SMART TRAC™ Digital Operator

MagneTek, Inc. - Drives and Systems Division

Contents

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Operator Driver Installation

Installing the Smart Trac Operator Driver

1. Click **START**, **PROGRAMS**, **MAG-300**, **CONTROL MANAGER**. The Control Manager software loads.

2. Expand the **Project** folder tree and right click the **Drivers** folder. A selection box appears with **New…** highlighted.
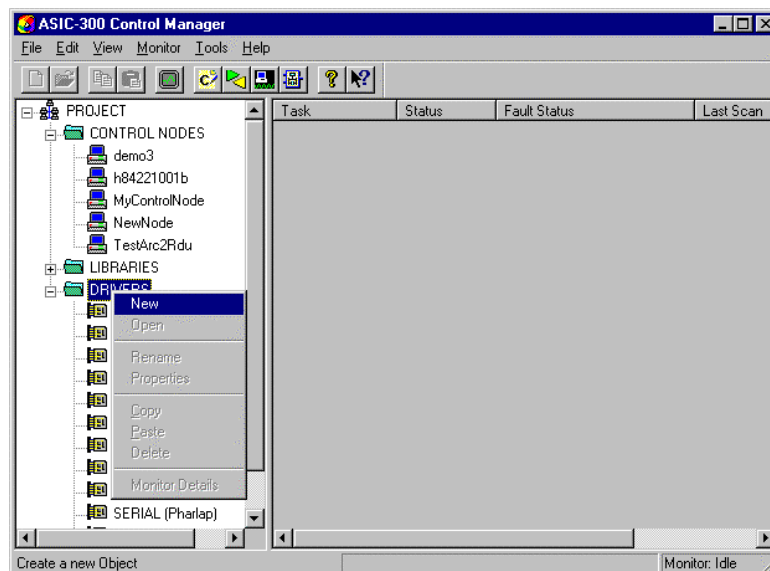

Figure 1. The New Device Driver Selection box.

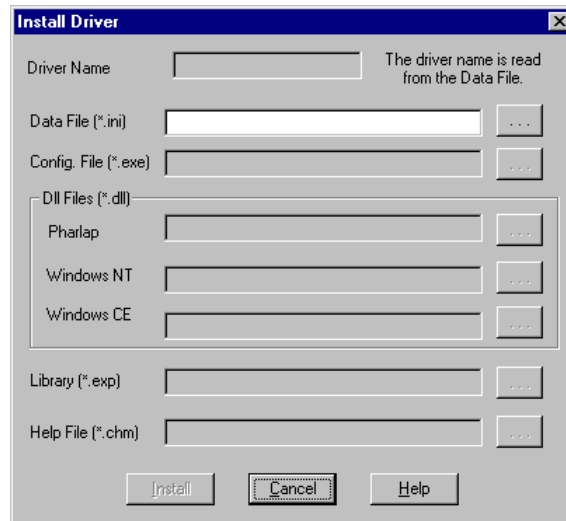3. Click the New selection box. The **Install Driver** dialog box appears.

Figure 2. I/O Driver Install dialog box.

*To view driver .dll files, you must select View All Files in Windows NT Explorer. If you have Windows NT without IE4.0 installed: from Explorer, click **View**, **Options**, click **View** tab. In **Hidden Files**, click Show all files If you have IE4.0 installed: from Explorer, click **View**, **Folder Options**, click the **View** tab. In **Advanced Settings**, click **Show All File**s in the **Hidden files** folder.*

4. Click the small box containing three dots (…) to the far right of the **Data File (*.ini)** box. This allows you to browse for the initialization file on your system (generally the driver will be installed from your CD_ROM). For our example, we assume the file is on a floppy in the A: drive. Find the file **Operator.ini** and **OPEN** it. Two more boxes, for entry of **Config.exe** and **Help.exe**, become active.

5. Click the small box containing three dots (…) to the far right of the **Config (*.exe)** box. Browse for the **Operator.EXE** file. Press **TAB** or **ENTER**. More boxes will become active.

