



# Centurion<sup>™</sup> C5 Series M-VIEW<sup>®</sup> Touch Series

**Operations Manual** 

00-02-1032 2022-08-17 Section 50 **Warranty** - A limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to http://www.fwmurphy.com/warranty



#### For Class I, Division 2:

This equipment is an open-type device and is meant to be installed in an enclosure suitable for the environment such that the equipment is only accessible with the use of a tool.

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

Warning – Explosion Hazard – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

Warning – Explosion Hazard – Do not replace batteries unless the area is known to be free of ignitable concentrations.

#### For AEx/Ex Zone 2:

The equipment shall only be used in an area of pollution degree 2, as defined in IEC 60664-1.

The equipment shall be installed completely within an enclosure that provides a minimum ingress protection of IP 54 in accordance with UL 60079-0 and only accessible by the use of a tool.

Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment. This protection is supplied internal to the equipment. No additional protection is required.

The wire size, torque rating of 12-24 AWG, 0.37-0.44 ft.-lbs. and suitable supply wire temperature rating of 96°C minimum shall be provided for the input power terminal block.

# **Table of Contents**

Introduction	1
Product Description	1
Modbus RTU Register Map	1
LED Indicators and Blink Codes	2
C5 Series DIP Switch Configuration	5
M-VIEW Touch Series Display Features	7
State and Mode of the Controller	7
FN Screen	7
Default Home Screen / Landing Page	8
Navigation	9
Passwords	10
Passwords and Security Access	10
Before Starting the Equipment for the First Time	12
Setup with M-VIEW Touch Series Display	12
	. –
Operational Screens	15
User-Configurable Screens	<b>15</b> 15
User-Configurable Screens	<b>15</b> 15 15
User-Configurable Screens Map of Operational Screens Powerup Logo	15 15 15 16
Operational Screens User-Configurable Screens Map of Operational Screens. Powerup Logo Software Version Information	15 15 15 16 16
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status	15 15 16 16 17
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status	15 15 16 16 16 17 17
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status Shutdown History	15 15 16 16 17 17 18
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status Shutdown History Shutdown Snapshot	15 15 16 16 17 17 17 18 19
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status. Shutdown History Shutdown Snapshot Event History.	15 15 16 16 16 17 17 17 19 19
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status Shutdown History Shutdown Snapshot Event History Active Alarms	15 15 16 16 17 17 17 17 19 19 19 20
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status Shutdown History Shutdown Snapshot Event History Active Alarms Gage	15 15 16 16 16 17 17 17 17 19 19 20 21
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status Shutdown History Shutdown Snapshot Event History Active Alarms Gage	15 15 15 16 16 17 17 17 17 19 19 20 21
User-Configurable Screens Map of Operational Screens Powerup Logo Software Version Information Digital Input / Output Status Temperature Input Status Shutdown History Shutdown Snapshot Event History Active Alarms Gage Line-by-Line Control Loop.	15 15 15 16 16 17 17 17 17 19 19 20 21 21 21

Rod Load23
Setup Menu
Setpoints Setup25
General Timer
State Timer26
Maintenance Timers27
Control Loop Setup27
Miscellaneous Setup
Digital Input Setup/Pulse Status
Digital Output Setup
Analog Input Setup31
Analog Output Setup32
Temperature Input Setup33
Rod Load Setup
Display Settings
Centurion Comm Status
Real-Time Clock Setup37
Super User Menu (Super User Passcode Required)
Centurion Comm Port Setup (Super User Passcode Required)
Centurion EMMC Log File Menu (Super User Passcode Required)43

## THIS PAGE INTENTIONALLY LEFT BLANK

# Introduction

## **Product Description**

The Centurion configurable controller is a display and controller combination expressly designed to meet the requirements of three specific kinds of applications:

- Screw Compressors
- Reciprocating Compressors
- Pumps

The heart of the Centurion system is the main input/output (I/O) module or controller, which can be mounted on a standard DIN rail. While it is designed to work with any Modbus (Client) compliant HMI (Human Machine Interface) or with no operator interface at all, it is optimally configured and field-configurable using the Centurion Configuration Tool, powerful software developed to configure the controller. Parameters can be modified in the field without special need for laptop or software by utilizing FW Murphy's specially programmed M-VIEW controller display.

The controller is designed to monitor, control, protect and optimize small- to medium-sized gas operated compressors and pumps in the field. Proper operation is maintained by monitoring set points and digital, analog and temperature input points and providing the logic to take corrective and/or proactive steps.

The controller also allows for controlled shutdown and no-flow monitoring as well as auto startup and engine control capabilities.

The controller provides real-time data via communications ports to a connected display and/or supervisory system. This advanced system offers multiple options for remote communications and operation. The industry standard Modbus RTU or Modbus TCP/IP protocol means greater support for a wide variety of communication equipment including radio and satellite communications systems.

## Modbus RTU Register Map

Application-specific map is contained in the panel sequence of operation documentation. Contact factory representative to obtain documents if needed or see <a href="http://www.fwmurphy.com">www.fwmurphy.com</a> for the Centurion C5 Controller Modbus Application Guide and Map.

#### **M-VIEW Touch Display**

#### M-VIEW Touch Display LED Indicators - Connected to C5 Controller RS232 Port 1

#### RED LED: Fast blink (normal) – Display is <u>receiving</u> data from C5

Off - No response from C5

#### GREEN LED:

Fast blink (normal) - Display is <u>requesting</u> data from the C5 Slow blink - Display <u>requesting</u> data from C5, no responses Off - Display is not requesting data, not running the application



#### **C5** Controller

**NOTE:** The Expansion modules have the same 2 Power LEDs and COP blink codes as the C5 Controller. They are located next to the power plug on all modules.

C5 Power LED Indicators – Power is always two green LEDs

#### 2 Green LEDs:

2 on - Unit is powered normally1 on - Internal power failure. Needs serviceOff - No DC power to unit



#### C5 Controller (continued)

C5 COP LED Indicators - Controller Operating Properly

#### Green LED:

#### 2-Digit Blink Codes - used on date code T4 and newer

Blink codes will be 2 digits separated by pauses with each blink code further separated by a rapid blink event.

Blink codes will be ¼ second ON and ¼ second OFF. Pauses will be ¾ second OFF.

The separator will be a 2 1/2 seconds pause.



