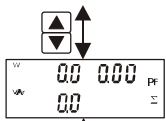
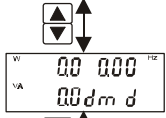


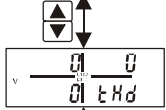
The sequence of the variables on the display



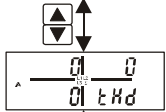
System variables : W – var – PF



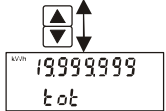
System variables : Wdmd – Vadmd – Hz



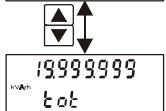
Single – phase variables : V – THD



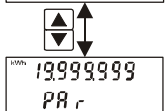
Single – phase variables : A – THD



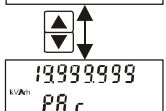
Total energy : kWh



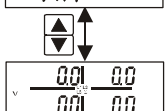
Total energy : kvarh



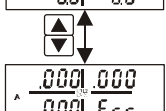
Partial energy : kWh



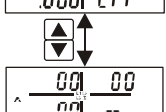
Partial energy : kvarh



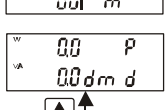
Single phase : V_{LN}



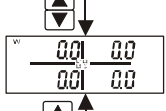
Single phase : A



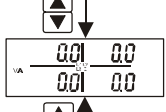
20 (90) A version: Maximum value single phase current



