

# **ARF868 Radio Modems**

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Application note : «Legacy X3-PRO» mode  
Version V1.0.2



## Information

Document information	
<b>Title</b>	ARF868 Radio Modems - Application note : Legacy X3-PRO mode
<b>Sub title</b>	Version 1.0.2
<b>Document type</b>	Implementation

This document applies to the following products :

Name	Reference	Firmware version
<b>Modem Radio ARF868 ULR 500mW</b>	ARF7940	V1.0
<b>Modem Radio ARF868 LR 500mW</b>	ARF7941	V1.0
<b>Modem Radio ARF868 MR 25mW</b>	ARF7942	V1.0
<b>Modem Radio ARF868 LP 25mW</b>	ARF7943	V1.0

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## TECHNICAL SUPPORT

### Website

Our website contains a lot of useful information: information on modules and wireless modems, user guides, and configuration software and technical documents which can be accessed 24 hours a day.

### E-mail

If you have technical problems or cannot find the required information in the provided documents, contact our Technical Support on our website, section « Technical Support ». This ensures that your request will be processed as soon as possible.

Helpful Information when Contacting Technical Support

When contacting Technical Support, please have the following information ready:

- Product type
- Firmware version (for example V1.0)
- A clear description of your question or the problem
- A short description of the application

## 1. Compatibility mode with ARFx3-PRO radio modems

For many years, deunis® manufactures and markets a range of radio modems named ARF33Pro, ARF43Pro, ARF53 and ARF53Pro. The new range of ARF868 radio modem embeds all the features to ensure an «Air» compatibility with ARFx3Pro and ARF53 radio modems.

Accordingly, ARF868 modem can operate vis-a-vis a X3Pro modem (ARF33Pro, ARF43Pro, ARF53pro) and a ARF53 radio modem by selecting the continuous asynchronous protocol «Legacy X3Pro» :

- Register S222 = 4
- Please refer to § 5.3 «Register Description» in the ARF868 radio modems user guide, available on the adeunis® website.

Following, a table of channels correspondences between ARFX3Pro (and ARF53) and ARF868 radio modems

Frequency (MHz)	X3Pro radio modems			ARF868 radio modems			Comments
	Channel (S200)	Data rate (kbps)	Pmax (dBm)	Channel (S200)	Data rate (kbps)	Pmax (dBm)	
869,55	<b>18</b>	10	20	<b>536</b>	10	25	The narrower spectral width of the ARF868 increases the maximum power on the frequencies 869.45 & 869.55 MHz compared to the ARF53-Pro
869,45	<b>19</b>	10	20	<b>528</b>	10	23	
869,15	<b>22</b>	10	14	<b>504</b>	10	14	
869,05	<b>23</b>	10	14	<b>496</b>	10	14	
868,95	<b>24</b>	10	14	<b>488</b>	10	14	
868,85	<b>25</b>	10	14	<b>480</b>	10	14	
868,75	<b>26</b>	10	14	<b>472</b>	10	14	
868,65	<b>28</b>	10	14	<b>456</b>	10	14	
868,55	<b>29</b>	10	14	<b>448</b>	10	14	
868,35	<b>30</b>	10	14	<b>440</b>	10	14	
868,25	<b>31</b>	10	14	<b>432</b>	10	14	For the ARF868 radio modem, you must also choose the RF data rate
	<b>3</b>	57.6	14		57.6	14	
868,15	<b>32</b>	10	14	<b>424</b>	10	14	
868,05	<b>33</b>	10	14	<b>416</b>	10	14	
867,95	<b>34</b>	10	14	<b>408</b>	10	14	
867,85	<b>35</b>	10	14	<b>400</b>	10	14	
867,75	<b>36</b>	10	14	<b>392</b>	10	14	
867,65	<b>37</b>	10	14	<b>384</b>	10	14	
867,55	<b>38</b>	10	14	<b>376</b>	10	14	
867,45	<b>39</b>	10	14	<b>368</b>	10	14	
867,35	<b>40</b>	10	14	<b>360</b>	10	14	
867,25	<b>41</b>	10	14	<b>352</b>	10	14	
867,15	<b>42</b>	10	14	<b>344</b>	10	14	
867,05	<b>43</b>	10	14	<b>336</b>	10	14	
866,95	<b>44</b>	10	14	<b>328</b>	10	14	
866,85	<b>45</b>	10	14	<b>320</b>	10	14	
866,75	<b>46</b>	10	14	<b>312</b>	10	14	
866,65	<b>47</b>	10	14	<b>304</b>	10	14	
866,55	<b>48</b>	10	14	<b>296</b>	10	14	
866,45	<b>49</b>	10	14	<b>288</b>	10	14	
866,35	<b>50</b>	10	14	<b>280</b>	10	14	
866,25	<b>51</b>	10	14	<b>272</b>	10	14	
866,15	<b>52</b>	10	14	<b>264</b>	10	14	
866,05	<b>53</b>	10	14	<b>256</b>	10	14	

