Hybrid Recorder Series
*mega-log* t/tl/tn/tp

A family of hybrid color recorders for documenting 1 to 6 analog inputs on a 120 mm chart

**Applications**
Mega-Log recorders are used to monitor processes where it is important to quickly view trends, event messages, and reports
- document inflow/outflow quantities in supply pipelines
- count quantity on production lines
- record energy distribution
- record temperature in sensitive manufacturing processes
- record product quantities in batching applications
- present process-relevant information in a very clear and concise manner

**Features**
- easy to read fluorescent display for digital and bar graph display presentation of measured values
- one six-channel recorder can replace two standard line chart recorders
- patented overwrite technology combines the advantages of color recording with the reliability of the linear array thermal principle
- universal connection of most frequently used analog and digital signals
- system compatible via serial interface
- comprehensive text information displayed and printed on the chart

Endress+Hauser
Nothing beats know-how
Mega-Log Recorders at a Glance

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Channels</th>
<th>Recording Style</th>
<th>Recording Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mega-Log t</td>
<td>1...6</td>
<td>Continuous line chart recording</td>
<td>Linear array thermal print head</td>
</tr>
<tr>
<td>Mega-Log tl</td>
<td>1, 2, or 3</td>
<td>Continuous line chart recording</td>
<td>Thermal print head for safety-line. Overwrite technology using felt tip pens</td>
</tr>
<tr>
<td>Mega-Log tn</td>
<td>2, 3, or 6</td>
<td>Continuous line chart recording</td>
<td>Thermal print head for safety-line. Overwrite technology using pen wheel</td>
</tr>
<tr>
<td>Mega-Log tp</td>
<td>6</td>
<td>Dotting recorder</td>
<td>Thermal print head for dot to dot connecting line. Overwrite technology using pen wheel</td>
</tr>
</tbody>
</table>

Features

Mega-Log t/tl/tn/tp

Linear Array Thermal Print Head
The high resolution (8 dots/mm) fully maintenance-free linear array thermal print head makes sure of the following even without ink:
- Reliable recording using "Safety line"
- High resolution text printouts
- Individual grids and scale printout for each channel
- Recording only the most important section of the signal range ("Zoom") and recording this on a preselectable section of the chart ("Zoning")
- Always operational in real time, even on varying paper feed rates, due to date and time printout.

Patented “Overwrite Technology”
Mega-Log recorders are designed to guarantee accurate and reliable recording. Overwrite technology combines all the advantages of color recording with those of the linear array thermal principle.

All channels are burnt into the paper simultaneously, without time offset, as a single color (black) trace. These lines are then traced in color using easily exchanged pens or a pen wheel. The unit can be set up to trace continuously or only in the case of a limit infringement.

Display
The 2 x 20 digit fluorescent display is integrated into the recorder door. The advantages are:
- Operation even with a locked door (changes to the setup can only be done by using a security code)
- Measured values are displayed as digital or analog values (trend bar graph)

Roll Chart or Z-Fold Paper
The Mega-Log series recorder operates with either roll or Z-fold paper. You have the choice:
- Roll chart paper for long term recording
- Z-fold paper for a fast look

Limit Monitoring
Five individual presettable limits per channel initiate, on request, an event printout, activate relays, or preset the paper feed rate to your chart requirement.

Built-in Timer
Program the times your recorder needs to be operational.
- Optimize paper usage
- You have a quick overview of process data because unimportant data is not recorded

Variable Analog Inputs
Each channel can be set to its individual input signal. All inputs are galvanically isolated from each other as well as the system, and can be calibrated by push buttons. All channels are measured very quickly (10 times per second).

Select the correct amplifier board:
Standard input board for economic measurement of current (0…1/10 V, 0/4…20 mA)
Universal input board (optional) for selectable measurement of the most frequently used types of analog signals (± mV/V/mA, RTDs, thermocouples; of course current and voltage measurement as the standard input board).
Automatic Signal Analysis
Your recorder analyzes incoming signals into minimum, maximum, and average values per channel. This is done over preset time cycles. These values are then printed in a table including measurement point identification, times, and engineering units.

Serial interface
Communicate remotely with any Mega-Log series recorder using RS 232/422/485 serial interfaces.

Relays
Program the recorder to transmit limit infringements and faults. The four relays can be individually programmed for any channel.

Special Inputs
In addition to the standard inputs, the Mega-Log series recorder can directly accept input from:
- Thermocouples
- Thermal resistors (RTD)
- Voltage
- Current

Signal selection on the recorder is done directly via the keypad.