	2-Digit Blink Codes					
Blinl	( Code	Description				
1 <sup>st</sup> Digit	2 <sup>nd</sup> Digit	Description				
1	1	Startup Error, contact factory				
2	1	Missing configuration file – Configurable 50333921 application running				
2	2	Good configuration – Configurable 50333921 application running				
2	4	Running with recovery application (firmware load needed, contact factory)				
3	1	Missing configuration file, C4-1 Configurable Emulation 50333950 application running				
3	2	Good configuration file, C4-1 Configurable Emulation 50333950 application running				
4	1	Rockwell Automation IO module firmware running				
4	2	MX3 IO module firmware running				
4	3	C5 Custom firmware running				
Fast Flash	n (100 mS)	Bootloader Mode, only used for switching applications or module reprogramming via				
		external CAN tools.				
Off		Controller not operating				

#### Legacy Blink Codes - used on date code T3 and earlier

Legacy Blink Codes				
Blink Code	Description			
1-Blink/sec	Good configuration - 50333920 firmware (SR 0.5) or Custom application running			
3-Rapid Blinks	Missing configuration file - 50333920 firmware running (SR 0.5)			
4-Blinks	Running in Recovery Mode			
Fast Flash (100 mS)	Bootloader Mode, only used for switching applications or module reprogramming via external CAN tools.			
Off	Controller not operating			

#### C5 Digital Input LED Indicators - Digital Inputs

#### Green LED:

On - Input active (DC+ or -) Off - Input active (open) Flashing – Wire fault detected, >= SR1.0 only

	DIGITAL INF	PUTS
	11 11 11 11 11 11 11 11 11 11 11 11 11	19 20 21 19 11 13 13 13 13 13 13 13 13 13 13 13 13 13 13 25 25 25 25 25 25 23<
138132136136137134133135131130	146145144143142 1414013	241 80 1 281 281 281 281 281 281 281 281 291 20
380 310 360 360 340 330 350 310 300	ep 42p 44p 43p 45p 41p 40p 30p	0 e0p eap eap eap eap eap eap eap esp eip eop 4ap 48p 41p 4
38 31 36 32 34 33 35 31 30	48 42 44 43 45 41 40 3	21 60 28 28 24 22 24 23 25 21 20 7 48 41
	•	
38P 31P 36P 32P 34P 33P 35P 31P 30P	6b 45b 44b 43b 42b 41b 40b 39b	• 909 239 289 219 269 229 249 239 259 219 209 📲 439 489 419
	Digital Ing	
	Digital inp	Juis

#### C5 Digital Output LED Indicators - Relay Outputs, FET DC+, FET DC-

Green LED:

On - Output on Off - Output off

	Digital Outputs	
81 80 79 78 77 76		93b 93 91
81 80 79 78 77 76 175 174 173 172 171 170 222 20 22 22 22 22 22 RELAY OUTPUTS	88 86 84 82 1 89 1 87 1 85 1 83 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	93b 93 91   92bl 92   90   留望始皇帝。 FET DC-

#### C5 Communication LED Indicators - RS232, RS485, CAN bus

Red LED:

#### Green LED:

Flash - Unit is <u>transmitting</u> data to device Off - No communication active Flash - Unit is <u>receiving</u> data Off - No communication active

RS232



RS485



CAN bus



## **C5 Series DIP Switch Configuration**

#### Node Address:

- **DIP1-8:** These switches allow you to assign a unique address to each Centurion that may be in the system using Modbus communication to RS485-2 and RS232-2. This allows the client controller to differentiate between the modules. Addressing is done in binary format, with each switch increasing value by factor of 2. For example, to name the controller address 5, set switch DIP1 and DIP4 to the CLOSED position. Valid settings are from 1 to 239. Addresses 240 thru 255 are for power-up functions only as detailed below.
- If set to 0: The RS485-2 and RS232-2 ports will change to 9600 band.

#### **Can Termination:**

- **DIP9:** This switch provides a 120Ω termination resistor for the CAN 1 communication chain. CAN must be wired in a daisy chain configuration. Set this switch to CLOSED only when the module is the end of the network. See control panel drawings for designation
- **DIP10:** This switch provides a 120Ω termination resistor for the CAN 2 communication chain. CAN must be wired in a daisy chain configuration. Set this switch to CLOSED only when the module is the end of the network. See control panel drawings for designation

#### **Switch Positions:**

Set these switches to the open or closed position for your application.



#### For T4 Date Code and Newer:

These DIP functions will not work in legacy modules before Date Code T4.

**DIP Power-up Functions:** There is a special feature for switching module operation mode that is activated by setting specific switch positions at power up. Change will only occur if the following switches are set CLOSED at power up. All other times, these switches behave as address selections.

• DIP switches 5-8 CLOSED at power up activates special mode to change the module behavior based on switches 1-4 position.



5-8 CLOSED

- 1-4 CLOSED: Load factory defaults to non-volatile settings restores Ethernet address to default values. Default setting is 192.168.0.100 IP, 255.255.255.0 network mask, 0.0.0.0 Gateway.
- 1 OPEN, 2-4 CLOSED: Load Rockwell IO Application.
- 2 OPEN, 1, 3, 4 CLOSED: Load Standard Configurable Controller Application.





2 OPEN,1, 3, 4 CLOSED

- 3 OPEN, 1, 2, 4 CLOSED: Load C5e Program 50333950 (C4 emulation).
- 1, 2 OPEN, 3, 4 CLOSED: Load Recovery Program. Not normally used. (Only for USB cable download in the event application is unable to run.)
- 1, 3 OPEN, 2, 4 CLOSED: Load MX3 program (C5 as I/O Expansion Module).
- 2, 3 OPEN, 1, 4 CLOSED: Set Ethernet port to DHCP mode

4	4	4	4
en 📃 👘	en 🔤 🔤	en 🔝	eo 📰 👘
10	10	5	5
- 18	- 8		- 18
3 OPEN. 1. 2. 4 CLOSED	1. 2 OPEN. 3. 4 CLOSED	1. 3 OPEN. 2. 4 CLOSED	2. 3 OPEN. 1. 4 CLOSED

# **M-VIEW Touch Series Display Features**

The display module is a highly integrated operator interface specially programmed to complement and support the Centurion controller. The primary purpose of the display is to:

- view controller operational information
- view/edit controller operational parameters
- send commands to controller, such as stop, edit and reset

#### State and Mode of the Controller

Depending on the configuration active in the controller, the operation may differ depending on what Mode the controller is currently displaying.

The Mode can be changed by touching certain icons if the configuration allows for Remote mode.

- Touching Reset or Run/Stop is a Local function and will change the Mode to Local if in Remote Mode.
- Touching the Fn icon before touching Reset or Run/Stop is a Remote function and will change the Mode to Remote if in Local Mode.



The top left of the screen displays the Centurion operating state. Displayed next on the top line are active timers, the run hour meter and the panel starting mode as Local or Remote. The top right displays the system (Centurion) being displayed. This information is key to understanding the status of the controller.

#### **FN Screen**

Touch the Function (Fn) icon to display the Function Menu pop-up with available function command screens.

Touch a function command screen from the menu to open it.

The function menu will time out in 5 seconds if a selection is not made.

A prompt to enter a password may appear for some screens to open.

When in Remote Mode: Remote mode commands are available only while the Fn icon is pressed.



# **Default Home Screen / Landing Page**

Your default Home Screen / Landing Page is determined by the first page configured in the Centurion configuration and may look similar to these examples.

#### **Centurion Home Screen / Landing Page**

An example of your default Home Screen / Landing Page if you are running the Centurion.



#### System View Home Screen / Landing Page

An example of your default Home Screen / Landing Page if you are running the Centurion and EICS.



Touch the Centurion screen and open the Centurion full screen view, or touch the EICS screen to open the EICS full screen view. To go back, touch the System View icon.

The top right corner is the name of the System being displayed. Use the arrows to scroll the Operator screens.



