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Revolution Not Evolution

7334

**DIPTRONIC™
MEASURING SYSTEM
MK1 & L.I.P.S**

**CPU REPLACEMENT
INSTRUCTIONS**



Issue D March 2010



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P7403 Electrical equipment service and installation guide for road tankers

Liquip supplies the following document as a guide for installing and operating electrical equipment on road tankers. It should be used in conjunction with local legislation and standards, owner's requirements and tank manufacturer procedures.

INFORMATION PERTAINING TO WORKING ON A TANK VEHICLE

1. Prior to working on a tank vehicle it must be degassed or certified to work on. Before working in a tank compartment an appropriate device must be used to check for the presence of volatile gases.
2. Any work carried out on a tank vehicle must be done so in a non-hazardous area.
3. Before working on any electrical equipment on a tank vehicle power must be isolated either via the battery isolation switch (BIS), by disconnecting the truck battery or by disconnecting the positive of the electrical equipment.
4. Never weld on a tank vehicle unless all electronic equipment is completely disconnected electrically from both the tanker and other equipment.
5. Hazardous conditions may be present when working with high voltage devices (such as gantry monitors). Qualified technicians only should be servicing these devices.
6. Do not connect a battery charger or other pulsed power supply to the truck battery without first isolating all electrical equipment as permanent damage may result.
7. Long sleeve and pants protective clothing should be worn at all times. Clothing must be non-static generating. Any petroleum contact with skin should be washed off immediately.
8. Always follow manufacturer guidelines when working on electrical equipment. Failure to do so may void warranty or cause damage.

INFORMATION PERTAINING TO INSTALLING EQUIPMENT ON A TANK VEHICLE

1. All electrical equipment and fittings must be suitable for use on a tanker and meet all local regulations for operation.
2. Use high quality waterproof conduit and fittings to IP66 minimum for all wiring and junction boxes.
3. Use waterproof flexible compound such as Silastic in all glands and joints not available as waterproof by design.
4. Mount all equipment away from direct spray areas such as behind the tyres and out of direct sunlight. Always select the most sheltered aspect.
5. Ensure all installations adhere to appropriate guidelines.
6. Coat all terminals, cable end and joints with non-conducting grease or Vaseline after final testing. This will prevent corrosion.



7. Prior to crimping, check wiring connections are electrically correct. When crimping make sure there is good electrical contact between the wire strands and metal section of the crimp terminal. Pull on the crimp to ensure a good connection has been made.
8. Cable ends may be crimped with ferrules for better connection. Do not solder the cable ends (fatigues and corrodes). Pre-coat with non-conductive grease for corrosion protection.
9. At any point a cable is extended or joined to a standard cable assembly, all cable screens must be connected to the chassis, refer to relevant wiring diagram. Insulate exposed screen wire using heat shrink, terminate with an eye terminal and attach to the junction box mounting screw. If the junction box is mounted to a panel not electrically connected to the chassis, the screens must still be joined together and connected to the chassis at one point, as per wiring diagram.
10. Common grounding of a system is most important. Do not rely on common chassis grounding at various points, run a full-length dedicated ground cable. Max resistance, battery ground to any ground point to be 1Ω. Refer Liquip Tech Talk #48: Electrical Bonding on Tankers. The electrical resistance between the tank and tanker chassis, prime mover chassis, or trailer undercarriage, and between the tank and the connection of the tanker pipework to the delivery hose, shall not exceed 10Ω (refer to AS2809.2).
11. Always fit as much loose cable length into junction boxes and housings as practicable to allow for future servicing.
12. Always segregate power and intrinsically safe wires in accordance with I.S wiring rules.
13. Carry out a complete wiring check for accuracy and continuity before connecting power to any device.
14. Observe international and local legal requirements. In the event of conflicting instructions seek qualified advice before proceeding.
15. Do not route communication cables past 'noisy' electrical apparatus such as solenoids and alternators.
16. Check instruction manual for recommended cable type and torque settings.
17. Use specialised, genuine tools for all electrical work.
18. Mount equipment to clean, dry, bare surfaces on a metal bracket mounted to the chassis/sub-frame. It is recommended the bracket be welded to the chassis/sub-frame to facilitate good electrical contact.
19. Ensure adequate clearance around equipment being installed. This will provide for ease in future maintenance.
20. When bolting equipment into place, the use of Teflon tape or anti-seize compound on threads is advised.
21. Fuses located in hazardous areas must be suited to that location.
22. Always allow suitable separation between intrinsically safe wiring and power from line power source.