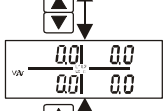
5 (10) A version: kWdmd and kVAdmd



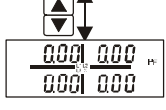
Single phase and system: W



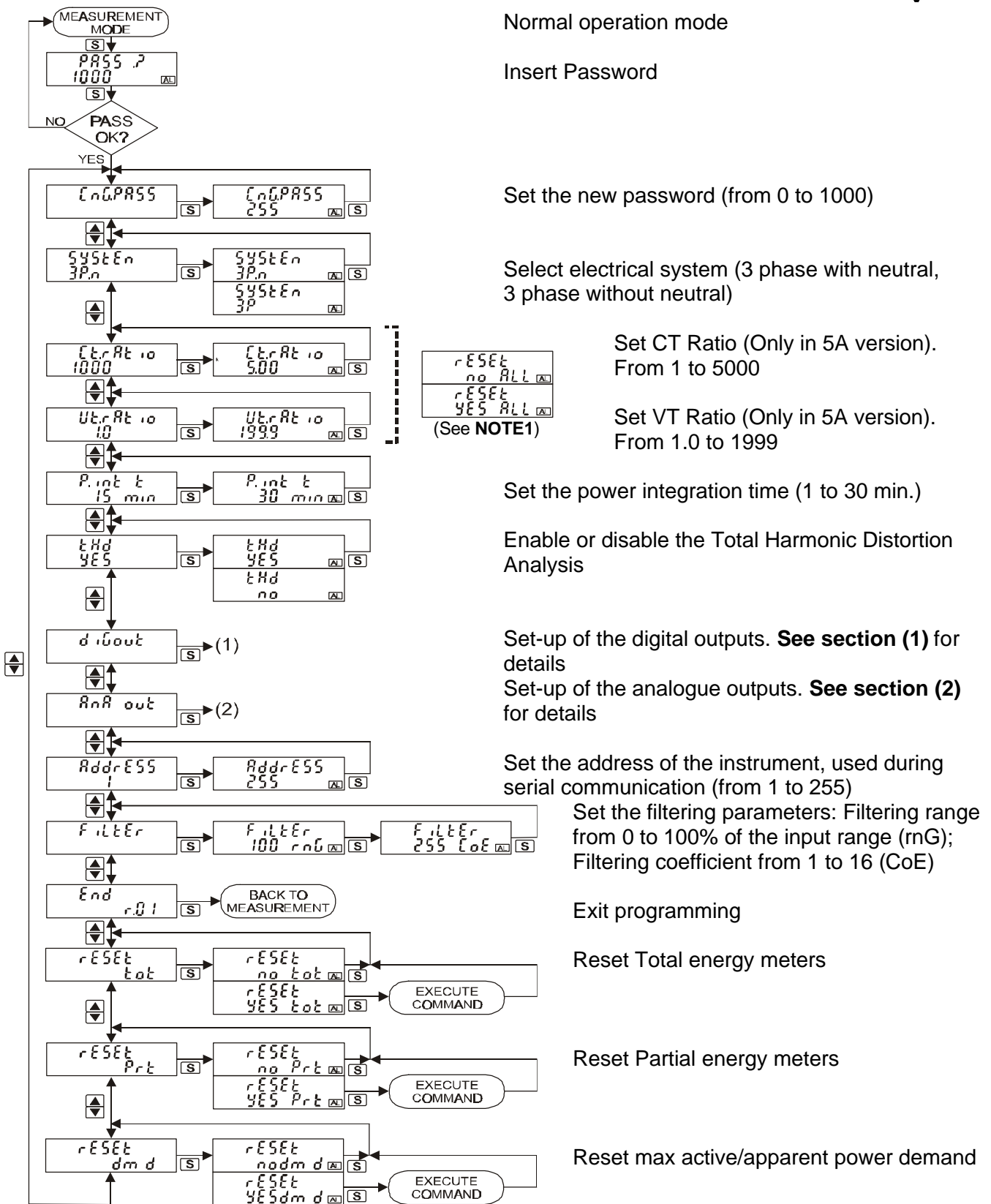
Single phase and system: VA



Single phase and system: var

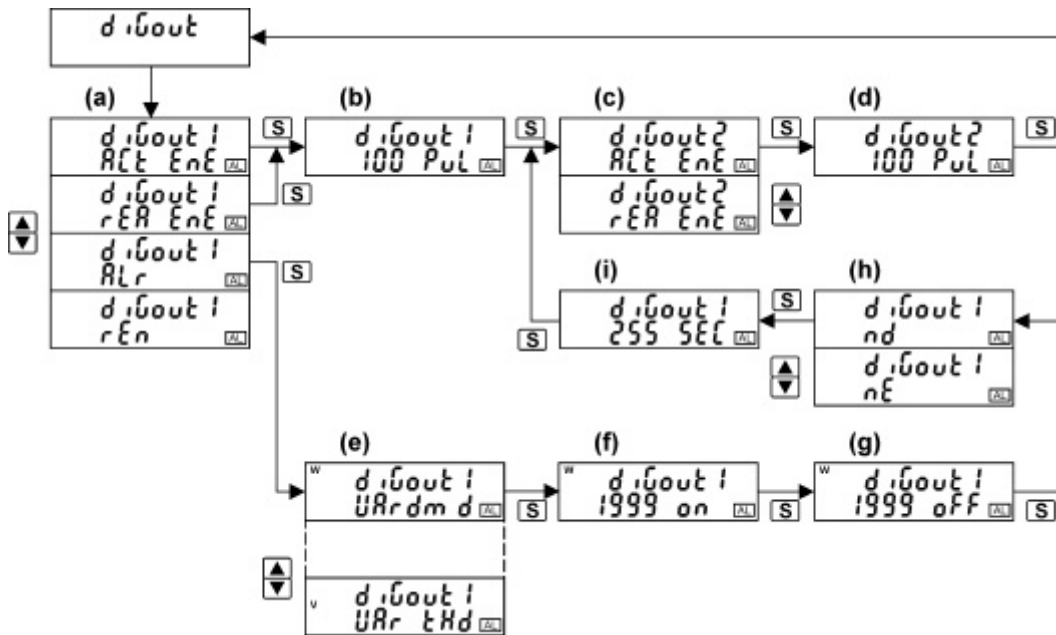


Single phase and system: PF



NOTE 1: when changing the CT and/or VT parameter, the instrument will reset the energy meters (if the operator chooses “no”, the instrument will exit without changing the CT and VT parameters)

(1) Section 1: Digital output set-up



1) **Set-up of the digital output.** If the “open collector module” is not present, such subsection won’t be displayed.