Virtual Mathematical Channels
Let your recorder do calculations for you. In addition to the normal analog channels, the recorder has three additional calculation channels:
- Mathematical combination of more than one channel for difference in differential pressure applications
- Multiplication for calculation of current and voltage
- Mathematical function for single channels (square root)

Operation Using Control Inputs
The Mega-Log series recorder will respond to various external inputs. These signals can:
- Change the paper feed rate
- Add explanatory text to the record
- Add the instantaneous values by operating a push button
- Preset the measuring time cycle or suppress recording. (When servicing, should only be done in combination with signal analysis)

Counting and Quantity Recording
The Mega-Log t can record quantities by using either two count inputs or integrating the analog input signals. The recorder prints these values in an easy-to-read tabular report giving measurement period, daily, monthly, and total quantities.
**Dynamic Process Control**

Using this interface, the recorder can learn and store the sequence of repeating process batches. Variations from a stored reference process in subsequent processes are dynamically monitored for infringement of present tolerance bands. If infringement occurs, the effect is the same as limit infringement (text printout, change feed rate, activate relay).

**Serial interface/Readex T**

The Mega-Log series can be connected to a PC enabling remote communication via an optional RS 232/422/485 interface. When an interface is selected, Readex T, IBM-compatible software, is supplied allowing you to obtain process information instantaneously. Readex T enables:

- Remote set up and storage of various process unit parameters
- Text printout on the recorder
- A central location for viewing process parameters such as: minimum, maximum, and average values.

**Memory/readout of signal analysis**

The signal analysis, compiled minimum, maximum, and average (or counter value) information can be stored in the unit by selecting optional memory: 128 K or 512 K. The stored data can be transmitted to a PC, displayed, and stored on a hard disk. This allows further analysis of process data using a spreadsheet program. This is also included in the Readex T software.

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**Set up/Operation**

Matching the recorder to the measurement application and reading the values can be done at the recorder or from a remote IBM-compatible PC using supplied software.

**Local Input and Read-Out**

Local operation is done using the film keypad on the front of the recorder. All set up steps are divided into functional groups. Each group covers a specific subject. This means that all general parameters such as feed rate, date, and time, as well as channel specific values are combined. Your benefits include:

- Quick access to single set up positions for changes
- Structured and user led system for initial set up
- Expansion options are just tagged to the end

Changing values is possible by following a simple schematic using five operation keys. The display assists in every step with explanatory text.

If the unit is not being set up, the actual values can be:

- Called up one at a time
- Displayed as a bar graph or numerically per channel
- Displayed in a scroll sequence for single or all channels

On request, trends, minimum, maximum, and average values can be displayed.

**Remote Operation**

Using a serial interface, you can operate (set up) or obtain measured values from multiple recorders at a central location. Modern window technology enables virtual self-explanatory operation. The program runs on all DOS-based IBM-compatible computers. Advantages include:

- Fast set up of all parameters similar or common to a number of recorders
- Evaluation of all measured values in the framework of data analysis
- Easily accessible and complete central information
Terminal Connection
Mega-Log t/tl/tn/tp

Analog Inputs

<table>
<thead>
<tr>
<th>Channel</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>111</td>
<td>Channel 1 Sense/Loop-power +</td>
</tr>
<tr>
<td>112</td>
<td>Channel 1 Pt100A/Loop-power -</td>
</tr>
<tr>
<td>113</td>
<td>Channel 1 Pt100B/Not used</td>
</tr>
<tr>
<td>211</td>
<td>Channel 2 Sense/Loop-power +</td>
</tr>
<tr>
<td>212</td>
<td>Channel 2 Pt100A/Loop-power -</td>
</tr>
<tr>
<td>213</td>
<td>Channel 2 Pt100B/Not used</td>
</tr>
<tr>
<td>311</td>
<td>Channel 3 Sense/Loop-power +</td>
</tr>
<tr>
<td>312</td>
<td>Channel 3 Pt100A/Loop-power -</td>
</tr>
<tr>
<td>313</td>
<td>Channel 3 Pt100B/Not used</td>
</tr>
<tr>
<td>411</td>
<td>Channel 4 Sense/Loop-power +</td>
</tr>
<tr>
<td>412</td>
<td>Channel 4 Pt100A/Loop-power -</td>
</tr>
<tr>
<td>413</td>
<td>Channel 4 Pt100B/Not used</td>
</tr>
<tr>
<td>511</td>
<td>Channel 5 Sense/Loop-power +</td>
</tr>
<tr>
<td>512</td>
<td>Channel 5 Pt100A/Loop-power -</td>
</tr>
<tr>
<td>513</td>
<td>Channel 5 Pt100B/Not used</td>
</tr>
<tr>
<td>611</td>
<td>Channel 6 Sense/Loop-power +</td>
</tr>
<tr>
<td>612</td>
<td>Channel 6 Pt100A/Loop-power -</td>
</tr>
<tr>
<td>613</td>
<td>Channel 6 Pt100B/Not used</td>
</tr>
</tbody>
</table>