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Replacement of CPU:

Follow the steps below to replace a multiple compartment Diptronic CPU. Note that there is a separate instruction manual (refer P7335 Diptronic Sensor Replacement Instructions) for replacing sensor-potted assemblies (DIP1xx-12) or aerial (DIP100-3).

1. Print a calibration report ticket for each compartment (if CPU still functional). If it is not possible to print a ticket then obtain setup data for each compartment from previous records.

Note: DipRecall allows all stored data to be saved to and restored from a PC. This applies to post 01.00.09 DIP200 EPROM's and all DIP240 EPROM's. Refer DipRecall manual for instructions.

Press the NEXT button to change compartments. Hold the NEXT and PRINT buttons when each compartment is selected to print the report ticket. Note the printer must be enabled in the CPU to perform this function (a printer harness is also needed). See section 12.12.

2. Record data on existing CPU label as required.
3. Isolate power to CPU.
4. Disconnect the wires from the CPU to the power supply.
5. Disconnect all military spec connectors.
6. Unscrew the mounting screws from the rear of the CPU housing making sure that the housing is supported and does not fall to the ground.
7. Position the new CPU and secure with mounting screws.
8. Return CPU to Liquip for inspection.



9. Connect all the military spec connectors.
10. Run the power cable to the junction box and reconnect wires in the same configuration as before.
11. Switch power on.

Follow the instructions below to setup the CPU and calibration data.

Note: If DipRecall is being used, other than steps 12.7 & 12.13 the following steps need not be followed. Refer DipRecall manual for information on how to upload data to, and download from a CPU.

12.1 Setting/editing the time – 24-hour format:

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC	CALIBRATION? YES
3	Press OK	SENSOR SETUP? NO
4	Press OK 3 times	CLOCK SETUP? NO
5	Press INC	CLOCK SETUP? YES
6	Press OK	## : ## : ## TIME
7	Repeatedly press INC or NEXT to input current time	## : ## : ## TIME
8	Press OK to save	## : ## : ## TIME
9	Hold CAL & press OK to exit	EXIT CALIBRATION? YES
10	Press OK	



12.2 Setting the date format:

Enter the desired date format – 3 options are available.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC	CALIBRATION? YES
3	Press OK	SENSOR SETUP? NO
4	Press OK 3 times	CLOCK SETUP? NO
5	Press INC then OK	CLOCK SETUP? YES
6	Press OK	## : ## : ## TIME
7	Press MENU	DD/MM/YY DATE FORMAT
8	Repeatedly press INC to select format. Press OK to save	## / ## / ## DATE FORMAT
9	Press OK to save	## / ## / ## DATE FORMAT
10	Hold CAL & press OK	EXIT CALIBRATION? YES
11	Press OK to exit	



12.3 Setting/editing the date:

Use this option to set or edit the current date.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK 3 times	CLOCK SETUP? NO
4	Press INC then OK	## : ## : ## TIME
5	Press MENU twice	## / ## / ## DATE
6	Repeatedly press INC then NEXT to input current date.	## / ## / ## DATE
7	Press OK to save	## / ## / ## DATE
8	Hold CAL & press OK	EXIT CALIBRATION? YES
9	Press OK to exit	



12.4 Entering the customer company name:

Use this option to enter the customer company name reference (default is Liquip Sales PL).

