

**How to migrate from**

**GemEasyLink332/385,**

**GemEasyAccess332/385 readers**

**To**

**GemProx-C2/-C5/-P2/-P5 readers**

**(new names:**

**Prox-C2/-C5/-P2/-P5)**

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**Migration Note**



**REVISION HISTORY**

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# Introduction

This migration note provides information on the use of the **GemProx –C2**, **GemProx –C5**, **GemProx –P2** and **GemProx –P5** contactless proximity card reader/writers in replacement of former **GemEasyLink332**, **GemEasyLink385**, **GemEasyAccess332** and **GemEasyAccess385** contactless proximity reader/writers no more available today.

**NOTE: The Wiegand versions GemEasyLink300 OEM couplers and the GemEasyAccess300 packaged readers are kept in production.**

Only their name is changed as it is the case of the GemProx contactless readers family.

- GemEasyLink300 becomes Prox-CW.
- GemEasyAccess300 becomes Prox-PW.

## Overview

### Description

The **GemProx –C2**, **GemProx –C5**, **GemProx –P2**, **GemProx –P5** are small contactless proximity card reader/writers having a built-in reader/writer and an internal antenna. They are used for any contactless applications such as access control, transportation, identity, banking services and vending machines.

These devices are very similar to the GemEasyLink332, GemEasyLink385, GemEasyAccess332 and GemEasyAccess385 reader/writers because they are based from the same technical design.

The main differences are the following:

- The GemProx series interface ISO14443-A&B smart cards (only ISO14443-A Mifare smart cards for the GemEasyLink/GemEasyAccess devices)
- The GemProx –P2 series have a SubD9 connector mounted over the cable (no SubD9 connector for the GemEasyAccess332 device)

All these contactless proximity card reader/writers are generally compatible. The slight differences are listed in the paragraph below.

## Replacement table

The following table gives equivalence between former and new readers:

				
Old name	GemProx-C2	GemProx-C5	GemProx-P2	GemProx-P5
New name	Prox-C2	Prox-C5	Prox-P2	Prox-P5
Reference	HWP111510	HWP111511	HWP111508	HWP111509
 GemEasyLink332 HWP108791	Yes			
 GemEasyLink385 HWP109705		Yes		
 GemEasyAccess332 HWP109085			Yes	
 GemEasyAccess385 HWP109704				Yes

Table 1: Replacement table

# Main differences between former and new readers

This paragraph details features of the GemProx –C2, GemProx –C5, GemProx –P2 and GemProx –P5 contactless reader/writers that are different from former GemEasyLink332, GemEasyLink385, GemEasyAccess332 and GemEasyAccess385 contactless reader/writers.

## Embedded Demo – Self Test Skip – Blue LED

Some new bits are now added to the Auxiliary Configuration Byte stored in the EEPROM of the GemProx series:

- The demo can only start if the corresponding bit into the auxiliary configuration byte into the EEPROM is set.
- The self-test at startup is skipped if the corresponding bit into the auxiliary configuration byte into the EEPROM is set.
- The blue LED activity is configured using the corresponding bits into the auxiliary configuration byte into the EEPROM.

The GemProx series are delivered with the following default set up:

- The demo detection is disabled (it is always enabled with the GemEasyLink / GemEasyAccess)
- The self-test is not skipped (it is never skipped with the GemEasyLink / GemEasyAccess)
- The blue LED is blinking (it is always blinking with the GemEasyLink / GemEasyAccess).

Auxiliary Configuration Byte @2h									
b8	b7	b6	b5	b4	b3	b2	b1		
							x	Reserved for future use	
						x		Demo detection enabled: 1 Demo detection disabled: 0	
					x			MAD sector authentication key: 0 = Key A / 1 = Key B	
				x				MAD message serial: 0 = complete / 1 = short	
			x						Reserved for future use
	x	x						b7-b6: blue LED activity 00 : Blinking (0.5/0.5 sec) 01 : Always On 10 : Always Off 11 : RFU (1)	
x								b8: self-test skip 0: no skip 1: skip	

## Default Communication Byte

This byte is used by the GemProx series to configure the serial communication line when it is powered on. This byte is not available with the GemEasyLink/GemEasyAccess series.

