

Eltek TU1023 - GenII GD90A Energy monitor (NDRail350) transmitter user instructions



The GD90A is part of the Eltek GenII family of transmitters.

When used with the NDRail350 energy monitor and appropriate current transformers, the GD90A provides comprehensive monitoring and patterns of use of a three phase supply. The system is ideal for retro fit energy monitoring. The GD90A can be used along side all other GenII transmitter types.

(See Eltek brochure "Telemetry Energy Monitoring" on the Eltek website: www.eltekdataloggers.co.uk/literature.shtml)

The system comprises:

- GD90A transmitter,
- NDRail350 (1 x three phase load meter),
- NDMeter CTs
- DSP10-12 DIN rail mounting power supply to power the GD90A.

All components can be supplied by Eltek.

The GD90A has an input for 1 x NDRail350 energy monitor (Modbus RS485)

The NDRail350 has an input for 1 x three phase load:

- 3 x CT (AC333mV)
- 3 x AC230V nominal
- 1 x AC230 nominal to power the unit





Parameters measured are 3 x voltage, 3 x current, 3 x power factor ($\cos\phi$), kWh and kvarh.

GD90A channel assignment

Channels can be presented at the RX250AL together with those from any other GenII transmitter and can be reordered during TX Setup or when configuring the RX250AL. Channels can only be renamed when configuring the RX250AL with Darca software. Note: RX250AL channels are numbers 1 through 247. GD90A channels are labelled A through L.

GD90A Channel	Phase/Range	Resolution	Function in Darca
A	V1 0-500VAC	0.1	Voltage
B	V2 0-500VAC	0.1	Voltage
C	V3 0-500VAC	0.1	Voltage
D	I1 0-1000A	0.1	Current
E	I2 0-1000A	0.1	Current
F	I3 0-1000A	0.1	Current
G	P1 0-1	0.01	Power factor (PF)
H	P2 0-1	0.01	Power factor (PF)
I	P3 0-1	0.01	Power Factor (PF)
J	65000		Pulse count kWh
K	65000		Pulse count kvarh
L	Ext power to GD90A	1	State

CTs that can be used with the NDRail350 (all AC333mV output at range)

Type	Range	Size mm	Cable dia	CT open	CT closed
SCL8-5 SCL16-50 SCL16-100	0-5A 0-50A 0-100A	43 x 37 x 32 51 x 45 x 27 51 x 45 x 27	8mm 16mm 16mm		
SCT19-150 SCT32-400 SCT51-800	0-150A 0-400A 0-800A	51 x 53 x 17 82.5 x 85 x 27 121 x 127 x 32	19mm 32mm 51mm		

Other SCT19 models available: 5, 10, 15, 20, 30, 50, 70 and 100A - refer Eltek

Other SCT32 models available: 70, 100, 150, 200, 250, 300, 400 and 600A - refer Eltek

Other SCT51 models available: 600, 1000A - refer Eltek

SCL can be operated at range x 1.21 continuously

SCT can be operated at range x 1.31 continuously

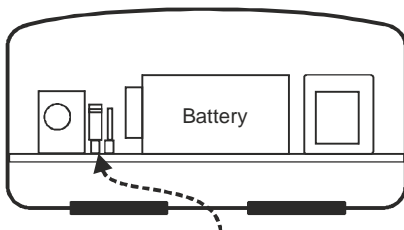
Important note

CTs have a moulded arrow impressed on the case. The CT must be mounted on the power cable so that the arrow points to the load!

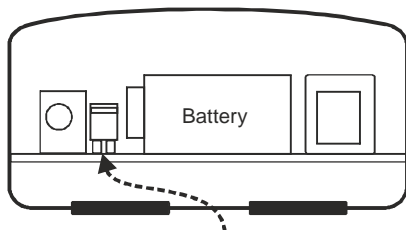
CT wiring: Black is positive, white is negative.

GD90A Links

The transmitter contains a rechargeable battery to maintain the GD90A operational should the AC supply fail. For despatch the battery is disconnected (to prevent total discharge). To connect the battery when received, remove the two bottom cover retaining screws to reveal:



Shipping:
The red link is installed as shown..



To commission:
Remove the red link and install as above

GD90A Notes

Method of operation

GD90A reads and stores the values from the NDRail350 meter every 10 seconds. 18 sets of values are stored and each newest set of values replaces the oldest. At each transmission the GD90A transmits the average of the 18 values for voltage, current or power factor. A transmission is randomised within the set TX interval. The default TX interval is preset to 5 minutes.

