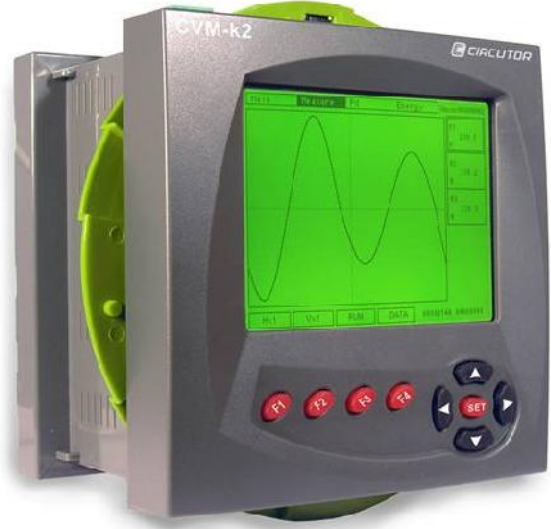## DTSk2 Quick Start Guide

The DTSk2 is an instrument that measures, calculates and displays the main electrical parameters for three-phase industrial systems (balanced or unbalanced). Measurements are in true RMS, via three AC voltage inputs and four AC. current inputs. (1A or 5A current transformers). The measured and calculated parameters are listed in the variables table.

This document is a quick start guide to the use and operation of the DTSk2. For more information the manual may be downloaded from Measurlogic's website www.measurlogic.com

⚠ Before any maintenance, modification to the connections, repair, etc., the instrument must be disconnected from the supply. If any operation or protection fault is suspected the instrument must remain out of service ensuring against any accidental reconnection. The instrument is designed to be changed quickly in the event of any breakdown.

1 DISPLAY DESCRIPTION.

The values measured, calculated and stored by the measuring modules are viewed through the Display module. The Display consists of a screen and the function and movement buttons.
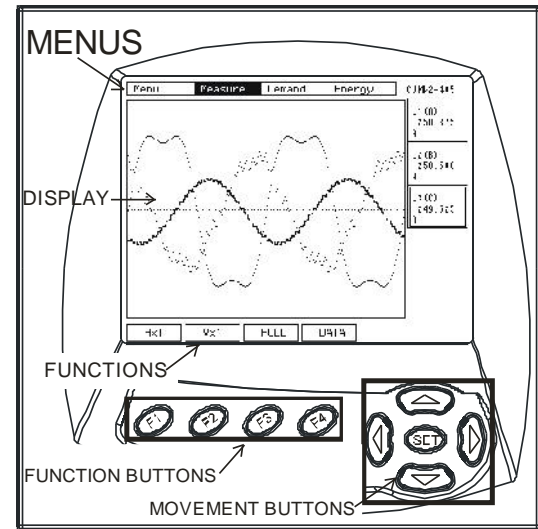
- Function buttons: Are identified by F1, F2, F3, F4 and serve to select the function that appears in the bottom line of the display.
- Movement buttons: Serve to move through the upper menu, into the setup screen and graphic screen.

To move through the options menu and select the desired option, use the movement buttons and press SET. The selected option, always appears highlighted.
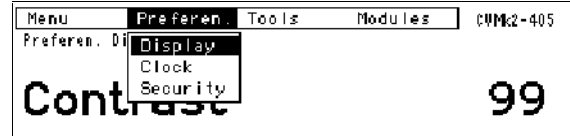
2 DISPLAY SETTINGS.

In this group of menus, you will be able to set all the parameters related to the display.

2.1 Display options
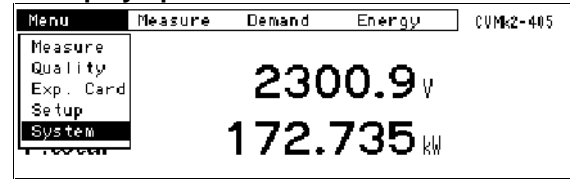
MENU   SYSTEM   PREFEREN.   DISPLAY
Shows all of the display's options.

