# IMPIANTO DI RETE PER LA CONNESSIONE A 15 KV DELL'IMPIANTO FOTOVOLTAICO

UBICATO NEL COMUNE DI ALESSANDRIA (AL)
STRADA BOLLA, FRAZ. SPINETTA MARENGO

Procedura autorizzativa (Decreto Regionale) N°_____del_____

## PROGETTO DEFINITIVO

## DOCUMENTAZIONE GENERALE

## SISTEMI DI MISURA

IDENTIFICAZIONE ELABORATO

| Livello prog. | Codice rintracciabilità | Tipo docum. | N°Elaborato | N°Foglio | Tot.Fogli | Nome file | Scala | Data |
|---|---|---|---|---|---|---|---|---|
| PD | 272549051 | 01 | 25 | - | - | | - | 31/05/2021 |

Revisione

| Revisione | Descrizione | Redatto | Controllato | Approvato | Data |
|---|---|---|---|---|---|
| 00 | Prima emissione | N.Oranges | A.Fata | V.Bretti | 31/05/2021 |
| | | | | | |
| | | | | | |

Progettista:

Vito Bretti
12.04.2022
17:04:29
GMT+01:00

Dott. Ing. VITO BRETTI ORDINE INGEGNERI ROMA A/23403 Settore a-b-c

GESTORE RETE ELETTRICA

Firma:

_____

Proponente: ENEL GREEN POWER ITALIA S.R.L.

Firma:

_____

***TITLE:*** **Sistemi di misura** ***AVAILABLE LANGUAGE:*** ***IT***

# SISTEMI DI MISURA
# "Spinetta Marengo FV"
# Alessandria (AL)


File: GRE.EEC.R.27.IT.P.13131.00.025.00_Sistemi di misura

| REV. | DATE | DESCRIPTION | PREPARED | VERIFIED | APPROVED |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| 00 | 31/05/2021 | ***PRIMA EMISSIONE*** | N. Oranges | A. Fata | V. Bretti |

**GRE VALIDATION**

| Name (EGP) | Discipline EGP | PE EGP |
|---|---|---|
| COLLABORATORS | VERIFIED BY | VALIDATE BY |

| PROJECT / PLANT | EGP CODE | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GROUP | FUNCION | TYPE | ISSUER | | COUNTRY | | TEC | PLANT | | | | | SYSTEM | | PROGRESSIVE | | | REVISION |
| ***Spinetta Marengo FV (13131)*** | GRE | EEC | R | 2 | 7 | I | T | P | 1 | 3 | 1 | 3 | 1 | 0 | 0 | 0 | 2 | 5 | 0 | 0 |

| CLASSIFICATION | For Information or For Validation | UTILIZATION SCOPE | Basic Design,Detailed Design,Issue for Construction, etc. |
|---|---|---|---|

ISKRAEMECO

Metering is our Business

# ICG MT860

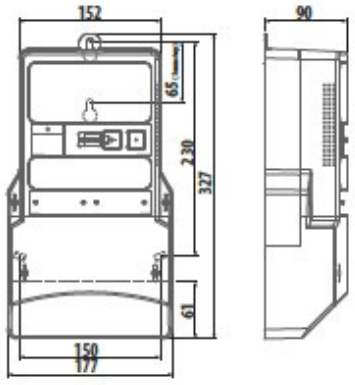
## High precision modular meter

- kWh, kvarh, kVAh — Active, Reactive and Apparent Energy
- 4 Quadrant measurement
- Accuracy class
- Multiple connection types
- CT/VT — Transformer connection
- Power quality according to EN 50160
- Maximum demand
- Load profile
- Load control
- Event log
- Real-time clock
- Multi-rate registration
- IEC 62056 - 21 compliance
- SCADA ready, Modbus — Real time SCADA, Modbus communications protocol
- PSTN, 2G, Ethernet — Communication
- RS232, RS485 — RS232 interface, RS485 interface
- CS, IR — CS (20 mA current loop) interface, IR (optical port) interface
- Photovoltaic ready