1-a) **Select the 1st output working mode:**

- ACt EnE: Pulses output retransmitting Active Energy
- rEA EnE: Pulses output retransmitting Reactive Energy
- ALr: Alarm output
- Ren: Remote operated output only (by means of the serial output)

1-b) **Set the number of pulses per kWh/kvarh of the 1st energy meter.** The ranges are as follows:

- **WM22 with 5A current input:**

| Ct ratio * Vt Ratio | | Range (pulses/kWh and pulses/kVvarh) | | |
|---------------------|--------|--------------------------------------|------|-----------------------------|
| From | To | From | To | |
| 1.0 | 5.0 | 1 | 100 | pulses/kWh and pulses/kvarh |
| 5.1 | 50.0 | 0.1 | 10.0 | pulses/kWh and pulses/kvarh |
| 50.1 | 500.0 | 0.01 | 1.00 | pulses/kWh and pulses/kvarh |
| 500.1 | 5000.0 | 1 | 100 | pulses/kWh and pulses/Mvarh |

- **WM22 with 90A current input (excluded 660VAC version):**

| Ct ratio * Vt Ratio | | Range (pulses/kWh and pulses/kVvarh) | | |
|---------------------|-----|--------------------------------------|-----|-----------------------------|
| From | To | From | To | |
| 1.0 | 5.0 | 1 | 100 | pulses/kWh and pulses/kvarh |

- **WM22 with 90A current input, only 660VAC version:**

| Ct ratio * Vt Ratio | | Range (pulses/kWh and pulses/kVvarh) | | |
|---------------------|------|--------------------------------------|------|-----------------------------|
| From | To | From | To | |
| 5.1 | 50.0 | 0.1 | 10.0 | pulses/kWh and pulses/kvarh |

1-c) **Select the 2nd output working mode:**

- ACt EnE: Pulses output retransmitting Active Energy
- rEA EnE: Pulses output retransmitting Reactive Energy

1-d) **Set the number of pulses per kWh / kvarh of the 2nd energy meter.** The ranges are the same as listed in point 2-b)

1-e) **Select the variable to be connected to the alarm.** The following options are available:

- (W) UAr dmd: Active power Demand variable (UAr)
- (VA) UAr dmd: Apparent power Demand variable (UAr)
- (V) UAr (Σ): System Voltage variable (UAr)
- (PF) UAr (Σ): System Power Factor variable (UAr)
- (V) UAr tHd: Voltage THD variable (UAr) (the highest value among the three phases)
- (A) UAr tHd: Current THD variable (UAr) (the highest value among the three phases)
- UAr ASY: Asymmetry variable (UAr)
- (W) UAr (Σ): System Active power variable (UAr)
- (VA) UAr (Σ): System Apparent power variable (UAr)
- (VAr) UAr (Σ): System Reactive power variable (UAr)

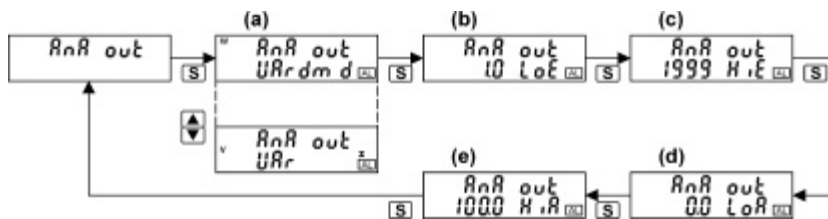
- 1-f) **Activation set-point (ON alarm) for the selected variable** (the number represents the variable value)
- 1-g) **De-activation set-point (OFF alarm) for the selected variable** (the number represents the variable value)

NOTE 2: the alarm type will be up or down, according to the following table:

| ON – OFF values correlation | Alarm type |
|-----------------------------|------------|
| ON > OFF | UP type |
| ON < OFF | DOWN type |

- 1-h) **Excitation of the output:**
 - nd: normally de-energized
 - nE: normally energized
- 1-i) **Activation delay of alarm** (from 1 to 255 s)