Relays

<table>
<thead>
<tr>
<th>Relay</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Relay 1 Normally closed (nc)</td>
</tr>
<tr>
<td>42</td>
<td>Relay 1 Normally open (no)</td>
</tr>
<tr>
<td>43</td>
<td>Relay 1 Common (c)</td>
</tr>
<tr>
<td>44</td>
<td>Relay 2 Normally closed (nc)</td>
</tr>
<tr>
<td>45</td>
<td>Relay 2 Normally open (no)</td>
</tr>
<tr>
<td>46</td>
<td>Relay 2 Common (c)</td>
</tr>
<tr>
<td>51</td>
<td>Relay 3 Normally closed (nc)</td>
</tr>
<tr>
<td>52</td>
<td>Relay 3 Normally open (no)</td>
</tr>
<tr>
<td>53</td>
<td>Relay 3 Common (c)</td>
</tr>
<tr>
<td>54</td>
<td>Relay 1 Normally closed (nc)</td>
</tr>
<tr>
<td>55</td>
<td>Relay 1 Normally open (no)</td>
</tr>
<tr>
<td>56</td>
<td>Relay 1 Common (c)</td>
</tr>
</tbody>
</table>

Control Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>Time mark 1</td>
</tr>
<tr>
<td>82</td>
<td>Time mark 2</td>
</tr>
<tr>
<td>83</td>
<td>External measuring period command</td>
</tr>
<tr>
<td>84</td>
<td>Stop recording</td>
</tr>
<tr>
<td>85</td>
<td>Count input A</td>
</tr>
<tr>
<td>86</td>
<td>Count input B</td>
</tr>
<tr>
<td>87</td>
<td>Time synchronization (remote sync.)</td>
</tr>
<tr>
<td>88</td>
<td>External feed rate change</td>
</tr>
<tr>
<td>89</td>
<td>Instantaneous value printout</td>
</tr>
<tr>
<td>90</td>
<td>Text 2\textsuperscript{1}</td>
</tr>
<tr>
<td>91</td>
<td>Text 2\textsuperscript{2}</td>
</tr>
<tr>
<td>92</td>
<td>Text 2\textsuperscript{3}</td>
</tr>
<tr>
<td>93</td>
<td>Text 2\textsuperscript{4}</td>
</tr>
<tr>
<td>94</td>
<td>Text print command</td>
</tr>
<tr>
<td>95</td>
<td>Supply remote synchronization +</td>
</tr>
<tr>
<td>96</td>
<td>Output remote synchronization</td>
</tr>
<tr>
<td>97</td>
<td>Not used</td>
</tr>
<tr>
<td>98</td>
<td>Not used</td>
</tr>
</tbody>
</table>

Serial Interface

<table>
<thead>
<tr>
<th>Sub-D Connector</th>
<th>DIN 41 652/9-Pole Socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS 485</td>
<td>RS 422</td>
</tr>
<tr>
<td>1. Screen</td>
<td>Screen</td>
</tr>
<tr>
<td>2. –</td>
<td>–</td>
</tr>
<tr>
<td>3. RXD/TXD(–)</td>
<td>RXD(–)</td>
</tr>
<tr>
<td>4. –</td>
<td>–</td>
</tr>
<tr>
<td>5. GND</td>
<td>GND</td>
</tr>
<tr>
<td>6. –</td>
<td>–</td>
</tr>
<tr>
<td>7. –</td>
<td>–</td>
</tr>
<tr>
<td>8. RXD/TXD(+)</td>
<td>RXD(+)</td>
</tr>
<tr>
<td>9. –</td>
<td>TXD(+)</td>
</tr>
</tbody>
</table>
Specifications
Mega-Log t/tl/tn/tp

Measurement Range:
0...1/10 V
0/4...20 mA using a shunt (included)
Voltage ≥ 1 MOhm, Current: 50 Ohm (external)

Input Impedance:
≤ 0.5% of full scale
≤ 0.2% of full scale
≤ 0.1% of full scale
≤ 0.1% of full scale/10K

Accuracy:
Base Accuracy
Long Term Drift
Power Up Drift
Temperature Drift

Operating Conditions:
Ambient Temperature
32...122°F (0...50°C) noncondensing
-4...158°F (-20...70°C)

Storage Temperature
-40...185°F (-40...+85°C)

Recording Paper

EMI:
Elect. fast transient (burst)
Electrostatic discharge
Electromagnetic fields
Normal mode noise rejection:
Common mode noise rejection:
Power failure:
Potential difference:
EMI emitted:
Display:

Dead Band:
Paper feed rate:
Feed Rate Types:
Presetable to:

Paper type:
Chart Divisions:
Recording Range Per Channel:
Supply ranges:

Electrical security:
Primary fuse:

Housing:
Housing Door:

Protection class:
Operational angle:
Installation depth:
Connections:

