

D-RFID-PR3 Manual

1. Introduction

D-RFID-PR3 (**PR3** for short) is external RF receiver module for PLC FATEK. PR3 receives codes from 433 MHz transmitters (**in system SEA D-RFID**) and sends them to RS485 serial channel (9600 Baud, 7 bits, even parity, 1 stop bit) in protocol FATEK.

Main Features

- External RF receiver module for PLC FATEK
- RF Data coding - **system SEA D-RFID**
- Operates in free 433 MHz band
- Serial communication: RS485 – FATEK protocol



2. Package

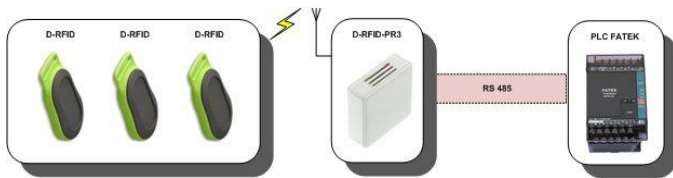
1 pc **PR3** (order code D-RFID-PR3)

Warning

Transmitter **D-RFID** and PLC **FATEK** are not part of **PR3** package and has to be ordered separately. **PR3** can be connected to any PLC FATEK, which is equipped with RS 485 communication port (e.g. FAC-FBS-CB5). **PR3** accepts only RF signals transmitted in system SEA D-RFID (e.g. **D-RFID** which can transmit codes for 2 year on internal battery).



3. Typical application



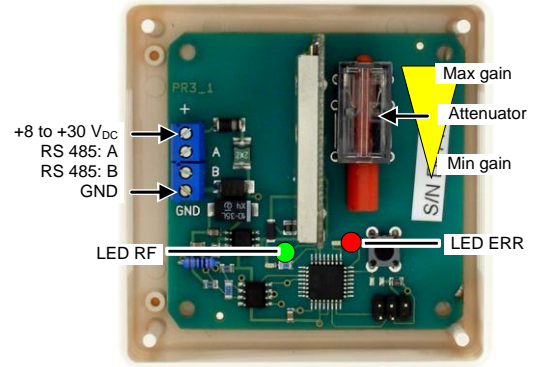
4. Installation

1. Connect PR3 to PLC and switch on the power supply. All LEDs on PR3 are dark. (In case the red LED lights, check the PLC serial port 3 setting (9600Bd, even parity, 1 stop bit), if it does not help, try to exchange A and B RS485 wires).
2. Locate the D-RFID transmitter near PR3. The green LED RF diode on PR3 starts to blink once per 10 sec.
3. Test the simple PLC program using WinProladder. (see the simple example at the end of this document)

5. Technical specification

Parameter	Symbol	Conditions	MIN.	TYP	MAX	Unit	
Dimensions	Width	W		70		mm	
	Height	H		70		mm	
	Depth	D		27		mm	
Supply	Voltage DC	V _{CC}	(typically car battery)	8	12	30	V _{DC}
	Current	I _{CC}	V _{CC} = 12V				mA
Output RS 485	Number	-		1		-	
	Protocol FATEK	-	http://fatek.esea.cz				
Temperature	Operational	T _A	-20		+55	°C	
Rel. humidity	Operational	h _A			90	%	

6. Hardware



6.1 Indicators (LED diodes), Attenuator

Name	LED diode	Description
RF	LED green	Lights whenever valid RF data packet is received.
ERR	LED red	Lights whenever any problem in communication with PLC appears
DBG	LED red	For debug purposes only
ATT	Attenuator	RF signal gain setting
-	Pushbutton	Not used

6.2 Connector

Pin		Description
1	+	Supply: +8 to +30 V _{DC}
2	A	RS 485: A (Data +)
3	B	RS 485: B (Data -)
3	GND	Ground: (Supply and RS 485)

7. Control

7.1 Common operation

Whenever any valid data packet is received the **green RF LED** shortly blinks and M1801 register in connected PLC is set.

7.2 Received signal gain setting

Turn the red rod on attenuator until the requested gain of PR3 is reached.

