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THE WIRELESS DATAPORT CATALOGUE
SEPTEMBER 2010

DATAONLINE
REMOTE MONITORING SOLUTIONS

INTRODUCTION

DATAONLINE LLC has been designing and manufacturing Remote Telemetry systems since 1989 and has a wealth of expertise in the installation and management of gathering asset data from industrial premises. Since these early days of telemetry, we have seen the rise of mobile telephony and the internet and have embraced both technologies to put us in the forefront of web-based telemetry.

The **DPW** range of products reflects the "state of the art" in ultra low power wireless remote telemetry and can be powered from internal primary batteries, solar panels and rechargeable batteries, or directly from external power supplies ranging from 6 to 60 Volts DC or 115 and 230 Volts AC. There is a heated power supply option for use in extremely cold climates that will maintain correct operation of the LCD displays and the internal battery.

The WRTU's can use the GSM network, the Reflex network, the CDMA network, the Vistar Satellite network or WiFi to communicate back the DataOnline's web servers to collect key inventory information from the field. We currently supply GSM based units to most of the countries in the developed world.

The use of low power 802.15.4 radio links with the new **DPW42x** WRTU's further enhances the wireless nature of our range of telemetry products. This new range allows the **DPW424** WRTU to be mounted in a convenient control room with up to four remote tanks connected completely wirelessly to our web site by using the **DPR422** 802.15.4 radio based Remote Sensors.

The **DPW42x** WRTU can be used with the DPA410 GPS module and a GSM multiband radio to track assets such as containers around the world and report on a variety of parameters, including the contents of an integral vessel, shock loading, shipping delays, etc.

Another major advantage of the **DPW424** WRTU is its ability to mix wired and wireless signals into the same unit. This means that one **DPW424** unit could be fitted on a tank and then receive the level signals from 3 adjacent tanks using the **DPR422** 802.15.4 radio based Remotes with the absolute minimum amount of site wiring. As these 4 tank levels would now be sent through one shared radio, the communication costs are also kept to a minimum.

The latest version of the wireless Dataport is the **DPW444** unit with 4 analog inputs as standard and a large 4 line LCD display with status indicators showing communication status, battery condition, etc. This model is only powered by lithium batteries, both primary and secondary cells in order to use the most up-to-date technology.

The DPG80x Liquid Level Gauges (LLG's) and the **DPW** range of **Wireless Remote Telemetry Units** (WRTU's) were designed to fit inside a weatherproof polycarbonate enclosure with the printed circuit board in the lid of the box with the liquid crystal display fitted directly on this pcb. This methodology allows the lid to be removed for installation on site by disconnecting the battery lead and the power source lead. The standard one or two channel variants of the **DPWxxx** usually have their sensors fitted to the base of the enclosure and just need the attachment of two impulse lines from the tank being monitored to become operational. **DPR422** 802.15.4 radio based remote units are just as easy to install.

Primary power is supplied by an external solar panel that is used to recharge an internal 6 Volt Lead-Acid or 8 Volt Lithium-Ion battery. Where solar power is impractical, such as indoor installations, an internal miniature power supply module is used in place of the solar panel. The internal power supply modules are for use with 6 to 60 Volts DC supplies or 115 & 230 Volts AC. The alternative is to use a lithium thionyl chloride primary battery pack mounted in the base of the enclosure to give up to five years of operation before the battery pack needs to be changed.

The DPW WRTUs accept inputs from 4 to 20 mA transmitters that are usually powered by the Dataport itself. The DPW WRTUs can also use the CDMA network or the GSM network. They can use SIM cards from any network provider.

When the 4 to 20 mA transmitters are powered from local plant based systems it is important to check that connecting up both transmitter loops into the Dataport's common ground input circuitry will not cause problems with the control system itself. If there is any doubt, we would recommend fitting the DPA940 or DPA950 two channel isolation module directly to the DPW800 board. The DPA440 or DPA450 four channel isolation modules are mounted in a separate enclosure that is usually mounted next to the associated Dataport.

The DPW WRTU's can be used with the DPA920/1 or DPA930/1 remote display units to give local tank level information away from the actual Dataport installation, such as found on sites with multiple tanks on one or more concrete plinths.

The DPW range of Digital Liquid Level Gauges (DLLG's) and WRTU's can be fitted with a variety of "add-on" boards. As mentioned above, the DPA940 and DPA950 boards can be fitted to the main DPW800 and DPW400 boards to produce relay or galvanic isolation from external control systems. They can also be fitted with the DPA910 two channel ALARM RELAY board to give local alarms in the shape of a pair of opening or closing relay contacts as the tank level drops above or below a critical point or the pressure in the tank crosses a preset threshold.

Where the DPW series WRTU's are used in POLL mode so that they support ad hoc enquiries, it is recommended that they are powered from the Lithium-Ion/Solar rechargeable battery option or a miniature mains power supply.

There are a number of external power supply options that can be fitted inside the DPW enclosures. The DPA960 is used for 115 VAC supplies, the DPA961 for 230 VAC supplies and the DPA964-xx for 6 to 60 VDC supplies.

If the environment where the unit will be installed is very cold and air temperatures below -20°C are possible for long periods, we would recommend that the unit is fitted with the DPA965 heated power supply board. The heater built into this power supply board will maintain an internal box temperature above -20°C even if the outside air temperature falls as low as -40°C. The DPA965 heated power supply will operate from an AC supply between 85 and 265 VAC at 50 or 50 Hz.

See the block diagram in Appendix A for a representative sample of how the various accessories can be used with the DPWxxx WRTU's.

THE DPG8XX ONE OR TWO CHANNEL LIQUID LEVEL GAUGE

This single or dual channel Dataport LLG accepts inputs from one or two 4 to 20 mA transmitters that can be powered from the Dataport or from an external control system. Two pushbuttons on the front of the enclosure are used to put the display into "FILL" mode to show the rapidly changing tank level or to change the mode of the display(s). The unit is usually battery powered but there are a variety of other power supply options. The solar panel (when fitted) and any field wiring cables are brought into the enclosure from below using IP67 cable glands.

SPECIFICATIONS

Measurement accuracy	0.5% of span (full scale).
Operating temperature	-40°F to +150°F. Long term operation below -5°F requires the use of the **DPA965** heated power supply option.
Inputs	One or Two 4-20mA current loops normally supplied from the integral sensors.
Programming	Programmable via an RS232 adaptor for SPAN and ZERO calibration, FILL mode duration and ALARM point thresholds. Certain versions of the software allow the service engineer to set the SPAN of the display on-site.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Alarm thresholds	2 settable alarm points per input channel.
Display(s)	1 or 2 six digit 17mm high LCD display panels.
Power supply	Internal 7 Volts primary cell battery pack, solar panel and 2.5 Ah rechargeable battery.
Enclosure rating	NEMA 4X or IP67
Approvals	Unit is CE approved.

THE DPW811 SINGLE CHANNEL BASIC WIRELESS WRTU

This single channel Dataport WRTU accepts inputs from one 4 to 20 mA transmitter that can be powered from the Dataport or from an external control system. Two pushbuttons on the front of the enclosure are used to put the display into "FILL" mode to show the rapidly changing tank level or to change the mode of the display(s). The unit can be fitted with either a GSM or a REFLEX radio and a variety of power supply options. The solar panel and any field wiring cables are brought into the enclosure from below using IP67 cable glands.

SPECIFICATIONS

Measurement accuracy	0.1% of span (full scale).
Operating temperature	-40°F to +150°F. Long term operation below -5°F requires the use of the **DPA965** heated power supply option.
Inputs	One 4-20mA current loop normally supplied from the integral sensor.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Reporting interval	Adjustable from once per day to once per hour.
Alarm thresholds	10 settable alarm points per input channel.
Communications	GSM cellular network (inc. GPRS) or the REFLEX paging network.
Display(s)	1 six digit 17mm high LCD display panel with optional yellow LED backlighting.
Power supply	Solar panel and 2.5 Ah rechargeable battery, AC mains supplies for 115 and 230 VAC or internal 7 Volts primary cell battery pack.
Enclosure rating	NEMA 4X or IP67
Approvals	Unit is CE approved, power supply to UL/TUV/CE, GSM radio to FTA, FCC, DOC, PTCRB, R&TTE, GCF & BABT, Reflex radio to FCC parts 2, 15, 24 & 90.

