PowerKey Pro
CANopen user manual

PowerKey Pro 2200

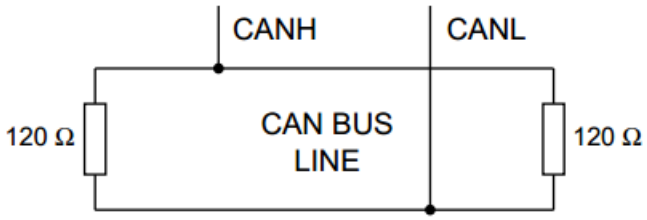
PowerKey Pro 2400

PowerKey Pro 2600

Summary:

1. How to connect Deutsch 4 pin:

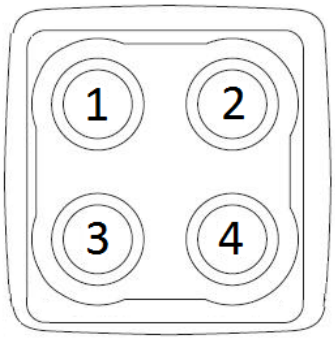
PIN	COLOUR	FUNCTION
1	Blue	CAN L
2	White	CAN H
3	Black	Negative battery
4	Red	Vbatt. (12-24V)

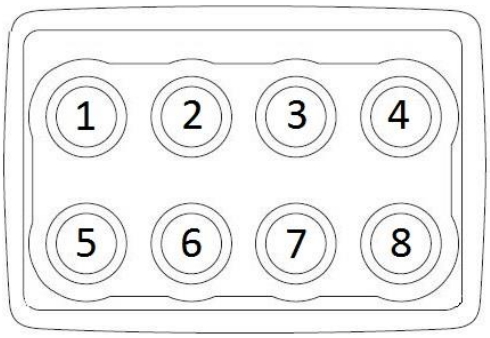


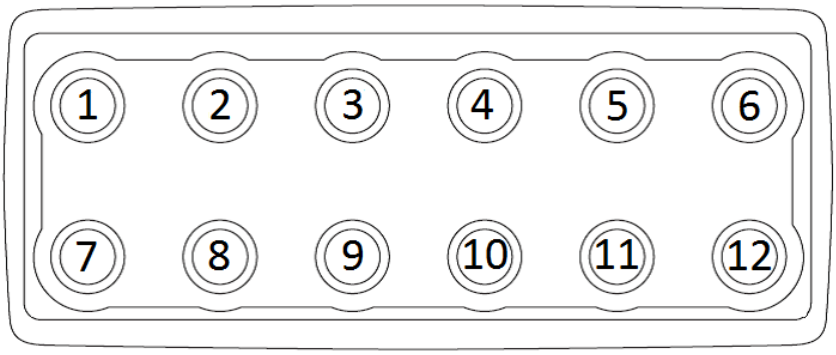
Each end of the CAN bus is terminated with 120Ω resistors in compliance with the standard to minimize signal reflections on the bus. You may need to place a 120Ω resistor between CAN-L and CAN-H.

2. Reference

Front view.







3. Default settings

Setting	Default status or level	How to change
Baud Rate	125 kbit/s	Object 6500h
CANopen Node ID	15h	Object 6500h
CANopen Node Status	Stop	NMT Message Start CANopen node
Key Brightness	3Fh (Maximum Brightness)	Object 6500h
Backlight Brightness	00h (OFF)	Object 6500h
Startup LED Light Show	Complete LED Sequence	Object 6500h
Periodic Message Transmission	Disable	Object 6500h
DEMO mode	Disable	Object 6500h
Heartbeat Message	Disable	Object 1017h
Boot-up service	Active	Object 6500h

NMT MESSAGES

The Network Management messages follow a master-slave structure. Through NMT services, CANopen devices are initialized, started, reset or stopped. All CANopen devices are regarded as NMT slaves. NMT messages have CAN-ID always equal to 00h.

4. Start CANopen node (keypad activation message)

Identifier	00h	
Byte 0	01h	Start CANopen node
Byte 1	XXh	Keypad CAN ID 00h: start all the keypads 15h: start the keypad with CAN ID = 15h.
Byte 2, 7	00h	Not used

Example:

Direction	Identifier	Format	Message
To Keypad	0	Std	01 15

5. Enter pre-operational

Identifier	00h	
Byte 0	80h	Enter pre-operational
Byte 1	XXh	Keypad CAN ID 00h: enter all the keypads 15h: enter the keypad with CAN ID = 15h.
Byte 2, 7	00h	Not used

Example:

Direction	Identifier	Format	Message
To Keypad	0	Std	80 15

6. Reset CANopen node

Identifier	00h	
Byte 0	81h	Reset CANopen node
Byte 1	XXh	Keypad CAN ID 00h: reset all the keypads 15h: reset the keypad with CAN ID = 15h.
Byte 2, 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**
To Keypad	0	Std	81 15

7. Stop CANopen node

Identifier	00h	
Byte 0	XXh	02h: Stop CANopen node
		00h: Stop CANopen node (old sw compatibility)
Byte 1	YYh	Keypad CAN ID 00h: stop all the keypads 15h: stop the keypad with CAN ID = 15h.
Byte 2, 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**
To Keypad	0	Std	02 15

8. Boot-up service

This service is used to signal that a NMT slave has entered the NMT state Pre-operational.

Identifier	700h + current CAN ID	Default 715h
Byte 0	00h	One data byte is transmitted with value 0.

Example:

Direction	**Identifier**	**Format**	**Message**
From Keypad	715h	Std	00h

The keypad with CAN ID 15h has entered the NMT state Pre-operational.

