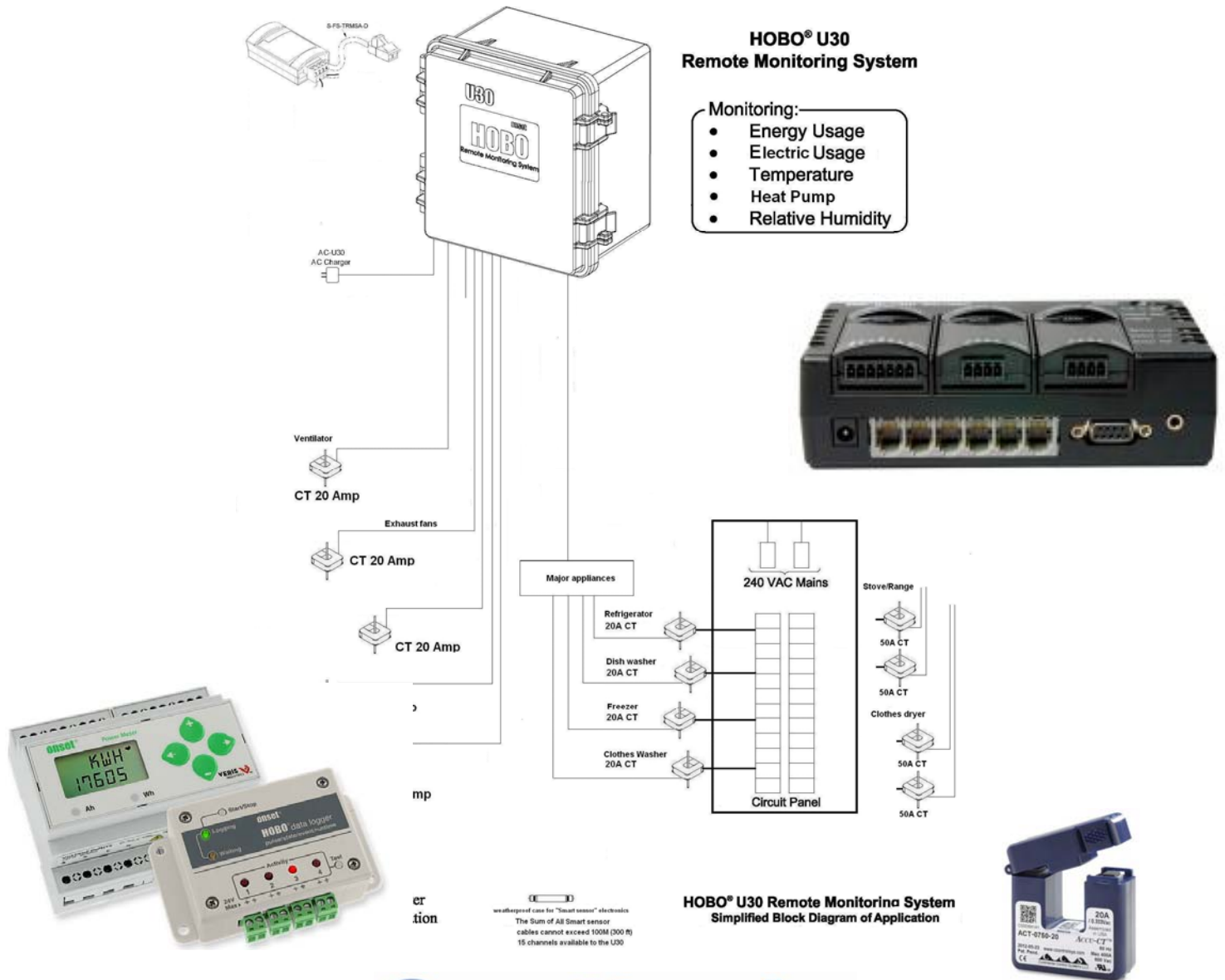


# HOBO Energy Monitoring

## Product Selection Guide



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# HOBO Energy Monitoring

## AC Current and/or Volts Only

Suitable for estimating power usage where the power supply is relatively stable (such as domestic or small commercial AC mains supply) with small, non-inductive loads. They are suitable where users want to know approximately how much power a device is using, how often and when it is being used.

