Tomix TNOS System
Update 2 (2019-12) Notes and Comments in English
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Use alongside the Tomix Japanese document at
www.tomytec.co.jp/tomix/necst/5701tnos/images/update/tnosupdatamanual201912.pdf

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TOMIX 5701 TNOS New Operation Control System
The Tomix TNOS new control system will be updated with additional functions and layout plans. Please read the explanation carefully and understand it before using the product properly. At the same time, please also read the instructions that come with the Basic Set.

Functions added by this 2nd TNOS Control Unit Update
- Brightness adjustment function
- Additions of Point [Track Switch] throwing function and sensors for Forwarding Mode
- Layout Plan [13] added

[in gray box on right] First, the TNOS Memory Card needs to be updated. Please update the Memory Card from the TNOS Update download page http://www.tomytec.co.jp/tomix/necst/5701tnos/tnos-update.html

[in wide box, left side – same as 1st Update]
About the TNOS dedicated Memory Card (5701)
The Memory Card included in the TNOS Basic Set is for the Control Unit T-CU01 only.
The Memory Card has a protect switch. When updating, unlock the protect switch to write the data to the Memory Card. [drawing shows UNLOCK position (up)]
To prevent writing of data to the Memory Card and to prevent accidental erasure, set this switch to the “LOCK” side. [drawing shows LOCK position (down)]

[in wide box, right side – same as 1st Update]
Memory Card
1. Do not put a heavy object on top. It may cause a malfunction.
2. Do not place the product in a place where it gets hot, such as inside a car that gets hot or in direct sunlight.
3. Do not disassemble or modify.
4. Do not subject to strong impact, bend, drop, or soak in water.
5. Do not touch the metal terminals with your hands or metal.
6. Do not put labels or stickers on the card.
7. Do not use in locations subject to static electricity or electrical noise. If the unit is affected by static electricity on the card and does not operate normally, remove the card from the Control Unit and then insert it again.
8. Do not place in a place where corrosive gas is generated.
10 Never format (initialize).
11. Do not insert or remove the card while the Control Unit is starting up.

[bottom half, left side – similar to 1st Update]
About updating the TNOS Control Unit
To update the Control Unit, it is first necessary to install the updated data on the dedicated Memory Card using the TNOS Update Tool [on the TNOS update page of the Tomix website]. After updating the Memory Card, then perform the update [to the Control Unit].
* When updating, please disconnect the ND Hub, etc., and perform it with the Control Unit alone.

Fig. 1-1 [in box]
1. With the Control Unit powered off, insert the dedicated Memory Card, which you have updated with the TNOS Update Tool, into the Control Unit.

2. While holding down the Setup button, turn the Control Unit power on.
3. Press the Select Layout Plan button
* The currently version will be displayed.
* The current product is displayed as “1.03.”
4. Use the dial to select the new version number.
* Select “1.04” as the version this time.
5. Press the Enter button. The update will start.
6. When the update is completed, “1.04.” is displayed.
* A decimal point appears after the “4”.
7. Turn the Control Unit off and then on again.
* **[new]** When operating after this update, turn on the power to the ND Hub(s) first, and then turn on the Control Unit power. If an ND Hub is turned on later, turn off the Control Unit and then turn it on again.

[bottom half, right side]
Fig. 1-2 [in box]
If the update is not completed correctly, the screen will appear as shown to the right. Please update again. [drawing shows “E.60.” error code; one of the additional error codes added in the 1st Update (2019-02].
If there is no update file, the screen is displayed as shown on the right. Make sure the Memory Card update is completed correctly. [drawing shows “E.61.” error code]

- Brightness Adjustment Function:

The brightness of the Control Unit numerical display and signal lamp can now be adjusted.
Fig. 2 [in box]
1. With the Control Unit turned on, press the Setup button.
2. Turn the dial and select “P.br7” to change the display brightness, or “P.brC” to change the signal lamp [LED] brightness, and press the Enter button.
3. Change the desired brightness from 1 to 20 with the dial and press the Enter button to set. The brightness you set is remembered even when the power is turned off.

- Brightness adjustment method from TCL command argument:

Command /Argument	Function
SB n	Set Brightness of the display (n: 1 to 20)
SE n	Set brightness of the signal display lamps (n: 1 to 20)

* For TCL commands, refer to the 1st Update.
[For a more complete table of TCL commands in English, see my separate **“Tomix TNOS Command Language (TCL) Notes”** document.]

[Page 2]
- **Addition of Point [Track Switch] function and sensors dedicated to Forwarding Mode**

By adding a function to throw any Point using the Control Unit and TCL commands, it is now possible to install a yard in any section [block] and switch it in Forwarding Mode. Along with this, in order to achieve more flexible movement in Forwarding Mode, we added sensors dedicated to Forwarding Mode only (shown in red numbers [below]) to existing Layout Plans [1, 2, 3, 8, 9, 10 and 11 – see diagrams in Tomix 2nd Update document].