9. Heartbeat message

The heartbeat mechanism for a CANopen device is established by cyclically transmitting the heartbeat message by the heartbeat producer. One or more CANopen devices in the network are aware of this heartbeat message. If the heartbeat cycle fails for the heartbeat producer the local application on the heartbeat consumer will be informed about that event.

If a CANopen device starts with a value for the heartbeat producer time unequal to 0 the boot-up message is regarded as first heartbeat message.

Identifier	700h + current CAN ID	Default 715h
Byte 0	XXh	XXh :State of heartbeat producer 00h: Boot-up 05h: Operational 7Fh: Pre-operational

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
From Keypad	715h	Std	00h	Boot up
From Keypad	715h	Std	7Fh	Pre-operational
To keypad	00h	Std	01h 15h	Start keypad with CAN id =15h
From Keypad	715h	Std	05h	Operational

PDO messages

PDO (Process Data Object) are fast telegram messages that can simply manage most important functions. There are no answers for this kind of messages. Each PDO message has an equivalent Service Data Object message.

10. Keys status message

The keypad must be activated, see NMT Start CANopen Node message.

- **PKP 2200**

Identifier	180 + current CAN ID	Default 195h
Byte 0	Keys from #1 to #4 0 0 0 0 - K4 K3 K2 K1	Keys: 1=on; 0=off
Byte 1, 3	00h	Not used
Byte 4	XXh	Tick Timer

Examples:

Direction	Identifier	Format	Message	Key state
From Keypad	195	Std	00 00 00 00 XX	No key pressed
From Keypad	195	Std	04 00 00 00 XX	Key #3 pressed
From Keypad	195	Std	02 00 00 00 XX	Key #2 pressed
From Keypad	195	Std	05 00 00 00 XX	Keys #1 and #3 pressed

- **PKP 2400**

Identifier	180 + current CAN ID	Default 195h
Byte 0	Keys from #1 to #8 K8 K7 K6 K5 - K4 K3 K2 K1	Keys: 1= on; 0= off
Byte 1, 3	00h	Not used
Byte 4	XXh	Tick Timer

Examples:

Direction	Identifier	Format	Message	Key state
From Keypad	195	Std	00 00 00 00 XX	No key pressed
From Keypad	195	Std	01 00 00 00 XX	Key #1 pressed
From Keypad	195	Std	02 00 00 00 XX	Key #2 pressed
From Keypad	195	Std	42 00 00 00 XX	Keys #7 and #2 pressed

- **PKP 2600**

Identifier	180 + current CAN ID	Default 195h
Byte 0	Keys from #1 to #8 K8 K7 K6 K5 - K4 K3 K2 K1	Keys: 1= on; 0= off
Byte 1	Keys from #9 to #12 0 0 0 0 – K12 K11 K10 K9	Keys: 1= on; 0= off
Byte 2, 3	00h	Not used
Byte 4	XXh	Tick Timer

Examples:

Direction	Identifier	Format	Data	Key state
From Keypad	195	Std	00 00 00 00 XX	No key pressed
From Keypad	195	Std	01 00 00 00 XX	Key #1 pressed
From Keypad	195	Std	08 00 00 00 XX	Key #4 pressed
From Keypad	195	Std	09 00 00 00 XX	Key #1 and #4 pressed
From Keypad	195	Std	00 0C 00 00 XX	Key #11 and #12 pressed

11. Set LED ON message

- ### PKP 2200

Identifier	200 + current CAN ID	Default 215h
Byte 0	G4 G3 G2 G1 – R4 R3 R2 R1	Green and Red LED
Byte 1,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	LED
To Keypad	215	Std	00 00 00 00 00 00 00 00	Turn off all the LED
To Keypad	215	Std	01 00 00 00 00 00 00 00	Only red LED #1 on
To Keypad	215	Std	03 00 00 00 00 00 00 00	Red LED #1 and # 2 on, other LED off
To Keypad	215	Std	80 00 00 00 00 00 00 00	Only green LED #4 on

- ### PKP 2400

Identifier	200 + current CAN ID	Default 215h
Byte 0	R8 R7 R6 R5 - R4 R3 R2 R1	Red LED
Byte 1	G8 G7 G6 G5 - G4 G3 G2 G1	Green LED
Byte 2,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	LED
To Keypad	215	Std	00 00 00 00 00 00 00 00	Turn off all the LED
To Keypad	215	Std	01 00 00 00 00 00 00 00	Only red LED #1 on
To Keypad	215	Std	42 00 00 00 00 00 00 00	Red LED #2 and #7 on, other LED off
To Keypad	215	Std	80 00 00 00 00 00 00 00	Only red LED #8 on
To Keypad	215	Std	00 10 00 00 00 00 00 00	Only green LED #5 on
To Keypad	215	Std	00 11 00 00 00 00 00 00	Green LED #1 and #5 on, other LED off

- ### PKP 2600

Identifier	200 + current CAN ID	Default 215h
Byte 0	R8 R7 R6 R5 - R4 R3 R2 R1	Red LED
Byte 1	G4 G3 G2 G1 – R12 R11 R10 R9	Green and Red LED
Byte 2	G12 G11 G10 G9 – G8 G7 G6 G5	Green LED
Byte 3,7	00h	Not used

Examples:

Direction	Identifier	Format	Data	LED
To Keypad	215	Std	00 00 00 00 00 00 00 00	Turn off all the LED
To Keypad	215	Std	01 00 00 00 00 00 00 00	Only red #1 LED on
To Keypad	215	Std	42 00 00 00 00 00 00 00	Red LED #2,#7 on, other LED off
To Keypad	215	Std	00 00 01 00 00 00 00 00	Green LED #5 on, other LED off
To Keypad	215	Std	00 10 00 00 00 00 00 00	Only green LED #1 on
To Keypad	215	Std	00 11 00 00 00 00 00 00	Green LED #1 and red LED#9 on ,other LED off

12. Set LED Blink message

Note: if the blink message is sent when the LED is already ON, the LED blinks in alternate mode.

