

ANNEX A — TECHNICAL SPECIFICATION

**Supply and Installation Agreement dated 4 November 2024 —
Project NWL-VAL-2024-07**

**Automated Conveyor and Sortation System, Valencia
Distribution Centre**

Revision B — issued with Amendment No. 1 on 20 January 2025

1. Scope

1.1 This Annex A sets out the performance, design, supply, installation and commissioning requirements for the automated conveyor and sortation system (the "System") to be supplied and installed by Tidewell Fabrication Ltd (the "Supplier") at Brisamar Logistics SA's Valencia Distribution Centre at Polígono Industrial Los Almendros, Paterna (the "Site").

1.2 In the event of conflict between this Annex and the body of the Agreement, the body of the Agreement prevails.

2. Performance requirements

2.1 Design throughput: the sorter shall process not less than 6,000 parcels per hour sustained over any 60-minute period, with a peak of 7,200 parcels per hour for 15 minutes.

2.2 Sortation accuracy: not less than 99.7% of parcels delivered to the correct outfeed lane, measured over 10,000 consecutive parcels.

2.3 Parcel envelope: 100 x 100 x 30 mm minimum to 800 x 600 x 500 mm maximum; mass 0.1 kg to 30 kg.

2.4 Availability: not less than 98.5% during operating hours, excluding planned maintenance.

3. Site conditions to be provided by the Buyer

3.1 Floor slab: level to a tolerance of 5 mm over any 3 m span measured in accordance with DIN 18202 Table 3, line 4, in all installation areas (see clause 6.2 of the Agreement).

3.2 Electrical supply: a permanent 400A three-phase 400 V 50 Hz supply terminated at the main control panel in Bay 1 (see clause 6.4 as

introduced by Amendment No. 1), available by 7 February 2025.

3.3 Ambient: 5 °C to 40 °C, non-condensing; the Site to be weather-tight before installation starts.

3.4 Network: two fibre pairs from the Site IT room to the main control panel and to the sorter control cabinet in Bay 3.

4. System architecture

4.1 Cross-belt sorter, 26 outfeed lanes (lanes 1–26), two inductions, recirculation loop with a second sorter outfeed added under Change Order CO-1.

4.2 Control system: Siemens S7-1500 redundant PLC pair (Change Order CO-2), Profinet field network, WinCC Unified HMI at the Bay 1 main control panel.

4.3 Warehouse control software: Supplier's SortMaster 4 with the interface to the Buyer's WMS specified in section 9.

5. Mechanical design

5.1 Conveyor supports adjustable within ± 20 mm of nominal height; the sorter carriage track in Bay 3 to be set within ± 1.5 mm across its length.

5.2 Guarding to EN ISO 13857; safety fencing at outfeed lanes 20–26 per Change Order CO-4.

5.3 Belt conveyors: 600 mm and 800 mm belt widths, variable speed 0.5 to 2.5 m/s.

6. Electrical installation

6.1 The outfeed chute shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.2 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.3 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be

demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.4 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.5 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.6 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.7 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.8 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.9 The field network shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.10 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.11 The drive inverter shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.12 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.13 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.14 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.15 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.16 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.17 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.18 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.19 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.20 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with DIN 18202. Compliance

shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.21 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.22 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.23 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

6.24 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
6.T1	outfeed chute	EN 60529	95 days
6.T2	safety fence	DIN 18202	12 days
6.T3	emergency stop circuit	EN 619	19 days
6.T4	HMI workstation	IEC 61131-3	26 days
6.T5	barcode scanner tunnel	EN ISO 13849-1	33 days
6.T6	sorter carriage	EN 60204-1	40 days

7. Control system software

7.1 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.2 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.3 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.4 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.5 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.6 The outfeed chute shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.7 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.8 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.9 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.10 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.11 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.12 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.13 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.14 The field network shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.15 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.16 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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7.21 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.22 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.23 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

7.24 The induction conveyor shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
7.T1	safety fence	EN ISO 13857	18 days
7.T2	emergency stop circuit	EN ISO 13857	25 days
7.T3	HMI workstation	EN ISO 13857	32 days

Ref	Item	Standard	Lead time
7.T4	barcode scanner tunnel	EN ISO 13857	39 days
7.T5	sorter carriage	EN ISO 13857	46 days
7.T6	induction conveyor	EN ISO 13857	53 days

8. Mechanical installation

8.1 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.2 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.3 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.4 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.5 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.6 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.7 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance

testing, and recorded in the commissioning dossier.

