

## (1/3) Specification

# Lithium-ion Battery Pack / TD Series

For AGV drive, industrial use 7S (25V) / 14S (50V)

\* Application of EVE 18650 Cylindrical Cell \*



- ◇ New products are shipped with a 30% charge. Charge and use.
- ◇ Documents required for export: MSDS (UN3481, Class 9) English/Chinese version and UN38.3 certificate  
Export HS Code: 8507609000 / Classification: Lithium ion storage battery / Others

---

## index

1. Product lineup and individual specifications
  2. Model name/ Order code explanation/ Option mark
  3. Precautions when selecting a model
  4. Product Features
  5. Common application specifications for all models
  6. Battery status BMS communication (optional) data content
  7. Product drawings and pictures
- (Appendix) Charge/discharge graph
-

\*Application in vertical conveying systems: Even if a hydraulic AGV is used, the AGV must be a speed-adjustable type such as BLDC and servo AGVs. Conventionally used hydraulic AGV packs that cannot control AGV speed cannot be used. This is because the starting current is excessive when directly starting the hydraulic AGV, so the battery often cuts off the overcurrent.

◇ **Model name Basic structure: TD-AGV-□□V□□AH-(case model number)/ (option)**

\* Models with COM in the model number have a battery status communication port.

COM = communication

\* Among the certifications below, UN certification means UN3833 certification, and this certification is essential for overseas transportation.

\* Case drawings for each model are uploaded on the Tadames website ( pdf, dwg, 3D (stp, igs) )

Design and production of Tadames / Made in Vietnam / Application of EVE Lithium ion battery cell (cylindrical 18650), production may be possible through consultation.

Note: In addition to the standard specifications below, customized

| index number  | Product model name<br>( Order Number )<br>COM = Status<br>communication device<br>mounting option | Certification | Applied BLDC AGV<br>output (W)<br>Soft_Start (ΔT ≥<br>1.5 seconds) |   | Battery Energy (Wh) | Discharge<br>Current  |   | Charging current /<br>Charger          |   | Weight, Size |   | Note                                     |
|---|---|---------------|--|---|---------------------|---|---|--|---|--------------|---|--|
|   |   |               | (AGV driving AGV) When<br>maximum output occurs<br>intermittently  | Vertical transfer, hydraulic<br>AGV) maximum output |                     | Instantaneous maximum<br>discharge current (A) (for<br>1.5 seconds) | Maximum allowable discharge<br>current (A)(5 minutes) | Maximum charge current (A)<br>(C_Rate) | TADA charger recommended<br>maximum capacity (low current<br>-> life extension) | Weight(kg)   | Size (mm)<br>(Length X Width X Height) ( L<br>X W X H ) |  |
| Below: 25V Battery / Nominal Voltage 25.8V (Using Voltage: Minimum 24V ~ Maximum 29V) |   |               |  |   |                     |   |   |  |   |              |   |  |
| 25V-01  | TD-AGV-25V-17AH<br>-CV190   | CE            | 680  | 410   | 440                 | 60  | 34  | 13<br>(0.75C)                          | TC-300W-□   | 3            | 242 X 90 X 142  | C: Aluminum case<br>V: Vertical mounting |
| 25V-02  | TD-AGV-25V-17AH<br>-CVCOM230  | CE            | 680  | 410   | 440                 | 60  | 34  | 13<br>(0.75C)                          | TC-300W-□   | 3.3          | 282 X 90 X 142  | C: Aluminum case<br>V: Vertical mounting |
| 25V-03  | TD-AGV-25V-17AH<br>-CH190   | CE            | 680  | 410   | 440                 | 3/25<br>60  | 34  | 13<br>(0.75C)                          | TC-300W-□   | 3            | 242 X 139 X 93  | C: Aluminum case<br>V: Vertical mounting |
| 25V-04  | TD-AGV-25V-17AH<br>-CHCOM230  | CE            | 680  | 410   | 440                 | 60  | 34  | 13<br>(0.75C)                          | TC-300W-□   | 3.3          | 282 X 139 X 93  | C: Aluminum case<br>V: Vertical mounting |
| 25V-05  | TD-AGV-25V-35AH<br>-CV330   | ISO           | 1400   | 840   | 880                 | 123   | 70  | 26<br>(0.75C)                          | TC-700W-□   | 5            | 382 X 90 X 142  | C: Aluminum case<br>V: Vertical mounting |

