

DAWN Mini ADAQ TC20™ Details

Technical Specifications

Inputs

Power Supply Input	12V or 24VDC nominal (9...32 VDC power supply range)
Supply Current	200 mA at 12 V Typical 100 mA at 24 V Typical
Protection	Reverse polarity protection is provided. Power supply input section protects against transient surges and short circuits and is isolated from thermocouple inputs
Thermocouple Types	Up to 20 channels, independently configurable for B, E, J, K, N, R, S or T
Thermocouple Inputs	The device reads mV signals from the supported Thermocouples. B = 0 to 13.82 mV E = -9.835 to 76.373 mV J = -8.095 to 69.553 mV K = -6.458 to 54.886 mV N = -4.345 to 47.513 mV R = -0.226 to 21.101 mV S = -0.236 to 18.693 mV T = -6.258 to 20.872 mV Temperatures are configured to indicate the SAE J1939 SPN to be transmitted by that temperature input. Accuracy: +/- 1°C typical with cold junction compensation at ambient temperature Resolution: 0.001°C
Scan Rate	100ms per channel, total sweep time maximum 2.2 seconds
Common Mode Readings	Input range +/- 4V maximum Rejection is 100db at 5Vp-p (50-60Hz)
Thermal Drift	150 ppm/°C of span (maximum)
Isolation	Digital isolation is 500VDC from input to ground. Three way isolation is provided for the CAN line, inputs and power supply
SPNs and PGNs	The SPN drop list includes all temperature SPNs from the J1939-71 standard published up to January of 2009. If an SPN is not supported by the drop list, the user can select a zero SPN, which then allows them to define the SPN and PGN per the application requirements. One byte parameters have a resolution of 1 °C / bit and a range of -40 °C to 210 °C. Two byte parameters have resolution of 0.03125 °C / bit and a range of -273 °C to 1735 °C (per SAE J1939). The Parameter Group Number (PGN) that will be used to send a temperature to the J1939 network will be entirely dependent on the Suspect Parameter Number (SPN) that was selected for that channel. In all cases, the PGN is a PDU2 type. Each PGN has a predefined priority and repetition rate associate with it.
Averaging	The average temperature of all the active channels can be broadcasted to the network using the default "Engine Average Information" PGN, or on a Proprietary B message.
Protection	Open circuit detection Frozen data detection Over or under temperature detection High temperature shutdown detection

Communication

CAN	1 CAN 2.0B port, protocol SAE J1939 Digital isolation is provided for the CAN line.
Network Termination	According to the CAN standard, it is necessary to terminate the network with external termination resistors. The resistors are 120 Ohm, 0.25W minimum, metal film or similar type. They should be placed between CAN_H and CAN_L terminals at both ends of the network.
RS-232	1 RS-232 port is available for debugging purposes. ASCII Text Format, 115200 Baud Rate Data – 8 bit, Parity – None, Stop – 1 bit. Flow Control – Xon/Xoff. Short circuit protection to ground.