- **PKP 2200**

Identifier	300 + current CAN ID	Default 315h
Byte 0	G4 G3 G2 G1 – R4 R3 R2 R1	Green and Red LED
Byte 1,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	LED
To Keypad	315	Std	00 00 00 00 00 00 00 00	No LED blinks
To Keypad	315	Std	01 00 00 00 00 00 00 00	Only red LED #1 blinks
To Keypad	315	Std	02 00 00 00 00 00 00 00	Only red LED #2 blinks
To Keypad	315	Std	80 00 00 00 00 00 00 00	Only green LED #4 blinks

- **PKP 2400**

Identifier	300 + current CAN ID	Default 315h
Byte 0	R8 R7 R6 R5 - R4 R3 R2 R1	Red LED
Byte 1	G8 G7 G6 G5 - G4 G3 G2 G1	Green LED
Byte 2,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	LED
To Keypad	315	Std	00 00 00 00 00 00 00 00	No LED blinks
To Keypad	315	Std	01 00 00 00 00 00 00 00	Only red LED #1blinks
To Keypad	315	Std	42 00 00 00 00 00 00 00	Only red LED #2 and #7 blink
To Keypad	315	Std	80 00 00 00 00 00 00 00	Only red LED #8 blinks
To Keypad	315	Std	00 10 00 00 00 00 00 00	Only green LED #5 blinks
To Keypad	315	Std	00 11 00 00 00 00 00 00	Only green LED #1 and #5 blink.

- **PKP 2600**

Identifier	300 + current CAN ID	Default 315h
Byte 0	R8 R7 R6 R5 - R4 R3 R2 R1	Red LED
Byte 1	G4 G3 G2 G1 – R12 R11 R10 R9	Green and Red LED
Byte 2	G12 G11 G10 G9 – G8 G7 G6 G5	Green LED
Byte 3,7	00h	Not used

Examples:

Direction	Identifier	Format	Data	LED
To Keypad	315	Std	00 00 00 00 00 00 00 00	No LED blinks
To Keypad	315	Std	01 00 00 00 00 00 00 00	Only red LED #1 blinks
To Keypad	315	Std	42 00 00 00 00 00 00 00	Only red LED #2 and #7 blinks
To Keypad	315	Std	00 00 01 00 00 00 00 00	Only green LED #5 blink
To Keypad	315	Std	00 10 00 00 00 00 00 00	Only green LED #1 blink
To Keypad	315	Std	00 11 00 00 00 00 00 00	Only green LED #1 and red LED #9 blink

SDO Messages:

A SDO (Service Data Object) is providing direct access to object entries of a CANopen device's object dictionary.

13. Object 6500h: Command Module

a) Set single LED state: 01h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	01h	Command: Set single LED state
Byte 5	XXh	Key Number (01-04h) for PKP 2200
		Key Number (01-08h) for PKP 2400
		Key Number (01-0Ch) for PKP 2600
Byte 6	00h	OFF
	01h – 03h	RED: 01h on; 02h blink; 03h alt blink
	04h – 06h	GREEN: 04h on; 05h blink; 06h alt blink
	07h – 09h	AMBER: 07h on; 08h blink; 09h alt blink
	0Ah	RED/GREEN blink 0Ah
	0Ch	AMBER/RED blink 0Ch
	0Eh	GREEN/AMBER blink 0Eh
Byte 7	00h	Not used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 00 65 01 01 08 01 00	Switch on LED #8 red
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	
To Keypad	615	Std	23 00 65 01 01 09 04 00	Switch on LED #9 green
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

b) Set LED brightness level: 02h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	02h	Command: Set LED brightness
Byte 5	XXh	Intensity 00h-3Fh→ 0-100%
Byte 6,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 00 65 01 02 10 00 00	Brightness = 25%
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

c) Set backlight brightness level: 03h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	03h	Command: Set backlight brightness
Byte 5	XXh	Intensity 00h-3Fh→ 0-100%
Byte 6,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 00 65 01 03 2F 00 00	Backlight brightness = 75%
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

d) Set device active on startup: 10h

If keypad is active on startup don't need Start command from host

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	10h	Command: Set device active on startup
Byte 5	XXh	00h: Not active
		01h: Active
Byte 6,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 00 65 01 10 01 00 00	Set device active on startup
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

e) Set device baud rate: 11h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	11h	Command: Set baud rate
Byte 5	XXh	00h: 125k (default)
		01h: 250k
		02h: 500k
Byte 6,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 00 65 01 11 01 00 00	Baud rate = 250k
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

f) Set periodic transmission: 12h

Note: the keypad must be activated, see NMT messages.