Standard, Event I, Event II (optional, external)
0, 5, 10, 20, 60, 120, 240, 300, 600, 1200, 1800, 3600, 7200 mm/hr

Selectable roll chart (approx. 24 m)
Z-fold (12 m)

Presetable in rough (5...15 divisions) and fine
(2, 5, 10) grid per channel

Part signal range: 0.001...100% in engineering units
Channel offset: 1 mm...100 mm preselectable

AC: 115, 230 (50/60 Hz ±10/-15%)
DC: 24 V ±20%

To VDE 0411/IEC 348

315 mA slow blow (230 V power supply)
630 mA slow blow (115 V power supply)

144 x 144 mm sheet steel for panel mounting

Selectable with latch or lock (optional)
with paper outlet, integrated display

NEMA 13 (IP 54 to DIN 40050)

90° ± 10° without limitation
90° ± 30° with limitation on recording

320 mm

Spade connectors (DIN 46244) 6.3 x 0.8 mm or
2.8 x 0.8 mm (Optional plug on screw terminals)
<table>
<thead>
<tr>
<th>Specification/Options</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>30 Event Text Integration</strong></td>
<td>Maximum 15 digit per event text entry</td>
</tr>
<tr>
<td><strong>Periodic Printout (Statistics)</strong></td>
<td>Additional integration of analog signal</td>
</tr>
<tr>
<td></td>
<td>Presettable per channel</td>
</tr>
<tr>
<td></td>
<td>Presettable integration time base (second, minute, hour, and day)</td>
</tr>
<tr>
<td></td>
<td>Four counters per analog input for:</td>
</tr>
<tr>
<td></td>
<td>- Presettable measuring period (10 digit)</td>
</tr>
<tr>
<td></td>
<td>- Day (10 digit)</td>
</tr>
<tr>
<td></td>
<td>- Month (12 digit)</td>
</tr>
<tr>
<td></td>
<td>- Totalizer (12 digit)</td>
</tr>
<tr>
<td><strong>Mathematic Module</strong></td>
<td>Analysis of analog input into: minimum,</td>
</tr>
<tr>
<td></td>
<td>maximum, and average values over selectable time cycles</td>
</tr>
<tr>
<td><strong>Housing Models</strong></td>
<td>Three additional channels. These mathematically combine the values on</td>
</tr>
<tr>
<td></td>
<td>the analog inputs (sum, difference, product, division)</td>
</tr>
<tr>
<td></td>
<td>Desktop model, laboratory housing</td>
</tr>
<tr>
<td><strong>Multi Range Voltage Board</strong></td>
<td>+/- 10 V, +/- 5 V, +/- 2 V, +/- 1 V, +/- 200 mV, +/- 100 mV, +/- 50 mV,</td>
</tr>
<tr>
<td></td>
<td>+/- 20 mV, linear squared; special currents using 50 ohm shunt</td>
</tr>
<tr>
<td></td>
<td>Compensation: Internal, External: 20°C, 50°C, 60°C, 70°C, 80°C all</td>
</tr>
<tr>
<td></td>
<td>galvanically isolated</td>
</tr>
<tr>
<td></td>
<td>Accuracy: see above</td>
</tr>
<tr>
<td></td>
<td>Thermocouple: additive +/- 2 K using internal reference.</td>
</tr>
<tr>
<td><strong>Resistive Thermometer</strong></td>
<td>Pt100, Pt100b, Pt100c, Pt1000,</td>
</tr>
<tr>
<td></td>
<td>Pt500 [-148...1112°F (-100...600°C)]</td>
</tr>
<tr>
<td></td>
<td>Ni100 [-76...356°F (-60...190°C)]</td>
</tr>
<tr>
<td></td>
<td>Accuracy: see above</td>
</tr>
<tr>
<td><strong>2 count inputs</strong></td>
<td>Maximum 25 Hz (function, see control inputs)</td>
</tr>
<tr>
<td><strong>Control Inputs</strong></td>
<td>To DIN 19 240: Feed rate change, time marks,</td>
</tr>
<tr>
<td></td>
<td>measurement external start and stop,</td>
</tr>
<tr>
<td></td>
<td>instantaneous value printout, 15 text printouts externally controlled,</td>
</tr>
<tr>
<td></td>
<td>time synchronization (in connection with control input &quot;remote</td>
</tr>
<tr>
<td></td>
<td>synchronization&quot;)</td>
</tr>
<tr>
<td></td>
<td>Function: Logical 0 equals -3...5 V</td>
</tr>
<tr>
<td></td>
<td>Logical 1 equals 12...30 V</td>
</tr>
<tr>
<td></td>
<td>a) External voltage source with</td>
</tr>
<tr>
<td></td>
<td>- Positive voltage impulses up to 24 V</td>
</tr>
<tr>
<td></td>
<td>- Input resistance: approx. 10 kOhm</td>
</tr>
<tr>
<td></td>
<td>- Bounce time: max. 5 ms</td>
</tr>
<tr>
<td></td>
<td>b) Potential-free contact</td>
</tr>
<tr>
<td><strong>Control Outputs:</strong></td>
<td>One control output for remote synchronization of</td>
</tr>
<tr>
<td></td>
<td>a number of recorders. On hour change:</td>
</tr>
<tr>
<td></td>
<td>momentary contact for 700 ms</td>
</tr>
<tr>
<td><strong>Auxiliary Voltage:</strong></td>
<td>Aux. voltage from recorder, 24 V DC, 100 mA</td>
</tr>
<tr>
<td><strong>Serial Interface:</strong></td>
<td>RS 232 C, RS 422, RS 485 (includes software)</td>
</tr>
</tbody>
</table>
**Specific Features**