THE DPW422 DUAL CHANNEL WIRELESS WRTU

This dual channel Dataport WRTU accepts inputs from one or two 4 to 20 mA transmitters that can be powered from the Dataport or from an external control system. Two pushbuttons on the front of the enclosure are used to put the display into "FILL" mode to show the rapidly changing tank level or to change the mode of the display(s). The unit can be fitted with either a GSM or a REFLEX radio and a variety of power supply options. The solar panel and any field wiring cables are brought into the enclosure from below using IP67 cable glands.
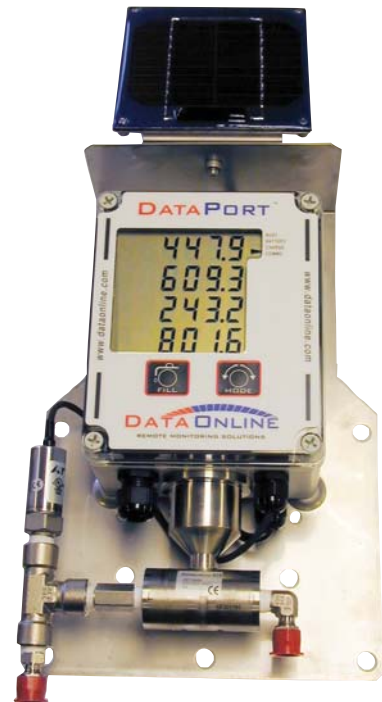
SPECIFICATIONS

Measurement accuracy	0.1% of span (full scale).
Operating temperature	-40°F to +150°F. Long term operation below -5°F requires the use of the **DPA965** heated power supply option.
Inputs	Two 4-20mA current loops normally supplied from the integral sensors.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Reporting Interval	Adjustable from once per day to once per hour.
Alarm thresholds	10 settable alarm points per input channel.
Communications	GSM cellular network (inc. GPRS) or the REFLEX paging network.
Display(s)	1 or 2 six digit 17mm high LCD display panels with optional yellow LED backlighting.
Power supply	Solar panel and 2.5 Ah rechargeable battery, AC mains supplies for 115 and 230 VAC or internal 7 Volts primary cell battery pack.
Enclosure rating	NEMA 4X or IP67
Approvals	Unit is CE approved, power supply to UL/TUV/CE, GSM radio to FTA, FCC, DOC, PTCRB, R&TTE, GCF & BABT, Reflex radio to FCC parts 2, 15, 24 & 90.

THE DPW444 4 CHANNEL WIRELESS WRTU with 802.15.4 local radio network capability

This is the latest addition to the product range and is a four channel Dataport that accepts inputs from one to four 4 to 20 mA transmitters that are normally powered from the Dataport or from 1 to 4 remote 802.15.4 radio based slave units. Two pushbuttons on the front of the enclosure are used to put the display into "FILL" mode to show the rapidly changing tank level or to change the mode of the display(s). The unit can be fitted with either a GSM, CDMA, Satellite or a REFLEX radio and a variety of power supply options. The solar panel and any field wiring cables are brought into the enclosure from below using IP67 cable glands.

The DPW444 Master unit can display the contents of all 4 channels whether, wired or wireless. Extensive system information is also available from this display when put into 'DEBUG' mode.

The unit is converted to an 802.15.4 radio MASTER by the simple addition of the DPA420 accessory. This little module is self-contained and does not normally need an external antenna for reliable site operation. The associated 802.15.4 radio based Remote units do not usually require external antennas.
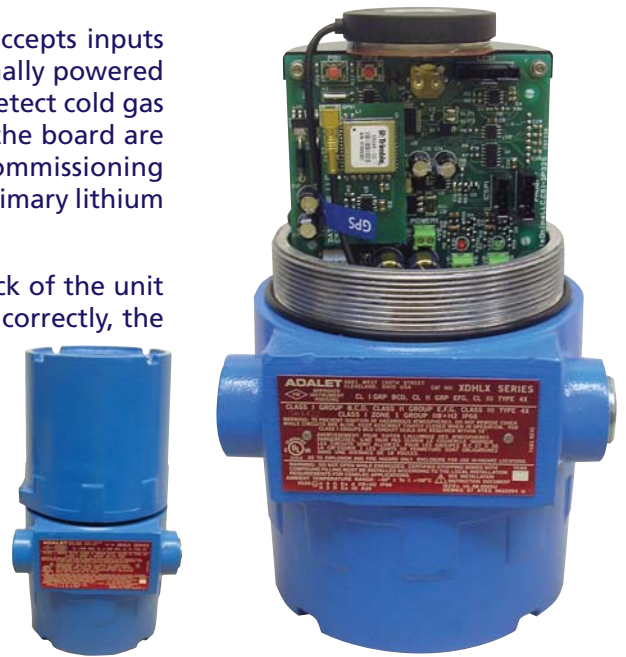
SPECIFICATIONS

Measurement accuracy	0.1% of span (full scale).
Operating temperature	-40°F to +150°F. Long term operation below -5°F requires the use of the **DPA965** heated power supply option.
Inputs	Two 4-20mA current loops normally supplied from the integral sensors.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Reporting interval	Adjustable from once per day to once per hour.
Alarm thresholds	10 settable alarm points per input channel.
Communications	GSM cellular network (inc. GPRS) or the CDMA network.
Display(s)	4 lines of six digit 16mm high LCD display panel with 4 status indicators
Power supply	Solar panel and 2.5 Ah rechargeable lithium battery, AC mains supplies for 115 and 230 VAC or internal 7 Volts primary lithium battery pack.
Enclosure rating	NEMA 4X or IP67
Approvals	Unit is CE approved, power supply to UL/TUV/CE, GSM radio to FTA, FCC, DOC, PTCRB, R&TTE, GCF & BABT, Reflex radio to FCC parts 2, 15, 24 & 90.

THE DPE460 6 CHANNEL EXPLOSION PROOF WIRELESS WRTU
without a display

This version of the Dataport is a six channel WRTU that accepts inputs from one up to four 4 to 20 mA transmitters that are normally powered from the Dataport plus 2 thermocouples that are used to detect cold gas exiting from a vent pipe. Two pushbuttons on the top of the board are used to put the display into "DEBUG" mode for commissioning purposes. The unit can be fitted with a GSM, radio and a primary lithium battery pack.

The unit is normally fitted with a GPS radio that keeps track of the unit anywhere worldwide. In order for this feature to function correctly, the top of the enclosure needs to have a clear view of the sky.

Closed version ⟶

SPECIFICATIONS

Measurement accuracy	0.1% of span (full scale).
Operating temperature	-40°F to +150°F.
Inputs	Four 4-20mA current loops supplied from the integral power supply plus 2 thermocouples for cold gas venting detection.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Reporting interval	Adjustable from once per day to once per hour.
Alarm thresholds	10 settable alarm points per input channel.
Communications	GSM cellular network (inc. GPRS) plus a worldwide GPS capability.
Display(s)	No display visible from outside the enclosure, but a small 8 character LCD is fitted for commissioning purposes.
Power supply	Internal 7 Volts, 45 Ahr lithium thionyl chloride battery pack.
Enclosure rating	Explosion proof as per FM/CSA/ATEX/IECEx, NEMA 4X / IP68
Approvals	Unit is CE approved, GSM radio to FTA, FCC, DOC, PTCRB, R&TTE, GCF & BABT

SPECIFICATIONS

Measurement accuracy	0.1% of span (full scale).
Operating temperature	-40°F to +150°F.
Inputs	Two 4-20mA current loops supplied from the integral power supply.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Reporting interval	Adjustable from once per day to once per hour.
Alarm thresholds	10 settable alarm points per input channel.
Communications	GSM cellular network (inc. GPRS).
Display(s)	1 by 6 digit LCD display visible from outside the enclosure.
Power supply	Internal 7 Volts, 45 Ahr lithium thionyl chloride battery pack.
Enclosure rating	Explosion proof as per FM/CSA/ATEX/IECEx, NEMA 4X / IP68
Approvals	Unit is CE approved, GSM radio to FTA, FCC, DOC, PTCRB, R&TTE, GCF & BABT

THE DPR422 ONE OR TWO CHANNEL 802.15.4 BASED REMOTE SENSOR

This single or dual channel Dataport Remote Sensor accepts inputs from one or two 4 to 20 mA transmitters that can be powered from the Dataport. It uses its 805.15.4 compliant radio to set up a link to its host DPW42x Dataport and becomes one of that unit's "remote" channels. Two pushbuttons on the front of the enclosure are used to put the display into "FILL" mode to show the rapidly changing tank level or to change the mode of the display(s). The unit is usually powered from a lithium thionyl chloride battery but there are a variety of other power supply options. The solar panel (when fitted) and any field wiring cables are brought into the enclosure from below using IP67 cable glands.