Centurion Screen with System View as Home Screen / Landing Page



EICS Screen with System View as Home Screen / Landing Page

## **Navigation**

#### The Best Way to Navigate

Press the information icon and review the tutorial of the Home Screen / Landing Page. We recommend you use this icon to view information on all available screens.



Reset	Reset any active timers and alarms/faults.
Run Stop	Initiate or cancel a start sequence.
Test	Enter Test mode and start the test timers. Not applicable in shut-down mode.
Timer "0"	Zero displayed timer (global timers, state timers, etc.).
FN	Enter the Function mode pop-up menu with additional available functions. Automatically cancels upon moving to the next mode or within 5 seconds if no choice is made from the menu.
	Information icon helps explain the screens at point of use.
Home	Takes you to the Home Screen / Landing Page.
Next	Scroll right for the next page.
Prev	Scroll left for the previous page.
Setup Enter	Setup is the page you need to edit or view the set-up details. Enter is used to enter a page or to save.
Esc Ack	Acknowledges all active messages and alarms displayed in the Active Alarm screen. Exit set-up mode. Exit edit mode without saving changes to the current configuration.
System View	Used to split the Home Screen / Landing Page when running two FW Murphy systems.

# Passwords

#### **Passwords and Security Access**

Some settings are password protected, including the setup screens.

#### Where to log ON and OFF

A pop-up message for login is displayed when security access is required and you may log in from that pop-up.

To log in anytime, touch the Setup Enter icon to open the Setup Menu and touch the Log On icon. You may log in from that pop-up.

Always remember to touch the Log Off icon to deactivate your security access before you leave the premises. Touch the Setup Enter icon to open the Setup Menu and touch the Log Off icon.

#### How to log ON

On the Security Manager pop-up, touch the green arrow to enter the password page.

Shutdown			37.2 Hr	s Local CE	NTURION				
?		Setup		×					
	Setpoints	General Timer	State Timer	Maintenance Timer					
		SECURITY I	MANAGER						
	Supervisor Login required								
	Analog Inputs	Analog Outputs	l emperature Inputs	Rod Load Setup					
	Display Settings	Centurion Comm Status	Real Time Clock	Super User Menu					
	Centurion Comm Ports	Centurion EMMC Log Files	Log On	Log Off					
		No User Lo	ogged On						
No Alarm									

On the Enter Username pop-up, enter super for supervisor access or op for operator access.

Shutdown			_			37.2	Hrs	Local	CENTURIC	)N
?			ENT	FER US	SERN/	AME			>	×
super									$\mathbf{X}$	
12	3	4	5	6	7	8	9	0		
q	w	e	r	t	У	u	i	0	P	
caps	a	s	d	f	g	h	j	k		
shift	z	×	C	v	b	n	m	spa		
No User Logged On										
No Alarms										

On the Enter Password pop-up, enter the password. Default passwords are 164 for operator or 133 for super.



Once you have entered using the default password, we recommend you change passwords for better security. See Display Settings for further details on how to set the passwords.

Shutdown	1			37.2 H	rs	Local	CENTURION
?			Passw	ord Setup			
Super Murphy Op EICSOp EICSSuper	Centurion Su FW Murphy U Centurion Op EICS Standar EICS High Us	T d Ow Use	his page lists all u isplay. Each Acco rn password from er accounts includ Super for Supervi include EICSOp	ser accounts on the unt may change their this menu. Centurio e Op for Operator ar sor. EICS accounts and EICSSuper.	nnd	×	
	Prev		N	ext		Chang	e Password
C5: No Alar	m			EICS: No Alarm			

# Before Starting the Equipment for the First Time

## Setup with M-VIEW Touch Series Display

Read and follow steps in order listed.

- 1. Locate the system drawing inside the panel and verify its drawing number matches the sticker on the lower front panel.
- 2. Locate the legend of the drawing and find the configuration description in the list. Record this description.
- 3. Power up the M-VIEW Touch display.
  - a. Allow time for the display to boot up and land on the Home Screen / Landing Page, approximately 15 seconds.
  - b. If you are running System View as your Home Screen / Landing Page, touch the screen on the Centurion side to view it full screen with active icons.



System View Home Screen / Landing Page



Centurion Home Screen / Landing Page

- c. From the Centurion Home Screen / Landing Page, touch the Arrow icon to scroll left until you find the Software Version Information screen.
- d. Verify that the configuration description matches the one you previously recorded from the drawing legend.



e. Touch the Home icon to return to the Home Screen / Landing Page.

- 4. Open the following list of screens to verify or change the factory settings as needed for your site location.
  - a. We suggest you record these values in the manual Sequence of Operation under Field Settings Section 8. This gives you a reference of any changed settings from the factory default.
  - b. From the Home Screen / Landing Page, touch the Setup / Enter icon to open the Setup Menu screen.
  - c. Touch the Log On icon and enter the Super Password as shown in the previous section, Passwords.



- d. From Setup Menu screen, touch the Setpoints icon to open it. Open and verify all the set values under the Blue (active) icons. Touch a value to change it.
  - i. Touch X to go back one page or touch the Menu icon to go back to the Setup Menu screen.
  - ii. Once the Setpoints verification and changes are made and recorded, return to the Setup Menu screen and touch the next icon in the list below. Repeat these steps to verify the set values under the remaining screens listed.
    - Setpoints
    - Control Loop
    - Analog Input
    - General Timer
    - State Timer
    - Temperature Inputs
    - Rod Load Setup

**NOTE:** Press the **W** Information icon to view information on available screens.

- 5. Start the unit.
  - a. Clear any Alarms Class A faults from the system. On the display, the unit state will read Panel Ready if no Class A shutdown condition exist.
  - b. Touch and hold the Run Stop icon on the display for 2 seconds. This will initiate the start cycle. Depending on your configuration, the Centurion will send signals to possibly prelube the equipment, check pre-starting permissives and then signal the driver to start the equipment. Confirmation of running may be in the form of RPM signal or digital switch input feedback. Once running signal is confirmed, the Centurion will be in a running condition. Class B and S lockout timers will begin timing to faults that require time lockout. Additional warmup and load permissives will be monitored as configured for the package prior to enabling any load control.
  - c. After all preload permissives have been achieved, such as oil or water temperatures, and possible minimum warmup times, the Unit State will read Loaded and will continue until the stop button is pressed, RPM is lost or a fault condition exist.

# Stops, Faults and Alarms

#### **Normal Stop**

When a normal stop is issued and the unit is running, the system will start a normal shut-down sequence.

- 1. To issue a normal stop, touch and hold the Run Stop icon on the display for 2 seconds.
- 2. On the display, the Unit State will read Cooldown, and the Cooldown state delay will begin timing (if configured).
- 3. After the Cooldown is completed, the Unit State will read Stopping.
- 4. When everything has been recognized as back to normal, the Unit State will read Panel Ready.

#### Fault Shutdown

The Centurion will continually monitor for Fault or ESD shutdown events which require the equipment to stop immediately or prevent it to start.

On the display, the Unit State will read Shutdown, and an Alarm Shutdown Banner will appear on most Operating screens.