\*Caution: Direct start of hydraulic AGV is not possible

| index number | Product model name<br>( Order Number )<br>COM = Status<br>communication device<br>mounting option | Certification | Applied BLDC AGV<br>output (W)<br>Soft_Start ( $\Delta T \geq$<br>1.5 seconds) |   | Battery Energy (Wh) | Discharge<br>Current  |   | Charging current /<br>Charger          |  | Weight, Size |   | Note                                    |
|--------------|---|---------------|--|---|---------------------|---|---|--|--|--------------|---|---|
|              |   |               | (AGV driving AGV) When<br>maximum output occurs<br>intermittently              | Vertical transfer, hydraulic<br>AGV) maximum output |                     | Instantaneous maximum<br>discharge current (A) (for<br>1.5 seconds) | Maximum allowable discharge<br>current (A)(5 minutes) | Maximum charge current (A)<br>(C_Rate) | TADA charger recommended<br>maximum capacity(low current<br>-> life extension) | Weight(kg)   | Size (mm)<br>(Length X Width X Height) ( L<br>X W X H ) |   |
| 25V-06       | TD-AGV-25V-35AH<br>-CVCOM370  | ISO           | 1400   | 840   | 880                 | 123   | 70  | 26<br>(0.75C)                          | TC-700W-□  | 5.5          | 422 X 90 X 142  | C:Aluminum case<br>V: Vertical mounting |
| 25V-07       | TD-AGV-25V-35AH<br>-CH330   | ISO           | 1400   | 840   | 880                 | 123   | 70  | 26<br>(0.75C)                          | TC-700W-□  | 5            | 382 X 139 X 93  | C:Aluminum case<br>V: Vertical mounting |
| 25V-08       | TD-AGV-25V-35AH<br>-CHCOM370  | ISO           | 1400   | 840   | 880                 | 123   | 70  | 26<br>(0.75C)                          | TC-700W-□  | 5.5          | 422 X 139 X 93  | C:Aluminum case<br>V: Vertical mounting |
| 25V-09       | TD-AGV-25V-52AH<br>-CV470   | ISO           | 1800   | 1080  | 1,320               | 158   | 90  | 39<br>(0.75C)                          | TC-1500W-□   | 7            | 522 X 90 X 142  | C:Aluminum case<br>V: Vertical mounting |
| 25V-10       | TD-AGV-25V-52AH<br>-CVCOM510  | ISO           | 1600   | 960   | 1,320               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-□   | 7.5          | 562 X 90 X 142  | C:Aluminum case<br>V: Vertical mounting |
| 25V-11       | TD-AGV-25V-52AH<br>-CH470   | ISO           | 1800   | 1080  | 1,320               | 158   | 90  | 39<br>(0.75C)                          | TC-1500W-□   | 7            | 522 X 139 X 93  | C:Aluminum case<br>V: Vertical mounting |
| 25V-12       | TD-AGV-25V-52AH<br>-CHCOM510  | ISO           | 1600   | 960   | 1,320               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-□   | 7.5          | 562 X 139 X 93  | C:Aluminum case<br>V: Vertical mounting |
| 25V-09.2     | TD-AGV-25V-57AH<br>-CV335-NMC   | ISO           | 1800   | 1080  | 1,425               | 158<br>4/25   | 90  | 39<br>(0.75C)                          | TC-1500W-□   | 7            | 297 X 85 X 335  | C:Aluminum case<br>V: Vertical mounting |
| 25V-13       | TD-AGV-25V-70AH<br>-W2L300  | ISO           | 800  | 500   | 1,760               | 80  | 60  | 26<br>(0.35C)                          | TC-700W-□  | 11.0         | 328 X 305 X 84  | C:Aluminum case<br>V: Vertical mounting |
| 25V-14       | TD-AGV-25V-70AH<br>- W2   | ISO           | 1800   | 1080  | 1,760               | 158   | 90  | 52<br>(0.75C)                          | TC-<br>1500W-<br>□ TC-<br>2000W-<br>□  | 11.3         | 390 X 300 X 88  | C:Aluminum case<br>V: Vertical mounting |
| 25V-15       | TD-AGV-25V-70AH<br>- W2COM  | ISO           | 1600   | 960   | 1,760               | 140   | 90  | 52<br>(0.75C)                          | TC-<br>1500W-<br>□ TC-<br>2000W-<br>□  | 11.7         | 430 X 300 X 88  | C:Aluminum case<br>V: Vertical mounting |