**Mega-Log t**

**Function**
Fast line chart recorder for maintenance-free, long-term recording. High resolution linear array thermal print head

- For text
- Grid
- Signal curves

![Graph](image)

Fast spikes are recorded by the linear array thermal print head.

Minimum, maximum, and average values are printed in tabular format at preset intervals

**Specifications**

**Mega-Log t**

**Measurement Unit**

**Damping:**

Response time presettable: 0...999.9 s

Basic system damping: Neglectable

**Recording Unit**

**Recording System:**

Linear array thermal print head

**Channel Identification:**

Printout of channel identification number next to signal curve
1. **POWER SUPPLY**
   - H: 230 V AC 50/60 Hz
   - F: 115 V AC 50/60 Hz
   - D: 24 V DC
   - Y: Special Version

2. **MODEL**
   - 1: 144 x 144 panel mounted/roll chart paper cassette
   - 3: 144 x 144 panel mounting/2-fold paper cassette
   - 2: Desk top model/roll chart paper cassette (rubber feed and mains cover)
   - 4: Desk top model/2-fold paper cassette (rubber feed and mains cover)
   - 6: Laboratory housing I (for units without HW options with roll chart paper cassette)
   - 5: Laboratory housing I (for units without HW options with Z-fold paper cassette)
   - 7: Laboratory housing II (for units with HW options with roll chart paper cassette)
   - 8: Laboratory housing II (for units with HW options with Z-fold paper cassette)
   - A: Wall cabinet IP65, roll chart paper cassette W x H x D - 600 x 321 x 400 mm
   - B: Wall cabinet IP65, Z-fold paper cassette W x H x D - 600 x 321 x 400 mm
   - Y: Special models

3. **OPERATING LANGUAGE/PROGRAM**
   - 1: American
   - 2: American with 30 event texts
   - Y: Special version

4. **FRONT DOOR AND PAPER ILLUMINATION**
   - A: Door (low reflection)
   - B: Door with lock (low reflection)
   - E: Door with paper illuminations
   - F: Door with lock, paper illumination

5. **SIGNAL PREPARATION AND EVALUATION**
   - A: Without preparation
   - B: MM - mathematical module
   - C: INT - Integration
   - D: SA - Periodic statistic printout of maximum/minimum/average values
   - E: MM + INT
   - F: MM + SA
   - G: INT + SA
   - H: MM + INT + SA
   - I: DPC = Dynamic process control
   - K: DPC + MM
   - L: DPC + INT
   - M: DPC + SA
   - N: DPC + MM + INT
   - O: DPC + MM + SA
   - P: DPC + INT + SA
   - Q: DPC + MM + INT + SA

6. **COUNT INPUTS/CONTROL INPUTS I**
   - 0: Without count inputs/control inputs I
   - 1: C1 - 2 count inputs
   - 2: TMC - 2 time marks
   - 3: REM - External control inputs
   - 4: CI + TMC
   - 5: CI + REM
   - 6: TMC + REM
   - 7: CI + TMC + REM

7. **CONTROL INPUTS II**
   - 0: Without control inputs II
   - 1: EF - External feed rate change
   - 2: MOM - Instantaneous value printout
   - 3: ETP - 15 selectable texts (printout)
   - 4: EF + MOM
   - 5: EF + ETP
   - 6: ETP + MOM
   - 7: EF + MOM + ETP

8. **FURTHER INPUTS/OUTPUTS**
   - A: Without further outputs
   - B: RS232 - Serial Interface RS 232 (+128 K) [+512 K]
   - C: RS4 - Serial interface RS 485/422 (+128 K) [+512 K]
   - D: SYNC - remote synchronization
   - E: REL - Relay output
   - F: RS232 + REL (+128 K) [+512 K]
   - G: RS4 + REL (+128 K) [+512 K]
   - H: RS232 + SYNC (+128 K) [+512 K]
   - I: RS4 + SYNC (+128 K) [+512 K]
   - J: RS232 + REL + SYNC (+128 K) [+512 K]

