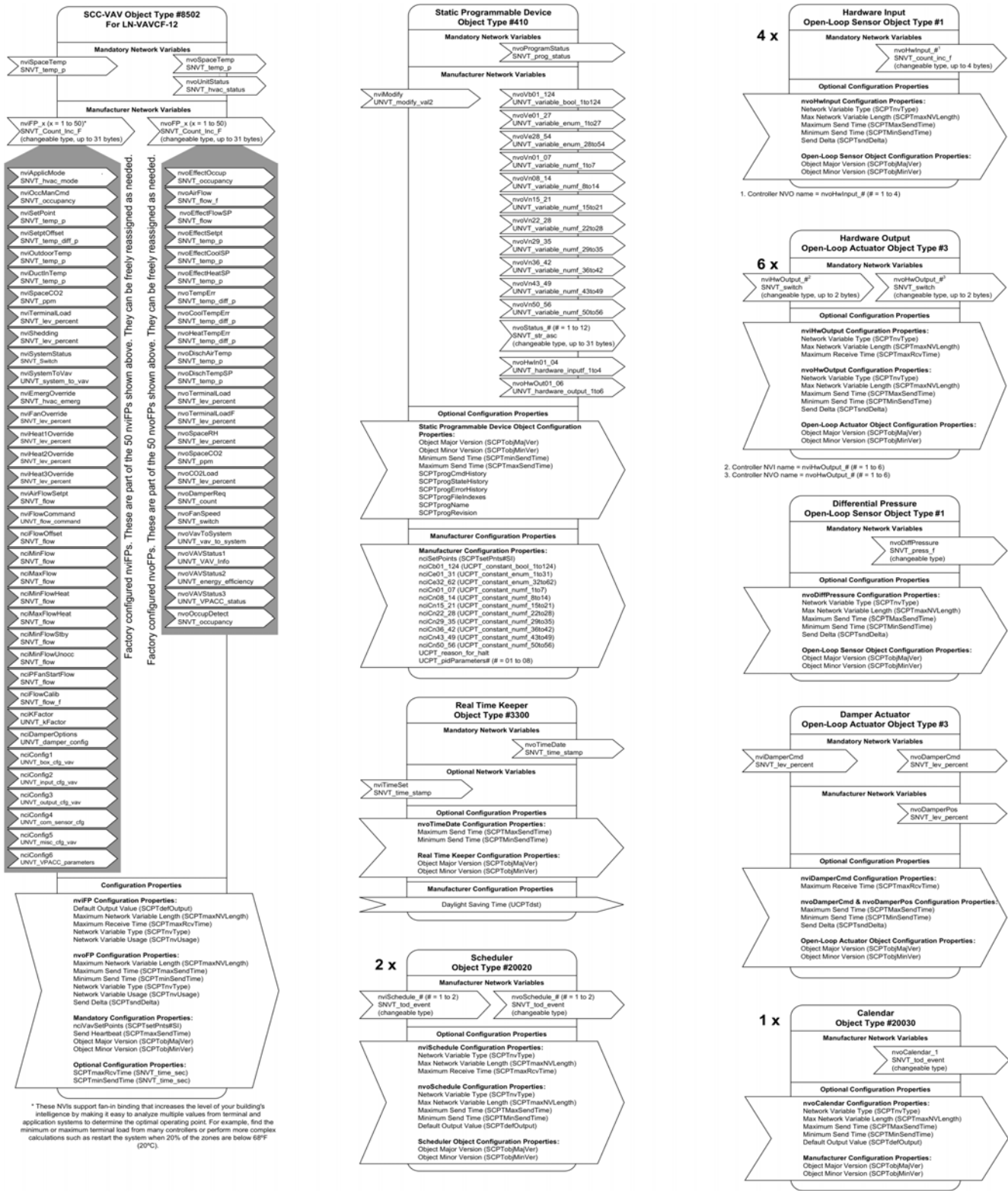**Figure 15: GPI LONMARK Objects and Network Variables – LX-PRG5x0-1**

Node
Object Type #0

Mandatory Network Variables

nviRequest
SNVT_obj_request

nvoStatus
SNVT_obj_status

Optional Network Variables

nviFileReq
SNVT_file_req

nvoFileStat
SNVT_file_status

nviFilePos
SNVT_file_pos

Optional Configuration Properties

Device Major Version (SCPTdevMajVer)
Device Minor Version (SCPTdevMinVer)
Location (SCPTlocation)

Manufacturer Configuration Properties

Bootloader Version (UCPTbootloaderVersion)
Network Stack Version (UCPTnetStackVersion)
Firmware Version (UCPTfirmwareVersion)
UCPTvendorId
UCPTvendorName

Real Time Keeper
Object Type #3300

Mandatory Network Variables

nvoTimeDate
SNVT_time_stamp

Optional Network Variables

nviTimeSet
SNVT_time_stamp

Optional Configuration Properties

nvoTimeDate Configuration Properties:
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)

Real Time Keeper Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Manufacturer Configuration Properties

Daylight Saving Time (UCPTdst)

Static Programmable Device
Object Type #410

Mandatory Network Variables

nvoProgramStatus
SNVT_prog_status

Optional Network Variables

35 x   nviFP_# (# = 1 to 35)
SNVT_count_inc_f
(changeable type)

nvoFP_# (# = 1 to 35)   **35 x**
SNVT_count_inc_f
(changeable type)

