

Specification for DIRIS A40

Multi-function energy meter for multimeasurement, energy metering and management in 4 quadrants, current and voltage harmonics calculation, monitoring of parameters, control/command, memorisation of voltage sags, swells and outages and communication of LV and HV networks.

Operation :

- Backlit LCD display enabling, 4 measurements (phases and total for example), bargraph for I1, I2, I3 and hours run or energy meter to be displayed.
The backlight is configurable on the voltage or current or auxiliary supply
- 6 function keys allowing direct access to :
 - I** : phase and neutral currents;
 - U/F** : phase to phase or phase to neutral voltages and frequency;
 - P/PF** : active, reactive and apparent power and power factor by phase and total;
 - MAX/AVG** for average and maximum demand for currents and powers;
 - H** : Total harmonic distortion up to the row 51 and harmonics from the row 3 to row 25 for 3U, 3V, 3I and In;
 - E/⊕** : Active energy (+/-), Reactive energy (+/-), Apparent energy and hours run
- Self test diagnostics function to check and correct wiring connection by internal. No need to rewire.

Functions :

The device enables the following functions to be carried out :

- Current measurement (I1, I2, I3 and IN), phase/phase and phase/neutral voltages , active P (+/-), reactive Q (+/-) and apparent S power per phase and total, power factor PF (L/C) per phase and total and frequency F.
- Display of average values for 3I, In, 3U, 3V, F, $\Sigma P(+/-)$, $\Sigma Q(+/-)$ and ΣS integrated individually on 2, 10 seconds or 5, 8, 10, 15, 20, 30 or 60 minutes.
- The last maximum demand for 3I, In, 3U, 3V, F, $\Sigma P(+/-)$, $\Sigma Q(+/-)$ and ΣS individually integrated on 2,10 seconds or 5, 8, 10, 15, 20, 30 or 60 minutes.

Note : Reset possible in configuration

- Hours run on 7 digits. Counting will be configurable on the voltage or on the current, with start threshold or on the auxiliary

Note :

* Reset possible in configuration



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- Active +/- (0 to 99 999 999 kWh), reactive +/- (0 to 99 999 999 kvarh) and apparent (0 to 99 999 999 kVAh) energy metering. Two pulse outputs configurable on pulse rate (0,1 to 100 kWh, kvarh and kVAh and 1 to 10 MWh, Mvarh and MVAh) and duration (100 to 900 ms).
- Calculation of harmonics % on I1, I2 I3, In, U12, U23, U31, V1, V2, V3 up to row 25 and thd 3I, thd In, thd 3U thd 3V up to row 51 can be viewed on the display.
- Monitoring of 3I, In, 3U, 3V, +/- ΣP , +/- ΣQ , ΣS , F, $\Sigma PF^{L/C}$, thd 3I, thd 3U, thd 3V, thd In and hour meter using upper and lower thresholds, hysteresis (0 to 99 %), time delay (0 second to 900 seconds) and relay state (NO or NF) enabling control of 2 to 6 relays. The storing of the 3 latest alarms for each values. The historic value is accessible by RS 485 (duration, type and fault value)
- 2 to 6 inputs for pulse metering or control state (6 pulse meters available in front face and 4 available via RS 485).
- 2 to 6 outputs for monitoring or command
- 2 to 4 analogues outputs 0/4-20 mA configurable for I1, I2, I3, In, U12, U23, U31, V1, V2, V3, ΣP , ΣQ , ΣS , $\Sigma PF^{L/C}$ and F. Possible to use 4-20 mA in auxiliary supply 30 V DC for metering inputs.
- Communication with JBUS/MODBUS protocol (up to 38400 bauds in RTU mode and via functions 3, 6, 8 and 16), and a three-wire (+, - and 0V) RS485 enabling remote viewing and configuration.
- Communication with PROFIBUS-DP protocol (up to 1,5 Mbauds); with three wire (+,- and 0V) RS 485 link enabling to be viewed and configured.
- 31-days storing of P+, P-, Q+, Q- with a internal / external synchronization signal. This signal can be set to 5, 8, 10, 15, 20, 30 and 60 minutes. Storing of the above values can be done over 62-day period if saving a single active or reactive power value.
- Storing the last min./max. instantaneous values for 3U, 3V, 3I, In, F, $\Sigma P\pm$, $\Sigma Q\pm$, ΣS , THD 3U, THD 3V, THD 3I, THD In.
- Stamp-dated storing of the 10 last :
 - voltage dips from 5 % to 95 % of Un (as per IEC 61000-4-30 and EN50160) with 10 ms tripping time.
 - Overvoltage from 105% to 150% of Un from 0 10 ms build-up time.
 - voltage cut-offs from a value less than 5% of Un.
- Storing of mean values according to synchronization signal for 3U, 3V (1 day in 10 minutes) and F (60 days in 10 minutes).



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Technical characteristics :

The meter is integrated in panel-mounted case H96xW96xD60 or 80mm (with plug-in module)

Connection by :

- 1 fixed terminal blocks 6 mm² for current,
- 1 removable terminal blocks 2,5 mm² for voltage,
- 1 removable terminal blocks 2,5 mm² for auxiliary supply, impulse outputs , analogue outputs, inputs and outputs.

- This device is installed on single, 2, 3 or 4-wire balanced or unbalanced three-phase networks, with different possibilities for the number of current transformers :

- 1, on phase 1
- 2, on phases 1 and 2 or 1 and 3
- 3, on the three phases

Current measurement can be via one, two, three CT's with 1 or 5A secondary (Inputs insulated) and primary configurable up to 10 000 A.

Voltage inputs up to 700 VAC direct or by voltage transformers with a maximum primary 500 kV and secondary 60, 100, 110, 115,120, 173 and 190 V AC.

- Accuracy :

- for voltages, this is guaranteed with a margin of 0.2 % from 50 to 700 VAC.
- for currents, this is guaranteed with a margin of 0.2 % from 10 to 120 % of the nominal current
- for active energy, this conforms to IEC 62053-22 in class 0.5S.
- for reactive energy, this conforms to IEC 62053-23 in class 2.

Part numbers

Diris A40 : ref.: 48250A40
(auxiliary supply 110 to 400 VAC or 120 to 350 VDC – CT 1 or 5A)

Diris A40 : ref.: 48251A40
(auxiliary supply 12 to 48 VDC - CT 1 or 5A)

Plug-in modules :

Metering	ref.: 48250090
Metering + Harmonics	ref.: 48250091
Communication by JBUS/MODBUS	ref.: 48250092
2 analog outputs 0/4-20 mA	ref.: 48250093
2 Inputs/2 Outputs	ref.: 48250094
Communication by PROFIBUS-DP	ref : 48250096
Memory	ref : 48250097