

MDT-40 Machine Data Transducer Function Summary.

How it can improve your manufacturing productivity.



Actual size: 5" H x 9" W.

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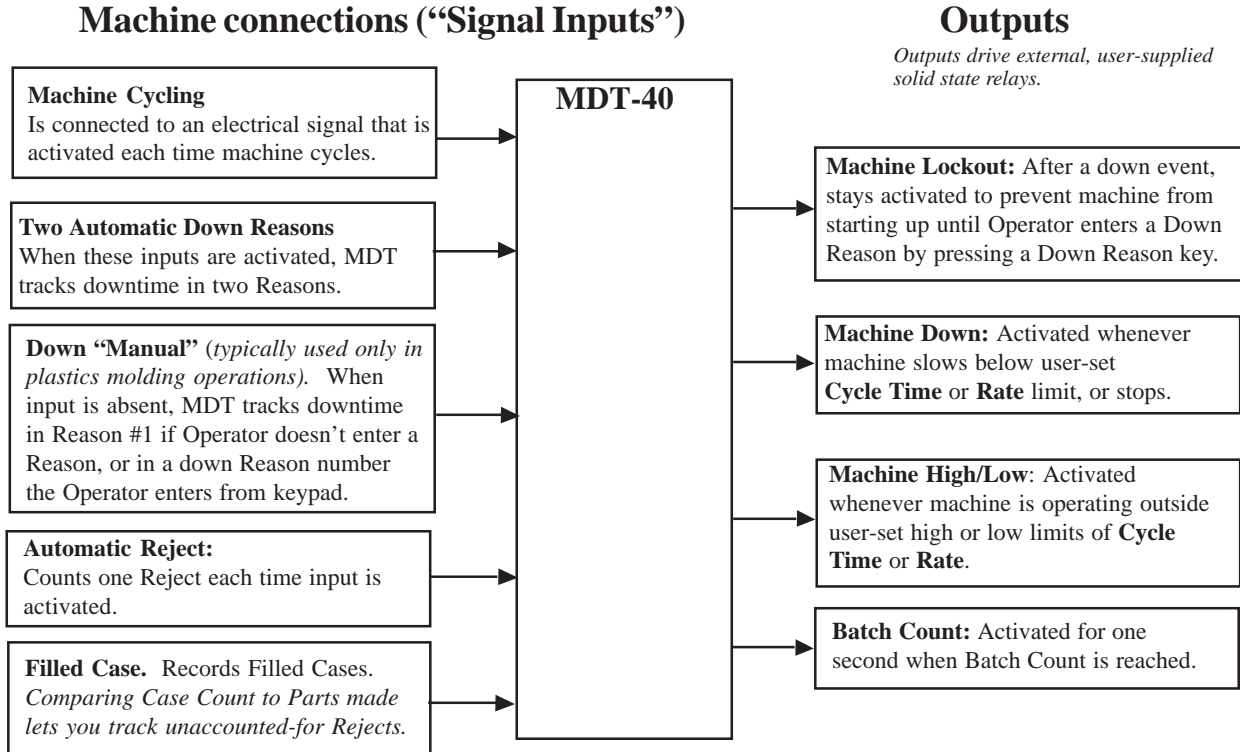
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The MDT-40 connects directly and easily to any production machine.

MDT uses existing electrical signals in the machine, so no interfacing relays or add-on interface devices are needed. MDT Inputs accept switch and relays, proximity and photo sensors and any voltage from 24V to 120V, AC or DC.

Multiple inputs and outputs give MDT-40 flexibility to monitor all types of processes.

Below is a summary of the MDT's machine six **Signal Inputs** and four **Outputs**.

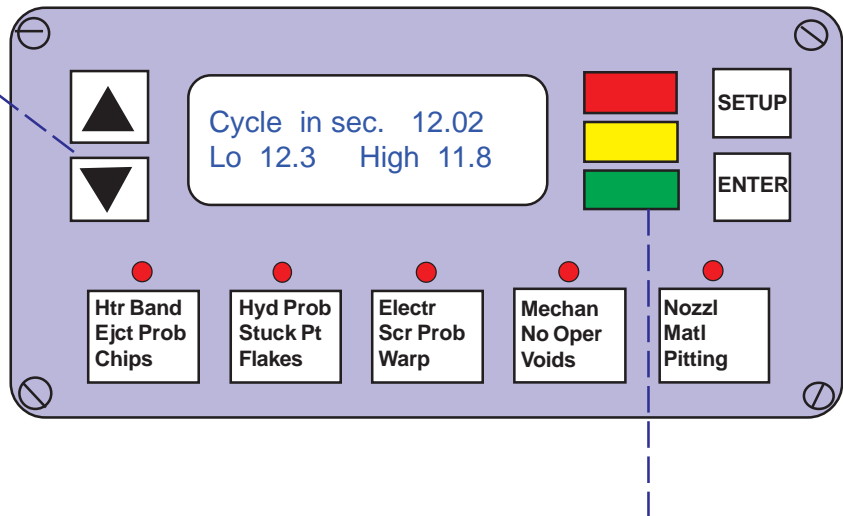


Real-time Data Function displays keep Operators informed, and your processes on target.

