



Introduction

This document provides instructions on using the 4G LTE-TDD iPackGPS. The 4G LTE-TDD iPackGPS works with cellular networks that use TDD LTE technology, and is compatible with LTE TDD Bands 38, 39, 40, 41; LTE-FDD Bands 1, 3; TDSCDMA Bands 34, 39; WCDMA Band 1; and GSM bands 900/1800 MHz. Before purchasing this iPack make sure the site has coverage from a cellular service provider that uses TDD technology. If in doubt, contact Technical Services (support@nrgsystems.com) with questions.

Configuration

Choose a cellular provider that has strong signal strength at the site where the iPack is going to be installed and follow the steps below:

1. Establish a pay as you go account for the iPack and obtain a Standard (15 x 25mm) SIM card.
2. Install the SIM card inside the iPack:
 - a. Undo the four screws holding the iPack together (two on each side).
 - b. With the iPack still together, turn it upside down and gently pull the two sides apart.
 - c. Locate the SIM card tray and insert the SIM card with the metal contacts facing down and the notch in the SIM card in the upper left hand corner:



3. Connect the iPack to a SymphoniePRO Data Logger and program the APN settings in the SymphoniePRO Desktop Application:
 - a. Navigate to the iPack tab and locate the Network box →
 - b. Enter the APN Name and (if used) the ISP Username and ISP Password.
 - c. Leave the Dial String and Primary/Secondary DNS as they are – do not change them.
 - d. A SIM PIN can be used but NRG Systems does not recommend using one.
 - e. Save the settings to the iPack.

Network	
ISP Username	<input type="text"/>
ISP Password	<input type="text"/>
APN	<input type="text" value="cmnet"/>
SIM PIN	<input type="text"/>
Dial String	<input type="text" value="*99#"/>
Primary DNS Server	<input type="text" value="0.0.0.0"/>
Secondary DNS Server	<input type="text" value="0.0.0.0"/>



4G LTE-TDD iPackGPS Configuration

- With the iPack settings saved, the Modem Status window should show the iPack's Registration as Home and the Carrier showing the cellular provider's operator details:

Modem Status

State:	Listening MetLink	
Signal Strength:	83%	
Registration:	Home	
Cellular Band:	Auto	Set
Carrier:	46000TDD38950	Set

Communication Log

The SymphoniePRO Communication Log provides a history of the modem's activity.

To export the Communication Log, navigate to the Site Utilities tab and change the Export Type in the Data Export box to "Communication". Choose the desired date range and press "Export". Open the resulting *.txt file in Excel.

Timestamp	Duration	Comm_Re	Comm_Re	Comm_Re	Comm_Re	Comm_Re	Comm_Re	Bytes_Tx	Bytes_Rx	Operator	Band	Signal	Result	Comm_Message	
4/17/2018 14:20	0:04:39	FALSE	TRUE	TRUE	FALSE	FALSE	TRUE	FALSE	8694	2661	46000TDD39148	Auto Band	74	Success	PPC-PC
4/17/2018 14:40	0:00:32	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	0	0	46000TDD39148	Auto Band	77	Success	
4/17/2018 14:50	0:00:32	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	0	0	46000TDD39148	Auto Band	70	Success	
4/17/2018 15:00	0:00:32	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	0	0	46000TDD38950	Auto Band	70	Success	
4/17/2018 15:10	0:00:32	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	0	0	46000TDD38950	Auto Band	77	Success	

The **Operator** column is an alphanumeric code that provides helpful information about the network the iPack is connected to. It can be deciphered like this:

46000TDD39148

- The first set of numbers is the **Operator Code**. This code identifies which cellular carrier the modem is using. The following website can be used to lookup operator codes:
<http://www.imei.info/operator-codes/>

Common Operator Codes		
China Mobile	China Telecom	China Unicom
460 00	460 03	460 01
460 02	460 05	
460 07		

- The second part is the access technology. This can be any of the following network access technology types:



Access Technology Codes				
iPack Code	Technology Name		iPack Code	Technology Name
NON	None		EDG	EDGE (2G)
CDM	CDMA1X (2G)		WCD	WCDMA (3G)
CDM	CDMA1X + HDR (2G)		HSD	HSDPA (3G)
CDM	CDMA1X + EHRPD (2G)		HSU	HSUPA (3G)
HDR	HDR (2G)		HSP	HSPA+ (3G)
HDR	HDR-EHRPD		TDS	TDSCDMA (3G)
GSM	GSM (2G)		TDD	TDD LTE (4G)
GPR	GPRS (2G)		FDD	FDD LTE (4G)

For example, **TDD** means the modem is using TDD LTE access technology.

EDG would mean the modem is using EDGE (2G) access technology.

3. The third part is the **ARFCN**, which contains information about the frequency band. The ARFCN can be looked up here: <https://www.cellmapper.net/arfcn>.
 - In this example, the website shows that ARFCN 39148 means the modem is using TDD Band 40.