## LiFePO4 Battery

- \* Cell LiFePO4
- \* Ceramic Fiber Cloth 500°C

| index number | Product model name<br>( Order Number )<br>COM = Status<br>communication device<br>mounting option | Certification | Applied BLDC AGV output (W)<br>Soft_Start ( $\Delta T \geq 1.5$ seconds) |  | Battery Energy (Wh) | Discharge Current   |  | Charging current / Charger          |  | Weight, Size   |   | Note |
|--------------|---|---------------|--|--|---------------------|---|--|-------------------------------------|--|--|---|------|
|              |   |               | (AGV driving AGV) When maximum output occurs intermittently              | Vertical transfer, hydraulic AGV) maximum output |                     | Instantaneous maximum discharge current (A) (for 1.5 seconds) | Maximum allowable discharge current (A)(5 minutes) | Maximum charge current (A) (C_Rate) | TADA charger recommended maximum capacity(low current -> life extension) | Size (mm)<br>(Length X Width X Height) ( L X W X H ) |   |      |
| 25V-06       | TD-AGV-25V-35AH<br>-CVCOM370-LFP  | ISO           | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 422 X 90 X 142                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-07       | TD-AGV-25V-35AH<br>-CH330-LFP   | ISO           | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 382 X 139 X 93                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-08       | TD-AGV-25V-35AH<br>-CHCOM370-LFP  | ISO           | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 422 X 139 X 93                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-09       | TD-AGV-25V-52AH<br>-CV470-LFP   | ISO           | 1800   | 1080   | 1,320               | 158   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 522 X 90 X 142                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-09.1     | TD-AGV-25V-52AH<br>-CV335-LFP   | ISO           | 1800   | 1080   | 1,320               | 158   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 297 X 85 X 335                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-09.2     | TD-AGV-25V-52AH-RS485-<br>LFP-A   | ISO           | 1800   | 1080   | 1,320               | 158   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 297 X 85 X 335<br>(±5%)                              | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-09.2     | TD-AGV-25V-52AH-RS485-<br>LFP-SHE   | ISO           | 1800   | 1080   | 1,320               | 158   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 297 X 85 X 335<br>(±5%)                              | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-10       | TD-AGV-25V-52AH<br>-CVCOM510-LFP  | ISO           | 1600   | 960  | 1,320               | 140   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 562 X 90 X 142                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-11       | TD-AGV-25V-52AH<br>-CH470-LFP   | ISO           | 1800   | 1080   | 1,320               | 158   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 522 X 139 X 93                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-12       | TD-AGV-25V-52AH<br>-CHCOM510-LFP  | ISO           | 1600   | 960  | 1,320               | 140   | 90   | 39<br>(0.75C)                       | TC-1500W-□   | 562 X 139 X 93                                       | C:Aluminum case<br>V: Vertical mounting |      |
| 25V-13       | TD-AGV-25V-36AH<br>- MK-LFP-SS  | UN 38.3       | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 140 X 405 X 90<br>(±5%)                              | C:Steel case                            |      |
| 25V-14       | TD-AGV-25V-36AH<br>- MK-LFP-SA  | UN 38.3       | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 140 X 405 X 90<br>(±5%)                              | C:Steel case                            |      |
| 25V-16       | TD-AGV-25V-36AH<br>- MK-LFP-RS485-A   | UN 38.3       | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 140 X 405 X 90<br>(±5%)                              | RS485                                   |      |
| 25V-16.1     | TD-AGV-25V-36AH<br>- MK-LFP   | UN 38.3       | 1400   | 840  | 880                 | 123   | 70   | 26<br>(0.75C)                       | TC-700W-□  | 140 X 405 X 90<br>(±5%)                              | C:Steel case                            |      |