These dataloggers output readings in Amps and/or Volts at a user-specified logging interval. Estimations of power usage and/or run times can be made by exporting data into a spreadsheet with relevant equations. They can also be used with temperature, or other third party sensors, for complementary readings.

Components:

### 1. AC Sensors

- AC Current sensors - CTV-x

These are placed around the supply wire only of each phase to be monitored. They have a hinged fourth side to make installation easy. They have a 2.5mm jack which plugs directly into a UX120 or ZW logger. Available ranges are: 2-20A, 5-50A, 10-100A, 20-200A, 60-600A.

- AC Voltage sensors - Conlab ACT-SV-x

These are used in conjunction with a 4-20mA input cable to measure single-phase voltage. These sensors are connected inline and require installation by personnel with a suitable electrical certification. Ranges are 0-150VAC or 300VAC.



### 2. Datalogger

- UX120-006M
  - ◇ High resolution
  - ◇ LCD Display
  - ◇ Accepts up to 4 sensors



OR

- ZW - series
  - ◇ Wireless data access
  - ◇ Models with integral temperature & humidity
  - ◇ Accepts up to 4 sensors



### 3. Software

HOBOWare Pro, with USB cable

The ZW-series also require a wireless HOBO data receiver.

### 4. Options

Sensors for the dataloggers above are also available to also measure:

4-20mA, Air Velocity, Carbon Dioxide, Compressed Air Flow, DC Amps, DC Volts, Differential Air Pressure, Gauge Pressure, Temperature, VOC

Contact Scottech for details

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Split Core Current Transducers	
101081	HOBO CTV-A 0-20A AC Current Sensor
101082	HOBO CTV-B 0-50A AC Current Sensor
101083	HOBO CTV-C 0-100A AC Current Sensor
101084	HOBO CTV-D 0-200A AC Current Sensor
101085	HOBO CTV-E 0-600A AC Current Sensor
AC Voltage Transmitters	
104604	T-CON-ACT-150 AC Voltage Transmitter—150VAC
104605	T-CON-ACT-300 AC Voltage Transmitter—300VAC
Also requires:	
101086	HOBO Cable 4-20MA Cable for external input
Dataloggers	
107759	HOBO UX102-006M 4-Channel Analogue Logger
106837	HOBO ZW-005 Wireless Data Node, ext. Temp/RH, Analogue, Pulse
106868	HOBO ZW-006 Wireless Data Node, 4 x Analogue external inputs
106869	HOBO ZW-007 Wireless Data Node, ext. Temp/RH, 2 x Analogue
106840	HOBO ZW-008 Wireless Data Node, 2 x Analogue, 2 x Pulse
106834	HOBO ZW-RCVR Wireless Data Node Receiver
106841	HOBO ZW-Router Wireless Data Node Router
Software	
103548	HOBOware Pro for PC/Mac with USB cable
Common Options	
101078	HOBO TMC6-HD Water/Soil Temperature Sensor
101079	HOBO TMC20-HD Water/Soil Temp Sensor
101080	HOBO TMC50-HD Water/Soil Temp Sensor
101212	HOBO Cable-2.5-Stereo 2.5VDC Voltage Input
101086	HOBO Cable 4-20MA Cable for External Input
107760	HOBO CABLE-ADAP24 24VDC External Input Cable
106919	HOBO CABLE-ADAP5 5VDC External Input Cable
106920	HOBO CABLE-ADAP10 10VDC External Input Cable
104530	HOBO TEL-7001 Telaire CO2 sensor
101088	HOBO Cable-CO2 input cable for Telaire CO2 Sensor to U12
	Contact Scott Technical for the full range of options

# HOBO Energy Monitoring

## Total Power Use kWh

For those who are mainly concerned with power usage, and want a measurement that matches their power meter, kWh systems integrate a WattNode sensor and 1 or 3 (depending on phase) current sensors. These require any of the pulse input loggers below and output readings in kWh. 1kWh = 1 unit on your power bill.

Components:

### 1. WattNode kWh module – WNB-x

The WattNode sensor provides accurate measurement of 1, 2 or 3 phase systems. It uses 1 to 3 AC current sensors (depending on the number of phases) and outputs True RMS of kWh used. It is bidirectional so can also measure net usage when used with PV or wind generation systems. It is also suitable for metering of variable frequency drives or where there may be loads with non-sinusoidal waveforms.