9. **INPUTS CHANNEL 1**
   - 1: Standard input 0-1/10 V, 0/4-20 mA
   - 6: Multi-function input (for ranges see technical information)
   - Y: Special versions

10. **INPUTS CHANNELS 2 - 6**
    - 0: Channel 2 not required (only one-channel versions)
    - 1: Standard input 0-1/10 V, 0/4-20 mA
    - 5: Loop power supply (24 V DC 25 mA)
    - 6: Multi-function input (for ranges see specifications)
    - Y: Special versions
**Specific Features**

**Mega-Log tl**

**Function**
Fast line chart recorder using patented overwrite technology

- High resolution linear array thermal print head for text, grid, and Safetyline.
- 1, 2, or 3 colored curves for fast channel identification.

Fast spikes are recorded by the linear array thermal print head.

Minimum, maximum, and average values are printed in tabular format at preset intervals.

The Mega-Log tl can be programmed to use its patented overwrite technology to overprint limit infringements in color.

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**Specifications**

**Mega-Log tl**

**Measurement Unit**

**Damping:**

**Recording Unit**

**Pens**

**Color Sequence**

Response time presettable: 0...999.9 s
Basic system damping: Neglectable

Line length: approximately 1500 m at 20 mm/h

Channel 1: blue
Channel 2: red
Channel 3: green
Signal curves are underlayed by Safetyline, thermal line. Additional channel identification via curve numbering.
# Order Code

**Mega-Log tl**

## POWER SUPPLY
- H: 230 V AC 50/60 Hz
- F: 115 V AC 50/60 Hz
- D: 24 V DC
- Y: Special Version

## MODEL
1. 144 x 144 panel mounted/roll chart paper cassette
2. Desk top model/roll chart paper cassette (rubber feed and mains cover)
3. Desk top model/roll chart paper cassette (rubber feed and mains cover)
4. Laboratory housing I (for units without HW options with roll chart paper cassette)
5. Laboratory housing II (for units without HW options with Z-fold paper cassette)
6. Laboratory housing I (for units with HW options with roll chart paper cassette)
7. Laboratory housing II (for units with HW options with Z-fold paper cassette)
8. Wall cabinet IP65, roll chart paper cassette W x H x D - 600 x 321 x 400 mm
9. Wall cabinet IP65, Z-fold paper cassette W x H x D - 600 x 321 x 400 mm
- Y: Special models

## OPERATING LANGUAGE/PROGRAM
- 1: American
- 2: American with 30 event texts
- Y: Special version

## FRONT DOOR AND PAPER ILLUMINATION
- A: Door (low reflection)
- B: Door with lock (low reflection)
- D: Door with paper illuminations
- F: Door with lock, paper illumination

## SIGNAL PREPARATION AND EVALUATION
- A: Without preparation
- B: MM - mathematic module
- C: INT - Integration
- D: SA - Periodic statistic printout of maximum/minimum/average values
- E: MM + INT
- F: MM + SA
- Q: INT + SA
- H: MM + INT + SA
- I: DPC = Dynamic process control
- K: DPC + MM
- L: DPC + INT
- M: DPC + SA
- N: DPC + MM + INT
- O: DPC + MM + SA
- P: DPC + INT + SA
- Q: DPC + MM + INT + SA

## COUNT INPUTS/CONTROL INPUTS I
- 0: Without count inputs/control inputs I
- 1: CI - 2 count inputs
- 2: TMC - 2 time marks
- 3: REM - External control inputs
- 4: CI + TMC
- 5: CI + REM
- 6: TMC + REM
- 7: CI + TMC + REM

## CONTROL INPUTS II
- 0: Without control inputs II
- 1: EF - External feed rate change
- 2: MOM - Instantaneous value printout
- 3: ETP - 15 selectable texts (printout)
- 4: EF + MOM
- 5: EF + ETP
- 6: ETP + MOM
- 7: EF + MOM + ETP

## FURTHER INPUTS/OUTPUTS
- A: Without further outputs
- B: RS232 - Serial Interface RS 232 (+128 K) [+512 K]
- C: RS4 - Serial Interface RS 485/422 (+128 K) [+512 K]
- D: SYNC - remote synchronization
- E: REL - Relay output
- I: RS232 + REL (+128 K) [+512 K]
- J: RS4 + REL (+128 K) [+512 K]
- K: RS232 + SYNC (+128 K) [+512 K]
- L: RS4 + SYNC (+128 K) [+512 K]
- M: RS232 + REL + SYNC (+128 K) [+512 K]

## INPUTS/OUTPUTS CHANNEL 1
- 1: Standard input 0-1/10 V, 0-4-20 mA
- 6: Multifunction input (for ranges see technical information)
- Y: Special versions

## INPUTS/OUTPUTS CHANNELS 2 - 3
- 0: Channel not required (only one-channel versions)
- 1: Standard input 0-1/10 V, 0-4-20 mA
- 6: Multifunction input (for ranges, see specifications)
- Y: Special versions