865,95	<b>54</b>	10	14	<b>248</b>	10	14	
865,85	<b>55</b>	10	14	<b>240</b>	10	14	
865,75	<b>56</b>	10	14	<b>232</b>	10	14	
865,65	<b>57</b>	10	14	<b>224</b>	10	14	
865,55	<b>58</b>	10	14	<b>216</b>	10	14	
865,45	<b>59</b>	10	14	<b>208</b>	10	14	
865,35	<b>60</b>	10	14	<b>200</b>	10	14	
865,25	<b>61</b>	10	14	<b>192</b>	10	14	
865,15	<b>62</b>	10	14	<b>184</b>	10	14	
865,05	<b>63</b>	10	14	<b>176</b>	10	14	
864,95	<b>64</b>	10	14	<b>168</b>	10	14	
864,85	<b>65</b>	10	14	<b>160</b>	10	14	
864,75	<b>66</b>	10	14	<b>152</b>	10	14	
864,65	<b>67</b>	10	14	<b>144</b>	10	14	
864,55	<b>68</b>	10	14	<b>136</b>	10	14	
864,45	<b>69</b>	10	14	<b>128</b>	10	14	
864,35	<b>70</b>	10	14	<b>120</b>	10	14	
864,25	<b>71</b>	10	14	<b>112</b>	10	14	
864,15	<b>72</b>	10	14	<b>104</b>	10	14	
864,05	<b>73</b>	10	14	<b>96</b>	10	14	
863,95	<b>74</b>	10	14	<b>88</b>	10	14	
863,85	<b>75</b>	10	14	<b>80</b>	10	14	
863,75	<b>76</b>	10	14	<b>72</b>	10	14	
863,65	<b>77</b>	10	14	<b>64</b>	10	14	
863,55	<b>78</b>	10	14	<b>56</b>	10	14	
863,45	<b>79</b>	10	14	<b>48</b>	10	14	
863,35	<b>80</b>	10	14	<b>40</b>	10	14	
863,25	<b>81</b>	10	14	<b>32</b>	10	14	
863,15	<b>82</b>	10	14	<b>24</b>	10	14	
863,05	<b>83</b>	10	14	<b>16</b>	10	14	
869,525	<b>84</b>	10	27	<b>534</b>	10	27	For the ARF868 radio modem, you must also choose the RF data rate
	<b>1</b>	57,6	27		57,6		
869,60	<b>85</b>	10	17	<b>540</b>	10	17	

**Example 1 :** to allow communication between an ARF868 and a X3Pro modem at 869,525Mhz with a data rate of 57.6Kbps, each S200 register must be set to :

- Value **1** on the X3Pro side.
- Value **534** on the ARF868 side AND choose data rate at 57.6Kbps in the S254 register.

**Example 2 :** to allow communication between an ARF868 and a X3Pro modem at 869,525Mhz with a data rate of 10Kbps, each S200 register must be set to :

- Value **84** on the X3Pro side
- Value **534** on the ARF868 side AND choose data rate at 10Kbps in the S254 register.

**In the Legacy X3PRO mode, the addressing of the ARF868 modem is identical to ARFX3-PRO modes:**

By default, the ARFx3-PRO works in addressed mode with source and destination addresses set to 0.

- S220=1 for addressed mode S220=0 for transparent mode
- S252= product source address (filtering in reception)
- S256=destination address (address transmitted in the frame and filtered by the receiver)