

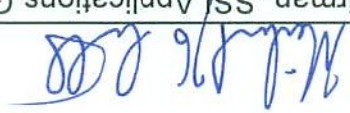
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Distribution: (this issue only)

This document contains 12 pages and was approved at Issue 7 by SSIAG at its meeting of 21 March 2012

This document forms SSIAG's interim guidance on this topic pending the production of an update to the relevant chapter(s) of the SSI Applications Manual.

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Issue 8

Crossing Stopping/Non-stopping Switch Data & Non Provision Of Power On Input (MSL Crossings only)

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SSI Applications Group

Crossing Stopping/Non-stopping Switch Data & Non provision of Power On input (MSL Crossings only)

1 DOCUMENT STATUS

This document was prepared for the SSI Signalling Principles Group ("SSISPG"). Issue Draft 3 was approved at the SSISPG on 10th August 2005, subject to minor changes. Issue 4 was updated in accordance with recommendations from that meeting, which have been checked and approved by the SSISPG members by e-mail. Issue 5 contains one further small correction, identified in the minutes, in Section 6.2.1.

Issue 6 has been updated in line with changes made during the commissioning as a result of a request by the T.I.C, and was approved at the SSI SPG meeting of 7 September 2005.

Issue 7 has been updated in line with SSIAG minute 09-075, and was approved subject to minor amendments at the SSIAG meeting of 21 March 2012.

Issue 8 has been updated to incorporate the minor amendments raised at the SSIAG meeting of 21 March 2012; see minute 12-028.

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3 PURPOSE OF PAPER

To show the data to be provided when using a Stopping/Non-stopping 2 position Switch instead of the one-shot button control shown in the SSI8003-100 series documents. The proposal is that when updating the SSI8003-100 series documents this method should be added as an alternative to the data included in SSI8003-102F.

Also included in this document are the changes associated with the non-provision of a Power On input for MSL Crossings.

4 SCOPE

This document relates to the data for the Stopping/Non-stopping controls to be commissioned in the Horsham scheme for the MSL Crossing at Warnham.

The data is an alternative to that shown in SSI8003-102F Section 1 which is based on the "AHBC Typical Circuits" Issue 2.0 as shown on sheet X03620. Changes will be required to the data in the following Sections of SSI8003-102G and -104D; Section 2 (X03600), Section 4 (X04200), Section 5 (X04400), Section 6 (X04500), Section 7 (X04600) and Section 8 (X04700). Consequential changes may also be required in the same Sections of SSI8003-104D.

For MSL Crossings in general the power arrangements are not dependent on batteries at the trackside and consequently the Power On input, monitoring the 110 volts a.c. supply to the charger, is not required. Changes will be required to SSI8003-106.

5 PRINCIPLES

The present Stopping/Non-stopping controls in the "AHBC Typical Circuits" Issue 2.0 (X03620) and the SSI data are based on receiving a Non-stopping input from the controlling Signalling Centre which then allows the Protecting Signal to clear immediately and the Crossing sequence to be initiated when the train passes the outermost strike-in point in that order.

Failure to receive the Non-stopping input leaves the Crossing in Stopping mode by default in which the Crossing is initiated when the train passes an inner strike-in point and clearance of the Protecting Signal is usually delayed until the Regulation Timer has exceeded its stated time.

The revised operating principles need the Signaller to select the mode required using a two-position switch and for each train to confirm his selection before the Protecting Signal will clear. Failure to confirm the selected mode when a train approaches the Crossing area results in the Confirm Button Indication flashing if the Protecting Signal is otherwise ready to clear.

Once the Signaller has selected the mode required and confirmed his selection he will be unable to change that selection until a train has passed the Protecting Signal and the latches have returned to their normal state, that is until the Confirm Button Indication is extinguished.