The cause of the event is recorded and can be viewed on the Shutdown History screen with time and date of occurrence.

- 1. The Shutdown History screen displays information of the fault, touch the Book icon for troubleshooting.
  - a. <Centurion Home Screen / FN / Shutdown History>
- 2. The Shutdown Snapshot screen displays the values of the unit running at the time a fault occurred.
  - a. <Centurion Home Screen / FN / Shutdown History/ Right Arrow to scroll >
- 3. Once the corrections are made, clear the Shutdown condition by touching the Reset icon on the screen.
- 4. Always make corrections on the unit before attempting to restart the equipment.

#### Alarms

If an alarm condition is detected, the Alarm/Shutdown banner on the bottom of the screen shows the active alarm messages in the system. Alarms may be configured as self-clearing or as requiring acknowledgement. Self-clearing alarms will auto clear if they're no longer present. Alarms requiring acknowledgement will persist until the ACK key is pressed.

- 1. Select alarm from the Active Alarms screen. (This screen displays up to 20 active alarms.)
  - a. <Centurion Home Screen / FN /Active Alarms>
- 2. Touch the ESC ACK icon to acknowledge the Active Alarm.

# **Operational Screens**

#### **User-Configurable Screens**

The Centurion has (9) user-configurable pages of (4) types. The Centurion Configuration Tool software allows users to configure up to nine (9) screens with controller input signal groupings. Possible custom screen types may include:

- a) Custom Line by Line allows users to display process data in a list format with description and value.
- b) Custom Gage allows user to display four (4) most important pieces of data on a 2 x 2 table in larger font.
- c) Custom <u>Control Loop</u> allows user to display Control Loop functions. The control output will be displayed as a percentage of the range.
- d) Custom <u>Generic Register</u> allows user to display up to 20 items on a page that can be mapped to the Centurion Modbus map and given a label.

For more information on configuring the optional screens through the Centurion Configuration Tool, please refer to the Configuration Tool Quick Start Guide.

## **Map of Operational Screens**

From the Home Screen / Landing Page, use the left and right arrows to view the Operating Screens. A password is not required to view these screens.



Some screens shown below are application specific and may not be used.

## **Powerup Logo**

Once power is turned on and the system is booting up, the user will view the FW Murphy Centurion logo screen for two seconds then switch to the default operating Home Screen / Landing Page configured for the system.



## **Software Version Information**

This screen has the FW Murphy corporate contact information, configuration description, checksum and date/timestamp for the configuration loaded in the controller.

Run Loa	aded		12345.6 Hrs	Local	CENT	URION		
Reset	Software Version Information							
Run Stop	www.fv (918) 31 Jul 201	vmurphy.com ) 957-1000 18 12:22:47PM	C5-1 Firmware: Bootloader: Build:	50333 04.02.10	3920 0002 0860	Next		
Test	51 00120	10 12.22.471 101	Disp Firmware: Bootloader:	50333	3681 25	Prev		
Timer "0"	503412345 R		Runtime:	:	2093	Setup Enter		
FN	Checksum: 31 Jul 2018 1	6FEDH 2:18:23PM				Esc Ack		
	n							

Any configuration changes subsequent to the factory shipment will be indicated by a unique checksum and new date/time stamp.

This screen also provides information such as the bootloader and firmware versions for the core module, the MV display and the expansion module (if used) to FW Murphy Technical Support staff.

# **Digital Input / Output Status**

The user can see the state of each digital input/output in a table—whether it is open or closed. The plus + or minus - sign will be shown on digital inputs to show whether the input is receiving power or is grounded to DC common.



## **Temperature Input Status**

The user can see the state of each temperature input in a table—whether it is OK or has a wiring fault.

Run Loa	aded		12	2345.7 Hrs	Local CE	NTURION
Reset	Conturi	<b></b>	Temperature Input	Status		Home
Run Stop	TI 1: TI 2:	OK OK				Next
Test	TI 3: TI 4: TI 5:	OK OK OK				Prev
Timer "0"	TI 6: TI 7: TI 8:	OK OK OK				Setup Enter
FN						Esc Ack
?						
No Alarn	n					

## **Shutdown History**

The history of the shutdown is displayed on this screen with the most recent at the top of the list and the oldest at the bottom.

The first number displayed in the line indicates how many entries are in the list.

Each event is displayed with the event label, the real-time clock and hour meter reading.

Run Loa	aded			12345.7 Hrs	Local	CENT	URION
			Shutdown	n History			
Reset	▶01 31 Jul 2018	12:25:56PM	12345.7	Hi Disch Cyl3 Tm	<b>.</b>		Home
	02 31 Jul 2018	12:24:55PM	12345.7	Hi Disch Cyl3 Tm	<b>)</b>		
Run	03 31 Jul 2018	12:23:12PM	12345.6	Hi Disch Cyl3 Tm	, ,		
Stop	04 31 Jul 2018	12:21:28PM	12345.6	Hi Disch Cyl3 Tm	<b>,</b>		Next
	05 31 Jul 2018	12:20:22PM	12345.6	Hi Disch Cyl3 Tm	<b>,</b>		
Test	06 31 Jul 2018	12:18:53PM	12345.6	Engine Overspee	d		
	07 31 Jul 2018	12:18:19PM	12345.6	Engine Overspee	d		Prev
Timer	08 31 Jul 2018	12:18:19PM	12345.6	Hi Disch Cyl3 Tm	<b>,</b>		Setup
"0"							Enter
FN							Esc
							Ach
						V	
	# Time Stamp		Hourmeter	Event Description			
No Alarr	n						

Press the Book icon to get a troubleshooting message to help find an issue.

Run Loa	aded	12345.7 Hrs Local CENTU	JRION'
Reset		Shutdown History	
	▶01 31 Jul	Troubleshooting: Hi Disch Cyl3 Tmp	Home
Run	03 31 Jul	1: Check Cylinder Discharge Value	
Stop	04 31 Jul	2: Check Cylinder Suction Valves	Next
Test	05 31 Jul 06 31 Jul	3: Check Cooler Louvers 4: Check Cooler for Debris	
	07 31 Jul	5: Check for Loose Belt	Prev
Timer "0"			Setup Enter
FN			Esc Ack
?			
	# Time Sta	mp Hourmeter Event Description	
No Alarr	n		

# Shutdown Snapshot

The shutdown snapshot screen is a capture of the values displayed at the time of a Fault SD or ESD event.

Run Loa	aded		12345.7 Hrs	Local CENT	URION
		Shutdowr	n Snapshot		
Reset	Engine Speed:	3860 RPM	Compress Oil:	172 °F	Hama
	Suction P :	73.6 PSI	PreCatalyst :	1115 °F	Home
Run	Stg1 Disc P :	293.0 PSI	PostCatalyst:	1072 °F	
Stop	Stg2 Disc P :	688.6 PSI	System Volts:	23.9 V	Next
	Stg3 Disc P :	1528 PSI	Rcy % Open :	100.00 %	
Test	Comp Oil P :	60.4 PSI	Desired Spd :	900 RPM	
	Disch Cyl1 T:	270 °F			Prev
Timer	Disch Cyl2 T:	272 °F			Setup
"0"	Disch Cyl3 T:	303 °F			Enter
	Disch Cyl4 T:	89 °F			Ess
FN					Ack
$\bigcirc$					
No Alarr	n				

These values are retained and displayed on the Shutdown Snapshot screen until the next Fault SD or ESD event occurs. If a "---" is displayed instead of a value, it indicates the shutdown snapshot has not captured any data. Fault snapshots are taken only while the equipment has been called to start/run. This behavior ensures that repeated attempts to reset a fault will not clear a previous run cycle's fault snapshot.

