

Trotter Controls, Inc. FORT WORTH, TEXAS	PRODUCT DATASHEET	NUMBER DS-0017	REVISION A
		MODEL 5025-0032	
TITLE DATASHEET – DMS Digital Monitor & Control System (DsPic30F6014)	BY VT	CHK'D LA	SERIAL 0001 and SUBS
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REVISIONS:

Revision A: 3/2/2010

- Changed pictures and dimensional drawing to reflect new smaller mechanical chassis.
- Revised enclosure assy p/n from 5025-0027 to 5025-0032.

ELIGIBLE SERIAL NUMBERS:

5025-0032 S/N:0001 and subsequent serial numbers.

PURPOSE:

This specification details the general specifications for the DMS process monitor and control unit.

SUMMARY:

This unit provides LCD display of process parameters in real time.

This assembly is suitable for a variety of display and control applications.

The standard models are as follows:

- o 3 Analog In / 0 Digital Out
- o 3 Analog In / 2 Digital Out
- o 5 Analog In / 2 Digital Out

This assembly comes standard with 2 analog/counter inputs, an LCD display, a connection for an external Encoder/Programming unit, a connection for a remote display, and an internal power supply.



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The standard unit is supplied in a very compact enclosure with sealed connectors.

Enclosures sealed to IP67

Optional enclosure styles and expansion boards can be provided to tailor the system for a specific application.

Part Number Designation:

The DMS display part number is constructed as follows.

5025-0032-(CC)-(OPT)
Base Model Number Configuration Code Options Code

- **CC:** Configuration Code for Connectors/Voltage Ranges
- **OPT:** Configuration Code for other options (leave blank if no options selected)

1. Determine the sensor configuration that is needed.
 - a. Refer to Table 1
 - b. Determine the number of input channels required for your application and verify that the voltage inputs ranges are appropriate.
2. Determine the output configuration that is needed.
 - a. Refer to Table 1
 - b. See if the number of output required is available for the desired input standard input configuration. If so, this is your standard part number. Leave the OPT code for the part number blank.
3. If the desired input range or output range is not available, look at the options page to see if a standard option is available.
4. If no option code is available for the desired input / output configuration, contact the factory for a new options (OPT) code for your application.

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Table 1 - Standard DMS configurations by CC code.

CC	CH1 IN CONFIG.	CH2 IN CONFIG.	CH3 IN CONFIG.	CH4 IN CONFIG.	OUTPUT OPTIONS	CH5 IN CONFIG.	CABLE CONFIG.	PCB ASSY#
01	0-5 V	0-5 V	-	-	-	0-24V	5200-0006	5950-0053
02	0-5 V	0-5 V	-	-	2	0-24V	5200-0007	5950-0062
03	0-5 V	0-5 V	0-5 V	RPM	2	0-24V	5200-0009	5950-0063

Notes: {X}

1. CH5 input is available on power input connector.

Table 2 ~ Available option Codes for DMS display.

OPT	CH1 CONFIG.	CH2 CONFIG.	CH3 CONFIG.	CH4 CONFIG.	OUTPUTS (SNK)	INPUTS (SNK)	CH5 IN CONFIG.
Blank {4}	STD	STD	STD	STD	STD	STD	STD
01	STD	STD	STD	STD	4	0	STD
02	STD	STD	STD	STD	2	2	STD
03	STD	STD	STD	STD	0	4	STD
04	4-20ma	4-20ma	STD	STD	STD	STD	STD

Notes: {x}

1. CH3 / CH4 configuration columns only apply to models having four inputs channels available.
2. STD: Designates standard model configuration.
3. Other input ranges and options can be supplied.
4. Leave option code prefix blank if standard model configuration is selected.

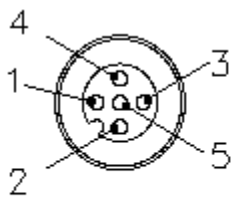
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Table 3 ~ Connectors for DMS display assembly verses configuration CC code.

