



User Manual

FHSS Ethernet Base Station

HW 8614/F2

Version 1.5

DATA  **UNWIRED**



HÖFT & WESSEL

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1. Introduction

Thank you for choosing Data Unwired products of Höft & Wessel.

The HW 8614/F2 is a powerful FHSS Ethernet Base Station that allows for other Data Unwired devices to access a wired network. Data Unwired FHSS (Frequency Hopping Spread Spectrum) systems operate in the 2.4 GHz ISM band and comply with FCC, IC and EC regulations.

Data Unwired products are easy to install and do not require specific drivers. So they can be used with most computers and operating systems.

This manual describes how to install and use the HW 8614/F2.

In case of problems during the installation or during the operation of the HW 8614/F2 that cannot be solved with the information given in this manual, please contact the local sales representative or Höft & Wessel AG.

1.1 References

This device is based on the HW 86022 FHSS radio module. Please refer to its documentation: HW 86022 Integration Manual, HW 86022 Firmware Manual.

1.2 Contact Höft & Wessel AG

For immediate assistance please address yourself to the Höft & Wessel Service Line:

Phone: +49-1803-232829
Fax: +49-511-6102-411
Email: info@Höft-wessel.de

If you have general questions concerning Höft & Wessel Data-Unwired products you may directly contact the Data Unwired team:

Phone: +49-511-6102-226
Fax: +49-511-6102-437
Email: tol@Höft-wessel.de

Latest revisions of all publicly available documentation and firmware downloads are available from our web-site www.data-unwired.com. If you are interested in Höft & Wessel Group in general, visit www.Höft-wessel.com.

Address:

Höft & Wessel AG
Rotenburger Strasse 20
D-30659 Hannover
Germany

2. Important User Information

The HW 8614/F2 does not require maintenance work or special attendance, except for the instructions mentioned below.



CAUTION:

Do not operate the device within the range of strong electromagnetic fields.

Notice the temperature range for operation given in chapter 4. Do especially avoid overheating.

Protect device against humidity and dust.

Clean device only with a soft cloth and mild cleaning agent. Do not apply water or wet cleaner.

Do not insert any objects into openings of the device unless specifically mentioned otherwise in this document. This may damage the device.

Do not open the HW 8614/F2

The HW 8614/F2 does not contain parts which could be maintained, exchanged or repaired by the customer or non-authorized maintenance personnel.

Opening the device might damage the electric components. A correct function of the device is no longer guaranteed!



NOTE:

This equipment makes use of radio spectrum and emits radio frequency energy. Care should be taken when the device is integrated in systems. Make sure that all specification within this document are followed, especially concerning operating temperature and supply voltage range.

Refer to national regulations of the region where the device shall be operated and make sure the national requirements are fulfilled.

2.1 Important Information for Users in the USA

**NOTE:**

This equipment contains a radio module with FCC-ID PGM860221.

It has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The maximum output power of the Base Station transmitter is 72 mW. The device has an internal antenna. As an optional external antenna only use Höft & Wessel Swivel Antenna E29776. Both the internal and the external antennas used for this mobile transmitter must provide a separation distance of at least 20 cm from all persons and must not be co-located and operated in conjunction with any other antenna or transmitter.

2.2 Important Information for Users in Canada

**NOTE:**

This equipment contains a radio module with Industry Canada ID 4153A-860221.

The device has an internal antenna. Only Höft & Wessel Swivel Antenna E29776 may be used as an optional external antenna.

