CiA Draft Standard Proposal 417-2

Application Profile for Lift Control Systems

Part 2: Virtual device definitions

This is a draft standard proposal and may be changed without notification.

Version 1.0.1

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HISTORY

Date	Changes
2003-02-26	added objects with their appropriate input and output description
2003-04-10	added objects with their appropriate input and output description
2003-04-14	wording corrected
2003-04-19	final preperation
2003-05-15	change version numbering

CONTENTS

1 Scope

This part of the application profile defines the virtual devices and the assignment of application objects that are supported by a particular virtual device.

2 Normative references

The normative references given in part 1 one shall apply also for part 2.

3 Definitions, acronyms and abbreviations

The definitions, acronyms and abbreviations given in part 1 shall also apply for part 2.

4 Virtual device definitions

4.1 Introduction

A physical CANopen device compliant to this application profile consists of one or more virtual devices. A virtual device shall not be distributed to several physical devices. Each virtual device supports a set of mandatory application objects and may implement additionally a variable set of optional application objects. Physical devices will not be defined, because they may implement multiple functions.

The virtual device implements different application objects, some shall be supported (*M*andatory) and some may be supported (*O*ptional). In the virtual device description, there is defined the access attribute indicating if an application object is read only (*ro*), read/write (*rw*) or write only (*wo*). Read only indicates that this shall not be written via the bus; read/write allows to read and to write this object; and write only means that this application object shall be not read via the bus.

4.2 Call controller

The call controller virtual device receives all call requests from the panel virtual devices, and transmits the corresponding acknowledgements to the panel virtual devices. In addition, the call controller sends commands to the car drive controller to move the car and the car door controller to control the doors. When the call controller, the car drive controller, and the car door controller are implemented on the very same physical device, the communication between these virtual devices may be handled locally.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6010_h	Virtual input mapping	M	rw
6011_h	Virtual output mapping	M	ro
6012_h	Virtual sensor mapping	O	rw
6302_h	Door position	O	rw
6383_h	Position value	M	rw
6390_h	Speed value car	O	rw
6391_h	Acceleration value car	O	rw

4.3 Input panel unit

The input panel unit virtual device may be installed as in-car call panel or as floor call panel. The panel virtual device transmits user requests.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6100_h	Input group 1	M	ro
6101_h	Input group 2	O	ro
:::::	::::::	:::::	:::::
$611F_h$	Input group 32	O	ro
6120_h	Parameter 1 group 1	M	rw
6121_h	Parameter 1 group 2	O	rw
:::::	:::::	:::::	:::::
$613F_h$	Parameter 1 group 32	O	rw
6140_h	Parameter 2 group 1	M	rw
6141_h	Parameter 2 group 2	O	rw
:::::	:::::	:::::	:::::
$615F_h$	Parameter 2 group 32	O	rw
6160_h	Parameter 3 group 1	M	rw
6161_h	Parameter 3 group 2	O	rw
:::::	:::::	:::::	:::::
$617F_h$	Parameter 3 group 32	O	rw
6180_h	Parameter 4 group 32	O	rw
:::::	:::::	:::::	:::::
$619F_h$	Parameter 4 group 32	O	rw

4.4 Output panel unit

The output display unit virtual device may be installed as in-car panel or as floor panel. The output panel unit can be a display device that shows car position as well as direction and may announce acoustically the incoming car as well as the input panel that receives the acknowledgements for its call requests.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6200_h	Output group 1	M	rw
6201_h	Output group 2	O	rw
:::::	:::::	:::::	:::::
$621F_h$	Output group 32	O	rw
6220_h	Parameter 1 group 1	M	rw
6221_h	Parameter 1 group 2	O	rw
:::::	:::::	:::::	:::::
$623F_h$	Parameter 1 group 32	O	rw
6240_h	Parameter 2 group 1	M	rw
6241_h	Parameter 2 group 2	O	rw

Index	Name	M/O	Access
:::::	:::::	:::::	:::::
$625F_h$	Parameter 2 group 32	O	rw
6260_h	Parameter 3 group 1	M	rw
6261_h	Parameter 3 group 2	O	rw
:::::	:::::	:::::	:::::
$627F_h$	Parameter 3 group 32	O	rw
6280_h	Parameter 4 group 1	M	rw
6281_h	Parameter 4 group 2	O	rw
:::::	:::::	:::::	:::::
$629F_h$	Parameter 4 group 32	O	rw

4.5 Car door controller

The car door controller virtual device transmits commands to the car door unit virtual device and receives status information from the car door unit virtual device and light barrier unit.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6300_h	Door controlword	M	ro
6301_h	Door statusword	M	rw
6302_h	Door position	O	rw
6310_h	Light barrier status	O	rw

4.6 Car door unit

The car door unit virtual device opens and closes the car door.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6300_h	Door controlword	M	rw
6301_h	Door statusword	M	ro
6302_h	Door position	O	ro
6303_h	Door configuration	M	rw
6310_h	Ligth barrier status	O	rw

4.7 Light barrier unit

The light barrier unit virtual device detects subjects and objects entering the protected area of the car door unit.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6310_h	Ligth barrier status	M	ro