8. Communication protocol

8.1 Common operation

PR3 sends data (using FATEK protocol) to RS 485 serial line with information concerning received data from D-RFID transmitters. Serial line setting is this: 9600 Baud, 7 bits, even parity, 1 Stop bit.

Example of debug data:

```
<#02>014708R03000505201080000000000D00000000037AE<#03><#0D>
```

Example of data concerning D-RFID transmitters:

```
<#02>014904M18011DR03008443932C1DR0301000002C9DDR0301200000A518<#03><#0D>
```

Detail description of serial data packet sent to RS485 line:

<#02>		Start of data packet (STX)
014904		Identification of data packet
M1801	1	Flag - "Valid data packet from RF transmitter received"
DR03008	443932C1	Packet number, which was sent by RF transmitter
DR03010	00002C9D	Transmitter number + IO state (not used)
DR03012	000000A5	Data packet fixed character
18		Data packet check sum
<#03><#0D>		End of data packet (ETX)

Detail description:

Register	Value	Meaning
M1801	1	Flag - "Valid data packet from RF transmitter received"
DR03008	443932C1	Packet number from RF transmitter
DR03010	00002C9D	R03010: Identification number of RF transmitter R03011: IO on RF transmitter (not used)
DR03012	000000A5	R03012: Check character R03013: 0

Transmitted data can be also processed on PC using user's own program. For testing purposes is possible to use program Hyperterminal (which is part of Windows XP) or program WinProlader 3.11 in "Simulation mode".

Detail description of FATEK communication protocol can be found in the following document.

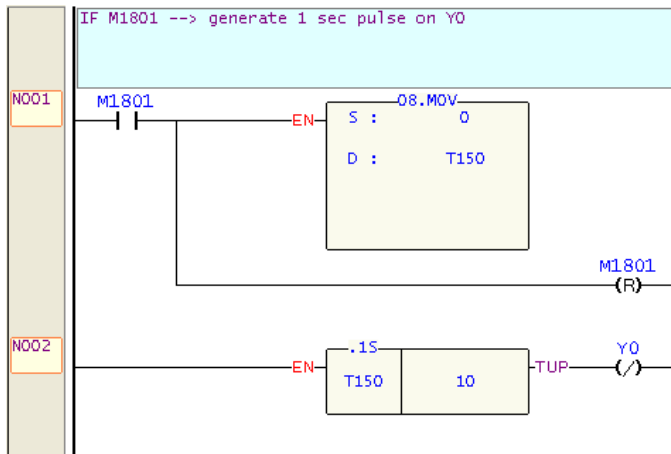
http://www.esea.cz/support/fatek/FBs_Manual/Manual_2/Appendix1.pdf

9. PLC program

9.1 Simple example

PLC program tests M1801 register. Whenever any valid data packet is received by PR3 RF receiver, the M1801 register is set to ON. PLC Program has to clear the register.

The example program on the following picture generates 1 sec pulse on Y0 output whenever any valid data packet is received.



10. Frequently asked questions

Where can I find description of FATEK communication protocol?

http://www.esea.cz/support/fatek/FBs_Manual/Manual_2/Appendix1.pdf

11. Troubleshooting

Problem	Possible reason	Solution
Red LED ERR lights permanently	Problem in Communication with PLC	Check setting of PLC serial port3: 9600 Bd, 7 bits, Even parity, 1 Stop Bit Try to exchange RS 485 signals A and B
Green LED VF does not blink in interval 10 sec	Receiver does not "see" any transmitter	Use attenuator to increase signal gain. Locate the transmitter near to PR3

12. Warranty

General warranty period is 12 months after purchase, when eventual malfunction of the device will be repaired free of charge in SEA company *) while shipping to SEA is paid by customer and SEA pays for shipping back to customer.



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SEA Ltd. has **NO RESPONSIBILITY** for any damage, lost, costs and any other problems direct or inducted, caused by eventual device malfunction from any reason.

Warning

SRD Regulations (Short Range Device): International regulations and national laws regulate the use of radio receivers and transmitters. It is the customer's responsibility to ensure that the system complies with regulations in his country.