| index number   | Product model name<br>( Order Number )<br>COM = Status<br>communication device<br>mounting option | Certification | Applied BLDC AGV<br>output (W)<br>Soft_Start ( $\Delta T \geq$<br>1.5 seconds) |   | Battery Energy (Wh) | Discharge<br>Current  |   | Charging current /<br>Charger          |  | Weight, Size |   | Note   |
|--|---|---------------|--|---|---------------------|---|---|--|--|--------------|---|--|
|  |   |               | (AGV driving AGV) When<br>maximum output occurs<br>intermittently              | Vertical transfer, hydraulic<br>AGV) maximum output |                     | Instantaneous maximum<br>discharge current (A) (for 1.5<br>seconds) | Maximum allowable discharge<br>current (A)(5 minutes) | Maximum charge current (A)<br>(C_Rate) | TADA charger recommended<br>maximum capacity(low current<br>-> life extension) | Weight(kg)   | Size (mm)<br>(Length X Width X Height) ( L<br>X W X H ) |  |
| Below: 50V battery / nominal voltage 51.7V (used voltage: minimum 48V ~ maximum 58V) |   |               |  |   |                     |   |   |  |  |              |   |  |
| 50V-01   | TD-AGV-50V-17AH<br>-CV330   | (no plan)     | 1360   | 820   | 880                 | 60  | 34  | 13<br>(0.75C)                          | TC-700W-□  | 5            | 374 X 90 X 142  | C:Aluminum case<br>V: Vertical mounting      |
| 50V-02   | TD-AGV-50V-17AH<br>-CVCOM370  | (no plan)     | 1360   | 820   | 880                 | 60  | 34  | 13<br>(0.75C)                          | TC-700W-□  | 5.5          | 414 X 90 X 142  | C:Aluminum case<br>V: Vertical mounting      |
| 50V-03   | TD-AGV-50V-17AH<br>-CH330   | (no plan)     | 1360   | 820   | 880                 | 60  | 34  | 13<br>(0.75C)                          | TC-700W-□  | 5            | 374 X 139 X 93  | C:Aluminum case<br>H: Horizontal<br>mounting |
| 50V-04   | TD-AGV-50V-17AH<br>-CHCOM370  | (no plan)     | 1360   | 820   | 880                 | 60  | 34  | 13<br>(0.75C)                          | TC-700W-□  | 5.5          | 414 X 90 X 142  | C:Aluminum case<br>H: Horizontal<br>mounting |
| 50V-05   | TD-AGV-50V-35AH<br>-W2  | (no<br>plan)  | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 11.3         | 390 X 300 X 88  | W: wide, slim                                |
| 50V-06   | TD-AGV-50V-35AH<br>-W2COM   | (no plan)     | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 11.7         | 430 X 300 X 88  | W: wide, slim                                |
| 50V-07   | TD-AGV-50V-35AH<br>-X2  | ISO           | 2800   | 1680  | 1,760               | 81, 2, 3  | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 11.0         | 390 X 165 X 146   | Handle option<br>available                   |
| 50V-08   | TD-AGV-50V-35AH<br>-X2COM   | ISO           | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 11.4         | 430 X 165 X 146   | Handle option<br>available                   |
| 50V-09   | TD-AGV-50V-52AH<br>-W3  | (no plan)     | 3600   | 2160  | 2,650               | 158   | 90  | 39<br>(0.75C)                          | TC-<br>1500W-<br>□ TC-<br>3500W-<br>□  | 17.4         | 390 X 441 X 88  | W: wide, slim                                |
| 50V-10   | TD-AGV-50V-52AH<br>-W3COM   | (no plan)     | 3200   | 1920  | 2,650               | 140   | 90  | 39<br>(0.75C)                          | TC-<br>1500W-<br>□ TC-<br>3500W-<br>□  | 17.8         | 430 X 441 X 88  | W: wide, slim                                |