nvoComSensr01_04
UNVT_comsensor_1to4

nvoComSensr05_08
UNVT_comsensor_5to8

nvoComSensr09_12
UNVT_comsensor_9to12

Manufacturer Network Variables

nviModify
UNVT_modify_val2

nvoHwIn01_07
UNVT_hardware_inputf_1to7

nvoHwIn08_14
UNVT_hardware_inputf_8to14

nvoHwIn15_16
UNVT_hardware_inputf_15to16

nvoHwInX1_01_07
UNVT_hardware_inputf_1to7

nvoHwInX1_08_12
UNVT_hardware_inputf_8to14

nvoHwInX2_01_07
UNVT_hardware_inputf_1to7

nvoHwInX2_08_12
UNVT_hardware_inputf_8to14

nvoHwOut01_12
UNVT_hardware_output_1to12

nvoHwOutX1_01_12
UNVT_hardware_output_1to12

nvoHwOutX2_01_12
UNVT_hardware_output_1to12

nvoVb01_124
UNVT_variable_bool_1to124

nvoVb125_248
UNVT_variable_bool_125to248

nvoVe01_27
UNVT_variable_enum_1to27

nvoVe28_54
UNVT_variable_enum_28to54

nvoVn01_07
UNVT_variable_numf_1to7

nvoVn08_14
UNVT_variable_numf_8to14

nvoVn15_21
UNVT_variable_numf_15to21

nvoVn22_28
UNVT_variable_numf_22to28

nvoVn29_35
UNVT_variable_numf_29to35

nvoVn36_42
UNVT_variable_numf_36to42

nvoVn43_49
UNVT_variable_numf_43to49

nvoVn50_56
UNVT_variable_numf_50to56

nvoWrIn01_07
UNVT_wireless_input_1to7

nvoWrIn08_14
UNVT_wireless_input_8to14

nvoWrIn15_21
UNVT_wireless_input_15to21

nvoWrIn22_28
UNVT_wireless_input_22to28

nvoWrOut01_07
UNVT_wireless_output_1to7

nvoWrOut08_14
UNVT_wireless_Output_8to14

nvoWrOut15_21
UNVT_wireless_Output_15to21

nvoWrOut22_28
UNVT_wireless_Output_22to28

nvoStatus_# (# = 1 to 12)
SNVT_str_asc
(changeable type)

Optional Configuration Properties

nviFP Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
Default Output Value (SCPTdefOutput)
SCPTnvUsage

nvoFP Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
SCPTnvUsage

Static Programmable Device Object Configuration
Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
SCPTprogCmdHistory
SCPTprogStateHistory
SCPTprogErrorHistory
SCPTprogFileIndexes
SCPTprogName
SCPTprogRevision

Manufacturer Configuration Properties

Manufacturer Configuration Properties:
nciSetPoint (UCPTsetPnts#RSI)
nciCo01_248 (UCPT_constant_bool_1to248)
nciCe01_31 (UCPT_constant_enum_1to31)
nciCe32_62 (UCPT_constant_enum_32to62)
nciCn01_07 (UCPT_constant_numf_1to7)
nciCn08_14 (UCPT_constant_numf_8to14)
nciCn15_21 (UCPT_constant_numf_15to21)
nciCn22_28 (UCPT_constant_numf_22to28)
nciCn29_35 (UCPT_constant_numf_29to35)
nciCn36_42 (UCPT_constant_numf_36to42)
nciCn43_49 (UCPT_constant_numf_43to49)
nciCn50_56 (UCPT_constant_numf_50to56)
UCPT_reason_for_halt
UCPT_pidParameters# (# = 01 to 30)

---

40 x   **Hardware Input**
Open-Loop Sensor Object Type #1

Mandatory Network Variables

nvoHwInput_#[1]
SNVT_count_inc_f
(changeable type)

Optional Configuration Properties

nvoHwInput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

1. Controller NVO name = nvoHwInput_# (# = 01 to 16)
   I/O Module 1 NVO name = nvoHwInputX1_# (# = 01 to 12)
   I/O Module 2 NVO name = nvoHwInputX2_# (# = 01 to 12)

---

8 x   **Scheduler**
Object Type #20020

Manufacturer Network Variables

nviSchedule_# (# = 1 to 8)
SNVT_tod_event
(changeable type)

nvoSchedule_# (# = 1 to 8)
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nviSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Scheduler Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

---

36 x   **Hardware Output**
Open-Loop Actuator Object Type #3

Mandatory Network Variables

nviHwOutput_#[2]
SNVT_switch
(changeable type)

nvoHwOutput_#[3]
SNVT_switch
(changeable type)

Optional Configuration Properties

nviHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

2. Controller NVI name = nviHwOutput_# (# = 01 to 12)
   I/O Module 1 NVI name = nviHwOutputX1_# (# = 01 to 12)
   I/O Module 2 NVI name = nviHwOutputX2_# (# = 01 to 12)
3. Controller NVO name = nvoHwOutput_# (# = 01 to 12)
   I/O Module 1 NVO name = nvoHwOutputX1_# (# = 01 to 12)
   I/O Module 2 NVO name = nvoHwOutputX2_# (# = 01 to 12)

---

2 x   **Calendar**
Object Type #20030

Manufacturer Network Variables

nvoCalendar_# (# = 1 to 2)
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nvoCalendar Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Manufacturer Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Figure 16: GPI LONMARK Objects and Network Variables – LX-PRG600-11 and LX-PRG610-11

SCC-VAV Object Type #8502
For LN-VAVCF-12

Mandatory Network Variables

nviSpaceTemp
SNVT_temp_p

nvoSpaceTemp
SNVT_temp_p

nvoUnitStatus
SNVT_hvac_status

Manufacturer Network Variables

nviFP_x (x = 1 to 50)*
SNVT_Count_Inc_F
(changeable type, up to 31 bytes)

nvoFP_x (x = 1 to 50)
SNVT_Count_Inc_F
(changeable type, up to 31 bytes)

Factory configured nviFPs. These are part of the 50 nviFPs shown above. They can be freely reassigned as needed.

Factory configured nvoFPs. These are part of the 50 nvoFPs shown above. They can be freely reassigned as needed.

nviApplicMode / SNVT_hvac_mode
nviOccManCmd / SNVT_occupancy
nviSetPoint / SNVT_temp_p
nviSeptOffset / SNVT_temp_diff_p
nviOutdoorTemp / SNVT_temp_p
nviDuctInTemp / SNVT_temp_p
nviSpaceCO2 / SNVT_ppm
nviTerminalLoad / SNVT_lev_percent
nviShedding / SNVT_lev_percent
nviSystemStatus / SNVT_Switch
nviSystemToVav / UNVT_system_to_vav
nviEmergOverride / SNVT_hvac_emerg
nviFanOverride / SNVT_lev_percent
nviHeat1Override / SNVT_lev_percent
nviHeat2Override / SNVT_lev_percent
nviHeat3Override / SNVT_lev_percent
nviAirFlowSetpt / SNVT_flow
nviFlowCommand / UNVT_flow_command
nciFlowOffset / SNVT_flow
nciMinFlow / SNVT_flow
nciMaxFlow / SNVT_flow
nciMinFlowHeat / SNVT_flow
nciMaxFlowHeat / SNVT_flow
nciMinFlowStby / SNVT_flow
nciMinFlowUnocc / SNVT_flow
nciPFanStartFlow / SNVT_flow
nciFlowCalib / SNVT_flow_f
nciKFactor / UNVT_kFactor
nciDamperOptions / UNVT_damper_config
nciConfig1 / UNVT_box_cfg_vav
nciConfig2 / UNVT_input_cfg_vav
nciConfig3 / UNVT_output_cfg_vav
nciConfig4 / UNVT_com_sensor_cfg
nciConfig5 / UNVT_misc_cfg_vav
nciConfig6 / UNVT_VPACC_parameters