6. Click the small box containing three dots (…) to the far right of the **Help (*.chm)** box. Browse for the **STOperatorEM.CHM** file. Press **TAB** or **ENTER.** The screen should look like the following (if installing from the A:\ drive).
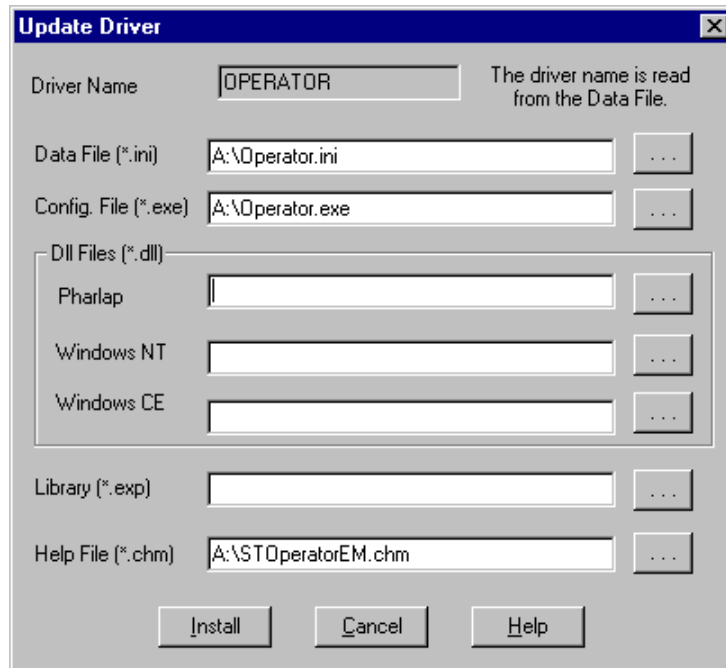
Figure 3 The completed example DeviceNet Driver Install screen

7. Click **INSTALL**. When finished, you are returned to Control Manager. The driver name should appear in its own folder within the **Drivers** folder.

8. The Operator card library is ready for use.

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The Smart Trac AC1 Digital Operator

Identifying Controls and Indicators

The face of the Smart Trac AC1 contains an eleven-key keypad for data input, a two-line by sixteen-character LCD display and LED's to provide status information.

Digital
Operator
LCD Display
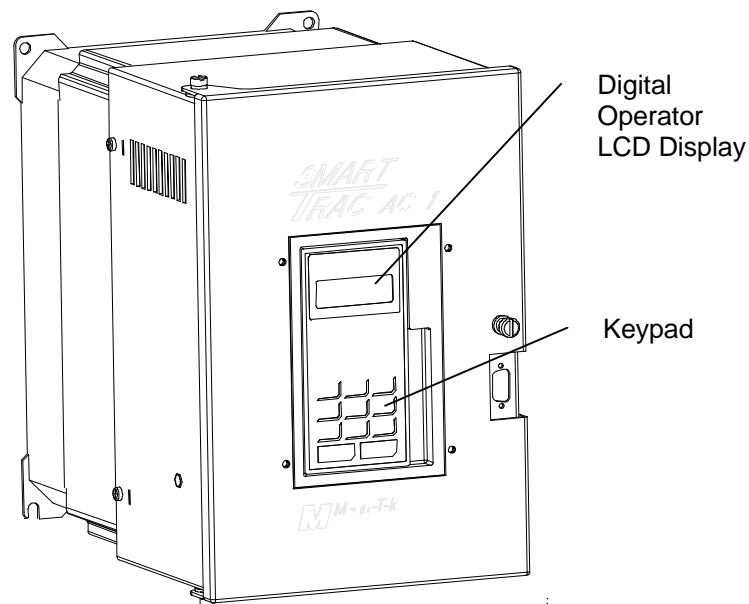
Keypad

Figure 4. Typical Smart Trac AC1 with keypad and LCD display.

An **RS-232 port**, also located on the face of the Smart Trac AC1, provides one means to connect a personal computer to the unit (optional communications cards providing other means).

Controls

Two types of controls exist on the Smart Trac AC1: **DATA** and **CONTROL**.