8.8 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.9 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.10 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.11 The outfeed chute shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

8.12 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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8.24 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
8.T1	emergency stop circuit	EN 60204-1	31 days
8.T2	HMI workstation	EN ISO 13849-1	38 days
8.T3	barcode scanner tunnel	IEC 61131-3	45 days
8.T4	sorter carriage	EN 619	52 days
8.T5	induction conveyor	DIN 18202	59 days
8.T6	main control panel	EN 60529	66 days

9. Safety and guarding

9.1 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.2 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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9.6 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.7 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.8 The barcode scanner tunnel shall be protected to IP54 or better in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.9 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.10 The induction conveyor shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.11 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.12 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.13 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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9.18 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.19 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.20 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.21 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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9.23 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

9.24 The field network shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
9.T1	HMI workstation	EN ISO 13849-1	44 days
9.T2	barcode scanner tunnel	EN 619	51 days
9.T3	sorter carriage	EN 60529	58 days
9.T4	induction conveyor	EN 60204-1	65 days
9.T5	main control panel	IEC 61131-3	72 days
9.T6	field network	DIN 18202	79 days

10. Testing and commissioning

10.1 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.2 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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10.4 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.5 The field network shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.6 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.7 The drive inverter shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.8 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.9 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.10 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.11 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.12 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.13 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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10.23 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

10.24 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
10.T1	barcode scanner tunnel	IEC 61131-3	57 days
10.T2	sorter carriage	EN 60529	64 days
10.T3	induction conveyor	EN ISO 13849-1	71 days
10.T4	main control panel	DIN 18202	78 days
10.T5	field network	EN 60204-1	85 days
10.T6	photo-eye array	EN 619	92 days

11. Documentation and training

11.1 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.2 The outfeed chute shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance

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11.6 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.7 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.8 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.9 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.10 The field network shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at

factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.11 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.12 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.13 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.14 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.15 The safety fence shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.16 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.17 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.18 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and

recorded in the commissioning dossier.

11.19 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.20 The induction conveyor shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.21 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.22 The field network shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.23 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

11.24 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
11.T1	sorter carriage	EN 619	70 days
11.T2	induction conveyor	EN 60204-1	77 days
11.T3	main control panel	DIN 18202	84 days
11.T4	field network	EN ISO 13849-1	91 days
11.T5	photo-eye array	EN 60529	98 days
11.T6	drive inverter	IEC 61131-3	15 days

12. Spare parts and maintenance

12.1 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.2 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.3 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.4 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.5 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.6 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.7 Design life: the System and all major components shall have a design life of not less than 15 years from Practical Completion, assuming the maintenance regime in section 7.

12.8 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.9 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be

demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.10 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.11 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.12 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.13 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.14 The main control panel shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.15 The field network shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.16 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.17 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and

recorded in the commissioning dossier.

12.18 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1.

Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.19 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.20 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.21 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.22 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.23 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

12.24 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
12.T1	induction conveyor	DIN 18202	83 days
12.T2	main control panel	IEC 61131-3	90 days

Ref	Item	Standard	Lead time
12.T3	field network	EN 60204-1	97 days
12.T4	photo-eye array	EN 60529	14 days
12.T5	drive inverter	EN 619	21 days
12.T6	belt conveyor	EN ISO 13849-1	28 days

13. Interfaces to the warehouse management system

13.1 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.2 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.3 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.4 The barcode scanner tunnel shall be protected to IP54 or better in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.5 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.6 The induction conveyor shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.7 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site

acceptance testing, and recorded in the commissioning dossier.