nvoEffectOccup / SNVT_occupancy
nvoAirFlow / SNVT_flow_f
nvoEffectFlowSP / SNVT_flow
nvoEffectSetpt / SNVT_temp_p
nvoEffectCoolSP / SNVT_temp_p
nvoEffectHeatSP / SNVT_temp_p
nvoTempErr / SNVT_temp_diff_p
nvoCoolTempErr / SNVT_temp_diff_p
nvoHeatTempErr / SNVT_temp_diff_p
nvoDischAirTemp / SNVT_temp_p
nvoDischTempSP / SNVT_temp_p
nvoTerminalLoad / SNVT_lev_percent
nvoTerminalLoadF / SNVT_lev_percent
nvoSpaceRH / SNVT_lev_percent
nvoSpaceCO2 / SNVT_ppm
nvoCO2Load / SNVT_lev_percent
nvoDamperReq / SNVT_count
nvoFanSpeed / SNVT_switch
nvoVavToSystem / UNVT_vav_to_system
nvoVAVStatus1 / UNVT_VAV_Info
nvoVAVStatus2 / UNVT_energy_efficiency
nvoVAVStatus3 / UNVT_VPACC_status
nvoOccupDetect / SNVT_occupancy

Configuration Properties

nviFP Configuration Properties:
Default Output Value (SCPTdefOutput)
Maximum Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
Network Variable Type (SCPTnvType)
Network Variable Usage (SCPTnvUsage)

nvoFP Configuration Properties:
Maximum Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTmaxSendTime)
Minimum Send Time (SCPTminSendTime)
Network Variable Type (SCPTnvType)
Network Variable Usage (SCPTnvUsage)
Send Delta (SCPTsndDelta)

Mandatory Configuration Properties:
nciVavSetPoints (SCPTsetPnts#SI)
Send Heartbeat (SCPTmaxSendTime)
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Optional Configuration Properties:
SCPTmaxRcvTime (SNVT_time_sec)
SCPTminSendTime (SNVT_time_sec)

* These NVIs support fan-in binding that increases the level of your building's intelligence by making it easy to analyze multiple values from terminal and application systems to determine the optimal operating point. For example, find the minimum or maximum terminal load from many controllers or perform more complex calculations such as restart the system when 20% of the zones are below 68°F (20°C).

Static Programmable Device
Object Type #410

Mandatory Network Variables

nvoProgramStatus
SNVT_prog_status

Manufacturer Network Variables

nviModify / UNVT_modify_val2

nvoVb01_124 / UNVT_variable_bool_1to124
nvoVe01_27 / UNVT_variable_enum_1to27
nvoVe28_54 / UNVT_variable_enum_28to54
nvoVn01_07 / UNVT_variable_numf_1to7
nvoVn08_14 / UNVT_variable_numf_8to14
nvoVn15_21 / UNVT_variable_numf_15to21
nvoVn22_28 / UNVT_variable_numf_22to28
nvoVn29_35 / UNVT_variable_numf_29to35
nvoVn36_42 / UNVT_variable_numf_36to42
nvoVn43_49 / UNVT_variable_numf_43to49
nvoVn50_56 / UNVT_variable_numf_50to56
nvoStatus_# (# = 1 to 12) / SNVT_str_asc (changeable type, up to 31 bytes)
nvoHwIn01_04 / UNVT_hardware_inputf_1to4
nvoHwOut01_06 / UNVT_hardware_output_1to6

Optional Configuration Properties

Static Programmable Device Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Minimum Send Time (SCPTminSendTime)
Maximum Send Time (SCPTMaxSendTime)
SCPTprogCmdHistory
SCPTprogStateHistory
SCPTprogErrorHistory
SCPTprogFileIndexes
SCPTprogName
SCPTprogRevision

Manufacturer Configuration Properties

Manufacturer Configuration Properties:
nciSetPoints (SCPTsetPnts#SI)
nciCb01_124 (UCPT_constant_bool_1to124)
nciCe01_31 (UCPT_constant_enum_1to31)
nciCe32_62 (UCPT_constant_enum_32to62)
nciCn01_07 (UCPT_constant_numf_1to7)
nciCn08_14 (UCPT_constant_numf_8to14)
nciCn15_21 (UCPT_constant_numf_15to21)
nciCn22_28 (UCPT_constant_numf_22to28)
nciCn29_35 (UCPT_constant_numf_29to35)
nciCn36_42 (UCPT_constant_numf_36to42)
nciCn43_49 (UCPT_constant_numf_43to49)
nciCn50_56 (UCPT_constant_numf_50to56)
UCPT_reason_for_halt
UCPT_pidParameters# (# = 01 to 08)

Real Time Keeper
Object Type #3300

Mandatory Network Variables

nvoTimeDate
SNVT_time_stamp

Optional Network Variables

nviTimeSet
SNVT_time_stamp

Optional Configuration Properties

nvoTimeDate Configuration Properties:
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)

Real Time Keeper Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Manufacturer Configuration Properties

Daylight Saving Time (UCPTdst)

---

2 x

Scheduler
Object Type #20020

Manufacturer Network Variables

nviSchedule_# (# = 1 to 2) / SNVT_tod_event (changeable type)

nvoSchedule_# (# = 1 to 2) / SNVT_tod_event (changeable type)

Optional Configuration Properties

nviSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Scheduler Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Hardware Input
Open-Loop Sensor Object Type #1

4 x

Mandatory Network Variables

nvoHwInput_#[1]
SNVT_count_inc_f
(changeable type, up to 4 bytes)

Optional Configuration Properties

nvoHwInput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

1. Controller NVO name = nvoHwInput_# (# = 1 to 4)

Hardware Output
Open-Loop Actuator Object Type #3

6 x

Mandatory Network Variables

nviHwOutput_#[2]
SNVT_switch
(changeable type, up to 2 bytes)

nvoHwOutput_#[3]
SNVT_switch
(changeable type, up to 2 bytes)

Optional Configuration Properties

nviHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)

nvoHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

2. Controller NVI name = nviHwOutput_# (# = 1 to 6)
3. Controller NVO name = nvoHwOutput_# (# = 1 to 6)

Differential Pressure
Open-Loop Sensor Object Type #1

Mandatory Network Variables

nvoDiffPressure
SNVT_press_f
(changeable type)

Optional Configuration Properties

nvoDiffPressure Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Damper Actuator
Open-Loop Actuator Object Type #3

Mandatory Network Variables

nviDamperCmd
SNVT_lev_percent

nvoDamperCmd
SNVT_lev_percent

Manufacturer Network Variables

nvoDamperPos
SNVT_lev_percent

Optional Configuration Properties

nviDamperCmd Configuration Properties:
Maximum Receive Time (SCPTmaxRcvTime)

nvoDamperCmd & nvoDamperPos Configuration Properties:
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)

Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

---

1 x

Calendar
Object Type #20030

Manufacturer Network Variables

nvoCalendar_1
SNVT_tod_event
(changeable type)

Optional Configuration Properties

nvoCalendar Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)

Manufacturer Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)

Figure 17: GPI LONMARK Objects and Network Variables – LX-VAVCF-11

Technical Specifications

LX-PRG203-1 (Part 1 of 2)

Product Code	LX-PRG203-1
Power Requirement	Voltage: 24 VAC/DC; ±15%, 50/60 Hz, Class 2 Protection: 1.85 A auto-reset fuse Consumption: 5 VA Maximum Consumption: 18 VA
Ambient Conditions	Ambient Operating Temperature: 0 to 70ºC (32 to 158°F) Ambient Storage Temperature: -20 to 70ºC (-4 to 158°F) Ambient Relative Humidity: 0 to 90% noncondensing
General	LONMARK certified according to the Interoperability Guidelines Version 3.4 Processor: Neuron® 3150®, 8 bits, 10 MHz Memory: Nonvolatile flash 64k (APB application), nonvolatile flash 128k (storage) Media Channel: TP/FT-10; 78 Kbps Communication: LonTalk® protocol Status Indicator: Green LED - power status and LON TX; Orange LED - service and LON RX Communication Jack: LON audio jack mono 1/8 in. (3.5 mm)
Enclosure	Material: ABS type PA-765A Dimensions (with screws): 5.7 x 4.7 x 2.0 in. (144.8 x 119.4 x 50.8 mm) Shipping Weight: 0.97 lb (0.44 kg)

Electromagnetic Compatibility	CE Emission: EN55022: 1998 class B (conducted and radiated)
	CE Immunity: EN61000-4-2:1995, level 3 in air
	        EN61000-4-2: 1995, level 2 by contact
	        EN61000-4-3: 1996, level 2
	        EN61000-4-4: 1995, level 2
	        EN61000-4-6: 1996, level 2
	        ENV 50204: 1995, level 2

Agency	UL Listed: UL916 Energy management equipment Material: UL94-5VA

Inputs	Quantity: 6 universal software configurable
	Input Types:
	  Digital: Dry Contact
	  Pulse: Dry Contact
	  Voltage: 0 to 10 VDC
	  Current: 0 to 20 mA with 249 ohm external resistor (wired in parallel), Accuracy: ±0.5%
	  Resistor Support:
	   Thermistor:
	     Type 2 and Type 3 10k ohm
	      Range: -40 to 150°C (-40 to 302°F)
	   Platinum:
	     PT1000 1k ohm
	     Range: -40 to 150°C (-40 to 302°F)
	     PT100: 100 ohm
	     Range: -40 to 135°C (-40 to 275°F)
	   Potentiometer:
	    Translation table configurable on several points, Accuracy: ±0.5%
	Input Resolution: 16-bit analog/digital converter

LX-PRG203-1 (Part 2 of 2)

Outputs	Quantity: 8

	5 Digital: 24 VAC Triac, digital (on/off) or PWM
	   0.75 A at 70°C; 158°F
	   1 A at 40°C; 104°F
	   PWM control: adjustable period from 2 seconds to 15 minutes

	3 Universal: 0-10 VDC, digital 0-12 VDC (on/off) or PWM
	   PWM control: adjustable period from 2 seconds to 15 minutes
	   20 mA maximum at 12 VDC (60°C; 140°F)
	   Auto reset fuse
	   Maximum load 600 ohm

	Output Resolution: 10-bit digital/analog converter

LX-PRG300-1 (Part 1 of 2)

Product Code	LX-PRG300-1
Power Requirement	Voltage: 24 VAC/DC; ±15%, 50/60 Hz, Class 2 Protection: 1.85 A auto-reset fuse Consumption: 5 VA Maximum Consumption: 18 VA
Ambient Conditions	Ambient Operating Temperature: 0 to 70°C (32 to 158°F) Ambient Storage Temperature: -20 to 70°C (-4 to 158°F) Ambient Relative Humidity: 0 to 90% noncondensing
General	LONMARK certified according to the Interoperability Guidelines Version 3.4 Processor: Neuron 3150, 8 bits, 10 MHz Memory: nonvolatile flash 64k (APB application), nonvolatile flash 128k (storage) Media Channel: TP/FT-10; 78 Kbps Communication: LonTalk protocol Clock: Real-time clock chip, CR2032 lithium battery (for clock) Status Indicator: Green LED - power status and LON TX; Orange LED - service and LON RX Communication Jack: LON audio jack mono 1/8 in. (3.5 mm)
Enclosure	Material: ABS type PA-765-A Dimensions: 5.7 x 4.7 x 2.0 in. (144.8 x 119.4 x 50.8 mm) Shipping Weight: 0.86 lb (0.39 kg)
Agency	UL Listed: UL916 Energy management equipment Material: UL94-5VA

Electromagnetic Compatibility	CE Emission: EN55022: 1998 class B (conducted and radiated)
	CE Immunity: EN61000-4-2:1995, level 3 in air
	              EN61000-4-2: 1995, level 2 by contact
	              EN61000-4-3: 1996, level 2
	              EN61000-4-4: 1995, level 2
	              EN61000-4-6: 1996, level 2
	              ENV 50204: 1995, level 2

LX-PRG300-1 (Part 2 of 2)

Inputs	Quantity: 10 universal software configurable
	Input Types:
	Digital: Dry Contact
	Pulse: Dry Contact
	Analog Voltage: 0 to 10 VDC, Accuracy: ±0.5%,
	Analog current: 4 to 20 mA with 249 ohm external resistor (wired in parallel), Accuracy: ±0.5%
	Resistor Support:
	Thermistor: Type 2, Type 3 10k ohm
	Range: -40 to 150°C (-40 to 302°F)
	Accuracy: ±0.5°C, ±0.9°F
	Platinum: RTD 1k ohm
	Range: -40 to 150°C (-40 to 302°F)
	Accuracy: ±1.0°C, ±1.8°F,
	PT100: 100 ohm
	Range: -40 to 135°C (-40 to 275°F)
	Accuracy: ±1.0°C, ±1.8°F
	Resolution: 0.1°C to 0.18°F (10k ohm to 100k ohm supported using translation table)
	Potentiometer:
	Translation table configurable on several points, Accuracy: ±0.5%
	Accuracy ±0.3% full scale
	Input Resolution: 16-bit analog/digital converter
Outputs	Quantity: 8 (software configurable)
	0 to 10 VDC, digital 0 to12 VDC (on/off) or PWM
	PWM output: adjustable period from 2 seconds to 15 minutes
	60 mA maximum at 12 VDC (60°C; 140°F)
	maximum load 200 ohm
	Auto-reset fuse: 60 mA at 60°C; 140°F, 100 mA at 20°C; 68°F
	Output Resolution: 10-bit digital/analog converter