**NOTE:** Only the first two line-by-line screens configured will be captured on the fault snapshot page. If no line-by-line custom screens are configured, the shutdown snapshot will not function.

## **Event History**

The history of the last 32 events is displayed on this screen with the most recent at the top of the list and the oldest at the bottom.

Run Loa	ade	d			12345.7 Hrs	Local	CENT	URION
				Event His	story			
Reset	01	31 Jul 2018	12:26:13PM	12345.7	Start Command			Home
	02	31 Jul 2018	12:26:10PM	12345.7	Reset Command			
Run	03	31 Jul 2018	12:25:56PM	12345.7	Hi Disch Cyl3 Tmp	•		
Stop	04	31 Jul 2018	12:25:39PM	12345.7	Start Command			Next
	05	31 Jul 2018	12:25:33PM	12345.7	Reset Command			
Test	06	31 Jul 2018	12:24:55PM	12345.7	Hi Disch Cyl3 Tmp			
	07	31 Jul 2018	12:23:51PM	12345.6	Start Command			Prev
Timer	08	31 Jul 2018	12:23:40PM	12345.6	Reset Command			Setup
"0"	09	31 Jul 2018	12:23:12PM	12345.6	Hi Disch Cyl3 Tmp			Enter
	10	31 Jul 2018	12:21:55PM	12345.6	Start Command			
EN	11	31 Jul 2018	12:21:50PM	12345.6	Reset Command			Esc
	12	31 Jul 2018	12:21:28PM	12345.6	Hi Disch Cyl3 Tmp	1		Ack
	13	31 Jul 2018	12:21:04PM	12345.6	Start Command			
?	14	31 Jul 2018	12:20:39PM	12345.6	Reset Command			
	#	Time Stamp		Hourmeter	Event Description			
No Alarr	n							

The first number displayed indicates how many entries are in the list.

Events include shutdowns, starts, stops, resets, etc. The user easily can view the events (alarms, etc.) logged before and after a shutdown.

Each event is displayed with the event label, real time-clock and hour meter reading.

## **Active Alarms**

Run Loa	aded 12345.7 Hrs Local C	enturion
Reset	Active Alarms	Home
Run Stop		Next
Test		Prev
Timer "0"		Setup Enter
FN		Esc Ack
?	* = not acknowledged Ack=Ack All Al	arms
No Alarr	1	

All active alarms and warnings will be displayed on the Active Alarms screen.

Unacknowledged alarms will be preceded by an asterisk, and acknowledged alarms will clear the asterisk.

Pressing ACK on this screen will acknowledge all active alarms.

The top right corner will indicate the number of alarms and which line the cursor is currently on. Example: 3/10 indicates 10 alarms, and the cursor is on line 3 of the list. A maximum of 20 active alarms will be displayed.

**NOTE:** Alarms are warnings based on setpoints and/or digital inputs which are separate from shutdowns that allow the equipment to continue to run.

#### Alarm / Shutdown Banner

This screen shows the alarm / shutdown annunciation as it will appear on most Operating Status screens.

The message(s) will be visible at the bottom line of the status screen area and then briefly clear once a second.

This will continue until alarms are acknowledged and/or shutdowns are cleared.

If there is more than one unacknowledged alarm active, each alarm will be displayed for one second each until acknowledged.

Pressing the Fn key followed by the ACK key will switch to the active alarms screen.

## Gage

This is an example of a custom-built Home Screen / Landing Page. This display provides larger characters for easier viewing as well as a means to prominently display items of interest.



## Line-by-Line

This is an example of a custom-built Line-by-Line Status screen.

If the parameters do not fit in the viewable area of the screen, up/down arrow icons will appear to indicate the ability to scroll up or down to see additional parameters.

Run Lo	aded		12345.7 Hrs	Local	CENT	URION	
		Page 7 (Li	Page 7 (Line by Line)				
Reset	Engine Speed	: 3862 RPM	Compress Oil:	17	72 °F		
	Suction P :	73.5 PSI	PreCatalyst :	111	12 °F	Home	
Run	Stg1 Disc P :	292.9 PSI	PostCatalyst:	107	71 °F		
Stop	Stg2 Disc P :	688.3 PSI	System Volts:	23	.9 V	Next	
	Stg3 Disc P :	1527 PSI	Rcy % Open :	100.0	0 %		
Test	Comp Oil P :	60.3 PSI	Desired Spd :	220	0 RPM		
	Disch Cyl1 T:	270 °F				Prev	
Timer	Disch Cyl2 T:	272 °F				Setup	
"0"	Disch Cyl3 T:	303 °F				Enter	
	Disch Cyl4 T:	<b>89</b> °F				Esc	
FN						Ack	
$\bigcirc$							
No Alarr	n						

## **Control Loop**

The user may choose to display any configured Control Loop functions in this convenient format. The control output will be displayed as a percentage of the range.



Touch the Loop Mode icon on this page to toggle the mode between Auto and Manual modes of control loop operation.

If the Control Loop is in Manual, touch the Man + and Man - arrow icons to adjust the output directly to make adjustments to the desired setting.

#### **Generic Register**

The Centurion has 9 user-configurable pages of 4 types. This Generic Register screen shows up to 20 items in a list that can be mapped to the Centurion Modbus map and given a label.

Run Loa	aded		B1 = 1 sec	12345.8 Hrs	Local	CENTURION
Reset	SHRT CYCLE	SEC :	Page 8 (Gene 0	eric Register)		Home
Run Stop	STARTS REIV	AIN .	0			Next
Test						Prev
Timer "0"						Setup Enter
FN						Esc Ack
?						
No Alarr	n					

Data is shown as a signed 16-bit integer with fixed decimal place. The data on this page can be changed using the Centurion Configuration Software.

# Rod Load

If Rod Load calculations have been enabled on the Centurion Configuration, the calculated tension and compression forces on the rod are displayed in Imperial or Metric units as configured by the user.



There is support for 1 through 6 throws of rod load calculation.

# Setup Menu

The Setup Menu screens provide access to system parameters. These settings can be modified with appropriate password access.



This example shows Centurion Operator as the security level and is listed on the bottom of screen.

Depending on your security access level, you may be able to view the screens but not make any edits, or you may be prompted to enter a password to open the screen. See the section Passwords for detailed password information.

Touch on your selection.

## **Setpoints Setup**

The Setpoints Setup screen can display up to 192 setpoints that may be configured in the system by the Centurion Configuration Tool software. The values for the setpoints are user-editable.



Setpoints are thresholds which can be configured as >= or <= and analog, temperature, speed or voltage input used for alarms, shutdowns and permissive signals for operating states.