- Contrast: Sets screen contrast level.
- LCD OFF: The Display can be turned off automatically. YES - the display will switch off with the backlight. NO - Display will never switch off.
- Backlight: Controls the backlight status, NO – the backlight is off permanently, YES - Backlight is permanently on. The other times (20-90-180) indicate the delay before switching off.
- Language: Sets the default language.

2.2 Clock
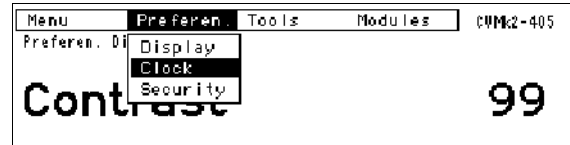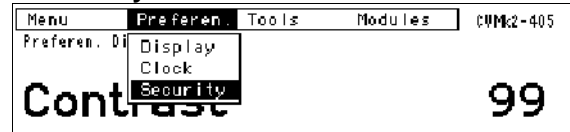
MENU   SYSTEM   PREFEREN   CLOCK

This screen sets the date and time of the instrument.
- Time: Sets the instrument time in 24 hour format.
- Date Type: Sets the date format in DD/MM/YY (day / month / year) or MM/DD/YY, (month / day / year)
- Date: Sets the actual date with the format as chosen above.

2.3 Security

MENU   SYSTEM   PREFEREN   SECURITY

This screen sets the preferences for access to the setup screens.
- Lock: YES - Sets a password for authorized personnel to make configuration changes.
- Password: Enter the 4-digit password. The default is 1234.
- New: To change the password, enter a new 4-digit value.
- Repeat: Confirm the new 4-digit password.

2.4 Device

MENU   SYSTEM   TOOLS   DEVICE

- Reset: Performs a complete RESET of the instrument, Removing auxiliary power also resets the instruments.
- Update: Sets the Display into BOOT mode for firmware updates.
- Baud disp.: The baud rate use by the Display to communicate with one or more measurement modules. Default 57.6 kbaud.

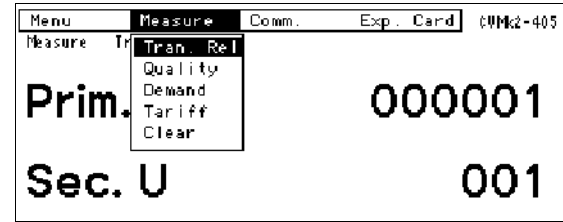## 2.5 Connected measuring modules list

MENU   SYSTEM   MODULES

Lists the different measurement modules connected to the display.

3 BASIC SETTINGS FOR MEASUREMENT MODULES.

This group of menus provides the user the ability to setup the DTSk2 for most common applications. For additional information, consult the complete manual.

3.1 Transformer ratios

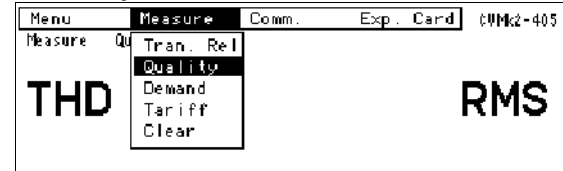MENU   SETUP   MEASURE   TRAN. REL

This menu provides for the programming of the primary and secondary voltage and current ratios.
- Prim. V: Sets the primary voltage. For any voltage less than 520V ph-ph, set to "1".
- Sec. V: Sets the secondary voltage. For any voltage less than 520V ph-ph, set to "1".
- Prim. I: Sets the primary current from the current transformer.
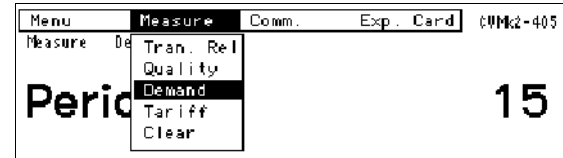- Sec. I: Sets the secondary of the current transformer. 1A or 5A.