- The **DATA** group includes keys labeled **MENU**, **UP**, **DOWN**, **RIGHT**, **ESCAPE** and **DATA/ENTER**. These keys allow setting or viewing of

data including parameters, feedbacks and selection and use of special functions.

- The **CONTROL** group includes the keys labeled **LOCAL/REMOTE**, **JOG**, **FWD/REV**, **RUN** and **STOP**. These keys provide control over the operation of the Smart Trac AC1. Although labeled for "typical" use, they may be programmed to operate differently. Consult the documentation specific to your Smart Trac AC1.

Indicators

Indicators include seven status lights labeled **DRIVE**, **FWD**, **REV**, **REMOTE/SEQ** and **REMOTE/REF**, **RUN** and **STOP**, and the LCD display showing status, fault or parameter information. What causes these lights to be triggered on or off is entirely up to the application program.

The behavior of each of these controls and indicators is described in tables and the figures that follow:
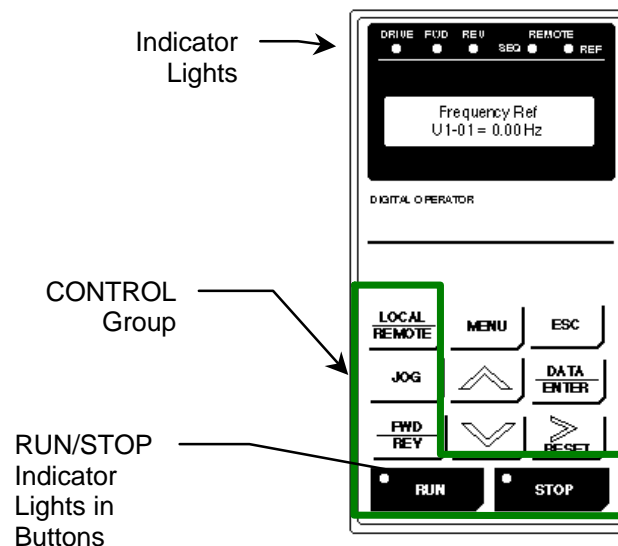
*Figure 5. The **CONTROL** Group of the Smart Trac AC1 Digital Operator.*
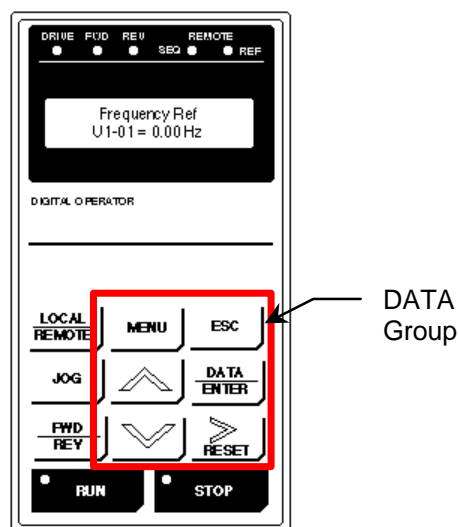
*Figure 6. The **DATA** group of the Smart Trac AC1 Digital Opertor.*

Table 1. Digital Operator Indicators

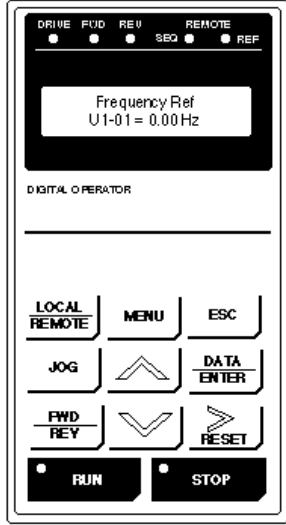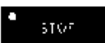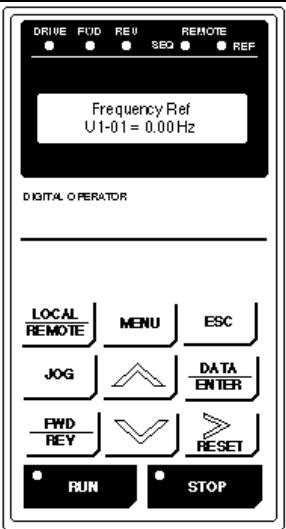| Digital Operator Indicators	
Indicator Lamp	**Function**
DRIVE	Red light - *programmable*. Typically lights (ON) when Smart Trac AC1 is in Drive mode of operation.
FWD	Red light – *programmable*. Typically lights (ON) when FWD motor direction is selected.
REV	Red light – *programmable*. Typically lights (ON) when REV motor direction is selected.
REMOTE/ SEQ	Red light – *programmable*. Typically ON when Smart Trac AC1 is operating from external RUN and STOP signals.
REMOTE/ REF	Red light – *programmable*. Typically ON when Smart Trac AC1 operating by an external frequency reference signal.
RUN	Red light – *programmable*. Typically OFF when Smart Trac AC1 is in stopped condition. Typically lights steadily (ON) when Run signal is active. It blinks after Stop signal has been received and Smart Trac AC1 is ramping down.
STOP	Red light – *programmable*. Typically, lights steadily (ON) at initial power-up. Typically blinks after Run signal becomes active but frequency reference is zero. Typically off when Smart Trac AC1 is controlling motor speed.