Multiple setpoints are often applied to a process. Groups which are not highlighted have no setpoints used in them.

Touch a setpoint group to view and edit items in that group.

## Setpoints 1 – 16 page

Click on blue icon to make edits. Gray icons are not active.

Run Loaded	B2 :	= 222 sec	12345.8 Hrs	Local	CENTURION		
?		Setpoint	s 1 - 16				
	SP	Delay (sec	;)	SP	Delay (sec)		
Lo Suction Prs	0.0	5	Dsc3 LD Perm P	600	0		
Hi Suction Prs	999.0	5		0	5		
Lo Stg1 Disc P	180.0	0	Lo Comp Oil P	50.0	0		
Hi Stg1 Disc P	420.0	0		0	0		
Lo Stg2 Disc P	300.0	0		0	0		
Hi Stg2 Disc P	700.0	0		0	0		
Lo Stg3 Disc P	600	0		0	0		
Hi Stg3 Disc P	7575	0	SP_16	0	0		
No Alarm							

## **General Timer**

Run Loaded	B2 = 198 sec	12345.8 Hrs Loca	al CENTURION	
?	General Time	General Timer Setup (sec)		
	Preset		Preset	
B1 Timer	30	No-Flow Timer	60	
B2 Timer	300	Test Timer	300	
C2 Timer	30	Ign On Timer	0	
S1 Timer	0	Fuel On Timer	0	
S2 Timer	0	lgn Off Timer	0	
S3 Timer	0	Power Sa∨e	0	
S4 Timer	0			
No Alarm				

General timers affect driver operation and also help define an event arming condition.

B1, B2 and S1-4 Timers are start-run lockout timers. Events configured to these class types do not arm for a specified time at start up.

C4 Timer is lockout until time after reaching a loaded condition.

No-Flow Timer is for class NF faults and enabled after the B1 expires.

Test Timer is time given to allow for maintenance testing of end devices without triggering a fault or shutdown condition.

Ignition On Timer and Fuel On Timer staggers the engines outputs at startup for engine fuel purge.

Ignition Off Timer allows unspent fuel to burn off after a stop.

#### **State Timer**

User may edit all state timers (except Panel Ready/Shutdown) if marked in use. When a state timeout value is reached, the state logic proceeds to the next in-use state.

Run Loaded		B2 = 168 sec	12345	.8 Hrs 🛛 Local	CENTUR	RION
?		State Timer Setup (sec)				X
	Preset		Preset		Preset	
Panel Rdy	0		0	Cooldown	120	
COT Perm	60	Warmup	65535	Stop Engin	5	
C Prlb Prm	60		0		0	
C Prlb Dur	120		0		0	
Start Valv	0		0		45	
Crank Stop	60		0		0	ĺ
Crank	15		0	Shutdown	65535	
Crank Rest	15	Run Loaded	65535			
No Alarm						

A state timeout may also be configured to trigger a fault event, such as a prelube permissive failure; however, the operation depends on the configuration.

A setting of 65535 disables the timeout event.

# **Maintenance Timers**

User may access and edit the maintenance interval presets and view the time remaining settings, if used by configuration.



If an interval time has elapsed, a message event is typically used to indicate maintenance is due.

Reset the timer after maintenance is performed by pressing the RST icon on this page.

## **Control Loop Setup**

User may edit up to 8 configured control loop settings.

Run Loaded	B2 = 115 sec	12345.8 Hrs Local	CENTURION
?	Control Lo	oop Setup	
Rcy Viv % O	pen Desired Speed	Ctl_Loop_3 Ctl_Loop	p_4
Ctl_Loop_5	Ctl_Loop_6	Ctl_Loop_7	o_8
No Alarm			

The settings on these pages differ depending on the type of control loop configured.

The control loops operate on the principle of a 0-100% output with special considerations for digital output loop types.

# Control Loop Typical

The pen chart shows the PID output (CO), Feedback (FB) and Setpoint over the last 2 minutes. Use this to help tune the closed loop control.



Press the Auto/Manual button change modes. In automatic, the control loop will try to maintain the setpoint +/- the deadband using calculation against the error (how far away from setpoint) of the loop.

Press the Manual Out edit box to set a desired output in manual if desired.

**P** = tunes for the Error at present condition.

I = adjust the output value on the accumulated error over time.

**D** = affects the output value based on the rate of change of the error.

Bigger numbers will result in larger changes in output %. General tuning guidelines start with I and D at low numbers, using only proportional. Once ringing is seen, reduce P slightly and increase I slowly. D may be introduced as a predictive measure, derivative adjust the output based on how much the error is changing in a given calculation loop.

Output ramp rates and min/max calculation limits are adjustable. Press loop overrides to adjust any possible control loop override factors.

The controller uses the parallel form of the PID equation as follows:

% Output = Kp(Error) + Ki∫(Error)dt + Kd×dError∕dt

## **Miscellaneous Setup**



Set the Flywheel Teeth to calibrate the magnetic pickup input RPM calculations.

Set/Rest the run Hour Meter which accumulates run time.

Crank Attempts Setpoint is the limit for crank cycles before overcrank faults.

Electric motor short cycle fault is set by the Maximum starts per hour limit.

Core junction offset is used to globally shift the internal temperature sensor.

#### **Digital Input Setup/Pulse Status**

Touch the desired output to view output status and modify output setup. Only outputs in use by the configuration are settable.

Pulse cycle input times and totals can be viewed and reset for each input.

Run Loaded		12345.9 Hrs Lo	cal CENTURION
?	Digital Input Setup &	& Pulse Input Status	
1-8	9-16	17-24	25-32
Panel ESD	Lo AUX WTR Lvi	Spare DI17	Spare DI25
Eng Request SD	Hi Stg1 Scb Lv	Spare DI18	Spare DI26
Spare DI03	Hi Stg2 Scb Lv	Spare DI19	Spare DI27
LB Lube NoFlow	Hi Stg3 Scb Lv	Spare DI20	Spare DI28
RB Lube NoFlow	Spare DI13	Spare DI21	Spare DI29
Lo Cmp Oil Lvl	Hi Comp Vib	Spare DI22	Spare DI30
Lo Eng Oil Lvl	Hi Engine Vib	Spare DI23	Spare DI31
Lo Eng JW Lvl	Hi Cooler Vib	Spare DI24	Remote ESD
No Alarm			

# **Digital Input (Typical)**

Run Loaded		12345.9 Hrs L	ocal CENTURION
<u>?</u>	Remote	ESD	
Sigr	nal Type	Normally Closed E	)C+
Sigr	nal Filter	None	
Rav	w Status:	Closed [	DC +
No Alarm			

## Pulse Input...An Input Configured For Pulse (Typical)

Run Loaded	Test = 221 s	ec 12346.0 Hrs	Local CENTURION
<b>?</b>	LB L		
	Signal Type	Normally Op	pen
	Signal Filter	Pulse	
	Filter Timing	20 sec	
	Total Pulses (x100)	15,447	
	Raw Status:		Open
	Cycle Time Pre∨:	16 sec Current:	5 sec
01/01 LB Lube I	No Flow		

## **Digital Output Setup**

Touch the desired output to view output status and modify output setup. Only outputs in use by the configuration are settable.