3.2 Quality

MENU   SETUP   MEASURE   QUALITY
- THD Calc.: The THD calculation can be performed using the fundamental frequency or the RMS value.

3.3 Demand

MENU   SETUP   MEASURE   DEMAND

The DTSk2 calculates the maximum demand of the following values, 3 phase active power, 3 phase apparent power, current demand per phase and average current demand. Different calculation parameters for the demand can be set, and are as follows.
- Period: The integration period in minutes. Set from1 to 60 minutes. Default is 15 minutes.
- Window: Three types of demand calculation can be set. FIXED, SLIDING or THERMAL
- Synchro: The demand calculations can be synchronized with an external pulse input (normally from the utility) or with the instrument's internal clock. Choose EXTERNAL or CLOCK respectively.

3.4 Tariff

MENU   SETUP   MEASURE   TARIFF
The DTSk2 allows for the configuration of up to 9 different tariffs (TOU - Time of Use).
- Num.Tariff: The number of different tariffs.
- Synchro: The tariffs can be synchronized with an external pulse input (normally from the utility) or with the instrument's internal clock. Choose EXTERNAL or CLOCK respectively.
- Input num: When selecting an external synchronization pulse, set the digital input number associated with that pulse.
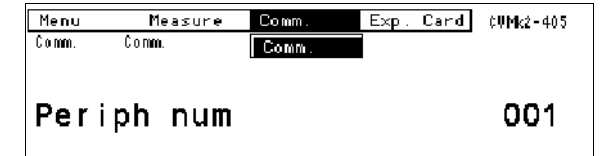
3.5 Clear

MENU   SETUP   MEASURE   CLEAR

This screen deletes the following values:
- All: All stored values.
- Maximums: Maximum values, dates and times.
- Minimums: Minimum values, dates and times.

- Energy: Energy and Tariff values.
- Demand: Maximum demand values including tariffs.
- Ext. Count: External input counters.

3.6 Comm

MENU   SETUP   COMM   COMM

This menu provides for the programming of the measurement module's RS-485 communication parameters. The parameters to program are:
- Periph num: Unique Modbus address. Default: 001
- Baud: Communications Baud rate. Default 38400
- Parity: (NO-ODD-EVEN). Default: No(ne)
- Data bit: Numbers of data bits. Default: 8
- Stop bit: Stop bits 1 – 2. Default: 1
- Protocol: MODBUS protocol.

4 TECHNICAL FEATURES

Product to be protected by an external fuse, Model KTK-1 by Bussmann or similar, rated 1A 600V

Aux. Power supply circuit:		
Single-phase:	85…265 Vac / 100…300 Vdc. DC model: 24Vdc	
Voltage tolerance:	-15 % / +10 %	
Frequency:	50 ~ 60 Hz	
Maximum consumption:	30 VA, 25W	
Operating temperature:	14 to 122 ºF (-10ºC to + 50 ºC)	
Humidity (without condensation):	5% ….. 95%	
Mechanical:		
Case material:	Self extinguishing V0 plastic	
For use on a flat surface of a Type 1 enclosure (For the Display module ONLY)		
Protection:		
Assembled instrument (DISPLAY):	IP 51	
Non assembled instrument (MEASURING MODULE):	IP 31	
Dimensions when panel mounting (in):	3.35" x 2" x 2.75" (85x52x70 mm)	
Weight:	1.65 lbs (0.750 kg)	
Field wiring terminals to use Copper conductors only, 14 AWG with minimum temperature rating of 140 ºF (60 ºC)		
Accuracy class:	-5 MODEL	-2 MODEL
Voltage:	0,5 % ± 1 digit	0,2 % ± 1 digit
Current :	0,5 % ± 1 digit	0,2 % ± 1 digit
Power / Energy:	0,5 % ± 1 digit	0,2 % ± 1 digit
Power factor:	0.5…1	
Scale range with measurement margin:	0,4%...120% / 0.2%...120%	
Measurement circuit:		
Rated voltage:	300 Vac ph-n / 520 Vac ph-ph	
Frequency:	45…65 Hz	
Rated current:	In/ 5 A or In/ 1 A.	
Permanent overload:	1.2 In	
Power consumption - voltage circuit	0.5 VA	
Power consumption - current circuit	0.9 VA	
Safety:		
UL File #: NMTR.E227534		
Category III - 300 V AC. / 520 AC. EN-61010 Class II double isolation against electric shock		