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

3. Product Description

3.1 Operational Elements

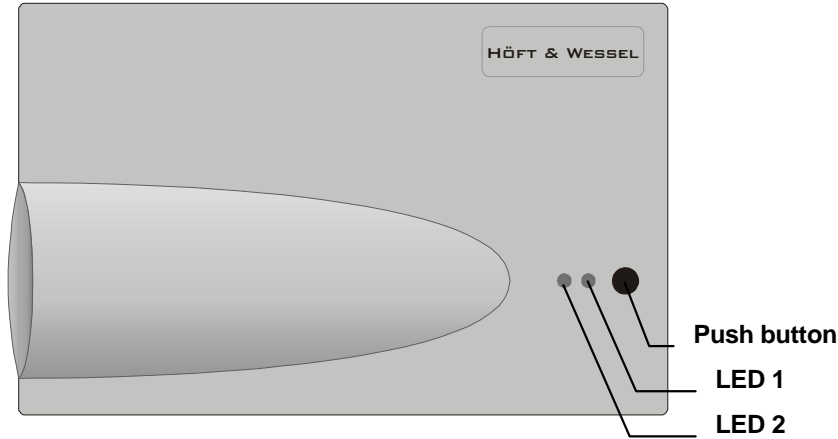


Figure 1: HW 8614/F2 top view

Push Button	Activates on-air subscription and changes termination mode
LED1 LED2	Display device's operating mode

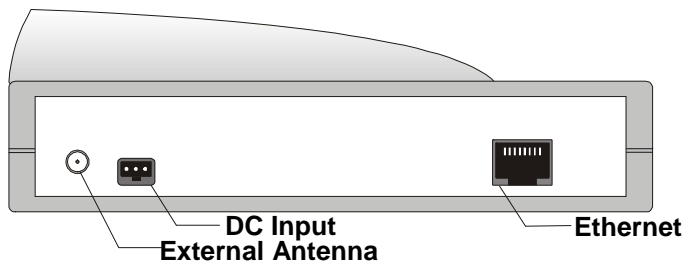


Figure 2: HW 8614/F2 connector panel view

Ethernet	RJ45 connector for Ethernet 10 Base-T
External Antenna	Reverse SMA connector for connection of external antennas
DC Input	Power supply input, use HW 1207 or HW 1208 power supply

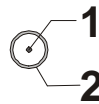
3.2 DC Input

Pin no.	Signal
1	7 .. 30V DC in
2	n.c.
3	Ground



3.3 External Antenna Interface

Pin no.	Signal
1	RF Signal 50 Ω
2	Ground



3.4 10 Base-T Ethernet

Pin no.	Signal
1	TX+
2	TX-
3	RX+
4	n.c.
5	n.c.
6	RX-
7	GND
8	n.c.



3.5 LED

If the device is powered on one or both LED are lit continuously or in intervals. Further information about the device's operating mode can be derived from the following table:

LED1 (red)	LED2 (green)	Meaning
	•	Device unpowered or firmware upgrade in progress
	⊗⊗⊗••	Device powered on, no radio connection
	⊗	Radio connection established
	⊗⊗⊗•⊗⊗⊗•	Radio connection established, data transfer
⊗		Ethernet link available
⊗⊗⊗⊗⊗		Ethernet link available, data transfer
⊗•⊗•	•⊗⊗•	Termination is "Fixed Type", on-air subscription mode enabled
⊗•⊗•	⊗•⊗•	Termination is "Portable Type", on-air subscription in progress
⊗•⊗•	•	On-air subscription failed (Portable Type termination only)
•	⊗•⊗•	On-air subscription succeeded (Portable Type termination only)

Legend:

- ⊗ constantly lit ⊗ constantly lit weak • off
- ⊗⊗⊗•• slow flashing ⊗•⊗• fast flashing
- ⊗•⊗••⊗⊗⊗ fast alternative flashing ⊗•⊗• ⊗•⊗• fast simultaneous flashing
- ⊗⊗⊗⊗⊗ constantly lit weak, jitter
- ⊗⊗⊗•⊗⊗⊗• constantly lit, short jitter