General Specifications

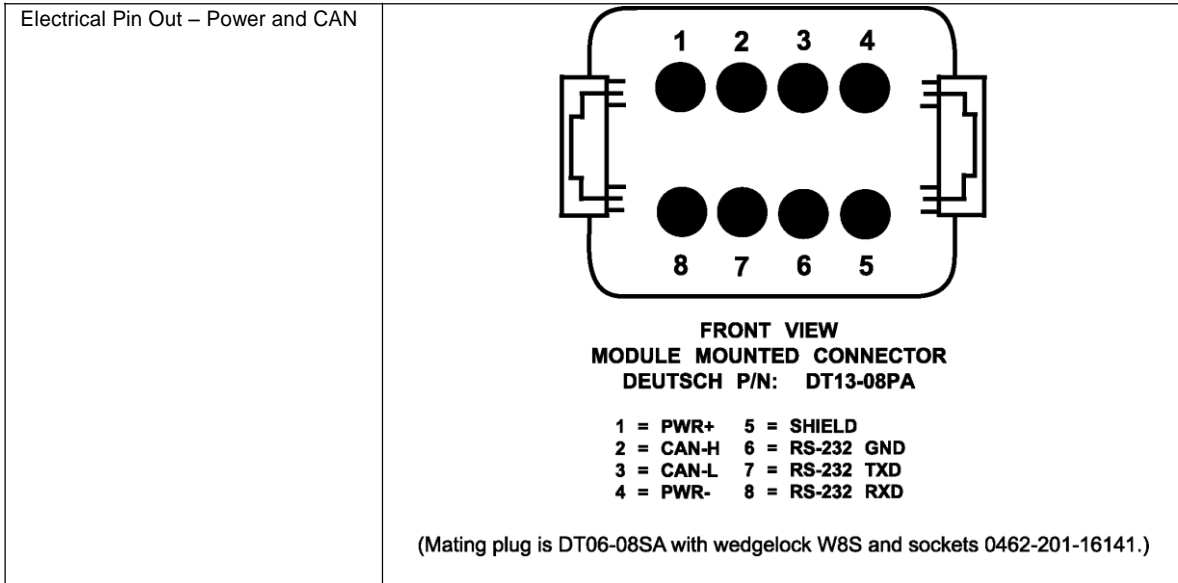
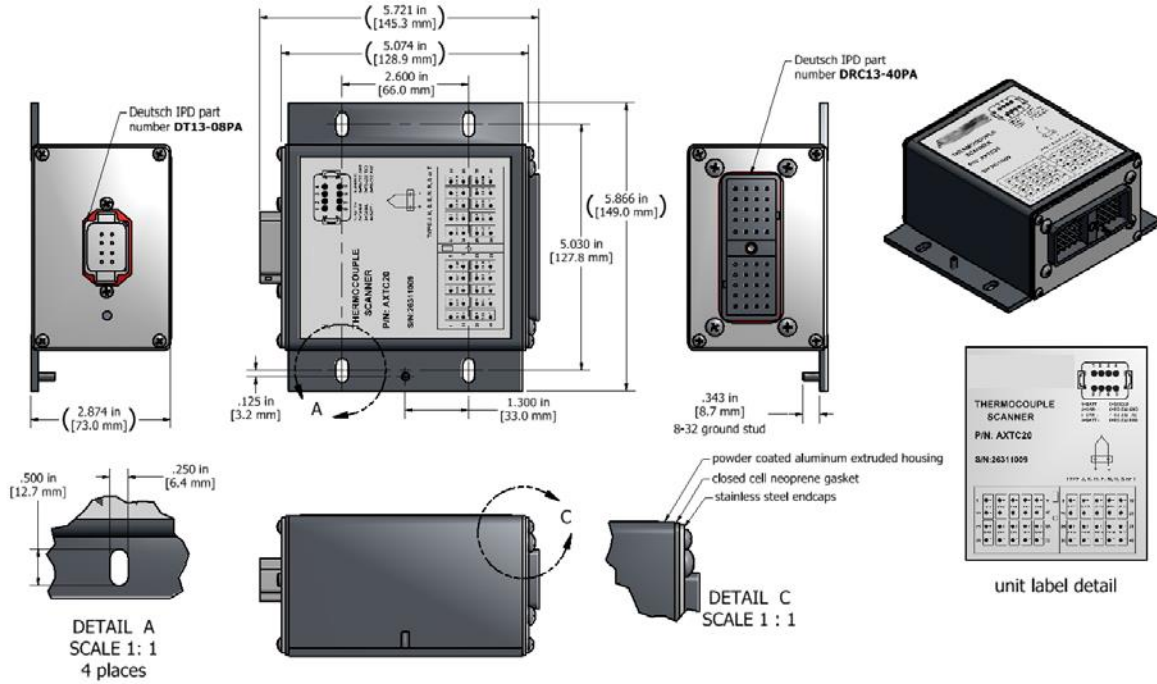
Microprocessor	MC56F8366, 16-bit, 512 kByte flash program memory
Diagnostics	Configurable Diagnostic Messaging parameters Diagnostic Log is maintained in non-volatile memory. Each thermocouple channel could be configured to send diagnostic messages to the network if the temperature goes out of range. When sending an “Active Diagnostic Trouble Code” (DM1) or a “Previously Active Diagnostic Trouble Codes” (DM2) message, the controller will use the appropriate Diagnostic Trouble Code (DTC). As defined by the standard, this is a combination of the Suspect Parameter Number (SPN), the Failure Mode Indicator (FMI), Occurrence Count (OC) and the SPN Conversion Method (CM).
UL and cUL Compliance	UL508 (April 2010) (FTPM2) – Controls for Stationary Engine Driven Assemblies cUL C22.2 No. 14-10 (2010)
CE Compliance	2004/108/EC (EMC Directive) 2011/65/EU (RoHS Directive)
Vibration	8 G for a rail mounted and vibration isolated device <i>The marine type approval process tested to 4.0 G per IEC 60068-2-6, Test Fc.</i>
Marine Type Approval	Lloyd’s Register, DNV, ABS, RINA, GL, BV, CCS, IRS <i>Meets the environmental, EMC and vibration requirements of generator set applications in marine installations.</i>
Operating Temperature Range	-40 to 85 °C (-40 to 185 °F)
Storage Temperature Range	-50 to 120 °C (-58 to 248 °F)
Humidity	Protected against 95% humidity non-condensing, 30 °C to 60 °C
Protection	IP65, Pollution Degree 3 per UL508 <i>The marine type approval process tested to IP56.</i>
Weight	2.2 lbs. (1.00 kg)