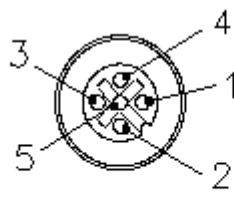
CC	PGM & SETUP	REMOTE DISPLAY	OPTIONS	CH1/CH2	POWER	CH3/CH4
01	X	X		X	X	
02	X	X	X	X	X	
03	X	X	X	X	X	X

Table 4 ~ Standard connector functions versus connector pin number.

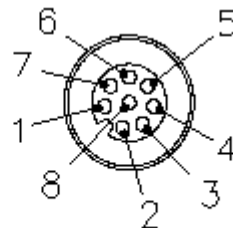
Pin #	PGM & SETUP (8 pin female)	REMOTE DISPLAY (8 pin male)	OPTIONS (5 pin female)	I/O Type	CH1/CH2 (5 pin female)	POWER (5 pin male)	CH3/CH4 (5 pin female)
1	SETUP	SPI 2 BUSY	OUT 1	Sink	+V SIG	+24V	+V SIG
2	SETUP	SPI 2 RESET	OUT 2	Sink	+SIG (CH1)	+Dimmer In	+SIG (CH3)
3	SETUP	SPI 2 CLK	OUT3 / IN 1	OPT	AGND	GND	AGND
4	SETUP	SPI 2 DATA	OUT 4 / IN 2	OPT	+SIG (CH2)	FR GND	+SIG (CH4)
5	SETUP	N/C	+V Supply	+24V	+5V	CH5	+5V
6	SETUP	N/C	-	-	-	-	-
7	SETUP	+7.2V	-	-	-	-	-
8	SETUP	GND OUT	-	-	-	-	-



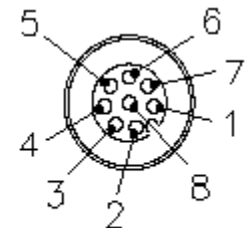
5 Pin Male



5 Pin Female



8 Pin Male



8 Pin Female

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GENERAL :

Table 5 ~ General specifications.

Rated Voltage Input	Min: 10 VDC Nominal: 24 VDC Max: 39 VDC ~ Other voltages available
Internal Regulation	Microprocessor: +4.9 ~ +5.1 VDC, Linear System / Aux: +7.5V +/- .5V, 3amps
Power Consumption	DMS Display Only Min: 1.4 watts ~ LCD Back Light Off Nominal: 2.3 watts ~ LCD Back Light On Max: Depends on external load & PIC clock frequency DC/DC Efficiency: 89%
Power Consumption	DMS With Sideloader Displays Nominal: 4.7 watts ~ 2 LCD Sideloader Displays with LCD Back Light On Nominal: 7.2 watts ~ 2 VFD Sideloader Displays
Dimensions (enclosure):	3.65"W X 2.4"H X 3.8"D
Fuse:	1.0 A (internal)
Environmental:	Storage Temperature: -30C - +80C (LCD) Operating Temperature: -20C ~ +70C (LCD) IP Class 65 (preliminary)
Microprocessor:	DSPIC6014A (MicroChip) I2C, SPI, RS-232, INTERNAL EEPROM, 30MIPS, 16 A/D channels, 2 PWM Analog Output Channels, Counter/Timers
Analog Inputs:	5 Channels with hardware/digital filters, 11 channels with no filters internally accessible
Digital I/O:	40 points, TTL protected to 20ma, Outputs can sink/source 20mA per point - Counter/Timer Support - I/O points are internal and are not available via external connectors
Communication:	RS232, TTL SPI, TTL I2C
Remote Display Capability:	Supports remote LCD or Vacuum Fluorescent Displays

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FEATURES :