13.8 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.9 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.10 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.11 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.12 The outfeed chute shall be protected to IP54 or better in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.13 The safety fence shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.14 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.15 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.16 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.17 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.18 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.19 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.20 The field network shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.21 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.22 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.23 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

13.24 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
13.T1	main control panel	EN 60529	96 days
13.T2	field network	DIN 18202	13 days
13.T3	photo-eye array	EN 619	20 days
13.T4	drive inverter	IEC 61131-3	27 days
13.T5	belt conveyor	EN ISO 13849-1	34 days
13.T6	outfeed chute	EN 60204-1	41 days

14. Quality assurance

14.1 The field network shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.2 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.3 The drive inverter shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.4 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.5 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.6 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.7 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.8 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.9 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.10 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.11 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.12 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.13 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.14 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall

be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.15 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.16 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.17 The outfeed chute shall be protected to IP54 or better in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.18 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.19 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.20 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.21 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.22 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance

testing, and recorded in the commissioning dossier.

14.23 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

14.24 The main control panel shall be tested over 72 hours of continuous operation in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
14.T1	field network	EN ISO 13857	19 days
14.T2	photo-eye array	EN ISO 13857	26 days
14.T3	drive inverter	EN ISO 13857	33 days
14.T4	belt conveyor	EN ISO 13857	40 days
14.T5	outfeed chute	EN ISO 13857	47 days
14.T6	safety fence	EN ISO 13857	54 days

15. Environmental and noise

15.1 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.2 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.3 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.4 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall

be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.5 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.6 The field network shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.7 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.8 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.9 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.10 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.11 The safety fence shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.12 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning

dossier.

15.13 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.14 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.15 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.16 The induction conveyor shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.17 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.18 The field network shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.19 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.20 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.21 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.22 The outfeed chute shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.23 The safety fence shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

15.24 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
15.T1	photo-eye array	EN 60204-1	32 days
15.T2	drive inverter	EN ISO 13849-1	39 days
15.T3	belt conveyor	IEC 61131-3	46 days
15.T4	outfeed chute	EN 619	53 days
15.T5	safety fence	DIN 18202	60 days
15.T6	emergency stop circuit	EN 60529	67 days

16. Marking and identification

16.1 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.2 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.3 The outfeed chute shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.4 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.5 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.6 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.7 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.8 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.9 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.10 The main control panel shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.11 The field network shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.12 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.13 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.14 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.15 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.16 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.17 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.18 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.19 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.20 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.21 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.22 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.23 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

16.24 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
16.T1	drive inverter	EN ISO 13849-1	45 days
16.T2	belt conveyor	EN 619	52 days
16.T3	outfeed chute	EN 60529	59 days
16.T4	safety fence	EN 60204-1	66 days
16.T5	emergency stop circuit	IEC 61131-3	73 days
16.T6	HMI workstation	DIN 18202	80 days

17. Packaging, transport and storage

17.1 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.2 The induction conveyor shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.3 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.4 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.5 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.6 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.7 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.8 The outfeed chute shall be protected to IP54 or better in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.9 The safety fence shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be

demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.10 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.11 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.12 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.13 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.14 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.15 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.16 The field network shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.17 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance

testing, and recorded in the commissioning dossier.

17.18 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.19 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.20 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.21 The safety fence shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.22 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.23 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

17.24 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
17.T1	belt conveyor	IEC 61131-3	58 days
17.T2	outfeed chute	EN 60529	65 days
17.T3	safety fence	EN ISO 13849-1	72 days

Ref	Item	Standard	Lead time
17.T4	emergency stop circuit	DIN 18202	79 days
17.T5	HMI workstation	EN 60204-1	86 days
17.T6	barcode scanner tunnel	EN 619	93 days

18. Site works and access

18.1 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.2 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.3 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.4 Spare parts: the Supplier shall dispatch any item on the recommended spares list within 10 business days of a written order, for a period of 10 years from Practical Completion.

18.5 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.6 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.7 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in

the commissioning dossier.