| index number | Product model name<br>( Order Number )<br>COM = Status<br>communication device<br>mounting option | Certification | Applied BLDC AGV<br>output (W)<br>Soft_Start ( $\Delta T \geq$<br>1.5 seconds) |   | Battery Energy (Wh) | Discharge<br>Current  |   | Charging current /<br>Charger          |  | Weight, Size |   | Note                       |
|--------------|---|---------------|--|---|---------------------|---|---|--|--|--------------|---|----------------------------|
|              |   |               | (AGV driving AGV) When<br>maximum output occurs<br>intermittently              | Vertical transfer, hydraulic<br>AGV) maximum output |                     | Instantaneous maximum<br>discharge current (A) (for 1.5<br>seconds) | Maximum allowable discharge<br>current (A)(5 minutes) | Maximum charge current (A)<br>(C_Rate) | TADA charger recommended<br>maximum capacity(low current<br>-> life extension) | Weight(kg)   | Size (mm)<br>(Length X Width X Height) ( L<br>X W X H ) |                            |
| 50V-11       | TD-AGV-50V-52AH<br>-X3  | ISO           | 3600   | 2160  | 2,650               | 158   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 16.0         | 390 X 238 X 146   | Handle option<br>available |
| 50V-12       | TD-AGV-50V-52AH<br>-X3COM   | ISO           | 3200   | 1920  | 2,650               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 16.4         | 430 X 238 X 146   | Handle option<br>available |
| 50V-13       | TD-AGV-50V-70AH<br>-X4  | ISO           | 3600   | 2160  | 3,530               | 158   | 90  | 53<br>(0.75C)                          | TC-3500W-□   | 20.8         | 390 X 309 X 146   | Handle option<br>available |
| 50V-14       | TD-AGV-50V-70AH<br>-X4COM   | ISO           | 3200   | 1920  | 3,530               | 140   | 90  | 53<br>(0.75C)                          | TC-3500W-□   | 21.8         | 430 X 309 X 146   | Handle option<br>available |
| 50V-12       | TD-AGV-50V-52AH<br>-X3COM   | ISO           | 3200   | 1920  | 2,650               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 16.4         | As requested  | Handle option<br>available |
|              |   |               |  |   |                     |   |   |  |  |              |   |                            |
|              |   |               |  |   |                     |   |   |  |  |              |   |                            |

## LiFePO4 Battery

- \* Cell LiFePO4
- \* Ceramic Fiber Cloth 500°C

| index number | Product model name<br>( Order Number )<br>COM = Status<br>communication device<br>mounting option | Certification | Applied BLDC AGV<br>output (W)<br>Soft_Start ( $\Delta T \geq$<br>1.5 seconds) |   | Battery Energy (Wh) | Discharge<br>Current  |   | Charging current /<br>Charger          |  | Weight, Size  |                            | Note |
|--------------|---|---------------|--|---|---------------------|---|---|--|--|---|----------------------------|------|
|              |   |               | (AGV driving AGV) When<br>maximum output occurs<br>intermittently              | Vertical transfer, hydraulic<br>AGV) maximum output |                     | Instantaneous maximum<br>discharge current (A) (for 1.5<br>seconds) | Maximum allowable discharge<br>current (A)(5 minutes) | Maximum charge current (A)<br>(C_Rate) | TADA charger recommended<br>maximum capacity(low current<br>-> life extension) | Size (mm)<br>(Length X Width X Height) ( L<br>X W X H ) |                            |      |
| 50V-11       | TD-AGV-50V-52AH<br>-X3-LFP  | ISO           | 3600   | 2160  | 2,650               | 158   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 390 X 238 X 146   | Handle option<br>available |      |
| 50V-12       | TD-AGV-50V-52AH<br>-LFP   | ISO           | 3200   | 1920  | 2,650               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 430 X 238 X 146   | Handle option<br>available |      |
| 50V-12.1     | TD-AGV-50V-52AH<br>-RS485-LFP-Auto  | ISO           | 3200   | 1920  | 2,650               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 430 X 238 X 146<br>(±5%)                                | Handle option<br>available |      |
| 50V-12.2     | TD-AGV-50V-52AH<br>-RS485-LFP-SS  | ISO           | 3200   | 1920  | 2,650               | 140   | 90  | 39<br>(0.75C)                          | TC-1500W-<br>□ TC-<br>3500W-□  | 430 X 238 X 146   | Handle option<br>available |      |
| 50V-13       | TD-AGV-50V-70AH<br>-X4-LFP  | ISO           | 3600   | 2160  | 3,530               | 158   | 90  | 53<br>(0.75C)                          | TC-3500W-□   | 390 X 309 X 146   | Handle option<br>available |      |
| 50V-14       | TD-AGV-50V-70AH<br>-X4COM-LFP   | ISO           | 3200   | 1920  | 3,530               | 140   | 90  | 53<br>(0.75C)                          | TC-3500W-□   | 430 X 309 X 146   | Handle option<br>available |      |
| 50V-15       | TD-AGV-50V-130AH-LFP  | ISO           | 3600   | 2160  | 3,530               | 158   | 90  | 53<br>(0.75C)                          | TC-3500W-□   | 250 x 300 x 400   | Handle option<br>available |      |
| 50V-16       | TD-AGV-50V-150AH<br>-LFP  | ISO           | 3200   | 1920  | 3,530               | 140   | 90  | 53<br>(0.75C)                          | TC-3500W-□   | 250 x 300 x 400   | Handle option<br>available |      |
| 50V-17       | TD-AGV-50V-35AH<br>-X2-LFP  | ISO           | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 470 X 165 X 155   | Handle option<br>available |      |
| 50V-18       | TD-AGV-50V-35AH<br>-X3COM-LFP   | ISO           | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 470 X 165 X 155   | Handle option<br>available |      |
| 50V-19       | TD-AGV-50V-35AH<br>-X3COM-LFP   | ISO           | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 453 X 165 X 152   | Handle option<br>available |      |
| 50V-20       | TD-AGV-50V-35AH<br>-ALARM   | ISO           | 2800   | 1680  | 1,760               | 123   | 70  | 26<br>(0.75C)                          | TC-1500W-□   | 453 X 165 X 152   | Handle option<br>available |      |