SPECIFICATIONS

Measurement accuracy	0.5% of span (full scale).
Operating temperature	-40°F to +150°F. Long term operation below -5°F requires the use of the **DPA965** heated power supply option.
Inputs	One or Two 4-20mA current loops normally supplied from the integral sensors.
Programming	Programmable via an RS232 adaptor for SPAN and ZERO calibration etc., or over-the-air from the DataOnline web site.
Measurement interval	Adjustable from once every 15 minutes to once per day.
Alarm thresholds	2 settable alarm points per input channel.
Display(s)	1 or 2 six digit 17mm high LCD display panels.
Power supply	Internal 7 Volts primary cell battery pack, solar panel and 2.5 Ah rechargeable battery.
Enclosure rating	NEMA 4X or IP67
Approvals	Unit is CE approved.

THE DPW & DPG RANGE ACCESSORIES

The **DPW** range of **WRTU's** and the **DPG80x DLLG's** can be used with the growing range of accessories to enhance and/or expand the capabilities of the overall installation.

The DPA920 or DPA930 remote display units can be used with the DPWxxx WRTU's to give local tank level information away from the actual Dataport installation, such as found on sites with multiple tanks on one or more concrete plinths.

When the 4 to 20 mA transmitters are powered from local plant based systems it is important to check that connecting up both transmitter loops into the Dataport's common ground input circuitry will not cause problems with the control system itself. If there is any doubt, we would recommend fitting the DPA940 or DPA950 two channel isolation module directly to the DPWxxx board.

The large selection of miniature internal power supplies allow the internal lead-acid battery to be charged from 115 VAC and 230 VAC mains supplies or any DC power source between 6 and 60 VDC.

The **DPW4xx** WRTU now allows complete wireless operation by using up to four **DPR422** Remote 802.15.4 radio based Sensors to gather data from tanks on a site without using ANY interconnecting cables. Typically the DPW424 host would be sited in the plant control room to give local operator access with up to four remote sensors attached to plant based 4-20 mA transmitters. Battery life of these remote sensors can be up to 5 years.

DATAPORT ACCESSORIES

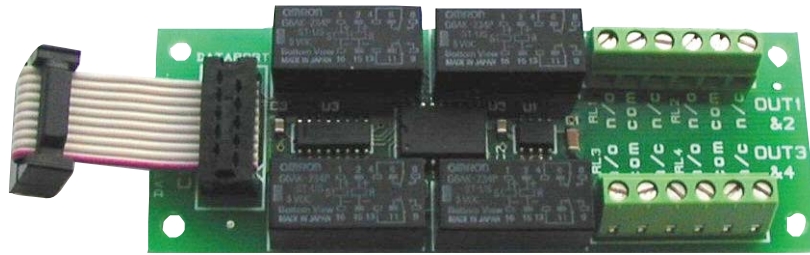# THE DPA910 DUAL CHANNEL ALARM RELAY BOARD

This small printed circuit board fits on to the 4 fixing pillars on the DPW series controller boards and connects into the "ALARM" connector on these boards.

There are 2 independent relays on the board, each with a changeover contact available at the screw terminals. The relay contacts are rated at 0.3A at 115 VAC or 1.0A at 30 VDC, but are intended to drive into low power alarm control systems. If the contacts are used to switch loads above 5 Watts, then external suppressors should be fitted across the screw terminals.

The operation of each relay is under the control of the microprocessor on the DPW800 series controller board and they would typically operate when the tank level went below a certain level or the pressure in the tank dropped below some preset value. See the operator' manual for the specific Dataport as to how to program these relays.

THE DPA911 FOUR CHANNEL ALARM RELAY BOARD

This small printed circuit board fits on to the 4 fixing pillars on the DPW series controller boards and connects into the "ALARM" connector on these boards.

There are 4 independent relays on the board, each with a changeover contact available at the screw terminals. The relay contacts are rated at 0.3A at 115 VAC or 1.0A at 30 VDC, but are intended to drive into low power alarm control systems. If the contacts are used to switch loads above 5 Watts, then external suppressors should be fitted across the screw terminals.

The operation of each relay is under the control of the microprocessor on the DPW4xx series controller board and they would typically operate when the tank level went below a certain level or the pressure in the tank dropped below some preset value. See the operator' manual for the specific Dataport as to how to program these relays.

THE DPA921 DUAL CHANNEL ANALOG REMOTE INDICATOR

This dual channel Remote Indicator is used in conjunction with the range of Dataport WRTU's and accepts an input from one 4 to 20 mA transmitter that is powered from the Dataport or from an external control system.

The unit is loop powered and SPAN and ZERO setting is achieved through the Programming port and allows the units of display to be set up to a maximum of 999999.

The **DPA921** can be supplied with a **DT1** differential pressure sensor for remote tank applications and then has the order code **DPG921**.
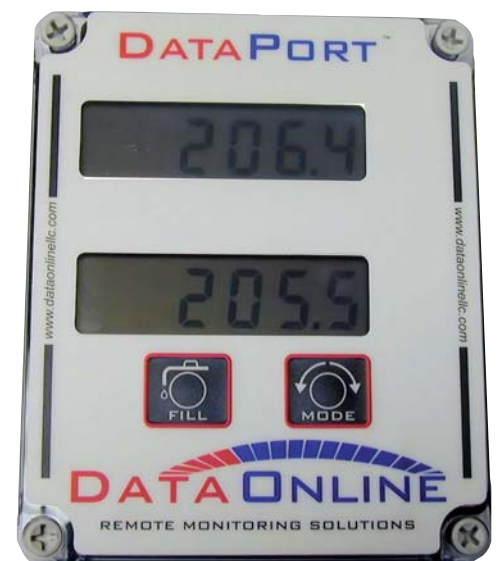
THE DPA930/1 SINGLE CHANNEL DIGITAL REMOTE INDICATOR

This single channel Remote Indicator is used in conjunction with the range of Dataport WRTU's and repeats the reading shown on its host Dataport WRTU's display. A small 2 pole programming switch is used to set which of the four possible WRTU channel displays to copy.

The unit is normally powered from the host Dataport but can also be powered from its own internal battery pack that will maintain operation for up to 5 years when the host Dataport is battery powered itself.

The **DPA931** variant has an RJ45 connector directly on the printed circuit board that allows standard CAT5 cables to be used to connect the unit to its remote host Dataport.

The **DPA930/1** can be supplied with a **DT1** differential pressure sensor for remote tank applications and then has the order code **DPR930/1**.
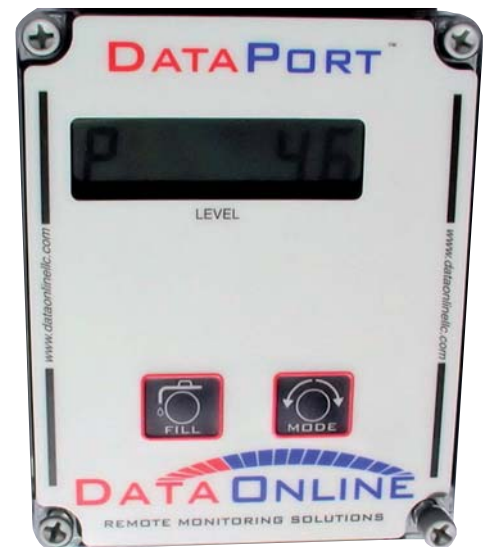
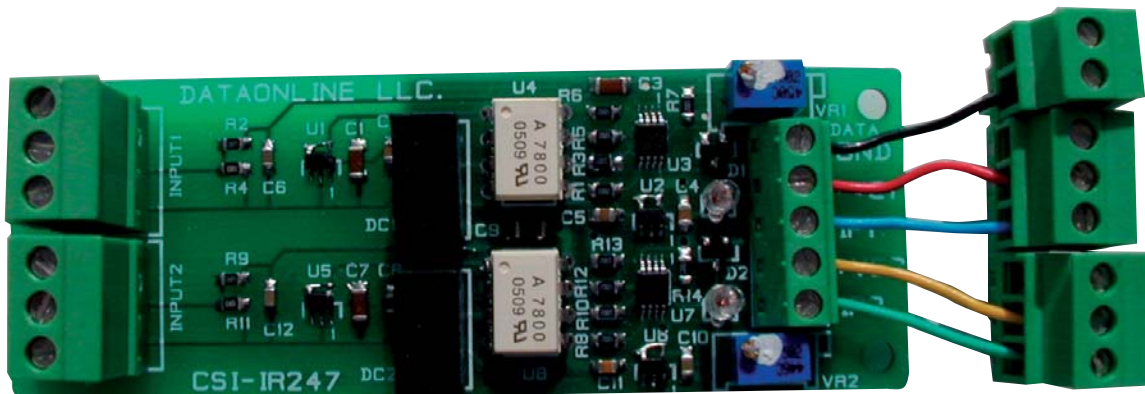
THE DPA940 DUAL CHANNEL RELAY ISOLATION MODULE

This two channel RELAY ISOLATION board is used in conjunction with the range of DPW Dataport WRTU's and isolates the analog inputs from each other. Note that each time an analog channel is sampled, the Dataport is electrically connected to that specific input.