Table 2. Digital Operator Control Keys

Digital Operator Control Keys	
Key Label	**Function**
LOCAL/ REMOTE LOCAL REMOTE	*Programmable.* Typically programmed to toggle between the Digital Operator and Remote (terminal) modes of operation. Active only when Smart Trac AC1 is in stopped condition.
JOG JOG	*Programmable.* Typically programmed to initiate Jog function while pressed and held in drive mode. Smart Trac AC1 output goes to programmed Jog Frequency to check motor operation, or to position the machine. When key is released, output returns to zero and motor stops. If motor is running, pressing this key will have no effect. May be programmed to be disabled if Smart Trac AC1 is programmed to use an external JOG input.
FWD/REV	*Programmable.* Typically programmed to toggle between motor run Forward and Reverse with each press of key. Selected direction is indicated by FWD or REV lights. If selection is made while Smart Trac AC1 is stopped, it determines direction motor will run when started. If selection is changed during running, Smart Trac AC1 will ramp motor to zero speed and then ramp it up to set speed in opposite (i.e. newly selected) direction.
RUN RUN	*Programmable.* Typically programmed to operate by external RUN and STOP signals (as indicated by REMOTE SEQ lamp being lit). Pressing key will produce a Run command to initiate Smart Trac AC1 output to motor. However, output frequency will be zero if frequency reference is zero at time key is pressed.
STOP STOP	*Programmable.* Typically programmed to produce a Stop command when key pressed. Smart Trac AC1 will decelerate motor in programmed stopping manner, then Smart Trac AC1 output will be disconnected from the motor.
MENU MENU	After power-up, displays top level of digital operator menu tree, Numeric Parameters. At the topmost level of five menus, it moves from menu to menu in the following order: Numeric Parameters, Numeric Feedbacks, Logic Parameters, Logic Feedbacks, and Special Functions. If within a submenu, returns to the topmost menu, Numeric Parameters.
ESC ESC	Returns display to previous level in menu tree or to status before pressing DATA/ENTER.

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Digital Operator Control Keys	
Key Label	**Function**
DATA/ ENTER	Moves to a submenu after selected with UP and DOWN arrow keys.
	Writes a keyed parameter value into Smart Trac memory.
>**RESET**	Moves blinking cursor of a value being changed one digit to the right if modifying either a numeric parameter or the password. If at the right-most position, wraps around to first position on left side of display.
	OR
	Resets a Smart Trac AC1 fault or fault history list.
up arrow	Moves to a previous menu or submenu within a menu level. At the topmost level of five menus, it moves from menu to menu in the following order: Numeric Parameters, Special Functions, Logic Feedbacks, Logic Parameters, and Numeric Feedbacks
down arrow	Moves to the next menu or submenu within a menu level. At the topmost level of five menus, it moves from menu to menu in the following order: Numeric Parameters, Numeric Feedbacks, Logic Parameters, Logic Feedbacks, and Special Functions.

Using the Digital Operator

You may use the Up and Down arrow keys to move from menu to menu or submenu to submenu within a menu level.