4. Specification

Dimensions:	Approx. 145 x 88 x 46 mm
Weight:	Approx. 180 g
Operating Temperature:	0 .. +55 °C
Storage Temperature:	0 .. +70 °C
Power Supply:	7.0 .. 30.0 V DC 2W
Data Interface:	10 Base-T Ethernet
Radio Band:	2,400 .. 2,483.5 MHz
Transmit Power:	Max. 100 mW
Standards:	EN 300 328 EN 300 489-1, -17 EN 60950 FCC part 15 IC RSS-210
Conformity:	R&TTE, FCC, IC
Modulation:	Gaussian FSK
Multiplexing:	TDMA, FDMA
Air Data Rate:	1.152 Mbit/s
Payload Data Rate:	Up to 432 kbit/s
Collision Avoidance:	Adaptive Frequency Hopping
Antennas:	One integrated antenna, external antenna connector to connect Höft & Wessel Swivel Antenna E29776.
Range:	Up to 60 m inside buildings, up to 300 m in open field
Operating Elements:	Push Button Two LED
Housing:	Plastic housing
Installation:	Desktop or wall mount installation
Accessories:	Wall mount power supplies: - for EU: HW 1207, 240V/50Hz prim., 7.5V/600 mA sec. - for USA: HW 1208, 120V/60Hz prim., 7.5V/600 mA sec. Swivel Antenna E29776.

5. Taking HW 8614/F2 into Operation

5.1 Hardware Installation

Connect the HW 8614/F2 device to the PC's network interface. Attach a HW 1207 or HW 1208 power supply.

In order to establish a wireless connection, at least one other Data Unwired radio device is required, e.g. any HW861x/F2 or a HW 86022 radio module.

5.2 Software Installation

It is recommended to download the Data Unwired Management Console from the "Download" section on www.data-unwired.com and install it. This software tool allows for easy management of Data Unwired devices.

For a detailed command reference refer to HW86022 Firmware Manual.

5.3 Termination Type and Subscription

In order to establish a wireless data link the following condition must be fulfilled:

- one device in a radio cell must have its termination mode configured to Fixed Type (FT, this manages the radio cell)
- the others must have their termination mode configured to Portable Type (PT, they take part in the managed radio cell)
- all PT devices must be subscribed to the FT device.

A device's termination mode can be altered using the configuration mode, e.g. through Data Unwired Management Console's Configuration Terminal or Properties dialog, or by using the push buttons.

Subscription can be realised by using off-line subscription (one-stop command on PT device's configuration interface). However, the FT's device identification must be known, which usually requires reading out these data from the configuration interface.

Another way to subscribe is the so call on-air subscription. Here, the FT must be brought into a special on-air subscription mode to accept incoming subscriptions. Then a PT device may run through an on-air subscription process. In this case, the FT identities are not required at the PT side.



NOTE:

It is strongly recommended that only one Data Unwired device configured as a Fixed Type has its on-air subscription mode enabled at a time. Otherwise Portable Type devices may be assigned randomly.

Make sure the all devices involved in the subscription process are within radio range.

5.3.1 Subscription Using Data Unwired Management Console

Read out the EMC and DECT identity of a Fixed Type device.

Use the “Subscribe to Base Station” functionality from the Files menu or the device context menu in the Device Manager’s list to subscribe a PT device to a FT device using the off-air subscription.

5.3.2 Subscription using push buttons

The subscription process can be invoked by using push buttons only. First, configure the device to a FT or PT termination.

5.3.2.1 Changing Termination Mode

In order to change the HW 8614/F2 termination between FT and PT mode, press the push button for at least 6 seconds.

The LEDs will now start to

- flash simultaneously in case the currently configured termination is Portable Type
- flash alternatively in case the currently configured termination is Fixed Type