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	12h	Command: Set periodic messages
Byte 5	XXh	00h: off; 01h: on
Byte 6	YYh	Period in milliseconds *10
Byte 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 00 65 01 12 01 32 00	Period = 500 ms
Keypad Reply	195	Std	60 00 65 01 00 00 00 00	

g) Set Boot-up service: 13h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	13h	Command: Set Boot-up service
Byte 5	XXh	00h: Not active
		01h: Active
Byte 6,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 00 65 01 13 00 00 00	Set Boot-up service not active
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

h) Set CANopen node ID: 70h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	70h	Command: Set CAN ID
Byte 5	XXh	New ID (00h-7Fh), default 15h
Byte 6,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 00 65 01 70 18 00 00	New Id = 18
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

The first reply is with old identifier.

i) Set default startup LED light level: 7Ch

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	7Ch	Command: Set startup LED level
Byte 5	XXh	0-3Fh → 0-100%
Byte 6,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Data**	
To Keypad	615	Std	23 00 65 01 7C 3F 00 00	100%
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

j) Set default startup backlight level: 7Bh

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	7Bh	Command: Set backlight level
Byte 5	XXh	0-3Fh →0-100%
Byte 6,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 00 65 01 7B 00 00 00	Backlight = 0% at startup
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

k) Set DEMO mode: 7Ah

Demo mode is a special feature that consist in different LED states for each button pressing. Disconnect and reconnect the keypad to enter this mode.

Identifier	615h (600h + current CAN ID)	
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	7Ah	Command: Set DEMO mode
Byte 5	XXh	01h : on
		00h: off
Byte 6,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 00 65 01 7A 01 00 00	Set demo mode on
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

l) Set startup LED show: 50h

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	00h	CAN Object 6500h
Byte 2	65h	
Byte 3	01h	Sub index
Byte 4	50h	Command: Set startup LED show
Byte 5	XXh	01h: Complete LED Show (default)
		02h: Amber fast flash
		03h: Disable
Byte 6,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 00 65 01 50 03 00 00	Startup LED show disable
Keypad Reply	595	Std	60 00 65 01 00 00 00 00	

14. Object 6000h: Digital input module, keys states

This module contains all the Switch State information.
A one indicates the switch is on, a zero indicates the switch is off.
The keypad must be enabled, see NMT messages.

- **PKP 2200**

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 6000h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 00 60 00 00 00 00 00	
Keypad reply	595	std	43 00 60 00 00 00 00 00	No key pressed
			43 00 60 00 01 00 00 00	Key 1 pressed
			43 00 60 00 02 00 00 00	Key 2 pressed
			43 00 60 00 04 00 00 00	Key 3 pressed
			43 00 60 00 08 00 00 00	Key 4 pressed
			43 00 60 00 03 00 00 00	Key 1 and 2 pressed
			43 00 60 00 0A 00 00 00	Key 2 and 4 pressed
			43 00 60 00 07 00 00 00	Key 1, 2 and 3 pressed
			43 00 60 00 0F 00 00 00	All keys pressed

- **PKP 2400**

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 6000h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 00 60 00 00 00 00 00	
Keypad reply	595	std	43 00 60 00 00 00 00 00	No key pressed
			43 00 60 00 01 00 00 00	Key 1 pressed
			43 00 60 00 02 00 00 00	Key 2 pressed
			43 00 60 00 04 00 00 00	Key 3 pressed
			43 00 60 00 08 00 00 00	Key 4 pressed
			43 00 60 00 10 00 00 00	Key 5 pressed
			43 00 60 00 20 00 00 00	Key 6 pressed
			43 00 60 00 40 00 00 00	Key 7 pressed
			43 00 60 00 80 00 00 00	Key 8 pressed
			43 00 60 00 03 00 00 00	Key 1 and 2 pressed
			43 00 60 00 81 00 00 00	Key 1 and 8 pressed
			43 00 60 00 FF 00 00 00	All keys pressed

- **PKP 2600**

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 6000h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 00 60 00 00 00 00 00	
Keypad reply	595	std	43 00 60 00 00 00 00 00	No key pressed
			43 00 60 00 01 00 00 00	Key 1 pressed
			43 00 60 00 02 00 00 00	Key 2 pressed
			43 00 60 00 04 00 00 00	Key 3 pressed
			43 00 60 00 08 00 00 00	Key 4 pressed
			43 00 60 00 10 00 00 00	Key 5 pressed
			43 00 60 00 20 00 00 00	Key 6 pressed
			43 00 60 00 40 00 00 00	Key 7 pressed
			43 00 60 00 80 00 00 00	Key 8 pressed
			43 00 60 00 00 01 00 00	Key 9 pressed
			43 00 60 00 00 02 00 00	Key 10 pressed
			43 00 60 00 00 04 00 00	Key 11 pressed
			43 00 60 00 00 08 00 00	Key 12 pressed
			43 00 60 00 41 00 00 00	Key 1 and 7 pressed
			43 00 60 00 10 04 00 00	Key 5 and 11 pressed
			43 00 60 00 30 08 00 00	Key 5,6 and 12 pressed
			43 00 60 00 07 00 00 00	Key 1, 2 and 3 pressed
			43 00 60 00 FF 0F 00 00	All keys pressed

15. Object 6001h: Digital output module.

This module sets and reads the LED Outputs States. A one indicates the LED is on a zero indicates the LED is off.

a) Set LED ON

- **PKP 2200**

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	01h	CAN Object 6001h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4	XYh	X: G4 G3 G2 G1 Green LED
		Y: R4 R3 R2 R1 Red LED
Byte 5,7	00h	Not used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 01 60 00 00 00 00 00	Set all LED off
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	
To Keypad	615	Std	23 01 60 00 80 00 00 00	Set green LED #4 on
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	
To Keypad	615	Std	23 01 60 00 04 00 00 00	Set red LED #3 on
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	