# **Digital Output (Typical)**

Select normally open or normally closed. Normally closed inverts the logic associated with the output if desired. The actual status of the output is shown as OFF or ON.

Run Loaded	Test = 263 sec	12346.0 Hrs	Local CENTURION
0	Comp Lub	e Pump	
	Action	Normally Ope	en
	Raw Status:		Off
No Alarm			

## Analog Input Setup

Touch the desired input to view input status and modify input scaling. Only input in use by the configuration are settable.

Run Loaded	Test = 238 sec	12346.0 Hrs	Local CENTURION
?	Analog Input	s Setup	
1-8	9-12		Ctrl Loop Output
Suction P	Core_Al_9		Rcy % Open
Stg1 Disc P	Core_AI_10		Desired Spd
Stg2 Disc P	Core_AI_11		Ctl_Loop_3
Stg3 Disc P	Core_Al_12		Ctl_Loop_4
Core_AI_5			Ctl_Loop_5
Comp Oil P			Ctl_Loop_6
Core_AI_7			Ctl_Loop_7
Core_AI_8			Ctl_Loop_8
No Alarm			

# Anolog Input (Typical)

Run Loaded	Test = 214 sec	12346.0 Hrs Local	CENTURION
0	Comp Oil P :	60.3 PSI	
	Scaled Minimum	0.0 PSI	
	Scaled Maximum	100.0 PSI	
	Moving Average Samples	4	
	Raw Count Offset	5243	
	Raw Count Span	20971	
	Raw Input:	17909 Counts	
No Alarm			

#### **Analog Output Setup**

Touch the desired output to view output status and modify output scaling. Only outputs in use by the configuration are settable.

Run Loaded	Test = 185 sec	12346.1 Hrs	Local	CENTURION
?	Analog Outp	uts Setup		
	1-4			
	Rcy % Open			
	Desired Spd			
	Core_AO_3			
	Core_AO_4			
No Alarm				

## Analog Output (Typical)



## **Temperature Input Setup**

Touch the desired input to view input status and modify input type. Only inputs in use by the configuration are settable.



# **Temperature Input Typical**

Run Loaded	Test	= 101 sec	12346.1 Hrs	Local	CENTURION
0	Disc	h Cyl1 T :	271 °F		
	Туре		K Thermocou	ıple	
	Offset		0 °F		
	Status:		Thermocou	ıple OK	
	Last Status E	rror:			
		[	Reset		
No Alarm					

## **Rod Load Setup**

Touch the desired throw number to view and modify rod load configuration. Only throws in use by the configuration will be settable.

Run Loaded		12346.1 Hrs	Local CENTURION		
?	Rod Load Setup				
Throw 1	Throw 2	Throw 3	Throw 4		
No Alarm					

## Rod Load (Typical)

Set the configuration for the compressor throw. The compressor performance run sheet will have this information.

Run Loaded	_	12346.1 Hrs Loca	CENTURION
<b>?</b>	Th	row 2	
Throw Type Dout	ole Acting	Hi Compression	40000 Lbs
Suction Pressure	Suction P	HiHi Compression	45000 Lbs
Suction Pressure Drop	8 %	Hi Tension	40000 Lbs
Discharge Pressure	Stg1 Disc P	HiHi Tension	45000 Lbs
Discharge Pressure Drop	8 %		
Cylinder	12.500 in		
Rod	2.000 in		
No Alarm			

Action may be changed from single to double throw. Set the pressure drop values to approximate internal gas pressures.

The drop includes piping and valve losses from the measurement point.

Tandem cylinder options have additional settings for the low and high pressure cylinder.

High setpoints are for the Alarms only.

HiHi setpoints are for shutdown fault event thresholds.

Some values, such as reassignment of pressure channels, are modified using the Centurion configuration tool.

# **Display Settings**

Use this page to modify setpoints specific to the display and communication parameters on the display.



The communication status to the Centurion may be monitored on this page and used for troubleshooting purposes.

Tap on the icons to open.

# **SD Card Utility**

From the Display Settings screen, touch the SD Card Utility to open the SD Card Status.

This SD page displays the SD Card status, size and usage. SD Card size is limited to 2Gb support at this time.



Touch the Format icon to format the card

Touch the Eject icon to safely eject the SD Card.

The SD Card may also be remounted from this menu.

# Password Setup Page

From the Display Settings screen, touch the User Manager icon for the Password Setup page.

The Password Setup page lists the security access accounts with password protection. Each account may change their own password from this menu.

Shutdowr	ı	37.2 Hrs Local CENTURION			
?		Passwo	ord Setup	1:	
Super Murphy Op EICSOp EICSSuper	Centurion Su FW Murphy U Centurion Op EICS Standar EICS High Us	This page lists all u display. Each Accou own password from t User accounts includ Super for Supervis include EICSOp	ser accounts on the int may change their his menu. Centurion e Op for Operator and sor. EICS accounts and EICSSuper.	×	
	Prev	N	ext	Chang	e Password
C5: No Alar	m		EICS: No Alarm		

#### Setting Password Rules

Any alphanumeric password may be used on each user account.

Centurion user names include Op for operator and Super for supervisor.

EICS user names include EICSop for operator and EICSSuper for supervisor.

**NOTE:** The screen will time out after 10 minutes without activity, and a password must be re-entered to return to the setup and edit menus.

Always remember to touch the Log Off icon to deactivate your security access before you leave the premises.

# **Centurion Comm Status**

?		Centurion Comm	Status		X
485-1 Bus Load:	0.0 %	232-1 Bus Load:	16.5 %	CAN-1 Bus Load:	
485-1 Receive Count:		232–1 Receive Count:	242308	CAN-1 Receive Count:	273
485-1 Transmit Count:		232–1 Transmit Count:	30266	CAN-1 Transmit Count:	74405
485–1 MB Bad Packet:		232–1 MB Bad Packet:		CAN-1 Transmit Fail Count:	
485-1 MB Exceptions:		232–1 MB Exceptions:		CAN-1 Buffer Full Count:	
485-1 MB No Response:		232–1 MB No Response:		CAN-1 Error Count:	
485-1 Frame Errors:		232–1 Frame Errors:		CAN-1 Lost Msg Count:	
485-1 HVV Overruns:	0	232-1 HW Overruns:	10	CAN-1 Msg RX Total Count:	
485-2 Bus Load:	0.0 %	232-2 Bus Load:	0.0 %	CAN-2 Bus Load:	0.0
485-2 Receive Count:		232-2 Receive Count:		CAN-2 Receive Count:	
485-2 Transmit Count:		232–2 Transmit Count:		CAN-2 Transmit Count:	
485–2 MB Bad Packet:		232–2 MB Bad Packet:		CAN-2 Transmit Fail Count:	
485–2 MB Exceptions:		232–2 MB Exceptions:		CAN-2 Buffer Full Count:	40
485-2 MB No Response:		232-2 MB No Response:		CAN-2 Error Count:	13
485-2 Frame Errors:		232-2 Frame Errors:		CAN-2 Lost Msg Count:	
485-2 HW Overruns:	0	232-2 HW Overruns:	0	CAN-2 Msg RX Total Count:	
				Eth Transmit Count:	
				Eth Receive Count:	
				Eth Transmit Byte Count:	
				Eth Receive Byte Count:	
		Denot Otatiatia	-	Eth Transmit Ping Count:	
		Reset Statistic	5	Eth Receive Ping Count:	

Users may view the status for all the Centurion communication ports since last power up.