The unit is powered from the Dataport to which it is attached and when the analog input channel is powered, the DPDT relay is energised and puts a 100 ohm resistor into the external 4 to 20 mA loop. When the analog input channel is powered down, the relay de-energises and leaves the external loop intact.

Two on-board LEDs are used to indicate when a reading cycle is in progress.

THE DPA950 DUAL CHANNEL GALVANIC ISOLATION MODULE

This two channel GALVANIC ISOLATION board is used in conjunction with the range of DPW800 Dataport WRTU's and isolates the external analog inputs from each other and the host Dataport. Since the WRTU printed circuit board needs to be modified to use this module, this is NOT suitable for field upgrades.

The unit is powered from the Dataport to which it is attached and when the analog input channel is powered, the isolation circuitry is energised and measures the voltage across the 10 ohm resistor that is inserted into the external 4 to 20 mA loop.

Span adjustment is factory set by two miniature potentiometers and Zero adjustment is performed by the host Dataport in software. Two on-board LEDs are used to indicate when a measurement cycle is in progress.

THE DPA960 (115 VAC) MAINS POWER SUPPLY MODULE

This miniature power supply module fits on the internal chassis plate inside the DPW800 range of WRTU's and replaces the Solar Panel as the prime battery charging power source.

This module is often fitted to its host Dataport where the solar panel cannot see enough of the sun, e.g. installations inside buildings, or where the Dataport is set up to support continuous polling.

The integral red LED indicates the presence of the mains supply and that the output is not short-circuited. The transformer used in the power supply is inherently short-circuit proof, but the mains supply to the module must be fused at 0.1 Amps maximum outside of the Dataport.

THE DPA960 (115 VAC) MAINS POWER SUPPLY MODULE

This miniature power supply module fits on the internal chassis plate inside the DPW800 range of WRTU's and replaces the Solar Panel as the prime battery charging power source.
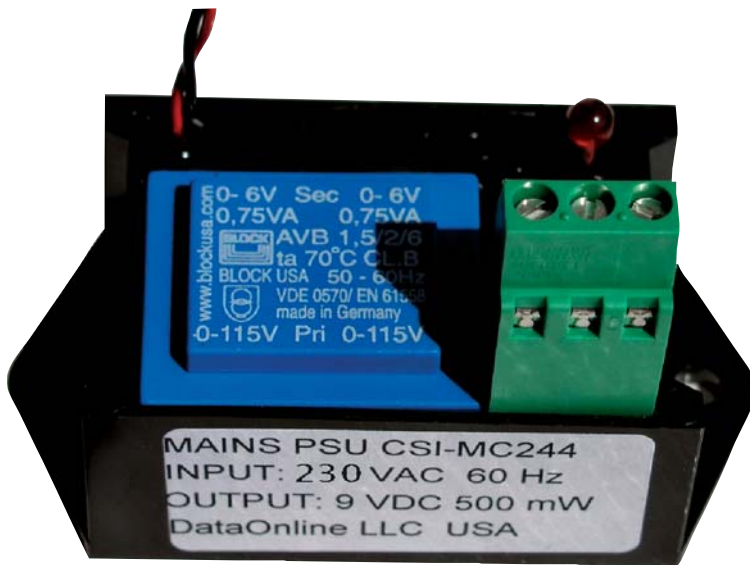
This module is often fitted to its host Dataport where the solar panel cannot see enough of the sun, e.g. installations inside buildings, or where the Dataport is set up to support continuous polling.

The integral red LED indicates the presence of the mains supply and that the output is not short-circuited. The transformer used in the power supply is inherently short-circuit proof, but the mains supply to the module must be fused at 0.1 Amps maximum outside of the Dataport.

TECHNICAL SPECIFICATIONS

STANDARD UNIT	MIN	TYP.	MAX	UNITS
Output Voltage	5	**7.5**	9.5	Volts
Output Current	40	**80**	120	mA
Operating temperature	-40°C		+50°C	Centigrade
Input voltage (50-60Hz)	100	**115**	125	VAC

THE DPA961 (230 VAC) MAINS POWER SUPPLY MODULE

This miniature power supply module fits on the internal chassis plate inside the DPW800 range of WRTU's and replaces the Solar Panel as the prime battery charging power source.

This module is often fitted to its host Dataport where the solar panel cannot see enough of the sun, e.g. installations inside buildings, or where the Dataport is set up to support continuous polling.

The integral red LED indicates the presence of the mains supply and that the output is not short-circuited. The transformer used in the power supply is inherently short-circuit proof, but the mains supply to the module must be fused at 0.1 Amps maximum outside of the Dataport.

TECHNICAL SPECIFICATIONS

STANDARD UNIT	MIN	TYP.	MAX	UNITS
Output Voltage	5	**7.5**	9.5	Volts
Output Current	40	**80**	120	mA
Operating temperature	-40°C		+50°C	Centigrade
Input voltage (50-60Hz)	200	**230**	250	VAC

THE DPA964 UNIVERSAL ISOLATED DC POWER SUPPLY MODULE

This miniature power supply module fits on the internal chassis plate inside the DPW range of WRTU's and replaces the Solar Panel as the prime battery charging power source.

This module is often fitted to its host Dataport where the solar panel cannot see enough of the sun, e.g. installations inside buildings, or where the Dataport is set up to support continuous polling.

The integral yellow LED indicates the presence of the DC supply and that the output is not short-circuited. The module is inherently short-circuit proof, but the DC supply to the module should be fused at 0.5 Amps maximum outside of the Dataport.

SPECIFICATIONS

STANDARD UNIT	MIN	TYP.	MAX	UNITS
Output Voltage	5	**7.5**	9.5	Volts
Output Current	40	**60**	80	mA
Operating temperature	-40°C		+50°C	Centigrade
Input voltage	85%	**100%**	125%	VDC
Input to Output isolation voltage withstand		**1500**		VDC

All units comply with EN 55022 class A and FCC level A regulations.

DPA964-6   for supplies between 5 and 10 Volts DC.
DPA964-12   for supplies between 10 and 20 Volts DC.
DPA964-24   for supplies between 20 and 30 Volts DC.
DPA964-48   for supplies between 30 and 60 Volts DC.

THE DPA965 UNIVERSAL HEATED POWER SUPPLY MODULE

Remote Display Connector

Heater

1 Ahr Lead-Acid Battery

2 Parts Mains Connector
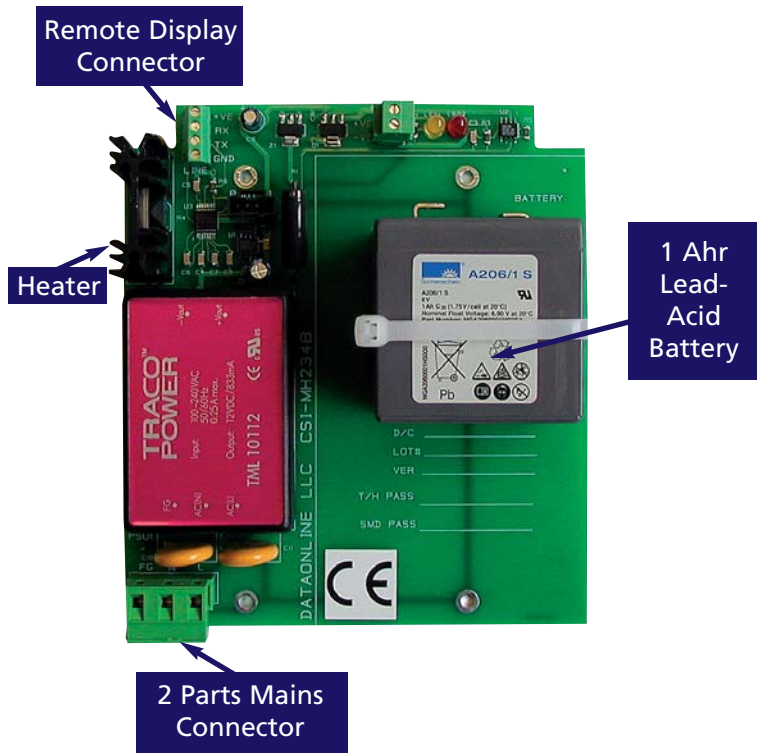
This power supply module fits inside the DPW range of WRTU's and replaces the Solar Panel and the 2.5 AHr rechargeable lead-acid battery. It also supports the use of the DPA930 remote displays without any further equipment.