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK	SYSTEM SETUP? NO
4	Press INC then OK	NO.OF COMPARTMENTS: #
5	Press MENU 2 times	##### COMPANY NAME REFERENCE
6	Repeatedly press INC & NEXT to input company name. Press OK to save.	##### COMPANY NAME REFERENCE
7	Hold CAL & press OK	EXIT CALIBRATION? YES
8	Press OK to exit	

12.5 Entering the truck ID:

Use this option to enter the truck ID into the CPU.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK	SYSTEM SETUP? NO
4	Press INC then OK	NO.OF COMPARTMENTS: #
5	Press MENU 3 times	##### TRUCK ID
6	Repeatedly press INC then NEXT to input truck ID. Press OK to save.	##### TRUCK ID
7	Hold CAL & press OK to exit	EXIT CALIBRATION? YES
8	Press OK	



12.6 Entering the number of compartments:

Use this menu function to enter the number of compartments in the tanker that accommodates the sensors. The number of compartments is the same as the number of sensors.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC	CALIBRATION? YES
3	Press OK	SENSOR SETUP? NO
4	Press OK	SYSTEM SETUP? NO
5	Press INC	SYSTEM SETUP? YES
6	Press OK	NO.OF COMPARTMENTS: 1
7	Repeatedly press INC to select number of compartments.	NO.OF COMPARTMENTS: #
8	Press OK	NO.OF COMPARTMENTS: #
9	Hold CAL & press OK	EXIT CALIBRATION? YES
10	Press OK	



12.7 Enter tank height (H) & dielectric:

Enter the 'H' value of each sensor under 'HT'. 'H' is the vertical distance from the top of the mounting pad to the bottom of the dipstick guide in each compartment. Note that this is the same value as in the order sent to Liquip in 'Determining Length of 'Diptronic' Electronic Dipstick'. Note that the sensors must all be connected when entering the data.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press INC then OK	SET SENSOR ID: 1
4	Press MENU twice	COMP.: 1 HT: #####mm DIEL.: 1.4-1.7 S/L MAX: #####mm
5	Repeatedly press NEXT or INC to change selection.	COMP.: # HT: #####mm DIEL.: ##-### S/L MAX: #####mm
6	Press OK to save	COMP.: # HT: #####mm DIEL.: ##-### S/L MAX: #####mm
7	Hold CAL & press OK to exit	EXIT CALIBRATION? YES
8	Press OK	

Note: Sometimes it is necessary to press OK a number of times in step 6 to save the entered data correctly. Ensure that after pressing OK, *HT*, *DIEL* & *S/L MAX* are the same as indicated on the ticket.



12.8 Setting up the temperature factors:

Each DIP1xx-12 has a label attached that contains data relating to the temperature factor of that particular sensor. Enter the data from each label corresponding to the selected compartment into the CPU according to the instructions below. It is crucial this data be entered exactly as indicated for the sensor to function correctly. Note that this data should have been written on the data sheets for sensor calibration for reference.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press INC then OK	CHANGE INDIVIDUAL SENSOR ID:
4	Press MENU button	TEMPERATURE FACTOR? NO
5	Press INC then OK	SELECT SENSOR NO.: 1
6	Repeatedly press INC for correct sensor number and press OK.	VIEW TEMP.FACTOR ARRAY? NO
7	Press OK	EDIT TEMP.FACTOR ARRAY? NO
8	Press INC then OK	SENSOR:# STEP:1 TEMP. FACTOR ###.#, ###.#
9	Repeatedly press NEXT & INC to enter correct temp & factor. Press OK to save.	SENSOR:# STEP:1 TEMP. FACTOR ###.#, ###.#
10	Hold CAL & press NEXT for next step	SENSOR:# STEP:2 TEMP. FACTOR ###.#, ###.#
11	Repeat above steps for all data	
12	If END displayed hold CAL & press NEXT	ADD ANOTHER STEP? NO



STEP	OPERATION	DISPLAY
13	Press INC then OK to add another step and OK to save or press OK to exit	SENSOR:# STEP:# TEMP. FACTOR ###.#, ###.#
14	Repeat above to add more steps	
15	Hold CAL & press NEXT	VIEW TEMP.FACTOR ARRAY? NO
16	To add another sensor's array of data press MENU 3 times and go to step 6 or proceed to step 17 to exit	SELECT SENSOR NO.: #
17	Hold CAL & press OK	EXIT CALIBRATION? YES
18	Press OK to exit	

12.9 Setup of calibration data in CPU:

12.9.1 Using existing compartment data sheets / calibration report tickets:

Each sensor should have a data sheet for sensor calibration from the original calibration. This data needs to be entered into the CPU exactly as indicated on the data sheets. Note that if calibration report tickets were printed in section 1, enter the calibration steps as indicated on those tickets.