(2) Section 2: Analogue output set-up



- 2) **Set-up of the digital output.** If the “open collector module” is not present, such sub-section won’t be displayed.
 - 2-a) **Select the variable to be retransmitted by analogue output.** The following options are available:
 - (W) UAr dmd: Active power Demand variable (UAr)
 - (VA) UAr dmd: Apparent power Demand variable (UAr)
 - (V) UAr (Σ): System Voltage variable (UAr)
 - (PF) UAr (Σ): System Power Factor variable (UAr)
 - (V) UAr tHd: Voltage THD variable (UAr) (the highest value among the three phases)
 - (A) UAr tHd: Current THD variable (UAr) (the highest value among the three phases)
 - UAr ASY: Asymmetry variable (UAr)
 - (W) UAr (Σ): System Active power variable (UAr)
 - (VA) UAr (Σ): System Apparent power variable (UAr)
 - (VAr) UAr (Σ): System Reactive power variable (UAr)
 - 2-b) **Programming of the minimum electrical scale (zero scale) of the measurement** (Lo.E is connected to the output value Lo.A)
 - 2-c) **Programming of the maximum electrical scale (full scale) of the measurement** (Hi.E is connected to the output value Hi.A)
- NOTE 3:** in points 2-b) and 2-c), the maximum programmable value will change according to the settings of the CT and VT ratios (in the 5A version) and other variables. For the THD max (V), THD max (A) and ASY (V), the maximum programmable value is 100 (%).
- NOTE 4:** in points 2-b) and 2-c), the LoE value must be lower than the HiE value.
- 2-d) **Programming of the minimum value of the electrical scale of the analogue output**, expressed as percentage (from 0 to 100) of the analogue output full scale
 - 2-e) **Programming of the maximum value of the electrical scale of the analogue output**, expressed as percentage (from 0 to 100) of the analogue output full scale.

TECHNICAL FEATURES

| Description | Three-phase power analyser | |
|--|----------------------------|---|
| Display | Energy meters | LCD 1 x 7 ½dgt |
| | Other variables | LCD 4 x 3 ½dgt |
| Basic current, in accordance with EN61036/EN61268 (Ib) | AV0-1-3-8-9: 20A | AV4-5-6-7: 5 A |
| Max current, in accordance with EN61036/EN61268 (Imax) | AV0-1-3-8-9: 90A | AV4-5-6-7: 10 A |
| Rated input voltage (Un) / current / Range | Range AV0 | 208V L-L / 20 (90) A - 20% ≤ Un ≤ +15%, 50-60Hz |
| | Range AV1 | 400V L-L / 20 (90) A - 20% ≤ Un ≤ +15%, 50-60Hz |
| | Range AV3 | 660V L-L / 20 (90) A - 30% ≤ Un ≤ +15%, 50-60Hz |
| | Range AV4 | 208V L-L / 5 (10) A - 20% ≤ Un ≤ +15%, 50-60Hz |
| | Range AV5 | 400V L-L / 5 (10) A - 20% ≤ Un ≤ +15%, 50-60Hz |
| | Range AV6 | 100V L-L / 5 (10) A - 20% ≤ Un ≤ +20%, 50-60Hz |
| | Range AV7 | 660V L-L / 5 (10) A - 30% ≤ Un ≤ +20%, 50-60Hz |
| | Range AV8 | 208V L-L / 20 (90) A - 20% ≤ Un ≤ +15%, 50-60Hz |
| | Range AV9 | 400V L-L / 20 (90) A - 20% ≤ Un ≤ +15%, 50-60Hz |