LX-PRG410-1 and LX-PRG400-1 (Part 1 of 2)

Product Codes	LX-PRG410-1 and LX-PRG400-1
Power Requirement	Voltage: 24 VAC/DC; ±15%, 50/60 Hz, Class 2
	Protection: 2.5 A auto-reset fuse
	Consumption: 5 VA
	Maximum Consumption: 18 VA
	Power Supply: 15 VDC output used to power 4 to 20 mA inputs
Ambient Conditions	Ambient Operating Temperature: 0 to 70°C (32 to 158°F)
	Ambient Storage Temperature: -20 to 70°C (-4 to 158°F)
	Ambient Relative Humidity: 0 to 90% noncondensing
General	LONMARK certified according to the Interoperability Guidelines Version 3.4
	Processor: Neuron 3150, 8 bits, 10 MHz
	Memory: nonvolatile flash 64k (APB application), nonvolatile flash 128k (storage)
	Media Channel: TP/FT-10; 78 Kbps
	Communication: LonTalk protocol
	Clock: Real-time clock chip, CR2032 lithium battery (for clock)
	Status Indicator: Green LED - power status and LON TX; Orange LED - service and LON RX
	Communication Jack: LON audio jack mono 1/8 in. (3.5 mm)
Enclosure	Material: ABS type PA-765A
	Dimensions (with screws): 7.7 x 4.7 x 2.0 in. (195.6 x 119.4 x 50.8 mm)
	Shipping Weight: 1.17 lb (0.53 kg)

LX-PRG410-1 and LX-PRG400-1 (Part 2 of 2)

Agency	UL Listed: UL916 Energy management equipment
	Material: UL94-5VA
Electromagnetic Compatibility	CE Emission EN55022: 1998 class B (conducted and radiated)
	CE Immunity: EN61000-4-2:1995, level 3 in air
	EN61000-4-2: 1995, level 2 by contact
	EN61000-4-3: 1996, level 2
	EN61000-4-4: 1995, level 2
	EN61000-4-6: 1996, level 2
	ENV 50204: 1995, level 2
Inputs	Quantity: 12 universal software configurable
	Input Types:
	Digital: Dry Contact
	Pulse: Dry Contact
	Analog Voltage: 0 to 10 VDC, Accuracy: ±0.5%,
	Analog current: 4 to 20 mA with 249 ohm external resistor (wired in parallel), Accuracy: ±0.5%
	Resistor Support:
	Thermistor: Type 2, Type 3 10k ohm
	Range: -40 to 150°C (-40 to 302°F)
	Accuracy: ±0.5°C, ±0.9°F
	Platinum: RTD 1k ohm
	Range: -40 to 150°C (-40 to 302°F)
	Accuracy: ±1.0°C, ±1.8°F,
	PT100: 100 ohm
	Range: -40 to 135°C (-40 to 275°F)
	Accuracy: ±1.0°C, ±1.8°F
	Resolution: 0.1°C to 0.18°F (10k ohm to 100k ohm supported using translation table)
	Potentiometer:
	Translation table configurable on several points, Accuracy: ±0.5%
	Accuracy ±0.3% full scale
	Input Resolution: 16-bit analog/digital converter
Outputs	Quantity: 12 (software configurable)
	Analog 0 to10 VDC, digital 0 to12 VDC (on/off) or PWM
	PWM output: adjustable period from 2 seconds to 15 minutes
	60 mA maximum at 12 VDC (60°C; 140°F)
	maximum load 200 ohm
	Auto-reset fuse: 60 mA at 60°C; 140°F, 100 mA at 20°C; 68°F
	Output Resolution: 10-bit digital/analog converter

LX-PRG510-1 and LX-PRG500-1 Controllers (Part 1 of 2)

Product Codes	LX-PRG510-1 and LX-PRG500-1
Power Requirement	Voltage: 24 VAC/DC; ±15%, 50/60 Hz, Class 2
	Protection: 2.5 A removable fuse for triac when using the internal power supply
	Consumption: 5 VA
	Maximum Consumption: 18 VA
	Power Supply: 15 VDC output used to power 4 to 20 mA inputs
Ambient Conditions	Ambient Operating Temperature: 0 to 70°C (32 to 158°F)
	Ambient Storage Temperature: -20 to 70°C (-4 to 158°F)
	Ambient Relative Humidity: 0 to 90% noncondensing

LX-PRG510-1 and LX-PRG500-1 Controllers (Part 2 of 2)

General	LONMARK certified according to the Interoperability Guidelines Version 3.4
	Processor: Neuron 3150, 8 bits, 10 MHz
	Memory: nonvolatile flash 64k (APB application), nonvolatile flash 64k (storage)
	Media Channel: TP/FT-10; 78 Kbps
	Communication: LonTalk protocol
	Transceiver: FTX-1
Enclosure	Material: LEXAN® 500R (GE)
	Dimensions (with screws): 7.7 x 4.7 x 2.0 in. (195.6 x 119.4 x 50.8 mm)
	Shipping Weight: 1.17 lb (0.53 kg)
Agency	UL Listed: UL916 Energy management equipment
	Material: UL94-5VA
Electromagnetic Compatibility	CE Emission: EN55022: 1998 class B (conducted and radiated)
	CE Immunity: EN61000-4-2: 1995, level 3 in air
	EN61000-4-2: 1995, level 2 by contact
	EN61000-4-3: 1996, level 2
	EN61000-4-4: 1995, level 2
	EN61000-4-6: 1996, level 2
	ENV 50204: 1995, level 2
Inputs	Quantity: 12 universal software configurable
	Input Types:
	Digital: Dry Contact
	Pulse: Dry Contact
	Analog Voltage: 0 to 10 VDC, Accuracy: ±0.5%,
	Analog current: 4 to 20 mA with 249 ohm external resistor (wired in parallel), Accuracy: ±0.5%
	Resistor Support:
	Thermistor: Type 2, Type 3 10k ohm
	Range: -40 to 150°C (-40 to 302°F)
	Accuracy: ±0.5°C, ±0.9°F
	Platinum: RTD 1k ohm
	Range: -40 to 150°C (-40 to 302°F)
	Accuracy: ±1.0°C, ±1.8°F,
	PT100: 100 ohm
	Range: -40 to 135°C (-40 to 275°F)
	Accuracy: ±1.0°C, ±1.8°F
	Resolution: 0.1°C to 0.18°F (10k ohm to 100 K ohm supported using translation table)
	Potentiometer:
	Translation table configurable on several points, Accuracy: ±0.5%
	Accuracy ±0.3% full scale
	Input Resolution: 16-bit analog/digital converter
Outputs	Quantity: 12 (software configurable)
	Analog 0 to10 VDC, digital 0 to12 VDC (on/off) or PWM
	PWM output: adjustable period from 2 seconds to 15 minutes
	60 mA maximum at 12 VDC (60°C;140°F)
	maximum load 200 ohm
	Auto-reset fuse: 60 mA at 60°C; 140°F, 100 mA at 20°C; 68°F
	Output Resolution: 10-bit digital/analog converter

