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www.omega.com/manuals/manualpdf/M5460.pdf



PLATINUM™ Series



DP32Pt, DP16Pt, DP8Pt, DP8Ept Temperature, Process and Strain Meters



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MQS5460/0716

1. Introduction

This PLATINUM™ Series Meters Quick Start Guide provides only a brief overview of each controller's functions and quick configurations to get started. Please refer to the PLATINUM™ Series Meters User's Guide PDF at Omega.com/manuals for complete information and specifications for each end device.

1.1 Description

The PLATINUM™ Series meter offers unparalleled flexibility in process measurement. While the meter is extremely powerful and versatile, great care has gone into designing a product that is easy to set up and use. Automatic hardware configuration recognition eliminates the need for jumpers. The PLATINUM™ Series meter displays only the menu items associated with the system's custom configuration.

Each unit allows the user to select the input type from 9 thermocouple types (J, K, T, E, R, S, B, C, and N), Pt RTDs (100, 500, or 1000 Ω , with a 385, 392, or 3916 curve), thermistors (2250 Ω , 5K Ω , and 10K Ω), DC voltage, or DC current. The analog voltage inputs may be single ended bipolar, differential absolute or differential ratiometric and both voltage and current are fully scalable using a single point or 10-point linearization to virtually all engineering units with a selectable decimal point that is perfect for use with pressure, flow, or other process inputs. Multiple Alarms can be configured for above, below, hi/lo, and band triggering using either absolute or deviation Alarm trigger points.

The PLATINUM™ Series meter features a large, three-color, programmable display with the capability to change color every time the Alarm is triggered. Various configurations of mechanical relay, SSR, DC pulse, and isolated or non-isolated analog voltage or current outputs are available. Every unit comes standard with USB communications for firmware updates, configuration management, and data transfer. Optional Ethernet and RS-232 / RS-485 Serial communications are also available. The Analog Output is fully scalable and may be configured for retransmission to follow your input signal. The universal power supply accepts 90–240 Vac. The low-voltage power option accepts 24 Vac or 12–36 Vdc.

Additional features usually found only on more expensive meters make these the most powerful products in their class. Some additional standard features are High-high/Low-low Alarm functionality, external latch reset, configuration save and transfer, and configuration password protection.

2. Safety Considerations

This device is marked with the international caution symbol. It is important to read this manual before installing or commissioning this device as it contains important information relating to Safety and EMC (Electromagnetic Compatibility).

This instrument is a panel mount device protected in accordance with 2014/35/EU, electrical safety requirements for electrical equipment for measurement, control, and laboratory use. Installation of this instrument should be done by qualified personnel.



In order to ensure safe operation, the following instructions must be followed and warnings observed:

This instrument has no power-on switch. An external switch or circuit-breaker must be included in the building installation as a disconnecting device. It must be marked to indicate this function, and it must be in close proximity to the equipment within easy reach of the operator. The switch or circuit-breaker must comply with the relevant requirements of IEC 947-1 and IEC 947-3 (International Electro technical Commission). The switch must not be incorporated in the main supply cord.

Furthermore, to provide protection against excessive energy being drawn from the main supply in case of a fault in the equipment, an overcurrent protection device must be installed.

- Do not exceed the voltage rating on the label located on the top of the instrument housing.
- Always disconnect the power before changing the signal and power connections.
- Do not use this instrument on a work bench without its case for safety reasons.
- Do not operate this instrument in flammable or explosive atmospheres.
- Do not expose this instrument to rain or moisture.
- Unit mounting should allow for adequate ventilation to ensure that the instrument does not exceed the operating temperature rating.
- Use electrical wires with adequate size to handle mechanical strain and power requirements. Install this instrument without exposing the bare wire outside the connector to minimize electrical shock hazards.