## Safety and protection features

### 1) General

Lithium-Ion Battery Pack Design Criteria Safety is our top priority. TADA battery packs are produced by carefully selecting only those whose safety has been proven from cell selection.

In addition to the battery protection circuit (BMS), it is equipped with additional safety devices against things that cannot be solved by BMS.

### 2) Safety and protection features

#### ◇ Overcurrent protection (limiting charging current and discharging current)

The battery's protection circuit (BMS) limits the input/output current to the set value (refer to the specification sheet for each model)..

Due to this function, the battery can be safely protected by preventing the output of excessive current..

#### ◇ Output cut-off control in case of short circuit (short circuit): Return to normal when short circuit is terminated

In case of short circuit between output terminals due to careless handling, the protection circuit (BMS) immediately cuts off the output. When the short circuit is terminated, it returns to normal and outputs normally.

#### ◇ (Over Voltage Protection)

The battery's protection circuit (BMS) monitors the voltage of each group of lithium-ion battery cells. During charging, charging stops when each cell group exceeds the specified voltage level, and charging resumes when the specified voltage is restored..

#### ◇ (Under Voltage Protection)

The battery's protection circuit (BMS) monitors the voltage of each group of lithium-ion battery cells. When each cell group falls below the specified voltage, discharging is stopped, and when the specified voltage is restored, discharging resumes.

#### ◇ Fire protection

As research from Sandia National Laboratories-USA, LiFePO<sub>4</sub> battery has an extremely low thermal runaway rate, only 2.4 KJ/Ah compare to 8.3KJ/Ah with NMC and 9.8KJ/Ah with NCA battery. So the LiFePO<sub>4</sub> are very safe in use. TADA LiFePO<sub>4</sub> Battery use famous TENPOWER LiFePO<sub>4</sub> cell brand, which pass the IEC62133 certificated by TUV Rheinland.

TADA battery also cover with fire protection sheet, which can withstand up to 500°C fire. Battery cover are made by steel that can withstand 1530 °C in case of fire.

### 3) Safety reference

One of the biggest benefits of choosing an LFP battery is its safety and lifespan. The combination of lithium iron phosphate is more stable than nickel manganese cobalt at higher temperatures. To extinguish a LiFePO<sub>4</sub> (Lithium Iron Phosphate) battery fire, you can use a foam extinguisher containing CO<sub>2</sub>, powder graphite, ABC dry chemical, or sodium carbonate.

It's recommended to place the battery pack in a protected outdoor area to allow it to burn out completely

### 3) List of Common Specifications

Development and production of TADA / Vietnam made, EVE lithium-ion battery cell application