Battery charging, recovery and endurance

The PCB mounted 150mAh 6V NiMH battery is charged at approximately 4mA. A fully discharged battery requires 36 hours charge to reach 80% capacity. The TX is fully functional if the battery is discharged when external power is applied. A charged battery can provide 24 hours standby should the AC supply fail. Settings are not lost if the battery is fully discharged. The battery is PCB mounted. Should replacement be necessary, the transmitter must be returned to Eltek or our approved distributor.

External power required is 12VDC regulated. The preferred power supply is the type DSP10-12, this DIN rail mounting power supply is provided with screw down connections for ease of installation. The max demand current from the external power supply is 50mA.

Indicators and concealed push switch

The push switch is located behind a small access hole located at the rear of the transmitter. To activate the switch a small screwdriver or unfurled paper clip can be used.

(When initially powered the transmitter is displayed for 5 seconds)

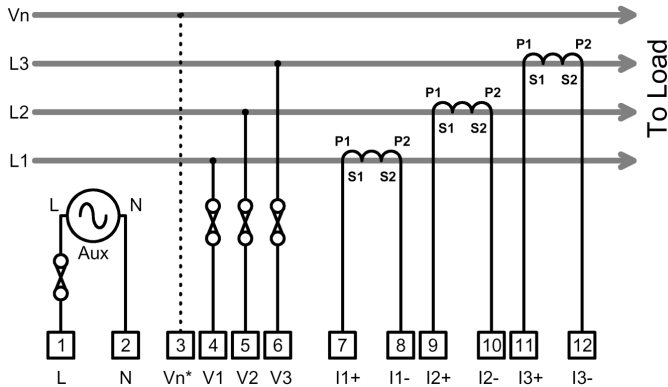
Red LED cadence due to activation of the concealed push switch:

Function	Activate switch for	LED cadence	LCD
Tx disable	5 seconds	5 x fast flashes	After 5 seconds displays OFF
Tx enable (when configured)	5 seconds	1 continuous 5 sec flash	After 5 seconds displays sensor information
Test transmissions approximately every 5 sec for 2 minutes.	2 second	Short flash at time of transmission	No change

Red LED (D5) due to GD90A being configured or not configured:

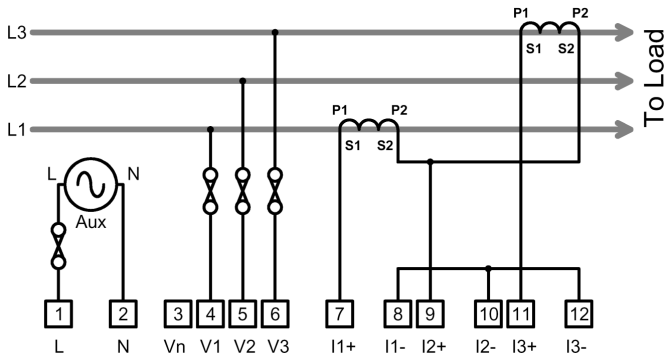
GD90A condition	LED	Note	LCD
GD90A not configured	"Blink" every 8 seconds		Battery gauge displayed only
GD90A configured	Short flash at time of a transmission	A transmission occurs at a random time within the set TX interval	See Display below

NDRail350 connections

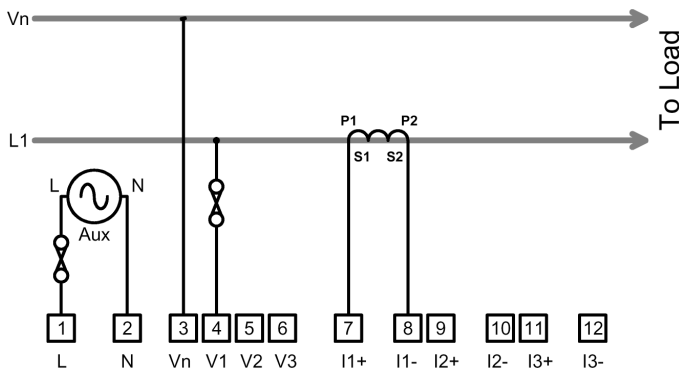


Ensure fuses are wired in as shown!
 A suitable Din rail mounting fuse holder is type CSFL4U (for fuse 1A 5 x 20mm fuse, not included) and end plate type CSFLEPU. Refer to Eltek.

3-Phase 3 or 4 wire (*Optional Neutral)



3-Phase 3 wire (2 x CTs)



Single Phase

Where applicable V1 (4), V2 (5), V3 (6) can be linked to L(1). A fuse must be used (see note above) from L supply to L(1)

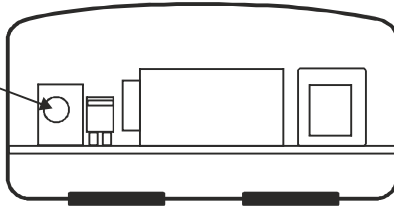
GD90A configuration using Darca software

Refer to the Quick start guide (ref TU1008) supplied with the RX250AI or download from <http://www.eltekdataloggers.co.uk/literature.shtml>

Connect the LCTX3 to the “Comms” socket):

To access the Comms connector, remove the two screws securing the case bottom to reveal the Comms connector. (Note GD90A cannot be configured by the logger only).