This module is fitted to its host Dataport where the ambient air temperature falls below -20°C for long periods of time. These conditions can be found in the north of Europe and around the USA/Canada border. The use of this power supply supports continuous polling of the Dataport.

The integral yellow LED indicates the presence of the battery charging supply and that the output is not short-circuited. The red LED indicates that the internal heater is switched off and the box is "warm". The module is inherently short-circuit proof, but the mains supply to the module must be fused at 1 Amp maximum outside of the Dataport.

TECHNICAL SPECIFICATIONS

Input voltage range	85 – 264 VAC
Input frequency range	47 – 440 Hz
Input current heater OFF	30mA @ 115 VAC/ 35mA @ 230 VAC typical
Input current heater ON	200mA @ 115 VAC/ 120mA @ 230 VAC typical
External fuse	1.5 A slow blow type recommended
Ambient Temperature range	-40 °C to +50 °C
EMI/RFI conducted	EN55022 class B, FCC part 15 level B
EMC Compliance	ESD to IEC/EN61000-4-2 4kV / 8kV RF immune to IEC/EN61000-4-3 3V / m Fast transients to IEC/EN61000-4-4 1kV
Safety standards	UL 1950, IEC 60950, EN 60950
Output supply	8.3 Volts max @ 80 mA max used to trickle charge the internal lead-acid battery
Temperature control	9 Watt heater switched on at an internal box temperature of +3 °C and off at +7 °C
Comms port	3.6 VDC logic level signals from the Dataport host
Remote Display connector	RS232 transmit & receive lines to remote displays and a 4.2 VDC power supply rated at 100 mA max.

This miniature power supply module fits on the internal chassis plate inside the DPW range of WRTU's and replaces the Solar Panel as the prime battery charging power source. It is only for use with 7.4 Volt rechargeable Lithium-ion batteries.

The integral GREEN LED indicates the presence of the DC supply and that the output is not short-circuited. The module is inherently short-circuit proof, but the DC supply to the module should be fused at 0.5 Amps maximum outside of the Dataport.

SPECIFICATIONS

STANDARD UNIT	MIN	TYP.	MAX	UNITS
Output Voltage	8.1	**8.2**	8.3	Volts
Output Current	120	**140**	160	mA
Operating temperature	-40°C		+50°C	Centigrade
Input voltage	12	**24**	48	VDC
Input to Output isolation voltage withstand		**1500**		VDC

All units comply with EN 55022 class A and FCC level A regulations.

## THE DPA970/1 REMOTE INDICATOR RS232 DRIVER MODULE
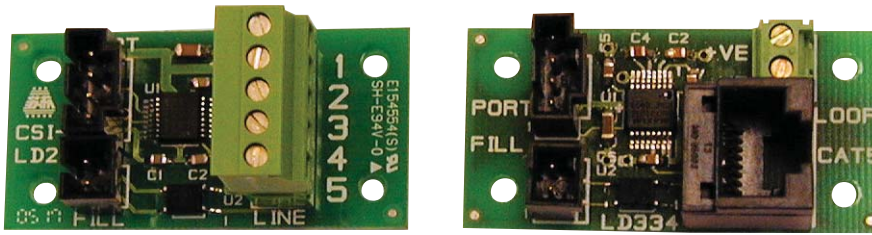
These small boards fit on the chassis plate inside a DPWxxx WRTU and supports operation of the DPA930 or DPA931 Remote Indicators.

Two flying leads connect the board to the host Dataport and a five way screw connector is used to terminate the field wiring from up to four remote DPA930 indicators. The board is powered from the Dataport's power supply and the remote indicator can also be powered from this power supply, via the five way field wiring.

A newer version of this board, the DPA971, has an RJ45 connector onboard to allow direct connection of CAT5 cables between the Dataport and the remote display. The DPA931 Remote Indicator also has an RJ45 connector allowing CAT5 cable connectivity.

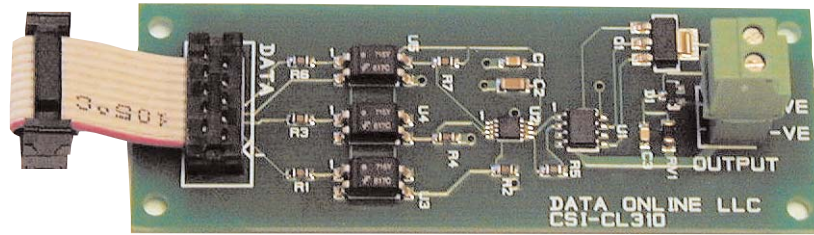## THE DPA975 4-20 mA ACTIVE CURRENT LOOP OUTPUT MODULE
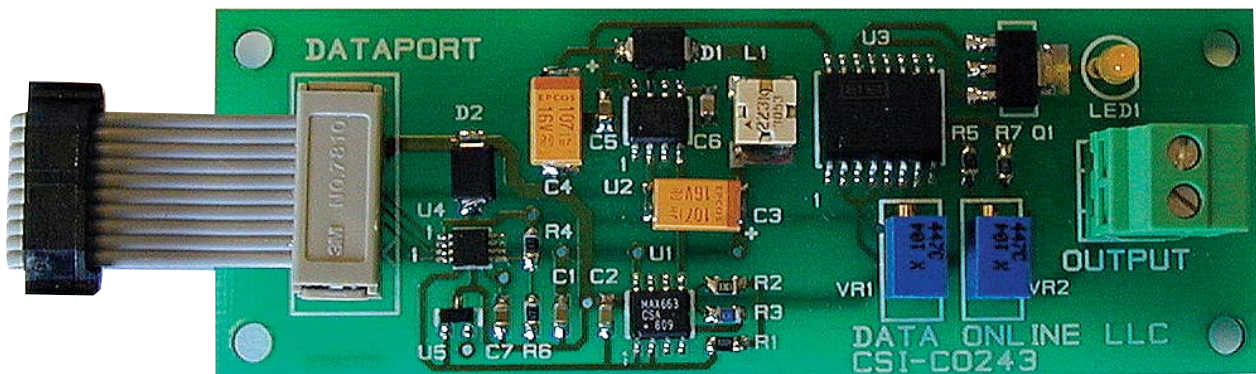
This small printed circuit board fits on to the 4 fixing pillars on the DPW series controller boards and connects into the "ALARM" connector on these boards.

The 4-20 mA current loop output is under the control of the host Dataport's microcontroller and can be spanned independently of the main displays in the host. In order for this module to drive the current loop continuously, the host Dataport MUST be mains powered using one of the DPA96x power supply modules.

Zero and span adjustment of the board itself is achieved by two on-board miniature potentiometers in the factory and these should NOT be adjusted in the field. Change the Zero and/or Span values through the Dataport's programming port or "over the air" using the DataOnline web site.

THE DPA976 4-20 MA PASSIVE CURRENT LOOP OUTPUT MODULE

This small printed circuit board fits on to the 4 fixing pillars on the DPW series controller boards and connects into the "ALARM" connector on these boards.

The 4-20 mA current loop output is under the control of the host Dataport's microcontroller and can be spanned independently of the main displays in the host. In order for this module to function correctly, the external current loop must be powered by a DC supply between 8 and 30 VDC.

Since this board is effectively powered by an external source, it does not require any significant power from the host Dataport. Consequently, the host Dataport can be Solar powered or primary battery powered, as is normal for the range of DLLG's.