18.8 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.9 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.10 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.11 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.12 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.13 The outfeed chute shall be protected to IP54 or better in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.14 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.15 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.16 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.17 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.18 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.19 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.20 The main control panel shall be tested over 72 hours of continuous operation in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.21 The field network shall be protected to IP54 or better in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.22 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.23 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

18.24 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
18.T1	outfeed chute	EN 619	71 days
18.T2	safety fence	EN 60204-1	78 days
18.T3	emergency stop circuit	DIN 18202	85 days
18.T4	HMI workstation	EN ISO 13849-1	92 days
18.T5	barcode scanner tunnel	EN 60529	99 days
18.T6	sorter carriage	IEC 61131-3	16 days

19. Acceptance criteria

19.1 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.2 The field network shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.3 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.4 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.5 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site

acceptance testing, and recorded in the commissioning dossier.

19.6 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.7 The safety fence shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.8 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.9 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.10 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.11 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.12 The induction conveyor shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.13 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.14 The field network shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.15 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.16 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.17 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.18 The outfeed chute shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.19 The safety fence shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.20 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.21 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.22 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60529.

Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.23 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

19.24 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
19.T1	safety fence	DIN 18202	84 days
19.T2	emergency stop circuit	IEC 61131-3	91 days
19.T3	HMI workstation	EN 60204-1	98 days
19.T4	barcode scanner tunnel	EN 60529	15 days
19.T5	sorter carriage	EN 619	22 days
19.T6	induction conveyor	EN ISO 13849-1	29 days

20. Warranty and defects

20.1 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.2 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.3 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning

dossier.

20.4 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.5 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.6 The main control panel shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.7 The field network shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.8 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.9 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.10 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.11 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.12 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.13 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.14 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.15 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.16 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.17 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.18 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.19 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.20 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.21 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.22 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.23 The outfeed chute shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

20.24 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
20.T1	emergency stop circuit	EN 60529	97 days
20.T2	HMI workstation	DIN 18202	14 days
20.T3	barcode scanner tunnel	EN 619	21 days
20.T4	sorter carriage	IEC 61131-3	28 days
20.T5	induction conveyor	EN ISO 13849-1	35 days
20.T6	main control panel	EN 60204-1	42 days

21. Electrical installation

21.1 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance

testing, and recorded in the commissioning dossier.

21.2 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.3 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.4 The outfeed chute shall be protected to IP54 or better in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.5 The safety fence shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.6 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.7 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.8 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.9 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.10 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.11 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.12 The field network shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.13 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.14 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.15 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.16 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.17 The safety fence shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.18 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance

shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.19 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.20 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.21 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.22 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.23 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

21.24 The field network shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
21.T1	HMI workstation	EN ISO 13857	20 days
21.T2	barcode scanner tunnel	EN ISO 13857	27 days
21.T3	sorter carriage	EN ISO 13857	34 days
21.T4	induction conveyor	EN ISO 13857	41 days
21.T5	main control panel	EN ISO 13857	48 days

Ref	Item	Standard	Lead time
21.T6	field network	EN ISO 13857	55 days

22. Control system software

22.1 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.2 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.3 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.4 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.5 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.6 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.7 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.8 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be

demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.9 The outfeed chute shall be protected to IP54 or better in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.10 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.11 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.12 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.13 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.14 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

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22.17 The field network shall be protected to IP54 or better in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.18 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.19 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.20 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.21 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.22 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.23 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

22.24 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
22.T1	barcode scanner tunnel	EN 60204-1	33 days
22.T2	sorter carriage	EN ISO 13849-1	40 days
22.T3	induction conveyor	IEC 61131-3	47 days
22.T4	main control panel	EN 619	54 days
22.T5	field network	DIN 18202	61 days
22.T6	photo-eye array	EN 60529	68 days

23. Mechanical installation

23.1 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.2 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.3 The safety fence shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.4 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.5 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.6 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.7 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.8 The induction conveyor shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.9 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.10 The field network shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.11 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.12 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.13 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.14 The outfeed chute shall be protected to IP54 or better in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.15 The safety fence shall be labelled with the tag number shown on the schematic in accordance with IEC 61131-3. Compliance shall be

demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.16 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.17 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.18 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.19 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.20 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.21 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.22 The field network shall be protected to IP54 or better in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

23.23 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance

testing, and recorded in the commissioning dossier.