EMC Considerations

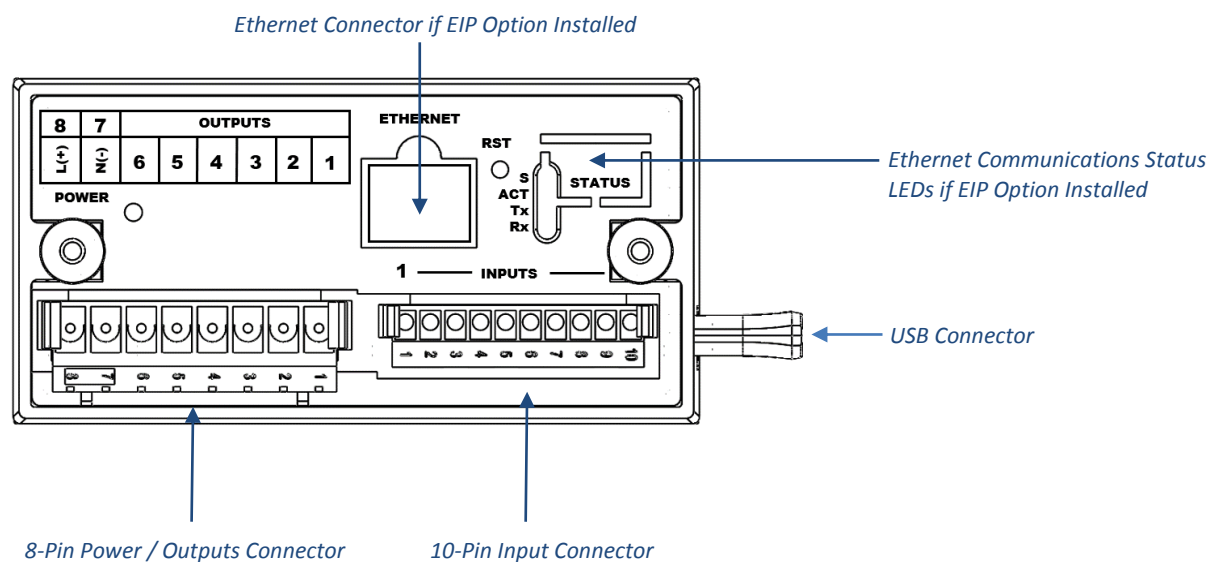
- Whenever EMC is an issue, always use shielded cables.
- Never run signal and power wires in the same conduit.
- Use signal wire connections with twisted-pair cables.
- Install Ferrite Beads on signal wires close to the instrument if EMC problems persist.



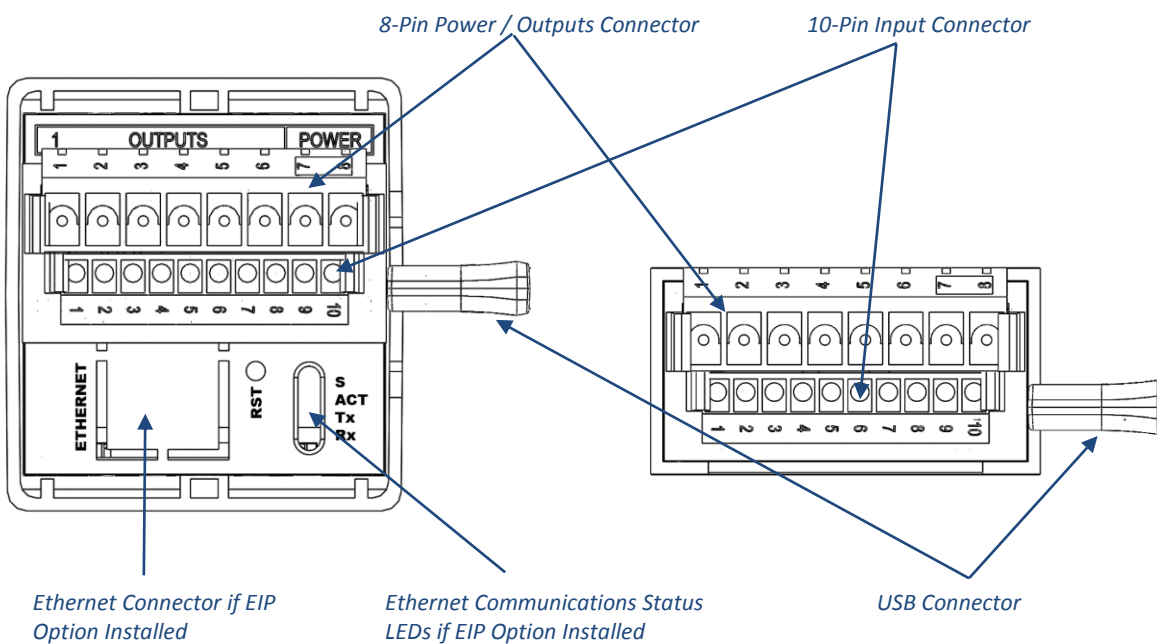
Failure to follow all instructions and warnings is at your own risk and may result in property damage, bodily injury and/or death. Omega Engineering is not responsible for any damages or loss arising or resulting from any failure to follow any and all instructions or observe any and all warnings.

3. Wiring Instructions

3.1 Back Panel Connections



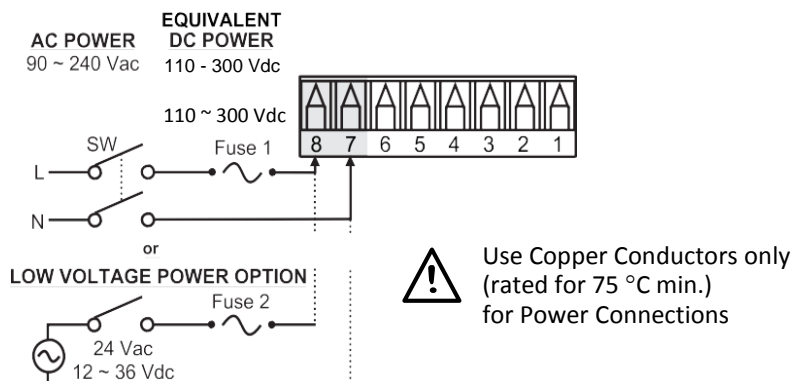
**Figure 1 – DP8Pt and DP8Ept Models: Back Panel Connections
(No Isolated Output Expansion Board Installed)**



**Figure 2 – DP16Pt and DP32Pt Models: Back Panel Connections
(With Isolated Output Expansion Board)**

3.2 Connecting Power

Connect the main power connections to pins 7 and 8 of the 8-pin power / output connector as shown in Figure 3.