LX-PRG203-11 (Part 1 of 2)

Product Code	LX-PRG203-11
Power Requirement	**Voltage:** 24 VAC/DC; ±15%, 50/60 Hz, Class 2 **Protection:** 2.0 A user-replaceable fuse **Power Consumption:** 14 VA typical plus all output loads **Maximum Consumption:** 23 VA
Ambient Conditions	**Operating Temperature:** 0 to 50°C (32 to 122°F) **Storage Temperature:** -40 to 70°C (-40 to 158°F) **Relative Humidity:** 0 to 90% noncondensing
General	**Processor:** STM32 (ARM Cortex™ M3) MCU, 32 bit **Processor Speed:** 68 MHz **Memory:** 384 KB nonvolatile flash (applications), 1 MB nonvolatile flash (storage) 64 KB RAM **Media Channel:** TP/FT-10; 78 Kbps **Communication:** LonTalk® protocol **Status Indicator:** Green LED – power status and LON TX; Orange LED – service and LON RX **Communication Jack:** LON® mono audio jack **LONMARK® Interoperability:** Version 3.4 **Device Class:** SCC Generic #8500 **LONMARK Functional Profile (pending):** Input Objects: Open-Loop Sensor #1, Output Objects: Open - Loop Sensor #3, Node Object: #0, Real Time Clock: Real Time Keeper #3300, Scheduler: Scheduler #20020, Calendar: Calendar #20030, Programmable Device: Static Programmable Device #410, SCC Generic #8500
Enclosure	**Material:** ABS type PA-765A **Dimensions (with screws):** 5.7 x 4.7 x 2.0 in. (144.8 x 119.4 x 50.8 mm) **Shipping Weight:** 0.97 lb (0.44 kg)

Inputs	**Quantity:** 6
	LN Series Communicating Sensors: 4
	Input Types: universal software configurable
	   Voltage: 0 to 10 VDC (40k ohm input impedance)
	       0 to 5 VDC (high input impedance)
	   Current: 0 to 20 mA with 249 ohm external resistor (wired in parallel)
	   Digital: dry contact
	   Pulse: dry contact; 500 ms minimum On/Off
	Resistor: 0 to 350k ohms. All thermistor types that operate within this range are supported. The following temperature sensors are pre-configured:
	   Thermistor:
	     Type 2 and Type 3 10k ohm (10k ohm at 25°C [77°F])
	   Platinum:
	     PT1000 1k ohm (1k ohm at 0°C [32°F])
	   Nickel:
	     RTD Ni1000 (1k ohm at 0°C [32°F])
	     RTD Ni1000 (1k ohm at 21°C [69.8°F])
	   Input Resolution: 16-bit analog/digital converter
	Power Supply Output: 15 VDC; maximum 200 mA (6 inputs x 20 mA each)

Outputs	**Digital (Triac) Outputs:** 5
	Universal Outputs: 3
	Digital:
	24 VAC Triac, digital (on/off), floating, or PWM; software configurable
	0.5 A continuous
	1.0 A at 15% duty cycle for a 10-minute period
	PWM control: adjustable period from 2 seconds to 65 seconds
	Floating control: requires two consecutive outputs
	minimum plus on/off: 500 milliseconds
	adjustable drive time period
	External power supply
	Universal:
	Linear (0-10 VDC)
	Digital (on/off), PWM, or floating (0 to 12 VDC); software configurable; built-in snubbing diode to protect against back EMF, for example, when used with a 12 VDC relay
	PWM control: adjustable period from 2 seconds to 65 seconds
	Floating control:
	minimum plus on/off: 500 ms
	adjustable drive time period
	60 mA maximum at 12 VDC (60°C [140°F])
	Minimum load resistance 200 ohms
	Auto reset fuse
	60 mA at 60°C (140°F)
	100 mA at 20°C (68°F)
	Output Resolution: 10-bit digital/analog converter
LN Series Communicating Sensor	**Communication:** RS-485
	Number of Sensors per controller: up to 4, in daisy-chain configuration
	Cable: Cat 5e, 8 conductor twisted pair
	Connector: RJ-45
Electromagnetic Compatibility	**CE Emission:** EN61000-6-3: 2007 Generic standards for residential, commercial, and light-industrial environments (pending)
	CE Immunity: EN61000-6-1: 2007; Generic standards for residential, commercial, and light-industrial environments (pending)
	FCC: This device complies with FCC rules part 15, subpart B, class B (pending)
Compliance	**United States:**
	UL Listed: UL916 Energy management equipment
	Material[1]**:** UL94-5VA
	Canada:
	UL Listed: UL916 Energy management equipment
	Material[3]**:** UL94-5VA
C E	**Europe:** CE Mark – Johnson Controls, Inc., declares that the products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.

LX-PRG300-11 (Part 1 of 2)

Product Code	LX-PRG300-11
Power Requirement	**Voltage:** 24 VAC/DC; ±15%, 50/60 Hz, Class 2 **Protection:** 3.0 A auto-reset fuse **Power Consumption:** 16 VA typical, plus all external loads **Maximum Consumption:** 38 VA
Ambient Conditions	**Operating Temperature:** 0 to 50°C (32 to 122°F) **Storage Temperature:** -20 to 50°C (-4 to 122°F) **Relative Humidity:** 0 to 90%
General	**Processor:** STM32 (ARM Cortex™ M3) MCU, 32 bit **Processor Speed:** 72 MHz **Memory:** 1 MB nonvolatile flash (applications), 2 MB nonvolatile flash (storage) 96 KB RAM **Media Channel:** TP/FT-10; 78 Kbps **Communication:** LonTalk® protocol **Status Indicator:** Green LED – power status and LON TX; Orange LED – service and LON RX **Communication Jack:** LON® mono audio jack **LONMARK® Interoperability:** Version 3.4 **Device Class:** Static Programmable Device **LONMARK Functional Profile (pending):** Input Objects: Open-Loop Sensor #1, Output Objects: Open - Loop Sensor #3, Node Object: #0, Real Time Clock: Real Time Keeper #3300, Scheduler: Scheduler #20020, Calendar: Calendar #20030, Programmable Device: Static Programmable Device #410
Enclosure	**Material:** ABS type PA-765A **Dimensions (with screws):** 5.7 x 4.7 x 2.0 in. (144.8 x 119.4 x 50.8 mm) **Shipping Weight:** 0.97 lb (0.44 kg)