- OEM configurations available
- Five analog/counter input channels standard
 - 0-5V, 0-10V, 4-20ma, other voltage available
 - Optically isolated counter inputs
 - Analog and digital filters for each channel
 - 12 bit resolution
 - Configurable Butterworth filters per each channel
- Two optically isolated Open collector digital outputs standard
 - 60mA @ 25C, 50mA @ 70C per point
 - 24V regulated supply out to power devices
- Two optically isolated configurable points, Open collector digital output or digital input.
 - Each channel jumper configurable
 - 60mA @ 25C, 50mA @ 70C per point (output mode)
 - Input can be sink or source. Jumper configurable
 - 24V Nominal input on digital inputs.
 - 10mA per input at 24Volts
- Displays 4 channels of analog / counter input
 - Large easy to read numbers
 - Units text for each channel
 - Display in engineering units
 - 28 non-linear lookup tables to scale inputs included
 - EEPROM storage of configuration
- Back lit LCD display
 - 144 X 32 bit graphic display
 - Display Type: Positive Transflective
 - Viewing Environment: Sunlight readable, Back lit
 - Wide temperature range LCD.
 - External voltage input controls LCD back light intensity via lookup table or fixed backlight (Software Setting)
 - Backlite Color: Light Blue, Yellow/Green (optional)
- Allow routing of any analog channel to any display location
 - Supports 255 user defined configurations
 - Supports 28 non-linear lookup tables
 - Supports 8 linear sensor types

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- Remote Display Connection, the DMS can drive remote displays.
 - LCD Positive Transflective displays. See DS-0015, DS-0025 for information on the IP67 rated remote LCD displays .
 - Vacuum Fluorescent displays. See DS-0022 for information on the IP67 rated remote display
- Analog Outputs - Optional analog outputs available.
- DSPic6014A Microprocessor
 - Internal EEPROM
 - 8K data space
 - 144K program space
 - 30 MIPS processing speed
 - 16 analog input channels, 12 bit resolution (4 channels with input filters and scaling resistors)
 - 2 PWM output channels
 - 40+ Digital I/O
- 6 layer PCB with internal ground and shield planes for noise free operation
- Wide Temperature range: -20C ~ 70C (LCD)
- External programming unit with encoder / push wheel and graphic/text display
- On board programming port for firmware updates and program development / diagnostics

SPECIAL CONFIGURATIONS ALSO AVAILABLE:

The following configurations for the display are available. Minimum order quantities may apply.

- Currently Available Options
 - On board PWM channels for analog output (2 channels)
 - Buffered RS-232 output
 - Buffered SPI output
 - Additional analog inputs
 - Additional analog input voltage ranges
 - I2C, SPI bus
- Non-Standard Options
 - IP67 Enclosure
 - Optically isolated bi-polar analog inputs
 - Optically isolated I2C bus

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- o RS-422/85 external connection
- o On board step motor control capability
- o On board H-bridge capability
- o On board servo valve control capability
- o Other board peripherals available
 - Accelerometer
 - Photo Eye
 - Temperature sensor
- o Daughter boards for special I/O functions
- o Custom configurations

