

Product Type Approval Certificate

Full

This certificate is issued to:

Supplier name and address:	Hitachi Rail STS 11 Viola Place, Eagle Farm, QLD 4009
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In respect of:

Manufacturer:	Hitachi Rail STS
Place of manufacture:	United States of America
Product description:	<p>Microlok II Computer Based Interlocking for railway signalling including the Microlok Duplicated system with Seamless Changeover (MDSC) and Duplicated Ethernet connectivity.</p> <p><i>Annexure 1 – schedule of additional items</i> details items added in this type approval.</p> <p><i>Annexure 2 – Schedule of previously approved items</i> lists items approved in prior Microlok II type approvals.</p> <p><i>Note: Type approval does not control application data preparation tools (Development system, reverse compiler and application logic comparison tool) used by the AEO in providing engineering services for the product.</i></p> <p>This Type approval supersedes existing Microlok II Type approvals *08/0501 and *11/1101. Items from the superseded type approvals are included in annexure 2. Previous revisions have been approved and remain approved until the end of life or specific advice is issued.</p>
Use approved for:	<p>Use as a computer based railway signalling interlocking system in accordance with TfNSW standards as well as the manufacturer's documentation and application constraints.</p> <p>Conclusions about the suitability for use under any other circumstances are not made. Reliance on this approval by any other organisation is done so entirely at that organisation's own risk.</p>

Conditions of approval:

1. Site specific maintenance information is provided as part of the Asset Information handover during the asset life cycle transition from acquisition to operate and maintain.
2. The content of SPG 1230 *Design of Microlok II Interlocking* should be used as guidance material in the specific application design of interlockings using Microlok II.
3. The transmission system used for safety related data transmission must be a closed network in accordance with IEC 62280 *Railway Applications – Communications, signalling and processing systems – Safety related communication in transmission systems*.
4. The specific application designer must consult the supplier in the identification and control of cyber security risks.
5. The supplier and maintenance AEO are to regularly monitor and liaise regarding cyber security issues. Taking action as required to maintain the overall safety and reliability of the installed infrastructure.
6. The Safe-P protocol is not approved for use in the TfNSW heavy rail network. Its use has not been assessed.
7. The AEO is to have authorisation for the life cycle activity for the engineering service supported by specific competency and processes compliant with the product safety case. The maintainer will need to review and update their competency and learning management.
8. The Traffic Management System interface design is not type approved. Specific application design approval is to cover all aspects of the Microlok II to Traffic Management System interface design. Including Failure Modes and Effects analysis; Reliability Availability and Maintainability; potential common mode failures to confirm availability requirements are met.
9. The Traffic Management Systems is type approved to interface correctly to the Microlok II configuration being implemented.
10. The supplier must advise TfNSW ASA of any changes made to the product or system which may alter its identification, performance characteristics, form, fit, function, security or processes required for correct usage so that this approval can be reviewed and revised or reconfirmed.

Evaluating rail transport operator

Name:	Peter McGregor
Position:	Lead Signals & Control Systems Engineer, Asset Standards Authority, Transport for NSW
Signature:	
Date:	06-03-2020

Product approval pack reference number: qA890039

Annexure 1 - Schedule of additional items

Item	Part number	Revision	Description
Synchronisation PCB	N17066401 (Note this is the 12Vdc version)	07	PCB allowing 2 Microlok II units to connect to each other and operate seamlessly as a synchronised pair.
Communication PCB	N17066403	06	PCB allowing a Microlok II cardfile to connect directly to one or more Ethernets by means of 2 Ethernet ports.
Executive Software	N800501-0320 Rev CC3.2	CC 3.2	CPU firmware Check sum C147 CRC D9E8
External Connector	N39908001	01	48-way connector assembly for Sync and Comm PCB's. Provides RJ45 Ethernet sockets to allow direct connection to Ethernet networks using standard ether cables.
Maintenance Tool	N800503-0300	CC3.0	Maintenance tool to trouble shoot the system and view event logs.