[Page 2, lower left]
<Sensors dedicated to Forwarding Mode>
- Sensors dedicated to Forwarding Mode are not used in normal Automatic Operation.
- To perform an operation using the sensors dedicated to Forwarding Mode, use a personal computer to write a TCL file (it is necessary to create an operation program).

For details, please refer to the explanation about “TCL Function” in the 1st Update (2019-02). [I corrected apparent typo “2019-12”]

<Wiring of the yard>

- If there are multiple sensors with the same sensor numbers, use the connectors on both sides of the sensor as shown in the figure to the left.
- Please wire the sensors in series [daisy-chain] so that there is only one sensor cable to connect to the appropriate sensor port on the ND Hub.
- If there are not enough free ports for Points when expanding the yard, it is possible to add Points and expand the yard by adding an ND Hub.

[Page 2, lower right]
[in box]
Example of Development with 1 yard
[see layout diagram]
When forwarding the train to the yard, first throw P1-3 to the curved route, and depending on the progress, throw P1-4 as well to maintain easterly movement of the train, to run 1.1(1,5)→ 1,4→1.7.

Fig. 3

- **How to throw Points by operating the Control Unit**

1. With the Control Unit power turned on, press the Setup button.
2. Turn the dial to display "P.Pnt" then press the Enter button.
3. Use the dial to select the desired Point(s). Turn dial left to display "ALL" if you want to select all Points.
4. Press the Enter button to throw the selected Points.

- **How to throw Points using a TCL Command**

Command/Argument	Function
CP g,h	Throw Point g to position h (h=0 straight, h=1 curved)

* The "-" in the Point number is described by "." ("P1-1" is "1.1")
For more information on TCL commands, refer to the 1st Update.
[For a more complete table of TCL commands in English, see my separate **"Tomix TNOS Command Language (TCL) Notes"** document.]

[Pages 3 and 4]

- **Addition of Layout Plan**

New Layout Plan with wiring and Operation sequences *For Layout Plans, refer to the manual that came with the Basic Set.
The diagram of each Layout Plan is a reference diagram of the position of the sensors and the insertion direction of the DC Feeders.
The train length is based on the assumption that a 3-car train will be operated, so increase the number of track sections and adjust the distance between the sensors and the insulated block gaps for longer trains.
* The number of gap joiners shown is the required number when gaps are installed on the branching end of a Point [Track Switch].
* If the length of each cable is not sufficient, please use extension cables.

[in gray box]
Please use this product after fully understanding how to use it. It does not support layouts other than the product program. We cannot answer any questions when using it for your own layout. Also, please note that we cannot answer questions about combinations with other companies' products.

Layout Plan: 13 (Compact)
Wiring /Train Placement/Block Sections/ Home Layout Plan
[see diagram: point-to-point with center passing siding; requires 1 ND Hub.]

Layout Plan: 13
Wiring/Train Placement/Block Sections/Home Layout Plan
[see diagram: point-to-point with center passing siding with center station; requires 1 ND Hub.]

Layout Plan: 13 (Development)
Wiring/Train Placement/Block Sections/Home Layout Plan
[see diagram: double-track point-to-point with two double crossovers, and center station; requires 1 ND Hub.]
* The sensors for Forwarding Mode are normally not used in Automatic Operation. To use the sensors for exclusive use in Forwarding Mode, it is necessary to write a TCL file (operation program) using a PC. For more information on TCL commands, refer to the 1st Update.
[For a more complete table of TCL commands in English, see my separate **"Tomix TNOS Command Language (TCL) Notes"** document.]

*If there is no station in Blocks 2 and 3 in "Operation Sequence Table 1"
Layout Plan 13: Operation Sequence Table 1 *For initial train position, place Train 1 at Block 1 and Train 1 at Block 4.
1. Passing Operation 1 2. Passing Operation 2 (with time difference).

*"Operation Sequence Table 2" has a station in Blocks 2 and 3
Layout Plan 13: Operation Sequence Table 2 *For initial train position, place Train 1 at Block 1 and Train 1 at Block 4.
3. Passing Operation 3 (stop at intermediate station) 4. Passing Operation 4 (stop at intermediate station/with time difference) 5. Passing Operation 5 (Train 1: passing through intermediate station. Train 2: stopping at intermediate station)

[right side]
* In addition to the item counts above [table], 2 (5812) branch cables are required separately.

* For S1-7 and S1-8, which have 2 sensors each as shown above [diagram], wire in series [daisy-chain] using the connectors on either side of either sensor, so that only one sensor is cabled directly to the ND Hub. [Also note the doubled DC Feeder connections for F1-2 and F1-3, spanning the double crossovers.]

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