| Main Category   | Characteristic   | Detail  |
|---|--|---|
| Life expectancy   | LV series: 5000 Cycles TD series: 4000 Cycles<br><br>(Estimated value, depending on conditions of use)   | Life Expectancy Conditions:<br>1) When the battery cell is used at a temperature of about 20°C.<br>2) Must be charging and discharging 0.2C Rate condition.<br>3) When charging and discharging between 30% or more of the remaining amount ↔ 90% of the remaining amount, Life expectancy varies depending on usage conditions. battery temperature at room temperature<br>The closer, the smaller the charge current and discharge current are compared to the battery capacity, the longer lifespan. |
| Charging Capacity   | Change in charging capacity according to the change in charging voltage of the charger   | [Attention ]<br>The maximum charging capacity ( Ah ) and nominal energy ( Wh ) indicated on this product are the maximum charging capacity ( Ah ) and nominal energy ( Wh )<br>When charging, the charging capacity decreases proportionally. This should be taken into account when selecting the battery capacity..   |
| Operating temperature conditions<br>(The temperature on the right is the temperature of the battery cell) | Charge : 0°C ~ 45°C  | Charge and discharge closer to room temperature, life cycle will be longer  |
|   | Discharge : -20°C ~ 60°C   | Life cycles is shortened at low and high temperatures.  |
| Protection function   | BMS  | Cell balancing function, overcharge (OVP), overdischarge (UVP), overcurrent (OCP), short-circuit cutoff (SCP), overheat control (OTP), automatic cooling control  |
| Battery status communication port<br>(optional)   | Communication content: :<br><br>Information necessary for battery use, such as battery voltage, remaining capacity, temperature, expected charging time, expected discharging time, error status, etc. | 1. When multiple batteries are connected in series or parallel, it is implemented as a Master Slave method. Master<br><br>The battery finally transmits the battery status information.<br>2. Provide pin map and protocol of communication port connector<br>3. RS232C / RS422 / RS485 / CAN (user selectable).  |
| cooling system  | Automatic ON/OFF cooling fan   | When the internal temperature of the battery is over 40 degrees, the cooling fan operates. When the temperature goes down, the fan stops working after a certain period of time.<br><br>[Note]: There is a cooling fan in the battery   |
| Charging method   | Constant voltage (CV) + Constant current (CC)  | The charging current is charged at an appropriate value below the rated charging current, and charging with the lowest possible current can extend the life of the battery. Set the maximum voltage (charging maximum voltage) as the charging voltage upper limit (CV) and charge with constant current (CC) below the rated charging current  |

## 6. COM Optional Product / Battery Status BMS communication data contents

### 1) Battery information

| 순번 | Data    | Type                       | High/Low Byte | Unit | Scale | Range            |
|----|---------|----------------------------|---------------|------|-------|------------------|
| 1  | Data 1  | Voltage                    | High          | V    | 0.01  | 0 ~ 655.35       |
|    | Data 2  |                            | Low           |      |       |                  |
| 2  | Data 3  | Electric current           | High          | A    | 0.01  | -327.68 ~ 327.67 |
|    | Data 4  |                            | Low           |      |       |                  |
| 3  | Data 5  | SOC<br>( State Of Charge ) | High          | %    | 1     | 0 ~ 100          |
|    | Data 6  |                            | Low           |      |       |                  |
| 4  | Data 7  | Battery status             | High          |      |       |                  |
|    | Data 8  |                            | Low           |      |       |                  |
| 5  | Data 9  | Charging completion time   | High          | min  | 1     | 0 ~ 65535        |
|    | Data 10 |                            | Low           |      |       |                  |
| 6  | Data 11 | Discharge completion time  | High          | min  | 1     | 0 ~ 65535        |
|    | Data 12 |                            | Low           |      |       |                  |
| 7  | Data 13 | Temperature                | High          | °C   | 0.1   | -3276.8 ~ 3276.7 |
|    | Data 14 |                            | Low           |      |       |                  |
| 8  | Data 15 | SOH<br>( State Of Health ) | High          | %    | 1     | 0 ~ 100          |
|    | Data 16 |                            | Low           |      |       |                  |
| 9  | Data 17 | Remain capacity            | High          | Ah   | 0.01  | 0 ~ 655.35       |
|    | Data 18 |                            | Low           |      |       |                  |
| 10 | Data 19 | Remain Energy              | High          | Wh   | 0.1   | 0 ~ 6553.5       |
|    | Data 20 |                            | Low           |      |       |                  |

### 2) Battery status information

| Bit | Explanation                 | Bit |
|-----|-----------------------------|-----|
| 0   | battery overvoltage         | 8   |
| 1   | Battery low voltage         | 9   |
| 2   | Excessive charging current  | 10  |
| 3   | Excessive discharge current | 11  |
| 4   | High temperature            | 12  |
| 5   | Low temperature             | 13  |