Caution: Do not connect power to your device until you have completed all input and output connections. Failure to do so may result in injury!

Figure 3 – Main Power Connections



For the low-voltage power option, maintain the same degree of protection as the standard high-voltage input power units (90–240 Vac) by using a Safety Agency Approved DC or AC source with the same Overvoltage Category and pollution degree as the standard AC unit (90–300 Vac).

The Safety European Standard 2014/35/EU for measurement, control, and laboratory equipment requires that fuses must be specified based on IEC127. This standard specifies the letter code “T” for a Time-lag fuse.

3.3 Connecting Inputs

The 10-pin input connector assignments are summarized in **Table 1**. **Table 2** summarizes the universal input pin assignments for different sensor inputs. All sensor selections are firmware-controlled and no jumper settings are required when switching from one type of sensor to another. **Figure 4** provides more detail for connecting RTD sensors. **Figure 5** shows the connection scheme for process current input with either internal or external excitation.

Table 1 – 10-Pin Input Connector Wiring Summary.

Pin No.	Code	Description
1	ARTN	Analog return signal (analog ground) for sensors
2	AIN+	Analog positive input
3	AIN-	Analog negative input
4	APWR	Analog power currently only used for 4-wire RTDs
5	AUX	Only used with controller models
6	EXCT	Excitation voltage output referenced to ISO GND
7	DIN	Digital input signal (latch reset), Positive at > 2.5V, ref. to ISO GND
8	ISO GND	Isolated ground for serial communications, excitation, and digital input
9	RX/A	Serial communications receive
10	TX/B	Serial communications transmit

Table 2 – Interfacing Sensors to the Input Connector.

Pin Number	Diff Voltage	Process Voltage	Process Current	Thermo-couple	2-Wire RTD	3-Wire RTD	4-Wire RTD	Thermistor	Remote Setpoint
1		Rtn			**	RTD2-	RTD2+		Rtn(*)
2	Vin +/-	Vin +/-	I+	T/C+	RTD1+	RTD1+	RTD1+	TH+	
3	Vd +/-		I-	T/C-			RTD2-	TH-	
4					RTD1-	RTD1-	RTD1-		
5									V/I In