When the Smart Trac AC1 is powered-up, the text window of the digital operator displays the message "Press the MENU key now…". Each press of the **MENU** key displays the next menu. There are five menus: **Numeric Feedbacks**, **Numeric Parameters**, **Logic Feedbacks**, **Logic Parameters**, and **Special Functions**. Each menu contains sub-menus.

1. To get familiar with the menu structure:

2. Press the **MENU** key. The first menu, Numeric Parameters, appears.

3. Press **DATA/ENTER**. You see the first numeric parameter, as programmed.

4. Press the **up arrow**. You see the last numeric parameter, as programmed.

5. Press the **ESC** key. You are returned to the Numeric Parameters menu.

6. Press the **MENU** key again. The second menu, **Numeric Feedbacks**, appears. Continue to press **MENU** through the **Logic Parameters** list, the **Logic Feedbacks** list, to the **Special Functions** menu list.

Selecting a Secondary Language

Your Smart Trac AC-1 may have been programmed to display legends and units in a *secondary*, or alternate, language. The *primary* language is always English and may not be changed. Either the primary (English) or secondary (alternate) language may be displayed by the user. You choose to use a secondary language in the **Special Functions** menu.

1. On the digital operator, press **MENU** until you get to the **Special Functions** menu.

2. Press **DATA/ENTER**. A message appears "**Set Language, press DATA/ENTER**."

3. Press **DATA/ENTER**. The message "**Present Language**" appears with either **English** or **Secondary** below it, indicating the language currently in use.

4. Press the **UP** or **DOWN** arrow keys until you reach the **English** or **Secondary Language** labels, depending on which you'd like to use. Press **DATA/ENTER** to select the use of the language.

5. When done, press **Menu** to return to the top-level menu.

Loading Application Settings

You can choose to accept all application (default) settings as defined in your application program. These include defaults for Numeric Parameters and Logic Parameters.

1. Press **MENU** on the digital operator. The words **Numeric Parameters** appear, indicating you are in the Numeric Parameters menu.

2. Press the **MENU** key again. The second menu, **Numeric Feedbacks**, appears. Continue to press MENU through the **Logic Parameters** list, the **Logic Feedbacks** list, to the **Special Functions** menu list.

3. Press **DATA/ENTER**. The submenu **Set Language** appears.

4. Press the **UP** and **DOWN** arrow keys until you get to the submenu **Newest Faults**.

5. Press **DATA/ENTER**. The message "**Load Defaults, press DATA/ENTER**" appears.

6. Press **DATA/ENTER**. The message "**Are you sure?**" appears with "**No-keep data**" below it.

7. Press **UP** or **DOWN** arrow keys and select between "**No-keep data**" and "**Yes-Load Default**." Press **DATA/ENTER** to select the indicated action.

8. When done, press **Menu** to return to the top-level menu.

Display Faults

You can read any of the newest or oldest faults on the digital operator:

1. Press **MENU** on the digital operator. The words **Numeric Parameters** appear, indicating you are in the Numeric Parameters menu.

2. Press the **MENU** key again. The second menu, **Numeric Feedbacks**, appears. Continue to press MENU through the **Logic Parameters** list, the **Logic Feedbacks** list, to the **Special Functions** menu list.

3. Press **DATA/ENTER**. The submenu **Set Language** appears.

4. Press the **UP** and **DOWN** arrow keys until you get to one of the submenus, **Newest Faults** or **Oldest Faults**, whichever you'd like to review.

5. Press **DATA/ENTER**. The first fault in the queue appears.

6. To review other faults, press the **UP** and **DOWN** arrow keys.

7. When done, press **Menu** to return to the top-level menu.

Display of Fault Information

The digital operator shows any Smart Trac AC1 or program faults before any other information. The first fault to occur is displayed. Once *cleared*, by pressing any key on the digital operator, a second fault, if present, is displayed. Clearing acknowledges that the operator has been notified of the fault. When a fault is cleared, it is no longer annunciated, but is still active.

If a priority fault is cleared through the Smart Trac ARCNET LAN, it is immediately removed from the local display on the digital operator.

A list of active faults may be viewed. The faults remain on this list until their triggering condition is removed and **>RESET** is pressed.