WM22-DIN - Instruction manual



| | | |
|---|------------------------------------|---|
| Accuracy | Active Power/Energy | Class 1, according to EN61036 |
| | Reactive Power/Energy | Class 2, according to EN61268 |
| | Voltage | Within Un range: $\pm(0.5\% \text{ rdg} + 1 \text{ dgt})$ |
| | Current | From 0.003lb to 0.2lb: $\pm(0.5\% \text{ rdg} + 3 \text{ dgt})$ From 0.2lb to Imax: $\pm(0.5\% \text{ rdg} + 1 \text{ dgt})$ |
| | Frequency | $\pm 0.1\% \text{ rdg}$ (50 to 60 Hz) |
| | THD | $\pm 3\% \text{ f.s.}$ (f.s. = 100%) (up to 7 th harmonic) |
| Additional errors in Energy metering (in accordance with EN 61036, EN 61268) | Voltage variation | < 0.5% |
| | Frequency variation | < 0.5% |
| | Wave-form | < 1% (3 rd harmonic: 10%) |
| | Voltage disymmetry | < 0.5% |
| | Magnetic induction | 0 (Up to 0,5mT) |
| | HF Electromagnetic fields | < 1% |
| | Operation of accessories | 0 |
| Temperature drift | | < 200 ppm/°C |
| Total temperature drift with analogue output (Input + output) | | < 500 ppm/°C |
| Current overload | | 30 Imax for 10ms, at 50Hz (direct connection) 20 Imax for 0.5s, at 50Hz (C.T connection) |
| Wave-form | | Sinusoidal or distorted wave |
| Crest factor | Ib = 20A: ≤ 6 (127A max peak) | Ib = 5A: ≤ 3 (15A max peak) |
| Sampling rate | | 1000 samplings / sec @ 50 Hz |
| Input impedance | 400V L-L | >720k Ω |
| | 208V L-L | >720k Ω |
| | 660V L-L | >1.97M Ω |
| | 100V L-L | >400k Ω |
| Electrical system | | 3-phase, balanced or unbalanced load, with or without Neutral. NOTE: in the self power supply versions, the Neutral must be always connected to the input. |
| Optional modules | 2 digital output | AO2900 module in slot A |
| | Analogue output 0 to 20mA | AO2920 module in slot B (only WM22 with Aux. power supply) |
| | Analogue output 0 to 10Vdc | AO2921 module in slot B (only WM22 with Aux. power supply) |
| | RS485 output | AO2950 module in slot B (only WM22 with Aux. power supply) |
| Alarm response time for V(sys), W(sys), VA(sys), var(sys), PF(sys) variables | FFT off, filter disabled | 700ms |
| | FFT on, filter enabled | 1.2 s |
| Analogue output response time for V(sys), W(sys), VA(sys), var(sys), PF(sys) variables | FFT off, filter disabled | 900ms |
| | FFT on, filter enabled | 1.4 s |
| Alarm and analogue output response time for THDV, THDA variables | | Filter disabled 3 s |
| Power supply | Self power supply versions | 400V L-L -20% \leq Un \leq +15% , 50-60Hz |
| | | 208V L-L -20% \leq Un \leq +15%, 50-60Hz |
| | Auxiliary power supply | 230 VAC -15 / +10% 50-60Hz |
| | | 115 VAC -15 / +10% 50-60Hz |
| | | 24 VAC -15 / +10% 50-60Hz |
| Operating temperature (in accordance with EN61036 and EN61268) | | From -20 to +55°C |
| Relative humidity (non condensing) | | from 0 to 90% @ 40°C |
| Installation category | | Cat. III (IEC 664) |
| Insulation | Input/output (optional) | 2kVAC for 1 minute |
| Dielectric strength | | 4kVAC for 1 minute |
| EMC | Burst | 4kV/ level 4 (EN61000-4-4) |
| | Radiated EM fields immunity | 10V/m 26-1000MHz (EN61000-4-3) |
| | Electrostatic discharge | 15kV (EN61000-4-2) |
| | Radio frequency emissions | In accordance with CISPR 14 e CISPR 22 |
| Surge voltage (1,2/50) mS | | 8kV (EN61000-4-5) |
| Standards | | Metrology, Safety EN61036, EN61268, IEC-664 |
| Current input terminal blocks | Type | Screw type |
| | Max. cable section (90A) | 35 mm ² |
| | Min. cable section(90A) | 6 mm ² |
| | Max. cable section (5A) | 4 mm ² |
| | Min. screws tightening torque | 2 Nm |
| | Max. screws tightening torque | 6 Nm |
| Protection degree | Front | IP40 |
| | Terminal blocks | IP20 |
| Mounting | | Panel or DIN-rail |
| Housing material | | ABS/NORYL/PC self-extinguishing |
| Dimensions | | 162.5 x 90 x 63 mm (9 DIN modules) |
| Weight | | About 800g (packing included) |