** Requires external connection to pin 4

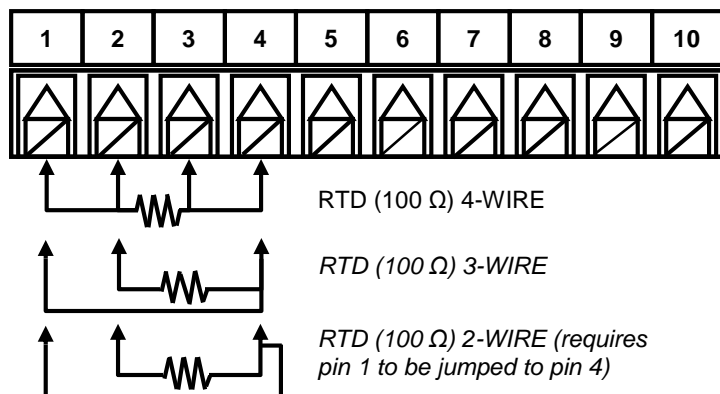


Figure 4 – RTD Wiring Diagram

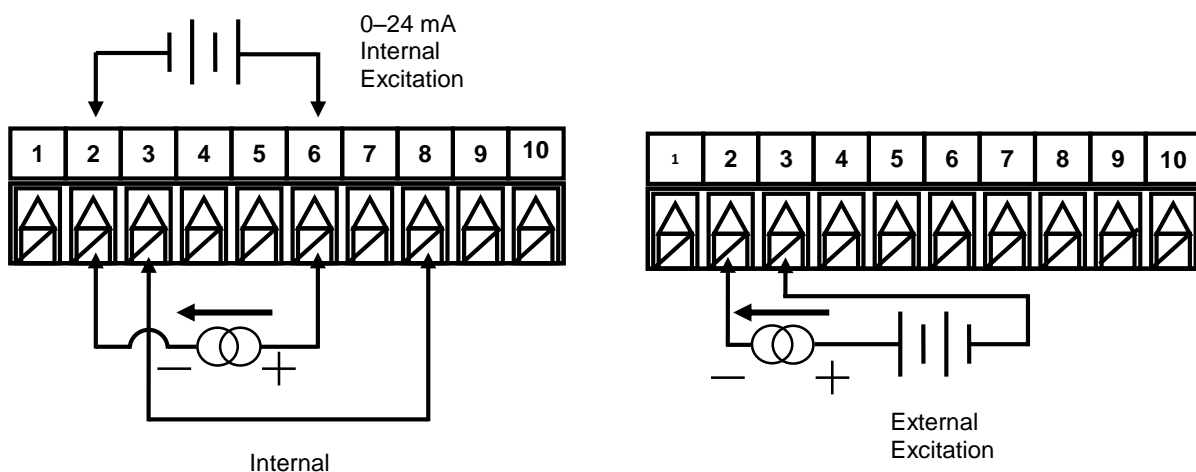


Figure 5 – Process Current Wiring Hookup with Internal and External Excitation

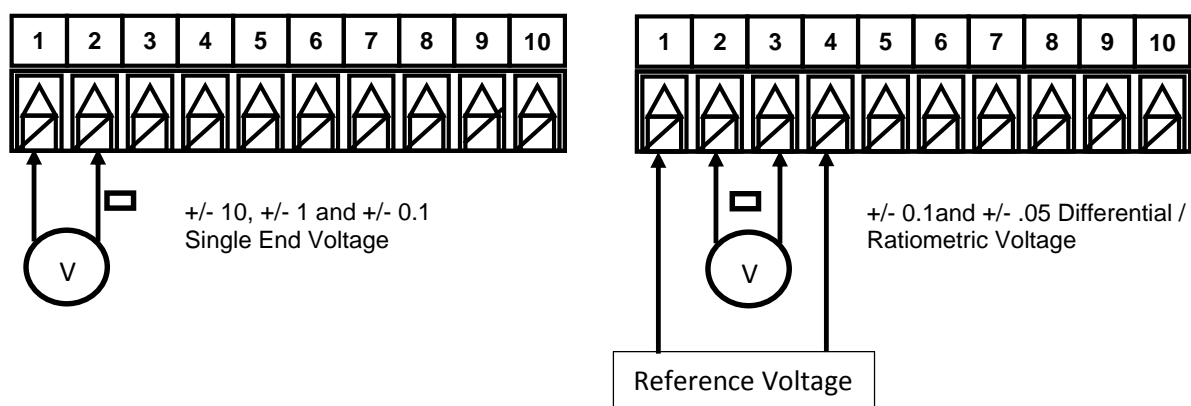


Figure 6 – Process Voltage Wiring Hookup with optional Ratiometric Voltage connection.

3.4 Connecting Outputs on Units with Alarm Relays

The PLATINUM™ Series Meters can be configured with two alarm only Single Pole Double Throw Mechanical Relays. This is the “-330” option and these SPDT relays have snubbers built in but only on the normally open contact side.

Table 3 – 8 Pin Output/Power Connector Wiring Summary by Configuration.

Config.	Description	Power		Output Pin Number					
		8	7	6	5	4	3	2	1
	Base Meter – No Outputs	AC+ or DC+	AC- or DC-						
-330	SPDT, SPDT			N.O	Com	N.C	N.O	Com	N.C

Table 4 – Definitions for Abbreviations in Table 3.

Code	Definition	Code	Definition
N.O.	Normally open relay/SSR load	AC-	AC power neutral in pin
Com	Relay Common/SSR AC power	AC+	AC power hot in pin
N.C.	Normally closed relay load	DC-	Negative DC power in pin
		DC+	Positive DC power in pin