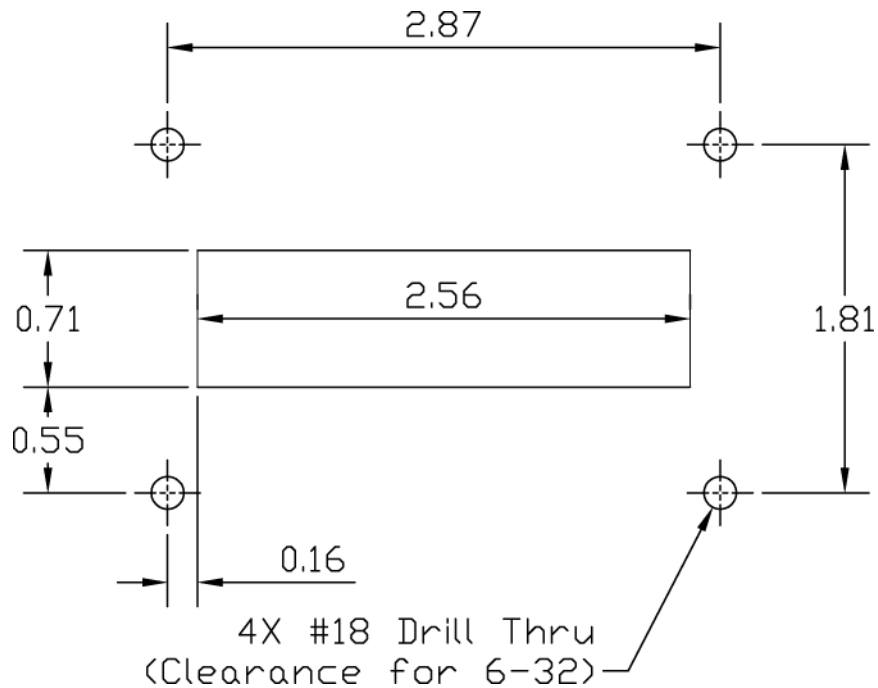


Figure 1 ~ Mounting & Recommended Display Cutout

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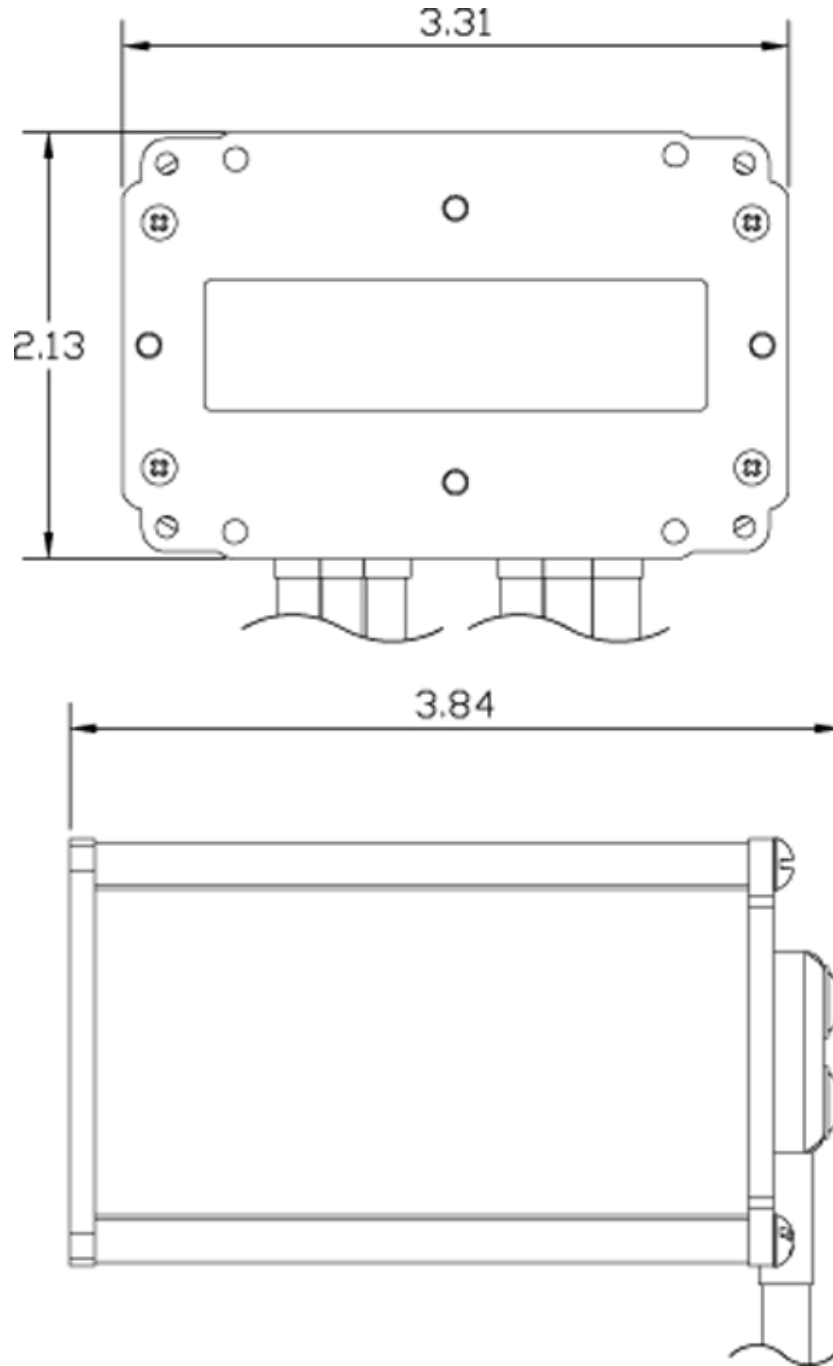


Figure 2 ~ Front View/Side View

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APPENDIX :

Various Items related to the DMS system are presented in the Appendix.