Pressing “up” or “down” arrow scrolls display to desired **Data Function**.

MDT displays name of **Data Function** and other information, such as user-set high and low limits which are download from computer with each Job.

In this example, the last **Cycle Time** was **12.02** seconds and the limits were **12.3** and **11.8** seconds. Similarly, you can display **Rate** functions and limits in per hour or per minute.



Annunciators and associated outputs alert personnel to problems.....immediately.

Use outputs to drive horns, or light tree. Software will also duplicate these alarms in its real-time screens.

Red Annunciator (and Machine Down Output) are activated when machine slows or stops.

Yellow Annunciator (and Machine High/Low Output) are activated when machine is operating outside limits.

Green Annunciator is activated when machine is operating “on target” (within **Cycle Time** or **Rate** limits).

Improve your manufacturing productivity with a real-time connection to the shop floor.

Cycle Time and Rate displays (with high/low alarm limits) ensure your Operators keep process at optimum.

Average Cycle Time and Rate displays enable Operators to continuously monitor their productivity against Job standards.

Hours and Parts to Go display enables operators to plan for Job change-over.

Downtime and Reject Reasons can be quickly entered at machine by Operators. MDT also has 2 direct-machine connected **Automatic Down Reason** inputs and one **Automatic Reject** input.

Cycle Time, Rate:	Machine Cycle time and Rate, instant and average*
Run, Down, Setup Time:	Total time in run, down and setup modes
Dwell/Process Time:	Duration (on time) of Machine Cycling Signal*
Good Parts:	# of Machine cycles times Parts Factor = Good Parts
Reject Parts:	Manually enter and auto reject in Down and Setup
Parts and Hours to go:	Number of parts and time to complete current Job
Product Identification:	Product Identification--alphanumeric**
Product Description:	Product Description--alphanumeric**
Work Order:	Work Order Identification--alphanumeric **
Batch Size, Count:	Size of Batch**, current number of parts in Batch
Case Size, Count:	Number of parts in case, current # of cases filled**

(*) All values can be displayed in seconds or minutes and per minute or per hour

(**) Values downloaded from system PC for each Job

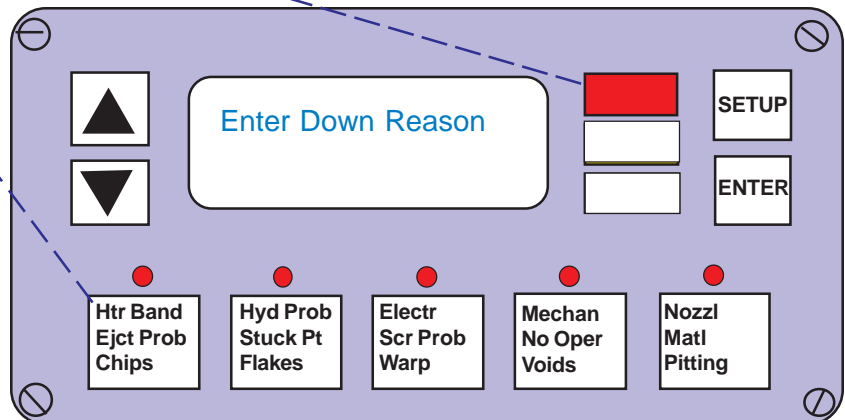
Record, analyze, then eliminate causes for Downtime.

You can define up to 999 **Down Reasons** per system, then assign a particular group of 10 Reasons to each machine. When the machine slows below a user-set threshold or stops, the MDT prompts Operator to enter a Down Reason by displaying **Enter Down Reason** and illuminating the red Annunciator and blinking all 5 small round, red indicators over each Down Reason key.