THE DPA981 USB LOCAL PROGRAMMING ADAPTOR

This programming adaptor has a 'chip' fitted inside the USB connector and is used with notebooks, laptops, PC's, etc. to allow certain parameters stored in the DPW Dataport's memory to be changed.

It is powered from the USB port on the host computer and will normally be mapped into one of the COM ports on the PC and operate at 9600 Baud.

Plugging this programmer into the PROG port on the Dataport will put the Dataport into the "local communication mode" and the Dataport will "sign-on" at 9600 Baud. See the operator's manual for the individual DPW programming capabilities.

THE DPA410 GPS MODULE FOR USE WITH MOBILE ASSETS

This small module "plugs on" to the main pcb of the DPW4xx WRTU and allows the Dataport to find out its position on the earth using the GPS satellite network and the onboard COPERNICUS radio module. An active GPS antenna must be mounted with a reasonable view of the sky and then plugged into the mating socket on the DPA410 board.

When this module is fitted to the DPW4xx board, the DPA420 802.15.4 Radio Controller module cannot be used.

# THE DPA420 802.15.4 RADIO CONTROLLER MODULE

This small module "plugs on" to the main pcb of the DPW844 WRTU and allows the Dataport to communicate at 2.4 GHz with up to 4 DPR4xx Remote Sensor units. The module has its own onboard antenna and does not normally need an external antenna for correct operation. The 4 Remotes can each be up to 1000 feet away from the DPW444 WRTU under ideal conditions.

When this module is fitted to the DPW4xx board, the DPA410 GPS module cannot be used.

THE DPA430 ANALOG EXPANSION MODULE

This module "plugs on" to the main pcb of the DPW42x WRTU and extends the unit's hardwired channels from 2 to 4. It contains a DC-DC converter that produces an 18 VDC supply for powering 2 external 4-20 mA transmitters. These new channels (3 & 4) behave in an identical manner to channels 1 & 2 in that they can be individually programmed for recording rate, alarm thresholds, sensor delay, etc. When this module is fitted to the DPW44x board, the following modules cannot be used:

DPA910 dual alarm relays, DPA940 relay isolator, DPA950 galvanic isolator and the DPA975 and DPA976 4-20 mA current output modules.
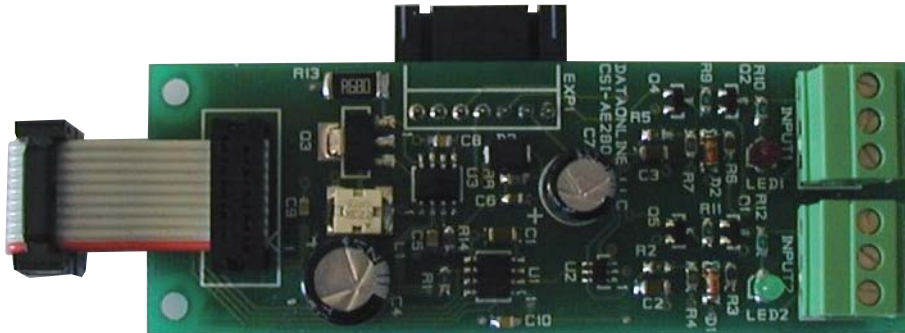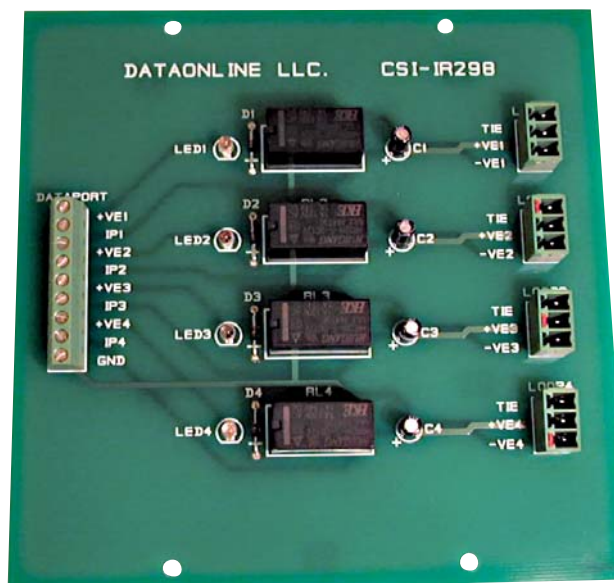

THE DPA440 FOUR CHANNEL RELAY ISOLATION MODULE

This four channel RELAY ISOLATION board is used in conjunction with the DPW444 Dataport WRTU and isolates the analog inputs from each other. Note that each time an analog channel is sampled, the Dataport is electrically connected to that specific input.

The unit is powered from the Dataport to which it is attached and when the analog input channel is powered, the DPDT relay is energised and puts a 100 ohm resistor into the external 4 to 20 mA loop. When the analog input channel is powered down, the relay de-energises and leaves the external loop intact.

Four on-board LEDs are used to indicate when a reading cycle is in progress.

THE DPA450 FOUR CHANNEL GALVANIC ISOLATION MODULE

This four channel GALVANIC ISOLATION board is used in conjunction with the DPW444 Dataport WRTU and isolates the analog inputs from each other and the Dataport itself.

