



Badger 1785 Analog/Digital Remote Terminal Unit



The 481 Analog/Digital Remote Station, Model 001785, is a microprocessor-based unit that provides analog and on/off contact closure (or contact opening) alarm-point status reporting. Optional relay cards enable the 001785 to control events as well as monitor them. This flexible remote station is a part of the 481 family of status monitoring and control equipment and can be configured to meet the requirements of a broad range of applications.

The remote station communicates with the master station (NetManager, 481A or 481 MiniMaster) over a frequency-shift-keyed (FSK) channel or an RS-232/RS-422 facility. All changes-of-status from the monitored analog and bistate (on/off contact closure or contact opening) points are reported to the master station.

- Model 001785 Remote Station Provides Status Reporting
- Field-expandable from 16 to 32 alarm/analog inputs and from 0 to 16 controls in a single (1 & 3/4") rack space.
- Field-expandable to 256 alarm/ analog inputs and 128 controls with up to seven 001785 or 001725 expansion stations.
- Inputs 1- 16 are individually assignable as on/off alarms or as analog points.
- The user for can individually program inputs 1-32 for desired alarm delay and for normally closed or open contacts monitoring.
- Each analog input has user assigned upper and lower alarm thresholds.
- Analog values are read automatically for threshold violation reporting and by operator request.
- High analog input impedance prevents interference with sensitive circuits such as radio A.G.C.
- With optional relay card installed, one relay can be used to drive external audible or visual alarm to locally signal change-of-status.
- Control relays are operable as momentary or latching by operator command.
- Remote unit parameters can be downloaded from master stations, which reduce field assistance when tailoring for the User's Network.



- Derived alarm equations are downloaded from master stations and an optional 32 derived-alarms based on Boolean and relational operators.
- A battery-backed real-time clock allows the remote to time-tag alarms when they actually occur.

Specifications

Analog Inputs

No. of analog inputs	16 max.: points 1-8. Single-ended and to ground; points 9-16, differential and floating (may be grounded)
Analog input -V	Points 1 -8: 0 to -5 Vdc, to ground; points 9-16: any 5-volt differential between limits of +10 Vdc and -10 Vdc
Input;	5 M ohm in-range (- 10 Vdc to +10 Vdc) 22 k ohm out-of-range (less than - 10 Vdc of greater than +10 Vdc)
Accuracy 20 k ohm	±1 % of full scale if measured source impedance is less than 20 k ohm
Conversion resolution	20 mV steps from 0 to 5.1 Vdc
Threshold detection	Single-ended inputs: 20 mV to -5 Vdc;
Limits:	Differential inputs: the upper mA lower values of any 5 Vdc range within the limits of +10 Vdc and -10 Vdc
Interval between point threshold crossing and off-normal indication	0 msec to 20 min (-0, +33 msec), user- selected for each input
Local display	LED lights when upper or lower analog threshold is exceeded.

Bistate Alarm Inputs

No. of alarm inputs	32 max. (16 max if all points 1-16 are used as analog inputs. An additional bistate alarm input can be added for each unused analog input, increasing the total number of bistate inputs to 32.) The maximum combination of alarm/analog inputs is 32 (one remote station) or 256 (eight stations stacked--see "remote station expansion" in this specification).
Alum input voltage	Guaranteed high state -2 Vdc to +75 Vdc; guaranteed low state (conducting): -3 Vdc to -75 Vdc

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Input Impedance

Points 1-16: 100 k ohm referenced to -16 Vdc, in-range (+10 Vdc to -10 Vdc) and 22 k ohm, referenced to ±10.5 Vdc, out-of-range (greater than +10 Vdc or less than, -10 Vdc); points 17-32: 100 k Ohm referenced to -16 Vdc

Alarm memory

Bi-directional (two-state)