Figure 1 ~ DMS processor board, power & I/O board, and display board shown with processor board and power boards still attached.

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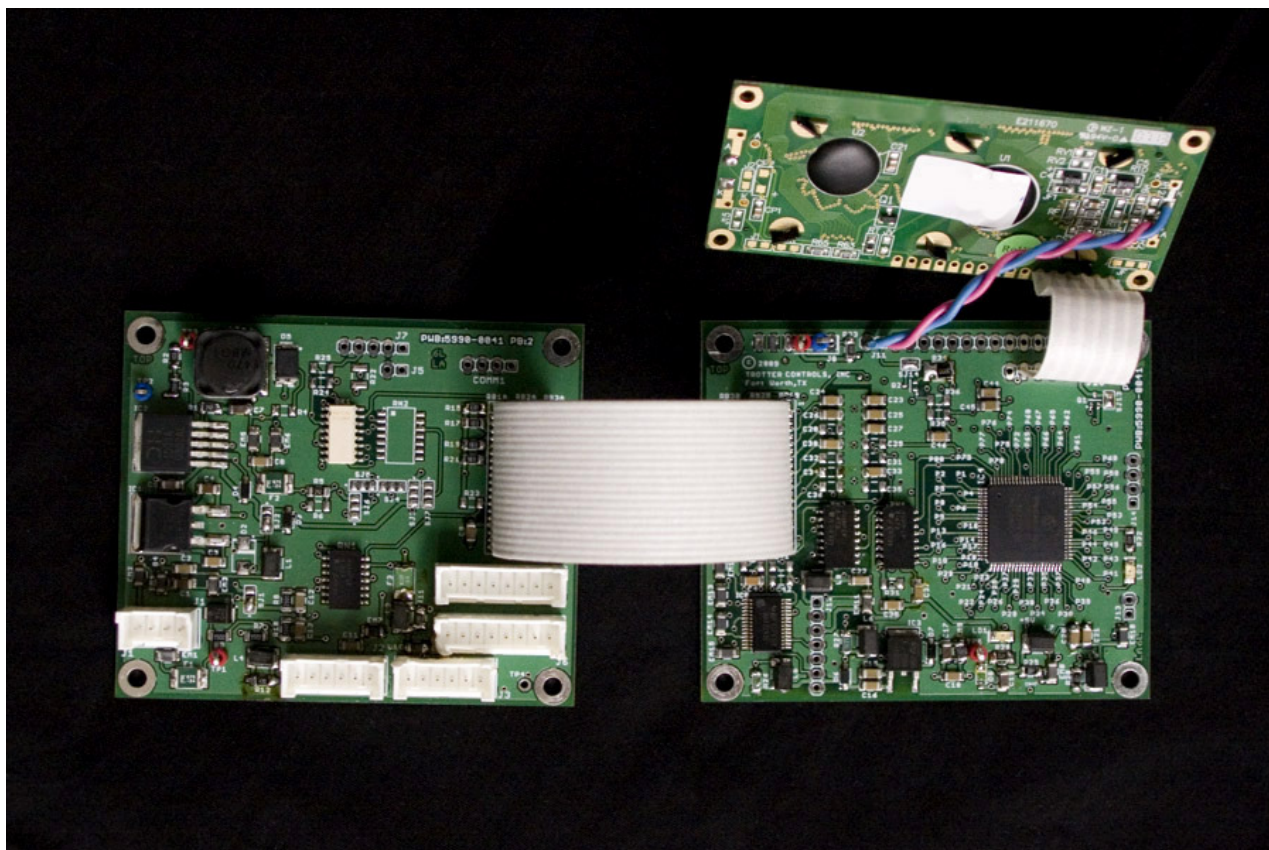


Figure 2 ~ DMS processor board, power I/O board, and display board shown ready for final installation in the chassis.