Comms connector



As a precaution disconnect the external 12VDC power supply before inserting the LCTX3 jack into the Comms socket. The external 12VDC can now be connected.

When configuration is completed disconnect the external 12VDC power supply before removing the LCTX3 jack. If the unit is not intended for immediate use, park the battery link so as to disconnect the internal battery. (See GD90A links page 4)

Before setting Tx channels please set the TX Interval:

Squirrel Channel to Transmitter Channel Assignments

Help Refresh Next Transmitter >> Close Transmitter Connections

Transmitter: Tx-18303

Sensor-On time (s): 0

User Preferred Tx Int: 00:01:40

Tx Interval: 00:01:40

Match

Set Sensor On Time

Set Log Int & Preferred Tx Int

Set Tx Interval

Total transmitter channels: 12
Used transmitter Channels: 0
Free transmitter Channels: 12
Battery Level (%): 83

Delete All Tx Channels

Set/Delete Selected Tx Channels

Auto Set (All Channels + Interval)-User Preferred

Channel: Current Squirrel Start Channel: 16 Update Channel Allocation

Tx Chan:	Range:	Sq Chan:					Match:	Alarms:	Hi:	Lo:
A	Voltage (0.0 to 500.0 V)	5	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
B	Voltage (0.0 to 500.0 V)	6	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
C	Voltage (0.0 to 500.0 V)	7	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
D	Current (0.0 to 1000.0 A)	8	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
E	Current (0.0 to 1000.0 A)	9	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
F	Current (0.0 to 1000.0 A)	10	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
G	Power Factor (-1.00 to 1.00)	11	Set Channel	Delete Channel	Meter		<input checked="" type="checkbox"/>			
H	Power Factor (-1.00 to 1.00)	12	Set Channel	Delete Channel	Meter		<input checked="" type="checkbox"/>			
I	Power Factor (-1.00 to 1.00)	13	Set Channel	Delete Channel	Meter		<input checked="" type="checkbox"/>			
J	Pulse Count (0 to 65000 kWh)	14	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
K	Pulse Count (0 to 65000 Kvarh)	15	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			
L	Voltage (0.0 to 1.0 Ext)	16	Set Channel	Delete Channel	Meter	Edit EU Range	<input checked="" type="checkbox"/>			

- For Tx channels A to L, select only the channel range from the drop down as shown above and click on Set Channel. DO NOT ATTEMPT to use the “Edit EU Range” box.
- Channels D, E and F are fixed 0-1000A; ensure the range type setting on the NDRail350 matches the range of the connected CT! See operating manual (see link on Page 8)
- Channel L monitors connection of the external power supply: 0 = not connected and 1 = 12V connected. Darca Plus can use these values to set an alarm should the AC supply fail.

GD90 specification

Frequency:	Default is 434.225Mhz (other frequencies are available)
Tx compliance:	To EN300 220 -1
Tx output power:	10mW ERP
Useable Tx interval:	typically 10 seconds to 15 minutes
On air duration:	approximately 400mS
Environment:	Indoor only, rated IP40
Temperature Range:	-10 to +55°C compliant to EN300 220-1, operational -30 to +60°C
Humidity:	95% non condensing
Size:	85 x 78 x 42mm (excluding 75mm antenna)
Weight:	250g
Connection strip:	8 x miniature pitch rising cage connector (included)
Antenna:	Supplied compressed spring, L=75mm, Gain -3db
Antenna connector:	SMA
Fixing:	WBG wall fixing bracket (optional)
Battery type:	PCB mounted (6v) 0.17Ah Ni-mH
Battery endurance:	typically >24 hours if battery fully charged
Charging time:	typically 36 hours from discharged to 80% capacity
Max lead length to NDRail350 (screened twisted pair):	<20m

NDRail350 support information

Notes:

Brochure - http://www.ndmeter.co.uk/files/ND_350_Retro-Fit_Meter_Brochure.pdf

User manual - http://www.ndmeter.co.uk/files/ND_PowerRail350_Manual.pdf

Installation manual – packed with product

SCL CT brochure - http://www.ndmeter.co.uk/files/SCL_Retro-fit_Current_Sensors.pdf

SCT CT brochure - http://www.ndmeter.co.uk/files/SCT_Retro-fit_Current_Sensors.pdf