The unit is powered from the Dataport to which it is attached and puts a 10 ohm resistor into the external 4 to 20 mA loop. There is no connection between each channel and any other channel and the 10 ohm resistor is permanently connected in series with the instrument loop.
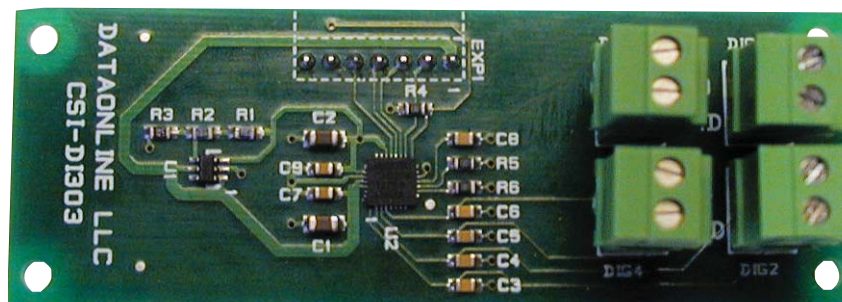
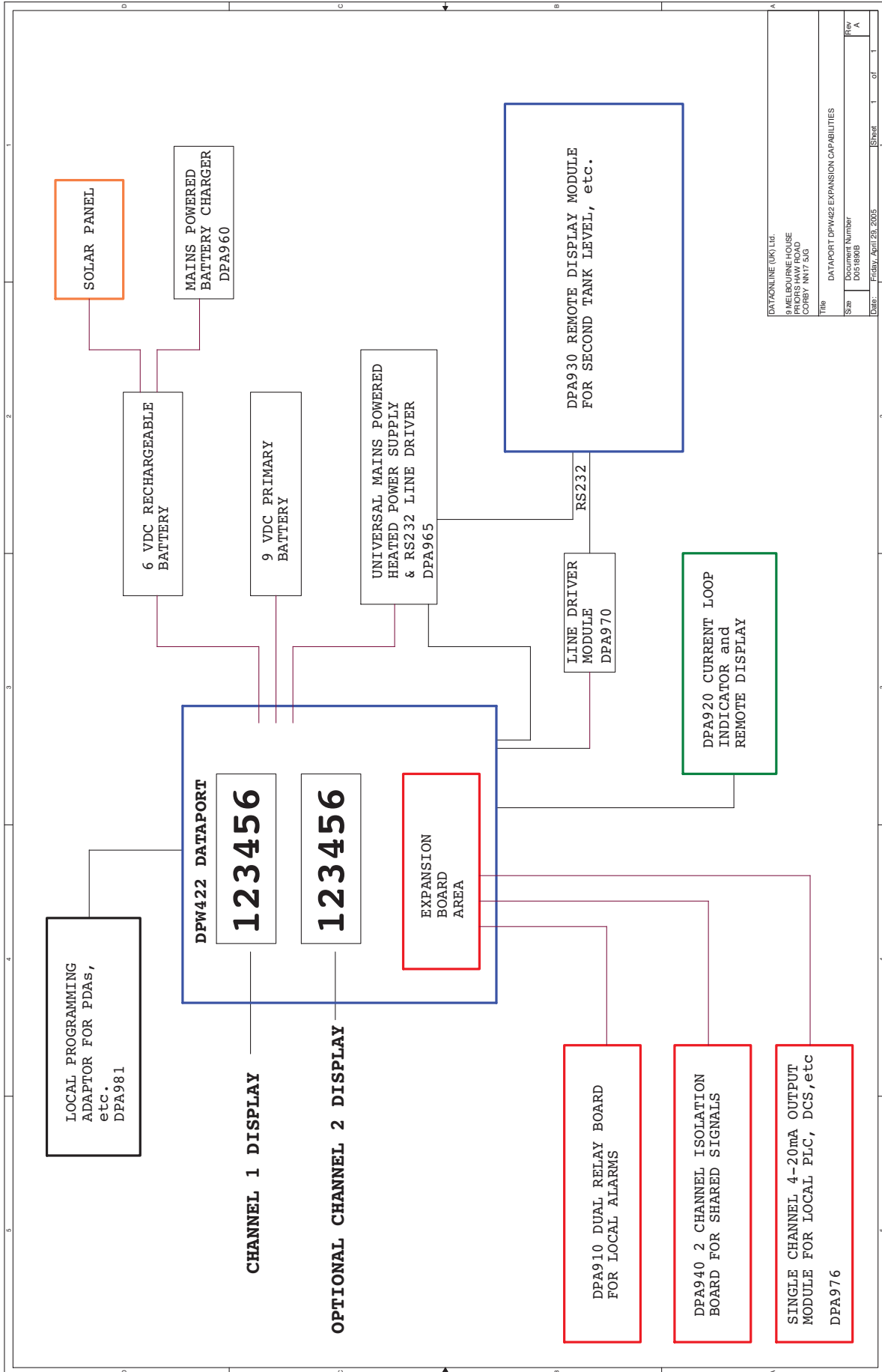Four on-board LEDs are used to indicate when a reading cycle is in progress.
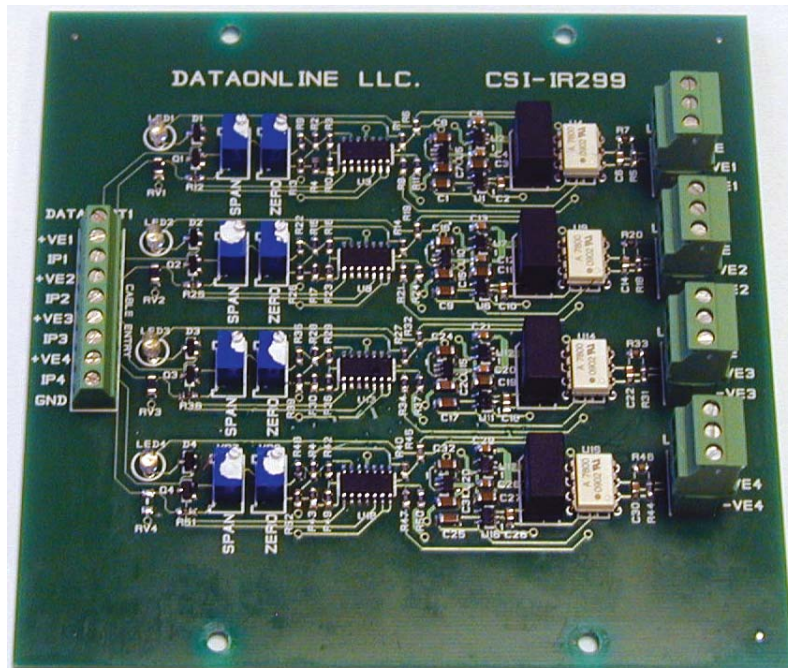
THE DPA460 FOUR CHANNEL DIGITAL INPUT MODULE

This 4 channel Digital Input board is used in conjunction with the DPW444 Dataport WRTU and monitors the states of up to four volt-free contacts. The contacts are scanned continuously by the onboard processor and it signals any change of state to the host microcontroller when it is interrogated every 2 seconds. This means that the unit cannot count pulses whose duration is less than 2 seconds, but it will react to shorter pulses as events, that would be reported to the web service.

Because this module only uses the EXP connector on the Dataport board, it can be used in conjunction with some of the other Dataport Accessories. Consult the sales department for more information.
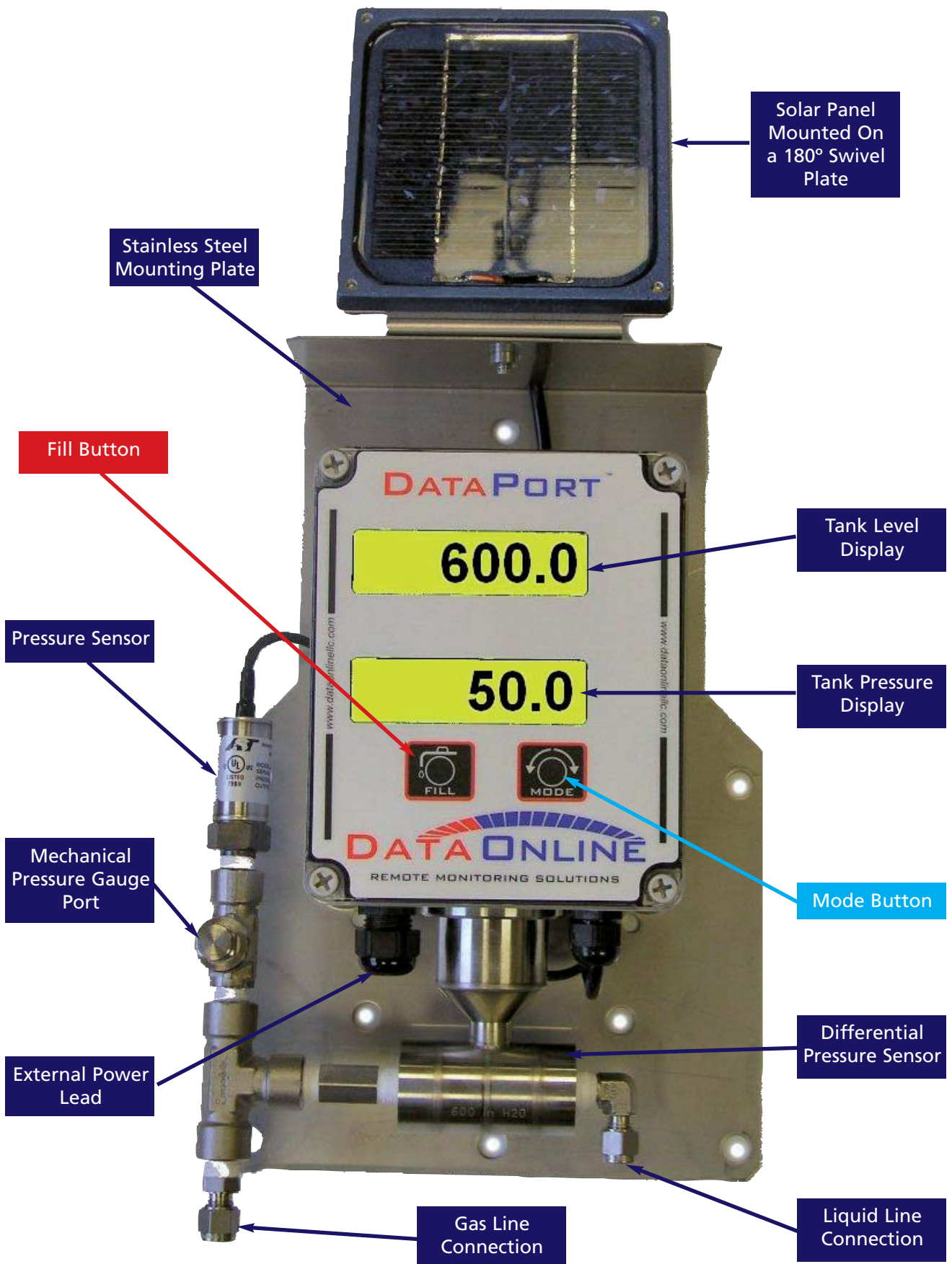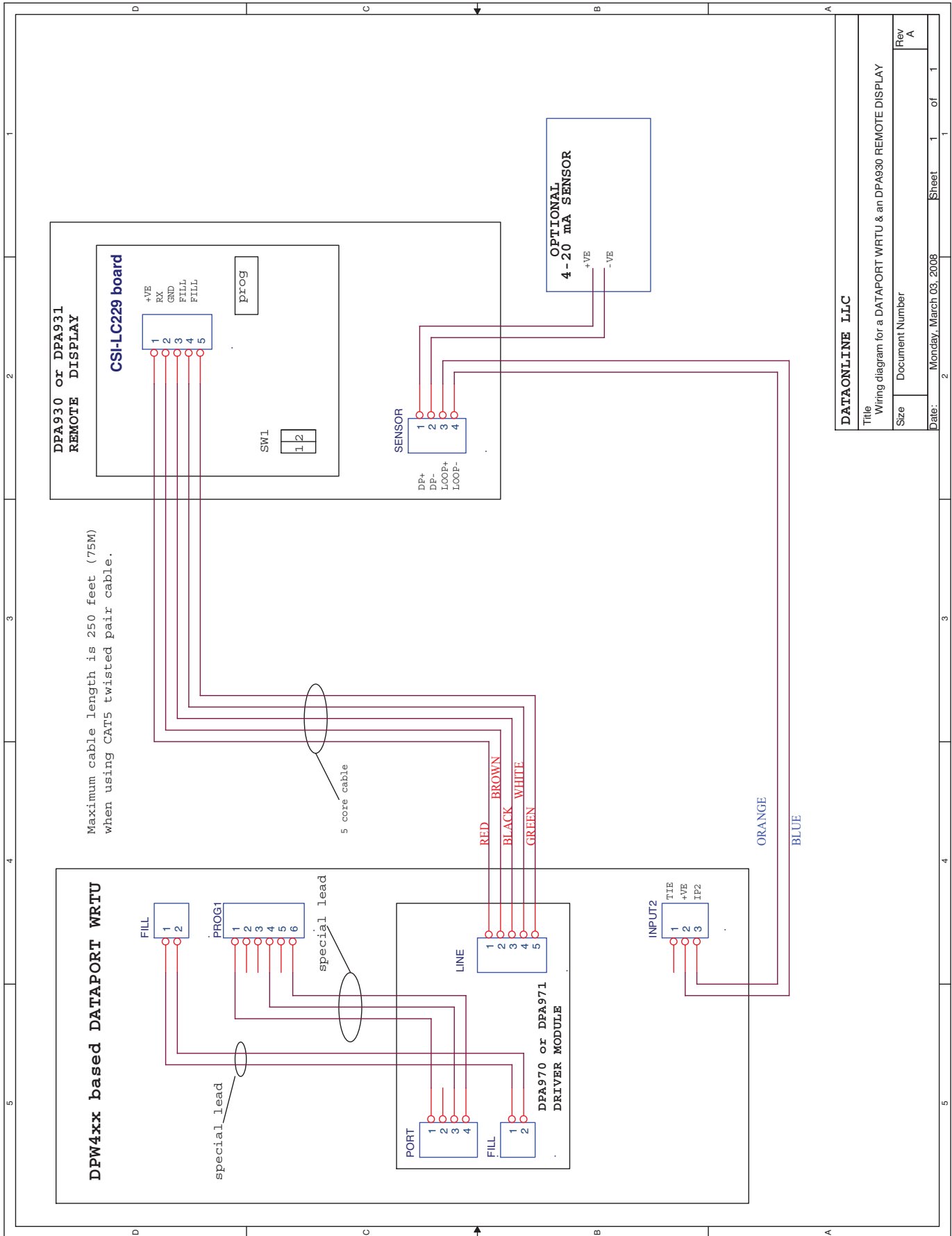
SOLAR PANEL