Annunciated faults are also logged into the oldest and newest faults history lists. These lists can be viewed. Pressing **>RESET** while viewing one of the history lists will clear all the faults in that list.

Once active faults are reset, menu items will be displayed.

Digital Operator Menu Tree

LEVEL 1 **LEVEL 2** **LEVEL 3**

Press the Menu key to begin.

Use up and down arrow keys to scroll through the options and parameters within a level

Number of parameters or feedbacks displayed depends on number of entries in Operator Configurator

Each press of >RESET moves one digit to right starting with leftmost digit.

MENU

OR

UP

DOWN

Numeric Parameters — DATA ENTER

Numeric Parameter 1 #1 (Value) Units
Numeric Parameter X #Z (Value) Units

DATA ENTER

Legend NNNN (Value) AAA (units)
*

DATA ENTER

Maximum Limit? Yes → ^Limit^ Exceeded Press ESC key

No

Minimum Limit? Yes → Limit Exceeded Press ESC key

No

ESC

DATA ENTER

MENU

OR

UP

DOWN

Numeric Feedbacks — DATA ENTER

Numeric Feedback 1 #Z (Value) Units
Numeric Feedback X #Z (Value) Units

DATA ENTER

Legend NNNN (Value) AAA (units)
*

MENU

OR

UP

DOWN

Logic Parameters — DATA ENTER

Logic Parameter 1
Logic Parameter X

DATA ENTER

Reset Counter ON
Reset Counter OFF

* Asterisk denotes logic branch not shown that is identical to Numeric Parameters branch in dashed line rectangle above..

MENU

OR

UP

DOWN

Logic Feedbacks — DATA ENTER

Logic Feedback 1
Logic Feedback X

DATA ENTER

Legend NNNN (Value) AAA (units)
*

MENU

OR

UP

DOWN

Special Functions — DATA ENTER

See next page for the Special Functions Menu Tree

MENU

OR

UP

DOWN

Use up and down arrow keys to scroll through the options and parameters within a level

Figure 7. AC1 Digital Operator Menu Tree

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Digital Operator Special Functions Menu Tree

LEVEL 1	LEVEL 2	LEVEL 3

Special Functions → DATA ENTER

MENU **OR** UP / DOWN

Use up and down arrow keys to scroll through the options and parameters within a level

Active Faults #1 press ENTER → DATA ENTER → (1st most recent Active Fault) / (to 20th most recent Active Fault) — UP / DOWN

Oldest Faults #2 press ENTER → DATA ENTER → (1st Oldest Fault) / (to 20th Oldest Fault) — UP / DOWN

Newest Faults #3 press ENTER → DATA ENTER → (1st Newest Fault) / (to 20th Newest Fault) — UP / DOWN

Load Defaults #4 press ENTER → DATA ENTER → Are you sure? No-Keep Data / Are you sure? Yes-Load Default — UP / DOWN

FAULT LABEL YY MMM DD   HH:MM:SS → DATA ENTER → FAULT CODE # NNNNN → DATA ENTER

Set Clock #5 press ENTER → DATA ENTER → Current Time DDMMMYY   HH:MM:SS → DATA ENTER → DATE/TIME Flashes → DATA ENTER

Password Entry #6 press ENTER → DATA ENTER → Enter the pswrd

Set Language #7 press ENTER → DATA ENTER → Present Language English / Present Language Secondary — UP / DOWN

TCP/IP Settings #8 press ENTER → DATA ENTER → IP Address NNN:NNN:NNN:NNN / Subnet Mask NNN:NNN:NNN:NNN / Gateway Address NNN:NNN:NNN:NNN — UP / DOWN

Firmware Version #9 press ENTER → DATA ENTER → Boot Code Version N.N.NN / Monitor Version N.N.NN / Operating System Version N.N.NN — UP / DOWN

COM1 Config #10 press ENTER → DATA ENTER → Baud Rate

Glossary of Terms

active fault	Any fault that has not been reset.
priority fault	The fault preventing a drive from functioning; the topmost level of faults. Faults may be assigned priorities using the Fault Manager.

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