## LOOP-POWER SUPPLY 24 V DC 25 mA ±10%
- A: Without loop-power
- B: One loop-power supply
- C: Two loop-power supplies
- D: Three loop-power supplies
- Y: Special version

## PEN LIFT/LOWER FUNCTION
- 0: Without pen lift/lower function
- 1: Channel 1 with pen lift/lower function
- 2: Channel 2 with pen lift/lower function
- 3: Channel 3 with pen lift/lower function
- 4: Channel 1 and 2 with pen lift/lower function
- 5: Channel 1 and 3 with pen lift/lower function
- 6: Channel 2 and 3 with pen lift/lower function
- 7: All channels with pen lift/lower function

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Specific Features
Mega-Log tn

Function
Fast color line chart recorder using patented overwrite technology.
- High resolution linear array thermal print head for text, grid, and Safetyline.
- 2, 3, or 6 colored curves for fast channel identification

Specifications
Mega-Log tn

Measurement Unit
Damping:

Recording Unit
Pens
Dots/Color Chamber
Color Sequence

Response time presettable:
0...999.9 s
Basic system damping: Neglectable

Two-, three-, or six-channel pen wheel
Two- and three-channel versions:
Channel 1: blue
Channel 2: red
Channel 3: green

Six-channel version:
Channel 1: violet
Channel 2: brown
Channel 3: black
Channel 4: green
Channel 5: blue
Channel 6: brown

Signal curves are underlayed by Safetyline, thermal line. Additional channel identification via curve numbering.

Fast spikes are recorded by the linear array thermal print head.
Minimum, maximum, and average values are printed in tabular format at preset intervals.
The Mega-Log tn can be programmed to use its patented overwrite technology to overprint limit infringements in color.
1  POWER SUPPLY  
H  230 V AC 50/60 Hz  
F  115 V AC 50/60 Hz  
D  24 V DC  
Y  Special Version  

2  MODEL  
1  144 x 144 panel mounted/roll chart paper cassette  
2  144 x 144 panel mounting/z-fold paper cassette  
3  Desk top model/roll chart paper cassette (rubber feed and mains cover)  
4  Desk top model/z-fold paper cassette (rubber feed and mains cover)  
5  Laboratory housing I (for units without HW options with roll chart paper cassette)  
6  Laboratory housing II (for units with HW options with roll chart paper cassette)  
7  Laboratory housing II (for units with HW options with z-fold paper cassette)  
A  Wall cabinet IP65, roll chart paper cassette W x H x D - 600 x 321 x 400 mm  
B  Wall cabinet IP65, z-fold paper cassette W x H x D - 600 x 321 x 400 mm  
Y  Special models  

3  OPERATING LANGUAGE/PROGRAM  
1  American  
2  American with 30 event texts  
Y  Special version  

4  FRONT DOOR AND PAPER ILLUMINATION  
A  Door (low reflection)  
B  Door with lock (low reflection)  
E  Door with paper illumination  
F  Door with lock, paper illumination  

5  SIGNAL PREPARATION AND EVALUATION  
A  Without preparation  
B  MM - mathematic module  
C  INT - Integration  
D  SA - Periodic statistic printout of maximum/minimum/average values  
E  MM + INT  
F  MM + SA  
G  INT + SA  
H  MM + INT + SA  
I  DPC - Dynamic process control  
K  DPC + MM  
L  DPC + INT  
M  DPC + SA  
N  DPC + MM + INT  
O  DPC + MM + SA  
P  DPC + INT + SA  
Q  DPC + MM + INT + SA  

6  COUNT INPUTS/CONTROL INPUTS I  
0  Without count inputs/control inputs  
1  CI - 2 count inputs  
2  TMC - 2 time marks  
3  REM - External control inputs  
4  CI + TMC  
5  CI + REM  
6  TMC + REM  
7  CI + TMC + REM  

7  CONTROL INPUTS II  
0  Without control inputs II  
1  EF - External feed rate change  
2  MOM - Instantaneous value printout  
3  ETP - 15 selectable texts (printout)  
4  EF + MOM  
5  EF + ETP  
6  ETP + MOM  
7  EF + MOM + ETP  

8  FURTHER IN/OUTPUTS  
A  Without further outputs  
B (N) [V]  RS232 - Serial interface RS 232 (+128 K) [+512 K]  
C (O) [W]  RS485/422 (+128K) (+512 K)  
D  SYNC - remote synchronization  
E  REL - Relay output  
F (P) [X]  RS232 + REL (+128 K) [+512 K]  
G (Q) [Y]  RS4 + REL (+128 K) [+512 K]  
H (R) [Z]  RS232 + SYNC (+128 K) [+512 K]  
I (S) [T]  RS4 + SYNC (+128 K) [+512 K]  
K (T) [U]  RS232 + REL + SYNC (+128 K) [+512 K]  
L (U) [V]  RS4 + REL + SYNC (+128 K) [+512 K]  