This page can assist with diagnosing connections to the Centurion from outside devices.

Touch Reset Statistics icon to reset the counters.

#### **Real-Time Clock Setup**

Touch Enable Clock Set icon to enter the edit mode.

Run Loaded		12346.1 Hrs	Local CENTURION
?	Real Time Clo		
	Tuesday 31 Jul 20		
	Set Time Minutes	0	Enable Clock Set
	Set Time Hour	13	[
	Set Date Day	31	[
	Set Date Month	July	[
	Set Date Year	18	[
	Set Day Of Week	Tuesday	[
Display DATE/TIME :		31	Jul 2018 01:00:36PM
No Alarm			

This setting is on the Centurion; however, the display clock and Centurion clock automatically synchronize. When the settings are complete, touch the Press to Set icon to enter the new clock setting.

# Super User Menu (Super User Passcode Required)

The Reset Fault History will clear the stored faults.

Run Loaded		12355.1 Hrs Local	CENTURION
0	Super User Setup		
	Reset Fault History	Reset	
	Reset E∨ent History	Reset	
	Display Factory Setup	Reset	
	Centurion Factory Setup	Reset	
	Language Select	English	
No Alarm			

The Reset Event History will clear the events.

The Display Factory Setup will restore language, backlight timeout, brightness and other settings stored in the display.

The Centurion Factory Setup will restore all setpoints to what was set up in the Configuration that was used.

The Language Select will change the language from English or Spanish.

For electric motor short cycle start per hour limiting, the fault may be set on this page to allow for a restart before the minimum time of 1 hour wait time to restart.

## Centurion Comm Port Setup (Super User Passcode Required)

Touch the desired communication port to view and edit port setup.



## RS485-1

The RS485 is used for long distance serial comunication. Distances up to 4000 feet are possible and multiple devices can be on the network.



120 ohm twisted shielded pair cable should be used for proper line integrity, wired in a daisy-chain fashion. Star networks should be avoided.

Fail-safe Biasing should be turned on only once. Typically done by the Client device.

Line termination should be turned on at the ends of the network.

Modbus Address is for this Centurion on the Network. The Centurion is a Modbus RTU server.

Set the communication parameters to match the Modbus RTU Client device.

Reply Delay is only used to slow down the port if the Client requires additional time.

## RS232-1

RS232 is used for short distance serial communication. Distances less than 35 feet are ideal in a point-to-point communication.



Low capacitance, shielded 3 conductor cable should be used, with adequate gage wire to reduce voltage losses. Devices must share a DC common reference.

Modbus Address is for this Centurion on the Network. The Centurion is a Modbus RTU server.

Set the communication parameters to match the Modbus RTU Client device.

Reply Delay is only used to slow down the port of the Client requires additional time.

# RS485-2

The RS485 is used for long distance serial comunication. Distances up to 4000 feet are possible and multiple devices can be on the network.



120 ohm twisted shielded pair cable should be used for proper line integrity, wired in a daisy-chain fashion. Star networks should be avoided.

Fail-safe Biasing should be turned on only once. Typically done by the Client device.

Line termination should be turned on at the ends of the network.

Modbus Address is for this Centurion on the Network. The Centurion is a Modbus RTU server.

Set the communication parameters to match the Modbus RTU Client device.

Reply Delay is only used to slow down the port of the Client requires additional time.

## RS232-2

RS232 is used for short distance serial communication. Distances less than 35 feet are ideal in a point-to-point communication.



Low capacitance, shielded 3 conductor cable should be used, with adequate gauge wire to reduce voltage losses. Devices must share a DC common reference.

Modbus Address is for this Centurion on the Network. The Centurion is a Modbus RTU server.

Set the communication parameters to match the Modbus RTU Client device.

Reply Delay is only used to slow down the port of the Client requires additional time.

# Can Port Settings - Can-1

CAN bus is used for long distance high speed communication. Distances up to 100 feet are possible depending on data rates, and multiple devices can be on the network.



120 ohm twisted shielded pair cable should be used for proper line integrity, wired in a daisy-chain fashion.

Star networks should be avoided.

Claimed Address is displayed for the address that was negotiated.

Source Address is for this Centurion on the network.

Arbitrary Address Capable is yes if other devices support address arbitration.

**Terminating Resistor** (set by DIP sw) is enabled. Line termination should be turned on at the ends of the network.

# Can Port Settings - Can-2

CAN bus is used for long distance high speed communication. Distances up to 100 feet are possible depending on data rates, and multiple devices can be on the network.



120 ohm twisted shielded pair cable should be used for proper line integrity, wired in a daisy-chain fashion.

Star networks should be avoided.

Claimed Address is displayed for the address that was negotiated.

Source Address is for this Centurion on the network.

Arbitrary Address Capable is enable/yes if other devices support address arbitration.

**Terminating Resistor** (set by DIP sw) is enabled. Line termination should be turned on at the ends of the network.

**ECU Address** is the engine ECU source address. Some engine ECUs require a specific source address to respond to data request. Refer to engine documentation.

#### **Ethernet Settings for the C5**

The Ethernet port settings are for the Centurion. The two ports share the same connection and act as a 2-port switch.



## Centurion EMMC Log File Menu (Super User Passcode Required)

The Centurion ENNC Log Files page displays the number of files on the internal EMMC memory storage on the Centurion.



In order to consistently bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time. FW MURPHY product names and the FW MURPHY logo are proprietary trademarks. This document, including textual matter and illustrations, is copyright protected with all rights reserved. (c) 2022 FW MURPHY. A copy of our typical warranty may be viewed or printed by going to www.fwmurphy.com/warranty.

FW MURPHY PRODUCTION CONTROLS Sales, Services & Accounting 4646 S. Harvard Ave. Tulsa, OK 74135

MANUFACTURING 2151 RANDON DYER ROAD Rosenberg, TX 77471

5757 FARINON DRIVE San Antonio, TX 78249 **DOMESTIC SALES & SUPPORT** 

FW MURPHY PRODUCTS Phone: 918 957 1000 Email: Info@fwmurphy.com Www.fwmurphy.com

FW MURPHY CONTROL SYSTEMS & SERVICES Phone: 281 633 4500 Email: CSS-Solutions@fwmurphy.com **INTERNATIONAL SALES & SUPPORT** 

CHINA PHONE: +86 571 8788 6060 EMAIL: INTERNATIONAL@FWMURPHY.COM

LATIN AMERICA & CARIBBEAN Phone: +1 918 770 8775

EMAIL: INTERNATIONAL@FWMURPHY.COM South Korea Phone: +82 70 7951 4100 EMAIL: International@fwmurphy.com





FM 523851 (China) TS 589322 (China)