

# T-Drive™

## Big Performance, Small Box

### Baseline features

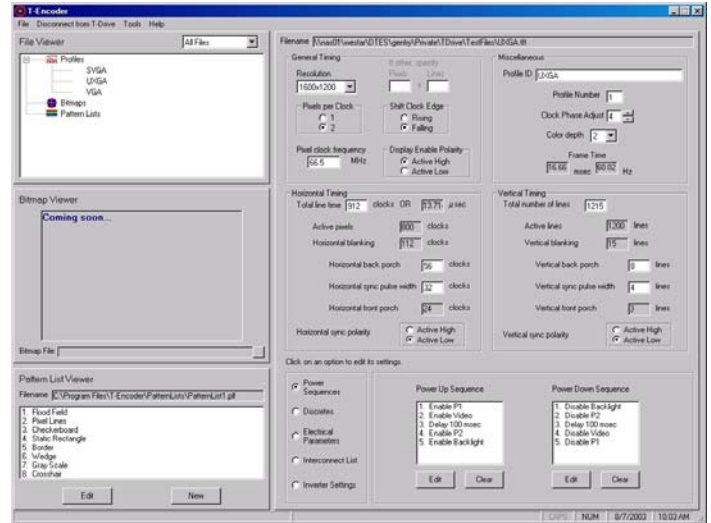
- ❖ Programmable raster timing and programmable power for TFT module and accompanying inverter, encapsulated in user-defined module profiles
- ❖ Single/dual channel LVDS and digital parallel video up to UXGA
- ❖ Power sequencing
- ❖ Real-time adjustments of test patterns
- ❖ Power consumption measurements
- ❖ Control of display specific features
- ❖ Inverter control
- ❖ Factory default pattern list, user-defined pattern lists and auto pattern sequencing

### Generated Test Patterns

- ❖ Full Screen Color
- ❖ 1 Pixel Horizontal and Vertical Line
- ❖ 2 Pixel Horizontal and Vertical Line
- ❖ 1 Pixel Checkerboard
- ❖ 2 Pixel Checkerboard
- ❖ Static Rectangle
- ❖ Border
- ❖ 4 Color Horizontal and Vertical Wedge
- ❖ Horizontal and Vertical Gray Scale
- ❖ Blink
- ❖ Movable Crosshair
- ❖ Moving Rectangle
- ❖ Response Time Animation

### Optional features

- ❖ Image download and display (including .bmp and .jpg files)
- ❖ TMDS/Analog output card
- ❖ Windows DLL for remote control



Do you need a TFT module drive system that provides the module power, inverter power, and digital video in one convenient benchtop box? Then, check out WDT's TFT module drive system, T-Drive™.

T-Drive™ provides everything you need to drive your TFT module...all in a small footprint, benchtop format. T-Drive™ outputs include:

- ❖ Digital video in one or two pixels per clock LVDS and parallel formats,
- ❖ Programmable module power, and
- ❖ Programmable inverter power.

T-Drive™ generates an extensive array of test patterns. You may control the color, intensity, and, in some cases, the position of these test patterns via the simple interface provided on the handheld keypad. You may also designate a unique pattern list for your repair/test function.

The accompanying software, T-Encoder™, helps you to manage the timing profiles and pattern lists stored in your T-Drive™. T-Encoder™'s easy graphical user interface is used to build your timing/electrical module profiles and pattern lists. Then you simply download this information to T-Drive™ using the supplied USB cable.

Each T-Drive™ system includes:

- ❖ T-Drive™
- ❖ Dual LVDS and digital parallel output cards, leaving one spare slot
- ❖ Handheld keypad
- ❖ USB cable, and
- ❖ CD containing T-Encoder™ software and User's Manual

Display Technologies

**WESTAR**

QinetiQ North America

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Revision H

**Video Timing***Horizontal (clocks per line)*

Total	up to 2047
Active	8 to 2039
Back Porch (HBP)	Equ 1, 2
Front Porch (HFP)	
Sync Pulse Width (HSPW)	

*Vertical (lines per frame)*

Total	up to 2047
Active	1 to 2039
Back Porch (VBP)	Equ 3, 4
Front Porch (VFP)	
Sync Pulse Width (VSPW)	

**Clock Frequency**

3.3/5 VDC TTL	1.5625 to 85 MHz
LVDS	20 to 85 MHz

**Pixels per clock** 1 or 2**Effectively up to 170M pixels/sec for 2 pixels/clock**

TMDS (optional)	25 to 165 MHz
Analog (optional)	1.5625 to 170 MHz

**Bits per Pixel** 8 bits each RGB**Test Patterns**

Full Screen Color	Static Rectangle
1 Pixel Horizontal Line	1 Pixel Vertical Line
2 Pixel Horizontal Line	2 Pixel Vertical Line
4 Color Horizontal Wedge	4 Color Vertical Wedge
Horizontal Gray Scale	Vertical Gray Scale
1 Pixel Checkerboard	2 Pixel Checkerboard
Blink	Border
Response Time Animation	Movable Crosshair
Moving rectangle	

**Trigger out signal for Blink pattern (TTL level)****Pattern List Capacity** 16 lists of up to 32 patterns**Timing Profile Capacity** 250**Bitmap Capacity (optional)** 256MB: 40 UXGA images  
512MB: 80 UXGA images**Equations:**

- Horizontal Blanking (HB) = Total - Active
- HFP = HB - HBP - HSPW
- Vertical Blanking (VB) = Total - Active
- VFP = VB - VBP - VSPW

**Input Power**Voltage 88 to 132/176 to 264 VAC  
150 Watts (max)

Auto Select

Frequency 47 to 63 Hz

**Power Generation/Switching/Sequencing***Internally Generated*

P1	2.5 to 18 VDC up to 2.0 Amp Accuracy* greater of 150mV and +/- 3%
P2	2.5 to 18 VDC up to 2.0 Amp Accuracy* greater of 150mV and +/- 3%
P3	2.5 to 18 VDC up to 2.0 Amp Accuracy* greater of 150mV and +/- 3%

Total deliverable power up to 50 Watts

*Externally Generated*P4 -28 to 28 VDC  
up to 3.0 Amp**All supplies are internally protected**

Switching Time	< 1 msec (Typical)
Power Sequence Delay	1 to 10000 msec range 1 msec increment

**Measurement Accuracy** +/-60mV, +/-60mA**Measurement Precision** 0.1V, 0.01A**Inverter Control**Resistive  
Voltage  
I2C (Digital)**Discretes**

In	8
Out	8
Electrical Level	3.3 or 5 VDC TTL

**Dimensions**

Height	5.75" (146.05 mm)
Length	12.75" (323.85 mm)
Depth	7.75" (196.85 mm)
Weight	6 lbs. (2.6 kg)

cycle time = 1 / (clock frequency)  
line time = (total clocks per line) \* (cycle time)  
frame time = (total lines per frame) \* (line time)\*Accuracy specified @ 0A. Use the following equation to determine actual voltage out.  
Voltage at output connector = Programmed voltage - (0.05 \* current draw in amps)

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