Standards:
IEC 664, VDE 0110, UL 94, IEC 801, IEC 348, IEC 571-1, EN 61000-6-3, EN 61000-6-1, EN 61010-1, EN 61000-4-11, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 55011
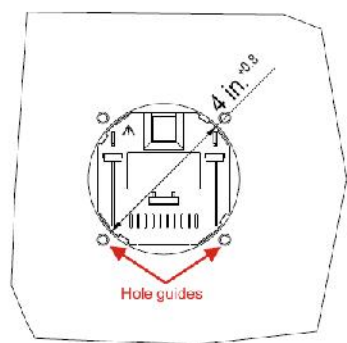
5 TECHNICAL SERVICE

In case of any instrument failure or operational questions, please contact

Measurlogic Inc.
7334 S. Alton Way, Suite 14M
Centennial, CO 80112
Toll-free: 1-877-PQ-SOLNS (777-6567)
Tel: 303-805-5252,   Fax: 425-799-4780
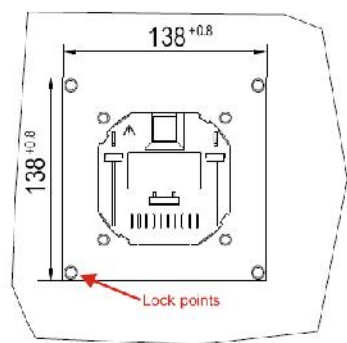e-mail/web   info@measurlogic.com,   www.measurlogic.com
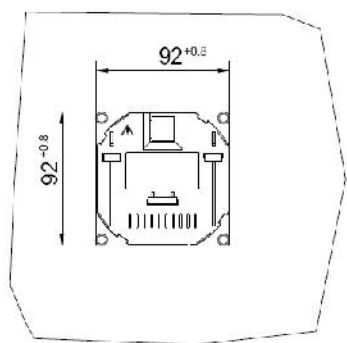
Picture 1

Picture 2

Picture 3

Pictures 1, 2 and 3: Shows the way you have to insert the display in the panel.
You can insert the CVMk2 in three different measures of holes. One of 92x92mm (picture 1) , other of 4 inch of diameter (picture 2) and the last one of 138x138mm (picture 3).
After to insert the display, we have to insert the blocker hoop, making sure that the clamps are closed (picture 4) and the white arrow (picture 5) that indicates the way of the communications wire, indicates upwards.
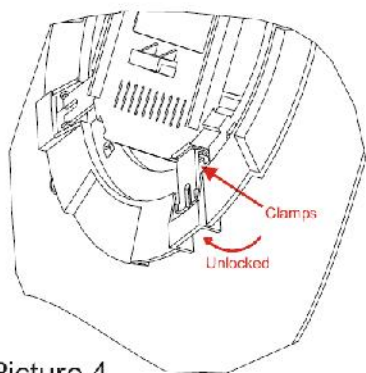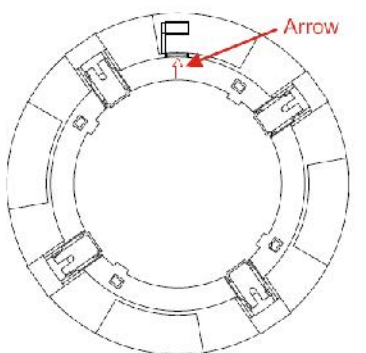