Interval between

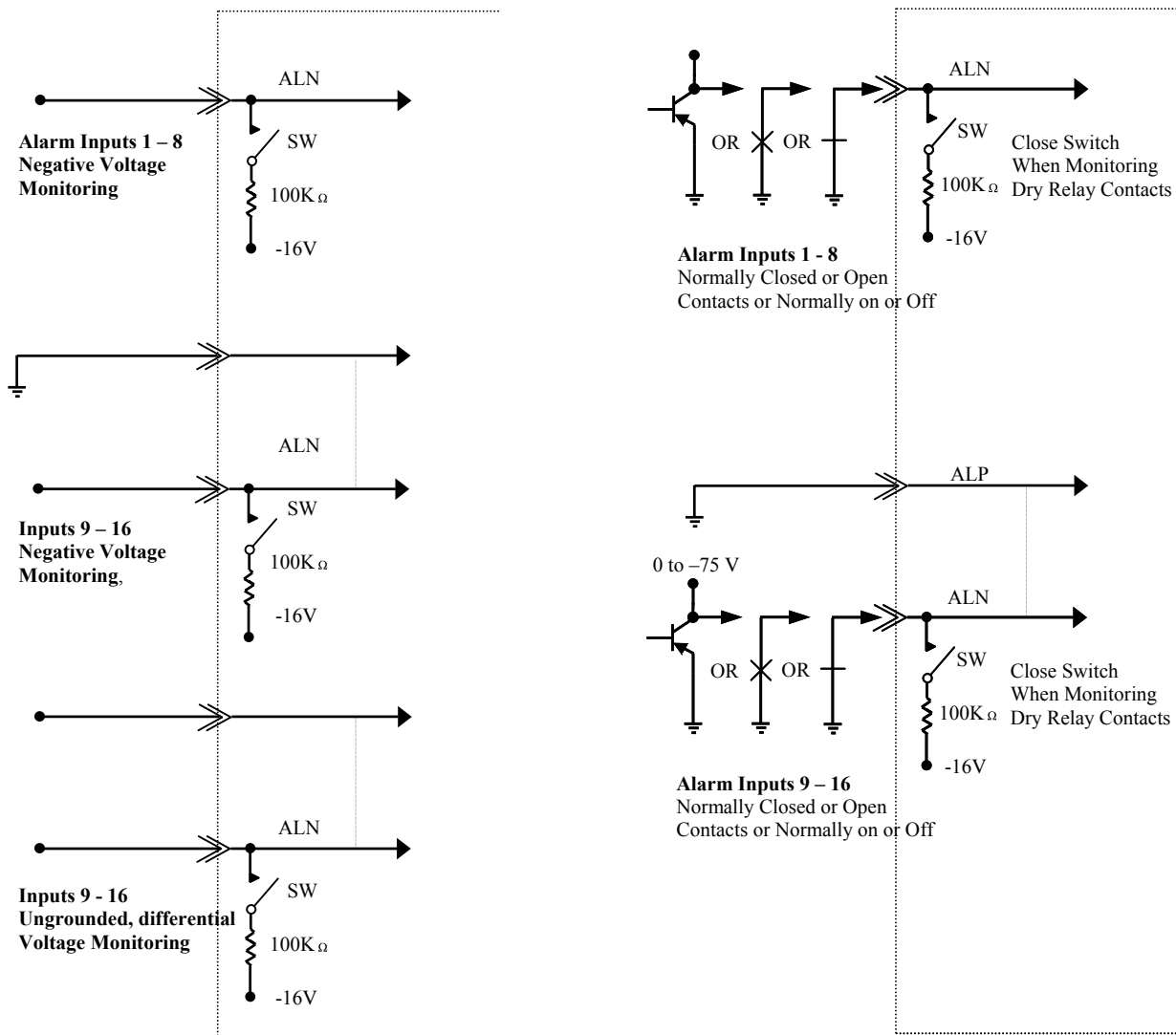
0 msec to 20 min (-0, +33 msec). user- change selectable for

Status change

each input point

Local display

LED lights when bpi is in alarm



Control Outputs

No. of outputs

Optionally 0, 8 or 16 magnetically latching Form C relays

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	insensitive to power failure. Relays can be initially installed or field-expandable from 0 to 8, 0 to 16 or 8 to 16.
Contact rating	60 Vdc at 1A resistive or 1/2 A inductive
Configuration	Latching or momentary set (1 sec) by command from the master station. Control.
FSK Tone Channel	(see Table of Standard FSK Channels)
Transmit level range	75-ohm circuits: -57 dBm (0.414 mV) to -21 dBm (26 mV); 600-ohm circuits: 48 dBm (3 mV) to -12 dBm (195 mV)
Receive level range	High range: 75-ohm circuits: -40 dBm (3 mV) to 0 dBm (293 mV); 600 ohm circuits: 48 dBm (3 mV) to 4 dBm (293 mV)
	Low range: 75-ohm circuits: -60 dBm (0.293 mV) to -20 dBm (29 mV); 600-ohm circuits: -68 dBm (0-293 mV) to -28 dBm (29 mV)
Bridging impedance	Transmit and receive: 10 k ohm, 15%
Terminating impedance	Optionally 75-ohm, 600-ohm or 10k ohm at 28 dB (user-selectable) return loss
Bridging/terminating balance	Within 2 dB
Out-of-band products	50 dB below carrier
Signal-to-noise ratio	16 dB for 10 ⁻³ BER

Standard FSK Tone Channels

Channel No	Nominal Center Frequency (kHz)	Bandwidth (Hz)	Baud Rate (bps)
4	10.0	1400	800
17	3.0	300	200
22	2.7	550	300
23	6.0	2000	1200
Bell 202*			1200

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- Bell 202 can be used when a voice frequency (VF) communications channel is utilized. VF bandwidth is normally between 200 and 3kHz.

RS-232 Channel (Optional)

Baud rate	112.5,200,240,300,400,600, 800, 1200 and 9600 bps
Signals Supported	Transmit mid receive data for digital radio applications (RTS and CTS not required); transmit and receive data, RTS and CTS for modem control (DCD not required)
Digital bridge	3 way bridge (remote station occupying one port), switch-selectable for (1) retransmission to port B from port A. and vice versus, or (2) isolated dual-part operation
Remote Station Expansion	Remote station can support up to seven 001785 or 001725 expansion remote stations, which share basic remote station's FSK or RS-232/RS-422 telemetry circuit. Each remote nation requires a unique address (up to 254 per common communication facility).

Power

Requirements	Input voltage -21 Vdc to -56 Vdc at 500 mA or less (72 watts). For 115/230 V AC operation, separate power supply can be supplied. Fuse alarm in the form of station battery is presented at user's connection point.
Environmental	
Ambient temperature	-20 C (-4 F) to +55 C (+130 F)
Relative humidity	0 to 95% non-condensing
Mechanical	
Dimensions	1.75" (4.45 cm) high x 12" (30.48 cm) deep x 19" (48.3 cm) wide
Mounting	Center (5-1/2" front projection) or flush in standard 19" relay racks
User Connections	All (except power) at wire wrap terminals on removable 30-pin card-edge connectors. Power: 4-Terminal barrier strip. Optional BNCs for unbalanced tone channels

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