23.24 The drive inverter shall be interlocked with the adjacent zone in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
23.T1	sorter carriage	EN ISO 13849-1	46 days
23.T2	induction conveyor	EN 619	53 days
23.T3	main control panel	EN 60529	60 days
23.T4	field network	EN 60204-1	67 days
23.T5	photo-eye array	IEC 61131-3	74 days
23.T6	drive inverter	DIN 18202	81 days

24. Safety and guarding

24.1 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.2 The main control panel shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.3 The field network shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.4 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.5 The drive inverter shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.6 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.7 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.8 The safety fence shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.9 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.10 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.11 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.12 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.13 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.14 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.15 The field network shall be accessible for maintenance without the removal of guarding in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.16 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.17 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.18 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.19 The outfeed chute shall be protected to IP54 or better in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.20 The safety fence shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.21 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.22 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 619. Compliance shall

be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.23 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with DIN 18202.

Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

24.24 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
24.T1	induction conveyor	IEC 61131-3	59 days
24.T2	main control panel	EN 60529	66 days
24.T3	field network	EN ISO 13849-1	73 days
24.T4	photo-eye array	DIN 18202	80 days
24.T5	drive inverter	EN 60204-1	87 days
24.T6	belt conveyor	EN 619	94 days

25. Testing and commissioning

25.1 The safety fence shall be labelled with the tag number shown on the schematic in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.2 The emergency stop circuit shall be interlocked with the adjacent zone in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.3 The HMI workstation shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.4 The barcode scanner tunnel shall be accessible for maintenance without the removal of guarding in accordance with EN 60204-1.

Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.5 The sorter carriage shall be rated for continuous duty at the design throughput in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.6 The induction conveyor shall be supplied with as-built drawings before site acceptance in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.7 The main control panel shall be tested over 72 hours of continuous operation in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.8 The field network shall be protected to IP54 or better in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.9 The photo-eye array shall be labelled with the tag number shown on the schematic in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.10 The drive inverter shall be interlocked with the adjacent zone in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.11 The belt conveyor shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.12 The outfeed chute shall be accessible for maintenance without the removal of guarding in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site

acceptance testing, and recorded in the commissioning dossier.

25.13 The safety fence shall be rated for continuous duty at the design throughput in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.14 The emergency stop circuit shall be supplied with as-built drawings before site acceptance in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.15 The HMI workstation shall be tested over 72 hours of continuous operation in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.16 The barcode scanner tunnel shall be protected to IP54 or better in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.17 The sorter carriage shall be labelled with the tag number shown on the schematic in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.18 The induction conveyor shall be interlocked with the adjacent zone in accordance with EN 60204-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.19 The main control panel shall achieve a mean time between failures of not less than 4,000 hours in accordance with EN ISO 13849-1. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.20 The field network shall be accessible for maintenance without the removal of guarding in accordance with IEC 61131-3. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.21 The photo-eye array shall be rated for continuous duty at the design throughput in accordance with EN 619. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.22 The drive inverter shall be supplied with as-built drawings before site acceptance in accordance with DIN 18202. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.23 The belt conveyor shall be tested over 72 hours of continuous operation in accordance with EN 60529. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

25.24 The outfeed chute shall be protected to IP54 or better in accordance with EN ISO 13857. Compliance shall be demonstrated at factory acceptance testing and again at site acceptance testing, and recorded in the commissioning dossier.

Ref	Item	Standard	Lead time
25.T1	main control panel	EN 619	72 days
25.T2	field network	EN 60204-1	79 days
25.T3	photo-eye array	DIN 18202	86 days
25.T4	drive inverter	EN ISO 13849-1	93 days
25.T5	belt conveyor	EN 60529	10 days
25.T6	outfeed chute	IEC 61131-3	17 days