The MDT has a user-changeable Down Reason menu which lists the current Reasons you're concentrating on. The top two rows are the 10 Down Reasons. *The bottom row lists 5 Reject Reasons--see next page.*

When Operator presses one of the five **Down Reason** keys, the indicator over the key stays on (and others go out) to identify the Reason entered. If desired, the Operator can change all downtime to a new Reason, or he can

segment the time into multiple Reasons (as for example during Setup to record various phases of Setup procedure). If the Down cause was due to one of the direct-machine-connected **Automatic Down Reasons**, no Operator input is required. You can continuously improve your processes because as you eliminate/minimize a particular Down causes, replace it with another...and easily change the MDT menu (because we provide a menu template in Word).



Machine Down Output can activate a horn, light tree or other “alarm” device.

For operations where one Operator services multiple machines, the user-set, job-specific machine operating cycle time or rate limits can be used to automatically alarm on an out-of-spec machine operation. Of course the machine status is also reflected in real-time on the systems PC screens.

Use machine “Lockout” to ensure Operator enters Down Reason.

MDT's Lockout output can be used to prevent machine restart until Operator enters a Down Reason. Note: to avoid possible operator injury, Lockout should only be used with machines which have separate on/off circuits. Lockout output should not be connected to a machine with a single on/off switch, such that the machine could start up when the Operator enters a Down Reason.

Special Functions help you analyze productivity, eliminate paper-based records and improve profitability by enabling you to develop accurate, “real-world” Job standards.

Segmenting a Down event into multiple Reasons lets you analyze your processes accurately.

Send a help call without Operator having to leave machine.

Job Change: You can develop accurate product standards because system tracks runtime, downtime, part and reject count by product ID and Work Order.

Parts Factor (number of parts made each machine operation) is downloaded into MDT for each Job. But if a cavity or die is removed, the Operator can change it from MDT.

Special Functions	
Job Change:	Operator can call up next Job in Job Queue.
Enter Rejects:	Operator can enter quantity of Rejects in up to 5 categories.
Enter Reason:	When machine goes down, MDT prompts operator for Reason.
Change Reason:	Enables Operator to change <u>entire</u> Reason to a new Reason.
Segment Reason:	Enables Operator to “segment” a down event into multiple Reasons--- for example during Job change you can segment a down event into “clean up”, “change mold”, “test”, etc.
Help Call:	Activating Help causes that machine’s display line at computer to change color to signify need for assistance.
Production Hold:	Used when a machine isn’t going to run on a scheduled shift.
Parts Factor:	Used to change number of parts made/processed each cycle.
End Batch:	Operator can terminate a Batch count.

Record, analyze, then eliminate causes of Rejects.

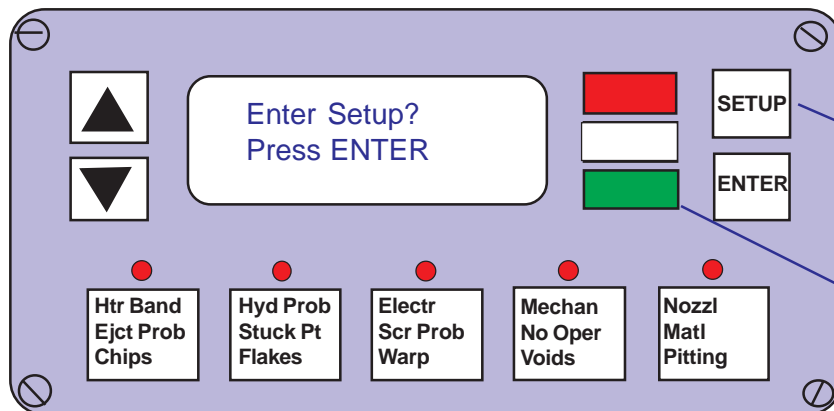
Operator can enter Rejects in 5 Reasons by referring to menu which you customize with your Reasons (*bottom row*). Similar to **Down Reasons**, you can define up to 999 **Reject Reasons** and assign each machine it’s own list.....and change the list at any time.

Htr Band Ejct Prob Chips	Hyd Prob Stuck Pt Flakes	Electr Scr Prob Warp	Mechan No Oper Voids	Nozzl Matl Pitting
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Improve inventory accuracy: In addition to recording Production counts, you have a choice with Rejects: You select that MDT automatically reject parts or count as good when MDT is in a down and Setup condition.

Improve your Job costing accuracy:

By automatically tracking actual Job **Run Time**, **Down Time**, **Good Parts** and **Reject Parts** and **Setup Time**, you can determine if your Job Standards are accurate. You enter **Setup** with a simple keypress as follows:



MDT tracks Setup Time when Operator presses SETUP key to enter (and exit) Setup mode.

Red and Green Annunciators are “on” when in SETUP.