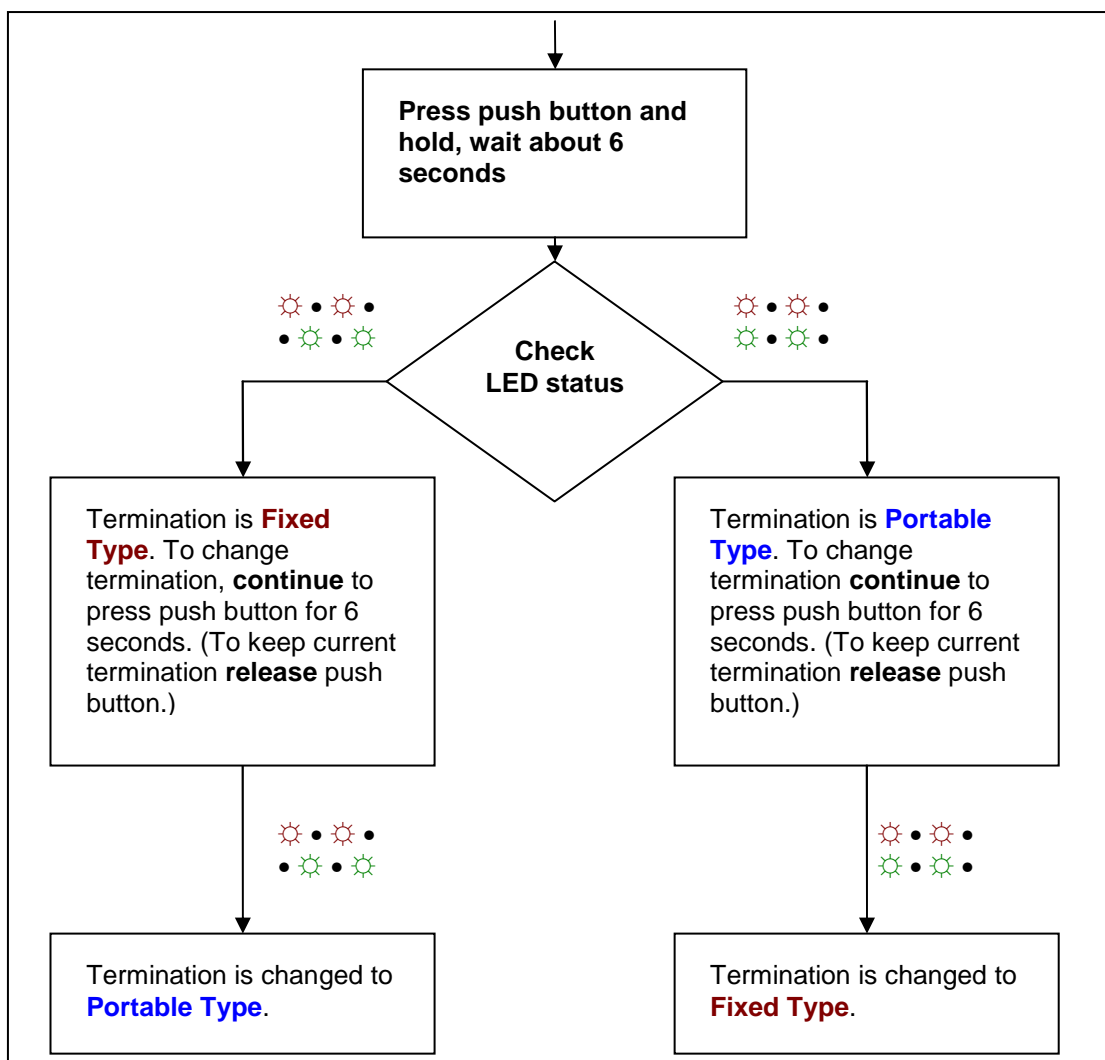


Figure 3: Changing termination mode

Keep the push button pressed for another 6 seconds will alter the termination mode. Release the push button if the desired termination mode is reached. The configuration is now permanently stored in memory.

Note that the subscription mode is now activated accordingly and will be deactivated by a shortly pressing the push button, after a subscription process, a timeout or when power is removed from the device.

5.3.2.2 Activation of On-Air Subscription mode on the Fixed Type device

On the FT device, press the push button for at least 6 seconds. Release the push button as soon as the two LEDs begin to flash concurrently. On-air subscription mode is now active.