These sensors are connected inline and require installation by personnel with a suitable electrical certification. A convenient pre-wired lead set is also available for temporary installations.



### 2. AC Sensors

These are placed around the supply wire only of each phase to be monitored. They have a hinged fourth side to make installation easy. Please note that these sensors are not the same as the CTV-x range, used with the UX120 or ZW analogue input.



### 3. Datalogger

- UX90-001(M)
  - ◊ LCD Display
  - ◊ Accepts 1 WattNode pulse input

OR

- UX120-017(M)
  - ◊ Accepts up to 4 WattNode pulse inputs
  - ◊ Compatible with the E50B2 Power & Energy sensor

OR

- ZW - series with pulse input
  - ◊ Wireless data access
  - ◊ Models with integral temperature & humidity

The H22 and U30 loggers are also compatible. See section on multi-parameter logging systems.



### 4. Software

HOBOWare Pro, with USB cable. The ZW-series also require a wireless HOBOWare data receiver.

### 5. Options

Use the UX120-017 and E50B2 if you require measurements of other power variables such as power factor (PF) or Volt-Amp Reactive (VAR). See section on Power Quality.

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WattNode kWh Modules	
104527	WattNode WNB-3Y-400-P kWh sensor with 3 outputs, Wye
107781	WattNode WNB-3D-400 kWh sensor, 3 phase Delta
107782	WattNode WNB-3Y-400 kWh sensor, single pulse output, Wye
Recommended	
106706	HOBO A-WNB-LEADSET Pre-wired terminal block and voltage cables for WattNode
Split Core Current Transducers	
107768	Accu-CT T-ACT-0750-020 Split core current transducer, 20A
107769	Accu-CT T-ACT-0750-050 Split core current transducer, 50A
107770	Accu-CT T-ACT-0750-100 Split core current transducer, 100A
107771	Accu-CT T-ACT-0750-250 Split core current transducer, 250A
104515	Magnelab T-MAG-SCT-600 AC split core CT, 600A
106896	Magnelab T-MAG-0400-05 miniature AC split core CT, 5A
106898	Magnelab T-MAG-0400-20 miniature AC split core CT, 20A
106899	Magnelab T-MAG-0400-50 miniature AC split core CT, 50A
106900	Magnelab T-MAG-0400-75 miniature AC split core CT, 75A
Dataloggers	
107079	HOBO UX90-001 Pulse Datalogger, 128KB
107080	HOBO UX90-001M Pulse Datalogger, 512KB
106988	HOBO UX120-017 4-Channel Pulse Input Datalogger, 512KB
106989	HOBO UX120-017M 4-Channel Pulse Input Datalogger, 4MB
106837	HOBO ZW-005 Wireless Data Node, ext. Temp/RH, Analogue, Pulse
106840	HOBO ZW-008 Wireless Data Node, 2 x Analogue, 2 x Pulse
106834	HOBO ZW-RCVR Wireless Data Node Receiver
106841	HOBO ZW-Router Wireless Data Node Router
104507	HOBO H22 Energy Logger
105973	HOBO U30-NRC w/ no analog port, 5 Smart Sensor Inputs, 10AH
105975	HOBO U30-NRC w/ no analog port, 10 Smart Sensor Input, 10AH
H22 & U30 also require:	
106713	HOBO S-UCC-M001 120Hz pulse input smart sensor, 1m cable
Software	
103548	HOBOware Pro for PC/Mac with USB cable



# HOBO Energy Monitoring

## Power Quality & VA

Where you have variable or inductive loads, you need to know more about power quality to get true power usage. The E50B2 measures 1- or 3-phase current and voltage and calculates a wide range of related parameters including Power Factor. It also has a display for those who require a real time reading. Setup of these systems is more complex and requires some basic knowledge of electrical systems and the types of load being measured.

Components:

### 1. E50B2 Power & Energy Meter

The E50B2 meter has been designed specifically for cost effective monitoring of a range of power parameters. It is used with AC current sensors and voltage leads to measure and calculate:

- ◇ AC Current & Voltage
- ◇ Amp Hour (Ah) & Amps (A)
- ◇ Kilowatt Hours (kWh) & Kilowatts (kW)
- ◇ Power Factor (PF)
- ◇ Volt-Amp Reactive (VAR)
- ◇ Volt-Amp Reactive Hour (VARh)
- ◇ Volt-Amps (VA)
- ◇ Volts (V)
- ◇ Watt Hours (Wh) & Watts (W)

The E50B2 outputs pulses proportional to the measurement. Connection to the datalogger is with relevant pulse input cables and HOBOWare software is used to convert automatically to power variables. A convenient pre-wired lead set is also available for temporary installations.