Using this configuration byte the GemProx devices can startup with a serial baudrate different than 9600 bps.

Default Communication Byte @5h								
b8	b7	b6	b5	b4	b3	b2	b1	
					x	x	x	b3-b1: Baud rate 000: 115200 bps 001: 57600 bps 010: 38400 bps 011: 19200 bps 100: 9600 bps 101: 4800 bps 110: 2400 bps 111: 1200 bps
				x				b4: Number of bits 0 = 8 bits per character 1 = 7 bits per character
			x					b5: The parity bit 0 = no parity 1 = even parity
		x						Reserved for future use
	x						Reserved for future use	
x							Reserved for future use	

When the GemProx device is delivered, it is configured the same way as the GemEasyLink / GemEasyAccess device: 9600 bps, 8 bits per character, no parity.

## RF Reset duration

The RF Reset duration is slightly different because both ISO14443 type A and type B smart cards are considered:

- 20 ms + 5 ms for the GemEasyLink / GemEasyAccess devices
- 20 ms + 20 ms for the GemProx devices

So it takes 15 ms longer for the GemProx devices to select a smart card.

## Operating Modes

The following table gives the list of the operating modes supported by the GemProx and the GemEasyLink / GemEasyAccess devices:

	Description	GemEasyLink GemEasyAccess	GemProx
Mode 0	Normal mode ISO14443 A&B + MIFARE®	X	X
Mode 5	Gemplus Cyclic auto read mode ISO14443-A + MIFARE®	X	(X)
Mode 6	Gemplus Master One-time auto read mode ISO14443-A + MIFARE®	X	(X)
Mode 7	Gemplus Slave One-time auto read mode ISO14443-A + MIFARE®	X	(X)
Mode 8	MAD Slave One-time auto read mode ISO14443-A + MIFARE®	X	X
Mode 15	PayPass™ mode ISO14443 A&B		X

(X): These mode are available but not fully qualified. The user should perform tests to check the proper operation in its particular environment.

Table 2: Operating modes

The GemProx series and the GemEasyLink/GemEasyAccess series are delivered with the same configuration: Mode 0 is activated at startup.

## Error Management

Operations are similar. However error management is slightly different on the following:

- For the GemEasyLink/GemEasyAccess device, if a MIFARE® authentication operation fails the smart card returns in HALT state (MIFARE® specification) and the reader returns error code "94h FFh" or "94h 0Fh". To recover the card communication a "Request All & Select" command should be send by the host.
- For the GemProx device, if a MIFARE® authentication operation fails the contactless reader/writer will automatically recover the card communication, and the error code "98h 20h" is returned.

## Firmware String

The GemEasyLink/GemEasyAccess device has the following firmware string returned by the "Read ROS Firmware Version" command: "ROS500-R3.20".

The GemProx device has the following firmware string returned by the "Read ROS Firmware Version" command: "ROS500-R3.40".

## Connections

The GemEasyAccess332 and the GemEasyAccess385 reader/writers (packaged devices) are delivered with an open wires cable:



Figure 1: GemEasyAccess332 and GemEasyaccess385 view

- No connectors are mounted on the cable,
- Cable length is 3 meters,
- The overall cable diameter is 5.1 mm.

The GemProx –P2 reader/writer is delivered with a SubD9 connector mounted on a 3 meters cable:



Figure 2: GemProx –P2 view

GemEasyLink/GemEasyAccess series to GemProx series

- The overall cable diameter is 3.5 mm,
- The SubD9 connector is female.

To use the GemProx –P2 with an open wire cable, cut the cable before the SubD9 connector.

The GemProx –P5 reader/writer is delivered with an open wires cable:



Figure 3: GemProx –P5 view

- No connectors are mounted on the cable,
- Cable length is 3 meters,
- The overall cable diameter is 5.1 mm.

The GemEasyLink332 and the GemEasyLink385 reader/writers (open case devices) have the same connections as the GemProx –C2 and GemProx –C5 reader/writers composed of a 5-pin terminal block:



Figure 4: GemProx –C2 and GemProx –C5 view

**End of document**

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