9  NUMBER OF ANALOG INPUTS  
2  Two analog inputs  
3  Three analog inputs  
6  Six analog inputs  

10 - 11  IN/OUTPUTS CHANNELS 1 - 2  
1  Standard input 0-1/10 V, 0-4/20 mA  
6  Multi-function input (for ranges see technical information)  
Y  Special versions  

12 - 15  IN/OUTPUTS CHANNEL 3 - 6  
0  Channel not required  
1  Standard input 0-1/10 V, 0-4 - 20 mA  
5  Loop-power supply (24 V DC 25 mA)  
6  Multi-function input (for ranges, see specifications)  
Y  Special versions
Specific Features
Mega-Log tp

Function
Fast six-channel color dot chart recorder
- High resolution linear array thermal print head for dot to dot connecting line, text, and grid.
- Six colored curves

Specifications
Mega-Log tp

Measurement Unit

Damping:
Scan time for all six inputs:
7.5 seconds
Presetable filter and intelligent print function

Recording Unit

Pens
Six channel pen wheel

Dots/color
500,000
Channel 1: violet
Channel 2: red
Channel 3: black
Channel 4: green
Channel 5: blue
Channel 6: brown

Color Sequence

Print cycle
7.5 seconds for all six channels
1 POWER SUPPLY
   H 230 V AC 50/60 Hz
   F 115 V AC 50/60 Hz
   D 24 V DC
   Y Special Version

2 MODEL
   1 144 x 144 panel mounted roll chart paper cassette
   2 144 x 144 panel mounting 2-fold paper cassette
   3 Desk top model roll chart paper cassette (rubber feed and mains cover)
   4 Desk top model 2-fold paper cassette (rubber feed and mains cover)
   5 Laboratory housing (for units without HW options with roll chart paper cassette)
   6 Laboratory housing (for units without HW options with 2-fold paper cassette)
   7 Laboratory housing (for units with HW options with roll chart paper cassette)
   8 Laboratory housing (for units with HW options with 2-fold paper cassette)
   A Wall cabinet IP65, roll chart paper cassette W x H x D - 600 x 321 x 400 mm
   B Wall cabinet IP65, 2-fold paper cassette W x H x D - 600 x 321 x 400 mm
   Y Special models

3 OPERATING LANGUAGE/PROGRAM
   1 American
   2 American with 30 event texts
   V Special version

4 FRONT DOOR AND PAPER ILLUMINATION
   A Door (low reflection)
   B Door with lock (low reflection)
   E Door with paper illuminations
   F Door with lock, paper illumination

5 INPUTS CHANNEL 1 - 6
   A Standard inputs (0-1/10 V, 0/4 - 20 mA)
   A Multifunction input

5 SIGNAL PREPARATION AND EVALUATION
   A Without preparation
   B MM - mathematic module
   C INT - Integration
   D SA - Periodic statistic printout of maximum/minimum/average values
   E MM + INT
   F MM + SA
   G INT + SA
   H MM + INT + SA
   I DPC = Dynamic process control
   K DPC + MM
   L DPC + INT
   M DPC + SA
   N DPC + MM + INT
   O DPC + MM + SA
   P DPC + INT + SA
   Q DPC + MM + INT + SA

6 COUNT INPUTS/CONTROL INPUTS 1
   0 Without count inputs/controls inputs I
   1 CI - 2 count inputs
   2 TMC - 2 time marks
   3 REM - External control inputs
   4 CI + TMC
   5 CI + REM
   6 TMC + REM
   7 CI + TMC + REM

7 CONTROL INPUTS II
   0 Without control inputs II
   1 EF - External feed rate change
   2 MOM - Instantaneous value printout
   3 ETP - 15 selectable texts (printout)
   4 EF + MOM
   5 EF + ETP
   6 ETP + MOM
   7 EF + MOM + ETP

8 FURTHER IN/OUTPUTS
   A Without further outputs
   B (N) [W] RS232 - Serial Interface RS 232 (+128 K) [+512 K]
   C (O) [W] RS 4 - Serial interface RS 485/422 (+128 K) (+512 K)
   D SYMC - remote synchronization
   E REL - Relay output
   F (P) [X] RS232 + REL (+128 K) [+512 K]
   G (O) [Z] RS4 + REL (+128 K) [+512 K]
   H (N) [I] RS232 + SYMC (+128 K) [+512 K]
   I (S) [2] RS4 + SYMC (+128 K) [+512 K]
   K (T) [S] RS232 + REL + SYMC (+128 K) [+512 K]
   L (U) [4] RS4 + REL + SYMC (+128 K) [+512 K]