### 2. AC Sensors

These are placed around the supply wire only of each phase to be monitored. They have a hinged fourth side to make installation easy. Please note that these sensors are not the same as the CTV-x range.



### 3. Datalogger

- UX120-017(M)
  - ◇ Dedicated 4-channel pulse input logger

OR

- H22 Energy, U30 or RX3000 multi-channel loggers
  - ◇ Multiple channels for a wide variety of analogue, pulse and smart sensor inputs
  - ◇ Requires 3 x pulse input cables



### 4. Software

HOBOWare Pro, with USB or serial cable (depending on logger)

### 5. Options

The H22, U30 or RX3000 dataloggers can measure and record a wide variety of other inputs for fully comprehensive studies. See section on Multi-parameter Logging Systems.

The RX3000 datalogger is available with Wi-fi, GSM and ethernet options.

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E50B2 Power Meter	
106991	HOBO T-VER-E50B2 Power Meter, 3 pulse output
Recommended	
106997	HOBO A-E50B2-LEADSET Wiring Kit
Split Core Current Transducers	
107768	Accu-CT T-ACT-0750-020 Split core current transducer, 20A
107769	Accu-CT T-ACT-0750-050 Split core current transducer, 50A
107770	Accu-CT T-ACT-0750-100 Split core current transducer, 100A
107771	Accu-CT T-ACT-0750-250 Split core current transducer, 250A
104515	Magnelab T-MAG-SCT-600 AC split core CT, 600A
106896	Magnelab T-MAG-0400-05 miniature AC split core CT, 5A
106898	Magnelab T-MAG-0400-20 miniature AC split core CT, 20A
106899	Magnelab T-MAG-0400-50 miniature AC split core CT, 50A
106900	Magnelab T-MAG-0400-75 miniature AC split core CT, 75A
Dataloggers	
106988	HOBO UX120-017 4-Channel Pulse Input Datalogger, 512KB
106989	HOBO UX120-017M 4-Channel Pulse Input Datalogger, 4MB
104507	HOBO H22 Energy Logger
105973	HOBO U30-NRC w/ no analog port, 5 Smart Sensor Inputs, 10AH
105975	HOBO U30-NRC w/ no analog port, 10 Smart Sensor Input, 10AH
H22 & U30 also require:	
106713	HOBO S-UCC-M001 120Hz pulse input smart sensor, 1m cable
Software	
103548	HOBOware Pro for PC/Mac with USB cable

# HOBO Energy Monitoring

## Multi-parameter Logging Systems

Where you wish to monitor a number of different parameters, or wish to measure multiples of the same parameter, the multi-channel logging systems are the most versatile. These are multi-purpose loggers that can measure a wide range of environmental and power parameters depending on your requirements. They have options for True RMS measurement of power sensors, a wide range of HOBO "smart sensors", as well as inputs for third party analogue sensors.

Components:

### 1. Sensors

Select what you require from the following:

TRMS sensors (require TRMS module):

- ◇ AC Current
- ◇ AC Voltage

Pulse sensors (require Pulse input cable)

- ◇ Kilowatt Hours
- ◇ Power & Energy Meter E50B2
- ◇ Third party pulse output sensors

Analogue sensors (require VIA module)

- ◇ Air velocity
- ◇ Carbon Dioxide
- ◇ Compressed Airflow
- ◇ DC Current
- ◇ Differential Pressure
- ◇ Gauge Pressure
- ◇ KiloWatts
- ◇ VOC
- ◇ Third party sensors (up to 20mA or 20VDC)

Smart Digital Sensors

- ◇ Barometric Pressure
- ◇ Solar Radiation (Total or PAR)
- ◇ Rainfall
- ◇ Relative Humidity
- ◇ Temperature
- ◇ Wind Speed & Direction

### 2. Modules

Ensure you have the correct module or cables required for the sensors you want (see list).