Inputs	**Number of Inputs:** 10
	LN Series Communicating Sensors: 12
	Input Types: universal software configurable
	  Voltage: 0 to 10 VDC (40k ohm input impedance)
	     0 to 5 VDC (high input impedance)
	  Current: 0 to 20 mA with 249 ohm external resistor (wired in parallel)
	  Digital: dry contact
	  Pulse: UI1 to UI4; 50 Hz maximum; minimum 10 ms On/10 ms off; SO output compatible; UI5 to UI10: 1 Hz maximum; Minimum 500 ms On 500 ms Off; dry contact
	Resistor: 0 to 350k ohms. All thermistor types that operate within this range are supported. The following temperature sensors are pre-configured:
	  Thermistor:
	    Type 2 and Type 3 10k ohm (10k ohm at 25°C [77°F])
	  Platinum:
	    PT1000 1k ohm (1k ohm at 0°C [32°F])
	  Nickel:
	    RTD Ni1000 (1k ohm at 0°C [32°F])
	    RTD Ni1000 (1k ohm at 21°C [69.8°F])
	  Input Resolution: 16-bit analog/digital converter
	Power Supply Output: 15 VDC; maximum 200 mA (10 inputs x 20 mA each)

LX-PRG300-11 (Part 2 of 2)

Outputs	**Universal Outputs:** 8
	Universal Output Characteristics:
	Linear (0-10 VDC)
	Digital (on/off), PWM, or floating (0 to 12 VDC); 0 to 20 mA (jumper configurable); software configurable; built-in snubbing diode to protect against back EMF (for example when used with a 12 VDC relay)
	PWM control: adjustable period from 2 seconds to 65 seconds
	Floating control:
	minimum plus on/off: 500 ms
	adjustable drive time period
	60 mA maximum at 12 VDC (60°C [140°F])
	Minimum load resistance: 200 ohms
	Auto reset fuse
	60 mA at 60°C (140°F)
	100 mA at 20°C (68°F)
	Output Resolution: 10-bit digital/analog converter
LN Series Communicating Sensor	**Communication:** RS-485
	Number of sensors per controller: up to 12, in daisy-chain configuration
	Cable: Cat 5e, 8 conductor twisted pair
	Connector: RJ-45
Electromagnetic Compatibility	**CE Emission:** EN61000-6-3: 2007 Generic standards for residential, commercial, and light-industrial environments (pending)
	CE Immunity: EN61000-6-1: 2007; Generic standards for residential, commercial, and light-industrial environments (pending)
	FCC: This device complies with FCC rules part 15, subpart B, class B (pending).
Compliance	**United States:**
	UL Listed: UL916 Energy management equipment
	Material[1]: UL94-5VA
	Canada:
	UL Listed: UL916 Energy management equipment
	Material[1]: UL94-5VA
$C\!E$	**Europe:** CE Mark – Johnson Controls, Inc., declares that the products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.

LX-PRG400-11 and LX-PRG410-11 (Part 1 of 2)

Product Codes	LX-PRG410-11 and LX-PRG400-11
Power Requirement	**Voltage:** 24 VAC/DC; ±15%, 50/60 Hz, Class 2 **Protection:** 3.0 A user-replaceable fuse **Power Consumption:** 22 VA typical plus all output loads **Maximum Consumption:** 60 VA
Ambient Conditions	**Operating Temperature:** 0 to 50°C (32 to 122°F) **Storage Temperature:** -20 to 50°C (-4 to 122°F) **Relative Humidity:** 0 to 90%
General	**Processor:** STM32 (ARM Cortex™ M3) MCU, 32 bit **Processor Speed:** 72 MHz **Memory:** 1 MB nonvolatile flash (applications), 2 MB nonvolatile flash (storage) 　　　96 KB RAM **Media Channel:** TP/FT-10; 78 Kbps **Communication:** LonTalk® protocol **Transceiver:** FT 5000 Free Topology Smart Transceiver **Status Indicator:** Green LED – power status and LON TX; Orange LED – service and LON RX **Communication Jack:** LON® mono audio jack **LonMark® Interoperability:** Version 3.4 **Device Class:** Static Programmable Device **LonMark Functional Profile:** Input Objects: Open-Loop Sensor #1, Output Objects: Open-Loop Sensor #3, Node Object: #0, Real Time Clock: Real Time Keeper #3300, Scheduler: Scheduler #20020, Calendar: Calendar #20030, Programmable Device: Static Programmable Device #410
Enclosure	**Material:** FR/ABS **Dimensions (with screws):** 5.7 x 4.7 x 2.0 in. (144.8 x 119.4 x 50.8 mm) **Shipping Weight:** 0.97 lb (0.44 kg)
Inputs	**Quantity:** 12 **LN Series Communicating Sensors:** 12 **Input Types:** universal software configurable 　Voltage: 0 to 10 VDC (40k ohm input impedance) 　　　　0 to 5 VDC (high input impedance) 　Current: 0 to 20 mA with 249 ohm jumper configurable internal resistor 　Digital: dry contact 　Pulse: UI1 to UI4; 50 Hz maximum; Minimum 10 ms On/10 ms Off, SO output compatible; UI5 to UI12: 1 Hz maximum; Minimum 500 ms On/500 ms Off, dry contact **Resistor:** 0 to 350k ohms. All thermistor types that operate within this range are supported. The following temperature sensors are pre-configured: 　Thermistor: 　　Type 2 and Type 3 10k ohm (10k ohm at 25°C [77°F]) 　Platinum: 　　PT1000 1k ohm (1k ohm at 0°C [32°F]) 　Nickel: 　　RTD Ni1000 (1k ohm at 0°C [32°F]) 　　RTD Ni1000 (1k ohm at 21°C [69.8°F]) 　Input Resolution: 16-bit analog/digital converter **Power Supply Output:** 15 VDC; maximum 200 mA (16 inputs x 20 mA each)

LX-PRG400-11 and LX-PRG410-11 (Part 2 of 2)