4. PLATINUM™ Series Navigation

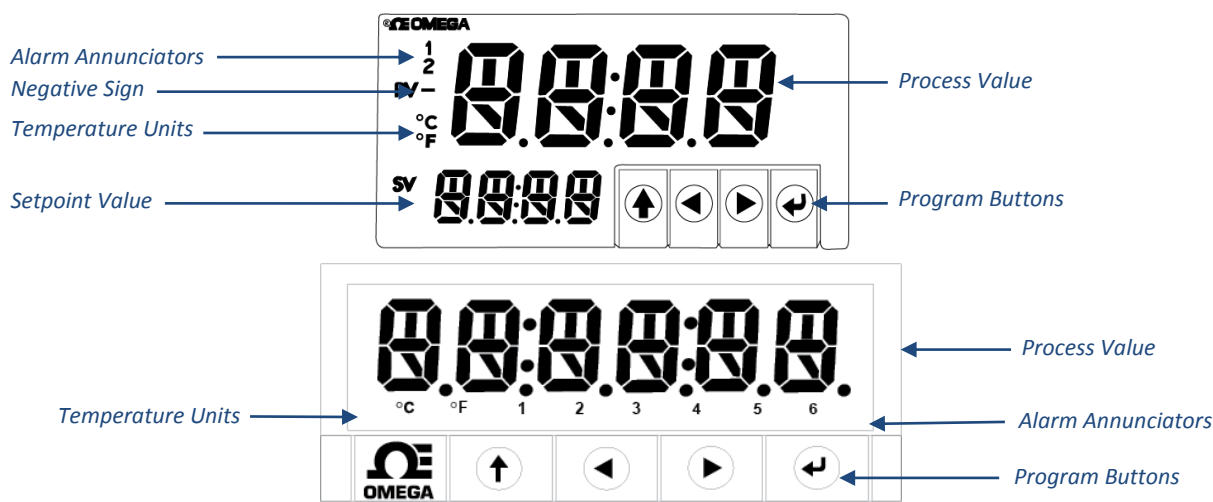


Figure 7 – PLATINUM™ Series Displays (DP8Pt and DP8EPt Shown)

4.1 Description of Button Actions



The UP button moves up a level in the menu structure. Pressing and holding the UP button navigates to the top level of any menu (**o**PER, **P**RoG, or **I**Nit). This can be useful if you get lost in the menu structure.



The LEFT button moves across a set of menu choices at a given level (up in the Section 4 menu structure tables). When changing numerical settings, press the LEFT button to make the next digit (one digit to the left) active.



The RIGHT button moves across a set of menu choices at a given level (down in the Section 4 menu structure tables). The RIGHT button also scrolls numerical values up with overflow to 0 for the flashing digit selected.



The ENTER button selects a menu item and goes down a level, or it enters a numerical value or parameter choice.

4.2 Menu Structure

The menu structure of the PLATINUM™ Series is divided into 3 main Level 1 groups, which are Initialization, Programming, and Operating. They are described in **Section 4.3**. The complete menu structure for levels 2-8 for each of the three Level 1 groups is detailed in **Section 5.1, 5.2, and 5.3**. Levels 2 through 8 represent sequentially deeper levels of navigation. Values with a dark box around them are default values or submenu entry points. Blank lines indicate user-provided information. Some menu items include links to reference information elsewhere in this user manual. The information in the Notes column defines each menu choice.

4.3 Level 1 Menu

INIt	Initialization Mode: These settings are rarely changed after initial setup. They include transducer types, calibration, etc. These settings can be password-protected.
PRoG	Programming Mode: These settings are frequently changed. They include Setpoints, Control Modes, Alarms, etc. These settings can be password-protected.
oPER	Operating Mode: This mode allows users to switch between Run Mode, Standby Mode, Manual Mode, etc.

4.4 Circular Flow of Menus

The following diagram shows how to use the LEFT and RIGHT buttons to navigate around a menu.

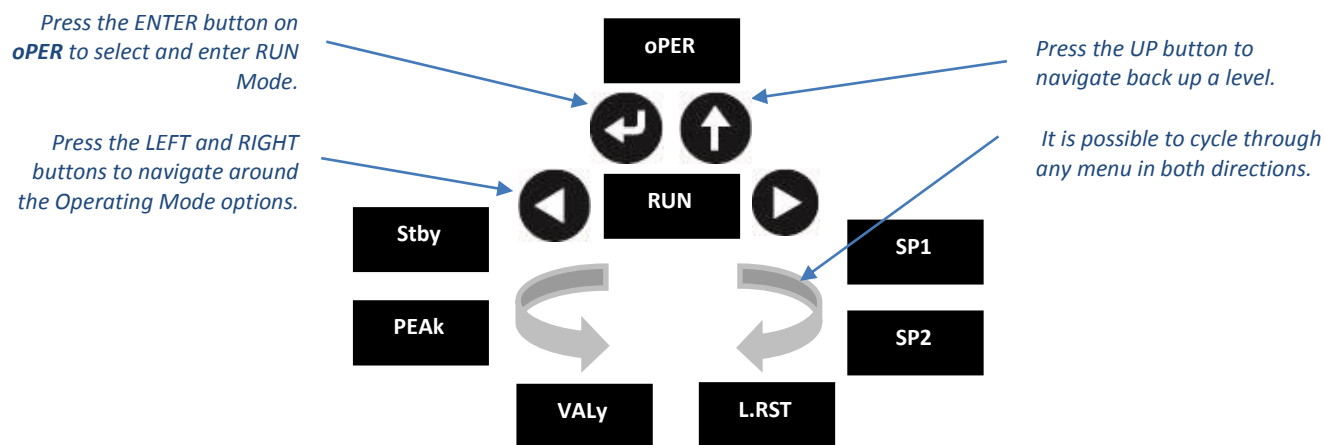


Figure 8 – Circular Flow of Menus.