Packaging	Rugged aluminum housing, stainless steel end plates, neoprene gaskets 145.30 x 149.00 x 73.00 mm (5.72 x 5.86 x 2.87") L x W x H Connectors, Deutsch IPD P/N: 1 8-pin DT13-08PA, 1 40-pin DRC13-40PA Can be mounted directly on the power generator set or remotely Suitable for moist, high shock, vibrating and non-hazardous environments
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Sample Rate vs Number of Channels

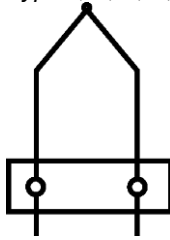
Hz	T	Channels
3.333333	0.3	1
2.5	0.4	2
2	0.5	3
1.666667	0.6	4
1.428571	0.7	5
1.25	0.8	6
1.111111	0.9	7
1	1	8
0.909091	1.1	9
0.833333	1.2	10
0.769231	1.3	11
0.714286	1.4	12
0.666667	1.5	13
0.625	1.6	14
0.588235	1.7	15
0.555556	1.8	16
0.526316	1.9	17
0.5	2	18
0.47619	2.1	19
0.454545	2.2 s	20

Dimensional Drawing

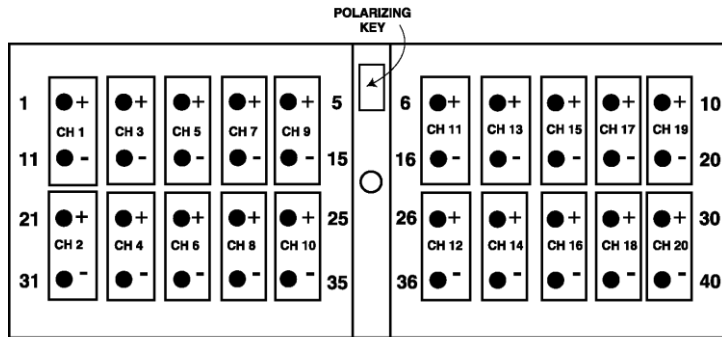


Electrical Pin Out - Thermocouples

Type J, K, B, E, N, R, S or T



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**FRONT VIEW OF
MODULE MOUNTED CONNECTOR
DEUTSCH P/N: DRC13-40PA**

Mating Connector Part Number: Deutsch IPD p/n DRC16-40SE-A or DRC18-40SA or DRC16-40S with sockets 0462-201-16141