Picture 4

Picture 4: The clamps are the fixations elements of display to the panel. It´s important to lock the display that the clamps were not blocked, so when we insert the hoop, the clamps remain fixed. In the same way, to dissasemble the display, the camps must be blocked. We have to open the clamps to remove the hoop.
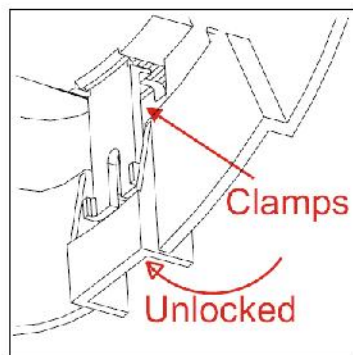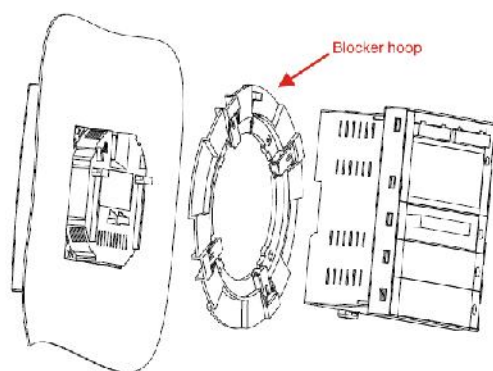
Picture 5: The arrow must indicate upwards as shows the picture, and must be in the same position that has the arrow in the black part of display.
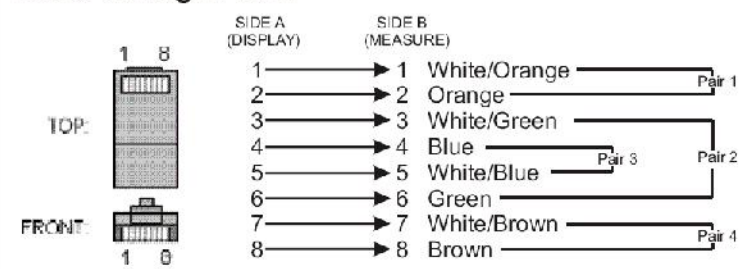