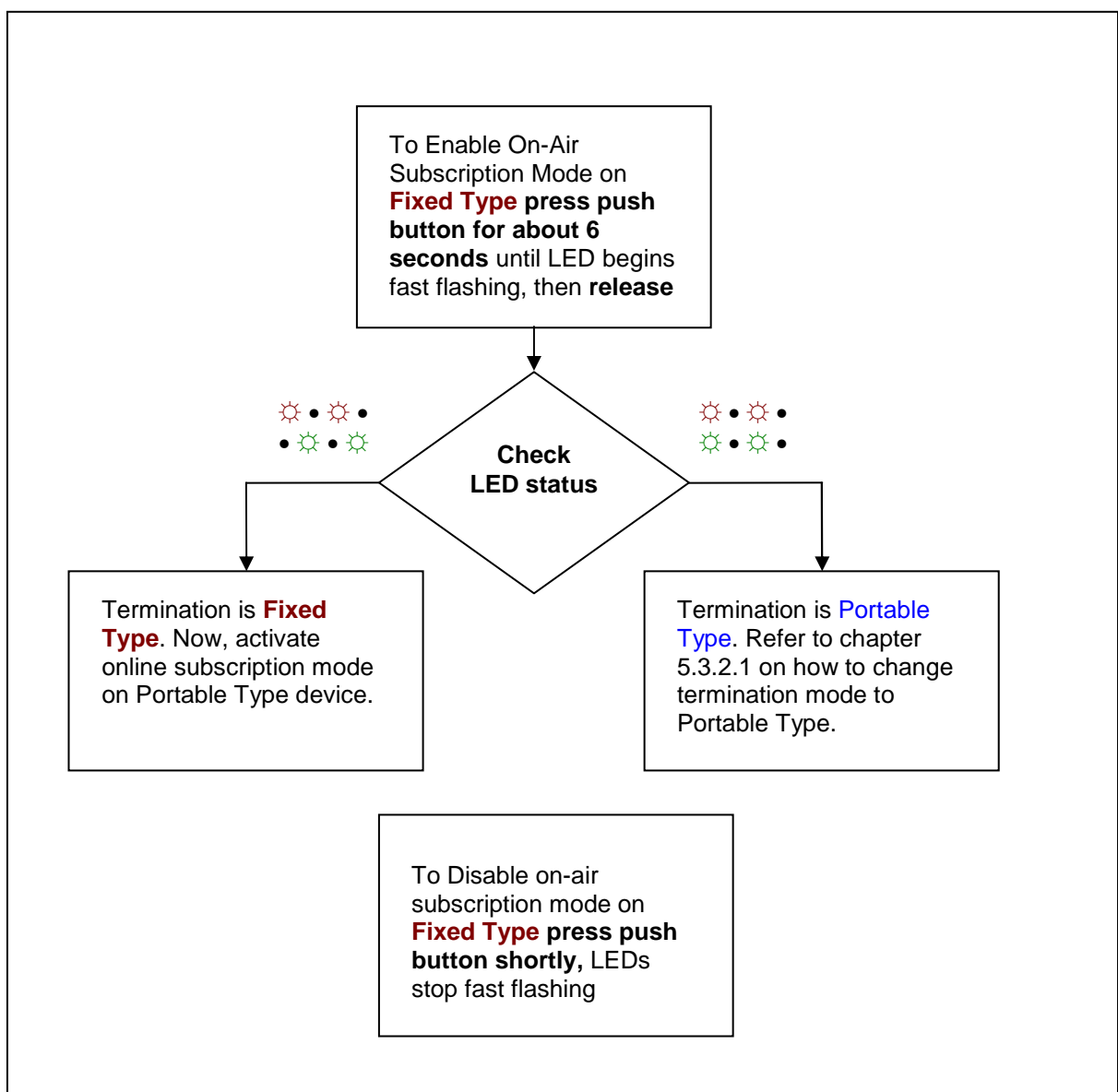


Figure 4: Activation of on-air subscription mode on FT device

5.3.2.3 On-Air Subscription

On the PT device, press the push button for at least 6 seconds. Release the push button as soon as the two LEDs begin to flash simultaneously. On-air subscription is now in progress.