- **PKP 2400**

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	01h	CAN Object 6001h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4	XXh	R8 R7 R6 R5 R4 R3 R2 R1 Red LED
Byte 5	YYh	G8 G7 G6 G5 G4 G3 G2 G1 Green LED
Byte 6,7	00h	Not used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	23 01 60 00 00 00 00 00	Set all LED off
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	
To Keypad	615	Std	23 01 60 00 00 01 00 00	Set green LED #1 on
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	

- **PKP 2600**

Identifier	600h + current CAN ID	Default 615h	
Byte 0	23h	Set Device Register	
Byte 1	01h	CAN Object 6001h	
Byte 2	60h		
Byte 3	00h	Sub index	
Byte 4	XYh	X: R8 R7 R6 R5	Red LED
		Y: R4 R3 R2 R1	Red LED
Byte 5	ZKh	Z: G4 G3 G2 G1	Green LED
		K: R12 R11 R10 R9	Red LED
Byte 6	ABh	A: G12 G11 G10 G9	Green LED
		B: G8 G7 G6 G5	Green LED
Byte 7	00h	Not used	

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 01 60 00 00 00 00 00	Set all LED off
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	
To Keypad	615	Std	23 01 60 00 80 00 00 00	Set red LED #8 on, other LED off
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	
To Keypad	615	Std	23 01 60 00 40 40 40 00	Set LED R7,G3,G11 on, other off
Keypad Reply	595	Std	60 01 60 00 00 00 00 00	

b) Read LED ON

The LEDs have the same mapping of Set LED ON message

- **PKP2200**

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	01h	CAN Object 6001h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not Used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 0F 00 00 00	All red LED on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 08 00 00 00	Red LED #4 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 20 00 00 00	Green LED #2 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 00 F0 00 00	All green LED on

- ## PKP 2400

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	01h	CAN Object 6001h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not Used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 FF 00 00 00	All red LED on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 01 00 00 00	Red LED #1 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 02 00 00 00	Red LED #2 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 00 FF 00 00	All green LED on

- ## PKP 2600

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	01h	CAN Object 6001h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not Used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 0F 00 00 00	Red LED #1,#2,#3 and #4 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 00 01 00 00	Red LED #9 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 00 00 01 00	Green LED #5 on
To Keypad	615	Std	40 01 60 00 00 00 00 00	
Keypad Reply	595	Std	43 01 60 00 00 F0 00 00	Green LED #1,#2, #3 and #4 on

16. Object 6002h: Digital output module.

This module sets and reads the LED Blink States.
Each bit position represents the corresponding LED. A one indicates the LED is Blinking a zero indicates the LED is Normal. If the Blink Bit is active with the ON Bit Active the LED will Blink Inverse to Normal Operation (ALT blink).

a) Set LED blink

- **PKP 2200**

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	02h	CAN Object 6002h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4	XYh	X: G4 G3 G2 G1 Green LED
		Y: R4 R3 R2 R1 Red LED
Byte 5,7		Not Used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 02 60 00 00 00 00 00	No LED blinks
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	
To Keypad	615	Std	23 02 60 00 08 00 00 00	Only red LED #4 blinks
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	
To Keypad	615	Std	23 02 60 00 10 00 00 00	Only green LED #1 blinks
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	

- **PKP 2400**

Identifier	600h + current CAN ID	Default 615h
Byte 0	23h	Set Device Register
Byte 1	02h	CAN Object 6002h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4	XXh	R8 R7 R6 R5 R4 R3 R2 R1 Red LED
Byte 5	YYh	G8 G7 G6 G5 G4 G3 G2 G1 Green LED
Byte 6,7	00h	Not used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 02 60 00 00 00 00 00	No LED blinks
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	
To Keypad	615	Std	23 02 60 00 01 00 00 00	Only red LED #1 blinks
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	
To Keypad	615	Std	23 02 60 00 00 FF 00 00	All green LED blink, red LED do not blink
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	

- **PKP 2600**

Identifier	600h + current CAN ID	Default 615h	
Byte 0	23h	Set Device Register	
Byte 1	02h	CAN Object 6002h	
Byte 2	60h		
Byte 3	00h	Sub index	
Byte 4	XYh	X: R8 R7 R6 R5	Red LED
		Y: R4 R3 R2 R1	Red LED
Byte 5	ZKh	Z: G4 G3 G2 G1	Green LED
		K: R12 R11 R10 R9	Red LED
Byte 6	ABh	A: G12 G11 G10 G9	Green LED
		B: G8 G7 G6 G5	Green LED
Byte 7	00h	Not used	

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	23 02 60 00 00 00 00 00	No LED blinks
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	
To Keypad	615	Std	23 02 60 00 10 20 40 00	Only red LED #5, green LED #2 and #11 blink.
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	
To Keypad	615	Std	23 02 60 00 00 00 05 00	Only green LED #5 and #7 blink.
Keypad Reply	595	Std	60 02 60 00 00 00 00 00	

b) Read LED blink

- **PKP 2200**

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	02h	CAN Object 6002h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not Used

Examples:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 FF 00 00 00	All LED blink
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 81 00 00 00	Red LED #1and green LED #4 blink
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 08 00 00 00	Red LED #4 blink

- ## PKP 2400

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	02h	CAN Object 6002h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not Used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 FF 00 00 00	All red LED blink
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 00 FF 00 00	All green LED blink
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 00 01 00 00	Green LED #1 blink

- ## PKP 2600

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	02h	CAN Object 6002h
Byte 2	60h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not Used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 00 00 01 00	Green LED #5 blink
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 80 40 20 00	Green LED #3, #8 and #10 blink
To Keypad	615	Std	40 02 60 00 00 00 00 00	
Keypad Reply	595	Std	43 02 60 00 08 00 00 00	Red LED #4 blink

17. Object 1017h: Producer heartbeat time

The producer heartbeat time shall indicate the configured cycle time of the heartbeat.