5. Complete Menu Structure

5.1 Initialization Mode Menu (INIt)

The following table maps the Initialization Mode (**INIt**) navigation:

Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Notes
INPt	t.C.	k					Type K thermocouple
		J					Type J thermocouple
		t					Type T thermocouple
		E					Type E thermocouple
		N					Type N thermocouple
		R					Type R thermocouple
		S					Type S thermocouple
		b					Type B thermocouple
		C					Type C thermocouple
	Rtd	N.wIR	3 wl				3-wire RTD
			4 wl				4-wire RTD
			2 wl				2-wire RTD
		A.CRV	385.1				385 calibration curve, 100 Ω
			385.5				385 calibration curve, 500 Ω
			385.t				385 calibration curve, 1000 Ω
			392				392 calibration curve, 100 Ω
			3916				391.6 calibration curve, 100 Ω
	tHRM	2.25k					2250 Ω thermistor
		5k					5000 Ω thermistor
		10k					10,000 Ω thermistor
	PRoC	4-20					Process input range: 4 to 20 mA
			Note: This Manual and Live Scaling submenu is the same for all PRoC ranges.				
			MANL	Rd.1	_____		Low display reading
				IN.1	_____		Manual input for Rd.1
				Rd.2	_____		High display reading
				IN.2	_____		Manual input for Rd.2
			LIVE	Rd.1	_____		Low display reading
				IN.1	_____		Live Rd.1 input, ENTER for current
				Rd.2	_____		High display reading
				IN.2	_____		Live Rd.2 input, ENTER for current
		0-24					Process input range: 0 to 24 mA
		+10					Process input range: -10 to +10 V
			Note: +- 1.0 and +-0.1 support SNGL, dIFF and RtIO tYPE				
		+1	tYPE	SNGL			Process input range: -1 to +1 V
				dIFF			Differential between AIN+ and AIN-

Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Notes
				RtLO			Ratiometric between AIN+ and AIN-
		+0.1					Process input range: -0.1 to +0.1 V
			Note: The +- 0.05 input supports dIFF and RtIO tYPE				
		+0.05	tYPE	dIFF			Differential between AIN+ and AIN-
				RtLO			Ratiometric between AIN+ and AIN-
							Process input range: -0.05 to +0.05 V
tARE	dSbL						Disable tARE feature
	ENbL						Enable tARE on oPER menu
	RMt						Enable tARE on oPER and Digital Input
LINR	N.PNt	_____					Specifies the number of points to use
			Note: The Manual / Live inputs repeat from 1..10, represented by <i>n</i>				
	MANL	Rd. <i>n</i>	_____				Low display reading
		IN. <i>n</i>	_____				Manual input for Rd. <i>n</i>
	LIVE	Rd. <i>n</i>	_____				Low display reading
		IN. <i>n</i>	_____				Live Rd. <i>n</i> input, ENTER for current
RdG	dEC.P	FFF.F					Reading format -999.9 to +999.9
		FFFF					Reading format -9999 to +9999
		FF.FF					Reading format -99.99 to +99.99
		F.FFF					Reading format -9.999 to +9.999
	°F°C	°C					Degrees Celsius annunciator
		°F					Degrees Fahrenheit annunciator
		NoNE					Turns off for non-temperature units
	d.RNd	_____					Display Rounding
	FLtR	8					Readings per displayed value: 8
		16					16
		32					32
		64					64
		128					128
		1					2
		2					3
		4					4
			Note: Four digit displays offer 2 annunciators, Six digit displays offer 6				
	ANN. <i>n</i>	ALM.1					Alarm 1 status mapped to "1"
		ALM.2					Alarm 2 status mapped to "1"
		oUt#					Output state selections by name
	NCLR	GRN					Default display color: Green
		REd					Red
		AMbR					Amber
	bRGt	HIGH					High display brightness

Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Notes
		MEd					Medium display brightness
		Low					Low display brightness
ECtN	5 V						Excitation voltage: 5 V
	10 V						10 V
	12 V						12 V
	24 V						24 V
	0 V						Excitation off
CoMM	USb						Configure the USB port
		Note: This PRot submenu is the same for USB, Ethernet, and Serial ports.					
		PRot	oMEG	ModE	CMD		Waits for commands from other end
					CoNt	_____	Transmit continuously every ###.# sec
				dAt.F	StAt	No	
						yES	Includes Alarm status bytes
					RdNG	yES	Includes process reading
						No	
					PEAk	No	
						yES	Includes highest process reading
					VALy	No	
						yES	Includes lowest process reading
					UNIT	No	
						yES	Send unit with value (F, C, V, mV, mA)
				LF	No		
					yES		Appends line feed after each send
				ECHo	yES		Retransmits received commands
					No		
				SEPR	_CR_		Carriage Return separator in CoNt
					SPCE		Space separator in CoNt Mode
			M.bUS	RtU			Standard Modbus protocol
				ASCI			Omega ASCII protocol
		AddR	_____				USB requires Address
	EtHN	PRot					Ethernet port configuration
		AddR	_____				Ethernet "Telnet" requires Address
	SER	PRot					Serial port configuration
		C.PAR	bUS.F	232C			Single device Serial Comm Mode
				485			Multiple devices Serial Comm Mode
			bAUd	19.2			Baud rate: 19,200 Bd
				9600			9,600 Bd
				4800			4,800 Bd
				2400			2,400 Bd

Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Notes
				1200			1,200 Bd
				57.6			57,600 Bd
				115.2			115,200 Bd
			PRty	odd			Odd parity check used
				EVEN			Even parity check used
				NoNE			No parity bit is used
				oFF			Parity bit is fixed as a zero
			dAtA	8bIt			8 bit data format
				7bIt			7 bit data format
			StoP	1bIt			1 stop bit
				2bIt			2 stop bits gives a “force 1” parity bit
		AddR	_____				Address for 485, placeholder for 232
SFty	PwoN	dSbL					RUN's automatically on power up
		ENbL					Power on: oPER Mode, ENTER to run
	RUN.M	dSbL					ENTER in Stby , PAUS , StoP runs
		ENbL					ENTER in modes above displays RUN
	SP.LM	SP.Lo	_____				Low Setpoint limit
		SP.HI	_____				High Setpoint limit
	LPbk	dSbL					Loop break timeout disabled
		ENbL	_____				Loop break timeout value (MM.SS)
	o.CRk	ENbI					Open Input circuit detection enabled
		dSbL					Open Input circuit detection disabled
t.CAL	NoNE						Manual temperature calibration
	1.PNt						Set offset, default = 0
	2.PNt	R.Lo					Set range low point, default = 0
		R.HI					Set range high point, default = 999.9
	ICE.P	ok?					Reset 32°F/0°C reference value
		dSbL					Clears the ICE.P offset value
SAVE	_____						Download current settings to USB
LoAd	_____						Upload settings from USB stick
VER.N	1.00.0						Displays firmware revision number
VER.U	ok?						ENTER downloads firmware update
F.dFt	ok?						ENTER resets to factory defaults
I.Pwd	No						No required password for INIt Mode
	yES	_____					Set password for INIt Mode
P.Pwd	No						No password for PRoG Mode
	yES	_____					Set password for PRoG Mode

5.2 Programming Mode Menu (PRoG)

The following table maps the Programming Mode (**PRoG**) navigation:

Level 2	Level 3	Level 4	Level 5	Level 6	Notes
SP1	_____				Process goal for PID, default goal for oN.oF
SP2	ASbo				Setpoint 2 value can track SP1 , SP2 is an absolute value
	dEVI				SP2 is a deviation value
ALM.1	Note: This submenu is the same for all other Alarm configurations.				
	tyPE	oFF			ALM.1 is not used for display or outputs
		AboV			Alarm: process value above Alarm trigger
		bELo			Alarm: process value below Alarm trigger
		HI.Lo.			Alarm: process value outside Alarm triggers
		bANd			Alarm: process value between Alarm triggers
	Ab.dV	AbSo			Absolute Mode; use ALR.H and ALR.L as triggers
		d.SP1			Deviation Mode; triggers are deviations from SP1
		d.SP2			Deviation Mode; triggers are deviations from SP2
		CN.SP			Tracks the Ramp & Soak instantaneous setpoint
	ALR.H	_____			Alarm high parameter for trigger calculations
	ALR.L	_____			Alarm low parameter for trigger calculations
	A.CLR	REd			Red display when Alarm is active
		AMbR			Amber display when Alarm is active
		GRN			Green display when Alarm is active
		dEFt			Color does not change for Alarm
	HI.HI	oFF			High High / Low Low Alarm Mode turned off
		oN	_____		Offset value for active High High / Low Low Mode
	LtCH	No			Alarm does not latch
		yES			Alarm latches until cleared via front panel
		both			Alarm latches, cleared via front panel or digital input
		RMt			Alarm latches until cleared via digital input
	CtCL	N.o.			Output activated with Alarm
		N.C.			Output deactivated with Alarm
	A.P.oN	yES			Alarm active at power on
		No			Alarm inactive at power on
	dE.oN	_____			Delay turning off Alarm (sec), default = 1.0
	dE.oF	_____			Delay turning off Alarm (sec), default = 0.0
oUt2					oUt2 is replaced by output type
oUt3					oUt3 is replaced by output type (1/8 DIN can have up to 6)
PId.S	ACTn	RVRS			Increase to SP1 (i.e., heating)
		dRct			Decrease to SP1 (i.e., cooling)
	A.to	_____			Set timeout time for autotune
	AUto	StRt			Initiates autotune after StRt confirmation