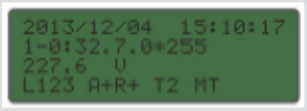
Proven technology, highest precision and communication modularity make the **MT860** the best solution for production and transmission applications. This multi-functional device meets modern market demands with extended functionalities:

- »No power reading« option via optical port
- Anti-tampering features
- Voltage cut, sag and swell detection
- Power quality monitoring
- Photovoltaic friendly design
- Recyclable casing material
- Exchangeable communication modules
- Exchangeable input/output modules

### Meter dimensions



# ICG MT860 High precision modular meter

| | | MT860S-T1 CT connected | MT860S-T1 CT & VT connected |
|---|---|---|---|
| **Type overview** | | | |
| **Network** | High voltage | | • |
| | Medium voltage | • | • |
| | Low voltage | • | • |
| **Connection type** | 3P4W | • | • |
| | 3P3W | • | • |
| **Communication type** | on board | Optical probe + no power reading, RS-485 | |
| | modules | CS – RS485, RS485-RS485, RS232-RS485, MODBUS TCP/IP & RTU, Ethernet – RS485, GSM/GPRS-RS485 | |
| **Outputs – on board** | | External power supply, Two impulse outputs, RS485 | |
| **Input – output options** | | 4 OPTOMOS outputs + 5A bistable relay + 1 input, 5 OPTOMOS outputs + 1 input, 8 OPTOMOS outputs + 4 inputs | |
| **Technical specifications** | | | |
| **Nominal voltage** Un | | 3 x 57.7/100 V ... 3 x 240/415 V | 3 x 57.7/100 V ... 3 x 240/415 V |
| **Voltage range** | | 0.8 – 1.15 Un | |
| **Reference frequency** | | 50 Hz ±2 % or 60 Hz ±2 % | |
| **Current** | Nominal current In | 1 A, 2 A, 5 A, 5/1 A | |
| | Base current Ib | – | |
| | Maximal current Imax | 6 A, 10 A | |
| **Accuracy class** | Active energy | Class 0.25 (IEC 62053 - 22) | |
| | Reactive energy | Class 2, 3 (IEC 62053-23), calibrated up to 0.5% | |
| | Apparent energy | According to the IEC 62053 - 22 standard | |
| **Real-time clock** | Accuracy | Crystal: < 5 ppm = ≤ ± 3 min./year (T = +25 °C) | |
| | Back-up power supply | LI battery : 10 years | |
| **External power supply** | Value | 100 – 240 V AC/DC | |
| | Tolerance | 0.8 – 1.15 Un | |
| | Frequency (only for AC) | 50 Hz or 60 Hz | |
| **Temperature ranges (IEC 62052 - 11)** | Operation | -40 °C ... +70 °C | |
| | Storage | -40 °C ... +80 °C | |
| **Ingress protection IEC 60529** | | IP 53 | |
| **Liquid Crystal Display** | |  | |
| **Basic functionality** | | | |
| **Measurement** | | Active (import/export) and Reactive energy (import/export), 4Q Reactive, Apparent energy & demand, Phase and three phase energy/demand measurements, Current average, maximum and cumulative demand measurement, Maximum demand can be calculated for all energies measured as tariff rated or cumulative | |
| **Tariff functions** | | Complex time-of-use (TOU), Tariff control via RTC or external inputs | |
| **Load profiles** | | Two independent Load profiles, Programmable and independent Load profiles period, Event log | |
| **Communication** | | Independent communication channels, MODBUS RTU and MODBUS TCP/IP | |
| **Power quality** | | Measurement of RMS phase current, RMS phase voltage, Power factor, Network frequency, Phase angles, Voltage interruptions, Short power outages | |
| **Specific** | | | |
| Backlit LCD display, Detection of opening main and terminal cover, Secured communication channels, Network anomalies detection, Communication modules, Input/output modules | | | |
| **Specific** | | | |
| Enhanced Power quality measurement features (Harmonic components, Total harmonic distortion factor, Voltage sags and swells), Load control, RTC (LI battery) | | | |



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