MAINS POWERED
BATTERY CHARGER
DPA960

6 VDC RECHARGEABLE
BATTERY

9 VDC PRIMARY
BATTERY

UNIVERSAL MAINS POWERED
HEATED POWER SUPPLY
& RS232 LINE DRIVER
DPA965

DPA930 REMOTE DISPLAY MODULE
FOR SECOND TANK LEVEL, etc.

RS232

LINE DRIVER
MODULE
DPA970

DPA920 CURRENT LOOP
INDICATOR and
REMOTE DISPLAY

DPW422 DATAPORT

123456

123456

EXPANSION
BOARD
AREA

LOCAL PROGRAMMING
ADAPTOR FOR PDAs,
etc.
DPA981

CHANNEL 1 DISPLAY

OPTIONAL CHANNEL 2 DISPLAY

DPA910 DUAL RELAY BOARD
FOR LOCAL ALARMS

DPA940 2 CHANNEL ISOLATION
BOARD FOR SHARED SIGNALS

SINGLE CHANNEL 4-20mA OUTPUT
MODULE FOR LOCAL PLC, DCS,etc

DPA976

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CORBY NN17 5JG

Title   DATAPORT DPW422 EXPANSION CAPABILITIES

Size   Document Number   Rev
        D051890/B   A

Date: Friday, April 29, 2005   Sheet   1   of   1

Solar Panel Mounted On a 180° Swivel Plate

Stainless Steel Mounting Plate

Fill Button

Pressure Sensor

Mechanical Pressure Gauge Port

External Power Lead

DATAPORT

600.0

50.0

FILL

MODE

DATAONLINE
REMOTE MONITORING SOLUTIONS

Tank Level Display

Tank Pressure Display

Mode Button

Differential Pressure Sensor

Gas Line Connection

Liquid Line Connection

DPA930 or DPA931 REMOTE DISPLAY

CSI-LC229 board

+VE
RX
GND
FILL
FILL

1 2 3 4 5

prog

SW1
1 2

SENSOR
1 2 3 4

DP+
DP-
LOOP+
LOOP-

OPTIONAL
4-20 mA SENSOR
+VE
-VE

Maximum cable length is 250 feet (75M)
when using CAT5 twisted pair cable.

5 core cable

RED
BROWN
BLACK
WHITE
GREEN

ORANGE
BLUE

DPW4xx based DATAPORT WRTU

FILL
1 2

PROG1
1 2 3 4 5 6

special lead

special lead

LINE
1 2 3 4 5

INPUT2
TIE
+VE
IP2
1 2 3

DPA970 or DPA971
DRIVER MODULE

PORT
1 2 3 4

FILL
1 2

DATAONLINE LLC

Title
Wiring diagram for a DATAPORT WRTU & an DPA930 REMOTE DISPLAY

Size | Document Number | Rev
     | | A

Date: Monday, March 03, 2008 | Sheet 1 of 1

Block diagram contents:

- CSI-AR217 DUAL ALARM RELAY BOARD
- OR
- CSI-IR246 RELAY ISOLATOR BOARD
- OR
- CSI-IR247 GALVANIC ISOLATOR BOARD
- OR
- CSI-CO304 4-20 mA ACTIVE OUTPUT
- OR
- CSI-CL310 4-20 mA PASSIVE OUTPUT
- OR
- CSI-VI271 CHART CYL-TEL BOARD
- OR
- CSI-IS257 ROCHESTER GAUGE BOARD
- OR
- CSI-AE280 ANALOG EXPANSION BOARD
- OR
- CSI-DI303 DIGITAL INPUT BOARD
- OR
- CSI-AR319 QUAD ALARM RELAY BOARD

- CSI-LC260 DUAL 6 DIGIT LCD BOARD
- OR
- CSI-LC292 QUAD 6 DIGIT LCD BOARD

- CSI-DP262 or CSI-DP362 2 or 4 CHANNEL PROCESSOR

- CSI-ZC279 ZIGBEE RADIO BOARD
- OR
- CSI-GP289 GPS RECEIVER BOARD

- CSI-RM263 GSM RADIO BOARD
- OR
- CSI-RM264 REFLEX RADIO BOARD
- OR
- CSI-RM265 PSTN MODEM BOARD
- OR
- CSI-RM352 GSM+GPS RADIO BOARD

BASIC CONFIGURATION IS THE DP262 BOARD FITTED WITH THE LC292 DISPLAY BOARD, THE RM263 GSM BOARD OR THE RM264 REFLEX BOARD AND THEN ONE OPTIONAL ADD-ON BOARD.

THE ZC279 BOARD IS ONLY FITTED FOR USE WITH ZIGBEE REMOTE UNITS.

THE GP289 BOARD IS ONLY FITTED FOR USE WITH ASSET TRACKING UNITS.

Title: DATAPORT 2 PCB MATRIX
Size: A
Document Number: DO704260P
Rev: A
Date: Thursday, April 08, 2010
Sheet 1 of 1