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
	2B	Set device register
Byte 1	17h	CAN Object 1017h
Byte 2	10h	
Byte 3	00h	Sub index
Byte 4	YYh	YYh: Heartbeat time in milliseconds
Byte 5	XXh	XXh: Heartbeat time in milliseconds
Byte 5, 7	00h	Not used

Heartbeat time: XXYYh minimum 000Ah maximum FFFFh milliseconds.

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 17 10 00 00 00 00 00	Read heartbeat time
Keypad Reply	595	Std	4B 17 10 00 64 00 00 00	Heartbeat time = 100ms
To Keypad	615	Std	2B 17 10 00 00 00 00 00	Switch off the heartbeat
Keypad Reply	595	Std	60 17 10 00 00 00 00 00	
To Keypad	615	Std	2B 17 10 00 32 00 00 00	Set heartbeat time = 50ms
Keypad Reply	595	Std	60 17 10 00 00 00 00 00	
To Keypad	615	Std	2B 17 10 00 F4 01 00 00	Set heartbeat time = 500ms
Keypad Reply	595	Std	60 17 10 00 00 00 00 00	

18. Object 1000h: Device Type

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 1000h
Byte 2	10h	
Byte 3, 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Data**
To Keypad	615	Std	40 00 10 00 00 00 00 00
Keypad Reply	595	Std	43 00 10 00 91 01 03 00

Device profile number 30191h.

19. Object 1008h: Manufacturer Device Name

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	08h	CAN Object 1008h
Byte 2	10h	
Byte 3, 7	00h	Non used

1° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	60h	Read Device Register Next Byte
Byte 1, 7	00h	Not used

2° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	70h	Read Device Register Next Byte
Byte 1, 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 08 10 00 00 00 00 00	
Keypad Reply	595	Std	41 08 10 00 0B 00 00 00	
To Keypad	615	Std	60 00 00 00 00 00 00 00	
Keypad Reply	595	Std	00 44 4E 41 20 67 72 6F	DNA Gro
To Keypad	615	Std	70 00 00 00 00 00 00 00	
Keypad Reply	595	Std	19 75 70 00 00 00 00 00	up

Manufacturer Device Name: DNA Group
The first byte of the last data message replied is 19h.

20. Object 1009h: Manufacturer Hardware Revision

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	09h	CAN Object 1009h
Byte 2	10h	
Byte 3, 7	00h	Not used

1° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	60h	Read Device Register second byte
Byte 1, 7	00h	Not used

2° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	70h	Read Device Register third byte
Byte 1, 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 09 10 00 00 00 00 00	
Keypad Reply	595	Std	41 09 10 00 0A 00 00 00	
To Keypad	615	Std	60 00 00 00 00 00 00 00	
Keypad Reply	595	Std	00 52 65 76 20 31 2E 30	Rev 1.0
To Keypad	615	Std	70 00 00 00 00 00 00 00	
Keypad Reply	595	Std	19 00 44 00 00 00 00 00	D

Manufacturer Hardware Revision: Rev 1.0D
The first byte of the last data message replied is 19h.

21. Object 100Ah: Manufacturer Firmware Revision

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	0Ah	CAN Object 100Ah
Byte 2	10h	
Byte 3, 7	00h	Not used

1° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	60h	Read Device Register second byte
Byte 1, 7	00h	Not used

2° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	70h	Read Device Register third byte
Byte 1, 7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 0A 10 00 00 00 00 00	
Keypad Reply	595	Std	41 0A 10 00 0A 00 00 00	
To Keypad	615	Std	60 00 00 00 00 00 00 00	
Keypad Reply	595	Std	00 52 65 76 20 31 2E 30	Rev 1.0
To Keypad	615	Std	70 00 00 00 00 00 00 00	
Keypad Reply	595	Std	19 00 52 00 00 00 00 00	R

Manufacturer Firmware Revision: Rev 1.0R.
The first byte of the last data message replied is 19h.

22. Object 100Bh: Model ID

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	0Bh	CAN Object 100Bh
Byte 2	10h	
Byte 3, 7	00h	Not used

1° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	60h	Read Device Register second byte
Byte 1, 7	00h	Not used

2° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	70h	Read Device Register third byte
Byte 1, 7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 0B 10 00 00 00 00 00	
Keypad Reply	595	Std	41 0B 10 00 07 00 00 00	
To Keypad	615	Std	60 00 00 00 00 00 00 00	
Keypad Reply	595	Std	00 50 4B 50 32 36 30 30	PKP2600
To Keypad	615	Std	70 00 00 00 00 00 00 00	
Keypad Reply	595	Std	1D 00 00 00 00 00 00 00	

Model ID: PKP2600

23. Object 1018h: Identity Data

a. Number of mapped objects

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	18h	CAN Object 1018h
Byte 2	10h	
Byte 3	00h	Sub index
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 18 10 00 00 00 00 00	
Keypad Reply	595	Std	4F 18 10 00 04 00 00 00	4

Number of mapped objects: 4

b. Vendor ID

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	18h	CAN Object 1018h
Byte 2	10h	
Byte 3	01h	Sub index
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 18 10 01 00 00 00 00	
Keypad Reply	595	Std	43 18 10 01 5A 03 00 00	000035Ah