Level 2	Level 3	Level 4	Level 5	Level 6	Notes
	GAIN	_P_	_____		Manual Proportional Band setting
		I	_____		Manual Integral Factor setting
		d	_____		Manual Derivative Factor setting
	%Lo	_____			Low clamping limit for Pulse, Analog Outputs
	%HI	_____			High clamping limit for Pulse, Analog Outputs
	AdPt	ENbL			Enable fuzzy logic adaptive tuning
		dSbL			Disable fuzzy logic adaptive tuning
RM.SP	oFF				Use SP1 , not remote Setpoint
	oN	4–20			Remote analog Input sets SP1 ; range: 4–20 mA
			Note: This submenu is the same for all RM.SP ranges.		
			RS.Lo	_____	Min Setpoint for scaled range
			IN.Lo	_____	Input value for RS.Lo
			RS.HI	_____	Max Setpoint for scaled range
			IN.HI	_____	Input value for RS.HI
		0–24			0–24 mA
		0–10			0–10 V
		0–1			0–1 V
M.RMP	R.CtL	No			Multi-Ramp/Soak Mode off
		yES			Multi-Ramp/Soak Mode on
		RMt			M.RMP on, start with digital input
	S.PRg	_____			Select program (number for M.RMP program), options 1–99
	M.trk	RAMP			Guaranteed Ramp: soak pnt must be reached in ramp time
		SoAk			Guaranteed Soak: soak time always preserved
		CYCL			Guaranteed Cycle: ramp can extend but cycle time can't
			Note: tIM.F does not appear for 6 digit display that use a HH:MM:SS format		
	tIM.F	MM:SS			"Minutes : Seconds" default time format for R/S programs
		HH:MM			"Hours : Minutes" default time format for R/S programs
	E.Act	StOP			Stop running at the end of the program
		HOLd			Continue to hold at the last soak setpoint at program end
		LiNk	_____		Start the specified ramp & soak program at program end
	N.SEG	_____			1 to 8 Ramp/Soak segments (8 each, 16 total)
	S.SEG	_____			Select segment number to edit, entry replaces # below
			MRt.#	_____	Time for Ramp number, default = 10
			MRE.#	oFF	Ramp events on for this segment
				oN	Ramp events off for this segment
			MSP.#	_____	Setpoint value for Soak number
			MSt.#	_____	Time for Soak number, default = 10
			MSE.#	oFF	Soak events off for this segment
				oN	Soak events on for this segment

5.3 Operating Mode Menu (oPER)

The following table maps the Operating Mode (**oPER**) navigation:

Level 2	Level 3	Level 4	Notes
RUN			Normal Run Mode, process value displayed, SP1 in optional secondary display
SP1	_____		Shortcut to change Setpoint 1, current Setpoint 1 value in main display
SP2	_____		Shortcut to change Setpoint 2, current Setpoint 2 value in main display
MANL	M.CNt	_____	Manual Mode, the RIGHT and LEFT buttons control output, displays M##.#
	M.INP	_____	Manual Mode, the RIGHT and LEFT buttons simulate the input for testing
PAUS			Pause and hold at current process value, display flashes
StoP			Stop controlling, turn off outputs, process value rotating flash, Alarms remain
L.RSt			Clears any latched Alarms; Alarms menu also allows digital input reset
VALy			Displays the lowest input reading since the VALy was last cleared
PEAk			Displays the highest input reading since the PEAk was last cleared
Stby			Standby Mode, outputs, and Alarm conditions disabled, displays Stby
tARE			TARE option - only available if enabled in INPt

6. Approvals Information



This product conforms to the **EMC: 2014/30/EU** (EMC Directive).

Electrical Safety: 2014/35/EU (Low Voltage Directive)

Safety requirements for electrical equipment for measurement, control, and laboratory

Double Insulation; Pollution Degree 2

Dielectric withstand Test per 1 min

- Power to Input/Output: 2300 Vac (3250 Vdc)
- Power to Input/Output¹: 1500 Vac (2120 Vdc)
- Power to Relays/SSR Output: 2300 Vac (3250 Vdc)
- Ethernet to Inputs: 1500 Vac (2120 Vdc)
- Isolated RS232 to Inputs: 500 Vac (720 Vdc)
- Isolated Analog to Inputs: 500 Vac (720 Vdc)
- Analog/Pulse to Inputs: No Isolation

Measurement Category I

Category I includes measurements performed on circuits not directly connected to the Mains Supply (power). Maximum Line-to-Neutral working voltage is 50Vac/dc. This unit should not be used in Measurement Categories II, III, and IV.

Transients Overvoltage Surge (1.2 / 50µs pulse)

- Input Power: 2500 V
- Input Power²: 1500 V
- Ethernet: 1500 V
- Input/Output Signals: 500 V

ADDITIONAL INFORMATION:

FCC: This device complies with Part 15, Subpart B, Class B of the FCC rules, for option **–EIP** only.

RoHS II: The above product has been declared by the original supplier as Compliant. The manufacturer of this item declares that the product complies with the EEE RoHS II Directive 2011/65/EC.26.

UL File Number: E209855

¹ Low-voltage DC power option: Units configured for external low power DC voltage, 12–36Vdc.

² Ibid.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **61 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the **normal five (5) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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