### 3. Datalogger

- H22 Energy Logger
  - ◇ For indoor use
  - ◇ Accepts any combination of 3 x TRMS or CVIA modules
  - ◇ 6 Smart sensor inputs



OR

- U30 or RX3000 General Purpose logger
  - ◇ Weatherproof
  - ◇ 5 or 10 Smart sensor inputs
  - ◇ With or without analogue (VIA) input
  - ◇ RX3000 has remote access options available (ethernet, GSM, Wi-fi)



### 4. Software and Data plan

HOBOWare Pro, with serial cable

Ethernet, GSM and Wi-fi systems also require an annual data plan

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AC Current & Voltage Sensors (require TRMS Module, or use with kWh/Power modules)	
107768	Accu-CT T-ACT-0750-020 Split core current transducer, 20A
107769	Accu-CT T-ACT-0750-050 Split core current transducer, 50A
107770	Accu-CT T-ACT-0750-100 Split core current transducer, 100A
107771	Accu-CT T-ACT-0750-250 Split core current transducer, 250A
104515	Magnelab T-MAG-SCT-600 AC split core CT, 600A
104516	Magnelab PT 0-150V T-MAG-SPT-150
104517	Magnelab PT 0-300V T-MAG-SPT-300
104518	Magnelab PT 0-600V T-MAG-SPT-600
kWh & Power Modules (require current sensors and pulse adaptor, see previous section)	
104527	WattNode WNB-3Y-400-P kWh sensor with 3 outputs, Wye
107781	WattNode WNB-3D-400 kWh sensor, 3 phase Delta
107782	WattNode WNB-3Y-400 kWh sensor, single pulse output, Wye
106991	HOBO T-VER-E50B2 Power Meter, 3 pulse output
HOBO Smart Sensors (selection only, wide range of meteorological sensors available)	
105510	HOBO S-THB-M002 12-bit Temp/RH smart sensor, 2m cable
101006	HOBO S-TMB-M002 12-Bit Temp Smart Sensor w/ 2m cable
106712	HOBO S-LIB-M018 Silicon Pyranometer Smart Sensor, 18m cable
Modules & Adaptors	
104509	HOBO S-FS-TRMSA Energy Logger TRMS Module
106647	HOBO S-FS-TRMSA-D TRMS Module w/ Plug-in Smart Sensor jack
104508	HOBO S-FS-CVIA Energy Logger Analog Module
106713	HOBO S-UCC-M001 120Hz pulse input smart sensor, 1m cable
Dataloggers	
104507	HOBO H22 Energy Logger
105973	HOBO U30-NRC w/ no analog port, 5 Smart Sensor Inputs, 10AH
105975	HOBO U30-NRC w/ no analog port, 10 Smart Sensor Input, 10AH
105977	HOBO U30-NRC w/ analog port, 5 Smart Sensor Inputs, 10AH
105979	HOBO U30-NRC w/ analog port, 10 Smart Sensor Inputs, 10AH
Software	
103548	HOBOware Pro for PC/Mac with USB cable
Options	Contact Scottech for details
	Wide range of analogue sensors
	Ethernet, Wi-fi and GSM options for RX3000

# HOBO Energy Monitoring

## Run Times, Lighting & Occupancy

Some times all you need to know is if a device is switched on or off. The UX90 range of loggers measure the state of a device and records when that changes. It can be used to determine the run-time of motors, whether doors are open or closed, how long lights are left on, and whether they are left on in unoccupied rooms.

### UX90-001(M) State / Pulse / Event / Runtime

- ◇ External contact input can be electronic solid state switch closure or logic driven voltage output
- ◇ Internal reed switch can be used with magnet to determine if windows or doors are open / closed

### UX90-002(M) Lighting On / Off

- ◇ Suitable for LED, CFL, fluorescent, HID, incandescent, natural lighting
- ◇ Auto-calibration of On / Off thresholds
- ◇ Optional light pipe to eliminate ambient sunlight in rooms

### UX90-004 (M) Motor On / Off

- ◇ Detects AC magnetic field or mechanical contact closure to indicate motor state
- ◇ Auto-calibration of On / Off thresholds
- ◇ Optional current switch

### UX90-005(M) Occupancy

- ◇ Infra red sensor detects if room is occupied up to 12m away
- ◇ Auto-calibration of On / Off thresholds

### UX90-006(M) Occupancy and Lighting On / Off

- ◇ Infra red sensor detects if room is occupied up to 5m away
- ◇ Also includes lighting On / off sensor



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