Vendor Id: 000035Ah

c. Product code

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	18h	CAN Object 1018h
Byte 2	10h	
Byte 3	02h	Sub index
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 18 10 02 00 00 00 00	
Keypad Reply	595	Std	43 18 10 02 00 00 00 00	00h

Product code: 0h

d. Revision Number

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	18h	CAN Object 1018h
Byte 2	10h	
Byte 3	03h	Sub index
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 18 10 03 00 00 00 00	
Keypad Reply	595	Std	43 18 10 03 10 16 12 00	00 10 15 10 Byte 0 App Revision Byte 1 Com Lib Rev Byte 2 HW Lib Rev

Revision Number: App revision 10h, Com lib revision 16h, HW lib revision 12h.

e. Firmware checksum

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	18h	CAN Object 1018h
Byte 2	18h	
Byte 3	04h	Sub index
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 18 10 04 00 00 00 00	
Keypad Reply	595	Std	43 18 10 04 DE E5 2C 00	00 2C E5 DEh

Firmware checksum: 00 2C E5 DEh

24. Object 1400h: Receive PDO Communication Parm 0

Describes the Receive Parameters for the LED States PDO Message.

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 1400h
Byte 2	14h	
Byte 3	XXh	00h: Number of mapped objects
		01h: COB Id
		03h: Inhibit Time
Byte 4,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 00 14 00 00 00 00 00	
Keypad Reply	595	Std	4F 00 14 00 02 00 00 00	2
To Keypad	615	Std	40 00 14 01 00 00 00 00	
Keypad Reply	595	Std	4B 00 14 01 00 02 00 00	0000 0200h
To Keypad	615	Std	40 00 14 03 00 00 00 00	
Keypad Reply	595	Std	4B 00 14 03 00 00 00 00	0000 0000h

Receive PDO communication Parm 0: Number of mapped objects:2,
COB id: 0000 0200h,
Inhibit Time: 0000 0000h

25. Object 1401h: Receive PDO communication Parm 1

Describes the Receive Parameters for the LED Blink States PDO Message.

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	01h	CAN Object 1401h
Byte 2	14h	
Byte 3	XXh	00h: Number of mapped objects
		01h: COB Id
		03h: Inhibit Time
Byte 4,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 01 14 00 00 00 00 00	
Keypad Reply	595	Std	4F 01 14 00 02 00 00 00	2
To Keypad	615	Std	40 01 14 01 00 00 00 00	
Keypad Reply	595	Std	4B 01 14 01 00 03 00 00	0000 0300h
To Keypad	615	Std	40 01 14 03 00 00 00 00	
Keypad Reply	595	Std	4B 01 14 03 00 00 00 00	0000 0000h

Receive PDO communication Parm 1: Number of mapped objects:2,
COB id: 0000 0300h,
Inhibit Time: 0000 0000h

26. Object 1600h: Output Descriptions

Received asynchronously digital outputs mapping

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 1600h
Byte 2	16h	
Byte 3	XXh	00h: Number of mapped objects
		01h: Set LED outputs
		02h: Set LED blink
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 00 16 00 00 00 00 00	
Keypad Reply	595	Std	4F 00 16 00 02 00 00 00	2
To Keypad	615	Std	40 00 16 01 00 00 00 00	
Keypad Reply	595	Std	43 00 16 01 20 00 01 60	6001 00 20h
To Keypad	615	Std	40 00 16 02 00 00 00 00	
Keypad Reply	595	Std	43 00 16 02 20 00 02 60	6002 00 20h

Output descriptions: Number of mapped objects:2,
Sets LED output: Object 6001h, Sub index 00h, Length 20h;
Sets LED blink: Object 6002h, Sub index 00h, Length 20h.

27. Object 1800h: Transmit PDO Communication Parm 0

Describes the Transmit Parameters for the Key States PDO Message.

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 1800h
Byte 2	18h	
Byte 3	XXh	00h: Number of mapped objects
		01h: Address base
		02h: Transmission Type (asynchronous RTR only).
		03h: Inhibit Time
		05h: Event Timer/ Writeable Int Value (ms)
Byte 4,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 00 18 00 00 00 00 00	
Keypad Reply	595	Std	4F 00 18 00 02 00 00 00	2
To Keypad	615	Std	40 00 18 01 00 00 00 00	
Keypad Reply	595	Std	4B 00 18 01 80 01 00 00	180h
To Keypad	615	Std	40 00 18 02 00 00 00 00	
Keypad Reply	595	Std	4B 00 18 02 FD 00 00 00	Async RTR only
To Keypad	615	Std	40 00 18 03 00 00 00 00	
Keypad Reply	595	Std	4B 00 18 03 00 00 00 00	0
To Keypad	615	Std	40 00 18 05 00 00 00 00	
Keypad Reply	595	Std	4B 00 18 05 00 00 00 00	0

Transmitt PDO communication parm 0: Number of mapped objects:2,
Address base: 180h;
Transmission RTR only;
Inhibit Time =0;
0= Event timer OFF

28. Object 1A00h: Inputs description

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 1A00h
Byte 2	1Ah	
Byte 3	XXh	00h: Number of mapped objects
		01h: Switch state
Byte 4,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 00 1A 00 00 00 00 00	
Keypad Reply	595	Std	4F 00 1A 00 01 00 00 00	1
To Keypad	615	Std	40 00 1A 01 00 00 00 00	
Keypad Reply	595	Std	43 00 1A 01 20 00 00 60	6000 00 20h

Inputs description: Number of mapped objects: 1
Switch state: Object 6000h,
Sub index 00h, Length 20h

29. Object 6100h: Device firmware specific

This Object reads the Device Firmware specifications. This includes the stored serial Number and the device generic model identification.