Note that if any data sheets / calibration report tickets are unobtainable each sensor will have to be recalibrated.

Repeat the steps indicated below for each sensor until all the data for each sensor is entered into the CPU.

Note that for each compartment, step 1 in calibration will be 'S/L MAX' under the 'SENSOR(mm)' and 0 under the 'CERTIFIED(L)' on the calibration sheet. View 'S/L MAX' in section 12.7.



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STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC	CALIBRATION? YES
3	Press OK	SENSOR SETUP? NO
4	Press OK twice	COMPART.CALIBRATION? NO
5	Press INC	COMPART.CALIBRATION? YES
6	Press OK	SELECT COMP.NO.: 1
7	Repeatedly press INC to select next compartment	SELECT COMP.NO.: #
8	Press OK	CALIBRATE LEVEL/VOLUME? NO
9	Press OK twice	EDIT LEVEL/VOLUME ARRAY? NO
10	Press INC	EDIT LEVEL/VOLUME ARRAY? YES
11	Press OK	COMP: # STEP: 1 MEASURED TRUE +#####.#, +0000.0
12	Continue to press INC then NEXT to edit	COMP: # STEP: 1 MEASURED TRUE +#####.#, +#####.#
13	Press OK to save	COMP: # STEP: 1 MEASURED TRUE +#####.#, +#####.#
14	Hold CAL & press NEXT for next step	END
15	Hold CAL & press NEXT	ADD ANOTHER STEP? NO
16	Press INC then OK to add another step.	COMP: # STEP: 2 MEASURED TRUE +#####.#, +#####.#
17	Continue to press INC then NEXT to edit	COMP: # STEP: 2 MEASURED TRUE +#####.#, +#####.#



STEP	OPERATION	DISPLAY
18	Press OK to save	COMP: # STEP: 2 MEASURED TRUE +#####.#, +#####.#
19	Repeat above steps until all steps entered	COMP: # STEP: # MEASURED TRUE +#####.#, +#####.#
20	When finished hold CAL & press NEXT	END
21	Hold CAL & press NEXT	ADD ANOTHER STEP? NO
22	Press OK to exit	VIEW LEVEL/VOLUME ARRAY? NO
23	Hold CAL and press OK	EXIT CALIBRATION? YES
24	Press OK	
25	Repeat above steps for each compartment	

View entered data as described in 'Viewing calibrated data' in P7326 manual. Edit any errors in the 'Edit calibrated data' section.

12.9.2 When no data sheets available:

For those cases where no data sheets are available (or it is not possible to obtain data through the CPU being replaced as in section 1 above) each sensor will have to be re-calibrated to suit that particular sensor. Calibrate according to the instructions in P7326 manual.

12.10 Compartment level messages:

The following compartment level messages can be found either on the data sheets for sensor calibration or on the calibration report ticket. If this information is unavailable set each level according to the instructions below. For either case follow the numbered steps below to enter into the CPU.

Up to 6 level messages can be displayed to alert the user to different fill states. L2 is used to indicate tank full with a 'MAX+' message. Set L2 to the last calibration step in litres rounded down to the nearest 10L.

L4 and L5 are internal messages that are not normally used. They should both be left at the default value of 1.



L3 is set between the safe fill level (SFL) and L2 and gives a ‘*** MAXIMUM LEVEL EXCEEDED – DOWNLOAD ***’ message. Set L3 at the same level as the probe actuation point. The probe actuation point is set 200L (230L for Exxon Mobil) under the internal roof level.