Outputs	**Universal Outputs:** 12
	Universal Output Characteristics:
	0 to 10 VDC linear; digital (on/off), PWM, or floating (0 to 12 VDC)
	0 to 20 mA (jumper configurable); software configurable.
	Built-in snubbing diode to protect against back EMF (for example, when used with a 12 VDC relay).
	Hand-Off-Auto (HOA) switch (LX-PRG410-11), hand position potentiometer range 0 to 12.5 VDC
	PWM control: adjustable period from 2 to 65 seconds
	Floating control:
	minimum plus on/off: 500 ms
	adjustable drive time period
	60 mA maximum at 12 VDC (60°C; 140°F)
	Load Resistance: minimum resistance 200 ohms for 0 to 10 VDC and 0 to 12 VDC, maximum 500 ohm for 0 to 20 mA output
	Auto reset fuse
	60 mA at 60°C (140°F)
	100 mA at 20°C (68°F)
	Output Resolution: 10-bit digital/analog converter
LN Series Communicating Sensor	**Communication:** RS-485
	Number of sensors per controller: up to 12, in daisy-chain configuration
	Cable: Cat 5e, 8 conductor twisted pair
	Connector: RJ-45
Electromagnetic Compatibility	**CE Emission:** EN61000-6-3: 2007; Generic standards for residential, commercial, and light-industrial environments (pending)
	CE Immunity: EN61000-6-1: 2007; Generic standards for residential, commercial, and light-industrial environments (pending)
	FCC: This device complies with FCC rules part 15, subpart B, class B (pending)
Compliance	**United States:** UL Listed: UL916 Energy management equipment Material[1]: UL94-5VA
	Canada: UL Listed: UL916 Energy management equipment Material[1]: UL94-5VA
$C\epsilon$	**Europe:** CE Mark – Johnson Controls, Inc., declares that the products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive

Product Codes	LX-PRG610-11 and LX-PRG600-11
Power Requirement	**Voltage:** 24 VAC/DC; ±15%, 50/60 Hz, Class 2 **Protection:** 3.0 A user-replaceable fuse **Power Consumption:** 22 VA typical plus all output loads **Maximum Consumption:** 60 VA
Ambient Conditions	**Operating Temperature:** 0 to 50°C (32 to 122°F) **Storage Temperature:** -20 to 50°C (-4 to 122°F) **Relative Humidity:** 0 to 90%
General	**Processor:** STM32 (ARM Cortex™ M3) MCU, 32 bit **Processor Speed:** 72 MHz **Memory:** 1 MB nonvolatile flash (applications), 2 MB nonvolatile flash (storage) 96 KB RAM **Media Channel:** TP/FT-10; 78 Kbps **Communication:** LonTalk® protocol **Transceiver:** FT 5000 Free Topology Smart Transceiver **Status Indicator:** Green LED - power status and LON TX; Orange LED - service and LON RX **Communication Jack:** LON® mono audio jack **LONMARK® Interoperability:** Version 3.4 **Device Class:** Static Programmable Device **LONMARK Functional Profile:** Input Objects: Open-Loop Sensor #1, Output Objects: Open-Loop Sensor #3, Node Object: #0, Real Time Clock: Real Time Keeper #3300, Scheduler: Scheduler #20020, Calendar: Calendar #20030, Programmable Device: Static Programmable Device #410
Enclosure	**Material:** FR/ABS **Dimensions (with screws):** 7.7 x 4.7 x 2.0 in. (195.6 x 119.4 x 50.8 mm) **Shipping Weight:** 1.17 lb (0.53 kg)

Inputs	**Input Types:** universal software configurable
	  Voltage: 0 to 10 VDC (40k ohm input impedance)
	         0 to 5 VDC (high input impedance)
	  Current: 0 to 20 mA with 249 ohm jumper configurable internal resistor
	  Digital: dry contact
	  Pulse: UI1 to UI4; 50 Hz maximum; Minimum 10 ms On/10 ms Off, SO output compatible; UI5 to UI12: 1 Hz maximum; Minimum 500 ms On/500 ms Off, dry contact
	Resistor: 0 to 350k ohms. All thermistor types that operate within this range are supported. The following temperature sensors are pre-configured:
	  Thermistor:
	    Type 2 and Type 3 10k ohm (10k ohm at 25°C [77°F])
	  Platinum:
	    PT1000 1k ohm (1k ohm at 0°C [32°F])
	  Nickel:
	    RTD Ni1000 (1k ohm at 0°C [32°F])
	    RTD Ni1000 (1k ohm at 21°C [69.8°F])
	  Input Resolution: 16-bit analog/digital converter
	Power Supply Output: 15 VDC; maximum 200 mA (16 inputs x 20 mA each)

Outputs	**Universal:** 0 to 10 VDC linear; digital (on/off), PWM, or floating (0 to 12 VDC)
	0 to 20 mA (jumper configurable); software configurable.
	Built-in snubbing diode to protect against back EMF (for example, when used with a 12 VDC relay)
	PWM control: adjustable period from 2 to 65 seconds
	Floating control:
	minimum plus on/off: 500 ms
	adjustable drive time period
	HOA, Hand-Off-Auto switch (when equipped), hand position potentiometer range 0 to 12.5 VDC
	60 mA maximum at 12 VDC (60°C; 140°F)
	Load Resistance: minimum resistance 200 ohms for 0 to 10 VDC and 0 to 12 VDC, maximum 500 ohm for 0 to 20 mA output
	Auto reset fuse:
	60 mA at 60°C (140°F)
	100 mA at 20°C (68°F)
	Output Resolution: 10-bit digital/analog converter
LN Series Communicating Sensors	**Communication:** RS-485
	Number of sensors per controller: up to 12, in daisy-chain configuration
	Cable: Cat 5e, 8 conductor twisted pair
	Connector: RJ-45
Electromagnetic Compatibility	**CE Emission:** EN61000-6-3: 2007; Generic standards for residential, commercial, and light-industrial environments (pending)
	CE Immunity: EN61000-6-1: 2007; Generic standards for residential, commercial, and light-industrial environments (pending)
	FCC: This device complies with FCC rules part 15, subpart B, class B (pending).
Compliance	**United States:**
	UL Listed: UL916 Energy management equipment
	Material[1]: UL94-5VA
	Canada:
	UL Listed: UL916 Energy management equipment
	Material[1]**:** UL94-5VA
C E	**Europe:** CE Mark – Johnson Controls, Inc., declares that the products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls® office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

North American Emissions Compliance

United States Emissions Compliance

Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Emissions Compliance

Industry Canada Statement

The term **IC** *before the certification/registration number only signifies that the Industry Canada technical specifications were met.*

Le terme « IC » précédant le numéro d'accréditation/inscription signifie simplement que le produit est conforme aux spécifications techniques d'Industry Canada.