Annexure 2 - Schedule of previously approved items

The Microlok II items type approved under *08/0501 and *11/1101 are listed below to provide a consolidated list of approved items.

Item	Part number	Revision	Description
Microlok II system cardfile	N1602101	Rev.0 or Later	Houses all applicable Microlok II system plug-in modules.
Microlok II system split cardfile	N169053-01	Rev. 6	Split card file. Use of a split card file to house both sides of a duplicated installation is unlikely to meet availability and maintainability requirements.
Microlok II Half Box	N18003901	Rev. 3	Compact card file 10 slots wide.
Central Processing Unit	N17061301	Rev. 15	Contains the 68332 CPU which executes application logic with proprietary executive software.
IN16 Vital Input (50V)	N17061003	Rev. 6	Supports 16 vital independent inputs at 50V. Does not have diode on the input stage.
IN16 Vital Input (12V)	N17061001	Rev. 6	Supports 16 vital independent inputs at 12V. Only for use in non-electrified areas.
IN32 – Non Vital Isolated Input Card	N17063701	Rev. 2	Supports 32 isolated non vital inputs.
16OUT Standard Vital Output (12V)	N17060501	Rev. 8	Supports 16 vital independent outputs at 12V.
16OUT 2 nd Generation Standard Output (12V)	N17066801	Rev. 2	Supports 16 vital non isolated outputs at 12V.
OUT32 – Non Vital Isolated Output Card	N17062701	Rev. 4	Supports 32 isolated non vital inputs
IN8.OUT8 - Standard 8xVital Output, 8x Vital Input (12V)	N17061601		Supports 8 vital independent outputs 12V and 8 vital independent inputs 12V.
IN32.OUT32 - Non Vital Non Isolated Input & Output card	N17061501	Rev. 5	Supports 32 non- vital inputs and 32 non-vital outputs. All are non-isolated. IN32.OUT32 w/o LCP version.
Vital Lamp Driver Card	N17060101	Rev. 18	Supports 16 vital lamp outputs (nominal 10-18V DC max).
Coded Track Circuit PCBs	N451910-0701	Rev. 10	General non-cab applications. This is the coded track card that plugs into the cardfile. Use and approval covered as part of Microtrax approval.

Item	Part number	Revision	Description
Coded Track Interface Panels	N451835-0101	Rev. 15	General non-cab applications. This is the coded track interface panel used to connect the coded track circuit to the rails. Use and approval covered as part of Microtrax approval.
Code System Interface	N17061401	Rev. 1	Interface to other remote control systems using a number of different protocols. Not required if Genysis protocol is used with Microlok II.
Power Supply Card	N16601203	Rev. 6	Card file power supply including vital conditional power supply (CPS). This is an upgraded card replacing N16660301 for new installations.
Conditional Power Supply (CPS) card	N451910-7501	Rev. 3	Conditional power supply only with front plate.
Vital Cut-Off Relay (VCOR) PN-150B	N322500-701	Rev. 37	Passes power from the CPS to vital outputs. Approved for relay also covered in Microtrax approvals.
Output Isolation Module (50V)	N17001102	Rev. 3	50V Model 12V Input, 50V output for driving 50V relays from Microlok outputs.
Output Isolation Module (12V)	N17001101	Rev. 3	12V Model 12V Input, 12V output for driving 12V QBCA relays. Used with Microlok Object Controller
Input Isolation Module (12V)	N34800901	Rev. 1	Used with Microlok Object Controller. Isolates external circuits from Object Controller power supply
Ancillary equipment recommended and or supplied by Hitachi STS (formally US&S / Ansaldo STS).	-		Crimps, tools and mounting hardware for MicroLok II installations.
Microlok II Executive Software	N800101-0001	Rev. 8.5	Operating system software for the Microlok II system.
Microlok II Development System and Maintenance Tool	N800102-0001	Rev. E 8.5	Application development tool (compiler, application s/w upload, system configuration, troubleshooting, reverse compiler and event log utilities