This process may take about 30 seconds. If a subscription to a Fixed Type device succeeded, the green LED will flash quickly for about 6 seconds. The subscription data are permanently stored on the device and it is now ready for communication with the Fixed Type device.

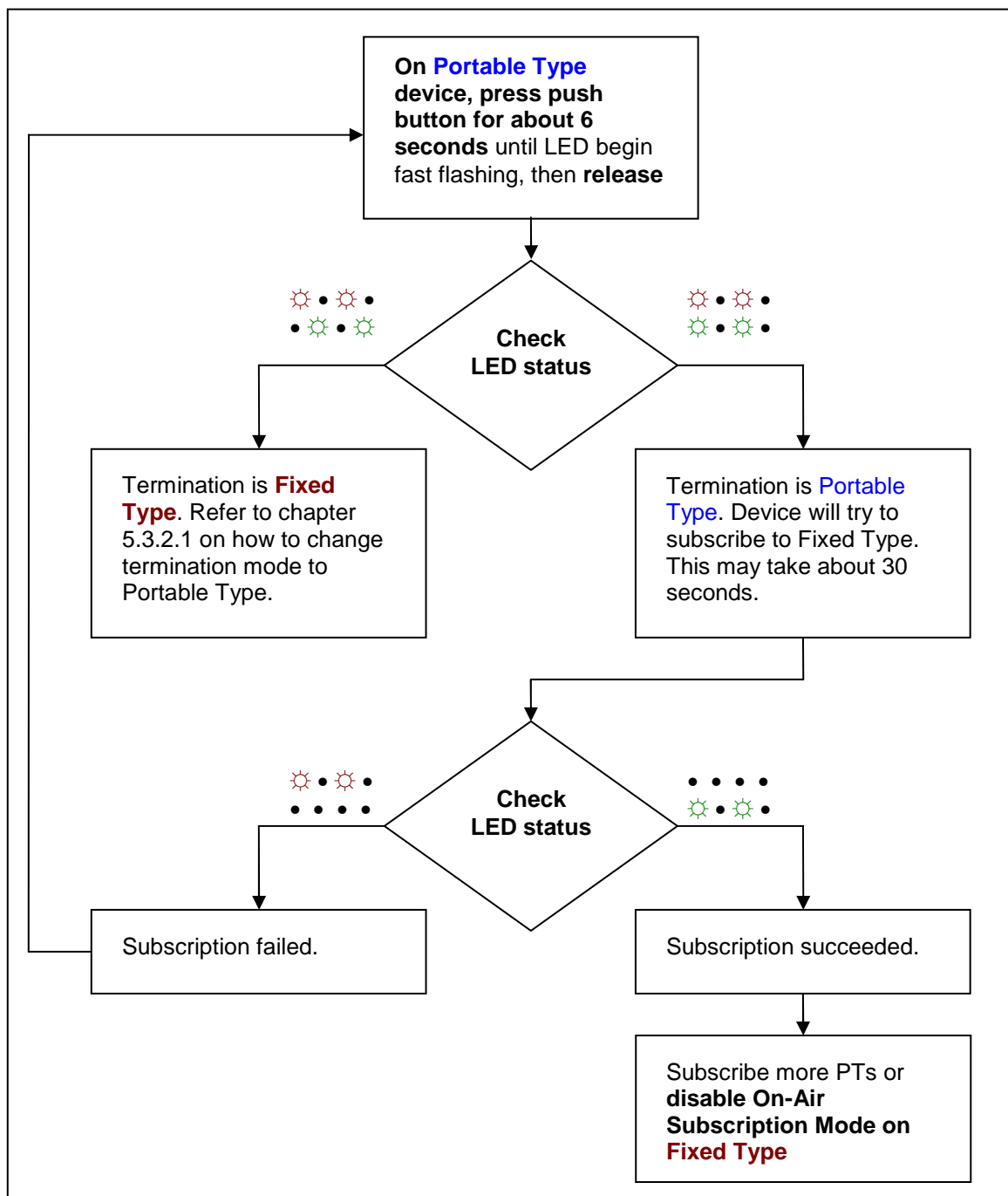


Figure 5: On-air subscription on PT device

If a Fixed Type device is not available or if the on-air subscription fails, the red LED flashes quickly for about 6 seconds. In this case try to repeat the subscription.