4.8 Car position unit

The car position unit virtual device measures the actual position of the car and may additional values like speed and acceleration mainly required by the car drive controller.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6380_h	Operating parameter	M	rw
6381_h	Measuring units per revolution	O	rw
6382_h	Preset value	O	rw
6383_h	Position value	M	ro
6384_h	Encoder measuring step settings	O	rw
6390_h	Speed value car	O	ro
6391_h	Acceleration value car	O	ro
$63A0_h$	CAM state register	O	ro
$63A1_h$	CAM enable register	O	rw
$63A2_h$	CAM polarity register	O	rw
$63B0_h$	Area state register	O	ro
$63B1_h$	Work area lowlimit	O	rw
$63B2_h$	Work area highlimit	O	rw
$63C0_h$	Operating status	M	ro
$63C1_h$	Single turn resolution	M	ro
$63C2_h$	Number of distinguishable revolutions	M	ro
$63C3_h$	Alarms and warnings	O	ro
$63C4_h$	Supported alarms and warnings	O	ro
$63C8_h$	Operating time	O	ro
$63C9_h$	Offset value	O	ro
$63CF_h$	Module identification	O	ro

4.9 Car drive controller

The car drive controller virtual device transmits commands to the car drive unit virtual device and receives status information from the car drive unit virtual device, car position unit, and load measuring unit.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6302_h	Door position	O	rw
6383_h	Position value	M	rw
6390_h	Speed value car	O	rw
6391_h	Acceleration value car	O	rw
6400_h	Controlword	M	ro
6401_h	Statusword	M	rw

Index	Name	M/O	Access
6406_h	Control effort	O	rw
6420_h	Target position	O	ro
6430_h	Target velocity	O	ro
6433_h	Velocity actual value	O	rw
6480_h	Load value	O	rw
6482_h	Load signaling	O	rw

4.10 Car drive unit

The car drive unit virtual device moves the car.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6383_h	Position value	M	rw
6400_h	Controlword	M	rw
6401_h	Statusword	M	ro
6402h	Control option codes	O	rw
6403_h	Modes of operation	M	rw
6404_h	Modes of operation display	M	ro
6405_h	Motion profile type	M	rw
6406_h	Control effort	O	ro
6408_h	Max velocity and speed	O	-
6409_h	Max acceleration and deceleration	M	rw
$640C_h$	Quick stop deceleration	M	rw
$640B_h$	Profile acceleration and deceleration	O	rw
$640C_h$	Profile jerk use	O	rw
$640D_h$	Profile jerk	O	rw
$640F_h$	Motor data	O	ro
6410_h	Position dimension	O	rw
6411_h	Velocity dimension	O	rw
6412_h	Acceleration dimension	O	rw
6413_h	Jerk dimension	O	rw
6414_h	Position encoder resolution	O	rw
6415_h	Velocity encoder resolution	O	rw
6416_h	Gear ratio	O	rw
6417_h	Feed constant	O	rw
6418_h	Position factor	O	rw
6419_h	Velocity encoder factor	O	rw
$641A_h$	Velocity factor 1	O	rw
$641B_h$	Velocity factor 2	O	rw

Index	Name	M/O	Access
$641C_h$	Acceleration factor	O	rw
$641D_h$	Jerk factor	O	rw
$641E_h$	Polarity	O	rw
6420_h	Target position	O	rw
6421_h	Position range limit	O	rw
6422_h	Software position limit	O	rw
6423_h	Profile velocity	O	rw
6424_h	End velocity	O	rw
6428_h	Home offset	O	rw
6429_h	Home method	O	rw
$642A_h$	Homing speed	O	rw
$642B_h$	Homing acceleration	O	rw
6430_h	Target velocity	O	rw
6431_h	Velocity sensor actual value	O	ro
6432_h	Velocity demand value	O	ro
6433_h	Velocity actual value	O	ro
6434_h	Sensor selection code	O	rw
6435_h	Velocity window	O	rw
6436_h	Velocity threshold	O	rw
6437_h	Max slippage	O	rw
6438_h	Velocity control parameter set	O	rw
6480_h	Load value	O	rw
6482_h	Load signaling	O	rw

4.11 Load measuring unit

The load measuring unit virtual device detects the load of the car and signals certain situations like normal load, full load, and overload.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6001_h	Lift number	M	rw
6480_h	Load value	M	-
6481_h	Load limits	M	rw
6482_h	Load signaling	M	-
6483_h	Load signaling limits	M	rw
6484_h	Rope load	O	ro
6485_h	Load measuring system configuration	M	rw

4.12 Sensor unit

The sensor unit virtual device detects certain sensor values and signals that like smoke detectors or glas detectes.

All objects used by this virtual device are listed as follows:

Index	Name	M/O	Access
6500_h	Sensor group 1	M	ro
6501_h	Sensor group 2	O	ro
:::::	::::::	:::::	:::::
$651F_h$	Sensor group 32	O	ro
6520_h	Sensor parameter 1 group 1	M	rw
6521_h	Sensor parameter 1 group 2	O	rw
:::::	:::::	:::::	:::::
$653F_h$	Sensor parameter 1 group 32	O	rw
6540_h	Sensor parameter 2 group 1	M	rw
6541_h	Sensor parameter 2 group 2	O	rw
:::::	:::::	:::::	:::::
$655F_h$	Sensor parameter 2 group 32	O	rw
6560_h	Sensor parameter 3 group 1	M	rw
6561_h	Sensor parameter 3 group 2	O	rw
:::::	:::::	:::::	:::::
$657F_h$	Sensor parameter 3 group 32	O	rw