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 6100h
Byte 2	61h	
Byte 3	XXh	00h: Number of mapped objects
		01h: Serial number
		02h: Device model ID (2 additional bytes)
Byte 4,7	00h	Not used

Examples:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 00 61 00 00 00 00 00	
Keypad Reply	595	Std	4F 00 61 00 02 00 00 00	2
To Keypad	615	Std	40 00 61 01 00 00 00 00	
Keypad Reply	595	Std	43 00 61 01 00 00 00 00	00 00 00 00h
To Keypad	615	Std	40 00 61 02 00 00 00 00	
Keypad Reply	595	Std	40 00 61 02 08 00 00 00	
To Keypad	615	Std	60 00 00 00 00 00 00 00	
Keypad Reply	595	Std	00 50 4B 50 32 36 30 30	PKP2600
To Keypad	615	Std	70 00 00 00 00 00 00 00	
Keypad Reply	595	Std	1D 00 00 00 00 00 00 00	

Number of mapped objects:2, serial number: 00000000h, Model ID: PKP2600

Sub Index 02h needs 2 additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 6100h
Byte 2	61h	
Byte 3	02h	Device model ID
Byte 4,7	00h	Not used

1° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	60h	Read Device Register second byte
Byte 1, 7	00h	Not used

2° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	70h	Read Device Register third byte
Byte 1, 7	00h	Not used

30. Object 6201: Device brightness control

This Object Sets/Reads the Device the Brightness levels of both the Key LEDs and the Back light Level.

a) Read brightness level

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	01h	CAN Object 6201h
Byte 2	62h	
Byte 3	XXh	00h: Number of mapped objects
		01h: Key LED brightness level
		02h: Back light brightness level
Byte 4,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	40 01 62 01 00 00 00 00	
Keypad Reply	595	Std	4F 01 62 01 3F 00 00 00	3Fh (default)
To Keypad	615	Std	40 01 62 02 00 00 00 00	
Keypad Reply	595	Std	4F 01 62 02 00 00 00 00	0h (default)

b) Set brightness level

See also section 11b and 11c.

Identifier	600h + current CAN ID	Default 615h
Byte 0	2Fh	Set Device Register
Byte 1	01h	CAN Object 6201h
Byte 2	62h	
Byte 3	XXh	01h: Key LED brightness level
		02h: Back light brightness level
Byte 4	00 – 3Fh	0-100%
Byte 5,7	00h	Not used

Example:

Direction	Identifier	Format	Message	Data
To Keypad	615	Std	2F 01 62 01 20 00 00 00	Set key LED value=20h
Keypad Reply	595	Std	60 01 62 01 00 00 00 00	
To Keypad	615	Std	2F 01 62 02 31 00 00 00	Set backlight 31h
Keypad Reply	595	Std	60 01 62 02 00 00 00 00	

31. Object 6300h: Serial number string

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	00h	CAN Object 6300h
Byte 2	63h	
Byte 3,7	00h	Not used

1° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	60h	Read Device Register second byte
Byte 1, 7	00h	Not used

2° additional byte

Identifier	600h + current CAN ID	Default 615h
Byte 0	70h	Read Device Register third byte
Byte 1, 7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	41 00 63 00 00 00 00 00	
Keypad Reply	595	Std	41 00 63 00 06 00 00 00	
To Keypad	615	Std	60 00 00 00 00 00 00 00	
Keypad Reply	595	Std	00 30 30 30 30 30 30 00	000000
To Keypad	615	Std	70 00 00 00 00 00 00 00	
Keypad Reply	595	Std	1D 00 00 00 00 00 00 00	

Serial number: ascii 000000.

32. Object 6301h: Bootloader presence

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	01h	CAN Object 6301h
Byte 2	63h	
Byte 3,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 01 63 00 00 00 00 00	
Keypad Reply	595	Std	4F 01 63 00 00 00 00 00	Bootloader not present
To Keypad	615	Std	40 01 63 00 00 00 00 00	
Keypad Reply	595	Std	4F 01 63 00 01 00 00 00	Bootloader present

33. Object 6302h: Device key and LED count

Identifier	600h + current CAN ID	Default 615h
Byte 0	40h	Read Device Register
Byte 1	02h	CAN Object 6302h
Byte 2	63h	
Byte 3	XXh	00h: Number of objects
		01h: Total number of Keys
		02h: Number of external Keys
		03h: Total number of LED
		04h: Number of external LED
Byte 4,7	00h	Not used

Example:

Direction	**Identifier**	**Format**	**Message**	**Data**
To Keypad	615	Std	40 02 63 00 00 00 00 00	
Keypad Reply	595	Std	4F 02 63 00 02 00 00 00	2
To Keypad	615	Std	40 02 63 01 00 00 00 00	
Keypad Reply	595	Std	4F 02 63 01 0F 00 00 00	0Fh
To Keypad	615	Std	40 02 63 02 00 00 00 00	
Keypad Reply	595	Std	4F 02 63 02 03 00 00 00	3h
To Keypad	615	Std	40 02 63 03 00 00 00 00	
Keypad Reply	595	Std	4F 02 63 03 1E 00 00 00	1Eh
To Keypad	615	Std	40 02 63 04 00 00 00 00	
Keypad Reply	595	Std	4F 02 63 04 06 00 00 00	06h

PKP2600 key and LED count: Number of objects: 2; Total number of keys: 15;
Number of external keys: 3; Number of LED: 30;
Number of external LED: 6.

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