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Figure 3 - DMS Internal View

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Figure 4 – DMS Rear View

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Figure 5 – DMS With Connectors

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Typical Connection Diagram:

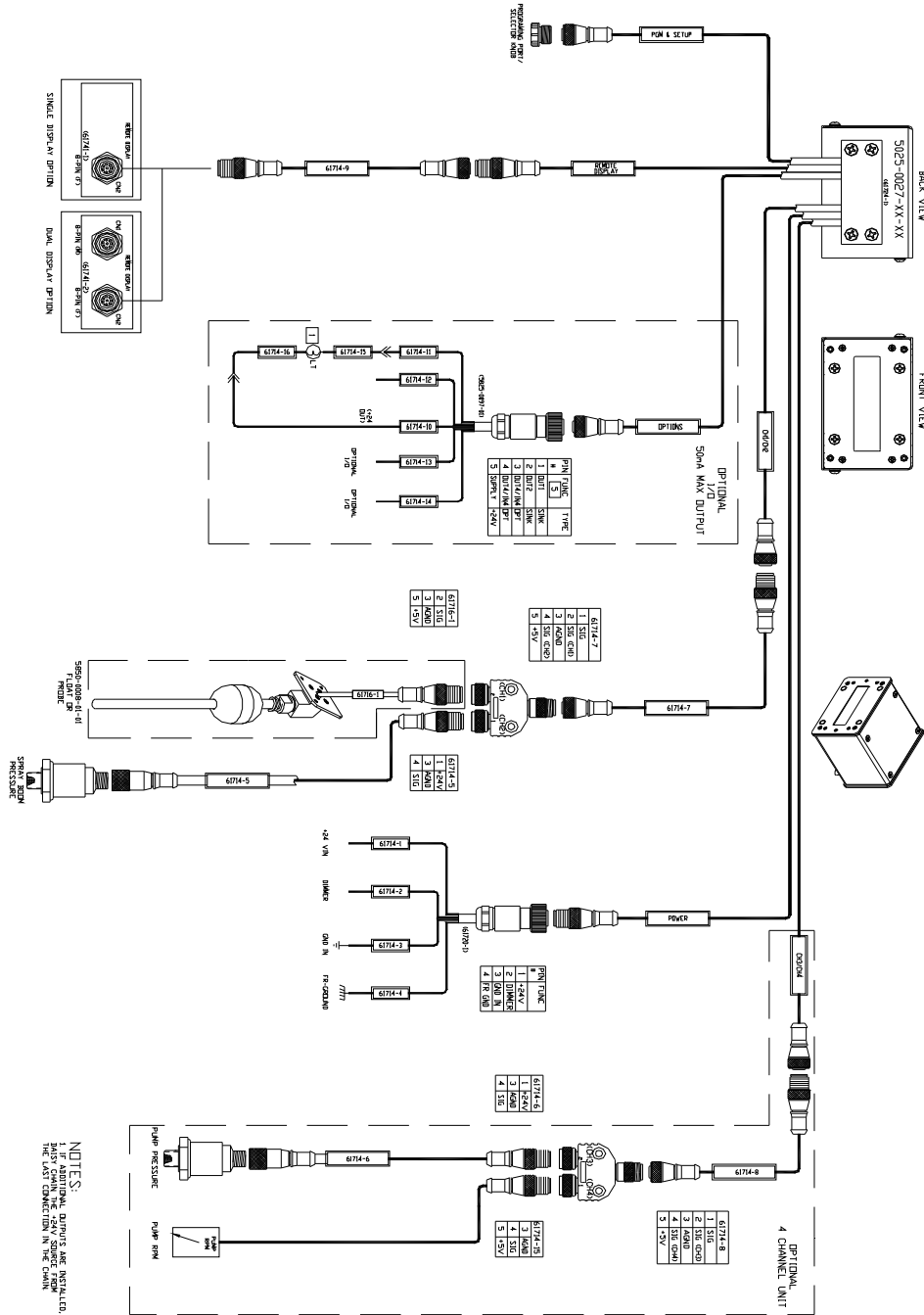


Figure 6 ~ Example DMS connection diagram.