6 DATA STOPPING/NON-STOPPING CONTROLS

6.1 Identities

In total sixteen identities, eleven associated with the Stopping/Non-stopping switch, four with the Confirm button and one for the No-train Approaching feature, are required as shown in the following sections. In these identities "nn" is the Crossing identity and "s" is the Protecting Signal number which in the data examples in Sections 6.2, 6.3 and 6.4 are **PG** and **12** respectively.

6.1.1 Stopping & Non-stopping Switch Identities

Firstly, two identities associated with the Stopping/Non-stopping switch are required in the **BUT** file. The **B(nn)(Stop)NF** identity relates to a contact of the switch being made in Stopping (Normal) position and the **B(nn)(Stop)RF** identity to a contact of the switch being made in the Non-stopping (Reverse) position.

Secondly, four latches, two Button Latches, **LB(nn)(Stop)** and **LB(nn)(N-Stop)**, and two Stick Latches, **L(nn)(Stop)S** and **L(nn)(N-Stop)S**, are required in the **FLG** file. The Button Latches are used to register the position of the Stopping/Non-stopping switch and to control the generation of Panel Requests in the **POD** file. Normally one latch will be set and one unset at all times.

The two Stick latches are normally unset and the one corresponding to the present switch position will be set when the Confirm button is operated. The set Latch will be unset when the train passes the signal.

Finally, five requests, are required in the **QST** file. The Stopping Request and Non-stopping Request, **Q(nn)(Stop)N** and **Q(nn)(Stop)R**, are generated by data in the **POD** file when the switch is the Normal and Reverse position respectively. When these requests are processed in the **PRR** file they set the corresponding Button Latch and unset the opposite Button Latch and, if it was set at the time, the opposite Stick Latch. The latter forces the Signaller to Confirm the new requirement before the Protecting Signal can be cleared.

The generation of the above requests by the Stopping/Non-stopping switch is dependent on the wiring connections to the switch contacts being maintained to effect the necessary changes to the mode of operation of the Crossing. These connections therefore are continually monitored by data in the **POD** file and any illegal state will result in the generation of the single request, **QX(nn)(Stop)**, which returns all Latches to their normal start-up state when the request is processed in the **PRR** file.

So that the Signaller's actions in selecting the Stopping and Non-stopping switch positions can be reported by the Panel Processor for recording by the Technician's Terminal, duplicate Stopping and Non-stopping Requests, **Qd(nn)(Stop)N** and **Qd(nn)(Stop)R**, are generated by data in the **PBK** file when the switch is first placed the Normal and Reverse positions respectively. These requests are included in the **PRR** file with null data.

6.1.2 Confirm Button Identities

Firstly, two identities associated with the Confirm button are required in the **BUT** file. The **B(nn)(CONF)F** identity relates to the button push-to-make "F" contact which is used in the 1st stage of the confirmation process. The second identity, **B(nn)(CONF)TMZ** relates to the push-to-break button "TM" contact which is used in the 2nd stage of the confirmation process. Note the additional "Z" at the end of the identity which is necessary to provide an active transition in the 0-to-1 sense.

Secondly, a single Confirm Request identity, **Q(nn)(CONF)**, is required in the **QST** file. This is generated by the correct sequence of operation of the two Button identities.

Finally, a single Confirm Button Indication identity, **I(nn)(CONF)PBK**, which is required in the Flashable section of the **IND** file. This identity is used to provide a flashing indication in the Confirm button when a train is approaching the Crossing area but the Signaller has not confirmed the selected mode and the Protecting Signal is ready to clear. When the selected mode has been confirmed the identity is used to produce a steady indication in the Confirm button. The indication is extinguished when the train passes the Protecting Signal.

6.1.3 No-train Approaching Identity

A further single identity for a No-train Approaching Latch, **Ls(NTA)**, is required in the **FLG** file. This latch is normally set and is unset when a train is detected in the area approaching the Crossing when it is used to flash the Confirm Button Indication if the Signaller has not confirmed the selected mode.