More Portable Type devices can now be subscribed to the same Fixed Type device if required.

5.4 Establish a Wireless Connection


Once a device configured as Portable Type termination is subscribed to a Fixed Type device and is within the range of the Fixed Type device, the radio connection is established.

Between HW 8614/F2 devices, Ethernet packets received on the 10 Base-T interface are transferred over the radio link and transmitted on the remote HW 8614/F2's 10 Base-T port - and vice versa (Ethernet Bridge). Avoid network loops!


On HW 8612/F2, HW 8615/F2 or HW 86022 devices the data received from the radio link are transferred into serial data stream that is send out over the serial interface and vice versa. Activate the TCP/IP stack or alternatively use a SWAP server on the network side to terminate into raw TCP, Telnet or VCOM. Refer to HW 86022 Firmware Manual for details.

6. Appendix

6.1 EC Declaration of Conformity



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**EU – Konformitätserklärung
EC - Declaration of Conformity**

**gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG)
und der Richtlinie 1999/5/EG (R&TTE)**
in accordance with the Radio and Telecommunications Terminal Equipment Act (FTEG)
and Directive 1999/5/EC (R&TTE Directive)

Hersteller / Manufacturer: Höft & Wessel AG

Anschrift / Address: Rotenburger Straße 20, 30659 Hannover

Produkt / Product: WLAN Ethernet Adapter
Wireless LAN ethernet adapter

Typ / Type: **HW 8614-F2**

Telekommunikations-Endeinrichtung
Telecommunications terminal equipment

Funkeinrichtung
Radio equipment

Höft & Wessel AG erklärt, dass das bezeichnete Produkt bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE-Richtlinie) entspricht.
Höft & Wessel AG declares that the product complies with the essential requirements of §3 and the other relevant provisions of the FTEG (Article 3 of the R&TTE Directive) when used for its intended purpose

Angewendete harmonisierte Normen / Harmonised standards applied:

Luftschnittstelle bei Funkanlagen gemäß § 3 (2) (Artikel 3 (2))
Air interface of the radio systems pursuant to article 3 (2)

EN 300328 : V1.7.1 (2006)

Schutzanforderungen in Bezug auf die elektromagnetische Verträglichkeit § 3 (1) 2 (Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility according to article 3 (1) b)


EN 301489-1 : 2008, EN 301489-17 : 2007
EN 300328 : V1.7.1 (2006)
EN 61000-4-2 : 1995+A1:1998+A2:2001, EN 61000-4-3 : 2006+A1:2008, EN 61000-4-4 : 2004,
EN 61000-4-5 : 2007, EN 61000-4-6 : 2007, EN 61000-4-11: 2004

Gesundheit und Sicherheit gemäß § 3 (1) 1 (Artikel 3 (1) a))
Health and safety requirements pursuant to article 3 (1) a)

EN 60950-1 : 2006

Hannover, den 29.01.09
Place and date


Rechtsverbindliche Unterschrift
Name and signature



Hansjoachim Oehmen
Höft & Wessel AG

09008/CE-1.0

6.2 FCC Declaration of Conformity


HÖFT & WESSEL

Declaration of Conformity

This certificate is issued for:

Metric Group Inc.
2540 Route 130 Suite 114
Cranbury New Jersey 08512
+1609 395 8570

Responsible Party, must be located in US


Product Description: 2.4 GHz FHSS Ethernet Adapter
Brand Name: Höft & Wessel
Model Number: HW 8614/F2

The product complies with 47CFR Part 15, Subpart B

Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Additional Information
This DoC is only valid in combination with test report GOM20812-2123-C-1.
This device contains a radio module PGM860221.

January 29, 2009
Date


Hansjoachim Oehmen
CEO Höft & Wessel AG