L6 indicates the lowest measurable level. *For all cases L6 should be a minimum of 3% capacity rounded up to the nearest 10L.*

The SFL needs to be entered into the CPU for each compartment. If product is pumped above this level a warning message will be displayed. The safe fill level should be set 3% or 12mm below probe actuation point, whichever is the **lower** in the compartment.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK	SYSTEM SETUP? NO
4	Press INC then OK	NO.OF COMPARTMENTS: #
5	Press MENU 4 times	C:1 L2: ##### L3: ##### SFL: ##### L4: ##### L5: ##### L6: #####
6	Repeatedly press NEXT or INC to input C, L2, L3, L6 & SFL	C:# L2: ##### L3: ##### SFL: ##### L4: ##### L5: ##### L6: #####
7	Press OK to save after entering each compartment	
8	Hold CAL & press OK	EXIT CALIBRATION? YES
9	Press OK to exit	



12.11 Adding / editing offsets:

Use these operations to add or edit a mm or litres offset. Check if there were any offsets in the previous calibration recorded in the data sheets for sensor calibration or on the calibration report tickets.

12.11.1 Adding an offset in mm

An offset in mm can be input if needed. This option may be useful for those cases where a sensor is removed from a compartment, reinstalled and located at a different level to previously. Enter the mm offset to the original level as indicated below.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK twice	COMPART.CALIBRATION? NO
4	Press INC then OK	SELECT COMP.NO.: 1
5	Continue to press INC for the desired compartment then press OK	CALIBRATE LEVEL/VOLUME? NO
6	Press OK 3 times	ADD OFFSET IN mm? NO
7	Press INC then OK	COMP:# OFFSET: ###mm
8	Repeatedly press INC then NEXT for offset then press OK to save	COMP:# OFFSET: ###mm
9	Hold CAL & press OK to exit	EXIT CALIBRATION? YES
10	Press OK	



12.11.2 Adding an offset in Litres

An offset in Litres can be input if needed. This option may be useful for those cases where a sensor shows consistent offset in litres to a certified measure such as verification after calibration or a general verification test.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK twice	COMPART.CALIBRATION? NO
4	Press INC then OK	SELECT COMP.NO.: 1
5	Continue to press INC for the desired compartment then press OK	CALIBRATE LEVEL/VOLUME? NO
6	Press OK 4 times	ADD OFFSET IN LITRES? NO
7	Press INC then OK	COMP:# OFFSET: ###L
8	Repeatedly press INC then NEXT for offset then press OK to save	COMP:# OFFSET: ###L
9	Hold CAL & press OK to exit	EXIT CALIBRATION? YES
10	Press OK	



12.12 Printer setup

Use the following commands to setup a printer that can be used to print out delivery tickets.

STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC then OK	SENSOR SETUP? NO
3	Press OK 5 times	PRINTER SETUP? NO
4	Press INC then OK	PRINTER: TM-295
5	Press OK to select	PRINTER: TM-295
6	Press MENU	COM 1 ACK? NO
7	Press INC then OK	COM 1 ACK? YES
8	Press MENU	EXIT CALIBRATION? YES
9	Press OK	

Note: *Following the initial printer setup, if this menu is re-opened step 6 will change to COM1 ACK? YES. Then press OK to acknowledge, MENU to go to EXIT CALIBRATION? YES, and OK to go back to the main display.*

12.13 Saving diagnostic settings

For post 01.00.05 DIP200 & post 11.00.00 DIP240's EPROM's save the diagnostics settings of each sensor in the CPU. Follow the steps on the following page.



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STEP	OPERATION	DISPLAY
1	Hold CAL & press OK	CALIBRATION? NO
2	Press INC	CALIBRATION? YES
3	Press OK 5 times	DIAGNOSTICS? NO
4	Press INC	DIAGNOSTICS? YES
5	Press OK	IDENTIFY THE SENSOR? NO
6	Press OK	SELECT COMP.NO.: #
7	Repeatedly press INC for Compartment 1	SELECT COMP.NO.: 1
8	Press OK	DISPLAY LEVEL AND TEMP
9	Press MENU	SENSOR: 1 DIGITAL SETUP? NO
10	Press INC	SENSOR: 1 DIGITAL SETUP? YES
11	Press OK	DISPLAY FIDUCIALS & TICKS
12	Press (hold) MENU	DISPLAY FACTORY PARAMETERS
13	Press OK to save	DISPLAY FACTORY PARAMETERS
14	Press MENU (x2 for LIPS)	SELECT COMP.NO.: #
15	Repeatedly press INC for next compartment	SELECT COMP.NO.: #
16	Repeat steps 9 to 16 until all compartments have been saved	
17	Hold CAL & press OK	EXIT CALIBRATION? YES
18	Press OK to exit	