Picture 5

Picture 6: The assembly scheme is as shows picture 6. The measure unit could be mounted behind the locker hoop as shows the picture or could be mounted in DIN rail, and connected with the display by the wire RJ45 Straight.
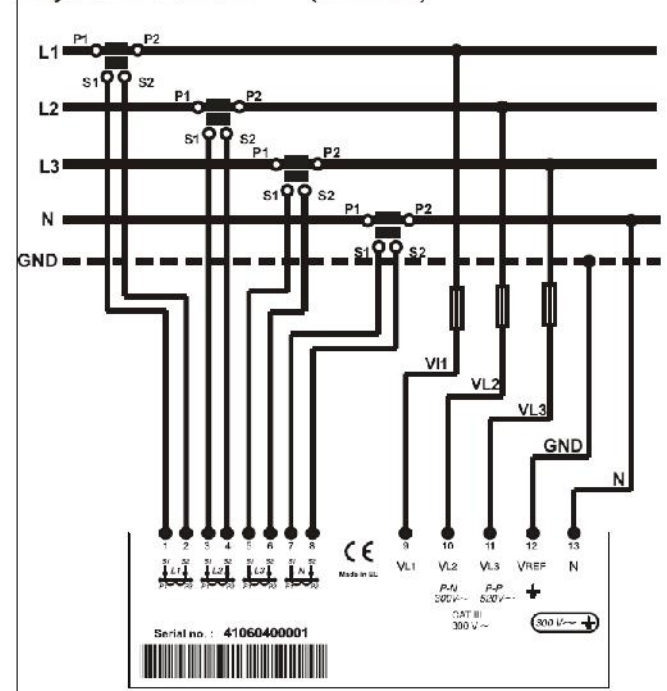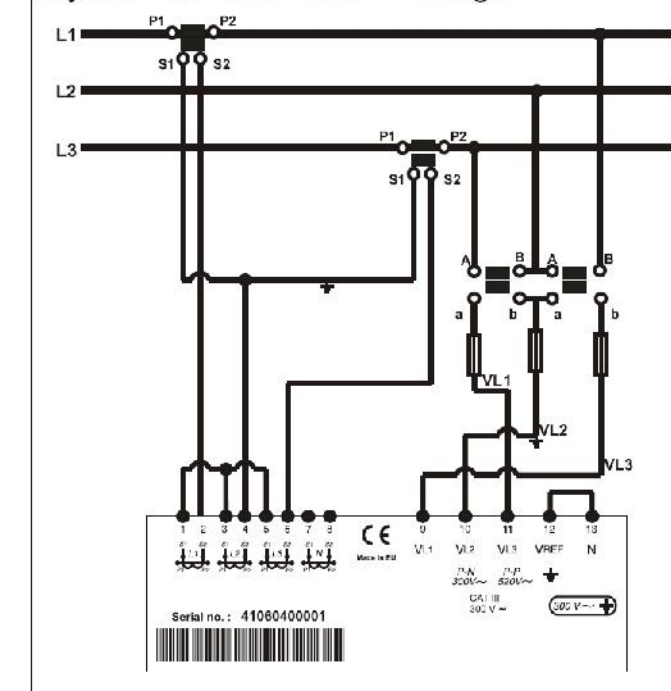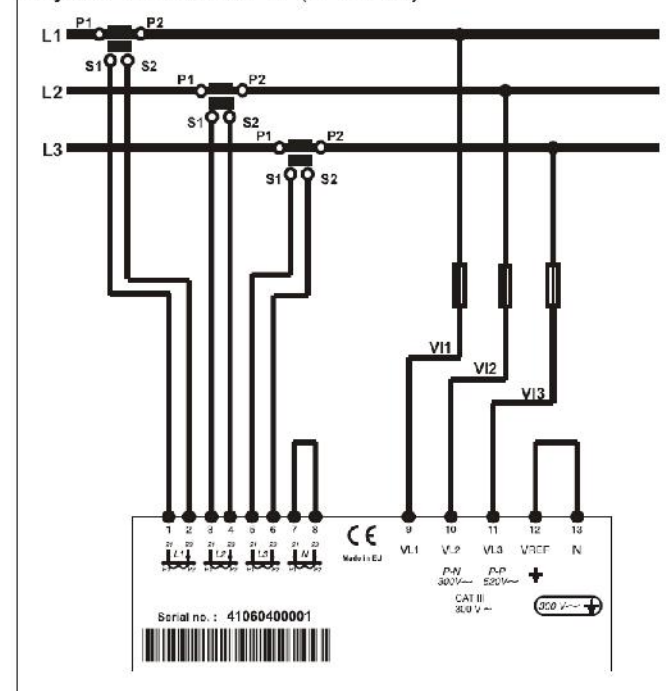

Picture 6

RJ45 Straight wire

SIDE A (DISPLAY)	SIDE B (MEASURE)	
1	1 White/Orange	Pair 1
2	2 Orange	
3	3 White/Green	
4	4 Blue	Pair 2
5	5 White/Blue	Pair 3
6	6 Green	
7	7 White/Brown	Pair 4
8	8 Brown	

Layout 4 Current T. (5 wires)

Serial no.: 41060400001

Layout 2 Current T. and 2 Voltage T.

Serial no.: 41060400001

Layout 3 Current T. (3 wires)

Serial no.: 41060400001

Layout 4 Current T. and 2 Voltage T.

Serial no.: 41060400001

Communications

RS-232

RJ45

RS-485

RJ45

Power Supply: 85-265 V~ 50/60 Hz, 6VA.
Power Supply: 85-265 V~ 50/60 Hz, 6VA.