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APPENDIX 1 - DIPTRONIC REFERENCE BOOKLETS

PART #	DOCUMENT	FILENAME
7310	DIPTRONIC MEASURING SYSTEM MK1 DRIVERS MANUAL	DIP200_INST_DIPTRONIC_MEASURING_DRIVER_INSTRUCTIONS_P7310.pub
7326	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. (WITH GPS) CALIBRATION MANUAL	DIP200_INST_DIPTRONIC_CALIBRATION_P7326.pub
7327	DIPTRONIC MEASURING SYSTEM MK1 & LIPS AUTOMATIC CALIBRATION RIG MANUAL	DIP200_INST_DIPTRONIC_CALIBRATION_RIG_P7327.pub
7328	DIPTRONIC L.I.P.S DRIVERS MANUAL	DIP200_INST_DIPTRONIC_LIPS_DRIVER_INSTRUCTIONS_P7328.pub
7329	DIPTRONIC MEASURING SYSTEM MK1 INSTALLATION MANUAL	DIP200_INST_DIPTRONIC_MEASURING_INSTALLATION_INSTRUCTIONS_P7329.pub
7330	DIPTRONIC L.I.P.S. & GPS INSTALLATION MANUAL	DIP200_INST_DIPTRONIC_LIPS_INSTALLATION_INSTRUCTIONS_P7330.pub
7331	DIPTRONIC GENERAL INFORMATION	DIP200_INST_DIPTRONIC_GENERAL_INFORMATION_P7331.pub
7333	DIPTRONIC CPU (DIP200 & DIP240) SOFTWARE UPGRADE INSTRUCTIONS	DIP200_INST_DIPTRONIC_SOFTWARE_UPGRADE_INSTRUCTIONS_P7333.pub
7334	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. CPU REPLACEMENT INSTRUCTIONS	DIP200_INST_DIPTRONIC_CPU_REPLACEMENT_INSTRUCTIONS_P7334.pub
7335	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. SENSOR (ANTENNAE & DIP100-12, DIP120-12 & DIP130-12) REPLACEMENT INSTRUCTIONS	DIP200_INST_DIPTRONIC_SENSOR_REPLACEMENT_INSTRUCTIONS_P7335.pub
7400	DIPTRONIC MEASURING SYSTEM MK1 & L.I.P.S. DipRecall MANUAL	DIP200_INST_DIPTRONIC_DIPRECALL_INSTRUCTIONS_P7400.pub



NOTICE FOR USE IN CEN

Instructions specific to hazardous area installations (reference European ATEX Directive 94/9/EC, Annex²², 1.0.6.)

The following instructions apply to equipment covered by certificate numbers Sira 02ATEX3323X (DIP200) and Sira 02ATEX2322X (DIP100):

1. The equipment may be used in a hazardous area with flammable gases and vapours with apparatus group IIA and with temperature classes T1, T2, T3, and T4.
2. The apparatus is only certified for use in ambient temperatures in the range -20°C to +60°C and should not be used outside this range.
3. The certified numbers have an 'X' suffix that indicates that special conditions of certification apply. These conditions are; The DIP100 has an aluminium cover and precautions must be taken to reduce the risk of a frictional spark occurring. The DIP200 power must be supplied via a fuse that has a breaking capacity capable of clearing the maximum short circuit current of the truck battery.
4. Installation shall be carried out in accordance with the applicable code of practice by suitably trained personnel.
5. Repair of this equipment shall be carried out in accordance with the applicable code of practice.
6. Certification marking as detailed in DIP100 series drawing number P7278 & DIP200 series drawing number P7284.
7. If it is likely the equipment will come in contact with aggressive substances, then it is the responsibility of the user to take suitable precautions to prevent the equipment being adversely effected, ensuring the type of protection is not compromised.

Aggressive Substances: e.g. acidic liquids or gases that may attack metals or solvents that may effect polymeric materials. inspections or establishing from the materials data sheet that it is resistant to specific chemicals.



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Notes:



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